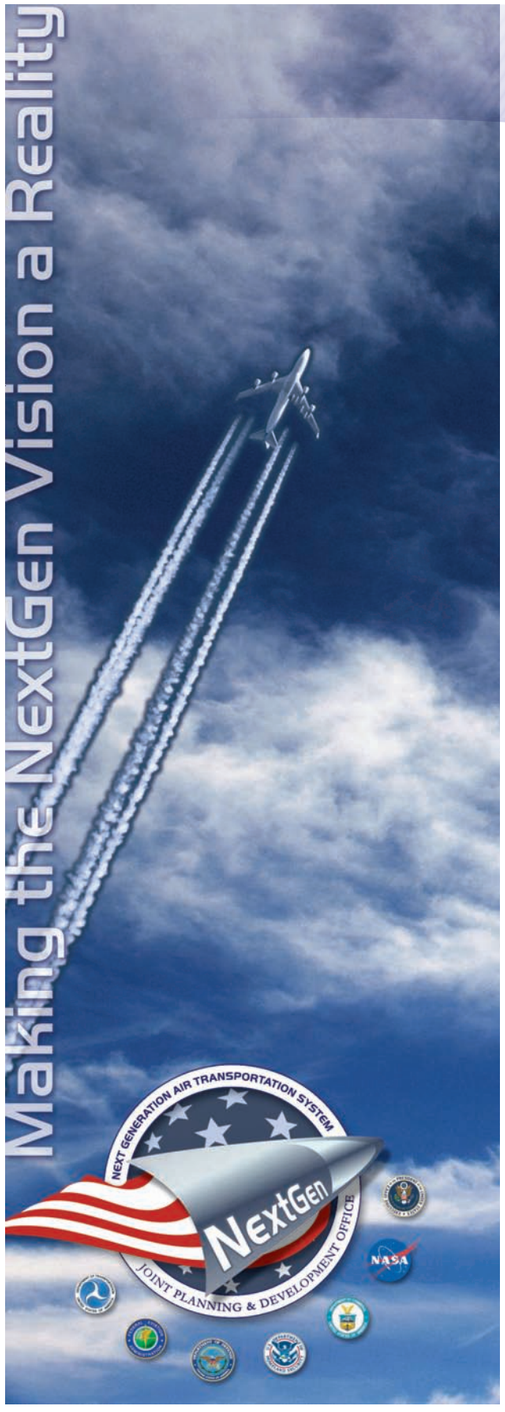

Joint Planning and Development Office

Enterprise Architecture V2.0

for the

The Next Generation Air Transportation System

22 June 2007

NextGen
Next Generation Air Transportation System

Document Change History

Version	Publication Date	Author	Description of Change

Acknowledgement:

Booz Allen Hamilton for designing, preparing, and developing the NextGen Enterprise Architecture Version 2.0 (Executive Summary, Enterprise Architecture and EAED Program Management Plan)

Special thanks to the Partner Agencies and NextGen Stakeholders for contributing their information, expertise and domain knowledge toward the development of Version 2.0 of the NextGen Enterprise Architecture.

Document Structure

This document is one component within the set of next generation air transportation system (NextGen) enterprise-level documentation and will be used to define, depict, and guide the development of NextGen. The complete documentation set includes—

- Executive Summary
- NextGen Concept of Operations
- NextGen Enterprise Architecture
- NextGen Integrated Work Plan
- JPDO Enterprise Architecture and Engineering Division (EAED) Program Management Plan

This document consists of three sections and 10 appendixes, as described below

Section	Type	Description
Section 1	Introduction	Describes the purpose, scope, goals and objectives, and organizational roles and responsibilities for the NextGen Enterprise Architecture..
Section 2	NextGen EA Approach	Describes the approach used to develop the NextGen EA.
Section 3	NextGen EA	Provides the supporting architecture details grouped by segments.
Appendix A	Reference Documents	References architecture frameworks used for NextGen EA development.
Appendix B	Overview and Summary (AV-1)	Summary describing the JPDO's mission, goals, and objectives for achieving the NextGen.
Appendix C	Integrated Dictionary (AV-2)	The complete glossary of terms used to develop the NextGen EA.
Appendix D	Operational Node Connectivity Diagram (OV-2)	Diagram identifying the operational nodes, including needlines and the information exchanged between them.
Appendix E	Operational Exchange Matrix (OV-3)	Matrix facilitating "information"-centric analysis and allows information to be traced to operational activities. It also enables decision makers to clarify who exchanges what information with whom, why the information is necessary, and in what manner the information is exchanged.
Appendix F	Activity Model Hierarchal Node Tree (OV-5)	Diagram logically depicting activities that successively decompose to lower levels of detail.
Appendix G	Operational Event/Trace Description (OV-6c)	Diagram providing information relevant to the sequencing of operational activities and describes missions spanning a wide range of operations and activities.
Appendix H	Operational Activity to Stakeholder Investment Traceability Matrix (SV-5 Hybrid)	Matrix aligning operational activities to stakeholder investments.
Appendix I	NextGen Reference Architecture	Taxonomy for classifying the NextGen EA elements.
Appendix J	Federal Transition Framework	Catalog of architectural information and implementation guidance for cross-agency initiatives using a simple, familiar structure aligned with the Federal Enterprise Architecture (FEA) Reference Models.

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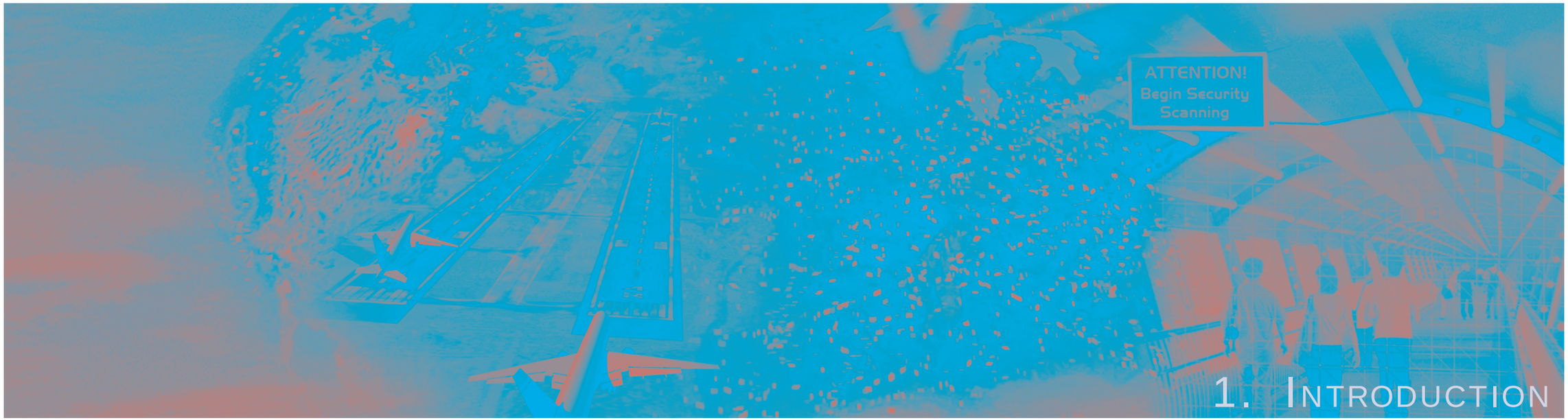

1. Introduction

The Federal Aviation Administration (FAA) is challenged with ensuring a sustainable air transportation system for the future and developing an actionable enterprise architecture (EA) roadmap for the NextGen that is both effective and affordable. FAA realizes that the forecasted growth in air traffic demand cannot occur without increased capacity, efficiency, and productivity. The characteristics of this growth, such as evolving fleet mixes, emerging high-performance general aviation aircraft, and changing airline airport business models will affect the demand profile and, in turn, the air traffic control costs and the revenue generated to provide these services. The NextGen must support this growth while meeting a wide range of environmental, safety, security, political, economic, and social imperatives that also affect the feasibility of operational transformation initiatives.

While the demand for safe, reliable, and efficient aviation services is growing, the nation's ability to successfully manage air traffic demand is under severe strain given our current capabilities and resources. NextGen is about a long-term transformation of our nation's existing air transportation system. This transformation is based on careful integration and collaboration among the Joint Planning and Development Office's (JPDO) various partners, including the private sector and general public. NextGen focuses on leveraging new technologies, such as satellite-based navigation and surveillance, supporting a three-fold increase in air vehicle operations, integrating security and national defense requirements, and ensuring that aviation remains an economically viable industry in the years ahead.

Considering these monumental challenges, President Bush enacted the "Vision 100" legislation (Public Law 108-176) in 2003 recognizing the need for a complete transformation of our National Airspace System (NAS). The JPDO was established to serve as the catalyst for this transformational effort by developing and implementing an integrated plan that provides objective, responsive, and reliable requirements and guidance to public and private sector organizations who will share the investment in this future vision. Specifically, the JPDO must comply with the President's Management Agenda and specific legislated responsibilities outlined in Public Law 108-176 for—

- "Creating and carrying out an integrated work plan"
- "Overseeing research and development on the new Air Transportation System"
- "Creating a transition plan for the implementation of that system"

- "Coordinating goals and priorities and coordinating research activities within the Federal Government with United States aviation and aeronautical firms"
- "Coordinating the development and utilization of new technologies."

The JPDO's principal challenge, in addressing these responsibilities, is the creation of the NextGen EA, which includes presenting an accurate instantiation of the relevant and necessary enterprise information and balancing the collective needs and objectives of the stakeholder community with individual stakeholder priorities. This type of information can be and often is ambiguous, divergent, or conflicting. Therefore, the intent of the NextGen EA is to provide a structure for developing, evaluating, and communicating the various components of an actionable roadmap for the transformation of core air transportation system operations to achieve the desired end-state performance goals.

1.1 Purpose

The purpose of the NextGen EA is to provide the organizing logic for stakeholders to align and evaluate their respective business and technology processes in a standardized and consistent framework. Moreover, the NextGen EA can be used to help manage the complexity of developing and managing the transformational march toward NextGen, as well as aligning operational and business plans and strategies to solution implementations. The development and use of the NextGen EA will enable leadership to respond to the need for rapid change in order to maintain the business and technical advantage necessary to meet mission requirements. The NextGen EA provides JPDO leadership, stakeholders, and partners with the requisite information and data necessary to make investment and design decisions with greater speed, precision, confidence, and clarity. These decisions will support the timely achievement of the NextGen vision and goals.

The development of the NextGen EA should be seen as an investment in the future. It will cost time and money upfront; but if effectively used, it will yield benefits that are measured over time and realized in pockets of overall investment savings, as documented in the overall NextGen Portfolio. In addition, as an analysis tool, the NextGen EA can—

- Provide the mechanism for rigorous analysis that will influence aviation and aeronautics research programs to achieve the goal of more effective and directed programs resulting in applicable research by aligning the partner agencies investments to the NextGen.
- Provide effective, efficient, and timely support for NextGen business processes
- Focus design initiatives to deliver an increased capacity of up to three times current operating levels
- Enhance collaboration between and among the JPDO, its partners, and the stakeholders, providing consistent, unified definition of information across the enterprise.
- Ensure suitable flexibility of the NextGen infrastructure to accommodate unforeseen new or changed business requirements, organizational changes, changing market conditions, and the like
- Promote operational agility by creating loosely coupled, scalable, and highly adaptable interoperability framework—which in turn creates the flexibility to select appropriate mission-supporting solutions
- Ensure maximum longevity/reuse of infrastructure components, thereby maximizing ROI and ensuring timely compliance with federal requirements;
- Mitigate risk of failure by resolving complex conflicts of meaning (semantics), structure (syntax), and hierarchy (schema), thereby addressing the root cause of high failure rates and long implementation cycles characteristic of current large-scale, multidimensional, cross-domain integration efforts
- Maximize opportunities for exploitation of corporate information/data assets (such as for portfolio management and customer relationship management); this implies a move toward consolidated enterprise data warehousing/mining and analysis to improve accuracy of decision making
- Reduce program expenditures or the cost of execution; for example, the EA can be used to identify gaps and overlaps, drive analysis to eliminate unnecessary redundancy, and drive open architecture utilization to significantly limit custom builds and lower implementation costs.

1.2 Audience

This NextGen EA is intended to be a reference for the architecture and engineering community, and to support the stakeholders and industry. The Executive Summary describes both the JPDO partner and stakeholder communities; in addition, the following types of individuals will benefit from this document:

- Senior leadership (e.g., agency and industry executives)
- Enterprise architects (e.g., system, information, infrastructure, and security architects and engineers)
- Portfolio/project managers
- External oversight agencies (e.g., the Office of Management and Budget, the General Accounting Office)

As each NextGen architectural product is explained in subsequent sections, the corresponding audience and their relevance will be further described.

1.3 Scope

This NextGen EA represents the organizing logic, utilizing the Department of Defense Architecture Framework (DoDAF) and Federal Enterprise Architecture (FEA) frameworks, for JPDO partners and stakeholders to align their business and technology processes in a standardized and consistent manner towards the end state described in the ConOps. Scheduled for release later in 2007, the Integrated Work Plan (IWP) will describe the major implementation milestones, dependencies, and resources needed to achieve the end-state vision described in the ConOps and detailed in the NextGen EA. Each of these key deliverables will be revised over time.

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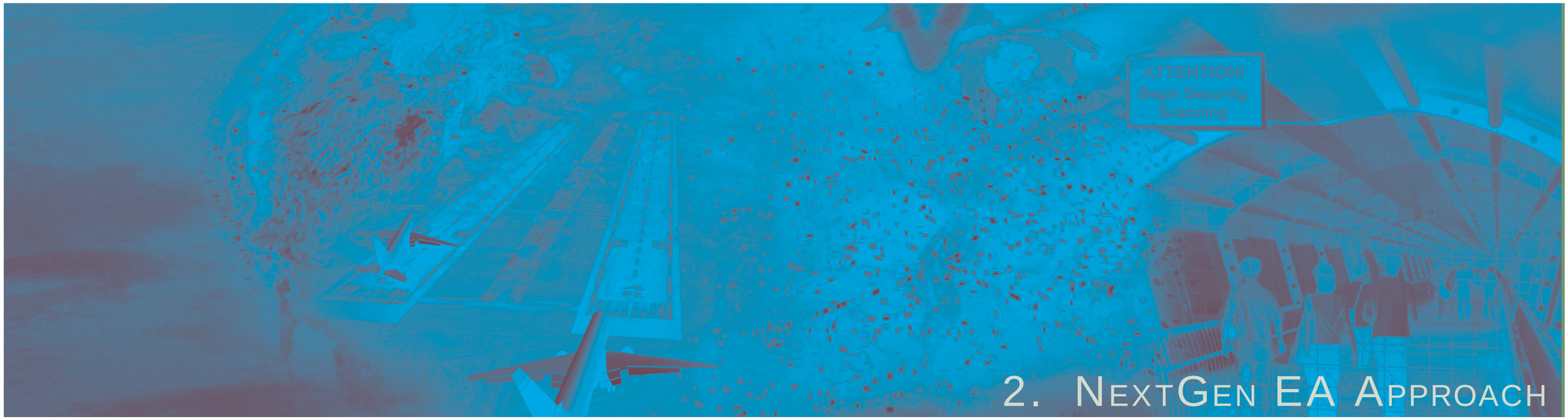


2. NextGen EA Approach

The JPDO's approach to developing the NextGen EA consists of the selection of an EA framework, the development of a Community Model, and the compilation of NextGen activities into an Enterprise Segment Activity Inventory (ESAI). Evaluating and selecting an appropriate architectural framework provides a logical structure for classifying and organizing NextGen EA data. A well-established framework also provides guidance and introduces a common lexicon that can be used throughout the stakeholder community to effectively communicate, collaborate, and coordinate NextGen planning efforts. Using the architectural framework described in Section 2.1, the JPDO can identify and select appropriate work products (i.e. the graphics, models, and/or narratives) that support the purpose and scope of the NextGen EA. Section 2.1 further describes the NextGen EA Framework and architectural work products. To ensure a business-driven perspective, NextGen EA development begins with the building of the NextGen Community Model (see Section 2.2), which is a highly-visual view of the NextGen environment focusing on the "who" of the community and the interaction between members. The Community Model and subsequent tiers set the stage for the functional decomposition of the NextGen business into segments that elaborate the "what" (e.g., activities, services, etc.) of NextGen. This segmented approach focuses on the business capabilities, services, operational activities and enablers to accurately describe the NextGen environment. To provide an aggregate view of the architectural details of each segment and a product that is easier to comprehend by stakeholders, the activities are compiled into a logical and hierarchical table called the ESAI, which can be found in Section 2.3. The ESAI provides an analytical and dependency-driven tool to support the communication and development of achievable NextGen capabilities.

2.1 NextGen EA Framework

The JPDO is developing and refining the NextGen EA using both the Federal Enterprise Architecture (FEA) Framework and the Department of Defense Architecture Framework (DoDAF) to represent the Air Transportation System of 2025 as described in the NGATS Integrated Plan and NextGen CONOPS. The FEA and DoDAF are used as foundational structures for NextGen EA work products. The integration of these two architecture frameworks, as depicted in Figure 1, addresses the broad composition of the JPDO civilian, defense, and commercial stakeholder community. The NextGen EA will be used as a collaboration tool across multiple government agencies and the private sector and will coordinate mission objectives and funding priorities among them. The NextGen EA will use the FEA

to support alignment with the funding and planning efforts of the government agencies and the DoDAF to describe the operational aspects of the NextGen and support analyses of the impacts of funding and planning decisions on the capabilities that will provide the performance improvements that are envisioned for the NextGen.

This combined framework (henceforth referred to as the "NextGen EA Framework") establishes a common lexicon and defines a structure for organizing information describing the scope of the architecture (i.e., what the JPDO will capture) and how the architectural layers are related to each other. As depicted in Figure 1 and described in Table 1, the NextGen EA Framework spans three architectural layers covering the strategic, operational, and system and program layers of NextGen.

The NextGen EA Framework establishes a starting point for partner agencies to align their respective EA's and material and nonmaterial investments to the NextGen, as well as build out and implement their respective segments of NextGen. It is not intended for the NextGen EA to consume an agency's architecture, but rather for agencies to utilize relevant portions of the NextGen EA and incorporate them into their target architectures and transition strategies. Ultimately, it is up to each agency to design and implement their segments of the solution to achieve the NextGen concepts.

Using the NextGen EA approach, the JPDO is developing and will continue to evolve, through the collaboration, coordination, and validation of partner agencies, a collection of architectural products (FEA and DoDAF) to represent the future capabilities and concepts of the NextGen. The following sections describe the architectural products derived from the NextGen EA Framework. Occasionally, NextGen EA work products (i.e., SV-5H) will be modified from

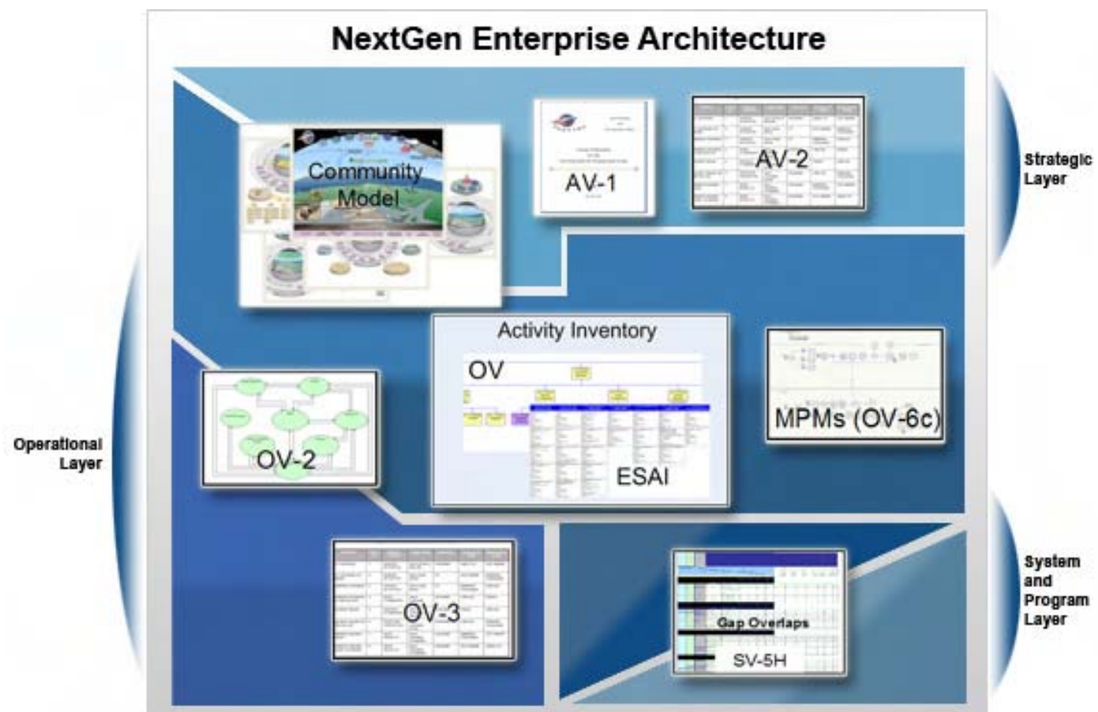


Figure 1 NextGen EA Framework

their standard form to satisfy NextGen's unique architectural requirements. The ability to summarize and show cross references between the FEA and DoDAF is accomplished through the use of the Enterprise Segment Activity Inventory (ESAI), which is described in Section 2.3.

Architectural Layer	Description
Strategic	Provides EA guidance and governance Extends the FEA reference models and aligns business functions/processes to goals and objectives Provides standard lexicon Facilitates "cross-agency" budget and performance integration through the FEA Performance Reference Models
Operational	Establishes a business-driven framework to facilitate cross-agency analysis and the identification of duplicative investments, gaps, and opportunities for collaboration • Provides DoDAF operational views • Defines high-level segment activities, tasks, and operational nodes performing tasks • Identifies information exchanges between nodes required to achieve the mission • Aligns partner agencies through respective segments "drill down"
System and Program	• Captures capability and functions required to meet goals • Provides system and technical views • Facilitates partner alignment to current and planned system views and technical views to OV-5 and capabilities

Table 1. Summary of NextGen EA Framework

2.1.1 FEA

The Office of Management and Budget (OMB) initiated the FEA framework in 2002 to identify opportunities for simplifying processes and unifying work across federal agencies and within the lines of business of the Federal Government. The FEA equips OMB and federal agencies with a common language and framework to describe and analyze investments within a federal agency or for a system that transcends interagency boundaries.

The FEA is a business-driven approach to architecture, building on common business practices crossing organizational boundaries and describing multi-organizational functional segments of the Federal Government. The business-led approach to developing top-level architectures helps agencies recognize and respond to changing mission needs and determine if those needs are being met by enterprise investments and resources.

Agencies are expected to architect first and then use the architecture to guide and inform investment planning and implementation. The FEA serves as a reference point to facilitate the efficient and effective coordination of common business processes, technology, information flows, systems, and investments among federal agencies.

The FEA is a collection of five interrelated reference models (as depicted in Figure 2) that describe architectural resources: a performance reference model (PRM), business reference model (BRM), service component reference model (SRM), technical reference model (TRM), and a data reference model (DRM).

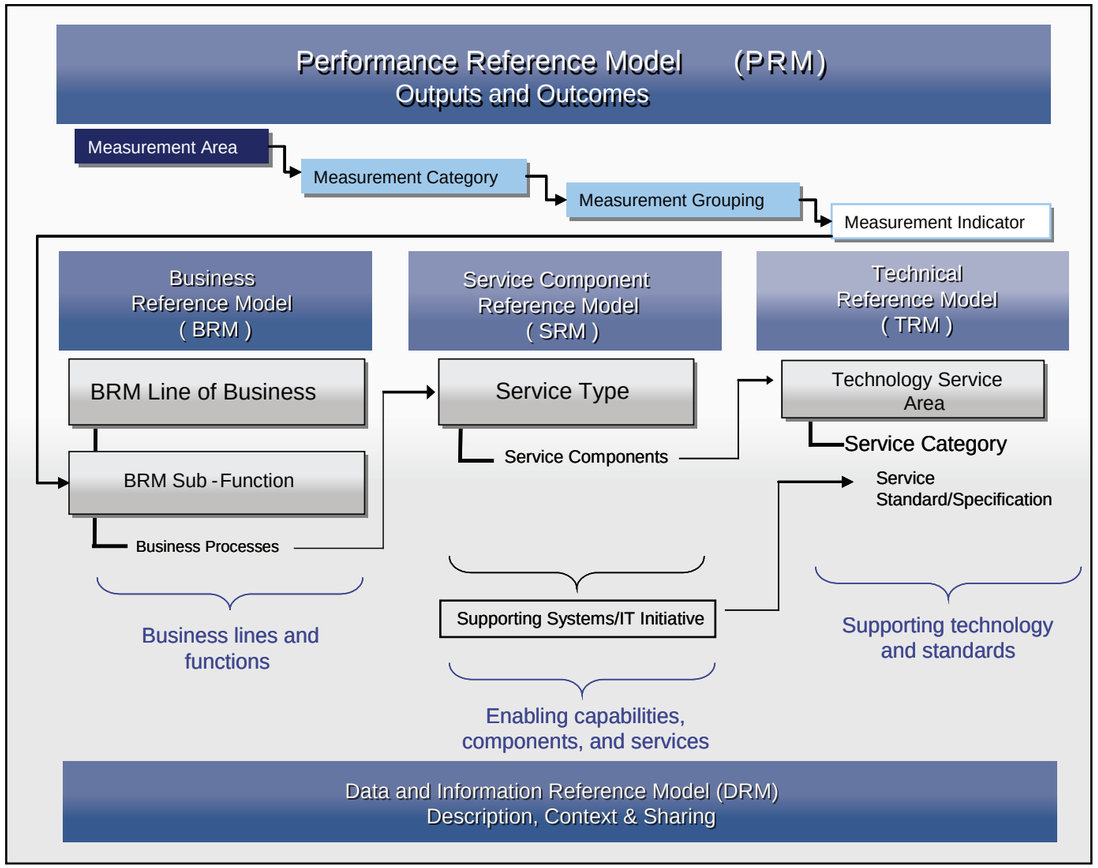


Figure 2: FEA Reference Model Overview

2.1.1.1 Performance Reference Model

The PRM, as depicted in Figure 3, is a framework for performance measurement providing common output measurements. It allows agencies to better manage their respective missions at a strategic level by providing a means for using the agency's EA to measure the success of investments and their impact on strategic outcomes. The PRM accomplishes these goals by establishing a common language by which the agency EA can describe the outputs and measures used to achieve program and business objectives. The advantage of aligning the NextGen EA to the PRM is that it facilitates resource allocation decisions based on comparative determinations. The PRM focuses on three main objectives:

1. Help the JPDO and partner agencies produce enhanced performance information to improve strategic and daily decision making
2. vImprove the alignment and better articulate the contribution of inputs to outputs, thereby creating a clear "line of sight" to desired results
3. Identify performance improvement opportunities that span traditional organizational structures and boundaries.

Audience

The PRM helps key decision makers and senior leadership, external oversight, and project and program managers understand how key investments are enabling progress toward the expected outcomes and mission results, and the extent to which they are doing so.

Utility

The PRM provides a "line of sight" reflecting how value is created as inputs are used to create outputs—outputs that affect mission and business results.[1] By establishing measurement indicators for NextGen activities and investments and aligning them to the framework provided by the PRM, agency officials can manage and track the performance of their investments against the expected results and make resource-allocation decisions based on comparative determinations.

Maturity

In April 2007, the JPDO proposed that OMB consider adding a new FEA PRM Measurement Category to support the proposed Air Transportation Line of Business (LoB). The intended goal of the new Measurement Category is to provide NextGen partner agencies with tailored information to identify, describe, and facilitate the analysis of existing Air Transportation–related mission and non-mission investments against the new groupings and indicators. The JPDO is currently awaiting feedback on the proposed revisions. The NextGen activities and services have been aligned to the FAA Operational Evolution Partnership solution sets and the JPDO Operational Improvements, as well as the FEA PRM. Measurement indicators for each of the NextGen activities and services will be identified as the NextGen EA continues to evolve.

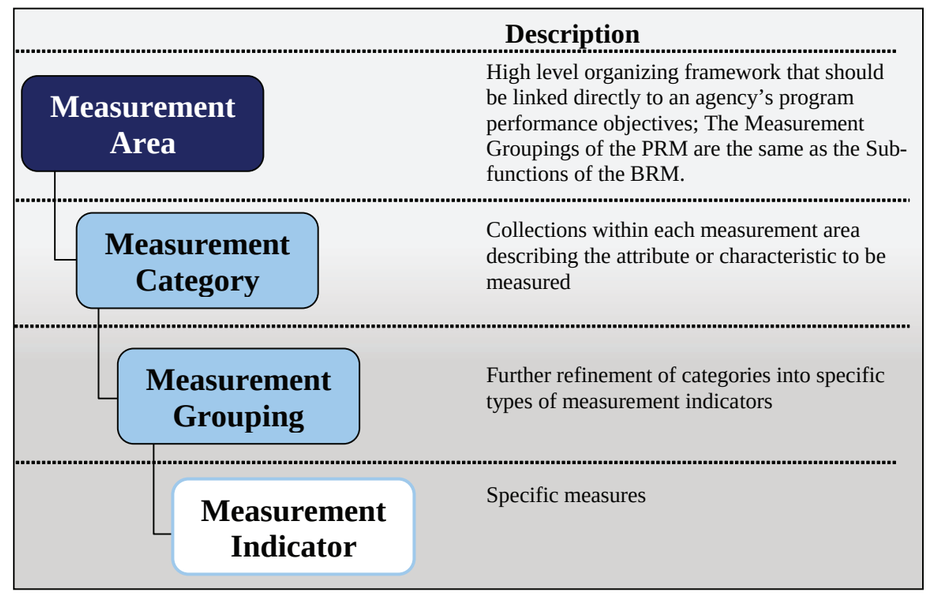


Figure 3: PRM Overview

1 *FEA Consolidate Reference Model v2.1*

2.1.1.2 Business Reference Model

The BRM, as depicted in Figure 4, provides a framework for facilitating a functional (rather than organizational) view of the Federal Government's LoBs, including its internal operations and its services, independent of the agencies, bureaus, and offices performing them. The BRM describes the Federal Government around common business areas instead of through a stove piped, agency-by-agency view. It thus promotes agency collaboration and serves as the underlying foundation for the FEA.

Audience

The BRM is most applicable to enterprise architects and business owners; however senior leadership, key decision makers, external oversight, and portfolio and program managers also have a vested interest in ensuring that business and functional activities support the mission.

Utility

Aligning NextGen activities and investments to the BRM allows enterprise architects and key decision makers to functionally organize the business activities supporting the mission in order to analyze the architecture for duplicative investments, overlaps, and gaps.

Maturity

In April 2007, the JPDO proposed that OMB consider adding a new FEA BRM LoB called Air Transportation to replace the existing Air Transportation Sub-function. The goal of the new LoB is to provide NextGen Partner agencies with tailored information to identify, describe, and facilitate the analysis of existing mission and non-mission investments, and integration and/or development considerations toward NextGen business and technology requirements. The JPDO is currently awaiting feedback on the proposed revisions; however, the NextGen activities identified in the OV-5 work product have been aligned to BRM Sub-functions.

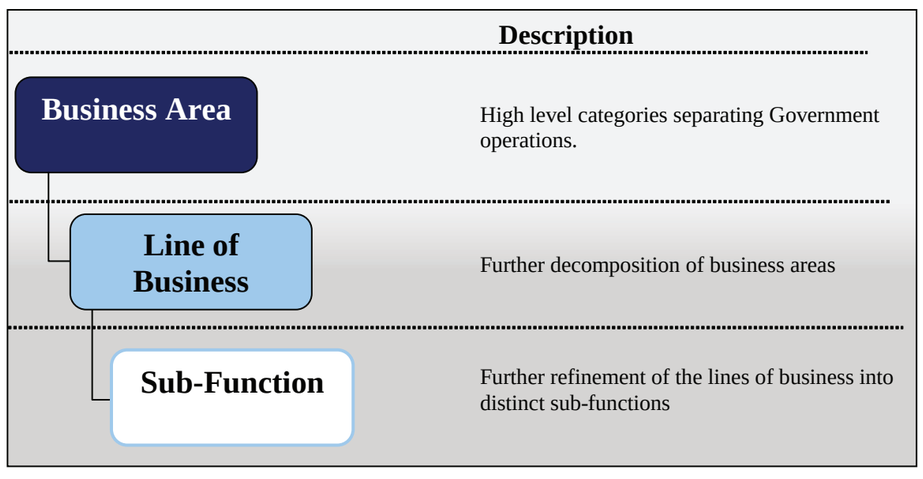


Figure 4: BRM Overview

2.1.1.3 Service Component Reference Model

The SRM, as depicted in Figure 5, is a framework for classifying service components according to how they support an agency's business and performance objectives. It identifies and classifies horizontal and vertical service components supporting federal agencies and their investments and assets. The advantage of aligning the NextGen EA to the SRM is that it will help identify applications, capabilities, components, and business services that can be reused across the Federal Government and within the JPDO partner and stakeholder community.

Audience

The SRM is most applicable to enterprise architects and system engineers and architects, as well as information, infrastructure, and security architects who are responsible for or require systems, applications, components, or services. Business owners and portfolio and program managers also have an interest in the SRM, as it can help them ensure the services support their business and mission objectives.

Utility

Aligning NextGen activities, investments, and services to the SRM allows enterprise architects and key decision makers to classify and understand what service components (providers and consumers) support the business objectives. Classifying systems, applications, components, and services as service component providers or consumers helps identify services that can be reused across the enterprise and also ensures that there are no duplicative services, overlapping services, or gaps in service needs.

Maturity

In April 2007, the JPDO proposed that OMB consider adding a new FEA SRM Service Domain to support the operational services supporting the proposed Air Transportation LoB. The intended goal of the new Service Domain is to provide NextGen Partner agencies with additional categories to classify their operational services. The JPDO is currently awaiting feedback on the proposed revisions; however, the NextGen activities and enterprise services have been aligned to the FEA SRM and proposed extensions.

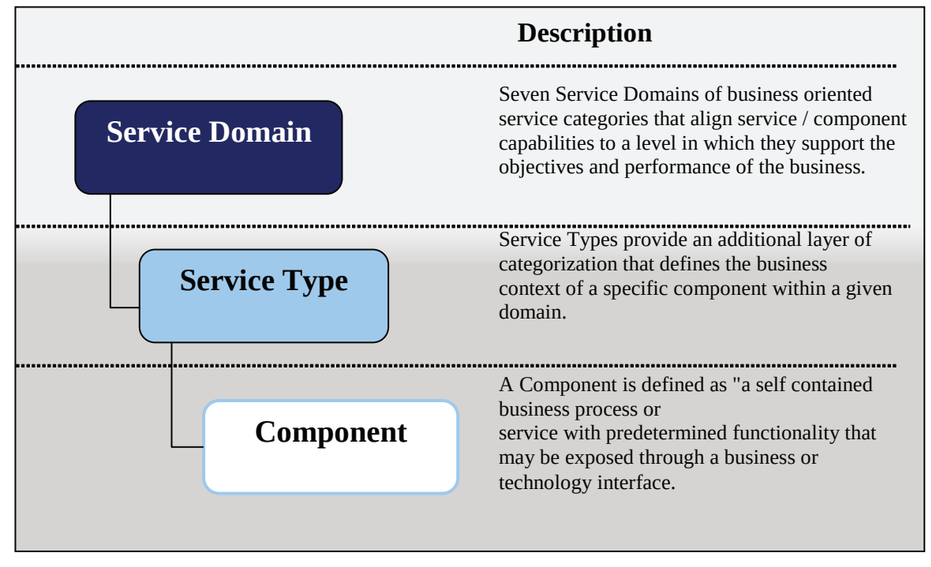


Figure 5: SRM Overview

2.1.1.4 Technical Reference Model

TRM, as depicted in Figure 6, is a component-driven, technical framework categorizing the standards and technologies to support and enable the delivery of service components and capabilities. It also unifies existing agency TRMs by providing a foundation to advance the reuse and standardization of technology and service components from a government-wide perspective. The advantage of aligning NextGen EA to the TRM is that it supports JPDO Partner agency capital planning investment control, portfolio management, and EA planning activities by providing a common, standardized vocabulary that describes NextGen technologies that are either currently used or planned for development.

Audience

The TRM is most applicable to enterprise architects and system engineers and architects, as well as information, infrastructure, and security architects who are responsible for or require technical solutions to enable the business. Business owners and portfolio and program managers also have an interest in the TRM, as it can help them ensure the business and services are enabled by appropriate technical solutions.

Utility

Aligning the technologies and standards supporting NextGen activities and services to the TRM allows enterprise architects and key decision makers to classify and understand the technical landscape and provides a foundation to advance the reuse and standardization of technical solutions. Categorizing technologies and standards across the enterprise also helps ensure that there are no duplications, overlaps, or gaps in technical solutions.

Maturity

The NextGen TRM is a work in progress and will be published in subsequent releases of the NextGen EA.

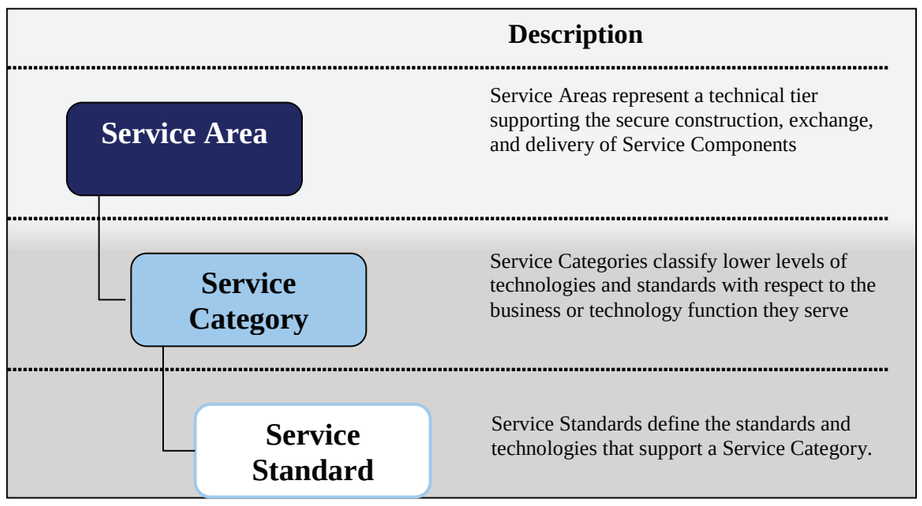


Figure 6: TRM Overview

2.1.1.5 Data Reference Model

The DRM, as depicted in Figure 7, is a framework for identifying data used throughout the Federal Government and determining how the data can be shared in response to business/mission requirements. The DRM helps to facilitate information sharing and communications, establishing a common data language that supports governance practices and data architecture planning. The DRM provides guidance to agencies for implementing repeatable processes to enable data sharing within and between agencies.

Audience

The DRM is most applicable to enterprise architects and system engineers and architects, as well as information and security architects who are responsible for managing and classifying the data and information assets in support of the business and mission objectives.

Utility

The DRM provides a means to consistently describe data architectures. The DRM's approach to Data Description, Data Context, and Data Sharing will help JPDO partners to uniformly describe their data artifacts, which may result in increased opportunities for cross-agency and cross-COI data sharing. The DRM's standardization areas provide a foundation to identify and facilitate initiative requirements that can result in increased compatibility between their respective EAs and the NextGen EA.

Maturity

The NextGen DRM is a work in progress and will be published in subsequent releases of the NextGen EA.

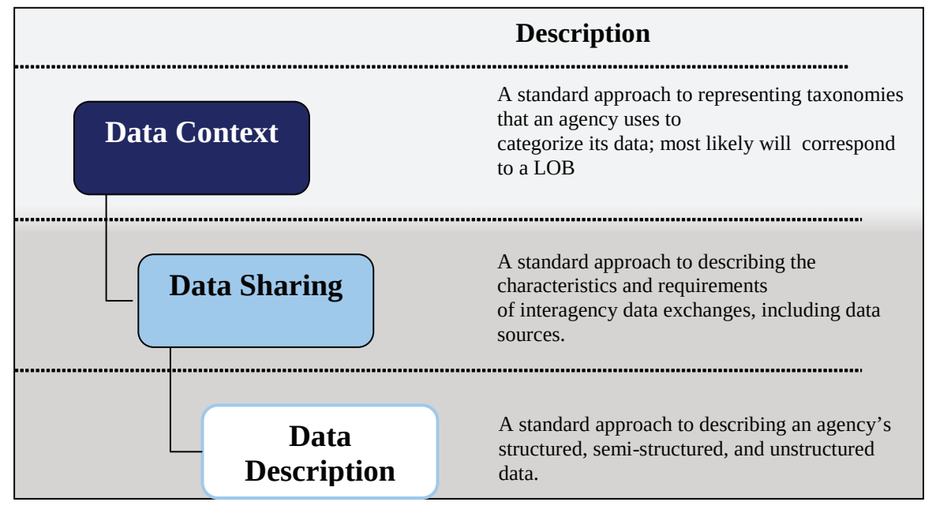


Figure 7: DRM Overview

2.1.1.6 Federal Transition Framework

The FTF, as depicted in Figure 8, is a catalog of architectural information and implementation guidance for cross-agency initiatives using a simple, familiar structure aligned with the FEA Reference Models. It contains government-wide IT policy objectives (e.g., Internet Protocol Version 5 and Homeland Security Presidential Directive 12) and initiatives, including OMB-sponsored initiatives (e.g., E-Gov and LoB).

Audience

The NextGen Air Transportation System FTF catalog item is most applicable to enterprise architects and business owners; however, applicable partner agency senior leadership, key decision makers, as well as portfolio and program

managers also have a vested interest in the FTF because it identifies their stake in the NextGen (target) solution and because OMB requires agencies to incorporate the target solution in their respective architectures and transition plans.

Utility

The additional degree of fidelity proposed through the NextGen Air Transportation System cross-agency initiative will offer JPDO partner agencies and stakeholders the ability to more clearly align their current and future investment portfolios and technical requirements. It offers the ability to share more consistent, complete, and detailed information about NextGen, including EA artifacts, Capital Planning Investment Control guidance, and various implementation and planning activities with cross-agency working groups and stakeholders who have responsibility for developing components of the NextGen architecture. The catalog also provides stakeholders with access to NextGen information to help them make better informed decisions about their respective investments, and improve the effectiveness and efficiency of their investment decisions in order to contribute to and demonstrate alignment with future NextGen EA releases.

Maturity

In April 2007, the JPDO proposed that OMB consider the NextGen Air Transportation System as a new cross-agency initiative and include it in the OMB FTF catalog. The JPDO is currently awaiting feedback on the proposed initiative inclusion. The draft NextGen Air Transportation System cross-agency initiative will be updated accordingly as it is vetted among OMB and the NextGen partner and stakeholder community.

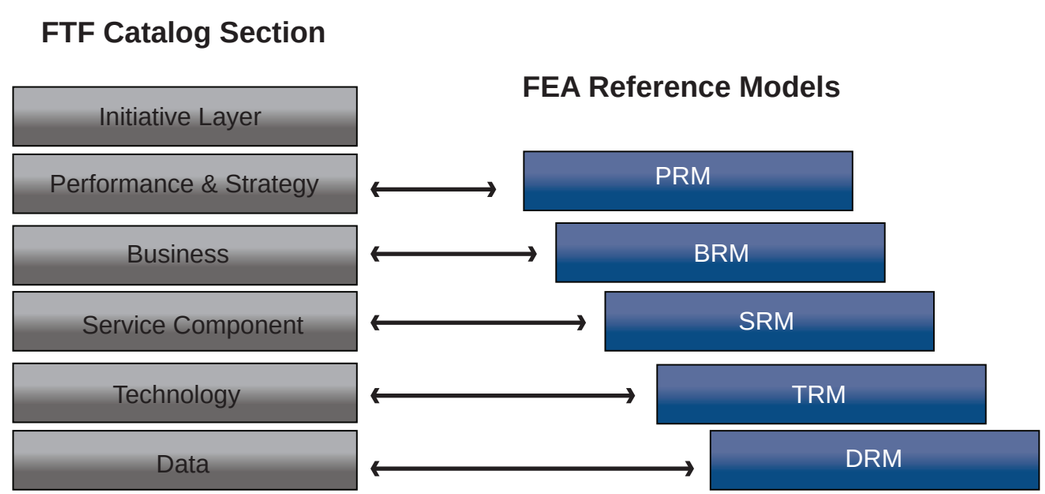


Figure 8: Federal Transition Framework and Catalog

2.1.2 DoDAF

DoDAF was developed to support a capability-based force-planning construct. It supports a decision process that assesses legacy and proposed systems in the aggregate, validates requirements, and considers the full range of Doctrine, Organization, Training, Materiel, Leadership and education, Personnel, and Facilities (DOTMLPF) solutions. Further, DoDAF provides a synchronized, collaborative, and integrated systems engineering approach that better facilitates capability-based planning. It provides the guidance, rules, and product descriptions for developing and presenting architecture descriptions that ensure a common denominator for understanding, comparing, and integrating families of systems (FOS), systems of systems (SoS), and interoperating and interacting architectures.

The DoDAF products comprising the NextGen EA relate the NextGen operational activities to the systems, processes, and mechanisms that need to be funded and developed by the stakeholders to achieve the NextGen Vision. The NextGen EA will align with the stakeholder architectures at the systems view level so that JPDO can provide analysis and guidance to stakeholders relevant to the impact of their systems' funding and development on the achievement of NextGen goals.

These features make DoDAF an ideal vehicle to support JPDO's mission of providing guidance to all its stakeholders for making investment decisions to update and revise the various systems and processes that will provide the improved performance that is the promise of NextGen.

The DoDAF prescribes an architectural description that comprises three views: an operational view (OV), systems view (SV), and technical standards view (TV). Each view includes a set of products (graphical, textual, and tabular documents) that describe particular aspects of the subject of the architecture description. In addition to these views, DoDAF also prescribes two overarching products in an All View (AV): AV-1, Overview and Summary Information, which provides the reader with specific details about why, how, and by whom the architecture description was created; and AV-2, Integrated Dictionary, which provides consistent definitions for all objects included in all the products of the architectural description.

The following sections provide a description of each of the chosen DoDAF products, its target audience, usefulness for achieving the architectural objectives, an assessment of the relative maturity of the product at the time of this release of the NextGen EA, and an example of the product with a brief explanation.

2.1.2.1 Overview and Summary Information (AV-1)

The AV-1 is a formal textual statement of the intended use of the architecture description, the approach to creating it, and, eventually, a summary of the findings. The NextGen EA, Version 2, AV-1 is presented in Appendix B.

Audience

The AV-1, like the cover of a book, is intended to provide anyone a very high level description of the architecture and its findings. It should be the first document read by any stakeholder or other party interested in understanding the NextGen EA.

Utility

The AV-1 gives the reader a condensed overview of the content of the architecture, including information about the reason for developing the architecture, the architectural products that will be developed to support that purpose, the kinds of analyses to be conducted on the products, who will conduct them, and how the results will be used. The AV-1 provides a summary of the vision, mission, architecture products, assumptions and constraints, and tools used in the process of developing the architecture.

Maturity

The NextGen EA Version 2.0 AV-1 is mature with regard to defining the purpose of the architecture and the products, methods, and organizations that will be used to achieve that purpose. As the NextGen architecture evolves, the AV-1 will be updated to include findings and changes that may be required by external or internal influences.

2.1.2.2 Integrated Dictionary (AV-2)

The AV-2 is a table that provides a formal definition for all terms used in the architecture description. The NextGen EA AV-2 is presented in Appendix C.

Audience

All partner agencies' and stakeholders' enterprise architects that will be responsible for aligning to and developing their respective extensions of the NextGen EA.

Utility

The AV-2 is the NextGen EA's common consistent language, reducing confusion and increasing understanding for partner agencies and stakeholders. It enables the JPDO to collaborate and socialize the NextGen EA with a consistent lexicon formatted in such a way that stakeholders can compare the elements of the NextGen EA to their respective integrated dictionaries and architectures and propose changes if necessary to ensure the community is using terms consistently and as intended.

Maturity

Like the AV-1, the AV-2 is a living repository. It is updated at each release of the NextGen EA.

2.1.2.3 Community Model (OV-1)

The community model is a high-level pictorial representation of the NextGen environment. Figure 9, Community Model Example, provides a condensed view of the OV-1. The full-size NextGen EA Community Model (OV-1) is presented in Section 3.

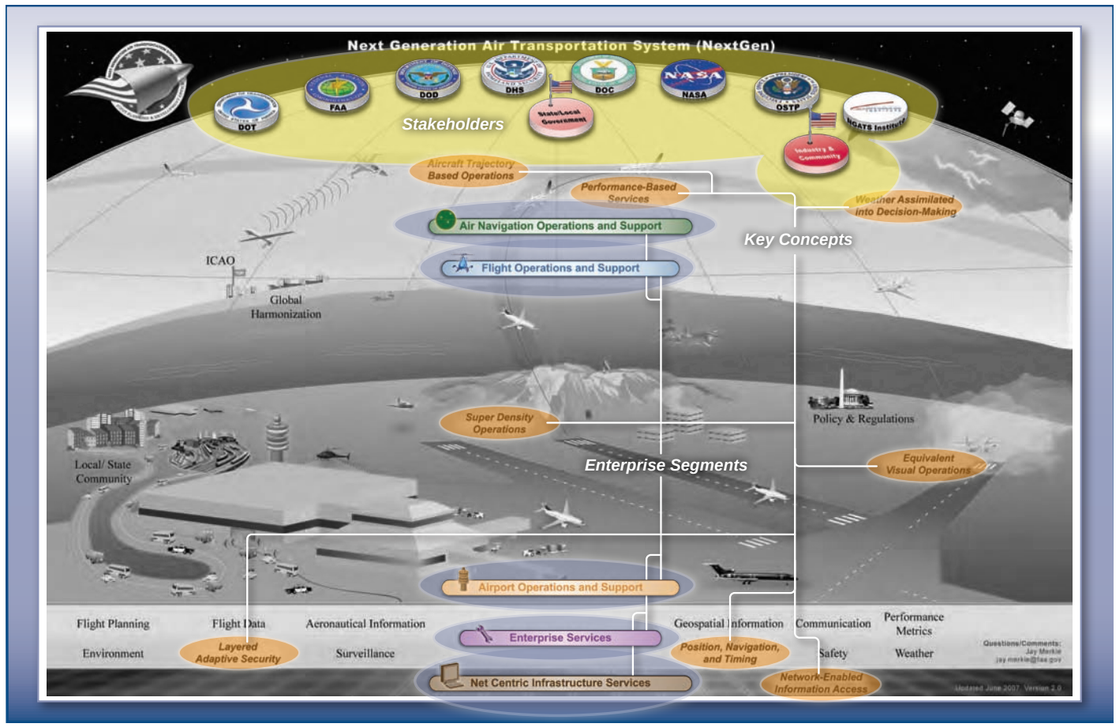


Figure 9: Community Model Example

Audience

High-level decision makers and stakeholders seeking a panoramic view of the "enterprise," which the NextGen EA describes in detail.

Utility

The Community Model (OV-1) provides a high-level pictorial description of the major organizational and operational elements of the Next Generation Air Transportation System and how those elements interact with each other and with their environment.

Maturity

The NextGen EA Community Model (OV-1) is at a mature state of development; however, it may be revised in subsequent releases in response to changes in the NextGen concept or environment

2.1.2.4 Operational Node Connectivity Description (OV-2)

The Operational Node Connectivity Description is a model that illustrates the "operational nodes" (idealized places or organizations that produce or consume information) and "needlines" (highest level description of information flow) showing that information produced at one node is needed by another node. Note that the needlines do not indicate physical connectivity (that is depicted in the systems views); rather, they document only that a particular operational node needs information provided by another operational node. Figure 10, OV-2 Example, provides a condensed view of the OV-2. The NextGen EA Operational Node Connectivity Description (OV-2) is presented in Appendix D.

Audience

The Operational Node Connectivity Description is intended for architects and to provide high-level decision makers a somewhat more detailed view of operational nodes and information flows than is shown in the OV-1.

Utility

The operational nodes shown in the NextGen EA represent idealized places or organizations where activities are performed that require and/or produce information. The OV-2 is provided not only to represent the various organizations and places where activities are performed but also to provide a framework for organizing the information exchanges that will be described in detail in the Operational Information Exchange Matrix, OV-3.

Maturity

The OV-2 is currently in an initial stage of development. Three major nodes have been defined—Air Transport Services, Government Support Services, and NextGen Partners—corresponding to major communities of interest within the Air Transportation System. Within these major nodes, lower level nodes have been identified to further refine the places and organizations where operational activities are performed. Operational activities, sometimes grouped as activity services, as defined by the OV-5, have now been assigned to the operational sub-nodes. Details of the information exchanges from node to node and from sub-node to sub-node are at the very earliest stages of development. The NextGen EA Version 2 OV-2 currently shows needlines to and from the major nodes. Eventually, needlines will be described for all relevant sub-node to sub-node exchanges across the major nodes. At this point, only about 35 cross-node information exchanges have been identified. This number will grow significantly in future releases as the working groups further refine the activities and information flows among them.

2.1.2.5 Operational Information Exchange Matrix (OV-3)

The OV-3 is the most comprehensive description of operational information flow. It further decomposes the information flows (needlines) identified in the OV-2 into one or more (usually many) specific Information Exchange Requirements (IERs) representing specific information flows from the OV-5 Activity Model. Additional architecturally

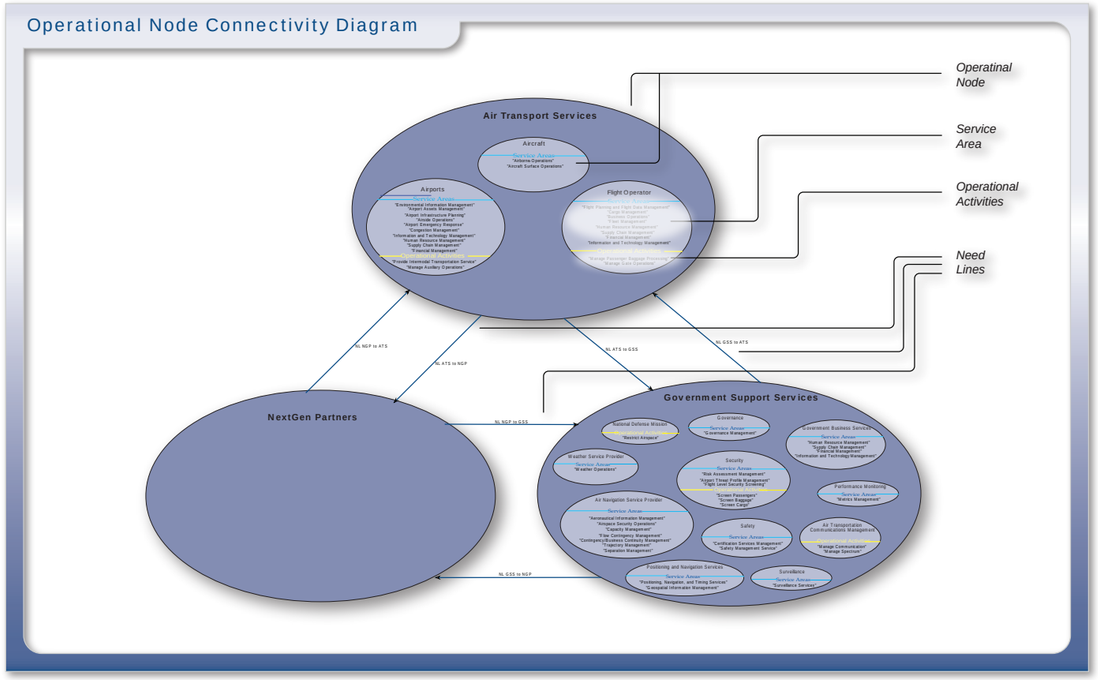


Figure 10: OV-2 Example

significant attributes of each IER are also collected in the OV-3 matrix. Each IER represents a transfer of information and all the attributes of that transfer relevant to the purposes of the architectural description. Figure 11, OV-3 Example, shows the current version of the OV-3. The NextGen EA Version 2 Operational Information Exchange Matrix (OV-3) is also presented in Appendix E.

The current version of the OV-3 identifies 17 IERs and describes the following high-level attributes:

- Needline Identifier—associates each information exchange with its relevant needline
- Information Exchange Requirement Identifier—a unique ID for each information exchange
- Information Exchange Requirement Name —a unique name for each information exchange
- Information Element Description—describes the nature of the information being exchanged
- Producer—provides information about the activity that produces the information element, including—
  - Source Activity
  - Source Operational Node
  - Source Operational Sub-Node
  - Source Operational Activity—lowest level activity that produces the information element
- Consumer—provides information about the activity that uses the information element, including—
  - Destination Activity(ies)
  - Destination Operational Node
  - Destination Operational Sub-Node
  - Destination Operational Activity—lowest level activity that uses the information element.

Eventually, the OV-3 will include all relevant cross-operational node information exchanges and will collect all the details of the exchanges that are necessary to achieve the objectives of the architectural description. Additional attributes of the IERs could include such details as—

- Nature of Transaction—provides information relevant to the purpose of the architectural description, including—
  - Triggering event
  - Criticality
- Performance Attributes—provides performance characteristics of the information element, including—
  - Periodicity
  - Timeliness
- Information Assurance—provides information about the protection required for the information exchange, including—
  - Confidentiality (security level)
  - Availability
  - Integrity
  - Access Control
  - Dissemination Control.

Audience

The OV-3 is a technical document intended for use by architects, analysts, and engineers seeking to gain insight into the details of the requirements for information flows among operational nodes.

Utility

The OV-3 matrix facilitates “information-centric” analysis. It enables information to be traced to operational activities. It also enables decision makers to clarify who exchanges what information with whom, why the information is necessary, and in what manner the information is exchanged. By clearly seeing the intricacies of information dependency, decisions can be made confidently, knowing the full impact and scope of any needed changes.

Maturity

The development of the NextGen EA Version 2 focused on the Community (OV-1), Activity (OV-5), and Reference Models (FEA). This development required intense collaboration within JPDO, consuming significant resources and resulting in significant flux in the Operational Activities and Reference Models until they were baselined in May 2007. Therefore, the OV-3, a much more detailed product that depends and builds upon information contained in the OV-5, is currently at a preliminary stage of development. As the NextGen EA Version 2 is reviewed by stakeholders and working groups, details of the information exchanges will be developed, and the OV-3 will continue to grow in detail and maturity.

Figure 11: OV-3 Example

Needline ID	Information Exchange			Producer				Consumer			
	IER Identifier	IER Name	Information Exchange Description	Source Activity		Source Operational Node	Source Operational Sub-Node	Destination Operational Node	Destination Operational Sub-Node	Destination Activity	
NL (GSS,WSP)-(GSS,ANSP)	IER 00001	4D Wx Picture	A virtual, consistent, reliable, comprehensive NextGen Government-provided weather information service available to all NAS stakeholders. The weather picture information consists of observed weather and forecast weather. The weather picture weather is available as girded service; that is to say, it exists over different 3D meteorological scales. The observed weather information includes but is not limited to the following: convection, turbulence, icing, rain, hail, snowfall, lighting, ceiling, visibility, space radiation, wind speed, wind direction, temperature, humidity, noise propagation potential, and airport plume concentration, atmospheric sensitivity to exhaust, volcanic ash, and wake vortex information. Forecast weather has the same information as observed weather with the additional parameters of probability of occurrence and a confidence level describing the occurrence probability.	A.1.1.4.2	Publish Weather Picture	Government Support Services	Weather Service Provider	Government Support Services	Air Navigation Service Provider	A.5.2.1	Provide Separation Clearance
NL (GSS,WSP)-(ATS,ACFT)								Air Transport Services	Aircraft	A.7.2.2.3	Receive 4D Weather Picture
NL (ATS,FO)-(GSS,ANSP)	IER 00002	Flight Object Data	Data pertaining to a particular aircraft that contains the latest confirmed information about the flight, including trajectory (estimated and/or actual); specifically, the Flight Object Data includes: (1) aircraft capabilities, including the level of navigation, communications, and surveillance performance (e.g., FMS capabilities); (2) aircraft flight performance parameters; (3) flight crew capabilities, including level of training received to enable special procedures; (4) 4DT profile and intent, containing the "cleared" 4DT profile plus any desired or proposed 4DTs; and (5) aircraft position information and near-term intent.	A.1.4.2.2	Provide Flight Data	Air Transport Services	Flight Operator	Government Support Services	Air Navigation Service Provider	A.5.1.1.1.1	Monitor Surface Conditions
NL (ATS,FO)-(GSS,ANSP)										A.5.1.2.4.1	Assign Cruise (enroute) Flight Path
NL (GSS,ATCM)-(GSS,ANSP)	IER 00003	Frequency Assignment	A message that provides the authorization, allocation and distribution of ATC radio frequencies used to communicate position, clearances and instructions, weather and traffic advisories and make requests between all relevant parties.	A.1.9.2.2	Assign Radio Frequency	Government Support Services	Air Transportation Communications Management	Government Support Services	Air Navigation Service Provider	A.5.1.1.2	Issue Modification Information/Clearance
NL (GSS,ANSP)-(ATS,FO)	IER 00004	Aeronautical Information	A message in the form of a Notice to Airmen(NOTAM) or Airport/Facility Directory that contains information pertaining to the establishment of, condition of , or change in any NAS component (facility, service, or procedure, or hazard in the NAS). Specifically, this message will contain information on airports, communications, navigation aids, instrument landing systems, VOR receiver check points, preferred routes, Flight Service Station/Weather Service telephone numbers, Air Route Traffic Control Center (ARTCC) frequencies, part-time surface areas, and various other pertinent special notices essential to air navigation which are considered essential to the safety of flight.	A.1.5.2.2	Publish Aeronautical Information	Government Support Services	Air Navigation Service Provider	Air Transport Services	Flight Operator	A.6.2.3	Determine Flight Support Need
NL (GSS,ANSP)-(ATS,ACFT)									Aircraft	A.7.2.1.3.2	Monitor Airborne Information
NL (ATS,APT)-(ATS,FO)	IER 00005	Airport Lease Information	Legal contract or agreement for State-owned lands and facilities associated with international or rural airports and seaplane bases. Contains information for a contract for the whole or a part of an airport site, where the Commonwealth is the lesser. Will contain information elements such as Lease description, Business Purpose, Contract Terms, Rent, Indemnity, Taxes, Insurance.	A.2.3.2	Design Landside Facilities	Air Transport Services	Airports	Air Transport Services	Flight Operator	A.3.1.4	Manage Gate Operations
NL (ATS,APT)-(ATS,FO)	IER 00006	Standard Airport Operating Procedures	A document that outlines and defines the rules and regulations governing the operation of airport, to include job titles, responsibilities and procedures for operations of the field with maximum efficiency and safety.	A.2.3.1	Manage Regional Planning Ops	Air Transport Services	Airports	Air Transport Services	Flight Operator	A.3.1.4	Manage Gate Operations
NL (ATS,APT)-(ATS,ACFT)	IER 00008	Parking Position Assignment	The parking position assignment is a message provided via data or voice link that is provided to the flight operator either prior to departure, or as an update upon arrival, that details the specific parking position and directions that the flight operator (aircraft) will utilize upon landing and maneuvering the aircraft to the appropriate gate.	A.3.2.2	Manage Ramp Support	Air Transport Services	Airports	Air Transport Services	Aircraft	A.7.1.2	Conduct Post Arrival Operations
NL (GSS,ANSP)-(ATS,FO)	IER 00009	Airspace Design Proposal	Information pertaining to the creation or use and classification of the airspace to support safety of flight and efficient flow of traffic. It includes the navigation tolerances that are integral factors in airspace design, to determine such things as lateral separation points, instrument approach design and terrain/obstacle clearance calculations. This report gets distributed to the various stakeholders to address the business operations and planning of flights.	A.4.2.5	Disseminate Proposed Airspace Design	Government Support Services	Air Navigation Service Provider	Air Transport Services	Flight Operator	A.6.1.1	Receive Airspace Design
										A.6.2.1	Plan Flight
NL (GSS,ANSP)-(ATS,FO)	IER 00010	Execution Plan	The plan that has been generated from the long term planning and designing of the airspace to meet the requirements of the growing demand. The execution plan could include a regulatory action (i.e., new standards, rules), a change to an existing rule that will have an impact beyond the ANSP (i.e., flow optimization, no new performance standards implemented), and change within existing rules that will affect the ANSP (i.e., reconfigure the airspace will change the work load/ balance).	A.4.2.6	Disseminate Execution Plan	Government Support Services	Air Navigation Service Provider	Air Transport Services	Flight Operator	A.6.1.2	Analyze Business Case
NL (GSS,ANSP)-(ATS,ACFT)	IER 00011	Arrival/Departure Information	Information pertaining to the procedures, rules and instructions for flight objects arriving and departing; will also include information concerning clearances both arrival and departure as well as taxi instructions, any predeparture procedures and instructions as well as initial trajectories (routes).	A.5.1.1.1.2	Manage Surface Movement	Government Support Services	Air Navigation Service Provider	Air Transport Services	Aircraft	A.7.1.1	Conduct Preflight Operations

Needline ID	Information Exchange			Producer				Consumer			
	IER Identifier	IER Name	Information Exchange Description	Source Activity		Source Operational Node	Source Operational Sub-Node	Destination Operational Node	Destination Operational Sub-Node	Destination Activity	
NL (GSS,ANSP)-(ATS,ACFT)	IER 00012	Separation Clearance	A message (data/voice) sent from a controller to the flight object (aircraft/flight operator) to perform self separation; the message provides separation directions for collision avoidance. The message gives the flight crew a clearance, indicating that they are henceforth responsible for the separation with that aircraft, and that they must begin a crossing maneuver within the given limits.	A.5.2.1	Provide Separation Clearance	Government Support Services	Air Navigation Service Provider	Air Transport Services	Aircraft	A.7.2.1.3.1	Receive Separation Clearance
NL (GSS,ANSP)-(ATS,ACFT)	IER 00013	Separation Instructions	A message that provides information to the flight object operator to use for the purpose of not breaching separation minima with restricted airspace, terrain and obstacles, or other vehicles.	A.5.2.2	Delegate Separation Operation	Government Support Services	Air Navigation Service Provider	Air Transport Services	Aircraft	A.7.2.1.3.1	Receive Separation Instructions
NL (GSS,ANSP)-(ATS,ACFT)	IER 00014	Surface Condition Report	Information provided to the flight object as reported by the airport management thru the Tower concerning the condition of the movement areas (runway and taxi-way), to ensure the flight object's safe operation in time for it to be useful to the flight operator. It includes the following: Construction work on or immediately adjacent to the movement areas; Rough portions of the movement area; Braking conditions caused by ice, snow, slush or water; Snowdrifts or piles of snow on or along the edges of the area and the extent of any plowed area; Parked aircraft on the movement area; Irregular operation of part or all of the airport lighting system; Volcanic ash on any airport surface area and whether the ash is wet or dry; Other pertinent airport conditions	A.5.1.1.1.1	Manage Surface Condition	Government Support Services	Air Navigation Service Provider	Air Transport Services	Aircraft	A.7.1.1.2	Receive Arrival/ Departure Information
NL (GSS,ANSP)-(ATS,ACFT)	IER 00015	Taxi Clearance	A directive from ATC to ``taxi to'' the takeoff runway or gate assigned to the aircraft. This is not a clearance to cross that assigned takeoff runway, or to taxi on that runway at any point, but is a clearance to cross other runways that intersect the taxi route to that assigned takeoff runway or gate. A clearance to ``taxi to'' any point other than an assigned takeoff runway is clearance to cross all runways that intersect the taxi route to that point	A.5.1.1.1.3	Issue Clearance	Government Support Services	Air Navigation Service Provider	Air Transport Services	Aircraft	A.7.1.1.4	Pushback
NL (ATS,ACFT)-(GSS,ANSP)	IER 00016	Flight Readiness Report	Flight operator's initial report to tower at the runway hold-short line indicating the flight object's (aircraft's) readiness to depart.	A.7.1.1.6	Report Flight Readiness	Air Transport Services	Aircraft	Government Support Services	Air Navigation Service Provider	A.5.1.2	Issue Modification Information/Clearance
NL (ATS,ACFT)-(GSS,ANSP)	IER 00017	Taxi Clearance Request	Voice or data message from flight operator to gain approval to move the flight object to the assigned or from the(active) runway.	A.7.1.1.3	Request Preflight Taxi Clearance	Air Transport Services	Aircraft	Government Support Services	Air Navigation Service Provider	A.5.1.1.3	Issue Clearance

2.1.2.6 Activity Model (OV-5)

The OV-5 is a graphical and textual description of the activities (functions or processes) performed by or within an organization and the information associated with those activities. The OV-5 is viewed as the foundation for any architecture analysis or process improvement effort because it captures and aligns an organization's activities, relationships, associated information exchange requirements (IER), and supporting systems. The OV-5 is a foundational architecture product for the NextGen, containing data that is often used to create other architecture products that are essential in conveying various aspects of the community or business processes.

The OV-5 Activity Model is typically presented in two formats: (1) a hierarchical description of the activities showing how higher level activities comprise lower level activities and (2) activity flow diagrams (i.e., IDEF0 diagrams) showing information flow from one activity to another and how that information is transformed by each activity. Figure 12, OV-5 Activity Hierarchy Example, provides a condensed view of the first type of OV-5 model. Figure 13, OV-5 Activity Flow Diagram Example, provides a view of the second type. The NextGen EA, Version 2, OV-5 Models are presented in detail in section3 of this volume. To aid stakeholders in finding the areas of the models of most interest to them, each section contains the OV-5 models relevant to a single enterprise segment.

Activity Model—Hierarchical Node Tree (OV-5)

The OV-5 models are hierarchical; that is, they begin with a set of activities that successively decompose to lower levels of detail that are captured in several diagrams. To assist stakeholder communities of interest in aligning the NextGen EA activities to their respective architectures, JPDO has deviated from the standard OV-5 Activity Flow format by grouping specific Activity Hierarchies under their respective enterprise segments and service areas as defined in the Community Model, OV-1. The aggregation of these diagrams comprises the full activity model. To facilitate understanding by all stakeholders and to provide alignment with the OV-1 community model, JPDO's activity models organize the relevant operational activities into eight enterprise segments (Core Business Services, Enterprise Services, Airport Operations, Airport Support, Air Navigation Operations, Air Navigation Support, Flight Operations, and Flight Support). Furthermore, each enterprise segment is composed of relevant service areas that provide another grouping level for the basic operational activities. Refer to Appendix F for the full compilation OV-5 Hierarchical Node tree.

Audience

The OV-5 Operational Activity Hierarchy is intended for architects, analysts, systems engineers, and systems developers.

Utility

The OV-5 Operational Activity Hierarchy provides a comprehensive structured list of all the operational activities of interest to the architectural description. That is, it shows all the activities that need to be considered to achieve the desired outcomes of the architectural analysis and how high-level activities are composed of lower level activities. The NextGen EA OV-5 Hierarchy also shows how the operational activities align within the eight enterprise segments and the relevant activity services in the Community Model.

Maturity

The OV-5 Hierarchy included in NextGen EA version 2 represents the initial baseline of operational activities which will form a foundation for detailed analysis and revision as the NextGen EA is socialized among the stakeholders in working group sessions. While a significant number of activities have be identified, defined, and organized, it is likely that future refinements will result from the close scrutiny by subject matter experts and other interested parties.

Activity Model—IDEF0 (Activity Flow Diagrams) (OV-5)

The IDEF0 captures the activities and the information flows among activities. The "box and arrow" graphics of an IDEF0 diagram (refer to Figure 13) show the activity as a box and the information flows to or from the activity as arrows entering or leaving the box. Specifically, the activities are shown with their inputs, outputs, controls, and mechanisms (ICOM). Activity inputs are portrayed entering an activity from the left; these are consumed or altered by the activity. Controls enter an activity from the top and guide the activity (e.g., policy); an output exits an activity from the right, and is the result of the activity; and a mechanism is drawn entering an activity from the bottom. Mechanisms provide a means by which an activity is performed (e.g., a particular system or person that performs the activity). Note that IDEF0 diagrams are non-temporal. All activities are considered to operate simultaneously, so they are not used to describe sequences or process steps. Sequencing of activities can be described using the Operational Event Trace, OV-6, architectural product.

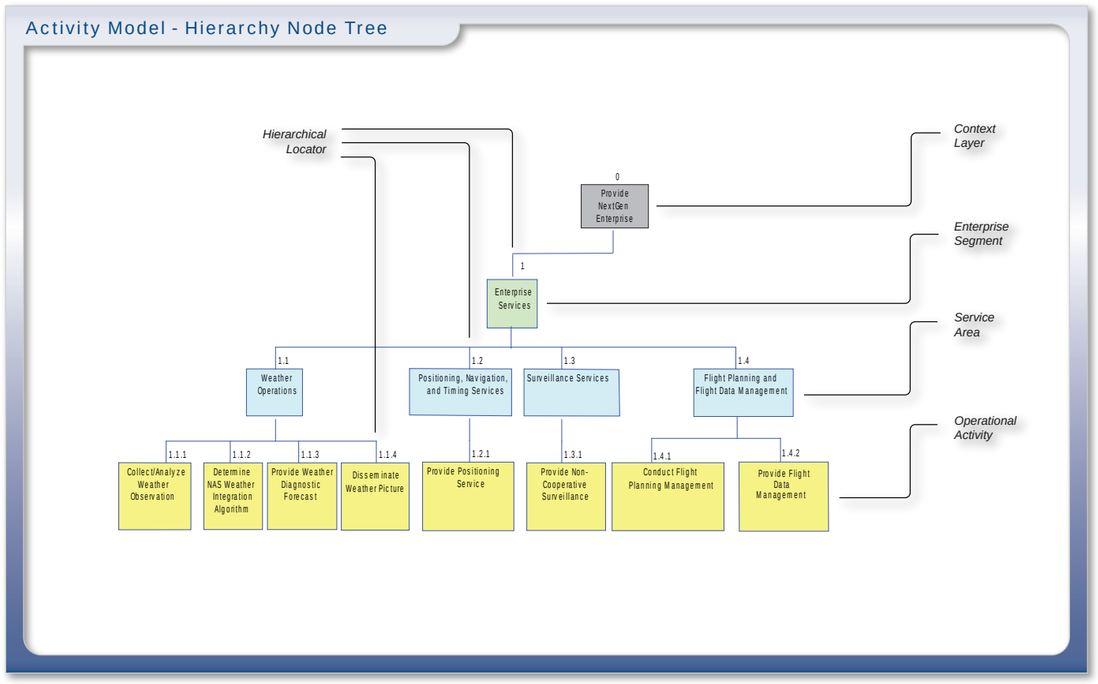


Figure 12: OV-5 Activity Hierarchy Example

Audience

The OV-5 Activity Flow diagram is intended for architects, analysts, systems engineers, and systems developers.

Utility

The OV-5 Activity Flow diagram provides information useful in streamlining, combing, or eliminating activities, and it is helpful for eliminating redundancy. Of the greatest importance is that the OV-5 Activity Flow diagram provides the foundation for the OV-3 and OV-6c diagrams that are necessary to understand issues of information distribution and timing—critical issues for developing a NextGen EA that will provide the performance improvements required by the NextGen Vision.

Maturity

The OV-5 Activity Flow diagram included in NextGen EA Version 2 represents the initial baseline that will form a foundation for detailed analysis and revision as the NextGen EA is shared with the stakeholders in working group sessions. While a significant number of activities and ICOMs have be identified and defined, it is likely that future refinements will result from the close scrutiny of subject matter experts and other interested parties.

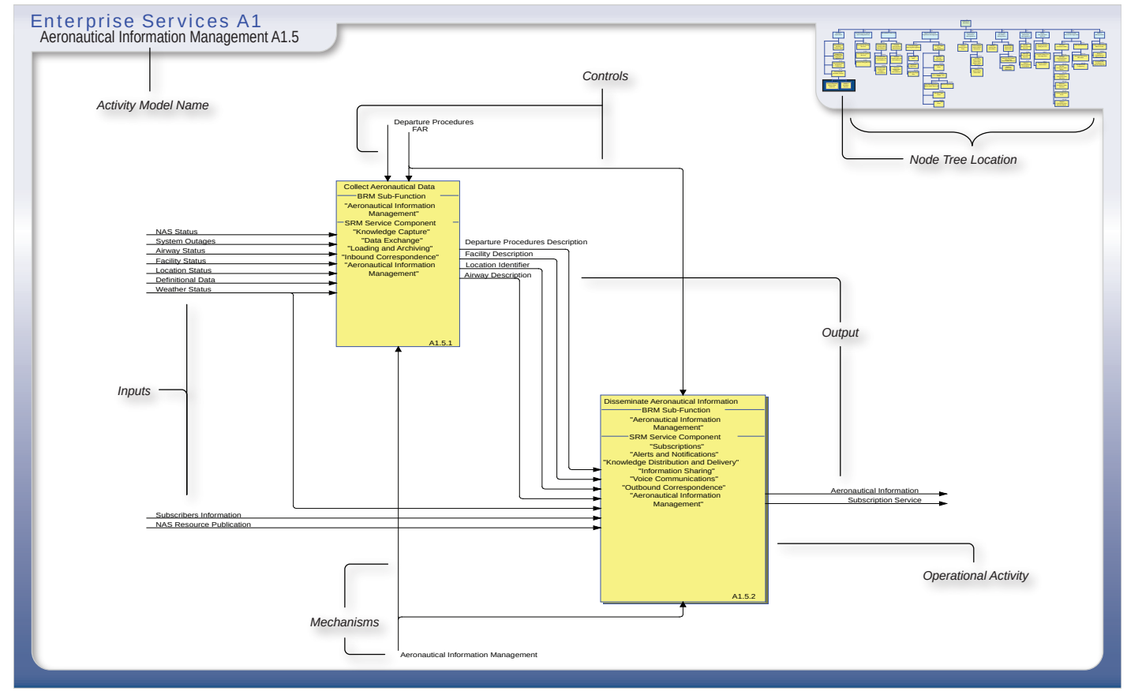


Figure 13: OV-5 Activity Flow Diagram Example

2.1.2.7 Operational Event/Trace Description, (OV-6c) Scenarios

The OV-6c is one of three operational activity sequence and timing description products that DoDAF prescribes for use separately or together. The sequence and timing of operational events are often crucial to the understanding of a mission operation or system and often necessary to achieving the results needed from analysis of the architectural description. Because the JPDO will use the architecture as a basis for advising stakeholders on the value and criticality of improving their systems and processes to achieve the goals of NextGen, an understanding of the sequencing of operational activities could provide key insights in support of that guidance. The OV-6c, Operational Event/Trace Description, was chosen for the NextGen architecture because it provides information specifically relevant to sequencing operational activities and is most appropriate for describing missions that span a wide range of operations and activities. Figure 14, OV-6c, Operational Event/Trace Description Example, provides a condensed view of the OV-6c product. The NextGen EA four Operational Event/Trace Description (OV-6c) scenarios are presented in Appendix G.

Audience

The OV-6c Operational Event/Trace Description is intended for architects, analysts, systems engineers, and systems developers.

Utility

The Operational Event/Trace Description provides a time-ordered sequence of information exchanges among the operational activities. This information will be useful for advising stakeholders on the value and criticality of specific material and nonmaterial investments to the achievement of the NextGen Vision.

Maturity

There are four OV-6c diagrams representing nominal scenarios that have been developed for NextGen EA Version 2. Additional OV-6c diagrams associated with Off-Nominal scenarios will be developed for subsequent releases of the Architecture.

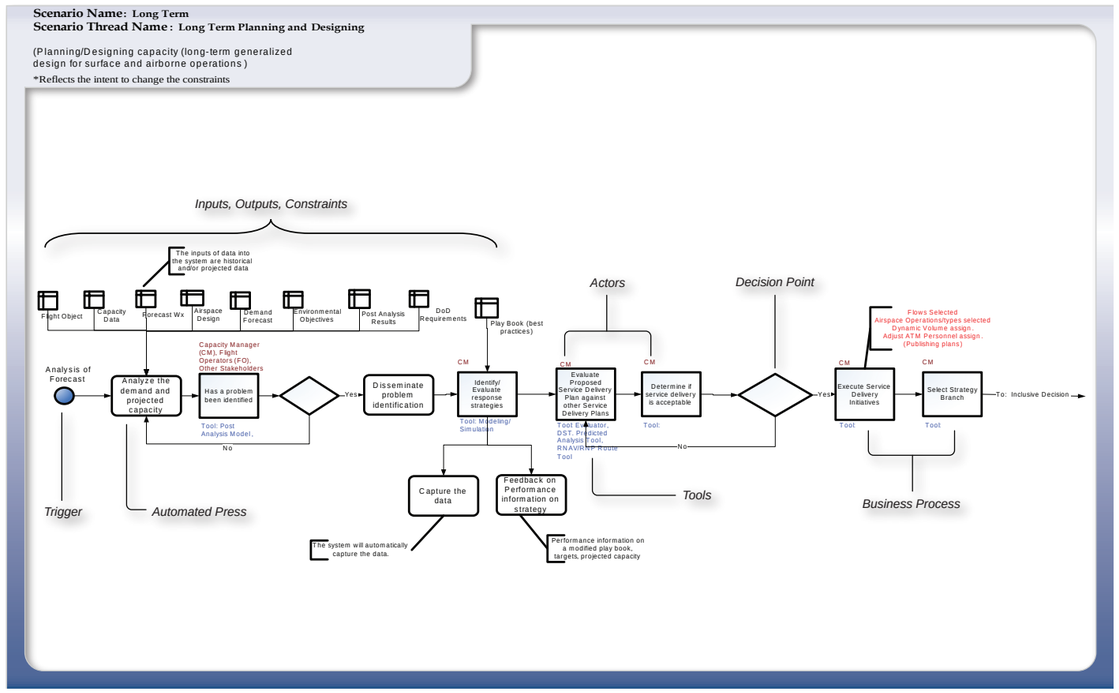


Figure 14: OV-6c Example

2.1.2.8 Operational Activity to Stakeholder Investment Traceability Matrix (SV-5 Hybrid)

To assist stakeholder communities of interest in aligning the NextGen EA activities to their respective architectures and capital investment plans, JPDO has deviated from the standard SV-5, Operational Activity to System Function format prescribed by DoDAF. The NextGen SV-5 Hybrid relates Operational Activities to the Stakeholder Investments. These investments include not just material investments in systems and functions, but also nonmaterial investments such as policy, process, and technology. This format is consistent with the JPDO mission and the NextGen EA objective to provide guidance to stakeholders in making investments that will develop the capabilities required to achieve the NextGen Vision. Figure 15, Operational Activity to Stakeholder Investment Traceability Matrix (SV-5 Hybrid) Example, provides a condensed view of the subject product. The NextGen EA, Version 2, Operational Activity to Stakeholder Investment Traceability Matrix (SV-5 Hybrid) is presented in Appendix H.

Audience

The SV-5 Hybrid is intended for use by JPDO and Stakeholder Architects and Portfolio Management Analysts. Stakeholder Program Managers and Systems Engineers may also find the SV-5 Hybrid useful in tracing their programs capabilities to the NextGen EA Operational Activities.

Utility

By relating NextGen EA operational activities to stakeholder investments, the SV-5 Hybrid describes the key relationships between Stakeholder Capital Investment and NextGen Capabilities.

Maturity

The NextGen EA, Version 2, Operational Activity to System Function Traceability Matrix reflects the current level of understanding of the operational activities and stakeholder investment plans. As the NextGen EA, Version 2, is reviewed by working groups and socialized among stakeholders, it is likely that operational activities will undergo significant revision, and the knowledge of stakeholder investments will be enhanced. Future releases of the NextGen EA will reflect that increasing level of understanding.

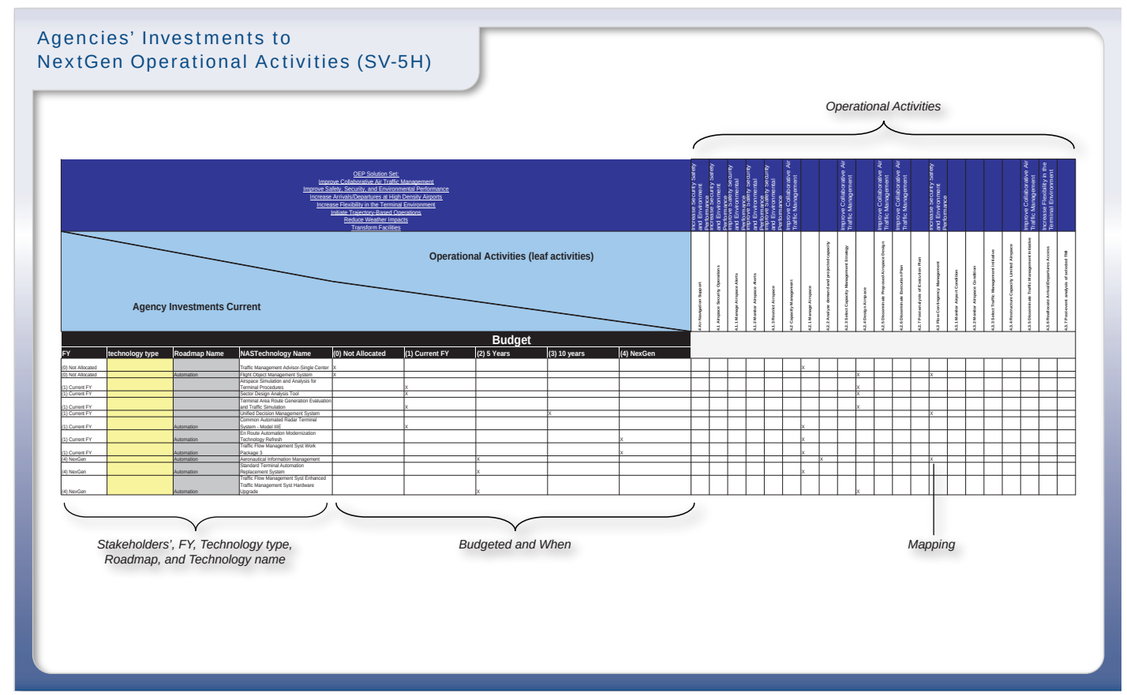


Figure 15: SV-5 Hybrid Example

Notes

GEORGETO
323 GTN
GEORGETO
DCA
WASHINGTON
DCA
Chan 47
NOTE: Prob
of D
LOM
OXONN
332 DC
I-DCA 5.6
DCA
R-186
R-295
PISCA INT
I-DCA 10.7
R-274
DCA
R-185
10 NM
2500 to Pisca Int
321° (3.1) and
LOC (3)
LATAS
OTT 12.2
500
2000
DCA R-325
111.0
GTN
323
OXONN
LOM/INT
I-DCA 5.6
I-DCA
MM
TDZE
15
CATEGORY
A
B
S-ILS 1
215/18
S-LOC 1
480/24
465 (500-½)
620-1
660-1

2.2 NextGen Community Model

The NextGen Community Model provides a highly-visual overarching view of the significant concepts, actors, roles, and the relationships among them, within the context of the NextGen environment. It acts as the foundation for other NextGen EA work products and serves to promote NextGen stakeholder involvement and understanding. It forms the basis for capturing, understanding, and analyzing the needs of users in the context of the activities they perform and the enterprise services provided to them and allows NextGen stakeholders to see how they fit into the community as a whole. Ideally the Community Model will serve as an icon for the overall NextGen EA effort that will spark questions and conversations about the work being performed while continuing to evolve the NextGen EA.

The Community model is not intended to replace traditional systems conceptual or logical models. These types of models provide a lower-level technical detail about the system being defined, including common data stores, system and user interfaces, applications and the relationships between these components. The Community Model abstracts these details and instead provides a high-level depiction of the community members and how they will interact with the system's services.

2.2.1 1st Tier -- NextGen Community Model

The NextGen Community Mode, figure 16, provides a graphical depiction of the significant concepts, actors, roles, and the relationships among them, within the context of the NextGen environment. The Community Model supports the development of the NextGen Enterprise Architecture by decomposing the NextGen environment into tiers which can be further described in increasing levels of detail. The 1st tier is a non-technical illustration to represent NextGen EA and its key concepts. The 2nd tier represents information exchanges between the enterprise Segments and Stakeholders. The 3rd tier is a further detailed breakout of the individual enterprise segments with service areas and actors.

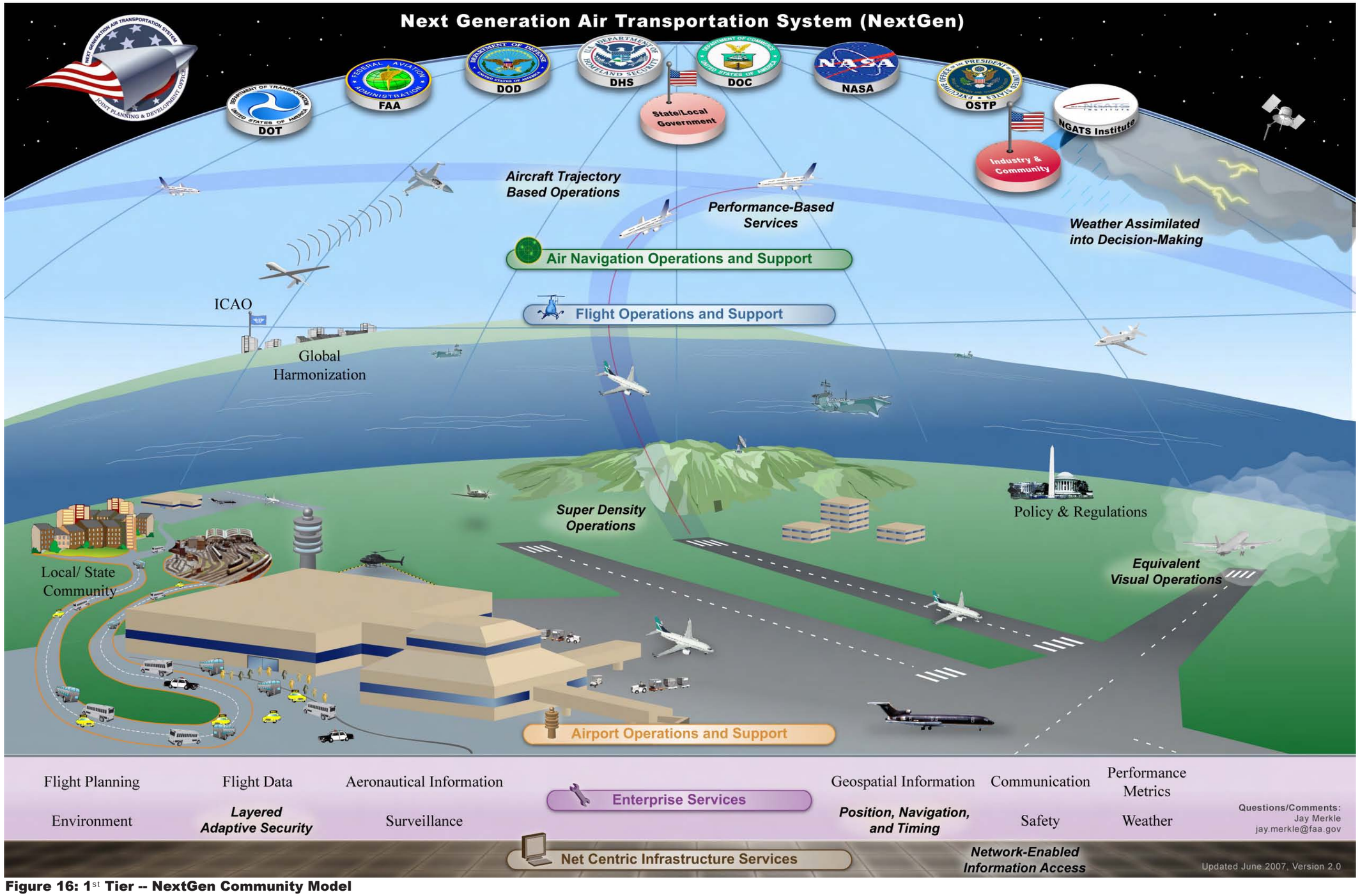


Figure 16: 1st Tier -- NextGen Community Model

2.2.2 2nd Tier – NextGen Community Model

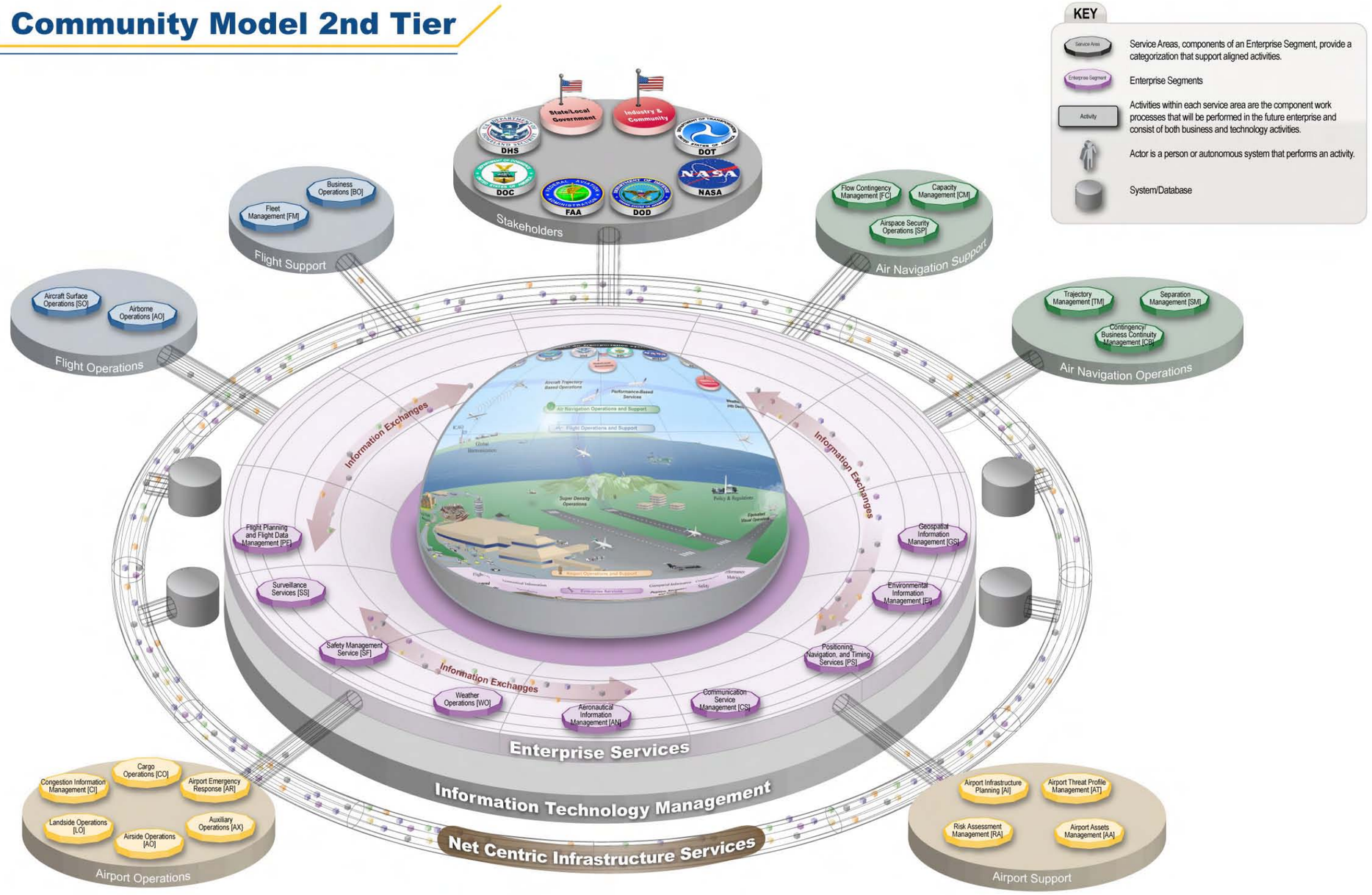
The 2nd tier of the NextGen Community Model represents information exchanges between the enterprise Segments and Stakeholders. It depicts seven enterprise segments (enterprise services, airport operations and support, air navigation operations and support, flight operations and support), representing communities of interest and practice within the enterprise.

Around the community model there are gray “discs” that represent each of the enterprise segments, lying on the enterprise segment discs are colored discs that represent each of the service areas in the architecture.

The rings and “pipes” that connect the elements of the model represent existing and future information exchange architectures. Attached to the inside of the rings and pipes are the system databases that will support the information being exchanged.

The inner most ring is the enterprise services that depict the data being exchanged across the enterprise. The enterprise service information is exchanged through the pipes to be published out to the stakeholders.

NextGen Community Model 2nd Tier



05/25/07 Version 2.0

Figure 17: 2nd Tier Community Model

2.2.3 3rd Tier – NextGen Community Model

The 3rd tier of the NextGen Community Model details the individual enterprise segments identified in the 2nd tier and includes the service areas, operational activities, and the actors that support the segments. There are three variants of the 3rd tier community model – one for Airport Operations and Support (Figure 21), one for Air Navigation Operations and Support (Figure 23), and finally one for Flight Operations and Support (Figure 25). The information provided in this tier of the Community Model establishes the basis for defining and developing the NextGen EA and architectural work products. As the level of detail for each enterprise segment increases and corresponding work products are developed, an aggregation or summary view of the NextGen EA data is required. This summary view is ultimately captured in the Enterprise Segment Activity Inventory work product described below.

2.3 Enterprise Segment Activity Inventory

The Enterprise Segment Activity Inventory (ESAI) summarizes and compiles the relevant aspects of the NextGen EA from the vantage point of an operational activity. Activities are defined as the operational work that users (or systems) perform to accomplish specific goals and objectives within the context of the NextGen environment. The ESAI consists of a several columns comprising activities that support the enterprise segments discussed in Section 3 and illustrated in the Community Model. The columns and activities are also grouped by service areas. Ultimately the ESAI is intended to provide a collective, exhaustive and mutually exclusive set of activities that summarize the complex system that the NextGen EA represents.

Audience:

Operational Users will use this product to validate their operational needs have been captured, JPDO architects will use it as a working cross-reference between the DoDAF products and the FEA reference models. Program management staff will use it to understand what will be delivered and when; risk analysts to early identify operational, technical and programmatic risk; cost analysts to convey a first cost Basis Of Estimate; chief engineer, chief architect, and software architect staff to understand the scope of functional activities to be developed.

Utility:

As an inventory of the NextGen EA, the ESAI defines the scope of activities, mapped to enterprise segments, that need to be supported and enabled by acquired and/or integrated NextGen systems. Figure 16 shows an example of a ESAI which depicts each enterprise segment that are group identifiers, or service areas (shown as a colored header to the enterprise segment table), for the functional activities below them. The activities within each service area are the component work functions that will be performed within the NextGen.

Since the ESAI is a visual query and representation of the NextGen EA, additional views can and will be created to reflect elements of importance to various stakeholders as additional data is captured, analyzed and conveyed. For example, views that show which activities a certain actor would perform, a view that shows activities that have specific environmental requirements, or views that show activities where legacy systems must be retired, etc.

Maturity:

The ESAI is a "living-document" and plays an important role in summarizing the NextGen EA to ensure that the various NextGen stakeholders, users and integrators, fully understand the activities required to support the new and existing operational functions or business processes. Once this document and the Integrated Work Plan are complete, a review of each service area—prioritizing activities by project need, complexity and cost can be completed to determine how component activities should be allocated as part of the NextGen Systems Acquisition.

The following three sections will show the grouped enterprise segment 3rd tier community model with the associated ESAI to provide a segmented view along with a detailed ESAI.

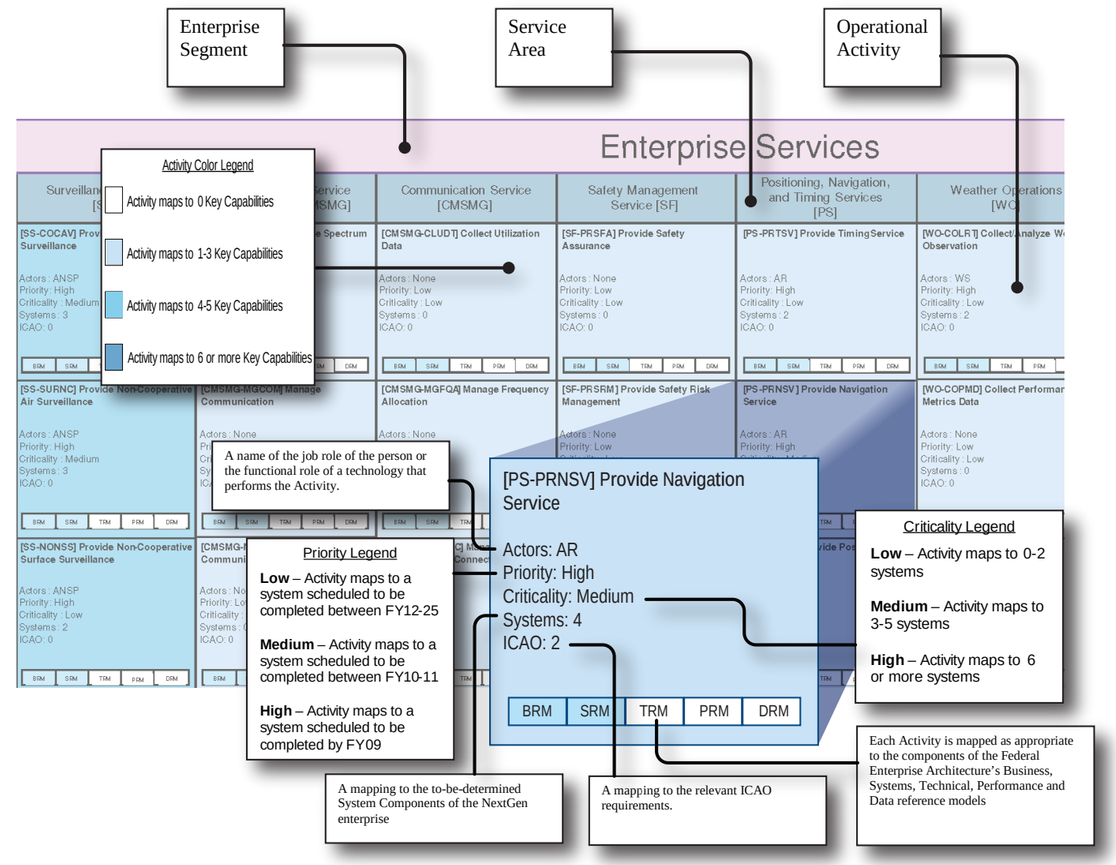


Figure 18: Enterprise Segment Activity Inventory (ESAI) Example

Notes

GEORGETO
323 GTN
GEORGETO
DCA 5
WASHINGTON
0 DCA
Chan 47
NOTE: Prok
of D
LOM
OXONN
332 DC
I-DCA 5.6
DCA
R-186
R-295
PISCA INT
I-DCA 10.7
R-274
DCA
R-185
2500 to Pisca Int
321° (3.1) and
LOC (3)
LATAS
OTT 12.2
10 NM
500
2000
DCA R-325
111.0
GTN
323
OXONN
LOM/INT
I-DCA 5.6
1551
I-DCA
1
MM
007°
0.5
4.1 NM
TDZE
15
CATEGORY
A
B
S-ILS 1
215/18
S-LOC 1
480/24
465 (500-½)
620-1
660-1
150
180

2.3.1 Enterprise Services

The Enterprise Services community provides delegated data services to the enterprise. Information delegation is accomplished by the processes and applications that constitute the Enterprise Service function. Another way to envision Enterprise Services is to consider where authorized subscribers can access the information desired. This access can be accomplished in an automated and virtual fashion where a standing request for information by subscribers is produced, using established protocols and standards. This access concept is what facilitates the NextGen vision of the future – delegated data for decision-making. Enterprise Services includes the following elements:

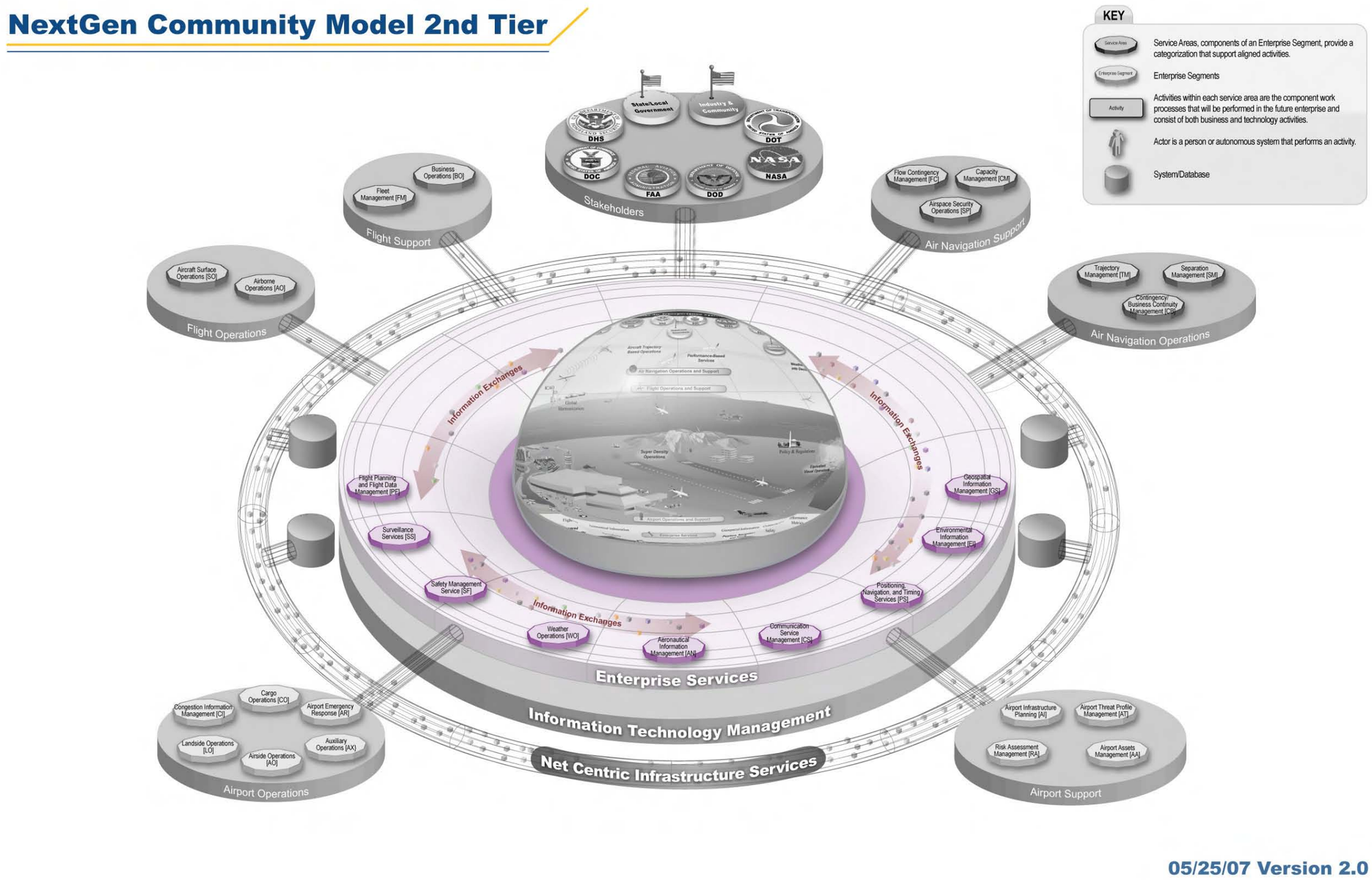


Figure 19: 3rd Tier Community Model: Enterprise Services

Enterprise Services

Flight Planning and Flight Data Management [PF]

[PF-FINFL] Authorize Flight Plan
Actors : AN,SY
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[PF-FFLPL] File Flight Plan
Actors : FO,SY
Priority: Low
Criticality : Low
Systems : 0
ICAO: 1

[PF-ARCFD] Archive Flight Data
Actors : SY
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[PF-MOFDT] Monitor Flight Data
Actors : AN,SY
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[PF-PFDSS] Provide Flight Data Subscription Services
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[PF-BRCFD] Publish Flight Data
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[PF-NEGFP] Negotiate Flight Plan
Actors : AN,FO
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

Flight Planning and Flight Data Management [PF]

[PF-EARCP] Establish Aircraft Capabilities
Actors : AN
Priority: Low
Criticality : Low
Systems : 0
ICAO: 2

[PF-PRDAT] Provide Flight Data Management
Actors : AN,FO
Priority: Medium
Criticality : Low
Systems : 2
ICAO: 7

[PF-CFPMG] Conduct Flight Planning Management
Actors : AN,FO
Priority: Medium
Criticality : Medium
Systems : 4
ICAO: 1

[PF-DISFD] Disseminate Flight Data
Actors : SY
Priority: Medium
Criticality : Low
Systems : 1
ICAO: 3

[PF-FLPLN] Provide Flight Data
Actors : FO,SY
Priority: Medium
Criticality : Low
Systems : 1
ICAO: 3

Surveillance Services [SS]

[SS-COCAV] Provide Cooperative Surveillance
Actors : AN
Priority: High
Criticality : Medium
Systems : 3
ICAO: 0

[SS-SURNC] Provide Non-Cooperative Air Surveillance
Actors : AN
Priority: High
Criticality : Medium
Systems : 3
ICAO: 0

[SS-NONSS] Provide Non-Cooperative Surface Surveillance
Actors : AN
Priority: High
Criticality : Low
Systems : 2
ICAO: 0

[SS-SURCV] Provide Cooperative Air Surveillance
Actors : AN
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[SS-COLVZ] Provide Cooperative Surface Surveillance
Actors : AN
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[SS-SURCO] Provide Non-Cooperative Surveillance
Actors : AN
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

Communication Service Management [CMSMG]

[CMSMG-MGSPM] Manage Spectrum
Actors : None
Priority: High
Criticality : Medium
Systems : 4
ICAO: 2

[CMSMG-MGCOM] Manage Communication
Actors : None
Priority: High
Criticality : High
Systems : 7
ICAO: 0

[CMSMG-MCOMS] Monitor CommunicationStatus
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[CMSMG-RCSVS] Report CommunicationService Status
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[CMSMG-ASGRF] Assign Radio Frequency
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

Communication Service [CMSMG]

[CMSMG-CLUDT] Collect Utilization Data
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[CMSMG-MGFQA] Manage Frequency Allocation
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[CMSMG-MGCMC] Manage CommunicationConnection
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[CMSMG-RCMSV] Restore CommunicationService
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[CMSMG-BCOMS] Balance CommunicationService
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

Safety Management Service [SF]

[SF-PRSFA] Provide Safety Assurance
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[SF-PRSRM] Provide Safety Risk Management
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[SF-PRASS] Provide Aviation Safety Service
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 1

Positioning, Navigation, and Timing Services [PS]

[PS-PRTSV] Provide Timing Service
Actors : AR
Priority: High
Criticality : Low
Systems : 2
ICAO: 0

[PS-PRNSV] Provide Navigation Service
Actors : AR
Priority: High
Criticality : Medium
Systems : 4
ICAO: 2

[PS-PRPSV] Provide Positioning Service
Actors : AR
Priority: High
Criticality : Low
Systems : 2
ICAO: 1

Weather Operations [WO]

[WO-COLRT] Collect/Analyze Weather Observation
Actors : WS,SY
Priority: High
Criticality : Low
Systems : 2
ICAO: 0

[WO-COPMD] Collect Performance Metrics Data
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[WO-WXDAT] Determine NAS Weather Integration Algorithm
Actors : WS,SY
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[WO-PDWPT] Provide Weather Diagnostic Forecast
Actors : WS,SY
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[WO-PUBFU] Disseminate Weather Picture
Actors : WS,SY
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[WO-DAPMR] Disseminate Performance Metrics Reports
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 1

Weather Operations [WO]

[WO-ANPMD] Analyze Performance Metrics Data
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 1

[WO-BROAD] Publish Weather Picture
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[WO-MT] Metrics Management
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[WO-SUBWX] Provide Weather Subscription Services
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

Aeronautical Information Management [AN]

[AN-PAISS] Provide Aeronautical InformationSubscription Services
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[AN-BDAIN] Publish Aeronautical Information
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[AN-COADT] Collect Aeronautical Data
Actors : SY
Priority: Low
Criticality : Low
Systems : 0
ICAO: 1

[AN-DAEIN] Disseminate Aeronautical Information
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 3

Geospatial Information Management [GS]

[GS-DAGIN] Disseminate Geospatial Information
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 3

[GS-COGIN] Collect Geospatial Information
Actors : SY
Priority: Low
Criticality : Low
Systems : 0
ICAO: 1

[GS-BRCGI] Publish Geospatial Information
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[GS-PVDGI] Provide Geospatial InformationSubscription Service
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

Environmental Information Management [EI]

[EI-MANEI] Manage Environmental Impacts
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[EI-MNOSA] Monitor Environmental Impacts
Actors : AN
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

[EI-ENVIR] Report Environmental Conditions
Actors : None
Priority: Low
Criticality : Low
Systems : 0
ICAO: 0

Figure 20: Activity Inventory (Enterprise Services Segment)

2.3.2 Airport Operations and Airport Support

The Airport Operations community provides the airside, terminal, and auxiliary operations that enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, resource limitations, and local environmental concerns. The Airport Operations community also supports the continuous monitoring and management of routine and emergency airport operations. Airport Support provides assurance that the airport is acquiring assets when needed, supporting the infrastructure planning of the airport, and taking preventive security measures to mitigate security risk (i.e., threat profiling and risk assessment).

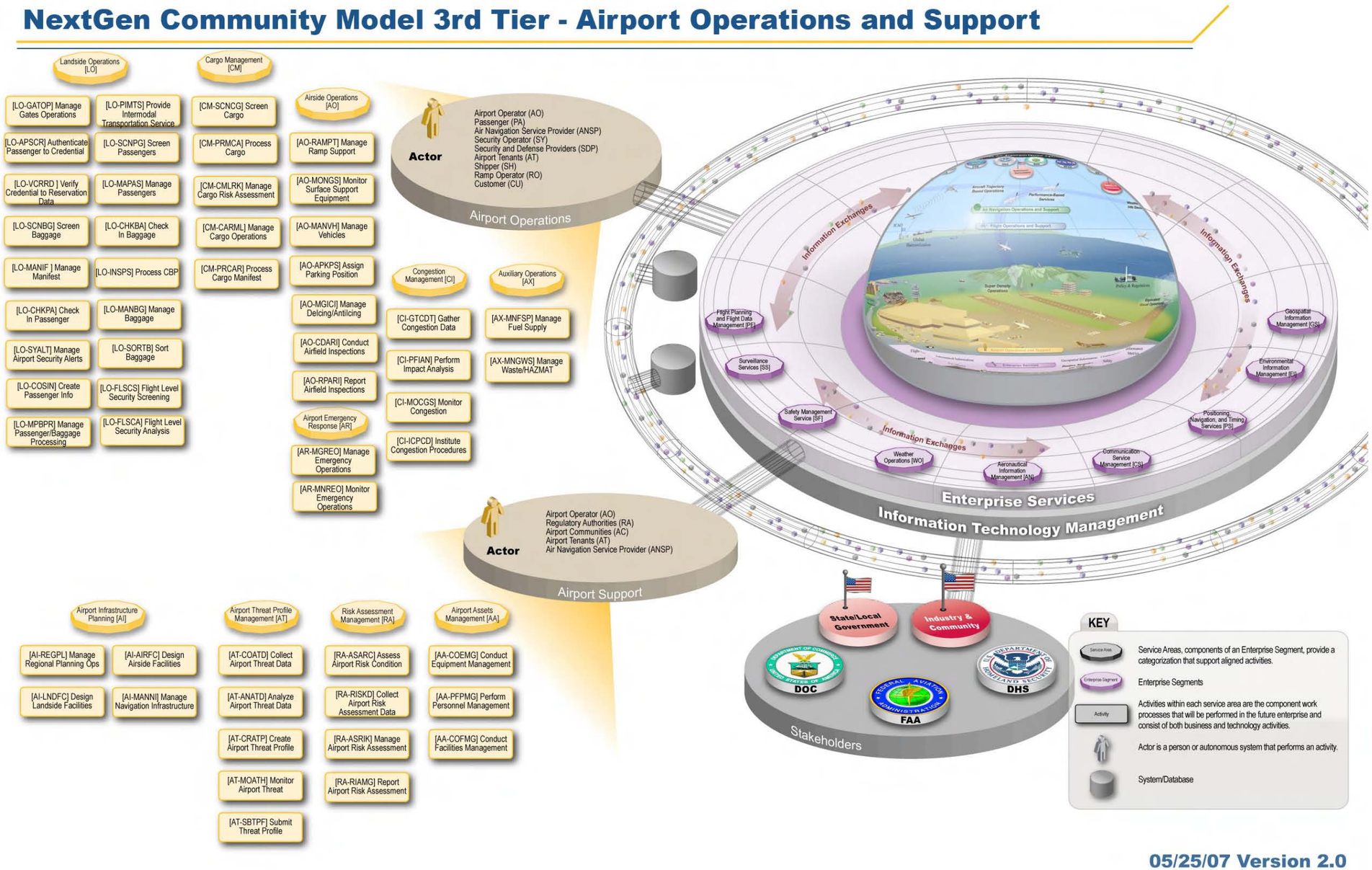


Figure 21: 3rd Tier Community Model: Airports

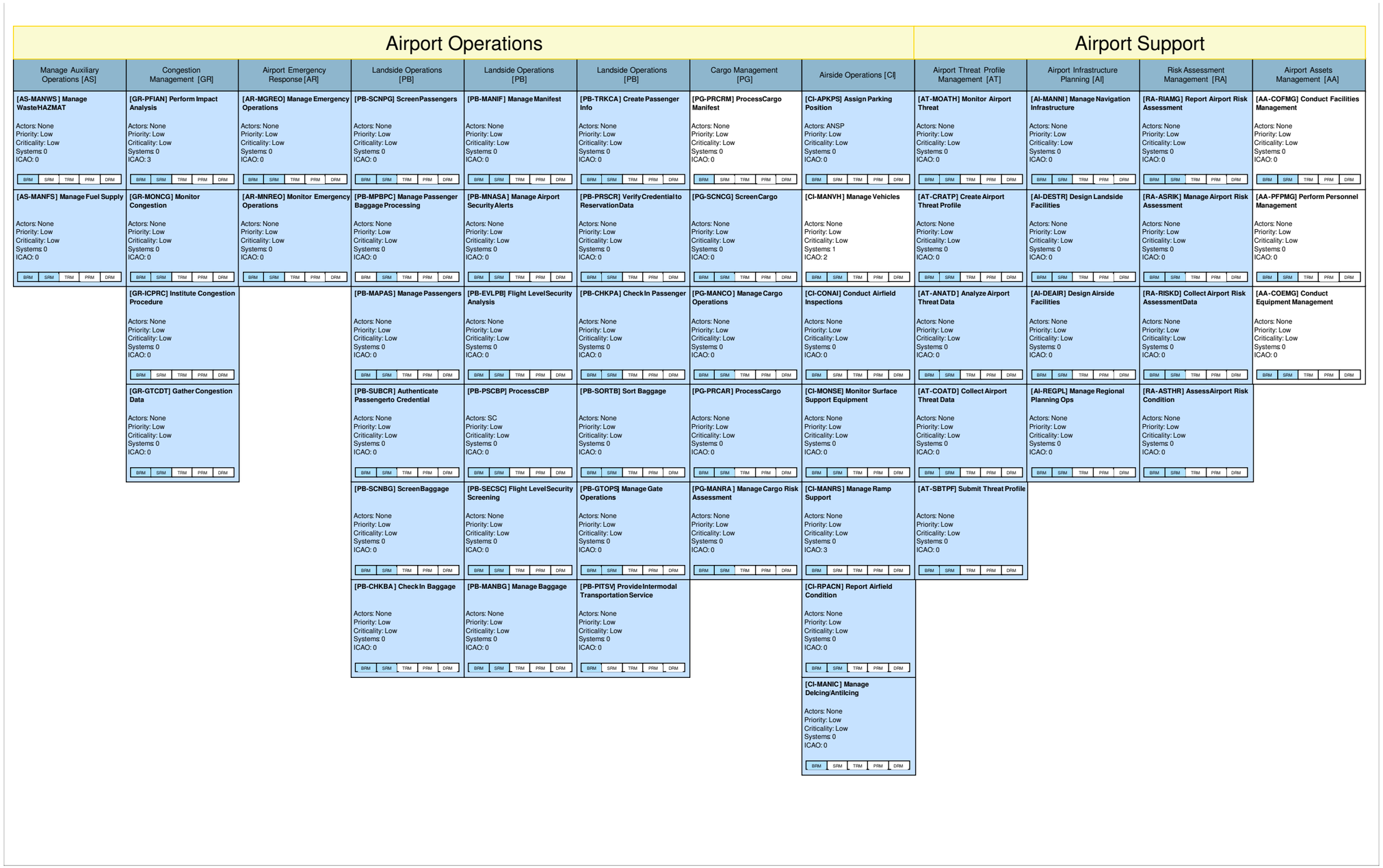


Figure 22: Activity Inventory (Airport Support/Operations Segments)

2.3.3 Air Navigation Operations and Air Navigation Support

Air Navigation Operations community provides service at the terminal and in flight to assure safe, secure, and efficient access to national airspace by all users. Air Navigation Operations supports the airborne aircraft with or without 4DT Navigation capabilities. Aircraft may perform autonomous operations and monitor weather and other airspace events to negotiate the best flight path. Air Navigation Support community provides the short and long term planning needed to assure safe, secure, and efficient access to national airspace by all users within terminal and cruise. It establishes the criteria for designing structures in the airspace to support safety of flight and efficient flow of traffic. Design criteria including the guidelines for establishing classes of airspace, designation of volumes of airspace for the provision of separation (sectors, special use, etc.), waypoints, published routes etc. The criteria include identification of those structures, which require rulemaking, publication, environmental evaluations, etc. The guidelines also include criteria to support the design process - objectives in the design to meet demand performance criteria for evaluating the efficiency of the design, and infrastructure coverage criteria and constraints.

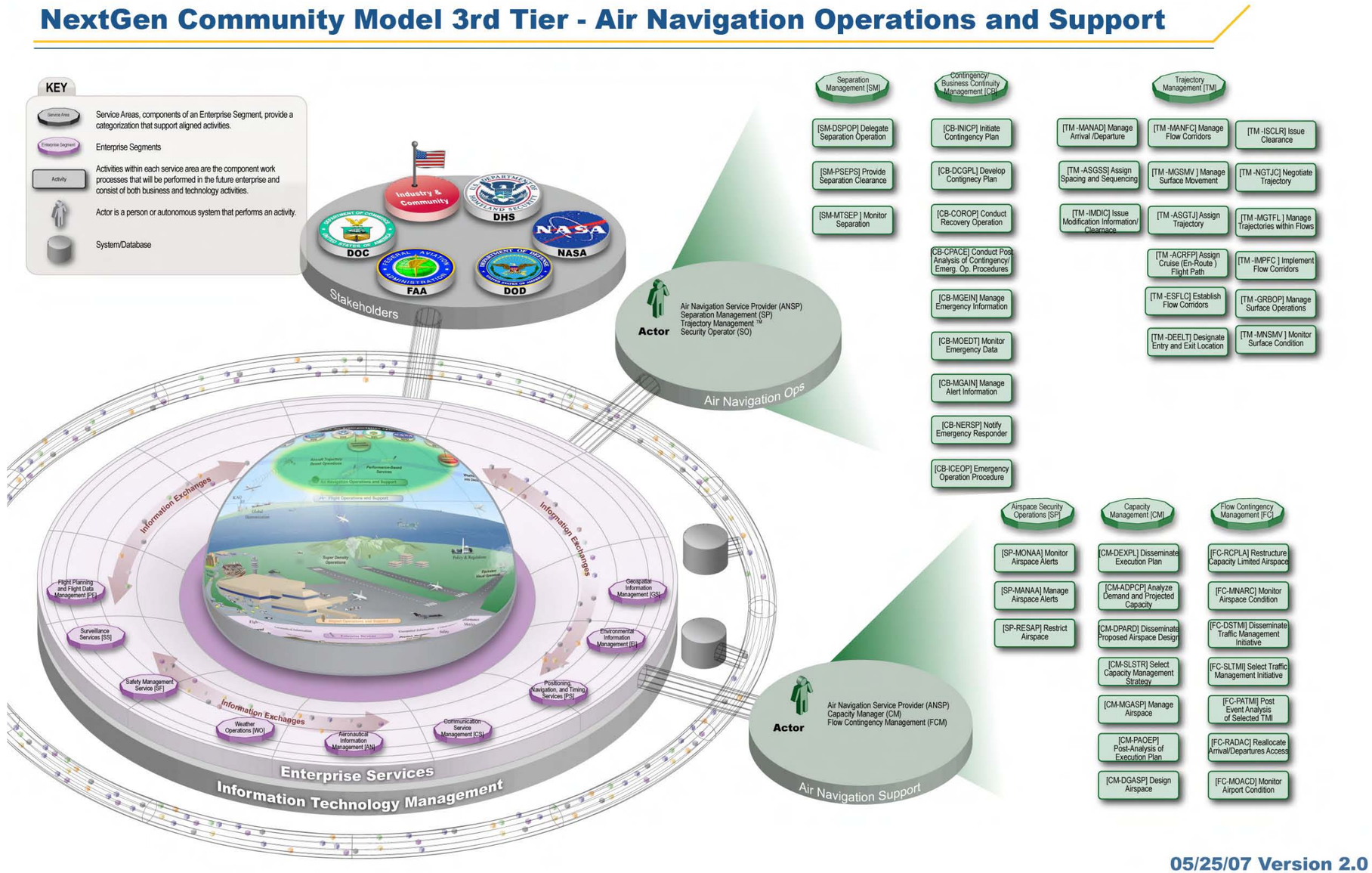


Figure 23: 3rd Tier Community Model: Air Navigation

Air Navigation Operation

Contingency/Business Continuity Management [CB]	Contingency/Business Continuity Management [CB]	Separation Management [SM]	Trajectory Management [TM]	Trajectory Management [TM]	Trajectory Management [TM]
[CB-MGEIN] Manage Emergency Information Actors: None Priority: High Criticality: Medium Systems: 3 ICAO: 0	**[CB-CPACE] ConductPost Analysis of Contingency/Emergency Operation Procedure** Actors : AN Priority: Low Criticality : Low Systems : 0 ICAO: 0	**[SM-DSPOP] Delegate Separation Operation** Actors: AN,SM Priority: Low Criticality: Low Systems: 0 ICAO: 2	**[TM-MGTFL] Manage Trajectories within Flows** Actors: AN,TM Priority: High Criticality: Medium Systems: 4 ICAO: 4	**[TM-MGDOP] Issue Modification Information/Clearance** Actors: AN,TM Priority: Low Criticality: Low Systems: 0 ICAO: 0	**[TM-IMPFC] Implement Flow Corridors** Actors: AN,TM Priority: Low Criticality: Low Systems: 0 ICAO: 0
[CB-EOPPC] Emergency Operation Procedure Actors: AN Priority: High Criticality: Medium Systems: 3 ICAO: 0	**[CB-MOEDT] Monitor Emergency Data** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0	**[SM-PSEPC] Provide Separation Clearance** Actors: AN,SM Priority: Low Criticality: Low Systems: 0 ICAO: 3	**[TM-MANAD] Manage Arrival /Departure** Actors: AN,TM Priority: High Criticality: Medium Systems: 5 ICAO: 5	**[TM-ITXMC] Issue Clearance** Actors: AN,TM Priority: Low Criticality: Low Systems: 0 ICAO: 0	**[TM-DEELT] Designate Entry and Exit Location and Time** Actors: AN,TM Priority: Low Criticality: Low Systems: 0 ICAO: 0
[CB-INICP] Initiate Contingency Plan Actors: AN Priority: Low Criticality: Low Systems: 0 ICAO: 0	**[CB-MGAIN] Manage Alert Information** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0	**[SM-MTSEP] Monitor Separation** Actors: AN,SM Priority: Low Criticality: Low Systems: 0 ICAO: 1	**[TM-ASGSS] Assign Spacing and Sequencing** Actors: AN,TM Priority: Low Criticality: Low Systems: 0 ICAO: 0	**[TM-MANFC] Manage Flow Corridors** Actors: AN,TM Priority: Low Criticality: Low Systems: 0 ICAO: 5	**[TM-ESFLC] Establish Flow Corridors** Actors: AN,TM Priority: Low Criticality: Low Systems: 0 ICAO: 0
[CB-DCGPL] Develop Contignecy Plan Actors: AN Priority: Low Criticality: Low Systems: 0 ICAO: 0	**[CB-NERSP] Notify Emergency Responder** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0		**[TM-NGTJC] Negotiate Trajectory** Actors: AN,FO,TM Priority: Low Criticality: Low Systems: 0 ICAO: 3	**[TM-MGSMV] Manage Surface Movement** Actors: AN,TM Priority: Low Criticality: Low Systems: 0 ICAO: 1	**[TM-MANSO] Manage Surface Operations** Actors: AN,TM Priority: Low Criticality: Low Systems: 0 ICAO: 2
[CB-COROP] Conduct Recovery Operation Actors: AN Priority: Low Criticality: Low Systems: 0 ICAO: 0			**[TM-ASGTJ] Assign Trajectory** Actors: AN,TM Priority: Low Criticality: Low Systems: 0 ICAO: 0	**[TM-ACRFP] Assign Cruise (En-Route) Flight Path** Actors: AN,TM Priority: Low Criticality: Low Systems: 0 ICAO: 1	**[TM-MNSCN] Monitor Surface Condition** Actors: AN,TM Priority: Low Criticality: Low Systems: 0 ICAO: 0

Air Navigation Support

Flow Contingency Management [FC]	Capacity Management [CM]	Airspace Security Operations [SP]
[FC-MOACD] Monitor Airport Condition Actors: FM Priority: Low Criticality: Low Systems: 0 ICAO: 1	**[CM-DGASP] Design Airspace** Actors: CM Priority: High Criticality: Medium Systems: 4 ICAO: 2	**[SP-RESAP] Restrict Airspace** Actors: AN,SC Priority: Low Criticality: Low Systems: 0 ICAO: 1
[FC-RADAC] Reallocate Arrival /Departures Access Actors: FM Priority: Low Criticality: Low Systems: 0 ICAO: 3	**[CM-MGASP] Manage Airspace** Actors: CM Priority: High Criticality: Medium Systems: 4 ICAO: 1	**[SP-MANAA] Manage Airspace Alerts** Actors: AN,SC Priority: Low Criticality: Low Systems: 0 ICAO: 0
[FC-PATMI] Post-event analysis of selected TMI Actors: FM Priority: Low Criticality: Low Systems: 0 ICAO: 2	**[CM-PAOEP] Post-analysis of Execution Plan** Actors: CM Priority: Low Criticality: Low Systems: 0 ICAO: 1	**[SP-MONAA] Monitor Airspace Alerts** Actors: AN,SC Priority: Low Criticality: Low Systems: 0 ICAO: 0
[FC-SLTMI] Select Traffic Management Initiative Actors: FM Priority: Low Criticality: Low Systems: 0 ICAO: 1	**[CM-SLSTR] Select Capacity Management Strategy** Actors: CM Priority: Low Criticality: Low Systems: 0 ICAO: 0	
[FC-DSTMI] Disseminate Traffic Management Initiative Actors: FM Priority: Low Criticality: Low Systems: 0 ICAO: 2	**[CM-DPARD] Disseminate Proposed Airspace Design** Actors: CM Priority: Low Criticality: Low Systems: 0 ICAO: 2	
[FC-MNARC] Monitor Airspace Condition Actors: FM Priority: Low Criticality: Low Systems: 0 ICAO: 1	**[CM-DEXPL] Disseminate Execution Plan** Actors: CM Priority: Low Criticality: Low Systems: 0 ICAO: 2	
[FC-RCPLA] Restructure Capacity Limited Airspace Actors: FM Priority: Low Criticality: Low Systems: 0 ICAO: 1	**[CM-ADPCP] Analyze demand and projected capacity** Actors: CM Priority: Medium Criticality: Low Systems: 1 ICAO: 8	

Figure 24:: Activity Inventory (Air Navigations support/Operations, Flight Support Segments)

2.3.4 Flight Operations and Flight Support

The Flight Operations community, the primary users of ATM services, has a range of objectives for operating flights. Benefits desired by flight operators include: maintaining schedule integrity and operating efficiency, having access to airspace and airports in the presence of congestion, being able to operate with minimal disruption from weather or visibility, having increased safety and utility, suffering minimal disruptions from security and defense operations, and having reduced operating costs. State and defense providers also have unique needs for access to airspace and transit through airspace to complete missions or for training. In addition, a broad community of operators who fly under VFR continue to need access to airspace without the requirement to be in communication with the ANSP.

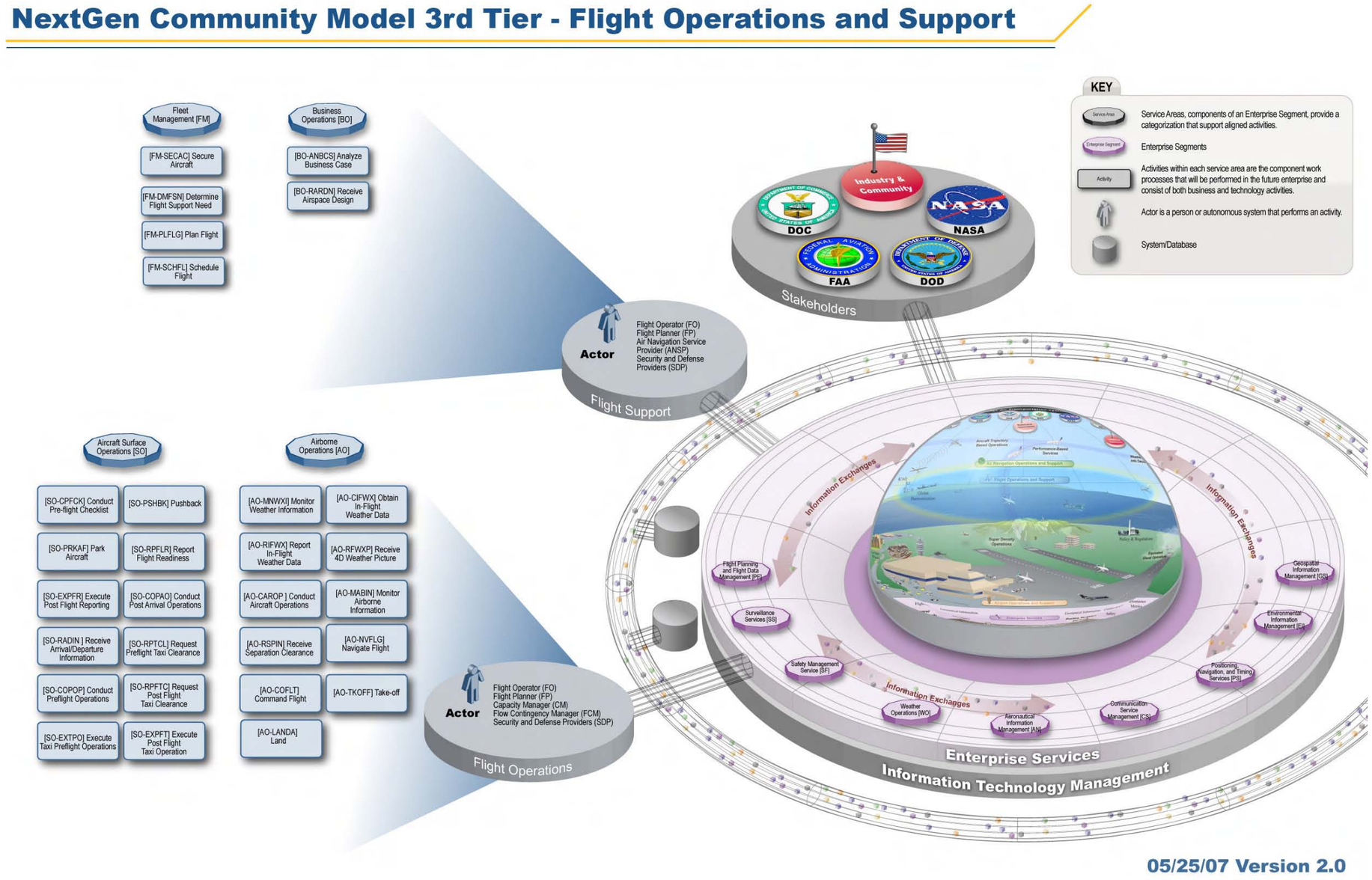


Figure 25: 3rd Tier Community Model: Flight

Flight Operations						Flight Support	
Aircraft Surface Operations [SO]	Aircraft Surface Operations [SO]	Aircraft Surface Operations [SO]	Airborne Operations [AO]	Airborne Operations [AO]	Airborne Operations [AO]	Fleet Management [FM]	Business Operations [BO]
[SO-EXPFT] Execute Post Flight Taxi Operation Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[SO-RPTCL] Request Preflight Taxi Clearance** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[SO-RPFLR] Report Flight Readiness** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[AO-MABIN] Monitor Airborne Information** Actors: AR Priority: High Criticality: Low Systems: 1 ICAO: 0 BRM SRM TRM PRM DRM	**[AO-MNWXI] Monitor Weather Information** Actors: AR Priority: High Criticality: Low Systems: 2 ICAO: 0 BRM SRM TRM PRM DRM	**[AO-TKOFF] Take-off** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[FM-SECAC] Secure Aircraft** Actors: AR,SC Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[BO-ANBCS] Analyze Business Case** Actors: FO,FP,BO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM
[SO-RPFTC] Request Post Flight Taxi Clearance Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[SO-RADIN] Receive Arrival/Departure Information** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[SO-PRKAF] Park Aircraft** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[AO-RWXPT] Receive 4D Weather Picture** Actors: AR,FO Priority: High Criticality: Medium Systems: 4 ICAO: 0 BRM SRM TRM PRM DRM	**[AO-COFLT] Command Flight** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[AO-RSPCL] Receive Separation Clearance** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[FM-DMFSN] Determine Flight Support Need** Actors: FO,FP Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[BO-RARDN] Receive Airspace Design** Actors: FO,FP,BO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM
[SO-EXTPO] Execute Taxi Preflight Operations Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[SO-COPAO] Conduct Post Arrival Operations** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[SO-PSHBK] Pushback** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[AO-RIFWX] Report In-Flight Weather Data** Actors: AR,FO Priority: High Criticality: Low Systems: 2 ICAO: 1 BRM SRM TRM PRM DRM	**[AO-NVFLG] Navigate Flight** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 2 BRM SRM TRM PRM DRM	**[AO-CAROP] Conduct Aircraft Operations** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 2 BRM SRM TRM PRM DRM	**[FM-PLFLG] Plan Flight** Actors: FO,FP Priority: Low Criticality: Low Systems: 0 ICAO: 1 BRM SRM TRM PRM DRM	
[SO-COPOP] Conduct Preflight Operations Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[SO-EXPFR] Execute Post Flight Reporting** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[SO-CPFCK] Conduct Pre-flight Checklist** Actors: FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[AO-OIFWX] Obtain In-Flight Weather Data** Actors: AR,FO Priority: High Criticality: Medium Systems: 3 ICAO: 0 BRM SRM TRM PRM DRM	**[AO-LANDG] Land** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM		**[FM-SCHFL] Schedule Flight** Actors: FO,FP Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	

Figure 26: Activity Inventory (Flight Operations, Flight Support)

Notes

3. NextGen EA

This section comprises eight subsections corresponding to the eight[1] Enterprise Segments, as follows:

3.1 Enterprise Services Segment

3.2 Airport Support

3.3 Airport Operations

3.4 Air Navigation Support

3.5 Air Navigation Operations

3.6 Flight Support

3.7 Flight Operations

3.8 Core Business Services

Within each subsection, the following products provide successive levels of detail about the respective Enterprise Segment:

- Enterprise Segment Description
- Enterprise Segment Purpose Statement
- Enterprise Segment 3rd Tier Community Model
- Enterprise Segment ESAI
- Enterprise Segment FEA Reference Models (PRM, SRM, …
- Enterprise Segment DoDAF Products and Activity Correspondence Tables

1 *Note that the original five Enterprise Segments (Enterprise Services, Airports, Air Navigation, Flight, and Core Business Services) have been expanded to include both an Operations and Support Segment for Airports, Air Navigation, and Flight.*

The DoDAF product details in each Enterprise Segment subsection include the relevant OV-5 Operational Activity Hierarchy and Activity Flow Diagrams starting at the Segment Service Area level. The following information is presented for each Service Area:

- Service Area Description – Describes the Service Area and its relevant Operational Activities
- Service Area Purpose – Describes the community of interest and practice relevant to the Service Area
- OV-5 Operational Activity Hierarchy – Orients the user within the Enterprise Segment's Operational Activity Hierarchy
- OV-5 Operational Activity Flow Diagrams – A formal presentation of the relevant Operational Activities, the information flows between the activities and the transformation of information performed by the activities. These are presented in IDEF0 format. Each Service Area's operational Activity Flow Diagrams are presented starting at the top of the Service Area's Activity Hierarchy and proceeding to the lowest Operational Activity level relevant to the purpose of the architectural description.
- Three Correspondence Tables as follows that relate the NextGen EA activity to NextGen stakeholders' investments:
  - JPDO Support Alignment – This table denotes the alignment of the NextGen EA to NextGen supporting elements. Elements such as the Operational Evolution Partnership Solution Sets (OEP), National Airspace System Operational Improvements (NAS OIs), and NextGen Operational Improvements (OIs), together form the means to realize the ATS future state.
  - NextGen Drivers – This table captures the relationship of specific business and mission drivers of the NextGen concept to relevant EA components. Drivers such as the NextGen CONOPS, the FEA Reference Models, International Civil Aviation Organization and ATMCP Requirements.
  - NextGen Future Solutions– Captures the stakeholder/partner agency investments that support the 2025 vision and how they align to the current NextGen EA structure. In this release, Version 2, of the NextGen EA, the FAA systems solutions are the only partner agency investments that are captured. The JPDO is in the initial phases of working with stakeholders to identify additional material and non-material solutions.

3.1 Enterprise Services (1)

3.1.1 Description

The Enterprise Services Enterprise Segment provides the operational context for delegating information on a user-based, publish and subscribe basis, to, from and across the NextGen environment. This Enterprise Segment maintains information on the processes, standards and applications that constitute and are necessary for information delegation, and the mechanisms to access.

3.1.2 Purpose

The purpose of the Enterprise Services Segment is to identify the required shared services among stakeholders such as: Weather Operations; Positioning, Navigation and Timing; Surveillance Services; Flight Planning and Flight Data Management; Aeronautical Information Management; Geospatial Information Management; Environmental Information Management; Safety management Services; Communications Services; and Metrics management. These shared services are decomposed into specific operational activities that define the service areas and provides the foundation for the NextGen EA, allowing architects and engineers to further develop detailed architecture products that show traceability to the NextGen CONOPS and stakeholders investments (material/non-material).

3.1.3 2nd Tier Community Model

NextGen Community Model 2nd Tier

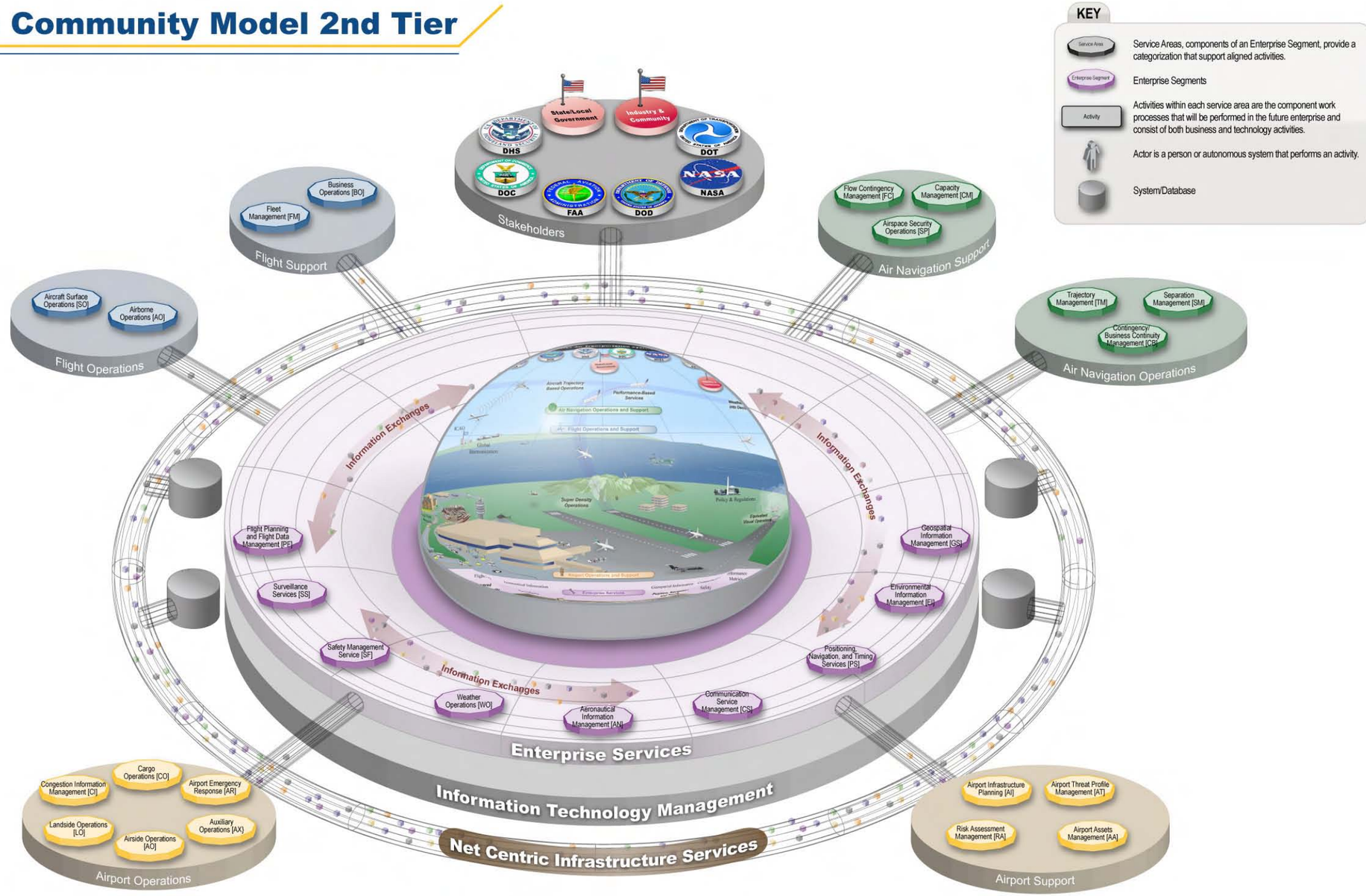


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Figure 1: Enterprise Services 2nd tier Community Model

3.1.4 Enterprise Segment Activity Inventory - Enterprise Services

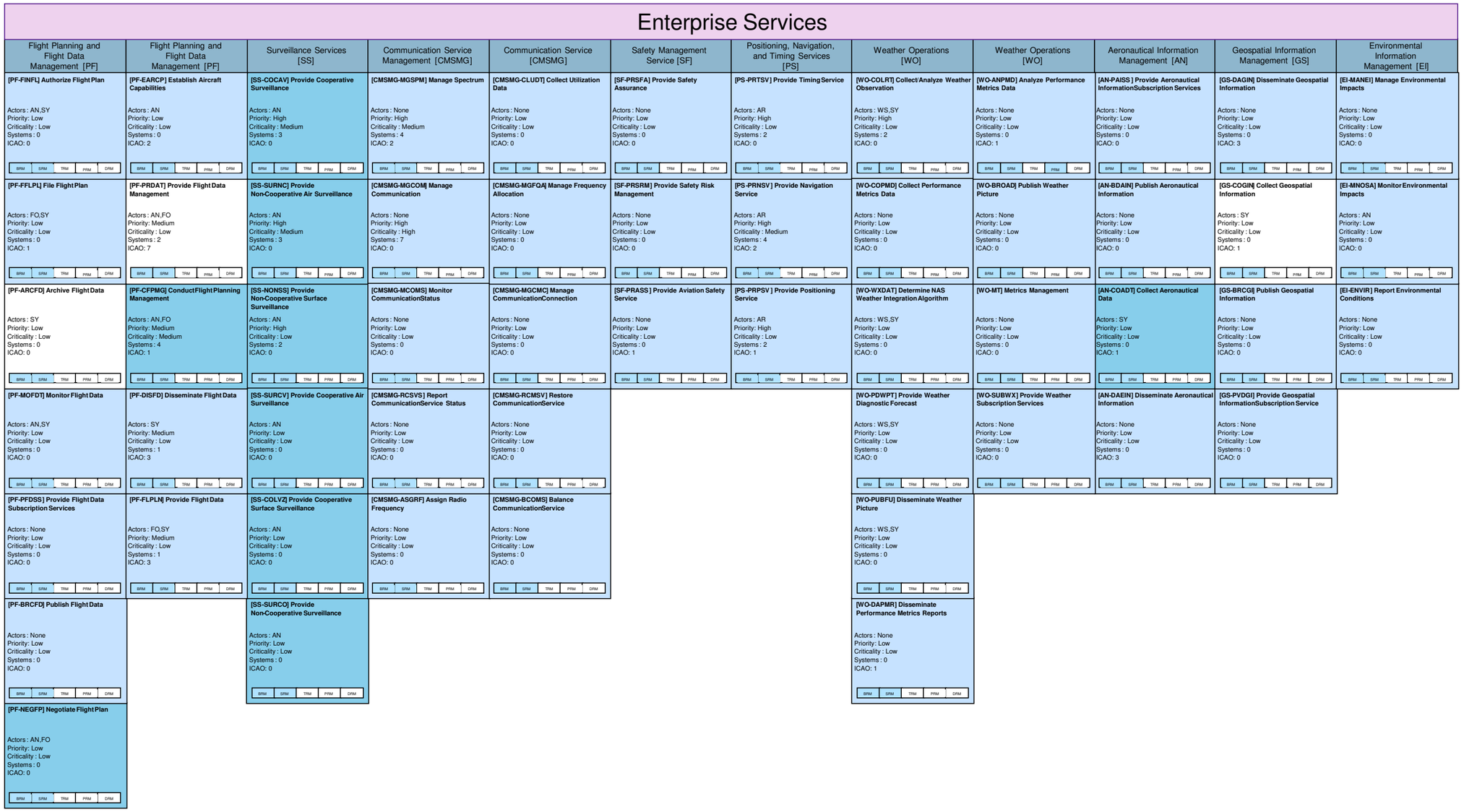

Figure 2: Enterprise Services ESAI

3.1.4.1 Enterprise Services ESAI Actor Table

Actor Code	Actor Name	Actor Description
AN	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
FO	Flight Operator	The flight Operator node represents the commercial entities responsible for providing, scheduling, provisioning, and staffing aircraft. The node also includes the ground side activities required to board and de-board passengers, baggage, and cargo, and the business operations necessary to keep the commercial enterprise viable.
AR	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
SY	System	An automation system
WS	Weather Service Provider	This operational node includes all the activities performed by Government organizations to provide aviation weather information products.

3.1.5 Enterprise Services FEA RM

The Enterprise Services Segment establishes the set of enterprise services available to NextGen subscribers for decision-making purposes. As depicted in figure 3, this segment describes functions under multiple Lines of Business, such as Air Transportation, Environmental Management, and Information and Technology Management, where services like weather forecasting, communication and information management services collect, analyze, and transform data into an information asset-base used throughout NextGen operational activities and by supporting systems to foster more efficient and effective access to NextGen-related information. The following table further describes the Enterprise Services Segment and identifies how each service function aligns to the other architectural layers of the NextGen EA Reference Architecture.

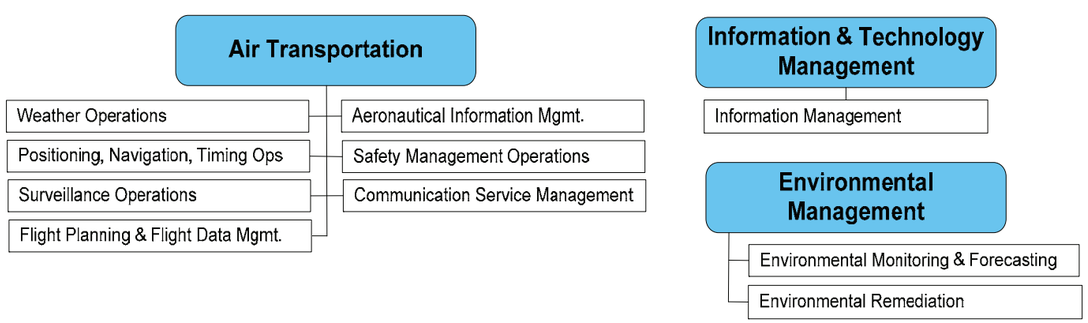

Figure 3: Enterprise Services FEA RM

3.1.6 Enterprise Services DoDAF products

List of Activity Models

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NextGen EA

Enterprise Services A1

1 of 2

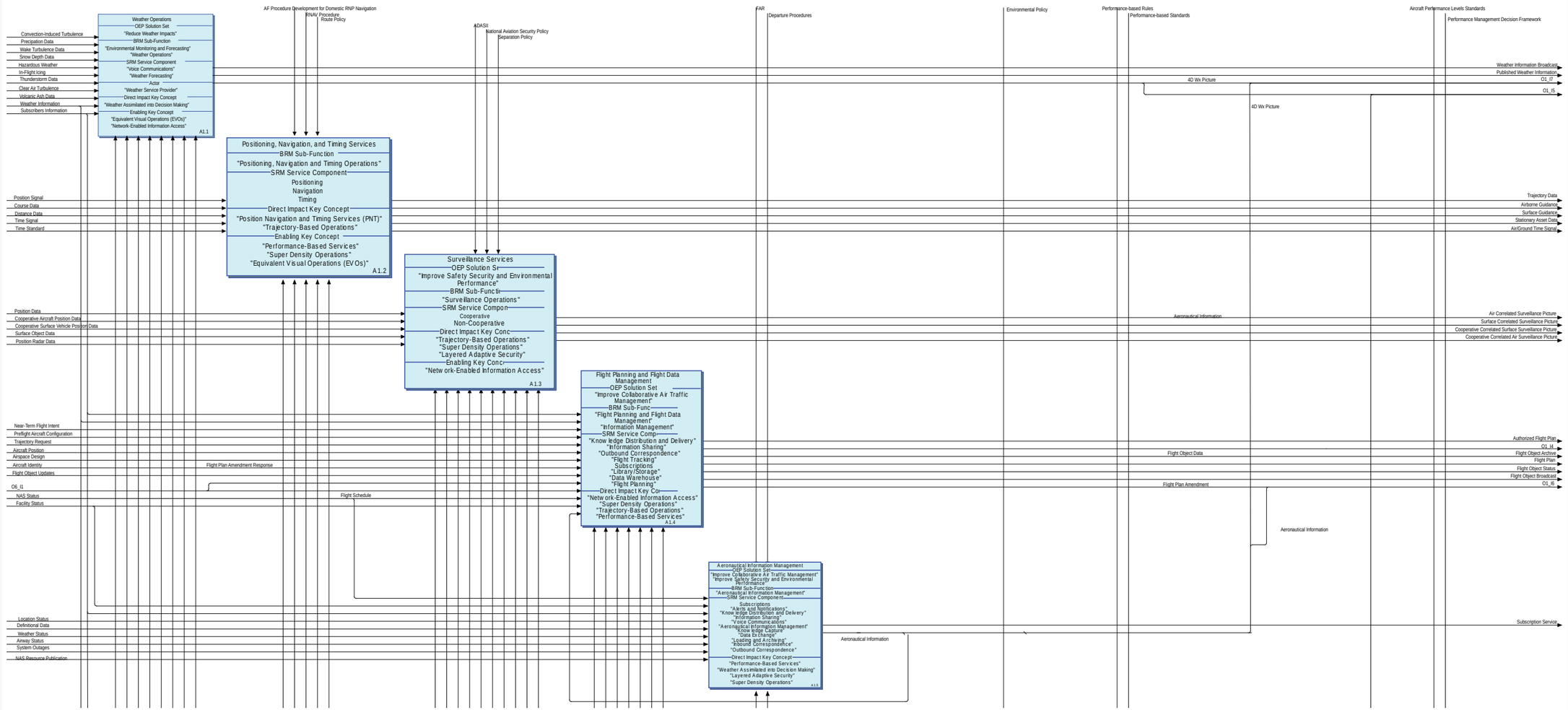
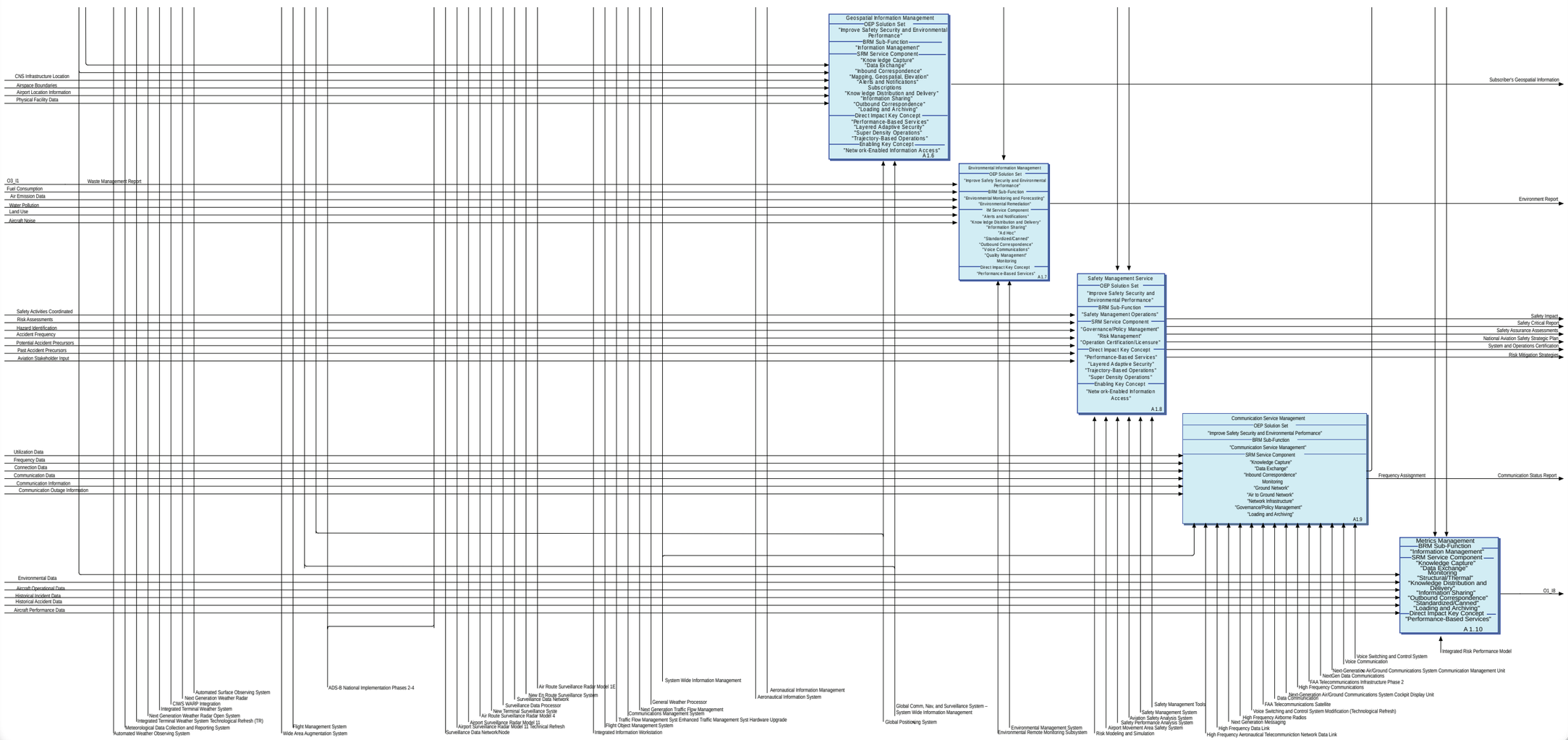


Figure 4 - 1 Enterprise Services Activity Model Diagram

NextGen EA
Enterprise Services A1

2 of 2



3.1.6.1 Weather Operations (1.1)

3.1.6.1.1 Description

Weather Operations enables the collection, analysis, and distribution of real-time and forecast weather to stakeholders. Weather information is tailored to the operational needs of those interested parties, maintaining a consistent view of weather information. Pre-flight and in-flight decisions are aided by weather services that assist the user in making tailored inquiries into the common weather picture. Other weather information such as alerts, advisories and warnings regarding significant weather changes are proactively published to stakeholders via digital communications.

3.1.6.1.2 Purpose

The purpose of Weather Operations provide the stakeholders an integrated, common picture of the weather situation. In general, stakeholders do not need meteorological expertise to interpret weather information. In addition, the weather service will be tailored to the user's needs reducing or eliminating the requirement for stakeholders to manually gather, interpret, and integrate diverse and sometimes conflicting weather data to realize a coherent picture of the weather situation.

3.1.6.1.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Reduce Weather Impacts	Reduced weather impact is a closely kin to the other capabilities. The focus here is in specific actions to improve the forecast or the use of forecast. Development if the weather product and ascertaining impact on individual flights and flows is a reduced weather impact issue. Note: The actual allocation in the response to individual flights etc. is C-ATM. The detection of the wake for purposes of changing pair-wise separation is reduce weather impact, inclusion of that data into traffic management tools for arrivals and departures would be high-density arr/departure terminals and airports.
NextGen Operational Improvements	Coordinated Ramp Operations Management	Surface movements of GSE are monitored and proactively managed, in real-time, to ensure the smooth, efficient, and safe flow of vehicular traffic. GSE has equipment to ensure accurate navigation during low-visibility conditions and to maintain clearance from active runway and taxiways. Congestion is reduced while safety and level of service are improved. Ramp operations management requirements for surveillance and communications that is compatible with those required for surface traffic management. Precise definition of ramp management vs surface management vs gate management is TBD. Waterfall deployment: a) OEP 2016 Start b) Top 100 2018 Start c) Other airports 2021 Start
NextGen Operational Improvements	Electronic VFR Operations for dependent parallel or converging runways	This OI allows additional reduction of arrival lateral spacing for very closely spaced parallel runways at OEP airports. This includes approaches with altitude offsets at suitable airports, and co-altitude approaches where necessary. This OI may result in more capacity than is achieved today, i.e., VMC rates may increase. This OI applies to runways that are closer than 2500 ft centerline to centerline and converging runways. This enables new runways to be built much closer to existing runways, potentially reducing the cost for new runway construction. Avoidance of wake vortices is an important consideration. Waterfall deployment: a) At selected locations b) All applicable OEP airports (2018+)
NextGen Operational Improvements	Electronic VFR Operations for independent parallel or converging runways	This OI allows maintaining VMC arrival and departure rates in IMC through use of onboard displays and alerting for independent parallel or converging runways. Using precision navigation, cooperative surveillance, and onboard algorithms and displays allows the reduction of lateral separation requirements for converging and parallel runway operations in IMC. Includes independent approaches to converging and parallel runways that are 4300 - 2500 ft centerline distances. The timing of implementation of this OI is strongly dependent on when an airline decides this is important and steps forward to advocate for it. Waterfall deployment: a) At selected locations b) All applicable OEP airports (2018+)
NextGen Operational Improvements	Advanced deicing, aniticing and snow removal operations	During winter weather, aircraft are anti-iced/deiced more efficiently. Icing holdover times are incorporated into 4DT in order to facilitate departure queuing. Deicing/anti-icing fluids are more effective with less environmental impact. Collection methods capture spent fluids for recycling.
NextGen Operational Improvements	All weather airport access	All-weather airport access is available where needed through a combination of complementary airborne and ground functionality to aid the pilot in approach guidance and acquisition of the runway environment for safe operations. All weather (Cat IIIc) approaches are available for all users where needed through a combination of complementary airborne and ground equipage. Implementation may involve on-board synthetic and enhanced vision systems, and ground-based augmentation systems (GBAS), and low-cost runway/taxiway lighting.
NextGen Operational Improvements	All-weather capability for Airside Facilities	Airside facilities are open during all weather conditions. Technology, systems, and procedures support airport operators in more effectively keeping airside facilities open and fully functional during all conditions. This includes the proactive scheduling of maintenance and weather-response activities (such as clearing runways of snow and ice). Delays and congestion that result from winter weather and non-nominal airfield conditions are reduced. Waterfall deployment: a) OEP 2016 Start b) Top 100 2018 Start c) Other airports 2021 start
NextGen Operational Improvements	Automation-assisted flight plan negotiation	Real-time, automation-assisted flight plan negotiation between the ANSP and operators provides operators the capability to optimize their business objectives in the presence of constraints. Flight Operations Center (FOC) automation and net-centric data-sharing mechanisms are implemented with service providers to allow flight planning feedback and negotiation mechanisms. FOCs gain more immediate feedback on formatting issues as well as feedback on when the proposed flight plan is likely to not be achieved due to other conditions that are identified. [Flight planners and operator flight planning automation interacts with the ANSP via a set of services that provide all stakeholders the opportunity to participate in the collaborative process. These services include a common flow strategy and trajectory analysis service that enables common situational awareness of current and projected NAS status and constraints. Operators with multiple aircraft involved in an initiative have the flexibility to adjust individual aircraft schedules and trajectories within those allocations to accommodate their own internal priorities. Automation monitors changing conditions, including traffic demand and weather trends, and identifies the need for dynamic refinement of Traffic Management Initiatives (TMIs).
NextGen Operational Improvements	Improved collaborative in-flight rerouting	Flight operators file multiple flight plans and ANSP selects the one that most efficiently meets flow management goals during operations, but may change to another selection during the flight as unexpected delays occur.
NextGen Operational Improvements	Improved collaborative pre-flight rerouting	Pre-flight rerouting to resolve en route flow problems caused by weather or congestion are improved with enhanced weather and demand predictions. Reroutes are targeted only to those flights predicted to be affected by the en route problems, resulting in fewer and shorter duration flight restrictions. Flight operators customize reroutes through flight plan preprocessing based on real-time impact analysis feedback to optimize their own business functions. Flight operators receive real-time feedback from the ANSP on the effect of flight operators planned flight if modification is necessary due to congestion or anticipated weather. Operators have access to universal pre-flight processor; airlines through their Flight Operations Centers (FOCs), other operators through a private service if they choose to pay to participate. Enablers: TFM information (re-routes, departure or en-route delays) provided to flight operators on a continuous basis. Operators have the capability to process TFM information.
NextGen Operational Improvements	Improved identification and mitigation of hazards	The risks of incidents and accidents are reduced by improving the identification and mitigation of latent and emergent safety hazards in the ATS. This OI involves shifting from reactive safety management to a more proactive approach that requires advancing the methods used to identify and mitigate latent and emergent safety risk in the ATS to reduce the risk of accidents and incidents. Vulnerabilities, hazards, threats, etc. are sought, identified, and managed before they result in incidents and accidents.
NextGen Operational Improvements	Improved integrated collaborative ground delay, pre-flight and in-flight rerouti	Rerouting TMIs are developed in collaboration with operators and are distributed across time horizons between pre-flight TFM and in-flight en route solutions. TFM specialists collaborate with operators to select efficient TMIs to solve flow problems. TMIs are distributed to manage ground delays, pre-flight rerouting, and airborne rerouting based on probabilities of weather predictions and other uncertainties. Conflict-free TFM initiatives for en route flights are provided to controllers and other ANSP personnel in a machine-executable form to expedite implementation.

Type	Name	Description
NextGen Operational Improvements	Near-all weather airport access	This provides affordable near-all-weather access to currently under-utilized regional, smaller commercial, and general aviation airports to support expanded commercial air service and viable air taxi service. Near all-weather airport access is available where needed through a combination of complementary airborne and ground functionality to aid the pilot in approach guidance and acquisition of the runway environment for safe operations. This improvement may not require synthetic vision and enhanced vision. This OI supports near-CAT 1, CAT 1, CAT 2 and CAT 3A, CAT 3B operations. Also included in this OI are improved Instrument Approach procedures and approach/runway lighting systems.
NextGen Operational Improvements	Reduced weather-related incidents	Weather-related incidents are reduced through equipage of aircraft with cockpit weather system technologies for enhanced situational awareness and decision making. Aircraft are equipped with icing detection and avoidance technologies, icing tolerant technologies, icing computational tools, airborne weather reporting sensor technologies, weather information data link systems technologies for ground-to-air dissemination, airborne weather reporting data link systems for air-to-ground and air-to-air dissemination, and turbulence detection, warning and alerting technologies. Improvements are needed in icing experimental methods, icing experimental databases, icing atmospheric characterization technologies, and icing education and training tools.
NextGen Operational Improvements	Surface Management Operations - Level 3	Aircraft and ground vehicle movement on airports in low visibility conditions is guided by moving map displays, CDTI, ADS-B (for flight vehicles), and a GSE Cooperative Surveillance System (for ground support equipment). Safety and efficiency of operations at some airports will also be enhanced by intelligent signage on the ground. Policy issue: Will this equipage be mandatory for access to some high-density airports during peak traffic times in low-visibility conditions, or will equipped aircraft be given priority access in low-visibility conditions but unequipped aircraft will be accommodated, or is this equipage simply optional. Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) some airports (Segment 2) b) OEP airports (Segment 3) c) top 100 airports (Segment 4) d) all commercial airports (Segment 6)
NAS Operational Improvements	ADS-B Separation	The air navigation service provider (ANSP) automation uses aircraft dependent surveillance broadcast in non-radar airspace to provide reduced separation and flight following. Improved surveillance enables ANSP to use radar-like separation standards and services.
NAS Operational Improvements	Automatic Hazardous Weather Alert Notification	Hazardous weather alerts are automatically sent to NAS users and air navigation service providers (ANSPs) via voice and data communications. Hazardous weather impacting NAS operations is detected, forecast, reported, and disseminated in real-time. Equipped aircraft and ground and space-based systems provide timely and accurate hazardous weather information.
NAS Operational Improvements	Deploy FIS-B Nationally	Flight Information Service-Broadcast (FIS-B) is deployed to provide weather services on the airport surface, in terminal and en route airspace to equipped aircraft. FIS-B improves flight deck situational awareness relative to hazardous weather and reduces frequency congestion. The air navigation service provider (ANSP) provides weather advisories to unequipped aircraft via other means.
NAS Operational Improvements	Full Operational Weather Capability	Reducing the impact of weather on NAS operations enhances NAS performance. NextGen network enabled weather (NNEW) facilitates widespread distribution and integration of weather products into ground and airborne decision support systems, enabling collaborative and dynamic NAS decision-making.
NAS Operational Improvements	Independent Operations to CSPR	Changes to wake rules are implemented based on improved wind measurements and wake transport prediction capabilities. Procedures allow staggered independent operations to closely spaced parallel or converging runways closer than 2500 feet, to maintain airport/runway capacity in lower visibility conditions.
NAS Operational Improvements	Integration of Weather Information into Decision Suppport Tools	Weather information is integrated with decision-oriented automation and supports decision-making processes. Trajectory-based weather information (observations, forecasts, model/algorithm data, and climatology, including surface observations and weather aloft) allows full integration of weather into traffic flow decision support tools. Decision support strategies are implemented directly through flight planning and air traffic management automation.

Type	Name	Description
NAS Operational Improvements	Turbulence and Icing Available on Meteorological Data Collection and Reporting S	The accuracy of weather forecast model output (e.g., in-flight icing and turbulence forecasts) improves as additional atmospheric conditions (humidity, turbulence, winds aloft, etc.) are provided by expanded data sources. Satellite and airborne nodes actively participate in collecting and transmitting network-enabled weather observations to ground-based systems for integration with other weather information.
NAS Operational Improvements	Wake Vortex Transport Prediction	Predicting the dissipation rate, 3-D movement and speed of wake vortices increases airport capacity by enabling reduced separation minima. Air navigation service provider (ANSP) automation and cockpit displays enable a common view of wake transport location. This capability enables reduced separation during periods of peak demand at airports conducting high-density operations.
NAS Operational Improvements	Wake Vortex Wind Based Procedures	Changes to wake rules are implemented based on improved wind measurements and wake transport prediction capabilities. Procedures allow more closely spaced operations to maintain airport/runway capacity.

3.1.6.1.4 NextGen Drivers

Type	Name	Description
Actor	Weather Service Provider	This operational node includes all the activities performed by Government organizations to provide aviation weather information products.
Actor	System	An automation system
ICAO ATMCP Requirement	R157	Standards for Meteorological Model accuracy and resolution shall be established, and performance requirements agreed, in order to facilitate the provision of appropriate user preferred trajectories.
ICAO ATMCP Requirement	R 33	The ATM system shall provide timely access to all relevant weather information for Demand and Capacity Balancing purposes
ICAO ATMCP Requirement	R 36	In order to increase service predictability, maximize capacity utilization and meet performance targets, the ATM system shall: a. utilize historical and forecasted weather information, including seasonal pattern and major weather phenomena; b. use information on changes in infrastructure status to increase predictability, maximize capacity utilization to meet performance targets; c. collaborate on post event analysis to support strategic planning; d. utilize projected traffic demand and planned trajectories; e. accommodate revisions to trajectory requests and resources status; f. collaborate on projections and responses; and facilitate collaboration on trajectory changes and traffic demands
ICAO ATMCP Requirement	R 75	The ATM system shall provide information systems that identify the nature of the information in terms of historical, current or planned.
CONOPS	5.3 WEATHER INFORMATION SERVICES	
Key Concept	Equivalent Visual Operations (EVO)	Improved information availability allows aircraft to conduct operations without regard for visibility or direct visual observation. For aircraft, this capability, in combination with PNT, enables increased accessibility, both on the airport surface and during arrival and departure operations. This capability also enables those providing services at airports (such as ATM or other ramp services) to provide services in all visibility conditions, leading to more predictable and efficient operations.

Type	Name	Description
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Weather Assimilated into Decisionmaking	By assimilating weather into decisionmaking, weather information becomes an enabler for optimizing NextGen operations. Directly applying probabilistic weather information to ATM decision tools increases the effective use of weather information and minimizes the adverse effects of weather on operations.
BRM Sub-Function	Environmental Monitoring and Forecasting	Environmental Monitoring and Forecasting involves the observation and prediction of environmental conditions. This includes but is not limited to the monitoring and forecasting of water quality, water levels, ice sheets, air quality, regulated and non-regulated emissions, as well as the observation and prediction of weather patterns and conditions.
BRM Sub-Function	Weather Operations	Weather Operations involves the activities related to the collection, analysis, and distribution of real-time weather forecasts to stakeholders. It also includes the activities related to proactively alerting, advising, and warning stakeholders via digital communications of significant weather changes in order to reduce weather impact on the Air Transportation System. Note: Some analytical aspects of weather forecasting are included in the Environmental Monitoring and Forecasting Sub-Function in the Environmental Management Line of Business.
SRM Service Component	Voice Communications	Defines the set of capabilities that provide telephony or other voice communications.
SRM Service Component	Weather Forecasting	Defines the set of capabilities that provide stakeholders with a common picture of current (i.e. real-time) and forecasted weather information, including weather attributes organized by horizontal, vertical, altitude, time, and probability components.

3.1.6.1.5 NextGen Future Solutions

Type	Name	Description
FAA Systems	Integrated Terminal Weather System Technological Refresh (TR)	The Integrated Terminal Weather System Technological Refresh (ITWS TR) provides a hardware/software upgrade enabling it to be sustained. Upgrades are implemented to the ITWS processor, the telecommunications module, with increases in RAM and the digital signal processor. In lieu of this TR to ITWS, much of its functionality may be incorporated into the GWP. However, the microburst prediction functionality may remain a ''local'' capability if latency requirements cannot be met.

Type	Name	Description
FAA Systems	Next Generation Weather Radar Open System	The Next Generation Weather Radar Open System (NEXRAD Open System) mechanism upgrade to NEXRAD began in 2004/2005 with an open systems architecture being implemented to the NEXRAD processor called RPG (Radar Product Generator) that consisted of new hardware, software, and modular configuration. This initial upgrade increased the radar processing and communications capability. Subsequent upgrades will be to the actual radar antenna implementing control via software that enables quicker, tailored scans resulting in more accurate products and improvement to overall system reliability and maintainability. This will also result in quicker refresh rates of radar imagery (precipitation intensity) on controllers scopes. This latter upgrade is scheduled for the 2006-20011 timeframe and will provide a foundation for system improvements including (1) range/velocity ambiguity mitigation, (2) obtain higher resolution data, and (3) achieve polarimetric capability. In addition the ORDA effort will address the obsolescence issue, improve supportability, replace the signal processor, and replace the control platform. NEXRAD is officially the Weather Surveillance Radar—1988 Doppler (WSR-88D). It is radar system is a network of weather surveillance Doppler radars serving weather prediction and forecasting needs of the National Weather Service (NWS), the U.S. Air Force Weather Agency (AFWA), and the Federal Aviation Administration (FAA). The WSR-88D radar consists of three primary functional areas: Radar Data Acquisition (RDA), Radar Product Generation (RPG), and the Open Principal User Processor (OPUP). The RDA subsystem performs real-time monitoring and control of the antenna, the transmitter and the receiver. It generates estimates of reflectivity, radial velocity, and velocity dispersion at each range cell along the radar beam. The RPG operates on the data from the RDA and generates meteorological products for the end users. The RPG also distributes products to end users, including the Advanced Weather Interactive Processing System (AWIPS), Open Principal User Processors (OPUP) and FAA Weather and Radar Processor (WARP). The end users provide equipment for interactive display and manipulation of the WSR-88D products. As the nation's primary weather radar system for now and the future, the WSR-88D must evolve to meet increasing demands for performance and capability, and to avoid technological obsolescence. Shortly after deployment was completed, the NWS and other NEXRAD agencies launched a NEXRAD Product Improvement (NPI) program to carryout and manage the evolutionary upgrades of the WSR-88D system. The NPI program launched the Open RDA (ORDA) project to facilitate near- and long-term improvements in the RDA area. Additional information at http://www.orda.roc.noaa.gov/
FAA Systems	CIWS WARP Integration	The CWI (CIWS WARP Integration) system will replace WARP Stage 3 sustainment as well as incorporate the functionality of the CIWS (Corridor Integrated Weather System) prototype. This is the first step in colsolidating system functinality within the FAA--in this case the weather processing functionality--that the agency will be adopting in the ensuing years. Later on, the FAA will likley integrate ITWS if it is deemed prudent to do so. In additon, guidance will be forthcoming from the JPDO Weather Product Team as they're working with other JPDO agencies regarding common mission requirements for sharing of weather data, products, and information.
FAA Systems	Automated Weather Observing System	The Automated Weather Observing System (AWOS) is a suite of sensors, which measure, collect, and disseminate weather data to help meteorologists, pilots, and flight dispatchers prepare and monitor weather forecasts, plan flight routes, and provide necessary information for takeoffs and landings. AWOSs are categorized as either Federal or Non Federal. The sensors measures weather parameters such as wind speed and direction, temperature and dew point, visibility, cloud heights and types, precipitation, and barometric pressure. AWOS provides minute-to-minute updates to pilots via very high frequency (VHF) radio.

Type	Name	Description
FAA Systems	Next Generation Weather Radar	The Next Generation Weather Radar (NEXRAD) system is a tri-agency (FAA, U.S. Department of Defense (DoD), and the National Weather Service (NWS)) network of Weather Surveillance Radar Model 88 Doppler (WSR-88D) systems. The Doppler weather radars identify and track heavy precipitation and thunderstorm attribute information such as high wind velocity, hail, tornado, wind shear, precipitation intensity, and echo tops products. Mosaics of multiple NEXRADs are provided by the Weather and Radar Processor (WARP) system to FAA controllers on the Display System Replacement (DSR) and to DoD and FAA oceanic controllers on the Microprocessor En Route Automated Radar Tracking System (MicroEARTS) to assist them in the control of aircraft in National Airspace System (NAS) airspace. NEXRAD products are also sent to traffic managers. Commercial weather vendors also receive NEXRAD products from the NWS. The FAA also has 12 NEXRAD systems outside of the contiguous United States in Hawaii (4), Alaska (7), and Puerto Rico (1). Additional information on NEXRAD can be found at URL http://www.roc.noaa.gov/
FAA Systems	Automated Weather Sensor System	AWSS is the latest version of an automated surface observing system to be fielded. It has the same capabilities as ASOS.
FAA Systems	Automated Surface Observing System	
NAS Activity	Provide Pre-Flight Weather Information	The activity which provides planning and preflight briefings containing current and forecast weather, including winds and temperatures, surface conditions, and any significant meteorological condition.
NAS Activity	Manage Weather Information	

3.1.6.2 Positioning, Navigation, and Timing Services (1.2)

3.1.6.2.1 Description

Position, Navigation, and Timing (PNT) Services provides the ability to accurately and precisely determine ones current location and orientation; desired path and position, apply corrections to course, orientation, and speed to attain the desired position; and to obtain accurate and precise time anywhere on the globe, within user defined timeliness parameters, which are enabled through PNT.

3.1.6.2.2 Purpose

The NextGen relies on PNT Services for the implementation and to conduct many of its basic operations, as well as trajectory-based operations. PNT reduces costs to the ANSP to provide better navigation services.

3.1.6.2.3 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	CDA with ground-based merging and spacing	Time-based and metered RNP routes are flown. Where practical, arrival routes support CDA operations under moderate to heavy traffic conditions, with ground-based automation providing conflict-free, time-based metering solutions over entire CDA trajectory to the runway. This enables aircraft with minimal equipage to perform CDAs. This OI requires an Implementation Decision to determine most effective method for negotiating time-based route and an Implementation Decision to determine how restricted the trajectory will be laterally, vertically, and in time, based on tradeoff between aircraft performance/ efficiency versus optimal use of airspace. Waterfall deployment: a) all runway ends at all OEP airports (Segment 4), b) all runways at the top 100 airports (Segment 5).
NextGen Operational Improvements	Increased IMC access-1	Performance-based navigation operations are used to provide greater IMC access to terrain-challenged airports and airports without expensive ground infrastructure. This OI also opens more options for airport access in various meteorological conditions. Waterfall deployment: a) to/from some runways at OEP airports (2009), b) to/from all runway ends at all OEP airports (2011), c) to/from all runways at the top 100 airports (Segment 5), d) to/from all runways serving commercial traffic (Segment 6).
NextGen Operational Improvements	Performance-based terminal operations	Performance-based navigation operations are used on terminal area arrival and departure routes to increase utilization of high-density terminal area airspace. Less noisy and fuel-optimal routes, including CDAs, are used where and when feasible, and environmental constraints are met through routing decisions and dispersion of traffic over multiple RNP routes. Waterfall deployment: a) to/from some runways at OEP airports (2009), b) to/from all runway ends at all OEP airports (2011), c) to/from all runways at the top 100 airports (Segment 5), d) to/from all runways serving commercial traffic (Segment 6).
NextGen Operational Improvements	Terminal area airborne merging and spacing for multiple runways	Arriving or departing aircraft to/from multiple runways are instructed to achieve and maintain a given spacing in time or distance from a designated lead aircraft as defined by an ANSP clearance. Onboard displays and automation support the aircraft conducting the merging and spacing procedure to enable accurate adherence to the required spacing. Flight crews are responsible for maintaining safe and efficient spacing from the lead aircraft. Responsibility for separation from all other aircraft remains with the ANSP. Assigned spacing may include a gap to allow for an intervening departure between subsequent arrivals. Mixed-equipage operations are supported; a spacing-capable aircraft can perform airborne spacing behind a non-capable aircraft as long as it is transmitting cooperative surveillance information. This OI includes complex merging and spacing, such as for crossing and diverging streams and includes development of ANSP capability and procedures. Because an aircraft is spacing from its lead aircraft according to whatever spacing timing he is assigned by the ANSP, dynamic spacing with specific pair wise spacing requirements are supported.
NAS Operational Improvements	ADS-B Separation	The air navigation service provider (ANSP) automation uses aircraft dependent surveillance broadcast in non-radar airspace to provide reduced separation and flight following. Improved surveillance enables ANSP to use radar-like separation standards and services.
NAS Operational Improvements	Flexible Entry for Oceanic Tracks	Flexible entry times into oceanic tracks or flows allow greater use of user-preferred trajectories.
NAS Operational Improvements	Oceanic Pairwise Maneuvers	Air navigation service provider (ANSP) and flight deck automation enhancements improve communication, navigation, and surveillance coverage in the oceanic domain. Aircraft transmission of position, velocity, and intent information allows the delegation of aircraft-to-aircraft separation when operationally advantageous for climbs, descents, crossing, and merging.

3.1.6.2.4 NextGen Drivers

Type	Name	Description
CONOPS	5.4 ROBUST PNT SERVICES	
Key Concept	Equivalent Visual Operations (EVO)	Improved information availability allows aircraft to conduct operations without regard for visibility or direct visual observation. For aircraft, this capability, in combination with PNT, enables increased accessibility, both on the airport surface and during arrival and departure operations. This capability also enables those providing services at airports (such as ATM or other ramp services) to provide services in all visibility conditions, leading to more predictable and efficient operations.

Type	Name	Description
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
Key Concept	Positioning, Navigation, and Timing (PNT) Services	PNT services are provided where and when needed, in accordance with demand and safety considerations, to enable reliable aircraft operations in nearly all conditions. Instead of being driven by the geographic location of a ground-based navigational aid (NAVAID), PNT services allow operators to define the desired flight path based on their own objectives.
Key Concept	Super-Density Arrival/Departure Operations	With increasing demand, an even greater need exists to achieve peak throughput performance at the busiest airports and in the busiest airspace. New procedures to improve airport surface movements, reduce spacing and separation requirements in place today, and better manage overall flows in and out of busy metropolitan airspace provide maximum use of the highest-demand airports. Airport terminals also maximize efficiency of egress and ingress, matching passenger and cargo flow to airside throughput while maintaining safety and security levels.
BRM Sub-Function	Positioning, Navigation and Timing Operations	PNT Operations involves the activities associated with accurately and precisely determining an aircraft's current location, orientation, desired path and position, and time, in order to apply corrections to course, orientation, and speed to attain the desired position. It also includes the activities associated with obtaining accurate and precise time anywhere on the globe within user defined timeliness parameters.
SRM Service Component	Positioning	Defines the set of capabilities that provide stakeholders with a highly accurate and reliable positioning source, improving surveillance capabilities and reduced separation standards.
SRM Service Component	Navigation	Defines the set of capabilities that enable area navigation (RNAV) as the standard method of navigation in the National Airspace System and provides the foundation for performance-based navigation operations.
SRM Service Component	Timing	Defines the set of capabilities that provide stakeholders with the precise synchronization of standard universal coordinated time to reduce the uncertainties associated with disparate timing sources.

3.1.6.2.5 NextGen Future Solutions

Type	Name	Description
NAS Activity	Manage Position Information	The supervision of the necessary activities involved in regulating the

3.1.6.3 Surveillance Services (1.3)

3.1.6.3.1 Description

This activity provides non-cooperative and cooperative surveillance of ground and airborne objects. Non-cooperative and cooperative surveillance systems will be designed and integrated to provide mutually supporting surveillance services information. The delegation of surveillance data allows each user to create a tailored view yet ensures that all users have a consistent "picture" of what is going on in their areas of interest. This consistent view is essential to supporting multiple agency missions and providing stakeholders and users with key information necessary to their operations. Numerous entities, government and private benefit from this delegated surveillance data intrinsic to NextGen.

3.1.6.3.2 Purpose

The purpose of the NextGen Surveillance Service provides improved surveillance accuracy, latency, integrity, and availability, that enables:

- Reduced Separation Standards
- Comprehensive tracking of aircraft and vehicles operating on the airport surface and within the ANSP-responsible airspace, along with sovereign airspace, to improve safety, security, and operational effectiveness.
- Increased Collaborative – Air Traffic Management (C-ATM) services within underutilized airspace and to underutilized airports
- Improved 4DT information, by providing aircraft intent and conformance monitoring
- Flexible assignment of multiple NextGen Surveillance sources to any operational position at any time, to enable more flexibility in assigning airspace to each position as needed to support distributed decision-making
- Adaptive flexible spacing and sequencing of aircraft on the ground and in the air.

3.1.6.3.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Safety Security and Environmental Performance	Involve activities which relate directly to safety, security and environment. This may relate to the deployment of a procedure and system if the purpose is directly about one of the three, e.g. runway status lights. However the inclusion of conformance taxi monitoring to a clearance as part of a Surface Traffic Management System would be categorized as High-Density since safety is only one of the purposes.
NextGen Operational Improvements	CDA with airborne merging and spacing	Fuel consumption and noise on approaches are reduced while maintaining throughput in heavy traffic through Continuous Descent Approaches (CDA) combined with airborne merging and spacing in moderate-to-heavy traffic. This OI requires airborne guidance to perform optimized CDA while staying within assigned lateral and vertical airspace corridor limits. This OI is complementary to OI-325 which delivers the aircraft at top of descent with spacing to initiate a successful CDA. This OI also enables reduced spacing buffers and hence increased throughput from precision airborne spacing. Mixed equipage can be supported within a single arrival stream, with some aircraft self-spacing and other aircraft managed by ANSP. This OI requires an Implementation Decision to determine appropriate trajectory restrictions laterally, vertically, and in time, based on tradeoff between aircraft performance/ efficiency versus optimal use of airspace.
NextGen Operational Improvements	CDA with ground-based merging and spacing	Time-based and metered RNP routes are flown. Where practical, arrival routes support CDA operations under moderate to heavy traffic conditions, with ground-based automation providing conflict-free, time-based metering solutions over entire CDA trajectory to the runway. This enables aircraft with minimal equipage to perform CDAs. This OI requires an Implementation Decision to determine most effective method for negotiating time-based route and an Implementation Decision to determine how restricted the trajectory will be laterally, vertically, and in time, based on tradeoff between aircraft performance/ efficiency versus optimal use of airspace. Waterfall deployment: a) all runway ends at all OEP airports (Segment 4), b) all runways at the top 100 airports (Segment 5).
NextGen Operational Improvements	Surface Management Operations - Level 1	This OI enhances surface operations to reduce delay and environmental impacts at target airports to manage surface traffic (aircraft and GSE) and generate taxi instructions.
NextGen Operational Improvements	Surface Management Operations - Level 2B	This OI increases efficiency and safety of surface traffic movement, with corresponding reduction in environmental impacts. Efficiency of surface movement is increased through the use of automation, on-board displays and data link of taxi instructions on arrival to properly equipped aircraft to reduce delay and environmental impacts and improve safety. This OI assumes development of surface automation that is fully integrated with airborne operations and applies this to surface management operations. This OI is an extension of OI 321 and contains those improvements as well.
NextGen Operational Improvements	Surface Management Operations - Level 4	Aircraft and ground vehicle movement on airports in zero/zero visibility conditions is guided by moving map displays, CDTI, ADS-B (flight vehicles), and a GSE Cooperative Surveillance System (for ground vehicles). Requires all present aircraft and ground vehicles to have cooperative surveillance (ADS-B out). Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) OEP airports (Segment 5) b) top 100 airports (Segment 6) c) all commercial airports (Segment 7)

Type	Name	Description
NAS Operational Improvements	ADS-B Separation	The air navigation service provider (ANSP) automation uses aircraft dependent surveillance broadcast in non-radar airspace to provide reduced separation and flight following. Improved surveillance enables ANSP to use radar-like separation standards and services.
NAS Operational Improvements	ADS-B Services to Secondary Airports	Expanded Automatic Dependent Surveillance-Broadcast (ADS-B) coverage, combined with other radar sources, provides equipped aircraft with radar-like services to secondary airports. Equipped aircraft automatically receive airborne broadcast traffic information. Surface traffic information is available at select non-towered satellite airports.
NAS Operational Improvements	Delegated Responsibility for Horizontal Separation	Enhanced surveillance and new procedures enable air navigation service providers (ANSP) to delegate aircraft-to-aircraft separation. Improved avionics and traffic information broadcast provide common situational awareness to the flight deck. Pilots implement delegated separation between equipped aircraft using established procedures.
NAS Operational Improvements	Expanded Traffic Advisory Services Using Digital Traffic Data	Surrounding traffic information is available to the flight deck, including automatic dependent surveillance (ADS) information and the rebroadcast of non-transmitting targets to equipped aircraft. Surveillance and traffic broadcast services improve situational awareness in the cockpit with more accurate and timely digital traffic data provided directly to aircraft avionics for display to the pilot.
NAS Operational Improvements	Flexible Entry for Oceanic Tracks	Flexible entry times into oceanic tracks or flows allow greater use of user-preferred trajectories.
NAS Operational Improvements	Full Surface Traffic Management with Conformance Monitoring	Improved surveillance tools for airport surface traffic management provide the air navigation service provider (ANSP), equipped aircraft, and airport operators the capability to predict, plan, and manage surface movements. Equipped vehicles provide surface traffic information in real-time to all parties of interest. A comprehensive view of aggregate traffic flows enables ANSP traffic management to project demand, balance runway assignments, and facilitate more efficient arrival and departure flows. Automation monitors surface operations conformance and updates the estimated departure clearance times to renegotiate the 4DT.
NAS Operational Improvements	NextGen Oceanic Procedures	Enhanced communication, surveillance, and flight deck avionics capabilities enable reduced oceanic separation minima when operationally advantageous and aircraft meet required total system performance requirements. Data communications between aircraft and between the aircraft and the air navigation service provider (ANSP) enable real-time control instructions by the ANSP and aircraft-to-aircraft delegation of separation authority. Accurate and immediate feedback of routing or altitude changes provides immediate acknowledgement for separation assurance, trajectory changes, and deviations around air traffic or weather.
NAS Operational Improvements	Oceanic Pairwise Maneuvers	Air navigation service provider (ANSP) and flight deck automation enhancements improve communication, navigation, and surveillance coverage in the oceanic domain. Aircraft transmission of position, velocity, and intent information allows the delegation of aircraft-to-aircraft separation when operationally advantageous for climbs, descents, crossing, and merging.
NAS Operational Improvements	Optimize Runway Assignments	Arrivals and departures are sequenced and staged to maintain throughput. Air navigation service provider (ANSP) automation uses arrival and departure-scheduling tools and 4DT agreements to flow traffic at high-density airports. Automation incorporates user provided gate assignments, requested runway, aircraft wake characteristics, and flight performance profiles. ANSP and airport operators monitor airport operational efficiency and make real-time adjustments to schedules and sequencing to optimize throughput.

3.1.6.3.4 NextGen Drivers

Type	Name	Description
ICAO ATMCP Requirement	R152	Where surveillance performance requirements are specified, they shall be determined on the basis of the accuracy of position determination [and subsequent display] required in a given volume of airspace and/or specific procedure to maintain appropriate levels of safety in respect of other hazards.

Type	Name	Description
CONOPS	5.5.2 Core Surveillance Services	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Surveillance Operations	Surveillance Operations involves the integration of non-cooperative and cooperative surveillance activities, which detect, identify and monitor ground and airborne objects to allow the creation of real-time situational awareness on the surface and air.
SRM Service Component	Cooperative	Defines the set of capabilities that allow the reliable, consistent, and unambiguous detection (i.e., multi-dimensional position) of airborne objects and other vehicles equipped with functioning avionics (i.e., surveillance sensors on the airframe) while in the air and on the ground.
SRM Service Component	Non-Cooperative	Defines the set of capabilities that allow an airborne object to be detected by ground-based, airborne, or space-based surveillance systems even if it does not have functional avionics equipment (i.e., surveillance sensors on the airframe) or when cooperative surveillance systems malfunction.

3.1.6.3.5 NextGen Future Solutions

Type	Name	Description
FAA Systems	Surveillance Data Network/Node	NAS surveillance systems, including radar and automatic dependent surveillance systems, will provide data to the Surveillance Data Network (SDN). The SDN will process the input surveillance data and publish Surveillance Data Objects (SDO) that will be made available to NAS and other users, including TSA, DOD, etc. Surveillance data availability supports 3-mile separation standards, gate-to-gate traffic management, seamless airspace and dynamic re-sectorization. Improved surveillance information is provided in a timely and consistent manner seamlessly across the NAS for operations, planning and decision-making. The information will be available to all user and services provider via SDO in near real time. This information enables decisions to be based on a shared common view of situations, even as conditions are changing. It is envisioned that the sharing of this information will be facilitated via a NAS FAA Telecommunication Information (FTI) system. Improved surveillance with SDOs will provide the automation higher quality of data for seamless surveillance, in combination with other capabilities and new procedures, enable capacity and safety improvements. These benefits accrue from increased situation awareness by decision makers and improved operation of decision support and analysis tools that use surveillance information enhancing safety.
FAA Systems	Surveillance Data Processor	Surveillance Data Processing, SDP, will receive surveillance reports from multiple sensors and sensor types including the ADS-B sensnors. Surveillance data format will be in accordance with the ASTERIX standard. A composite surveillance "picture" will be produced for manual controller use, to support separation assurance algorithms (conflict alert, MSAW, URET, etc) and to support the uplink of TIS-B and FIS-B information

Type	Name	Description
FAA Systems	Surveillance Data Network	National Airspace System (NAS) surveillance systems, including radar and automatic dependent surveillance (ADS) systems will provide surveillance data objects via the Surveillance Data Network (SDN), which is a sub-network of the proposed System Wide Information Management (SWIM) and the FAA Telecommunication Infrastructure (FTI). The published Surveillance Data Objects (SDO) will be made available to users of the National Airspace System (NAS), including the Transportation Security Administration (TSA), U.S. Department of Defense (DoD), and others. Surveillance data availability supports 3-mile separation standards, gate-to-gate traffic management, seamless airspace, and dynamic resectorization. Improved surveillance information is provided in a timely and consistent manner seamlessly across the NAS for operations, planning, and decision-making. The information will be available to all users and service providers via SDO in near real time. This information enables decisions to be based on a shared common view of situations, even as conditions are changing. Improved surveillance with SDOs will provide the automation higher quality of data for seamless surveillance and, in combination with other capabilities and new procedures, enable capacity and safety improvements. These benefits accrue from increased situation awareness by decision makers and improved operation of decision support and analysis tools that use surveillance information.
FAA Systems	ADS-B National Implementation Phases 2-4	To provide for a national deployment of ground-based stations to broadcast Flight Information Service (FIS), Traffic Information Services (TIS), and Automatic Dependent Surveillance (ADS) data.

3.1.6.4 Flight Planning and Flight Data Management (1.4)

3.1.6.4.1 Description

Flight Plan Filing and Flight Data Management Services provide support to flight operators for flight planning activities. These services also manage data related to a flight from the initial filing of a proposed flight to the closing of the flight plan and the archiving of the data to support performance management analysis.

3.1.6.4.2 Purpose

Flight plan filing provides an interactive flight planning capability for all users to file a user-preferred departure to destination flight profile. Flight Operators are encouraged to file flight plans containing the 4DT well in advance of the flight.

Flight Data Management Services manage the flight object and its related data throughout the flight. Flight Data Management Services ensure that ownership and integrity of the flight object and data are maintained throughout the flight. Flight Data Management Services also manage the delegation of flight information that is stored in the flight object based on a variety of request, such as specific flights or temporal and spatial boundaries.

3.1.6.4.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Collaborative Air Traffic Management	Collaborative ATM covers the both the strategic and tactical interactions with the customers to manage demand when the desired use of capacity can not be accommodated. C-ATM includes the flow programs as well as collaboration on procedures that will establish balance by shifting demand to less desirable capacity alternatives e.g. routings, altitudes, times.
NextGen Operational Improvements	Automation-assisted flight plan negotiation	Real-time, automation-assisted flight plan negotiation between the ANSP and operators provides operators the capability to optimize their business objectives in the presence of constraints. Flight Operations Center (FOC) automation and net-centric data-sharing mechanisms are implemented with service providers to allow flight planning feedback and negotiation mechanisms. FOCs gain more immediate feedback on formatting issues as well as feedback on when the proposed flight plan is likely to not be achieved due to other conditions that are identified. [Flight planners and operator flight planning automation interacts with the ANSP via a set of services that provide all stakeholders the opportunity to participate in the collaborative process. These services include a common flow strategy and trajectory analysis service that enables common situational awareness of current and projected NAS status and constraints. Operators with multiple aircraft involved in an initiative have the flexibility to adjust individual aircraft schedules and trajectories within those allocations to accommodate their own internal priorities. Automation monitors changing conditions, including traffic demand and weather trends, and identifies the need for dynamic refinement of Traffic Management Initiatives (TMIs).
NextGen Operational Improvements	Improved collaborative in-flight rerouting	Flight operators file multiple flight plans and ANSP selects the one that most efficiently meets flow management goals during operations, but may change to another selection during the flight as unexpected delays occur.

3.1.6.4.4 NextGen Drivers

Type	Name	Description
ICAO ATMCP Requirement	R 06	The ATM system shall provide global common aviation data standards and reference system to allow fusion and conflation and provide comprehensive situational awareness and conflict management.
ICAO ATMCP Requirement	R125	The ATM system shall operate on the basis that all operations are “known to the system.
CONOPS	2.6 TRANSFORMED FLIGHT OPERATIONS	
CONOPS	5.6 FLIGHT PLAN FILING AND FLIGHT DATA MANAGEMENT SERVICES	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users’ existing equipage, thus potentially maximizing the value of the service providers’ and users’ investments.
BRM Sub-Function	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.
BRM Sub-Function	Flight Planning and Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.
SRM Service Component	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.
SRM Service Component	Library/Storage	Defines the set of capabilities that support document and data warehousing and archiving.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Data Warehouse	Defines the set of capabilities that support the archiving and storage of large volumes of data.

Type	Name	Description
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Flight Planning	Defines the set of capabilities that optimize flights based on individual mission objectives, available aircraft, security and airspace constraints, and forecasted weather.
SRM Service Component	Flight Tracking	Defines the set of capabilities that monitor flight object data to track aircraft execution conformance against the flight plan (filed information) and subsequent instructions (clearances).
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.

3.1.6.4.5 NextGen Future Solutions

Type	Name	Description
NAS Activity	Convey Flight Plan	The activity of disseminating an active flight plan to the appropriate facilities.
NAS Activity	Execute Flight Planning Operation	To perform the activities necessary before flight,I.e., plan the route of flight, obtain a weather briefing, check NOTAMS, file the flight plan, etc.
NAS Activity	Manage Flight Plan	The activity of receiving and updating an active flight plan.
NAS Activity	Manage NOTAMS	Control or distribution of aeronautical information required by ATC and airmen

3.1.6.5 Aeronautical Information Management (1.5)

3.1.6.5.1 Description

This activity provides the capability for aeronautical information to be uploaded, received, and exchanged with more accuracy and in a timely manner. Aeronautical information includes : Current performance requirements for airspace access and operation, special use airspace status and activity, airspace affected by temporary flight restrictions, route information and performance metrics, system outages affecting Global Positioning System (GPS), Wide Area Augmentation System (WAAS), Local Area Augmentation System (LAAS), and other NAVAIDS, including lighting, weather status, such as convective activity, winds aloft, icing, etc. airport status information, including runway availability and planned long- and short-term activities affecting the airport such as construction, snow removal, etc. and definitional data for airspace boundaries, fixes, terminal procedures, runways, and other supporting information.

3.1.6.5.2 Purpose

The purpose of AIM is to provide the subscribers to the system data on the air transportation system in a timely and accurate manner. AIM provides all constraint and condition information (e.g. NOTAMs) to improve planning available to all users.

3.1.6.5.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Collaborative Air Traffic Management	Collaborative ATM covers the both the strategic and tactical interactions with the customers to manage demand when the desired use of capacity can not be accommodated. C-ATM includes the flow programs as well as collaboration on procedures that will establish balance by shifting demand to less desirable capacity alternatives e.g. routings, altitudes, times.
OEP Solution Set	Improve Safety Security and Environmental Performance	Involve activities which relate directly to safety, security and environment. This may relate to the deployment of a procedure and system if the purpose is directly about one of the three, e.g. runway status lights. However the inclusion of conformance taxi monitoring to a clearance as part of a Surface Traffic Management System would be categorized as High-Density since safety is only one of the purposes.
NextGen Operational Improvements	Electronic VFR Operations - Level 1	Visibility and cloud clearance requirements for VFR flights are reduced through use of onboard traffic displays, increasing utility of VFR operations. Electronic VFR provides the ability of an aircraft to transition through a light cloud layer or operate in lower visibility, using CDTI (with ADS-B or TIS B) to augment continuation of visual separation after initial visual contact.
NextGen Operational Improvements	All-weather capability for Airside Facilities	Airside facilities are open during all weather conditions. Technology, systems, and procedures support airport operators in more effectively keeping airside facilities open and fully functional during all conditions. This includes the proactive scheduling of maintenance and weather-response activities (such as clearing runways of snow and ice). Delays and congestion that result from winter weather and non-nominal airfield conditions are reduced. Waterfall deployment: a) OEP 2016 Start b) Top 100 2018 Start c) Other airports 2021 start
NextGen Operational Improvements	Reduced controlled flight into terrain	Controlled Flight Into Terrain (CFIT) is reduced through incorporation and integration of synthetic vision technologies and world-wide geospatial databases. Situational awareness enhancements utilize database, sensor, and hazard (terrain, traffic - surface and airborne, etc.) detection technologies merged with display symbology and precise GPS navigational information to create synthetic views of the aircraft's external environment for display to the flight crew. Regional databases and integrity monitoring technologies provide (acquire, verify, and maintain) worldwide geospatial databases suitable for synthetic vision applications.
NextGen Operational Improvements	Reduced human errors in detection and management of malfunctions and off-nominal	Human errors are reduced in detecting and managing malfunctions through off-nominal condition detection and alerting systems. System health monitoring, management, and interface technologies are incorporated in airborne and ground-based systems.
NextGen Operational Improvements	Reduced weather-related incidents	Weather-related incidents are reduced through equipage of aircraft with cockpit weather system technologies for enhanced situational awareness and decision making. Aircraft are equipped with icing detection and avoidance technologies, icing tolerant technologies, icing computational tools, airborne weather reporting sensor technologies, weather information data link systems technologies for ground-to-air dissemination, airborne weather reporting data link systems for air-to-ground and air-to-air dissemination, and turbulence detection, warning and alerting technologies. Improvements are needed in icing experimental methods, icing experimental databases, icing atmospheric characterization technologies, and icing education and training tools.
NextGen Operational Improvements	Surface Management Operations - Level 2B	This OI increases efficiency and safety of surface traffic movement, with corresponding reduction in environmental impacts. Efficiency of surface movement is increased through the use of automation, on-board displays and data link of taxi instructions on arrival to properly equipped aircraft to reduce delay and environmental impacts and improve safety. This OI assumes development of surface automation that is fully integrated with airborne operations and applies this to surface management operations. This OI is an extension of OI 321 and contains those improvements as well.
NextGen Operational Improvements	Surface Management Operations - Level 3	Aircraft and ground vehicle movement on airports in low visibility conditions is guided by moving map displays, CDTI, ADS-B (for flight vehicles), and a GSE Cooperative Surveillance System (for ground support equipment). Safety and efficiency of operations at some airports will also be enhanced by intelligent signage on the ground. Policy issue: Will this equipage be mandatory for access to some high-density airports during peak traffic times in low-visibility conditions, or will equipped aircraft be given priority access in low-visibility conditions but unequipped aircraft will be accommodated, or is this equipage simply optional. Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) some airports (Segment 2) b) OEP airports (Segment 3) c) top 100 airports (Segment 4) d) all commercial airports (Segment 6)

Type	Name	Description
NextGen Operational Improvements	Surface Management Operations - Level 4	Aircraft and ground vehicle movement on airports in zero/zero visibility conditions is guided by moving map displays, CDTI, ADS-B (flight vehicles), and a GSE Cooperative Surveillance System (for ground vehicles). Requires all present aircraft and ground vehicles to have cooperative surveillance (ADS-B out). Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) OEP airports (Segment 5) b) top 100 airports (Segment 6) c) all commercial airports (Segment 7)
NAS Operational Improvements	On-Demand NAS Information	National airspace system (NAS) and aeronautical information is available to users on demand. NAS and aeronautical information is consistent across applications and locations, and available to authorized subscribers and equipped aircraft. Proprietary and security sensitive information is not shared with unauthorized agencies/individuals.

3.1.6.5.4 NextGen Drivers

Type	Name	Description
ICAO ATMCP Requirement	R 06	The ATM system shall provide global common aviation data standards and reference system to allow fusion and conflation and provide comprehensive situational awareness and conflict management.
ICAO ATMCP Requirement	R 07	The airspace user shall make available relevant operational information to the ATM system.
ICAO ATMCP Requirement	R 13	The ATM system shall provide the status of ATM resources.
ICAO ATMCP Requirement	R 53	The airspace user shall make available the relevant operational information to the ATM system
ICAO ATMCP Requirement	R 54	The ATM system shall use relevant airspace user operational information to meet performance targets.
ICAO ATMCP Requirement	R 75	The ATM system shall provide information systems that identify the nature of the information in terms of historical, current or planned.
CONOPS	5.8 AERONAUTICAL INFORMATION SERVICES	
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
Key Concept	Weather Assimilated into Decisionmaking	By assimilating weather into decisionmaking, weather information becomes an enabler for optimizing NextGen operations. Directly applying probabilistic weather information to ATM decision tools increases the effective use of weather information and minimizes the adverse effects of weather on operations.
BRM Sub-Function	Aeronautical Information Management	Aeronautical Information Management involves the activities related to managing and disseminating near-real-time aeronautical information/data to critical stakeholders. Aeronautical information includes: current performance requirements for airspace access and operation, special use airspace status and activity, airspace affected by temporary flight restrictions, route information and performance metrics, and National Airspace System (NAS) status.
SRM Service Component	Alerts and Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.
SRM Service Component	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Voice Communications	Defines the set of capabilities that provide telephony or other voice communications.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Aeronautical Information Management	Defines the set of capabilities that allow aeronautical information to be uploaded, received, and exchanged with more accuracy and in a timely manner.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.
SRM Service Component	Inbound Correspondence	

3.1.6.5.5 NextGen Future Solutions

Type	Name	Description
FAA Systems	Aeronautical Information Management	The Aeronautical Information Management (AIM) system represents the evolution of the acquisition, storage, processing, and dissemination of aeronautical information in the National Airspace System (NAS). Aeronautical information is defined as any information concerning the establishment, condition, or change in any component (facility, service, or procedure, or hazard) of the NAS. Aeronautical information comes in two types with one being a somewhat static type, and the other being a more dynamic type. The static portion represents the aeronautical information baseline as of a particular date, while the dynamic portion updates particular aspects of the static portion due to system impacts or events. The static portion represents data that NAS automation systems and other users use to adapt their software to properly operate. The dynamic portion represents information typically contained in Notices to Airmen (NOTAMs) that indicate short-term changes to the static data. Many NAS systems support the acquisition, generation, and dissemination of the static aeronautical information. Information of this type includes airspace structures, airways, locations of NAS facilities, inter-facility letters of agreement, and memorandums of understanding, obstructions, standard procedures, airspace charts, etc. Several NAS systems also support the acquisition, generation, processing, and dissemination of the dynamic aeronautical information. Information of this type includes, facility outages, runway closures, temporary flight restrictions (TFR), airspace constraints, Significant Meteorological Advisory (SIGMETs), etc. This information must be disseminated to users and providers of air traffic services in a timely and efficient manner. The AIM system will provide the central point for the dissemination of high quality, configuration controlled, information to NAS systems, service providers, and users of the NAS. The AIM system will soon disseminate data based on the Aeronautical Information Exchange Model (AIXM) protocols.

Type	Name	Description
FAA Systems	Aeronautical Information System	The Aeronautical Information System (AIS) is a web-based replacement system for the obsolete, maintenance intensive, non-Year 2000 (Y2K) compliant Leased A and B service (LABS) GS-200 system. AIS provides a workstation to: (a) process flight plans (file, amend, cancel, store, and transmit) including International Civil Aviation Organization (ICAO) flight plans, (b) retrieve aeronautical weather from the Weather Message Switching Center Replacement (WMSCR) system, collectives and AIS, and (c) process Notice to Airmen (NOTAM) (collect and distribute). The AIS uses the FAA Internet Protocol (IP) Routed Multi-user Net (FIRMNet) for access by 60+ flight data (FD) specialists in Air Route Traffic Control Centers (ARTCCs), 60+ in Automated Flight Service Stations (AFSSs), and 10+ in FAA Regional Offices (ROs). It uses Non-classified IP Router Network (NIPRNet) for access by 60+ Military Base Operations (MBOs), dedicated lines for access by 20+ Meteorological Weather Processing Centers and National Airspace Data Interchange Network (NADIN) Packet-Switched Network (PSN) for access to the WMSCR system. Alternate access is available via toll free service to a local service provider. The primary AIS server is located in the National Network Control Center (NNCC) Salt Lake City facility and the back-up server is located in Chantilly Virginia. AIS underwent a technological refresh via replacement in 2004; hence the system is alternately referred to as AISR. Military base operations use AIS for flight plan input.
NAS Activity	Collect Aeronautical Information	To accumulate or assemble information required by ATC, pilots and flight operations which pertain to the condition of flight
NAS Activity	Distribute Aeronautical Information	The distribution of aeronautical information to ATC,pilots and flight operations
NAS Activity	Issue Airspace State Information	The activity of disseminating the current characteristics of a given volume of airsapce.
NAS Activity	Manage Aeronautical Information	

3.1.6.6 Geospatial Information Management (1.6)

3.1.6.6.1 Description

Geospatial Information Management (GIM) provides the capability to access and update information about the physical locations of fixed and mobile assets. Stakeholders are provided the capability to employ a common indexing structure to support the asset information development, exchange of information, as well as to query overall asset inventories. GIM manages current information, as well as maintaining historical information.

3.1.6.6.2 Purpose

The purpose of GIM is to support the dynamic airspace boundary adjustments, trajectory-based operations (TBO), interactive flight planning, and future decision support tools operating in a collaborative environment of delegated data. GIM depends on the ability to describe, communicate, and manage the characteristics of airspace and other asset information at increasingly finer levels of resolution. The increased precision and resolution of GIM data supports decision-making by the Air Navigation Service Provider (ANSP) as well as providing the basis for enterprise service for collaboration (such as C-ATM) among the ANSP, flight operators, and other stakeholders in the NextGen.

3.1.6.6.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Safety Security and Environmental Performance	Involve activities which relate directly to safety, security and environment. This may relate to the deployment of a procedure and system if the purpose is directly about one of the three, e.g. runway status lights. However the inclusion of conformance taxi monitoring to a clearance as part of a Surface Traffic Management System would be categorized as High-Density since safety is only one of the purposes.
NextGen Operational Improvements	Reduced controlled flight into terrain	Controlled Flight Into Terrain (CFIT) is reduced through incorporation and integration of synthetic vision technologies and world-wide geospatial databases. Situational awareness enhancements utilize database, sensor, and hazard (terrain, traffic - surface and airborne, etc.) detection technologies merged with display symbology and precise GPS navigational information to create synthetic views of the aircraft's external environment for display to the flight crew. Regional databases and integrity monitoring technologies provide (acquire, verify, and maintain) worldwide geospatial databases suitable for synthetic vision applications.
NextGen Operational Improvements	Reduced human errors in detection and management of malfunctions and off-nominal	Human errors are reduced in detecting and managing malfunctions through off-nominal condition detection and alerting systems. System health monitoring, management, and interface technologies are incorporated in airborne and ground-based systems.

3.1.6.6.4 NextGen Drivers

Type	Name	Description
Actor	System	An automation system
ICAO ATMCP Requirement	R 06	The ATM system shall provide global common aviation data standards and reference system to allow fusion and conflation and provide comprehensive situational awareness and conflict management.
ICAO ATMCP Requirement	R 13	The ATM system shall provide the status of ATM resources.
ICAO ATMCP Requirement	R 36	In order to increase service predictability, maximize capacity utilization and meet performance targets, the ATM system shall: a. utilize historical and forecasted weather information, including seasonal pattern and major weather phenomena; b. use information on changes in infrastructure status to increase predictability, maximize capacity utilization to meet performance targets; c. collaborate on post event analysis to support strategic planning; d. utilize projected traffic demand and planned trajectories; e. accommodate revisions to trajectory requests and resources status; f. collaborate on projections and responses; and facilitate collaboration on trajectory changes and traffic demands
ICAO ATMCP Requirement	R 75	The ATM system shall provide information systems that identify the nature of the information in terms of historical, current or planned.
CONOPS	5.9 GEOSPATIAL INFORMATION SERVICES	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.

Type	Name	Description
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.
SRM Service Component	Alerts and Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.
SRM Service Component	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Mapping, Geospatial, Elevation	
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.
SRM Service Component	Inbound Correspondence	

3.1.6.6.5 NextGen Future Solutions

Type	Name	Description
FAA Systems	Global Positioning System	The Global Positioning System (GPS) is a (nominal) 24 satellite constellation orbiting at approximately 12,000 miles above the earth in six equally-spaced planes. GPS satellites broadcast a precisely timed L-band signal that is received and processed onboard aircraft, in ground vehicles or hand-held receivers to determine the users three-dimensional position (i.e., latitude, longitude and altitude), velocity (if applicable) and the precise time of day. The GPS was developed, and is maintained & operated by, the U.S Department of Defense. GPS equipped aircraft can navigate on published jetways or utilize Area Navigation (RNAV) to fly a desired route between two locations. Approval has been granted for properly certified GPS avionics to be used as a primary means of navigation in oceanic airspace and in certain remote areas. In July 2003 the Wide Area Augmentation System (WAAS)was commissioned, thereby ensuring GPS/WAAS enabled primary navigation service throughout the NAS. WAAS ensures that GPS sourced data meets requirements for accuracy, availability, and integrity.
FAA Systems	Global Comm, Nav, and Surveillance System – System Wide Information Management	In 2006 the System Wide Information Management (SWIM) portion was separated and became National Airspace System (NAS) Capital Investment Plan (CIP) Project Number M31.01-01. This mechanism provides for the development, building and testing of the Global Communications, Navigation, and Surveillance System (GCNSS) related SWIM architecture and prototype system. Development activities include the following: Benefit-Cost Analysis, Trade Studies Analysis and development of the Functional Requirements Document, and the System Specification.

3.1.6.7 Environmental Information Management (1.7)

3.1.6.7.1 Description

Environmental Information Management (EIM) manages and monitors the environmental impacts and reports them to the various stakeholders. The NextGen is dependent on the effectiveness of EIM to manage and mitigate the environmental constraints to the capacity and the impacts due to aircraft operations.

3.1.6.7.2 Purpose

The purpose of EIM is to manage aviation's environmental impacts in a manner that limits or reduces their "footprint" and enables the air transportation system to meet the nations future transportation needs.

3.1.6.7.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Safety Security and Environmental Performance	Involve activities which relate directly to safety, security and environment. This may relate to the deployment of a procedure and system if the purpose is directly about one of the three, e.g. runway status lights. However the inclusion of conformance taxi monitoring to a clearance as part of a Surface Traffic Management System would be categorized as High-Density since safety is only one of the purposes.
NextGen Operational Improvements	Environmental performance-based air traffic operations	Environmental performance criteria are integrated into the ATM system design and specific operations such as access to airspace, RNP route selection.
NextGen Operational Improvements	Integrated environmental air traffic management planning and operations	An agile air traffic system has flexibility to achieve better fuel efficiency and emissions reductions enroute flight through the use of environmentally friendly procedures such as RNP procedures.

Type	Name	Description
NextGen Operational Improvements	Proactively address emergent environmental issues	This OI will address environmental issues such as maintaining water quality, lowering energy intensity, and minimizing aviation's impact on global climate change.
NextGen Operational Improvements	Reduced at-airport significant noise impact	Significant aircraft noise is contained within the airport boundary and/or neighboring compatible land uses.
NextGen Operational Improvements	Reduced terminal and enroute significant noise impact	Noise- and emissions-favorable RNP routes are used en route. This OI also includes reduction of noise over national parks.
NextGen Operational Improvements	Reduced unit level of aircraft emissions	Overall aircraft emissions can be reduced by improvements in aircraft engine and airframe technologies that reduce the unit generation of emissions by the aircraft and used by the fleet.
NextGen Operational Improvements	Reduced unit level of aircraft noise generation	Overall aircraft noise will be reduced by improvements in aircraft engine and airframe technologies that reduce the unit generation of noise by the aircraft and used by the fleet.
NextGen Operational Improvements	Reduced unit level of GSE emissions	Overall GSE emissions will be reduced by improvements in GSE engine and vehicle technologies that reduce the unit generation of emissions by the GSE and used at the airport.
NextGen Operational Improvements	Use of environmental management processes integrated across aviation community	This OI involves the use of the EMS framework to address, plan and mitigate environmental issues (see OI 6013)
NAS Operational Improvements	On-Demand NAS Information	National airspace system (NAS) and aeronautical information is available to users on demand. NAS and aeronautical information is consistent across applications and locations, and available to authorized subscribers and equipped aircraft. Proprietary and security sensitive information is not shared with unauthorized agencies/individuals.
NAS Operational Improvements	Use CDA to Support User Efficiency and Noise Reduction	Continuous descent approaches (CDAs) permit aircraft to remain at higher altitudes on approach to the airport and use lower power settings during descent. CDA arrival procedures provide for lower noise and more fuel-efficient operations. The air navigation service provider procedures and automation accommodate CDAs when operationally advantageous.

3.1.6.7.4 NextGen Drivers

Type	Name	Description
ICAO ATMCP Requirement	R128	The ATM system shall facilitate the appropriate community members to work with appropriate environmental authorities to ensure that an appropriate balance is struck between the need to mitigate the effects of ATM on the environment and the economic benefit to States derived from ATM.
ICAO ATMCP Requirement	R167	Environmental issues shall be considered in the design, development and operation of all aspects of the ATM system
ICAO ATMCP Requirement	R 30	Environmental issues shall be considered in the design, development and operation of the aerodrome
ICAO ATMCP Requirement	R 47	The evolution of ATM services shall be based on business, safety or environmental analysis as appropriate.
ICAO ATMCP Requirement	R127	The ATM system shall meet the expectation for the aviation industry to contribute to the reduction of impacts upon the environment, including noise, gaseous emissions, and effect on the amenity of particular areas, through the establishment and monitoring of agreed environmental performance targets.
CONOPS	7 ENVIRONMENTAL MANAGEMENT FRAMEWORK	
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Environmental Monitoring and Forecasting	Environmental Monitoring and Forecasting involves the observation and prediction of environmental conditions. This includes but is not limited to the monitoring and forecasting of water quality, water levels, ice sheets, air quality, regulated and non-regulated emissions, as well as the observation and prediction of weather patterns and conditions.
BRM Sub-Function	Environmental Remediation	Environmental Remediation supports the immediate and long-term activities associated with the correcting and offsetting of environmental deficiencies or imbalances, including restoration activities.
SRM Service Component	Alerts and Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.
SRM Service Component	Quality Management	Defines the set of capabilities that help determine the level of assurance that a product or service will satisfy certain requirements.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Ad Hoc	Defines the set of capabilities that support the use of dynamic reports on an as needed basis.
SRM Service Component	Standardized/ Canned	Defines the set of capabilities that support the use of preconceived or pre-written reports.
SRM Service Component	Voice Communications	Defines the set of capabilities that provide telephony or other voice communications.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.

Type	Name	Description
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.

3.1.6.7.5 NextGen Future Solutions

Type	Name	Description
FAA Systems	Environmental Remote Monitoring Subsystem	The function of the Environmental Remote Monitoring Subsystem (ERMS) is to monitor and control environmental equipment in a variety of National Airspace System (NAS) facilities. Some of the facility parameters that are monitored include fuel tank leakage, facility door opening, and engine generator startup. ERMS performs within the Remote Maintenance Monitoring System (RMMS) of the NAS as a fully functioning, remote monitoring subsystem (RMS). The RMMS interfaces with the Monitor and Control Facility (MCF) and the data are displayed via the Maintenance Automation System Software (MASS).
FAA Systems	Environmental Management System	

3.1.6.8 Safety Management Service (1.8)

3.1.6.8.1 Description

Safety Management Service (SMS) is the principle enabler of a safe and efficient higher capacity air transportation system. SMS is the process that provides a systematic method for managing safety. The four components of an SMS are policy, architecture, assurance, and safety promotion.

3.1.6.8.2 Purpose

The National-level SMS are provided to facilitate safety management and cooperation across aviation stakeholder organization. These services provided, among others, coordination of safety activities such as research and risk mitigation strategies, injection of critical and timely safety information and lessons learned, and regulatory oversight to assure the public of the safety of air transportation.

3.1.6.8.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Safety Security and Environmental Performance	Involve activities which relate directly to safety, security and environment. This may relate to the deployment of a procedure and system if the purpose is directly about one of the three, e.g. runway status lights. However the inclusion of conformance taxi monitoring to a clearance as part of a Surface Traffic Management System would be categorized as High-Density since safety is only one of the purposes.
NextGen Operational Improvements	Ground-based and on-board runway incursion alerting equipment.	This OI increases the safety of operations by reducing runway incursions. Operators of suitably equipped commercial, business, and general aviation aircraft receive runway incursion alerts from on-board detection systems and from complementary ground-based detection systems where implemented. Airborne equipage is not required to receive incursion alerts. This OI will require research and development of runway incursion alerting systems appropriate for business, general aviation, and commercial aircraft.
NextGen Operational Improvements	Improved aircraft upset prevention and recovery	Upset prevention and recovery is improved through equipage of aircraft with guidance and control countermeasures. Flight control systems are introduced to implement guidance and control measures for recovery from failure/loss-of-control conditions.
NextGen Operational Improvements	Improved identification and mitigation of hazards	The risks of incidents and accidents are reduced by improving the identification and mitigation of latent and emergent safety hazards in the ATS. This OI involves shifting from reactive safety management to a more proactive approach that requires advancing the methods used to identify and mitigate latent and emergent safety risk in the ATS to reduce the risk of accidents and incidents. Vulnerabilities, hazards, threats, etc. are sought, identified, and managed before they result in incidents and accidents.
NextGen Operational Improvements	Improved intermodal harmonization of safety regulations, procedures and standard	The risks of incidents and accidents are reduced among the modes of transportation through the intermodal harmonization and use of regulations, procedures and NextGen technologies. Aviation provides intermodal leadership to harmonize regulations, procedures and supporting systems and to facilitate the adoption of NextGen technologies, as applicable, to other modes of transportation. Accidents and incidents are reduced through the consistent application of safety management approaches and the use of NextGen technologies. Best practices are applied across the modes of transportation to improve safety of movement of goods/materials and people.

Type	Name	Description
NextGen Operational Improvements	Improved international harmonization of safety regulations, procedures and stand	The risks of incidents and accidents are reduced worldwide through international harmonization and use of regulations, procedures and NextGen technologies. U.S. provides international leadership to harmonize regulations, procedures and supporting systems and to facilitate the adoption of NextGen technologies worldwide.
NextGen Operational Improvements	Increased crash survivability - energy absorbing structures	Survivability is improved in survivable accidents by minimizing loads and maintaining habitable volumes through introduction of improved energy absorbing seats, restraints, and energy absorbing aircraft and ground structures.
NextGen Operational Improvements	Increased crash survivability - fire prevention and suppression	Accident survivability is increased through equipage of aircraft with fuel tank fire prevention and fire suppression system technologies. This OI includes development of a fuel tank inerting, cargo compartment suppression, breathing oxygen generation, elevated flash point fuel technologies, and improvements in ground response systems.
NextGen Operational Improvements	Integrated risk-based planning and management of security resources	Security resources are planned, and managed using an integrated, adaptive, and responsive risk management capability that supports risk-informed decisions among security mission partners. This capability harmonizes short and long term resource allocation and investments among partners to gain the highest possible security return on investment and to reduce the overall cost of security operations.
NextGen Operational Improvements	Reduced human errors in detection and management of malfunctions and off-nominal	Human errors are reduced in detecting and managing malfunctions through off-nominal condition detection and alerting systems. System health monitoring, management, and interface technologies are incorporated in airborne and ground-based systems.
NextGen Operational Improvements	Use of improved safety operational processes	The risks of incidents and accidents are reduced by the consistent application of safety management across the ATS (e.g., in the operation of aircraft, certification of equipment, the conduct of maintenance, etc.) which provides a systematic approach to achieve an acceptable level of safety risk and establishes the mechanisms necessary to deliver and monitor safety performance. Organizations will speak the same language regarding safety and safety management processes, tools, and information will be aligned within and among ATS participants.
NAS Operational Improvements	Full Surface Traffic Management with Conformance Monitoring	Improved surveillance tools for airport surface traffic management provide the air navigation service provider (ANSP), equipped aircraft, and airport operators the capability to predict, plan, and manage surface movements. Equipped vehicles provide surface traffic information in real-time to all parties of interest. A comprehensive view of aggregate traffic flows enables ANSP traffic management to project demand, balance runway assignments, and facilitate more efficient arrival and departure flows. Automation monitors surface operations conformance and updates the estimated departure clearance times to renegotiate the 4DT.

3.1.6.8.4 NextGen Drivers

Type	Name	Description
Actor	Safety	This operational node includes all activities by Government organizations related to assuring safety within the Air Transportation System.
Actor	Regulatory Authorities	Organizations and people responsible for certain aspects of the overall performance of the aviation industry, including aviation safety, environmental effects, and international trade; regulatory authorities include aviation safety regulators, certification authorities, standardization organizations, environmental regulators, and accident/incident authorities
ICAO ATMCP Requirement	R134	The safety of the ATM system, or its components and parts, shall be evidence based.
ICAO ATMCP Requirement	R135	In addition to traditional lag indicator statistical analysis in the ongoing monitoring of safety, lead indicator and causal factor analysis and treatment shall support ATM system safety.
ICAO ATMCP Requirement	R141	Common safety indicators shall be defined and used by all States.
ICAO ATMCP Requirement	R175	Ensure that safety data will be recorded, processed and analyzed centrally within State, region or group of States, taking into account the experience of existing State incident reporting schemes; furthermore safety data will be shared globally.
ICAO ATMCP Requirement	R 47	The evolution of ATM services shall be based on business, safety or environmental analysis as appropriate.
ICAO ATMCP Requirement	R 102	All safety practices and processes shall be explicit, and shall comply with the safety requirements and standards of ICAO, State regulatory authorities and other appropriate parties
CONOPS	8.3 SAFETY MANAGEMENT ENTERPRISE OPERATIONS	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Safety Management Operations	Safety Management Operations involves the activities related to the integration and management of safety (e.g., policy, procedures, risks, and assurance) throughout the Air Transportation System and stakeholder community. It also includes the activities associated with the identification and management of potential problems in a system, organization, or operations in order to mitigate safety risks and improve the level of safety in the US air transportation system, increase the safety of worldwide air transportation, and maintain aviations record as the safest mode of transportation.
SRM Service Component	Governance/Policy Management	Defines the set of capabilities that influence and determine decisions, sections, business rules and other matters within an organization.
SRM Service Component	Risk Management	Defines the set of capabilities the support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal; includes risk assessment and risk mitigation.
SRM Service Component	Operation Certification/ Licensure	Defines the set of capabilities that support the certification (e.g., licensing) and qualification of an operation, process, procedure, etc.

3.1.6.8.5 NextGen Future Solutions

Type	Name	Description
FAA Systems	Safety Management System	The Safety Management System (SMS) provides a systematic and integrated method for managing the safety of Air Traffic Services. Major elements of the SMS includes: Policy: The SMS requirements and responsibility for system function, as well as safety oversight. Architecture: The processes and practices used to assess changes to air traffic services for safety risk and the documentation of those changes. Assurance: The processes used to evaluate and ensure safety for air traffic services including evaluation inspection as well as data tracking and analysis. Safety promotion: communication and dessimination of safety information to strengthen safety culture and support integration of the SMS into operation.
FAA Systems	Safety Management Tools	The Safety Management Tools mechanism develops safety management tools such as the Integrated Safety Engineering Environment (ISEE) Tool, the Hazard Tracking and Risk Resolution (HTRR) Tool, and other safety management system (SMS) tools as necessary. The ISEE Tool contains descriptions of all safety analysis processes, descriptions of analysis tools, and will add airborne equipment certification analyses in accordance with SAE International Aerospace Recommended Practice (ARP) ARP-4761 standard. The ISEE Tool incorporates a computer-based training capability to permit on-line system safety training on each component or module in the ISEE. The HTRR Tool is a system that will be used to support National Airspace System (NAS) modernization projects in logging and tracking safety hazards to resolution. The FAA/EUROCONTROL Tool System Safety Techniques Toolbox (call the SMS Toolbox in the FAA) develops safety techniques to integrate into the ISEE Tool. In the future it could be used as a “how-to” guide on performing different safety assessments. It will step the reader through each analysis and explain what goes in each column of the worksheets and what each column means. Analyses include: Preliminary Hazard Analysis (PHA), System Hazard Analysis (SHA), Subsystem Hazard Analysis (SSHA), and Operating and Support Hazard Analysis (O&SHA), Fault Tree Analysis (FTA), Failure Modes and Effects Analysis (FMEA) and similar analytical techniques, Functional Hazard Analysis (FHA), Preliminary System Safety Assessment (PSSA), and Common Mode Analysis (CMA).
FAA Systems	Safety Performance Analysis System	The Safety Performance Analysis System (SPAS) is a client/server architecture, with high-end servers to calculate the SPAS algorithms. Internet query and browser technology, and a distributed wide-area network (WAN) are used to deliver information to the inspectors. The SPAS allows FAA inspectors to: access current FAA and industry safety-related data; create and maintain safety performance indicators; access support tools for planning and reporting surveillance activities; and retrieve underlying safety performance information.
FAA Systems	Aviation Safety Analysis System	The Aviation Safety Analysis System (ASAS) program provides the automation hardware, software, and communication infrastructure to support aviation safety information databases and access to them by the increasingly mobile FAA safety workforce. The workforce uses these databases to certify and regulate aircrews, airlines, and other licensed companies in aviation. Having information readily available improves the ability of safety personnel to develop safety regulations and oversee the civil aviation industry. The information technology infrastructure and software systems also enhance data and information sharing. Additional information: National Aviation Safety Data Analysis Center (NASDAC) at URL http://www.faa.gov/safety/data_statistics/nasdac/
FAA Systems	Airport Movement Area Safety System	The Airport Movement Area Safety System (AMASS) with Airport Surface Detection Equipment (ASDE) provides controllers with automatically generated visual and aural alerts of potential runway incursions and other potential unsafe conditions. AMASS includes the Terminal Automation Interface Unit (TAIU) that processes arrival data from the Airport Surface Detection Equipment (ASDE-3). AMASS adds an automation enhancement to the ASDE-3 and tracks the movement of aircraft and ground vehicles on the airport surface and presents the data to the tower controllers via the ASDE display. AMASS integrates and displays data from ASDE-3 and the Runway Status Lights (RWSL).
FAA Systems	Airport Movement Area Safety System-1	The Airport Movement Area Safety System (AMASS) with Airport Surface Detection Equipment (ASDE) provides controllers with automatically generated visual and aural alerts of potential runway incursions and other potential unsafe conditions. AMASS includes the Terminal Automation Interface Unit (TAIU) that processes arrival data from the Airport Surface Detection Equipment (ASDE-3). AMASS adds an automation enhancement to the ASDE-3 and tracks the movement of aircraft and ground vehicles on the airport surface and presents the data to the tower controllers via the ASDE display. AMASS integrates and displays data from ASDE-3 and the Runway Status Lights (RWSL).

3.1.6.9 Communication Service Management (1.9)

3.1.6.9.1 Description

Communication Service (CS) provides the service to exercise executive, administrative, and supervisory direction of the service that enables voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.

3.1.6.9.2 Purpose

The purpose of CS is to improve voice communications, bandwidth capacity, and ensure there is no single point of failure in the system. CS ensures widespread access to secure, accurate, current, and timely information and the capability to delegate this information securely among the operational entities.

3.1.6.9.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Safety Security and Environmental Performance	Involve activities which relate directly to safety, security and environment. This may relate to the deployment of a procedure and system if the purpose is directly about one of the three, e.g. runway status lights. However the inclusion of conformance taxi monitoring to a clearance as part of a Surface Traffic Management System would be categorized as High-Density since safety is only one of the purposes.
NextGen Operational Improvements	Integrated command and control of security resources for incident response and r	Security and defense service providers jointly manage security resources and respond to security incidents by using an integrated security command and control capability that includes unified security operations protocols, communications, procedures, and tactics. This provides a seamless aviation security operation systems that are adaptive and responsive to the emerging threats.
NextGen Operational Improvements	Integrated high-risk flight management and risk mitigation	Flights are continually monitored and assessed risks. High risk flights are identified using an integrated risk assessment capability. Notifications are provided to the ANSP and the defense/security service providers to coordinate integrated response for risk mitigation facilitate by improved communications and information sharing.
NextGen Operational Improvements	Integrated risk-based planning and management of security resources	Security resources are planned, and managed using an integrated, adaptive, and responsive risk management capability that supports risk-informed decisions among security mission partners. This capability harmonizes short and long term resource allocation and investments among partners to gain the highest possible security return on investment and to reduce the overall cost of security operations.
NextGen Operational Improvements	Net-centric security situational awareness and management of airport.	Information fusion of all data inputs at airport to a central airport operations center, connecting data, intelligence, predictive systems, imagery and risk analysis to national and regional systems. This OI builds off of NEO backbone to support routine and emergency decision-making.
NAS Operational Improvements	ADS-B Separation	The air navigation service provider (ANSP) automation uses aircraft dependent surveillance broadcast in non-radar airspace to provide reduced separation and flight following. Improved surveillance enables ANSP to use radar-like separation standards and services.
NAS Operational Improvements	Expanded Conflict Resolution via Data Communication	In trajectory-based airspace, decision support tools support the air navigation service provider (ANSP) by identifying conflicts/complexity/density conditions and providing alternatives to resolve the conditions. These alternatives include proposed trajectories that are exchanged with the operator via data communications. This allows multi-step solutions that are not subject to constraints imposed by voice.
NAS Operational Improvements	Flexible Entry for Oceanic Tracks	Flexible entry times into oceanic tracks or flows allow greater use of user-preferred trajectories.

Type	Name	Description
NAS Operational Improvements	Initial Conflict Resolution via Voice	The air navigation service provider (ANSP) uses voice to resolve potential conflicts using rank-ordered resolutions provided by automation. Automation enables ANSP to accommodate pilot requests for trajectory changes by providing conflict detection, trial flight planning, and an optimal ranking of resolutions.
NAS Operational Improvements	Oceanic Pairwise Maneuvers	Air navigation service provider (ANSP) and flight deck automation enhancements improve communication, navigation, and surveillance coverage in the oceanic domain. Aircraft transmission of position, velocity, and intent information allows the delegation of aircraft-to-aircraft separation when operationally advantageous for climbs, descents, crossing, and merging.
NAS Operational Improvements	Use Aircraft Provided Intent Data to Improve Conflict Resolution	Air navigation service provider (ANSP) automation uses aircraft position broadcast reports, velocity, and intent data to provide tactical and strategic separation services and more efficient flows. Aircraft exchange of intent data enables aircraft-to-aircraft delegated separation authority when operationally advantageous.
NAS Operational Improvements	Use Aircraft Provided Intent Data to Improve Flow Conflict Resolution	Air navigation service provider (ANSP) automation uses aircraft provided intent data (4D trajectory contracts) to improve modeling of conflict-free flows at high-density airports. Conformance monitoring tools ensure 4D trajectories reflect the aircraft's actual and intended state.
NAS Operational Improvements	Use Data Messaging to Provide Flow and Taxi Assignments	Surface traffic management incorporates flow and taxi instructions into data messages and delivers them to the flight deck. At high-density airports clearances and amendments, requests, NAS status, airport flows, weather information, and surface movement instructions are issued via data communications.

3.1.6.9.4 NextGen Drivers

Type	Name	Description
ICAO ATMCP Requirement	R132	In supporting ATM expectations, the developers of telecommunication systems shall ensure that adequate radio spectrum is available and that harmful interference from such systems will be neither caused to, nor received from, other authorized users. Frequency and spectrum allocation and management assistance programs shall be established and/or maintained.
ICAO ATMCP Requirement	R148	The ATM system shall be based on a principle of reducing voice communications as far as is practicable. "Routine transmissions", including position reporting, should be conducted via data link. This will apply to all phases of flight, and where practical on the ground.
ICAO ATMCP Requirement	R173	The communication mediums/protocols used to support interoperability (both the determination of and provisioning of services across discontinuities) shall be agreed upon in conformance with internationally approved, open and non-proprietary standards (i.e. the specification of the mediums/protocols and their operational performance must be freely-available).
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Communication Service Management	Communication Service Management involves the activities related to managing the command, control, and communications systems and networks that provide real-time services to enable voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.

Type	Name	Description
SRM Service Component	Governance/Policy Management	Defines the set of capabilities that influence and determine decisions, sections, business rules and other matters within an organization.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Ground Network	Defines the set of capabilities that support ground-to-ground information sharing (e.g., facilities, communication and data infrastructure, people, and systems) and provide service providers access to surveillance, communications, and flight data management regardless of physical location.
SRM Service Component	Air to Ground Network	Defines the set of capabilities that provide near-real time critical voice/data communications to flight crew and flight deck that ensures data is available for flight deck automation (i.e., avionics to support flight crew decision-making) as well as real-time data to the Air Navigation Service Provider (ANSP) on the operational aspects of flights.
SRM Service Component	Network Infrastructure	Defines the set of capabilities that provide infrastructure security and service continuity through virtual and physical facilities to enable flexible ground and air-to-ground communication networks.
SRM Service Component	Inbound Correspondence	
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.

3.1.6.9.5 NextGen Future Solutions

Type	Name	Description
FAA Systems	Next-Generation Air/Ground Communications System Communication Management Unit	The Next-Generation Air-Ground Communications System Communication Management Unit (NEXCOM CMU) is a device that routes data to and from the NEXCOM radios, and incoming data to the appropriate cockpit display. This may be a standalone unit, part of a multifunctional display (MFD) or it may be implemented as part of a Flight Management System (FMS).
FAA Systems	NextGen Data Communications	To meet the Next Generation Air Transportation (NextGen) system timetable, the acquisition of air/ground data communications components must begin no later than fiscal year (FY) 2008. This project provides for the development of system level requirements, research to support procedures development and rule making changes, as well as the acquisition of the chosen means for data communications transmission between the aircraft and the ground and the automation functions for air traffic control message generation and exchange. This program will introduce a new capability into the National Airspace System (NAS). Alternatives analyses that will be conducted during FY 2006 and 2007 will determine the most cost-effective solution for introducing these capabilities, and the best ways to leverage existing infrastructure and automation.

Type	Name	Description
FAA Systems	System Wide Information Management	The System Wide Information Management (SWIM) program provides the technology for precise information sharing among users including a common air surveillance picture, improved data exchange, and situational awareness. This system is a command and response database that draws information from other systems and makes it available to authorized users. This system provides the potential for reduced separation standards for Air Traffic Management (ATM) and flight conformance monitoring for homeland security. The SWIM program will improve utilization of airspace by providing users with information on heavily loaded air traffic control (ATC) sectors and other factors that would impact flight delays. It is part of the future planning to upgrade automation systems and provide more accurate and timely information for all system users. This program will demonstrate the effectiveness of seamless information sharing between Flight Operations Centers and air traffic controllers using SWIM. The SWIM program will also provide important business case information, technical analysis and documentation to support the decision process for future National Airspace System (NAS) capacity improvements.
FAA Systems	Voice Switching and Control System	Note: The Voice Switching and Control System (VSCS) program office is seeking a final investment decision (FID) with the FAA Joint Resources Council (JRC) in August 2006. The Voice Switching and Control System (VSCS) provides the Air Route Traffic Control Center (ARTCC) air traffic controller with ground/ground voice switching interfacility and intrafacility communications and remote control access to air/ground radio equipment for controller-to-pilot communications. The VSCS replaced the aging ground-to-ground switching equipment and the air-to-ground circuits with a single integrated, computer-controlled, digital voice switching system, which greatly improves air traffic safety with clearer voice communications. The VSCS provided as government furnished property (GFP) communications requirement for inclusion in the common console in the Display System Replacement (DSR). Delivery and implementation of the VSCS Training and Backup System (VTAB) and VSCS Console Equipment (VCE) will be completed.
FAA Systems	Next-Generation Air/Ground Communications System Cockpit Display Unit	The Next-Generation Air/Ground Communications System Cockpit Display Unit (NEXCOM CDU) displays NEXCOM messages in aircraft cockpit. This display may be a standalone device or may be part of a multifunction, switchable, display unit.
FAA Systems	Next Generation Messaging	The Next Generation Messaging (NEXGEN Messaging) program is the FAA's enterprise-wide messaging system with a 10-year life cycle. NEXGEN currently serves approximately 43,000 messaging users with twelve message stores located at the nine regional offices, the two centers, and at headquarters. NEXGEN provides support through a three-tier system, which includes 1,200 local support personnel, 12 Regional Messaging Administration Teams, and 24 hours per day, 7 days a week (24/7) National Help Desk.
FAA Systems	Data Communication	none
NAS Activity	Manage Communications Service	To exercise executive, administrative, and supervisory direction of the service that enables voice and /or data transmission between and /or among properly equipped airborne platform(s) and one or more ground stations.

3.1.6.10 Metrics Management (1.10)

3.1.6.10.1 Description

Metrics Management collects information to improve performance. Metrics on overall ATM performance include collecting metrics on all levels in the air transportation system (i.e., airports, national airspace, environments, etc).

3.1.6.10.2 Purpose

The purpose of Metrics Management is to switch to real-time (operational impact) reviews of the system safety and performance in lieu of historical-based anaylsis, which then allows:

- Use of onboard data monitoring to manage individual aircraft safety among the COIs
- Use of inter-aircraft data to provide inter-element compliance and performance data to systems
- Enhanced use of aircraft-ground monitoring of operational characteristics in the decision making process.

3.1.6.10.3 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Integrated environmental air traffic management planning and operations	An agile air traffic system has flexibility to achieve better fuel efficiency and emissions reductions enroute flight through the use of environmentally friendly procedures such as RNP procedures.
NextGen Operational Improvements	Proactively address emergent environmental issues	This OI will address environmental issues such as maintaining water quality, lowering energy intensity, and minimizing aviation's impact on global climate change.

3.1.6.10.4 NextGen Drivers

Type	Name	Description
CONOPS	9.3 PERFORMANCE MANAGEMENT ENTERPRISE SERVICES	
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Structural/Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.
SRM Service Component	Standardized/ Canned	Defines the set of capabilities that support the use of preconceived or pre-written reports.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.

Type	Name	Description
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.

3.1.6.10.5 NextGen Future Solutions

Type	Name	Description
NAS Activity	Monitor System Performance	A means for checking or viewing a group of interacting, interelated, or independent elements froming a complex whole, the execution of same

3.1.6.11 Weather Operations (1.1)

3.1.6.11.1 Description

Weather Operations enables the collection, analysis, and distribution of real-time and forecast weather to stakeholders. Weather information is tailored to the operational needs of those interested parties, maintaining a consistent view of weather information. Pre-flight and in-flight decisions are aided by weather services that assist the user in making tailored inquiries into the common weather picture. Other weather information such as alerts, advisories and warnings regarding significant weather changes are proactively published to stakeholders via digital communications.

3.1.6.11.2 Purpose

The purpose of Weather Operations is to provide the stakeholders an integrated, common picture of the weather situation. In general, stakeholders do not need meteorological expertise to interpret weather information. In addition, the weather service will be tailored to the user's needs reducing or eliminating the requirement for stakeholders to manually gather, interpret, and integrate diverse and sometimes conflicting weather data to realize a coherent picture of the weather situation.

Enterprise Services A1

Weather Operations A1.1

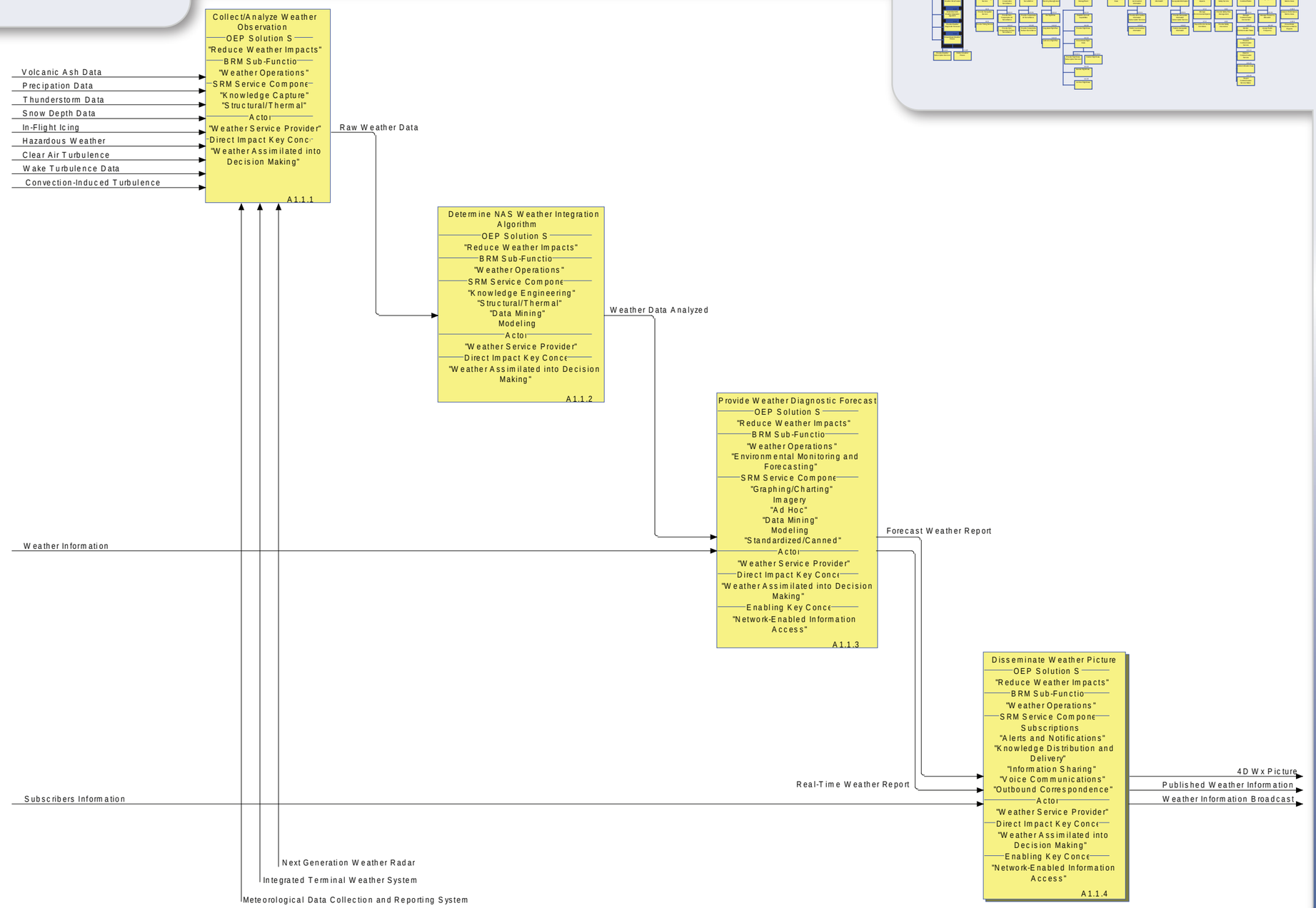


Figure 5 - 1.1 Weather Operations Activity Model Diagram

Notes

GEORGETO
323 GTN
GEORGETO
DCA
WASHINGTON
DCA
Chan 47
NOTE: Prob
of D
LOM
OXONN
332 DC
I-DCA 5.6
DCA
R-186
R-295
PISCA INT
I-DCA 10.7
R-274
DCA
R-185
10 NM
2500 to Pisca Int
321° (3.1) and
LOC (3)
LATAS
OTT 12.2
500
2000
DCA R-325
111.0
GTN
323
OXONN
LOM/INT
I-DCA 5.6
I-DCA
MM
TDZE
15
CATEGORY
A
B
S-ILS 1
215/18
S-LOC 1
480/24
465 (500-½)
620-1
660-1

3.1.6.12 Collect/Analyze Weather Observation (1.1.1)

3.1.6.12.1 Description

This activity configures the weather sensors, gather weather data via ground sensors, satellite sensors, and aircraft sensors (i.e., UAS, GA), and it performs the analysis of the collected weather data.

3.1.6.12.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Reduce Weather Impacts	Reduced weather impact is a closely kin to the other capabilities. The focus here is in specific actions to improve the forecast or the use of forecast. Development if the weather product and ascertaining impact on individual flights and flows is a reduced weather impact issue. Note: The actual allocation in the response to individual flights etc. is C-ATM. The detection of the wake for purposes of changing pair-wise separation is reduce weather impact, inclusion of that data into traffic management tools for arrivals and departures would be high-density arr/departure terminals and airports.
NextGen Operational Improvements	Ground-based and on-board runway incursion alerting equipment.	This OI increases the safety of operations by reducing runway incursions. Operators of suitably equipped commercial, business, and general aviation aircraft receive runway incursion alerts from on-board detection systems and from complementary ground-based detection systems where implemented. Airborne equipage is not required to receive incursion alerts. This OI will require research and development of runway incursion alerting systems appropriate for business, general aviation, and commercial aircraft.

3.1.6.12.3 NextGen Drivers

Type	Name	Description
Actor	Weather Service Provider	This operational node includes all the activities performed by Government organizations to provide aviation weather information products.
Actor	System	An automation system
CONOPS	5.3.2 Weather Information Operations	
Key Concept	Weather Assimilated into Decisionmaking	By assimilating weather into decisionmaking, weather information becomes an enabler for optimizing NextGen operations. Directly applying probabilistic weather information to ATM decision tools increases the effective use of weather information and minimizes the adverse effects of weather on operations.
BRM Sub-Function	Weather Operations	Weather Operations involves the activities related to the collection, analysis, and distribution of real-time weather forecasts to stakeholders. It also includes the activities related to proactively alerting, advising, and warning stakeholders via digital communications of significant weather changes in order to reduce weather impact on the Air Transportation System. Note: Some analytical aspects of weather forecasting are included in the Environmental Monitoring and Forecasting Sub-Function in the Environmental Management Line of Business.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Structural/Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.

3.1.6.12.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Meteorological Data Collection and Reporting System	
FAA Systems	Integrated Terminal Weather System	The Integrated Terminal Weather System (ITWS) is a new technology that helps make air traffic flow more efficient in periods of adverse weather at NAS pacing airports. ITWS is an air traffic management (ATM) tool that provides air traffic managers, controllers and airline dispatchers highly accurate, easily understood and immediately useable graphical weather information and hazard alerts on a single, integrated color display. ITWS uses highly sophisticated meteorological algorithms to integrate and analyze data from multiple FAA and NWS sources, including data from the Terminal Doppler Weather Radar (TDWR), Airport Surveillance Radar Model 9 (ASR-9) weather channel, Next Generation Weather Radar (NEXRAD) or WSR-88, Low-Level Windshear Alert System (LLWAS), Automated Weather Observing System (AWOS) Data Acquisition System (ADAS), aircraft observatiosn from Meteorological Data Collection and Reporting System (MDCRS), and NWS gridded model data, to display current and near-term forecasts of weather conditions and hazards in the terminal area. From ADAS, ITWS gets 1-minute ASOS data and ground-stroke lightning data. The ITWS will provide aviation-oriented weather products via situation displays to air traffic control (ATC) personnel in Airport Traffic Control Tower (ATCT), Terminal Radar Approach Control (TRACON), and Air Route Traffic Control Center (ARTCC) facilities, as well as in the David J. Hurley Air Traffic Control System Command Center (ATCSCC). The data are immediately usable without further meteorological interpretation. In addition, ITWS subsumes Terminal Weather Information for Pilots (TWIP) functionality (depictions of impacting weather to jetliner flight decks via ARINC) from TDWR. The Integrated Terminal Weather System (ITWS) program was rebaselined on May 3, 2004. Through fiscal year (FY) 2006: 15 systems had been ordered, delivered, installed, and commissioned. Service was provided at 19 airports of which 14 were OEP airports and four were support systems. Current plans call for the first phase of ITWS to deploy 22 operational systems providing coverage for 35 airports, of which 28 are Operational Evolution Plan (OEP) airports. The second phase, which is not included in the current funding profile, will deploy 12 more operational sites, including one additional OEP airport. Prototype ITWS units at four sites serve seven airports, of which six are OEP airports, and will continue in operation until they are replaced by production systems that incorporate the Terminal Convective Weather Forecast (TCWF) performance improvement. In FY 2006 the program is on track to complete the development of the TCWF capability and complete installation of an ITWS in the New York city area.
FAA Systems	Next Generation Weather Radar	The Next Generation Weather Radar (NEXRAD) system is a tri-agency (FAA, U.S. Department of Defense (DoD), and the National Weather Service (NWS)) network of Weather Surveillance Radar Model 88 Doppler (WSR-88D) systems. The Doppler weather radars identify and track heavy precipitation and thunderstorm attribute information such as high wind velocity, hail, tornado, wind shear, precipitation intensity, and echo tops products. Mosaics of multiple NEXRADs are provided by the Weather and Radar Processor (WARP) system to FAA controllers on the Display System Replacement (DSR) and to DoD and FAA oceanic controllers on the Microprocessor En Route Automated Radar Tracking System (MicroEARTS) to assist them in the control of aircraft in National Airspace System (NAS) airspace. NEXRAD products are also sent to traffic managers. Commercial weather vendors also receive NEXRAD products from the NWS. The FAA also has 12 NEXRAD systems outside of the contiguous United States in Hawaii (4), Alaska (7), and Puerto Rico (1). Additional information on NEXRAD can be found at URL http://www.roc.noaa.gov/

3.1.6.13 Determine NAS Weather Integration Algorithm (1.1.2)

3.1.6.13.1 Description

This activity determines the weather heuristic to provide out to stakeholders.

3.1.6.13.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Reduce Weather Impacts	Reduced weather impact is a closely kin to the other capabilities. The focus here is in specific actions to improve the forecast or the use of forecast. Development if the weather product and ascertaining impact on individual flights and flows is a reduced weather impact issue. Note: The actual allocation in the response to individual flights etc. is C-ATM. The detection of the wake for purposes of changing pair-wise separation is reduce weather impact, inclusion of that data into traffic management tools for arrivals and departures would be high-density arr/departure terminals and airports.

3.1.6.13.3 NextGen Drivers

Type	Name	Description
Actor	Weather Service Provider	This operational node includes all the activities performed by Government organizations to provide aviation weather information products.
Actor	System	An automation system
CONOPS	5.3.2 Weather Information Operations	
Key Concept	Weather Assimilated into Decisionmaking	By assimilating weather into decisionmaking, weather information becomes an enabler for optimizing NextGen operations. Directly applying probabilistic weather information to ATM decision tools increases the effective use of weather information and minimizes the adverse effects of weather on operations.
BRM Sub-Function	Weather Operations	Weather Operations involves the activities related to the collection, analysis, and distribution of real-time weather forecasts to stakeholders. It also includes the activities related to proactively alerting, advising, and warning stakeholders via digital communications of significant weather changes in order to reduce weather impact on the Air Transportation System. Note: Some analytical aspects of weather forecasting are included in the Environmental Monitoring and Forecasting Sub-Function in the Environmental Management Line of Business.
SRM Service Component	Knowledge Engineering	Defines the set of capabilities that support the translation of knowledge from an expert into the knowledge base of an expert system.
SRM Service Component	Structural/Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.
SRM Service Component	Data Mining	Defines the set of capabilities that provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.
SRM Service Component	Modeling	Defines the set of capabilities that develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.

3.1.6.13.4 NextGen Future Solutions

3.1.6.14 Provide Weather Diagnostic Forecast (1.1.3)

3.1.6.14.1 Description

This activity provides the weather diagnostic forecast by performing ensemble forecast modeling.

3.1.6.14.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Reduce Weather Impacts	Reduced weather impact is a closely kin to the other capabilities. The focus here is in specific actions to improve the forecast or the use of forecast. Development if the weather product and ascertaining impact on individual flights and flows is a reduced weather impact issue. Note: The actual allocation in the response to individual flights etc. is C-ATM. The detection of the wake for purposes of changing pair-wise separation is reduce weather impact, inclusion of that data into traffic management tools for arrivals and departures would be high-density arr/departure terminals and airports.

3.1.6.14.3 NextGen Drivers

Type	Name	Description
Actor	Weather Service Provider	This operational node includes all the activities performed by Government organizations to provide aviation weather information products.
Actor	System	An automation system
CONOPS	5.3 WEATHER INFORMATION SERVICES	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Weather Assimilated into Decisionmaking	By assimilating weather into decisionmaking, weather information becomes an enabler for optimizing NextGen operations. Directly applying probabilistic weather information to ATM decision tools increases the effective use of weather information and minimizes the adverse effects of weather on operations.
BRM Sub-Function	Environmental Monitoring and Forecasting	Environmental Monitoring and Forecasting involves the observation and prediction of environmental conditions. This includes but is not limited to the monitoring and forecasting of water quality, water levels, ice sheets, air quality, regulated and non-regulated emissions, as well as the observation and prediction of weather patterns and conditions.
BRM Sub-Function	Weather Operations	Weather Operations involves the activities related to the collection, analysis, and distribution of real-time weather forecasts to stakeholders. It also includes the activities related to proactively alerting, advising, and warning stakeholders via digital communications of significant weather changes in order to reduce weather impact on the Air Transportation System. Note: Some analytical aspects of weather forecasting are included in the Environmental Monitoring and Forecasting Sub-Function in the Environmental Management Line of Business.
SRM Service Component	Graphing/Charting	Defines the set of capabilities that support the presentation of information in the form of diagrams or tables.
SRM Service Component	Imagery	Defines the set of capabilities that support the creation of film or electronic images from pictures or paper forms.
SRM Service Component	Data Mining	Defines the set of capabilities that provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.
SRM Service Component	Ad Hoc	Defines the set of capabilities that support the use of dynamic reports on an as needed basis.

Type	Name	Description
SRM Service Component	Standardized/ Canned	Defines the set of capabilities that support the use of preconceived or pre-written reports.
SRM Service Component	Modeling	Defines the set of capabilities that develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.

3.1.6.14.4 NextGen Future Solutions

3.1.6.15 Disseminate Weather Picture (1.1.4)

3.1.6.15.1 Description

This activity will provide the fused 4D weather picture in consumable format for automation systems and stakeholders, this activity will also provide the weather heuristic out to stakeholders.

3.1.6.15.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Reduce Weather Impacts	Reduced weather impact is a closely kin to the other capabilities. The focus here is in specific actions to improve the forecast or the use of forecast. Development if the weather product and ascertaining impact on individual flights and flows is a reduced weather impact issue. Note: The actual allocation in the response to individual flights etc. is C-ATM. The detection of the wake for purposes of changing pair-wise separation is reduce weather impact, inclusion of that data into traffic management tools for arrivals and departures would be high-density arr/departure terminals and airports.
NextGen Operational Improvements	Improved collaborative pre-flight rerouting	Pre-flight rerouting to resolve en route flow problems caused by weather or congestion are improved with enhanced weather and demand predictions. Reroutes are targeted only to those flights predicted to be affected by the en route problems, resulting in fewer and shorter duration flight restrictions. Flight operators customize reroutes through flight plan preprocessing based on real-time impact analysis feedback to optimize their own business functions. Flight operators receive real-time feedback from the ANSP on the effect of flight operators planned flight if modification is necessary due to congestion or anticipated weather. Operators have access to universal pre-flight processor; airlines through their Flight Operations Centers (FOCs), other operators through a private service if they choose to pay to participate. Enablers: TFM information (re-routes, departure or en-route delays) provided to flight operators on a continuous basis. Operators have the capability to process TFM information.
NAS Operational Improvements	Near Real Time Dissemination of Weather Information to All Ground and Air Users	NextGen Network Enabled Weather (NNEW) provides near real-time notification of changing weather situations to strategic and tactical decision-makers. The update frequency of weather information is commensurate with the need to react to unanticipated, rapidly changing circumstances. Near real-time weather information integrated into decision-support automation systems enables airspace or configuration changes (e.g., realigning sectors, flows, or runway configurations) based on changing or forecast weather conditions.

3.1.6.15.3 NextGen Drivers

Type	Name	Description
Actor	Weather Service Provider	This operational node includes all the activities performed by Government organizations to provide aviation weather information products.
Actor	System	An automation system

Type	Name	Description
CONOPS	5.3 WEATHER INFORMATION SERVICES	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Weather Assimilated into Decisionmaking	By assimilating weather into decisionmaking, weather information becomes an enabler for optimizing NextGen operations. Directly applying probabilistic weather information to ATM decision tools increases the effective use of weather information and minimizes the adverse effects of weather on operations.
BRM Sub-Function	Weather Operations	Weather Operations involves the activities related to the collection, analysis, and distribution of real-time weather forecasts to stakeholders. It also includes the activities related to proactively alerting, advising, and warning stakeholders via digital communications of significant weather changes in order to reduce weather impact on the Air Transportation System. Note: Some analytical aspects of weather forecasting are included in the Environmental Monitoring and Forecasting Sub-Function in the Environmental Management Line of Business.
SRM Service Component	Alerts and Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.
SRM Service Component	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Voice Communications	Defines the set of capabilities that provide telephony or other voice communications.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.

3.1.6.15.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Issue Automatic Terminal Information Service Information	An activity that provides advance noncontrol airport/terminal area and meteorological information to aircraft.

3.1.6.16 Disseminate Weather Picture (1.1.4)

3.1.6.16.1 Description

This activity will provide the fused 4D weather picture in consumable format for automation systems and stakeholders, this activity will also provide the weather heuristic out to stakeholders.

Enterprise Services A1

Weather Operations A1.1

Disseminate Weather Picture A1.1.4

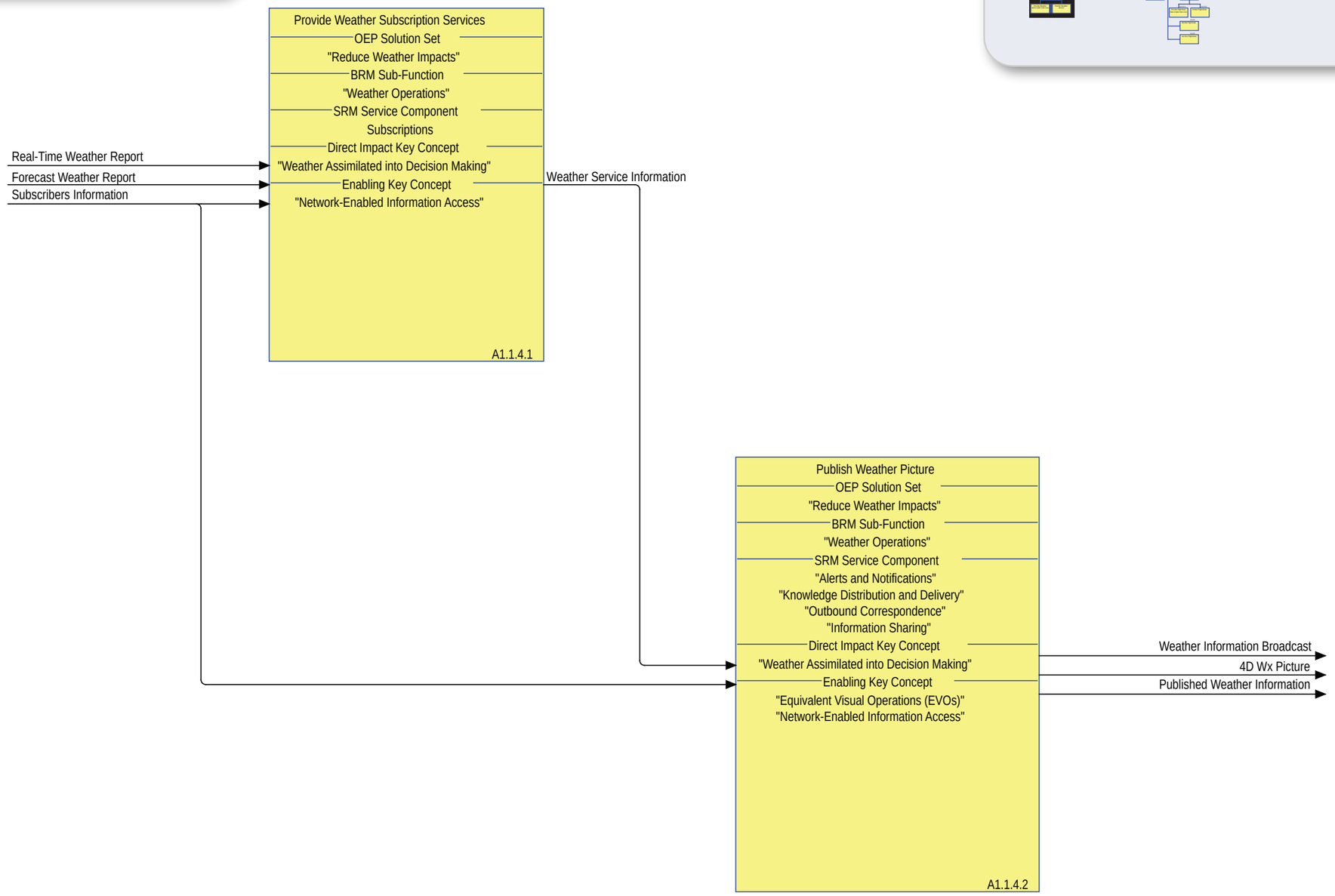


Figure 6 - 1.1.4 Disseminate Weather Picture Activity Model Diagram

3.1.6.17 Provide Weather Subscription Services (1.1.4.1)

3.1.6.17.1 Description

This activity allows automation systems and stakeholders to subscribe to published fused real-time weather data (pre-flight and in-flight).

3.1.6.17.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Reduce Weather Impacts	Reduced weather impact is a closely kin to the other capabilities. The focus here is in specific actions to improve the forecast or the use of forecast. Development if the weather product and ascertaining impact on individual flights and flows is a reduced weather impact issue. Note: The actual allocation in the response to individual flights etc. is C-ATM. The detection of the wake for purposes of changing pair-wise separation is reduce weather impact, inclusion of that data into traffic management tools for arrivals and departures would be high-density arr/departure terminals and airports.
NextGen Operational Improvements	Improved collaborative pre-flight rerouting	Pre-flight rerouting to resolve en route flow problems caused by weather or congestion are improved with enhanced weather and demand predictions. Reroutes are targeted only to those flights predicted to be affected by the en route problems, resulting in fewer and shorter duration flight restrictions. Flight operators customize reroutes through flight plan preprocessing based on real-time impact analysis feedback to optimize their own business functions. Flight operators receive real-time feedback from the ANSP on the effect of flight operators planned flight if modification is necessary due to congestion or anticipated weather. Operators have access to universal pre-flight processor; airlines through their Flight Operations Centers (FOCs), other operators through a private service if they choose to pay to participate. Enablers: TFM information (re-routes, departure or en-route delays) provided to flight operators on a continuous basis. Operators have the capability to process TFM information.

3.1.6.17.3 NextGen Drivers

Type	Name	Description
CONOPS	5.3.1 Introduction	
CONOPS	5.3.3 Weather Information Enterprise Services	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Weather Assimilated into Decisionmaking	By assimilating weather into decisionmaking, weather information becomes an enabler for optimizing NextGen operations. Directly applying probabilistic weather information to ATM decision tools increases the effective use of weather information and minimizes the adverse effects of weather on operations.
BRM Sub-Function	Weather Operations	Weather Operations involves the activities related to the collection, analysis, and distribution of real-time weather forecasts to stakeholders. It also includes the activities related to proactively alerting, advising, and warning stakeholders via digital communications of significant weather changes in order to reduce weather impact on the Air Transportation System. Note: Some analytical aspects of weather forecasting are included in the Environmental Monitoring and Forecasting Sub-Function in the Environmental Management Line of Business.
SRM Service Component	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.

3.1.6.17.4 NextGen Future Solutions

3.1.6.18 Publish Weather Picture (1.1.4.2)

3.1.6.18.1 Description

This activity will push weather information to subscribed users.

3.1.6.18.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Reduce Weather Impacts	Reduced weather impact is a closely kin to the other capabilities. The focus here is in specific actions to improve the forecast or the use of forecast. Development if the weather product and ascertaining impact on individual flights and flows is a reduced weather impact issue. Note: The actual allocation in the response to individual flights etc. is C-ATM. The detection of the wake for purposes of changing pair-wise separation is reduce weather impact, inclusion of that data into traffic management tools for arrivals and departures would be high-density arr/departure terminals and airports.
NextGen Operational Improvements	Surface Management Operations - Level 3	Aircraft and ground vehicle movement on airports in low visibility conditions is guided by moving map displays, CDTI, ADS-B (for flight vehicles), and a GSE Cooperative Surveillance System (for ground support equipment). Safety and efficiency of operations at some airports will also be enhanced by intelligent signage on the ground. Policy issue: Will this equipage be mandatory for access to some high-density airports during peak traffic times in low-visibility conditions, or will equipped aircraft be given priority access in low-visibility conditions but unequipped aircraft will be accommodated, or is this equipage simply optional. Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) some airports (Segment 2) b) OEP airports (Segment 3) c) top 100 airports (Segment 4) d) all commercial airports (Segment 6)

3.1.6.18.3 NextGen Drivers

Type	Name	Description
CONOPS	5.3.3 Weather Information Enterprise Services	

Type	Name	Description
Key Concept	Equivalent Visual Operations (EVO)	Improved information availability allows aircraft to conduct operations without regard for visibility or direct visual observation. For aircraft, this capability, in combination with PNT, enables increased accessibility, both on the airport surface and during arrival and departure operations. This capability also enables those providing services at airports (such as ATM or other ramp services) to provide services in all visibility conditions, leading to more predictable and efficient operations.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Weather Assimilated into Decisionmaking	By assimilating weather into decisionmaking, weather information becomes an enabler for optimizing NextGen operations. Directly applying probabilistic weather information to ATM decision tools increases the effective use of weather information and minimizes the adverse effects of weather on operations.
BRM Sub-Function	Weather Operations	Weather Operations involves the activities related to the collection, analysis, and distribution of real-time weather forecasts to stakeholders. It also includes the activities related to proactively alerting, advising, and warning stakeholders via digital communications of significant weather changes in order to reduce weather impact on the Air Transportation System. Note: Some analytical aspects of weather forecasting are included in the Environmental Monitoring and Forecasting Sub-Function in the Environmental Management Line of Business.
SRM Service Component	Alerts and Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.

3.1.6.18.4 NextGen Future Solutions

3.1.6.19 Positioning, Navigation, and Timing Services (1.2)

3.1.6.19.1 Description

Position, Navigation, and Timing (PNT) Services provides the ability to accurately and precisely determine ones current location and orientation; desired path and position, apply corrections to course, orientation, and speed to attain the desired position; and to obtain accurate and precise time anywhere on the globe, within user defined timeliness parameters, which are enabled through PNT.

3.1.6.19.2 Purpose

The NextGen relies on PNT Services for the implementation and to conduct many of its basic operations, as well as trajectory-based operations. PNT reduces costs to the ANSP to provide better navigation services.

Enterprise Services A1

Positioning, Navigation, and Timing Services A1.2

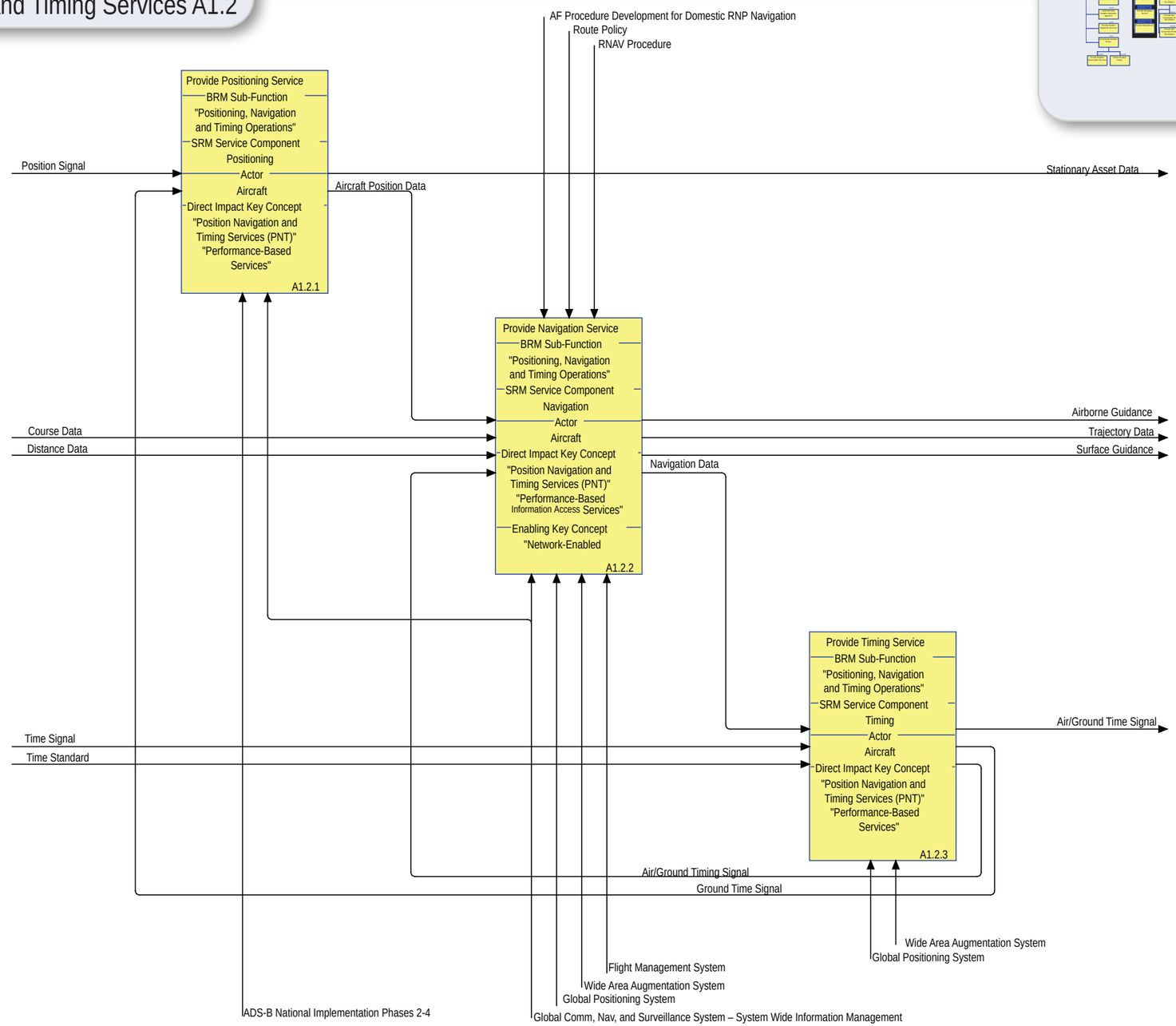


Figure 7 - 1.2 Positioning, Navigation, and Timing Services Activity Model Diagram

3.1.6.20 Provide Positioning Service (1.2.1)

3.1.6.20.1 Description

This activity provides highly accurate and reliable positioning source, which will enable improved surveillance capabilities and reduced separation standards.

3.1.6.20.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	CDA with ground-based merging and spacing	Time-based and metered RNP routes are flown. Where practical, arrival routes support CDA operations under moderate to heavy traffic conditions, with ground-based automation providing conflict-free, time-based metering solutions over entire CDA trajectory to the runway. This enables aircraft with minimal equipage to perform CDAs. This OI requires an Implementation Decision to determine most effective method for negotiating time-based route and an Implementation Decision to determine how restricted the trajectory will be laterally, vertically, and in time, based on tradeoff between aircraft performance/ efficiency versus optimal use of airspace. Waterfall deployment: a) all runway ends at all OEP airports (Segment 4), b) all runways at the top 100 airports (Segment 5).
NextGen Operational Improvements	Surface Management Operations - Level 3	Aircraft and ground vehicle movement on airports in low visibility conditions is guided by moving map displays, CDTI, ADS-B (for flight vehicles), and a GSE Cooperative Surveillance System (for ground support equipment). Safety and efficiency of operations at some airports will also be enhanced by intelligent signage on the ground. Policy issue: Will this equipage be mandatory for access to some high-density airports during peak traffic times in low-visibility conditions, or will equipped aircraft be given priority access in low-visibility conditions but unequipped aircraft will be accommodated, or is this equipage simply optional. Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) some airports (Segment 2) b) OEP airports (Segment 3) c) top 100 airports (Segment 4) d) all commercial airports (Segment 6)
NextGen Operational Improvements	Terminal area airborne merging and spacing for multiple runways	Arriving or departing aircraft to/from multiple runways are instructed to achieve and maintain a given spacing in time or distance from a designated lead aircraft as defined by an ANSP clearance. Onboard displays and automation support the aircraft conducting the merging and spacing procedure to enable accurate adherence to the required spacing. Flight crews are responsible for maintaining safe and efficient spacing from the lead aircraft. Responsibility for separation from all other aircraft remains with the ANSP. Assigned spacing may include a gap to allow for an intervening departure between subsequent arrivals. Mixed-equipage operations are supported; a spacing-capable aircraft can perform airborne spacing behind a non-capable aircraft as long as it is transmitting cooperative surveillance information. This OI includes complex merging and spacing, such as for crossing and diverging streams and includes development of ANSP capability and procedures. Because an aircraft is spacing from its lead aircraft according to whatever spacing timing he is assigned by the ANSP, dynamic spacing with specific pair wise spacing requirements are supported.

3.1.6.20.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
ICAO ATMCP Requirement	R148	The ATM system shall be based on a principle of reducing voice communications as far as is practicable. "Routine transmissions", including position reporting, should be conducted via data link. This will apply to all phases of flight, and where practical on the ground.
CONOPS	5.4.2 Positioning Services	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
Key Concept	Positioning, Navigation, and Timing (PNT) Services	PNT services are provided where and when needed, in accordance with demand and safety considerations, to enable reliable aircraft operations in nearly all conditions. Instead of being driven by the geographic location of a ground-based navigational aid (NAVAID), PNT services allow operators to define the desired flight path based on their own objectives.
BRM Sub-Function	Positioning, Navigation and Timing Operations	PNT Operations involves the activities associated with accurately and precisely determining an aircraft's current location, orientation, desired path and position, and time, in order to apply corrections to course, orientation, and speed to attain the desired position. It also includes the activities associated with obtaining accurate and precise time anywhere on the globe within user defined timeliness parameters.
SRM Service Component	Positioning	Defines the set of capabilities that provide stakeholders with a highly accurate and reliable positioning source, improving surveillance capabilities and reduced separation standards.

3.1.6.20.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	ADS-B National Implementation Phases 2-4	To provide for a national deployment of ground-based stations to broadcast Flight Information Service (FIS), Traffic Information Services (TIS), and Automatic Dependent Surveillance (ADS) data.
FAA Systems	Global Positioning System	The Global Positioning System (GPS) is a (nominal) 24 satellite constellation orbiting at approximately 12,000 miles above the earth in six equally-spaced planes. GPS satellites broadcast a precisely timed L-band signal that is received and processed onboard aircraft, in ground vehicles or hand-held receivers to determine the users three-dimensional position (i.e., latitude, longitude and altitude), velocity (if applicable) and the precise time of day. The GPS was developed, and is maintained & operated by, the U.S Department of Defense. GPS equipped aircraft can navigate on published jetways or utilize Area Navigation (RNAV) to fly a desired route between two locations. Approval has been granted for properly certified GPS avionics to be used as a primary means of navigation in oceanic airspace and in certain remote areas. In July 2003 the Wide Area Augmentation System (WAAS)was commissioned, thereby ensuring GPS/WAAS enabled primary navigation service throughout the NAS. WAAS ensures that GPS sourced data meets requirements for accuracy, availability, and integrity.

Type	Name	Description
NAS Activity	Manage Position Information	The supervision of the necessary activities involved in regulating the
NAS Activity	Formulate Position Correction	The function to express in precise form and to state definitely or systematically and to cause navigations sensors, devices, or algorithms to reset position to value known to be more accurate due to inaccuacies and drift in the devices and algorithms
NAS Activity	Sense Position Reference	The function to judge and decide with soundness, prudence, and intelligence the consultation of sources of information t detect a point or area occupied by a physical object.

3.1.6.21 Provide Navigation Service (1.2.2)

3.1.6.21.1 Description

This activity enables area navigation (RNAV) as the standard method of navigation in the NAS. The navigation service provides the foundation for performance based navigation operations including those that have specified RNP.

3.1.6.21.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	CDA with ground-based merging and spacing	Time-based and metered RNP routes are flown. Where practical, arrival routes support CDA operations under moderate to heavy traffic conditions, with ground-based automation providing conflict-free, time-based metering solutions over entire CDA trajectory to the runway. This enables aircraft with minimal equipage to perform CDAs. This OI requires an Implementation Decision to determine most effective method for negotiating time-based route and an Implementation Decision to determine how restricted the trajectory will be laterally, vertically, and in time, based on tradeoff between aircraft performance/ efficiency versus optimal use of airspace. Waterfall deployment: a) all runway ends at all OEP airports (Segment 4), b) all runways at the top 100 airports (Segment 5).
NextGen Operational Improvements	Flexible routing	Equipped aircraft are not restricted to pre-defined routes except when trajectory management or separation management ANSP deem the congestion level to warrant more structure. The ANSP uses ground-based decision support tools (e.g., conflict probe) to maintain separation of aircraft flying on flexible routes. All airspace is available to support RNAV operations. Structure is never imposed unless needed for congestion relief. This supports the ability for operators to fly wherever they want; operators can file any route any way they want except where demand requires that structure be imposed.
NextGen Operational Improvements	Increased IMC access-1	Performance-based navigation operations are used to provide greater IMC access to terrain-challenged airports and airports without expensive ground infrastructure. This OI also opens more options for airport access in various meteorological conditions. Waterfall deployment: a) to/from some runways at OEP airports (2009), b) to/from all runway ends at all OEP airports (2011), c) to/from all runways at the top 100 airports (Segment 5), d) to/from all runways serving commercial traffic (Segment 6).
NextGen Operational Improvements	Reduced terminal and enroute significant noise impact	Noise- and emissions-favorable RNP routes are used en route. This OI also includes reduction of noise over national parks.
NextGen Operational Improvements	Terminal area airborne merging and spacing for multiple runways	Arriving or departing aircraft to/from multiple runways are instructed to achieve and maintain a given spacing in time or distance from a designated lead aircraft as defined by an ANSP clearance. Onboard displays and automation support the aircraft conducting the merging and spacing procedure to enable accurate adherence to the required spacing. Flight crews are responsible for maintaining safe and efficient spacing from the lead aircraft. Responsibility for separation from all other aircraft remains with the ANSP. Assigned spacing may include a gap to allow for an intervening departure between subsequent arrivals. Mixed-equipage operations are supported; a spacing-capable aircraft can perform airborne spacing behind a non-capable aircraft as long as it is transmitting cooperative surveillance information. This OI includes complex merging and spacing, such as for crossing and diverging streams and includes development of ANSP capability and procedures. Because an aircraft is spacing from its lead aircraft according to whatever spacing timing he is assigned by the ANSP, dynamic spacing with specific pair wise spacing requirements are supported.

3.1.6.21.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
ICAO ATMCP Requirement	R149	The ATM system shall be based on self contained navigation, supported primarily by on-board and/or satellite based systems, as far as is practicable
ICAO ATMCP Requirement	R150	The service to airspace users shall be based on the actual navigation performance of the users at the time of service. Where navigation performance requirements are specified, they shall be determined on the basis of the navigation accuracy required in a given volume of airspace and/or through specific procedure to maintain appropriate levels of safety in respect of other hazards.
CONOPS	5.4.3 Navigation Services	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
Key Concept	Positioning, Navigation, and Timing (PNT) Services	PNT services are provided where and when needed, in accordance with demand and safety considerations, to enable reliable aircraft operations in nearly all conditions. Instead of being driven by the geographic location of a ground-based navigational aid (NAVAID), PNT services allow operators to define the desired flight path based on their own objectives.

Type	Name	Description
BRM Sub-Function	Positioning, Navigation and Timing Operations	PNT Operations involves the activities associated with accurately and precisely determining an aircraft's current location, orientation, desired path and position, and time, in order to apply corrections to course, orientation, and speed to attain the desired position. It also includes the activities associated with obtaining accurate and precise time anywhere on the globe within user defined timeliness parameters.
SRM Service Component	Navigation	Defines the set of capabilities that enable area navigation (RNAV) as the standard method of navigation in the National Airspace System and provides the foundation for performance-based navigation operations.

3.1.6.21.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Flight Management System	A Flight Management System (FMS) is a computer system that uses a database to allow routes to be preprogrammed and stored. The system is constantly updated with respect to position accuracy by reference to one or more conventional radio navigation aids (i.e., multi-sensor systems). The system may also use information from an inertial reference unit (IRU) or from a stand-alone inertial navigation system (INS). A sophisticated program and its associated database ensure that the most appropriate navaids are automatically selected during the update cycle. FMSs combine the relative position information from two or more point-referenced navigation aids such as Very High Frequency Omnirange (VOR) or Distance Measuring Equipment (DME) to determine the absolute position of the aircraft (latitude, longitude). The resulting Area Navigation (RNAV) capability permits operation on any desired course.
FAA Systems	Wide Area Augmentation System	The Wide Area Augmentation System (WAAS) consists of a distributed array of Reference and Master Stations designed to provide range correction and integrity information messages that are used by WAAS-capable Global Positioning System (GPS) avionics to accurately determine an aircraft''s 3-dimensional (3-D) position in space. Accurately surveyed WAAS Reference Stations (WRS) receive and process GPS satellite range data which is forwarded to redundant WAAS Master Stations (WMS) for additional processing before sending the resulting range-correction data to redundant WAAS Ground Uplink Stations (GUS). The GUS transmit the data to Geostationary (GEO) satellites, which retransmit them on a GPS civil-use frequency for reception by GPS/WAAS avionics. The WAAS data enables aircraft to determine their position in the airspace with an accuracy that will enable, for WAAS-equipped aircraft, introduction of advanced navigation initiatives such as precision and non-precision approaches to airports throughout the National Airspace System (NAS), and reduced longitudinal separation. The WAAS service volume includes the contiguous United States, Hawaii, portions of Alaska and the Caribbean, and the United States border areas with Canada and Mexico. Using just the single civil frequency that is currently available from GPS, WAAS supports a near-precision instrument approach capability termed Localizer Performance with Vertical Guidance (LPV). Planned enhancement of WAAS with additional WRS and GEO satellites will improve the coverage and availability of WAAS, leading to Full LPV Performance (FLP) in 2008. As of April 2006 the FAA had 25 WRS installations operational in the NAS. The present installation schedule is as follows: Four WRSs, installed in Alaska, are scheduled to be added to the NAS in August 2006. Two WRSs, installed in Canada at Goose Bay and Gander, are scheduled to be added to the WAAS in August of 2007. Three WRSs, installed in Mexico at Mexico City, Merida, and Puerto Vallarta, are scheduled to be added to the WAAS in August of 2007. Two WRS, which will be installed in Canada at Winnipeg and Iqaluit, in the summer of 2006, are scheduled to be added to the WAAS in February 2008. Two WRS, which are scheduled to be installed in Mexico at Tapachula and San Jose Del Cabo, in the summer of 2006, should be added to the WAAS in February 2008. Thus, the end quantity of WRS will be 38, in the spring of 2008. Modernization of GPS by the U.S. Department of Defense (DoD) will provide a second civil frequency (termed L5) for WAAS in the 2015 timeframe. New dual-frequency WAAS avionics will then provide a precision instrument approach capability equivalent to Instrument Landing System (ILS) Category I operations. This capability is termed Global Navigation Satellite System (GNSS) Landing System (GLS).
FAA Systems	Global Positioning System	The Global Positioning System (GPS) is a (nominal) 24 satellite constellation orbiting at approximately 12,000 miles above the earth in six equally-spaced planes. GPS satellites broadcast a precisely timed L-band signal that is received and processed onboard aircraft, in ground vehicles or hand-held receivers to determine the users three-dimensional position (i.e., latitude, longitude and altitude), velocity (if applicable) and the precise time of day. The GPS was developed, and is maintained & operated by, the U.S Department of Defense. GPS equipped aircraft can navigate on published jetways or utilize Area Navigation (RNAV) to fly a desired route between two locations. Approval has been granted for properly certified GPS avionics to be used as a primary means of navigation in oceanic airspace and in certain remote areas. In July 2003 the Wide Area Augmentation System (WAAS)was commissioned, thereby ensuring GPS/WAAS enabled primary navigation service throughout the NAS. WAAS ensures that GPS sourced data meets requirements for accuracy, availability, and integrity.
FAA Systems	Global Comm, Nav, and Surveillance System – System Wide Information Management	In 2006 the System Wide Information Management (SWIM) portion was separated and became National Airspace System (NAS) Capital Investment Plan (CIP) Project Number M31.01-01. This mechanism provides for the development, building and testing of the Global Communications, Navigation, and Surveillance System (GCNSS) related SWIM architecture and prototype system. Development activities include the following: Benefit-Cost Analysis, Trade Studies Analysis and development of the Functional Requirements Document, and the System Specification.

3.1.6.22 Provide Timing Service (1.2.3)

3.1.6.22.1 Description

This activity enables the precise synchronization of operations and the reduction of uncertainties associated with disparate timing source.

3.1.6.22.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	CDA with ground-based merging and spacing	Time-based and metered RNP routes are flown. Where practical, arrival routes support CDA operations under moderate to heavy traffic conditions, with ground-based automation providing conflict-free, time-based metering solutions over entire CDA trajectory to the runway. This enables aircraft with minimal equipage to perform CDAs. This OI requires an Implementation Decision to determine most effective method for negotiating time-based route and an Implementation Decision to determine how restricted the trajectory will be laterally, vertically, and in time, based on tradeoff between aircraft performance/efficiency versus optimal use of airspace. Waterfall deployment: a) all runway ends at all OEP airports (Segment 4), b) all runways at the top 100 airports (Segment 5).
NextGen Operational Improvements	Terminal area airborne merging and spacing for multiple runways	Arriving or departing aircraft to/from multiple runways are instructed to achieve and maintain a given spacing in time or distance from a designated lead aircraft as defined by an ANSP clearance. Onboard displays and automation support the aircraft conducting the merging and spacing procedure to enable accurate adherence to the required spacing. Flight crews are responsible for maintaining safe and efficient spacing from the lead aircraft. Responsibility for separation from all other aircraft remains with the ANSP. Assigned spacing may include a gap to allow for an intervening departure between subsequent arrivals. Mixed-equipage operations are supported; a spacing-capable aircraft can perform airborne spacing behind a non-capable aircraft as long as it is transmitting cooperative surveillance information. This OI includes complex merging and spacing, such as for crossing and diverging streams and includes development of ANSP capability and procedures. Because an aircraft is spacing from its lead aircraft according to whatever spacing timing he is assigned by the ANSP, dynamic spacing with specific pair wise spacing requirements are supported.

3.1.6.22.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
CONOPS	5.4.4 Timing Services	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
Key Concept	Positioning, Navigation, and Timing (PNT) Services	PNT services are provided where and when needed, in accordance with demand and safety considerations, to enable reliable aircraft operations in nearly all conditions. Instead of being driven by the geographic location of a ground-based navigational aid (NAVAID), PNT services allow operators to define the desired flight path based on their own objectives.
BRM Sub-Function	Positioning, Navigation and Timing Operations	PNT Operations involves the activities associated with accurately and precisely determining an aircraft's current location, orientation, desired path and position, and time, in order to apply corrections to course, orientation, and speed to attain the desired position. It also includes the activities associated with obtaining accurate and precise time anywhere on the globe within user defined timeliness parameters.
SRM Service Component	Timing	Defines the set of capabilities that provide stakeholders with the precise synchronization of standard universal coordinated time to reduce the uncertainties associated with disparate timing sources.

3.1.6.22.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Wide Area Augmentation System	The Wide Area Augmentation System (WAAS) consists of a distributed array of Reference and Master Stations designed to provide range correction and integrity information messages that are used by WAAS-capable Global Positioning System (GPS) avionics to accurately determine an aircraft''s 3-dimensional (3-D) position in space. Accurately surveyed WAAS Reference Stations (WRS) receive and process GPS satellite range data which is forwarded to redundant WAAS Master Stations (WMS) for additional processing before sending the resulting range-correction data to redundant WAAS Ground Uplink Stations (GUS). The GUS transmit the data to Geostationary (GEO) satellites, which retransmit them on a GPS civil-use frequency for reception by GPS/WAAS avionics. The WAAS data enables aircraft to determine their position in the airspace with an accuracy that will enable, for WAAS-equipped aircraft, introduction of advanced navigation initiatives such as precision and non-precision approaches to airports throughout the National Airspace System (NAS), and reduced longitudinal separation. The WAAS service volume includes the contiguous United States, Hawaii, portions of Alaska and the Caribbean, and the United States border areas with Canada and Mexico. Using just the single civil frequency that is currently available from GPS, WAAS supports a near-precision instrument approach capability termed Localizer Performance with Vertical Guidance (LPV). Planned enhancement of WAAS with additional WRS and GEO satellites will improve the coverage and availability of WAAS, leading to Full LPV Performance (FLP) in 2008. As of April 2006 the FAA had 25 WRS installations operational in the NAS. The present installation schedule is as follows: Four WRSs, installed in Alaska, are scheduled to be added to the NAS in August 2006. Two WRSs, installed in Canada at Goose Bay and Gander, are scheduled to be added to the WAAS in August of 2007. Three WRSs, installed in Mexico at Mexico City, Merida, and Puerto Vallarta, are scheduled to be added to the WAAS in August of 2007. Two WRS, which will be installed in Canada at Winnipeg and Iqaluit, in the summer of 2006, are scheduled to be added to the WAAS in February 2008. Two WRS, which are scheduled to be installed in Mexico at Tapachula and San Jose Del Cabo, in the summer of 2006, should be added to the WAAS in February 2008. Thus, the end quantity of WRS will be 38, in the spring of 2008. Modernization of GPS by the U.S. Department of Defense (DoD) will provide a second civil frequency (termed L5) for WAAS in the 2015 timeframe. New dual-frequency WAAS avionics will then provide a precision instrument approach capability equivalent to Instrument Landing System (ILS) Category I operations. This capability is termed Global Navigation Satellite System (GNSS) Landing System (GLS).
FAA Systems	Global Positioning System	The Global Positioning System (GPS) is a (nominal) 24 satellite constellation orbiting at approximately 12,000 miles above the earth in six equally-spaced planes. GPS satellites broadcast a precisely timed L-band signal that is received and processed onboard aircraft, in ground vehicles or hand-held receivers to determine the users three-dimensional position (i.e., latitude, longitude and altitude), velocity (if applicable) and the precise time of day. The GPS was developed, and is maintained & operated by, the U.S Department of Defense. GPS equipped aircraft can navigate on published jetways or utilize Area Navigation (RNAV) to fly a desired route between two locations. Approval has been granted for properly certified GPS avionics to be used as a primary means of navigation in oceanic airspace and in certain remote areas. In July 2003 the Wide Area Augmentation System (WAAS)was commissioned, thereby ensuring GPS/WAAS enabled primary navigation service throughout the NAS. WAAS ensures that GPS sourced data meets requirements for accuracy, availability, and integrity.

3.1.6.23 Surveillance Services (1.3)

3.1.6.23.1 Description

This activity provides non-cooperative and cooperative surveillance of ground and airborne objects. Non-cooperative and cooperative surveillance systems will be designed and integrated to provide mutually supporting surveillance services information. The sharing of surveillance data allows each user to create a tailored view yet ensures that all users have a consistent "picture" of what is going on in their areas of interest. This consistent view is essential to supporting multiple agency missions and providing stakeholders and users with key information necessary to their operations. Numerous entities, government and private benefit from this shared surveillance data intrinsic to NextGen.

3.1.6.23.2 Purpose

The purpose of the NextGen Surveillance Service provides improved surveillance accuracy, latency, integrity, and availability, that enables:

- Reduced Separation Standards
- Comprehensive tracking of aircraft and vehicles operating on the airport surface and within the ANSP-responsible airspace, along with sovereign airspace, to improve safety, security, and operational effectiveness.
- Increased Collaborative – Air Traffic Management (C-ATM) services within underutilized airspace and to underutilized airports
- Improved 4DT information, by providing aircraft intent and conformance monitoring
- Flexible assignment of multiple NextGen Surveillance sources to any operational position at any time, to enable more flexibility in assigning airspace to each position as needed to support distributed decision-making
- Adaptive flexible spacing and sequencing of aircraft on the ground and in the air.

Enterprise Services A1

Surveillance Services A1.3

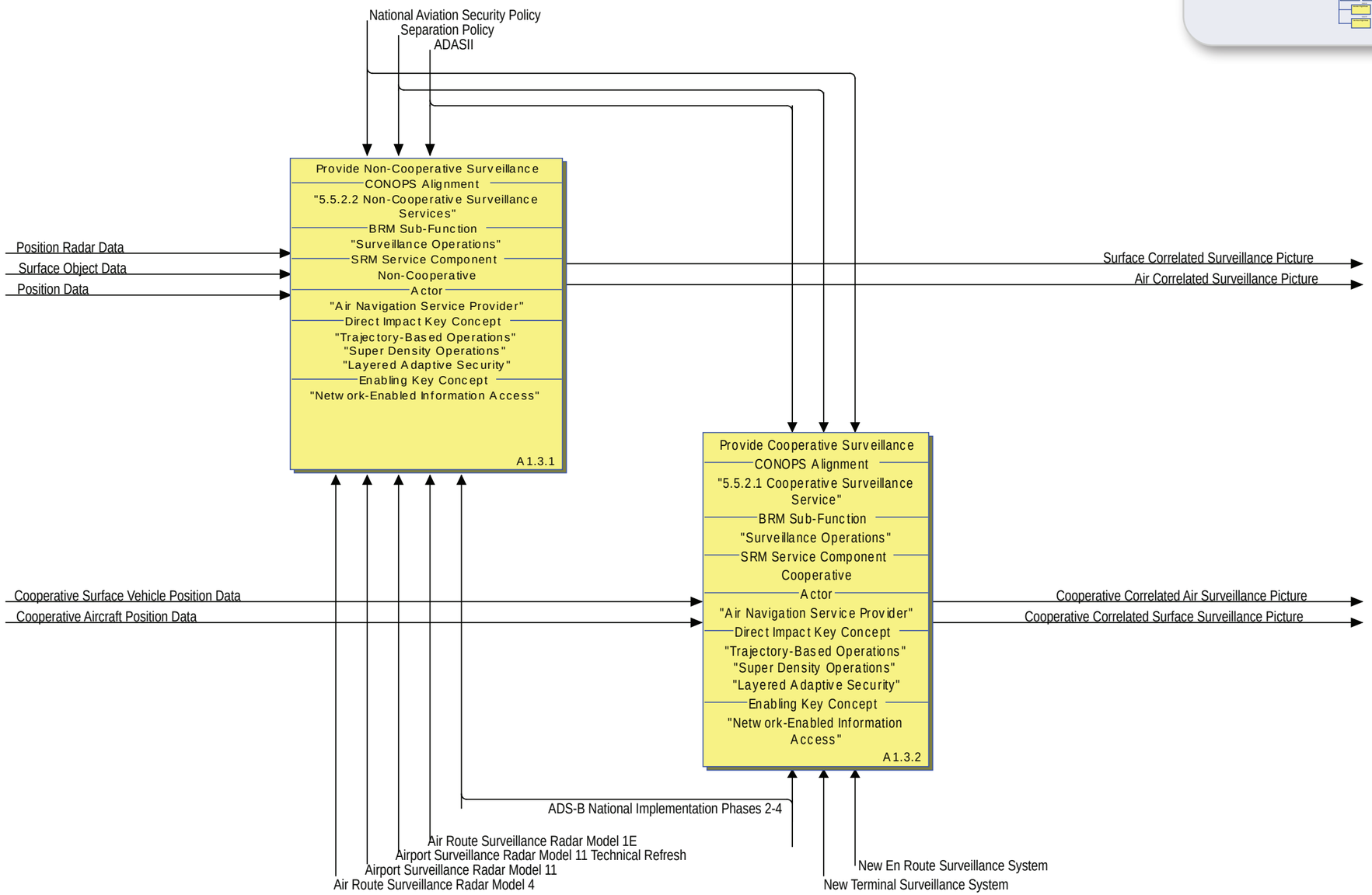


Figure 8 - 1.3 Surveillance Services Activity Model Diagram

3.1.6.24 Provide Non-Cooperative Surveillance (1.3.1)

3.1.6.24.1 Description

This activity provides non-cooperative surveillance, enabling an airborne object to be detected by ground, airborne, or space-based surveillance systems even if it does not have functional avionics equipment. Non- cooperative surveillance can be used when airborne or ground cooperative surveillance systems malfunction.

3.1.6.24.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	CDA with airborne merging and spacing	Fuel consumption and noise on approaches are reduced while maintaining throughput in heavy traffic through Continuous Descent Approaches (CDA) combined with airborne merging and spacing in moderate-to-heavy traffic. This OI requires airborne guidance to perform optimized CDA while staying within assigned lateral and vertical airspace corridor limits. This OI is complementary to OI-325 which delivers the aircraft at top of descent with spacing to initiate a successful CDA. This OI also enables reduced spacing buffers and hence increased throughput from precision airborne spacing. Mixed equipage can be supported within a single arrival stream, with some aircraft self-spacing and other aircraft managed by ANSP. This OI requires an Implementation Decision to determine appropriate trajectory restrictions laterally, vertically, and in time, based on tradeoff between aircraft performance/ efficiency versus optimal use of airspace.
NextGen Operational Improvements	CDA with ground-based merging and spacing	Time-based and metered RNP routes are flown. Where practical, arrival routes support CDA operations under moderate to heavy traffic conditions, with ground-based automation providing conflict-free, time-based metering solutions over entire CDA trajectory to the runway. This enables aircraft with minimal equipage to perform CDAs. This OI requires an Implementation Decision to determine most effective method for negotiating time-based route and an Implementation Decision to determine how restricted the trajectory will be laterally, vertically, and in time, based on tradeoff between aircraft performance/efficiency versus optimal use of airspace. Waterfall deployment: a) all runway ends at all OEP airports (Segment 4), b) all runways at the top 100 airports (Segment 5).
NextGen Operational Improvements	Surface Management Operations - Level 1	This OI enhances surface operations to reduce delay and environmental impacts at target airports to manage surface traffic (aircraft and GSE) and generate taxi instructions.
NextGen Operational Improvements	Surface Management Operations - Level 2B	This OI increases efficiency and safety of surface traffic movement, with corresponding reduction in environmental impacts. Efficiency of surface movement is increased through the use of automation, on-board displays and data link of taxi instructions on arrival to properly equipped aircraft to reduce delay and environmental impacts and improve safety. This OI assumes development of surface automation that is fully integrated with airborne operations and applies this to surface management operations. This OI is an extension of OI 321 and contains those improvements as well.
NextGen Operational Improvements	Surface Management Operations - Level 4	Aircraft and ground vehicle movement on airports in zero/zero visibility conditions is guided by moving map displays, CDTI, ADS-B (flight vehicles), and a GSE Cooperative Surveillance System (for ground vehicles). Requires all present aircraft and ground vehicles to have cooperative surveillance (ADS-B out). Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) OEP airports (Segment 5) b) top 100 airports (Segment 6) c) all commercial airports (Segment 7)

3.1.6.24.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
CONOPS	5.5.2.2 Non-Cooperative Surveillance Services	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Surveillance Operations	Surveillance Operations involves the integration of non-cooperative and cooperative surveillance activities, which detect, identify and monitor ground and airborne objects to allow the creation of real-time situational awareness on the surface and air.
SRM Service Component	Non-Cooperative	Defines the set of capabilities that allow an airborne object to be detected by ground-based, airborne, or space-based surveillance systems even if it does not have functional avionics equipment (i.e., surveillance sensors on the airframe) or when cooperative surveillance systems malfunction.

3.1.6.24.4 NextGen Future Solutions

3.1.6.25 Provide Cooperative Surveillance (1.3.2)

3.1.6.25.1 Description

This activity provides cooperation surveillance from all aircraft in the national airspace and is one of the key elements of trajectory based operations.

3.1.6.25.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	CDA with airborne merging and spacing	Fuel consumption and noise on approaches are reduced while maintaining throughput in heavy traffic through Continuous Descent Approaches (CDA) combined with airborne merging and spacing in moderate-to-heavy traffic. This OI requires airborne guidance to perform optimized CDA while staying within assigned lateral and vertical airspace corridor limits. This OI is complementary to OI-325 which delivers the aircraft at top of descent with spacing to initiate a successful CDA. This OI also enables reduced spacing buffers and hence increased throughput from precision airborne spacing. Mixed equipage can be supported within a single arrival stream, with some aircraft self-spacing and other aircraft managed by ANSP. This OI requires an Implementation Decision to determine appropriate trajectory restrictions laterally, vertically, and in time, based on tradeoff between aircraft performance/ efficiency versus optimal use of airspace.
NextGen Operational Improvements	Surface Management Operations - Level 1	This OI enhances surface operations to reduce delay and environmental impacts at target airports to manage surface traffic (aircraft and GSE) and generate taxi instructions.

Type	Name	Description
NextGen Operational Improvements	Surface Management Operations - Level 2A	Efficiency of surface traffic movement is increased through the use of automation, on-board displays and data link of departure taxi instructions prior to pushback to properly equipped aircraft to reduce delay, environmental impacts and operational errors. Automation optimizes surface throughput and data links taxi instructions to aircraft. The taxi instructions include the 2D route. Pilot uses onboard displays of taxi route and guidance to efficiently and safely follow taxi instructions. Surface optimization automation includes activities such as runway snow removal, aircraft de-icing, and runway reconfiguration.
NextGen Operational Improvements	Surface Management Operations - Level 4	Aircraft and ground vehicle movement on airports in zero/zero visibility conditions is guided by moving map displays, CDTI, ADS-B (flight vehicles), and a GSE Cooperative Surveillance System (for ground vehicles). Requires all present aircraft and ground vehicles to have cooperative surveillance (ADS-B out). Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) OEP airports (Segment 5) b) top 100 airports (Segment 6) c) all commercial airports (Segment 7)

3.1.6.25.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
CONOPS	5.5.2.1 Cooperative Surveillance Service	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Surveillance Operations	Surveillance Operations involves the integration of non-cooperative and cooperative surveillance activities, which detect, identify and monitor ground and airborne objects to allow the creation of real-time situational awareness on the surface and air.
SRM Service Component	Cooperative	Defines the set of capabilities that allow the reliable, consistent, and unambiguous detection (i.e., multi-dimensional position) of airborne objects and other vehicles equipped with functioning avionics (i.e., surveillance sensors on the airframe) while in the air and on the ground.

3.1.6.25.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Airport Surveillance Radar Model 9 Mode Select ASTERIX Upgrade	The ASR-9/Mode S All-purpose Structured EUROCONTROL Radar Information Exchange (ASTERIX) Upgrade provides improved surveillance data interface capabilities to National Airspace System (NAS) automation systems. This will allow additional data currently available at the radar site to be sent to automation systems for improved tracking and data networking. This upgrade is currently planned to be implemented after the completion of the ASR-9/Mode S Service Life Extension Program (SLEP), and will extend through the lifespan of the original SLEP implementation. This mechanism will be replaced at the end of its life cycle by the New Terminal Surveillance System (for terminal sites) and the New En Route Surveillance System (for en route sites).
FAA Systems	Air Traffic Control Beacon Interrogator-Model 6	The Air Traffic Control Beacon Interrogator Model 6 (ATCBI-6) is a ground-based system that interrogates transponders, receives, and processes replies from transponders, determines the range and azimuth to the aircraft, and forwards the information to appropriate air traffic control (ATC) automation systems. Replies provide identification and altitude data of the transponder. The ATCBI-6 Replacement Program will procure 129 Monopulse Secondary Surveillance Radar (MSSR) with Selective Interrogation (SI) to replace existing operational beacons, which includes four support systems (not shown in the quantities below) for training, testing, logistics, and operational support. Through Fiscal Year (FY) 2005 135 systems had been ordered, 77 systems had been delivered to sites, and 51 systems commissioned. As of 17 November 2005 54 ATCBI-6 systems had been commissioned. In FY 2006 up to 15 March 2006 five systems had completed Initial Operational Capability (IOC), and nine additional systems had been delivered.
FAA Systems	ADS-B National Implementation Phases 2-4	To provide for a national deployment of ground-based stations to broadcast Flight Information Service (FIS), Traffic Information Services (TIS), and Automatic Dependent Surveillance (ADS) data.
FAA Systems	New Terminal Surveillance System	The New Terminal Surveillance System replaces existing terminal radar systems with new radars that incorporates primary and secondary surveillance and Doppler weather radar capability. In the event that Automatic Dependent Surveillance-Broadcast (ADS-B) is used in lieu of secondary surveillance at some locations, the New Terminal Radar will include just the primary surveillance and Doppler weather radar capabilities at those locations. The determination of these locations will depend on the outcome of future ADS-B investment decisions as well as necessary weather support to Terminal operations.
FAA Systems	New En Route Surveillance System	The New En Route Surveillance System is a future generation surveillance system capable of providing cooperative surveillance capabilities in the en route environment commensurate with the technology at that time. This system will replace the new Air Traffic Control Radar Beacon Interrogator Model 6 (ATCBI-6) and en route Mode Select (Mode S) systems at the end of their life cycles.

3.1.6.26 Provide Non-Cooperative Surveillance (1.3.1)

3.1.6.26.1 Description

This activity provides non-cooperative surveillance, enabling an airborne object to be detected by ground, airborne, or space-based surveillance systems even if it does not have functional avionics equipment. Non- cooperative surveillance can be used when airborne or ground cooperative surveillance systems malfunction.

Enterprise Services A1

Surveillance Services A1.3

Provide Non-Cooperative Surveillance A1.3.1

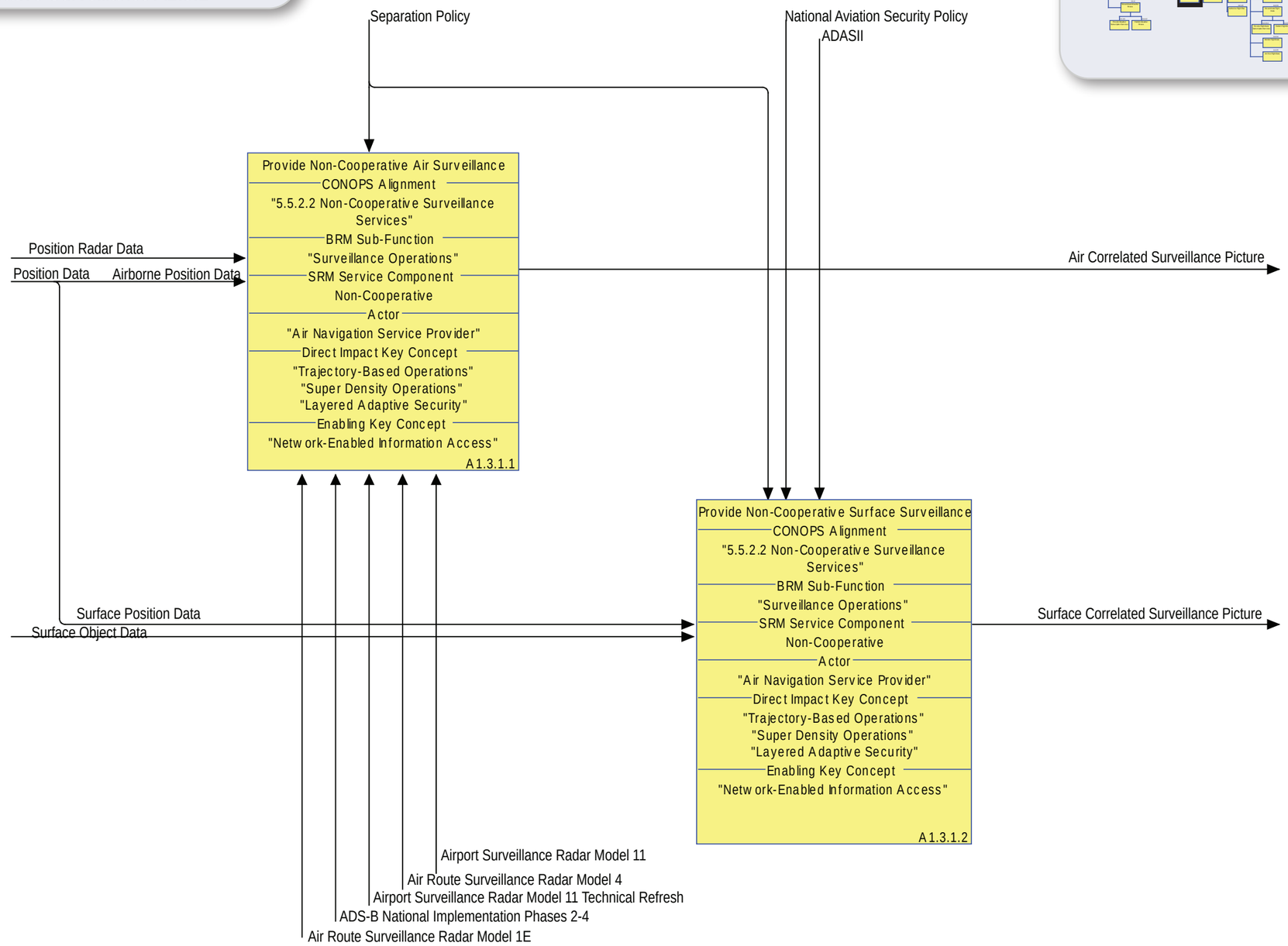


Figure 9 - 1.3.1 Provide Non-Cooperative Surveillance Activity Model Diagram

3.1.6.27 Provide Non-Cooperative Air Surveillance (1.3.1.1)

3.1.6.27.1 Description

This activity provides airborne, or space-based surveillance systems to detect and monitor airborne objects, even if the objects do not have functional avionics equipment.

Non-cooperative surveillance can be used when airborne or ground cooperative surveillance systems malfunction.

3.1.6.27.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	CDA with ground-based merging and spacing	Time-based and metered RNP routes are flown. Where practical, arrival routes support CDA operations under moderate to heavy traffic conditions, with ground-based automation providing conflict-free, time-based metering solutions over entire CDA trajectory to the runway. This enables aircraft with minimal equipage to perform CDAs. This OI requires an Implementation Decision to determine most effective method for negotiating time-based route and an Implementation Decision to determine how restricted the trajectory will be laterally, vertically, and in time, based on tradeoff between aircraft performance/efficiency versus optimal use of airspace. Waterfall deployment: a) all runway ends at all OEP airports (Segment 4), b) all runways at the top 100 airports (Segment 5).
NextGen Operational Improvements	Terminal area airborne merging and spacing for multiple runways	Arriving or departing aircraft to/from multiple runways are instructed to achieve and maintain a given spacing in time or distance from a designated lead aircraft as defined by an ANSP clearance. Onboard displays and automation support the aircraft conducting the merging and spacing procedure to enable accurate adherence to the required spacing. Flight crews are responsible for maintaining safe and efficient spacing from the lead aircraft. Responsibility for separation from all other aircraft remains with the ANSP. Assigned spacing may include a gap to allow for an intervening departure between subsequent arrivals. Mixed-equipage operations are supported; a spacing-capable aircraft can perform airborne spacing behind a non-capable aircraft as long as it is transmitting cooperative surveillance information. This OI includes complex merging and spacing, such as for crossing and diverging streams and includes development of ANSP capability and procedures. Because an aircraft is spacing from its lead aircraft according to whatever spacing timing he is assigned by the ANSP, dynamic spacing with specific pair wise spacing requirements are supported.

3.1.6.27.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
CONOPS	5.5.2.2 Non-Cooperative Surveillance Services	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Surveillance Operations	Surveillance Operations involves the integration of non-cooperative and cooperative surveillance activities, which detect, identify and monitor ground and airborne objects to allow the creation of real-time situational awareness on the surface and air.
SRM Service Component	Non-Cooperative	Defines the set of capabilities that allow an airborne object to be detected by ground-based, airborne, or space-based surveillance systems even if it does not have functional avionics equipment (i.e., surveillance sensors on the airframe) or when cooperative surveillance systems malfunction.

3.1.6.27.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Airport Surveillance Radar Model 11 Technical Refresh	The Airport Surveillance Radar Model 11 Technical Refresh segment funds ASR-11 digital radar systems technology refresh activities that will ensure continuation of improved and expanded surveillance service.
FAA Systems	ADS-B National Implementation Phases 2-4	To provide for a national deployment of ground-based stations to broadcast Flight Information Service (FIS), Traffic Information Services (TIS), and Automatic Dependent Surveillance (ADS) data.
FAA Systems	Air Route Surveillance Radar Model 4	The Air Route Surveillance Radar Model 4 (ARSR-4) is a three-dimensional, long-range, rotating phased array, primary surveillance radar with integrated height finder capability. It is part of the joint surveillance system (JSS) used in conjunction with ARSR-3 coverage as part of the nationwide air defense command surveillance network. In addition to functions peculiar to the military, the ARSR-4 performs the same basic functions of the ARSR-3, by providing primary long-range surveillance data, including slant range and azimuth data.

3.1.6.28 Provide Non-Cooperative Surface Surveillance (1.3.1.2)

3.1.6.28.1 Description

This activity provides ground based surveillance systems to detect and monitor ground objects, even if the objects do not have functional avionics equipment.

Non-cooperative surveillance can be used when airborne or ground cooperative surveillance systems malfunction.

3.1.6.28.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Surface Management Operations - Level 1	This OI enhances surface operations to reduce delay and environmental impacts at target airports to manage surface traffic (aircraft and GSE) and generate taxi instructions.
NextGen Operational Improvements	Surface Management Operations - Level 2A	Efficiency of surface traffic movement is increased through the use of automation, on-board displays and data link of departure taxi instructions prior to pushback to properly equipped aircraft to reduce delay, environmental impacts and operational errors. Automation optimizes surface throughput and data links taxi instructions to aircraft. The taxi instructions include the 2D route. Pilot uses onboard displays of taxi route and guidance to efficiently and safely follow taxi instructions. Surface optimization automation includes activities such as runway snow removal, aircraft de-icing, and runway reconfiguration.

Type	Name	Description
NextGen Operational Improvements	Surface Management Operations - Level 2B	This OI increases efficiency and safety of surface traffic movement, with corresponding reduction in environmental impacts. Efficiency of surface movement is increased through the use of automation, on-board displays and data link of taxi instructions on arrival to properly equipped aircraft to reduce delay and environmental impacts and improve safety. This OI assumes development of surface automation that is fully integrated with airborne operations and applies this to surface management operations. This OI is an extension of OI 321 and contains those improvements as well.
NextGen Operational Improvements	Surface Management Operations - Level 3	Aircraft and ground vehicle movement on airports in low visibility conditions is guided by moving map displays, CDTI, ADS-B (for flight vehicles), and a GSE Cooperative Surveillance System (for ground support equipment). Safety and efficiency of operations at some airports will also be enhanced by intelligent signage on the ground. Policy issue: Will this equipage be mandatory for access to some high-density airports during peak traffic times in low-visibility conditions, or will equipped aircraft be given priority access in low-visibility conditions but unequipped aircraft will be accommodated, or is this equipage simply optional. Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) some airports (Segment 2) b) OEP airports (Segment 3) c) top 100 airports (Segment 4) d) all commercial airports (Segment 6)

3.1.6.28.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
CONOPS	5.5.2.2 Non-Cooperative Surveillance Services	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Surveillance Operations	Surveillance Operations involves the integration of non-cooperative and cooperative surveillance activities, which detect, identify and monitor ground and airborne objects to allow the creation of real-time situational awareness on the surface and air.
SRM Service Component	Non-Cooperative	Defines the set of capabilities that allow an airborne object to be detected by ground-based, airborne, or space-based surveillance systems even if it does not have functional avionics equipment (i.e., surveillance sensors on the airframe) or when cooperative surveillance systems malfunction.

3.1.6.28.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Airport Surveillance Radar Model 11	The Airport Surveillance Radar Model 11 (ASR-11) is a digital, combined primary and secondary surveillance radar (SSR), short-range radar system with a 60 nautical mile (nmi) detection range for medium and small activity airports. The ASR-11 provides advanced digital primary radar including weather intensity surveillance with an integrated monopulse SSR system for use in the airport terminal area. The ASR-11 is used to detect and report the presence and location of an aircraft in a specific volume of airspace. The ASR-11 provides search radar surveillance coverage in controlled airspace primarily in terminal areas. As of June 2006, 22 ASR-11 systems have been commissioned. There have been 65 ASR-11 systems purchased with two additional systems to be purchased in fiscal year (FY) 2007. There are 25 operational ASR-11 systems, plus two support systems, and it is planned to have ten additional systems become operational in fiscal year (FY) 2006. Nine of the planned operational systems in FY 2006 have been completed.
FAA Systems	Air Route Surveillance Radar Model 1E	The Air Route Surveillance Radar Model 1E (ARSR-1E) is a 1970s analog radar. It is a long-range radar system with a maximum detection range of 200 nautical miles (nmi). The ARSR-1E is a surveillance system used to detect azimuth and slant range of en route aircraft operating between terminal areas. It also provides weather intensity data.
NAS Activity	Manage Surface Operations	The supervision of the activities necessary for formulating taxi sequences and communicating instructions to pilots and vehicle operators for the safe and efficient flow of traffic on the airport surface.

3.1.6.29 Provide Cooperative Surveillance (1.3.2)

3.1.6.29.1 Description

This activity provides cooperation surveillance from all aircraft in the national airspace and is one of the key elements of trajectory based operations.

Enterprise Services A1

Surveillance Services A1.3

Provide Cooperative Surveillance A1.3.2

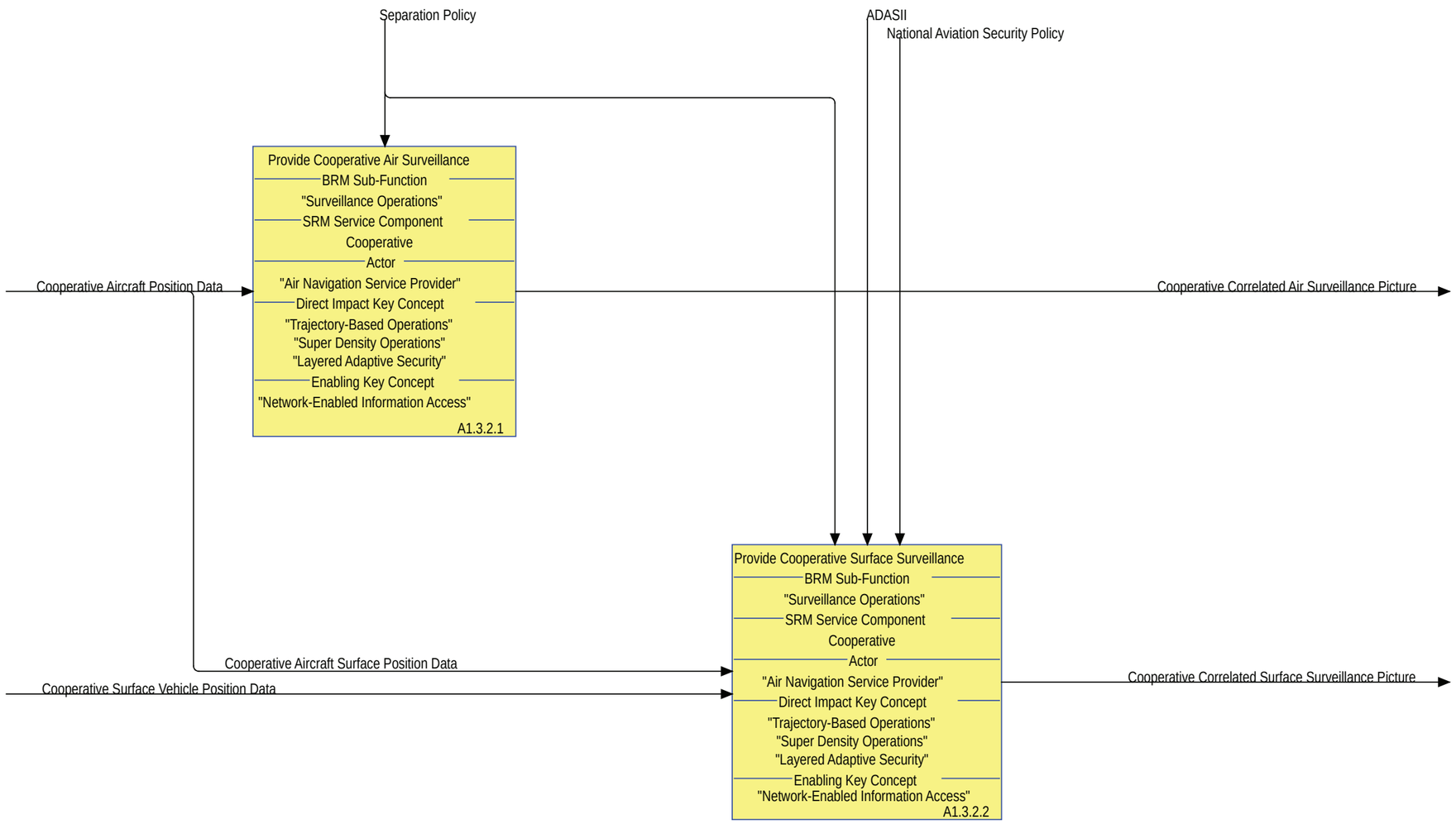


Figure 10 - 1.3.2 Provide Cooperative Surveillance Activity Model Diagram

3.1.6.30 Provide Cooperative Air Surveillance (1.3.2.1)

3.1.6.30.1 Description

This activity provides cooperative airborne surveillance, enabling detection of airborne based objects. Cooperative surveillance requires flight objects to be equipped with surveillance sensors.

3.1.6.30.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	CDA with airborne merging and spacing	Fuel consumption and noise on approaches are reduced while maintaining throughput in heavy traffic through Continuous Descent Approaches (CDA) combined with airborne merging and spacing in moderate-to-heavy traffic. This OI requires airborne guidance to perform optimized CDA while staying within assigned lateral and vertical airspace corridor limits. This OI is complementary to OI-325 which delivers the aircraft at top of descent with spacing to initiate a successful CDA. This OI also enables reduced spacing buffers and hence increased throughput from precision airborne spacing. Mixed equipage can be supported within a single arrival stream, with some aircraft self-spacing and other aircraft managed by ANSP. This OI requires an Implementation Decision to determine appropriate trajectory restrictions laterally, vertically, and in time, based on tradeoff between aircraft performance/ efficiency versus optimal use of airspace.
NextGen Operational Improvements	Surface Management Operations - Level 4	Aircraft and ground vehicle movement on airports in zero/zero visibility conditions is guided by moving map displays, CDTI, ADS-B (flight vehicles), and a GSE Cooperative Surveillance System (for ground vehicles). Requires all present aircraft and ground vehicles to have cooperative surveillance (ADS-B out). Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) OEP airports (Segment 5) b) top 100 airports (Segment 6) c) all commercial airports (Segment 7)

3.1.6.30.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
CONOPS	5.5.2.1 Cooperative Surveillance Service	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Surveillance Operations	Surveillance Operations involves the integration of non-cooperative and cooperative surveillance activities, which detect, identify and monitor ground and airborne objects to allow the creation of real-time situational awareness on the surface and air.
SRM Service Component	Cooperative	Defines the set of capabilities that allow the reliable, consistent, and unambiguous detection (i.e., multi-dimensional position) of airborne objects and other vehicles equipped with functioning avionics (i.e., surveillance sensors on the airframe) while in the air and on the ground.

3.1.6.30.4 NextGen Future Solutions

3.1.6.31 Provide Cooperative Surface Surveillance (1.3.2.2)

3.1.6.31.1 Description

This activity provides cooperative ground surveillance, enabling detection of ground based objects. Cooperative surveillance requires flight objects to be equipped with surveillance sensors.

3.1.6.31.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	CDA with airborne merging and spacing	Fuel consumption and noise on approaches are reduced while maintaining throughput in heavy traffic through Continuous Descent Approaches (CDA) combined with airborne merging and spacing in moderate-to-heavy traffic. This OI requires airborne guidance to perform optimized CDA while staying within assigned lateral and vertical airspace corridor limits. This OI is complementary to OI-325 which delivers the aircraft at top of descent with spacing to initiate a successful CDA. This OI also enables reduced spacing buffers and hence increased throughput from precision airborne spacing. Mixed equipage can be supported within a single arrival stream, with some aircraft self-spacing and other aircraft managed by ANSP. This OI requires an Implementation Decision to determine appropriate trajectory restrictions laterally, vertically, and in time, based on tradeoff between aircraft performance/efficiency versus optimal use of airspace.
NextGen Operational Improvements	Surface Management Operations - Level 2A	Efficiency of surface traffic movement is increased through the use of automation, on-board displays and data link of departure taxi instructions prior to pushback to properly equipped aircraft to reduce delay, environmental impacts and operational errors. Automation optimizes surface throughput and data links taxi instructions to aircraft. The taxi instructions include the 2D route. Pilot uses onboard displays of taxi route and guidance to efficiently and safely follow taxi instructions. Surface optimization automation includes activities such as runway snow removal, aircraft de-icing, and runway reconfiguration.
NextGen Operational Improvements	Surface Management Operations - Level 3	Aircraft and ground vehicle movement on airports in low visibility conditions is guided by moving map displays, CDTI, ADS-B (for flight vehicles), and a GSE Cooperative Surveillance System (for ground support equipment). Safety and efficiency of operations at some airports will also be enhanced by intelligent signage on the ground. Policy issue: Will this equipage be mandatory for access to some high-density airports during peak traffic times in low-visibility conditions, or will equipped aircraft be given priority access in low-visibility conditions but unequipped aircraft will be accommodated, or is this equipage simply optional. Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) some airports (Segment 2) b) OEP airports (Segment 3) c) top 100 airports (Segment 4) d) all commercial airports (Segment 6)
NextGen Operational Improvements	Surface Management Operations - Level 4	Aircraft and ground vehicle movement on airports in zero/zero visibility conditions is guided by moving map displays, CDTI, ADS-B (flight vehicles), and a GSE Cooperative Surveillance System (for ground vehicles). Requires all present aircraft and ground vehicles to have cooperative surveillance (ADS-B out). Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) OEP airports (Segment 5) b) top 100 airports (Segment 6) c) all commercial airports (Segment 7)

3.1.6.31.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
CONOPS	5.5.2.1 Cooperative Surveillance Service	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Surveillance Operations	Surveillance Operations involves the integration of non-cooperative and cooperative surveillance activities, which detect, identify and monitor ground and airborne objects to allow the creation of real-time situational awareness on the surface and air.
SRM Service Component	Cooperative	Defines the set of capabilities that allow the reliable, consistent, and unambiguous detection (i.e., multi-dimensional position) of airborne objects and other vehicles equipped with functioning avionics (i.e., surveillance sensors on the airframe) while in the air and on the ground.

3.1.6.31.4 NextGen Future Solutions

3.1.6.32 Flight Planning and Flight Data Management (1.4)

3.1.6.32.1 Description

Flight Plan Filing and Flight Data Management Services provide support to flight operators for flight planning activities. These services also manage data related to a flight from the initial filing of a proposed flight to the closing of the flight plan and the archiving of the data to support performance management analysis.

3.1.6.32.2 Purpose

Flight plan filing provides an interactive flight planning capability for all users to file a user-preferred departure to destination flight profile. Flight Operators are encouraged to file flight plans containing the 4DT well in advance of the flight.

Flight Data Management Services manage the flight object and its related data throughout the flight. Flight Data Management Services ensure that ownership and integrity of the flight object and data are maintained throughout the flight. Flight Data Management Services also manage the distribution of flight information that is stored in the flight object based on a variety of request, such as specific flights or temporal and spatial boundaries.

Enterprise Services A1

Flight Planning and Flight Data Management A1.4

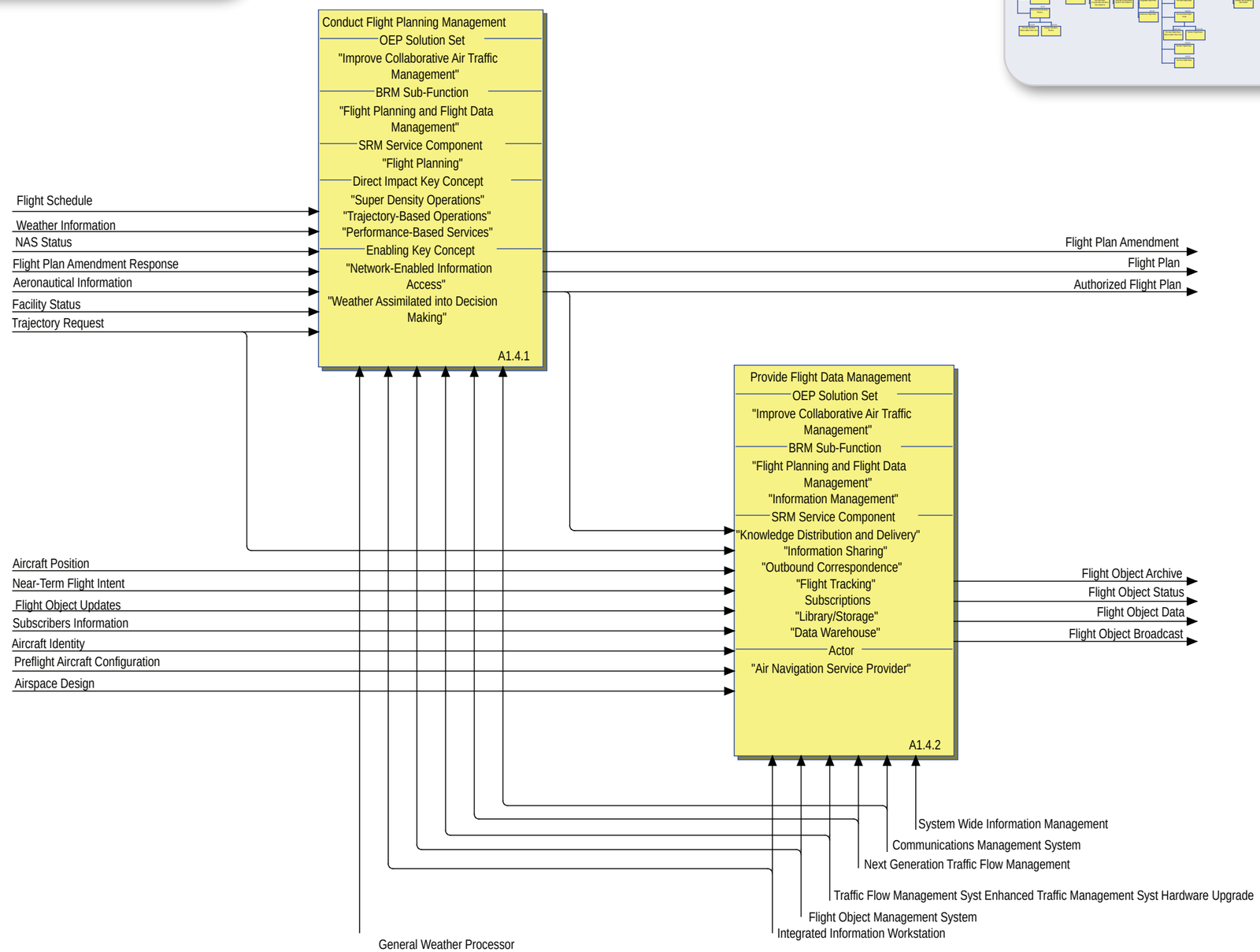


Figure 11 - 1.4 Flight Planning and Flight Data Management Activity Model Diagram

3.1.6.33 Conduct Flight Planning Management (1.4.1)

3.1.6.33.1 Description

This activity begins when either the ANSP or the flight operator initialize or requires a change in a new or existing flight plan. Fight operators and the ANSP have a range of flight planning capabilities that optimize flights based on individual mission objectives, available aircraft, security and airspace constraints, and forecasted weather (see Chapter 3). Operators also have access to an authoritative source of weather information that provides forecasts and current conditions. Flight planning automation uses both weather data and system constraint data provided from the ANSP in planning individual flights or groups of flights. Additionally, flight planning makes use of known separation standards as well as the RNP level of the equipment being used. The process ends when both the ANSP and the flight operator agree on the results. Common flight data is available for updates as the flight plan is refined or updated.

3.1.6.33.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Collaborative Air Traffic Management	Collaborative ATM covers the both the strategic and tactical interactions with the customers to manage demand when the desired use of capacity can not be accommodated. C-ATM includes the flow programs as well as collaboration on procedures that will establish balance by shifting demand to less desirable capacity alternatives e.g. routings, altitudes, times.
NextGen Operational Improvements	Automation-assisted flight plan negotiation	Real-time, automation-assisted flight plan negotiation between the ANSP and operators provides operators the capability to optimize their business objectives in the presence of constraints. Flight Operations Center (FOC) automation and net-centric data-sharing mechanisms are implemented with service providers to allow flight planning feedback and negotiation mechanisms. FOCs gain more immediate feedback on formatting issues as well as feedback on when the proposed flight plan is likely to not be achieved due to other conditions that are identified. [Flight planners and operator flight planning automation interacts with the ANSP via a set of services that provide all stakeholders the opportunity to participate in the collaborative process. These services include a common flow strategy and trajectory analysis service that enables common situational awareness of current and projected NAS status and constraints. Operators with multiple aircraft involved in an initiative have the flexibility to adjust individual aircraft schedules and trajectories within those allocations to accommodate their own internal priorities. Automation monitors changing conditions, including traffic demand and weather trends, and identifies the need for dynamic refinement of Traffic Management Initiatives (TMIs).
NextGen Operational Improvements	Improved collaborative in-flight rerouting	Flight operators file multiple flight plans and ANSP selects the one that most efficiently meets flow management goals during operations, but may change to another selection during the flight as unexpected delays occur.
NextGen Operational Improvements	Improved Collaborative Oceanic Routing	Oceanic route efficiency is improved through collaborative negotiation of entry times and track loading and oceanic traffic handling is improved through comparison of current routes against desired profiles to identify beneficial control actions. Aircraft dispatchers and traffic flow managers negotiate oceanic entry times prior to departure. The negotiation includes looking ahead to plan near-term climbs when loading tracks. Oceanic 4D profiles of active flights are continually examined to determine control actions that enhance oceanic capacity while providing improved efficiency within traffic flows. This is an extension of “tailored arrivals,” where either a) aircraft send desired profiles (pre-departure and real-time), or b) ground automation predicts desired profiles.
NextGen Operational Improvements	Reduced human errors in operation of automated systems	Human errors are reduced through equipage of aircraft and ground systems with human-centered automation interfaces and skill training for automation. Interfaces are developed that increase usefulness and understandability of information, maintain appropriate human engagement, increase situation comprehension, increase situation comprehension, increase awareness of systems health, ensure the availability and the accessibility of needed information, and improve collaborative decision making. This OI includes development of improved training methods for flight crews and ground employees that focus on the increased use of, and integration of, automation, and the development of training modules and simulators targeted at improving and maintaining skills in areas especially vulnerable to error.
NextGen Operational Improvements	Reduced terminal and enroute significant noise impact	Noise- and emissions-favorable RNP routes are used en route. This OI also includes reduction of noise over national parks.
NextGen Operational Improvements	Reduced weather-related incidents	Weather-related incidents are reduced through equipage of aircraft with cockpit weather system technologies for enhanced situational awareness and decision making. Aircraft are equipped with icing detection and avoidance technologies, icing tolerant technologies, icing computational tools, airborne weather reporting sensor technologies, weather information data link systems technologies for ground-to-air dissemination, airborne weather reporting data link systems for air-to-ground and air-to-air dissemination, and turbulence detection, warning and alerting technologies. Improvements are needed in icing experimental methods, icing experimental databases, icing atmospheric characterization technologies, and icing education and training tools.
NAS Operational Improvements	Provide Full Flight Plan Constraint Evaluation with Feedback	Timely and accurate national airspace system (NAS) information enables users to plan and fly routings that meet their objectives. Constraint information that impacts the proposed route of flight is incorporated into air navigation service provider (ANSP) automation, and is available to users. Examples of constraint information include special use airspace status, SIGMETS, infrastructure outages, and significant congestion events.
NAS Operational Improvements	Provide Interactive Flight Planning from Anywhere	Flight planning activities are accomplished from the flight deck as readily as any location. Airborne and ground automation provide the capability to exchange flight planning information and negotiate flight trajectory contract amendments in near real-time.
NAS Operational Improvements	Trajectory Flight Data Management	Flight planning and trajectory processing incorporates flight data information from the flight deck into trajectory and conformance modeling tools. Trajectories are negotiated and updated with respect to actual versus projected trajectory through collaboration processes that ensure requested changes are consistent with flow objectives.

3.1.6.33.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
ICAO ATMCP Requirement	R 27	Flight parameters and aircraft performance characteristics shall be available to the ATM system.
CONOPS	2.6 TRANSFORMED FLIGHT OPERATIONS	
CONOPS	5.6 FLIGHT PLAN FILING AND FLIGHT DATA MANAGEMENT SERVICES	

Type	Name	Description
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
Key Concept	Weather Assimilated into Decisionmaking	By assimilating weather into decisionmaking, weather information becomes an enabler for optimizing NextGen operations. Directly applying probabilistic weather information to ATM decision tools increases the effective use of weather information and minimizes the adverse effects of weather on operations.
BRM Sub-Function	Flight Planning and Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.
SRM Service Component	Flight Planning	Defines the set of capabilities that optimize flights based on individual mission objectives, available aircraft, security and airspace constraints, and forecasted weather.

3.1.6.33.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Flight Object Management System	The Flight Object Management System (FOMS) is a component of the Standard Automation Platform (SAP). FOMS processes flight data received from multiple sources via the System Wide Information Management (SWIM) Management Unit (SMU). FOMS also receives track data from the Surveillance Data Processor (SDP) and associates tracks with flight data, producing the flight object which is published to SWIM for subscriber use. Flight plan support functionality includes end-to-end profile evaluation in all phases of flight and evaluation against static and dynamic constraints (terrain, obstacles, airspace restrictions, etc.). FOMS supports flight planning up to 180 day prior to day of flight. A user can access the flight object from initial to close-out in the same manner.FOMS provides end-to-end flight data management from preflight to post-analysis. Ownership of the flight object begins and ends with TFM and transitions during the flight to clearance delivery, ramp, surface, departure, transition to cruise, cruise, transition to arrival, …..ramp. Flight data management is based on trajectory, assigned volumes, and "necessary" route structure.
FAA Systems	General Weather Processor	The GWP represents a consolidation of weather processing functionality as it will collect, analyze, tailor, display, and distribute the bulk of weather data/products/information throughout much of the NAS. The GWP will receive weather data from multiple sensors and distribute processed and tailored weather information via System Wide Information Management. The GWP provides a standard set of algorithms and access to data/products that convey current and future status of impacting weather to all NAS services. It will likely interface to a National 4-Dimensional Weather Data Base (4D Wx Db)for data retrieval and storage of output products for later retrieval by FAA users and their automation systems as well as other agencies such as NWS, DoD, Dept of Homeland Security, etc). Other non-FAA users such as airline dispatchers will likely have access to GWP products (via 4D Wx Db). The initial implementation of the GWP will subsume the weather processing functionality of WARP and CIWS (called CWI for CIWS-WARP Integration), in the 2013/14 timeframe. It will also interface with SWIM to ingest numerous data sets as well as for disseminating tailored weather products/information throughout the NAS. Later, around 2022 or so, the GWP will subsume the functionality of ITWS [late in the ITWS lifecycle] if it is deemed prudent to do so.
FAA Systems	Integrated Information Workstation	The Integrated Information Workstation Build 2 will incorporate new hardware technology and software enhancements through a technical refresh program. However, as of December 2005 the Joint Planning and Development Office (JPDO) is designing the Next Generation Air Transportation System (NEXTGEN) so the IIW Build 1 and Build 2 will have new names.)
FAA Systems	System Wide Information Management	The System Wide Information Management (SWIM) program provides the technology for precise information sharing among users including a common air surveillance picture, improved data exchange, and situational awareness. This system is a command and response database that draws information from other systems and makes it available to authorized users. This system provides the potential for reduced separation standards for Air Traffic Management (ATM) and flight conformance monitoring for homeland security. The SWIM program will improve utilization of airspace by providing users with information on heavily loaded air traffic control (ATC) sectors and other factors that would impact flight delays. It is part of the future planning to upgrade automation systems and provide more accurate and timely information for all system users. This program will demonstrate the effectiveness of seamless information sharing between Flight Operations Centers and air traffic controllers using SWIM. The SWIM program will also provide important business case information, technical analysis and documentation to support the decision process for future National Airspace System (NAS) capacity improvements.
FAA Systems	Communications Management System	The Communications Management System (CMS) Management and Control function performs tasks for overall management and control of all air-to-ground (A/G) and ground-to-ground (G/G) voice and data communications to support the System Wide Information Management (SWIM) system. CMS will also incorporate a reconfiguration control function to support reconfigurable airspace assignments, data routing, and a digital recording for both voice and data. The CMS routing function is a data router that ensures transport of data communications among air traffic control (ATC) facilities and users of SWIM. Additionally, CMS integrates functionalities inherently provided by the voice switches, the voice recorders, and the Aeronautical Telecommunication Network (ATN) A/G router.

Type	Name	Description
FAA Systems	Traffic Flow Management Syst Enhanced Traffic Management Syst Hardware Upgrade	The Traffic Flow Management System - Enhanced Traffic Management System Hardware Upgrade (TFMS - ETMS HW Up) mechanism is a technology refresh of existing equipment and workstations at the FAA David J. Hurley Air Traffic Control System Command Center (ATCSCC), the hub at the John A Volpe National Transportation Systems Center (Volpe Center), and Traffic Management Units (TMUs) located at Air Route Traffic Control Centers (ARTCCs), Terminal Radar Approach Control (TRACON) facilities and some Airport Traffic Control Towers (ATCTs). As a program under the Traffic Flow Management-Modernization (TFM-M) program and Collaborative ATM (CATM) Segment, the TFMS-ETMS Hardware Upgrade will prepare the Traffic Flow Management Infrastructure for the software upgrade described under "TFMS-CATM-T Apps Upgrade". The hardware refresh on the ETMS was completed at the Volpe Center Hub Site in June 2003 and at 77 remote FAA sites by December 2004. A System Design Review (SDR) for the TFM-M was held in April 2005 and a Preliminary Design Review (PDR) TFM-M was held in September 2005. A build-out of TFM Enhanced Disaster Recovery Capability at the FAA William J. Hughes Technical Center (WJHTC) began in January 2006.
NAS Activity	Convey Flight Plan	The activity of disseminating an active flight plan to the appropriate facilities.
NAS Activity	Manage Flight Information	The supervision of the necessary activities involved in regulating the

3.1.6.34 Provide Flight Data Management (1.4.2)

3.1.6.34.1 Description

This activity ensures that ownership and integrity of the flight object and data are maintained throughout the flight, and to ensure storage of a flight data upon completion of a flight.

3.1.6.34.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Collaborative Air Traffic Management	Collaborative ATM covers the both the strategic and tactical interactions with the customers to manage demand when the desired use of capacity can not be accommodated. C-ATM includes the flow programs as well as collaboration on procedures that will establish balance by shifting demand to less desirable capacity alternatives e.g. routings, altitudes, times.
NAS Operational Improvements	Continuous Flight Day Management	
NAS Operational Improvements	Trajectory Flight Data Management	Flight planning and trajectory processing incorporates flight data information from the flight deck into trajectory and conformance modeling tools. Trajectories are negotiated and updated with respect to actual versus projected trajectory through collaboration processes that ensure requested changes are consistent with flow objectives.
NAS Operational Improvements	Use Aircraft Provided Intent Data to Improve Conflict Resolution	Air navigation service provider (ANSP) automation uses aircraft position broadcast reports, velocity, and intent data to provide tactical and strategic separation services and more efficient flows. Aircraft exchange of intent data enables aircraft-to-aircraft delegated separation authority when operationally advantageous.
NAS Operational Improvements	Use Aircraft Provided Intent Data to Improve Flow Conflict Resolution	Air navigation service provider (ANSP) automation uses aircraft provided intent data (4D trajectory contracts) to improve modeling of conflict-free flows at high-density airports. Conformance monitoring tools ensure 4D trajectories reflect the aircraft's actual and intended state.

3.1.6.34.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
ICAO ATMCP Requirement	R 09	The ATM system shall use relevant data to dynamically optimize 4-D trajectory planning.
ICAO ATMCP Requirement	R 27	Flight parameters and aircraft performance characteristics shall be available to the ATM system.
ICAO ATMCP Requirement	R 31	Flight parameters and aircraft performance characteristics shall be available to the ATM system
ICAO ATMCP Requirement	R 48	The evolution of the ATM system shall provide incentives to upgrade to new capabilities
ICAO ATMCP Requirement	R 49	The ATM system shall provide benefits commensurate with the level of aircraft capabilities or performance.
ICAO ATMCP Requirement	R 75	The ATM system shall provide information systems that identify the nature of the information in terms of historical, current or planned.
ICAO ATMCP Requirement	R 98	The ATM system shall use flight trajectory, flight intent and individual aircraft performance characteristics in the provision of ATM services.
CONOPS	5.6 FLIGHT PLAN FILING AND FLIGHT DATA MANAGEMENT SERVICES	
BRM Sub-Function	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.
BRM Sub-Function	Flight Planning and Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.
SRM Service Component	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.
SRM Service Component	Library/Storage	Defines the set of capabilities that support document and data warehousing and archiving.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Data Warehouse	Defines the set of capabilities that support the archiving and storage of large volumes of data.

Type	Name	Description
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Flight Tracking	Defines the set of capabilities that monitor flight object data to track aircraft execution conformance against the flight plan (filed information) and subsequent instructions (clearances).
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.

3.1.6.34.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Flight Object Management System	The Flight Object Management System (FOMS) is a component of the Standard Automation Platform (SAP). FOMS processes flight data received from multiple sources via the System Wide Information Management (SWIM) Management Unit (SMU). FOMS also receives track data from the Surveillance Data Processor (SDP) and associates tracks with flight data, producing the flight object which is published to SWIM for subscriber use. Flight plan support functionality includes end-to-end profile evaluation in all phases of flight and evaluation against static and dynamic constraints (terrain, obstacles, airspace restrictions, etc.). FOMS supports flight planning up to 180 day prior to day of flight. A user can access the flight object from initial to close-out in the same manner.FOMS provides end-to-end flight data management from preflight to post-analysis. Ownership of the flight object begins and ends with TFM and transitions during the flight to clearance delivery, ramp, surface, departure, transition to cruise, cruise, transition to arrival, …..ramp. Flight data management is based on trajectory, assigned volumes, and "necessary" route structure.
FAA Systems	Integrated Information Workstation	The Integrated Information Workstation Build 2 will incorporate new hardware technology and software enhancements through a technical refresh program. However, as of December 2005 the Joint Planning and Development Office (JPDO) is designing the Next Generation Air Transportation System (NEXTGEN) so the IIW Build 1 and Build 2 will have new names.)
FAA Systems	Communications Management System	The Communications Management System (CMS) Management and Control function performs tasks for overall management and control of all air-to-ground (A/G) and ground-to-ground (G/G) voice and data communications to support the System Wide Information Management (SWIM) system. CMS will also incorporate a reconfiguration control function to support reconfigurable airspace assignments, data routing, and a digital recording for both voice and data. The CMS routing function is a data router that ensures transport of data communications among air traffic control (ATC) facilities and users of SWIM. Additionally, CMS integrates functionalities inherently provided by the voice switches, the voice recorders, and the Aeronautical Telecommunication Network (ATN) A/G router.
FAA Systems	Traffic Flow Management Syst Enhanced Traffic Management Syst Hardware Upgrade	The Traffic Flow Management System - Enhanced Traffic Management System Hardware Upgrade (TFMS - ETMS HW Up) mechanism is a technology refresh of existing equipment and workstations at the FAA David J. Hurley Air Traffic Control System Command Center (ATCSCC), the hub at the John A Volpe National Transportation Systems Center (Volpe Center), and Traffic Management Units (TMUs) located at Air Route Traffic Control Centers (ARTCCs), Terminal Radar Approach Control (TRACON) facilities and some Airport Traffic Control Towers (ATCTs). As a program under the Traffic Flow Management-Modernization (TFM-M) program and Collaborative ATM (CATM) Segment, the TFMS-ETMS Hardware Upgrade will prepare the Traffic Flow Management Infrastructure for the software upgrade described under "TFMS-CATM-T Apps Upgrade". The hardware refresh on the ETMS was completed at the Volpe Center Hub Site in June 2003 and at 77 remote FAA sites by December 2004. A System Design Review (SDR) for the TFM-M was held in April 2005 and a Preliminary Design Review (PDR) TFM-M was held in September 2005. A build-out of TFM Enhanced Disaster Recovery Capability at the FAA William J. Hughes Technical Center (WJHTC) began in January 2006.

Type	Name	Description
NAS Activity	Manage Flight Information	The supervision of the necessary activities involved in regulating the

3.1.6.35 Conduct Flight Planning Management (1.4.1)

3.1.6.35.1 Description

This activity begins when either the ANSP or the flight operator initialize or requires a change in a new or existing flight plan. Fight operators and the ANSP have a range of flight planning capabilities that optimize flights based on individual mission objectives, available aircraft, security and airspace constraints, and forecasted weather (see Chapter 3). Operators also have access to an authoritative source of weather information that provides forecasts and current conditions. Flight planning automation uses both weather data and system constraint data provided from the ANSP in planning individual flights or groups of flights. Additionally, flight planning makes use of known separation standards as well as the RNP level of the equipment being used. The process ends when both the ANSP and the flight operator agree on the results. Common flight data is available for updates as the flight plan is refined or updated.

Enterprise Services A1

Flight Planning and Flight Data Management A1.4

Conduct Flight Planning Management A1.4.1

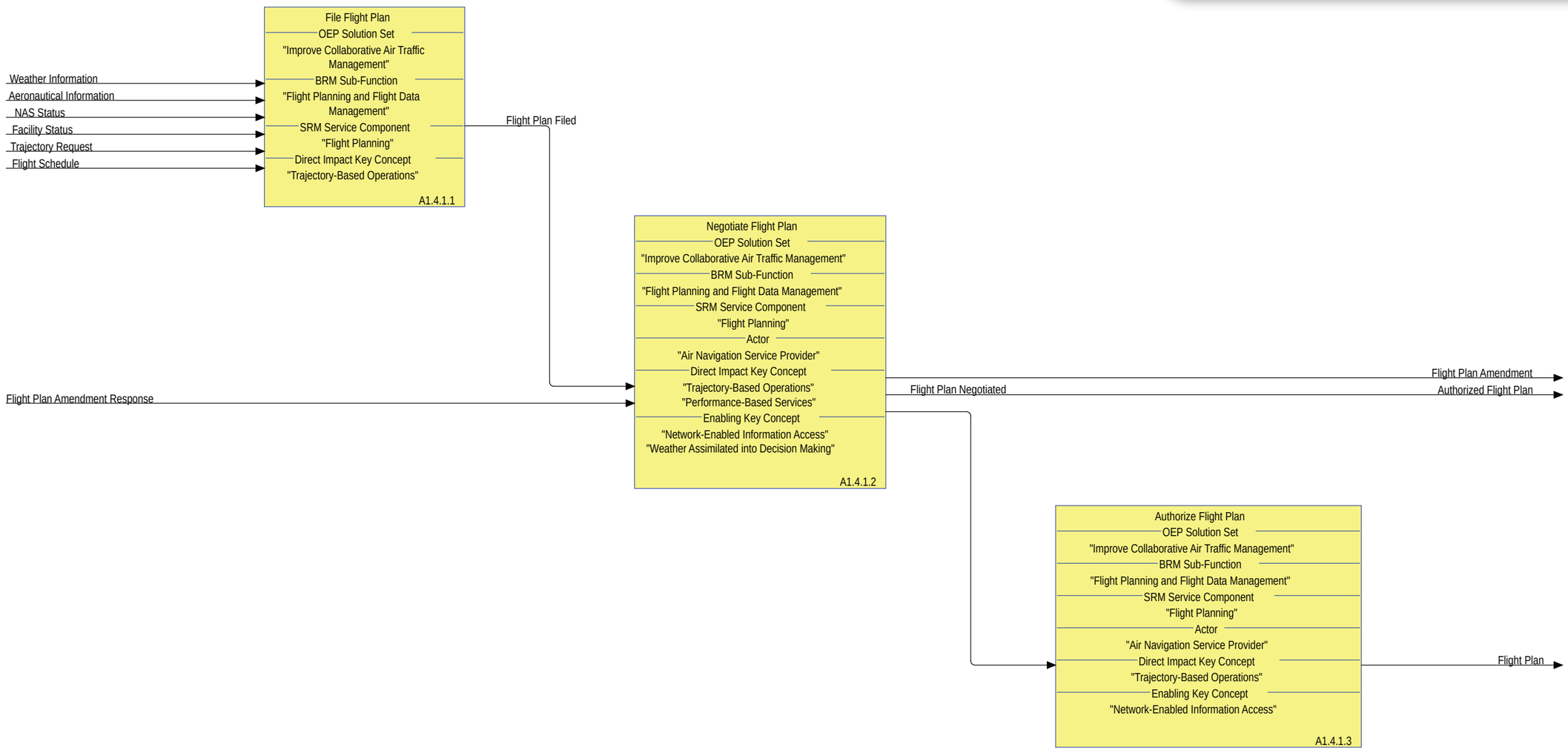


Figure 12 - 1.4.1 Conduct Flight Planning Management Activity Model Diagram

3.1.6.36 File Flight Plan (1.4.1.1)

3.1.6.36.1 Description

This activity provides the capability to submit a user-preferred departure-to-destination flight plan. The flight plan (including the planned trajectory) is managed as part of the Flight Object and this provides the aircraft capabilities.

3.1.6.36.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Collaborative Air Traffic Management	Collaborative ATM covers the both the strategic and tactical interactions with the customers to manage demand when the desired use of capacity can not be accommodated. C-ATM includes the flow programs as well as collaboration on procedures that will establish balance by shifting demand to less desirable capacity alternatives e.g. routings, altitudes, times.
NextGen Operational Improvements	Automation-assisted flight plan negotiation	Real-time, automation-assisted flight plan negotiation between the ANSP and operators provides operators the capability to optimize their business objectives in the presence of constraints. Flight Operations Center (FOC) automation and net-centric data-sharing mechanisms are implemented with service providers to allow flight planning feedback and negotiation mechanisms. FOCs gain more immediate feedback on formatting issues as well as feedback on when the proposed flight plan is likely to not be achieved due to other conditions that are identified. [Flight planners and operator flight planning automation interacts with the ANSP via a set of services that provide all stakeholders the opportunity to participate in the collaborative process. These services include a common flow strategy and trajectory analysis service that enables common situational awareness of current and projected NAS status and constraints. Operators with multiple aircraft involved in an initiative have the flexibility to adjust individual aircraft schedules and trajectories within those allocations to accommodate their own internal priorities. Automation monitors changing conditions, including traffic demand and weather trends, and identifies the need for dynamic refinement of Traffic Management Initiatives (TMIs).
NextGen Operational Improvements	Improved collaborative in-flight rerouting	Flight operators file multiple flight plans and ANSP selects the one that most efficiently meets flow management goals during operations, but may change to another selection during the flight as unexpected delays occur.
NextGen Operational Improvements	Improved Collaborative Oceanic Routing	Oceanic route efficiency is improved through collaborative negotiation of entry times and track loading and oceanic traffic handling is improved through comparison of current routes against desired profiles to identify beneficial control actions. Aircraft dispatchers and traffic flow managers negotiate oceanic entry times prior to departure. The negotiation includes looking ahead to plan near-term climbs when loading tracks. Oceanic 4D profiles of active flights are continually examined to determine control actions that enhance oceanic capacity while providing improved efficiency within traffic flows. This is an extension of "tailored arrivals," where either a) aircraft send desired profiles (pre-departure and real-time), or b) ground automation predicts desired profiles.

3.1.6.36.3 NextGen Drivers

Type	Name	Description
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
Actor	System	An automation system
ICAO ATMCP Requirement	R 45	The ATM system shall accommodate all types of airspace user missions
CONOPS	2.6 TRANSFORMED FLIGHT OPERATIONS	
CONOPS	5.6 FLIGHT PLAN FILING AND FLIGHT DATA MANAGEMENT SERVICES	
BRM Sub-Function	Flight Planning and Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.
SRM Service Component	Flight Planning	Defines the set of capabilities that optimize flights based on individual mission objectives, available aircraft, security and airspace constraints, and forecasted weather.

3.1.6.36.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Convey Flight Plan	The activity of disseminating an active flight plan to the appropriate facilities.
NAS Activity	Execute Flight Planning Operation	To perform the activities necessary before flight,I.e., plan the route of flight, obtain a weather briefing, check NOTAMS, file the flight plan, etc.
NAS Activity	Plan Flight	Verb phrase: The activity necessary for preparing for a flight I.e., determining the route of flight, fuel requirements, checking the weather, etc.
NAS Activity	Schedule Flight	The activity required to determine the destination and the departure and arrival times for a flight.

3.1.6.37 Negotiate Flight Plan (1.4.1.2)

3.1.6.37.1 Description

The activity provides automated feedback on flight plans if filed flight plans constrain the system (such as the presence of congestion or reserved airspace.), significant weather, or performance-based airspace capability requirements for the planned route.

3.1.6.37.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Collaborative Air Traffic Management	Collaborative ATM covers the both the strategic and tactical interactions with the customers to manage demand when the desired use of capacity can not be accommodated. C-ATM includes the flow programs as well as collaboration on procedures that will establish balance by shifting demand to less desirable capacity alternatives e.g. routings, altitudes, times.
NextGen Operational Improvements	Automation-assisted flight plan negotiation	Real-time, automation-assisted flight plan negotiation between the ANSP and operators provides operators the capability to optimize their business objectives in the presence of constraints. Flight Operations Center (FOC) automation and net-centric data-sharing mechanisms are implemented with service providers to allow flight planning feedback and negotiation mechanisms. FOCs gain more immediate feedback on formatting issues as well as feedback on when the proposed flight plan is likely to not be achieved due to other conditions that are identified. [Flight planners and operator flight planning automation interacts with the ANSP via a set of services that provide all stakeholders the opportunity to participate in the collaborative process. These services include a common flow strategy and trajectory analysis service that enables common situational awareness of current and projected NAS status and constraints. Operators with multiple aircraft involved in an initiative have the flexibility to adjust individual aircraft schedules and trajectories within those allocations to accommodate their own internal priorities. Automation monitors changing conditions, including traffic demand and weather trends, and identifies the need for dynamic refinement of Traffic Management Initiatives (TMIs).

Type	Name	Description
NextGen Operational Improvements	Improved collaborative in-flight rerouting	Flight operators file multiple flight plans and ANSP selects the one that most efficiently meets flow management goals during operations, but may change to another selection during the flight as unexpected delays occur.
NextGen Operational Improvements	Improved Collaborative Oceanic Routing	Oceanic route efficiency is improved through collaborative negotiation of entry times and track loading and oceanic traffic handling is improved through comparison of current routes against desired profiles to identify beneficial control actions. Aircraft dispatchers and traffic flow managers negotiate oceanic entry times prior to departure. The negotiation includes looking ahead to plan near-term climbs when loading tracks. Oceanic 4D profiles of active flights are continually examined to determine control actions that enhance oceanic capacity while providing improved efficiency within traffic flows. This is an extension of "tailored arrivals," where either a) aircraft send desired profiles (pre-departure and real-time), or b) ground automation predicts desired profiles.

3.1.6.37.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
CONOPS	2.6 TRANSFORMED FLIGHT OPERATIONS	
CONOPS	5.6 FLIGHT PLAN FILING AND FLIGHT DATA MANAGEMENT SERVICES	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.

Type	Name	Description
Key Concept	Weather Assimilated into Decisionmaking	By assimilating weather into decisionmaking, weather information becomes an enabler for optimizing NextGen operations. Directly applying probabilistic weather information to ATM decision tools increases the effective use of weather information and minimizes the adverse effects of weather on operations.
BRM Sub-Function	Flight Planning and Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.
SRM Service Component	Flight Planning	Defines the set of capabilities that optimize flights based on individual mission objectives, available aircraft, security and airspace constraints, and forecasted weather.

3.1.6.37.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Guide Flight	The activity of determining the current location as well as the path which the aircraft will take on its flight from one destination to the next.
NAS Activity	Issue Synchronization State Information	The activity of disseminating instructions to pilots in order to change the sychronization plan, or prevent deviations from the synchronization plan.
NAS Activity	Manage Flight Plan	The activity of receiving and updating an active flight plan.
NAS Activity	Manage Pre-Flight Flight Plan	The activity which accepts, processes, and validates flight plan data from all users.

3.1.6.38 Authorize Flight Plan (1.4.1.3)

3.1.6.38.1 Description

This activity provides the finalized flight plan before the execution of the flight. The flight plan will be finalized within 1-2 hours before flight.

3.1.6.38.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Collaborative Air Traffic Management	Collaborative ATM covers the both the strategic and tactical interactions with the customers to manage demand when the desired use of capacity can not be accommodated. C-ATM includes the flow programs as well as collaboration on procedures that will establish balance by shifting demand to less desirable capacity alternatives e.g. routings, altitudes, times.

3.1.6.38.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	System	An automation system

Type	Name	Description
CONOPS	2.6 TRANSFORMED FLIGHT OPERATIONS	
CONOPS	5.6 FLIGHT PLAN FILING AND FLIGHT DATA MANAGEMENT SERVICES	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Flight Planning and Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.
SRM Service Component	Flight Planning	Defines the set of capabilities that optimize flights based on individual mission objectives, available aircraft, security and airspace constraints, and forecasted weather.

3.1.6.38.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Convey Flight Plan	The activity of disseminating an active flight plan to the appropriate facilities.
NAS Activity	Execute Flight Plan	Perform the necessary activities necessary to fly the aircraft, navigate, and communicate.
NAS Activity	Execute Flight Planning Operation	To perform the activities necessary before flight,I.e., plan the route of flight, obtain a weather briefing, check NOTAMS, file the flight plan, etc.

3.1.6.39 Provide Flight Data Management (1.4.2)

3.1.6.39.1 Description

This activity ensures that ownership and integrity of the flight object and data are maintained throughout the flight, and to ensure storage of a flight data upon completion of a flight.

Enterprise Services A1

Flight Planning and Flight Data Management A1.4

Provide Flight Data Management A1.4.2

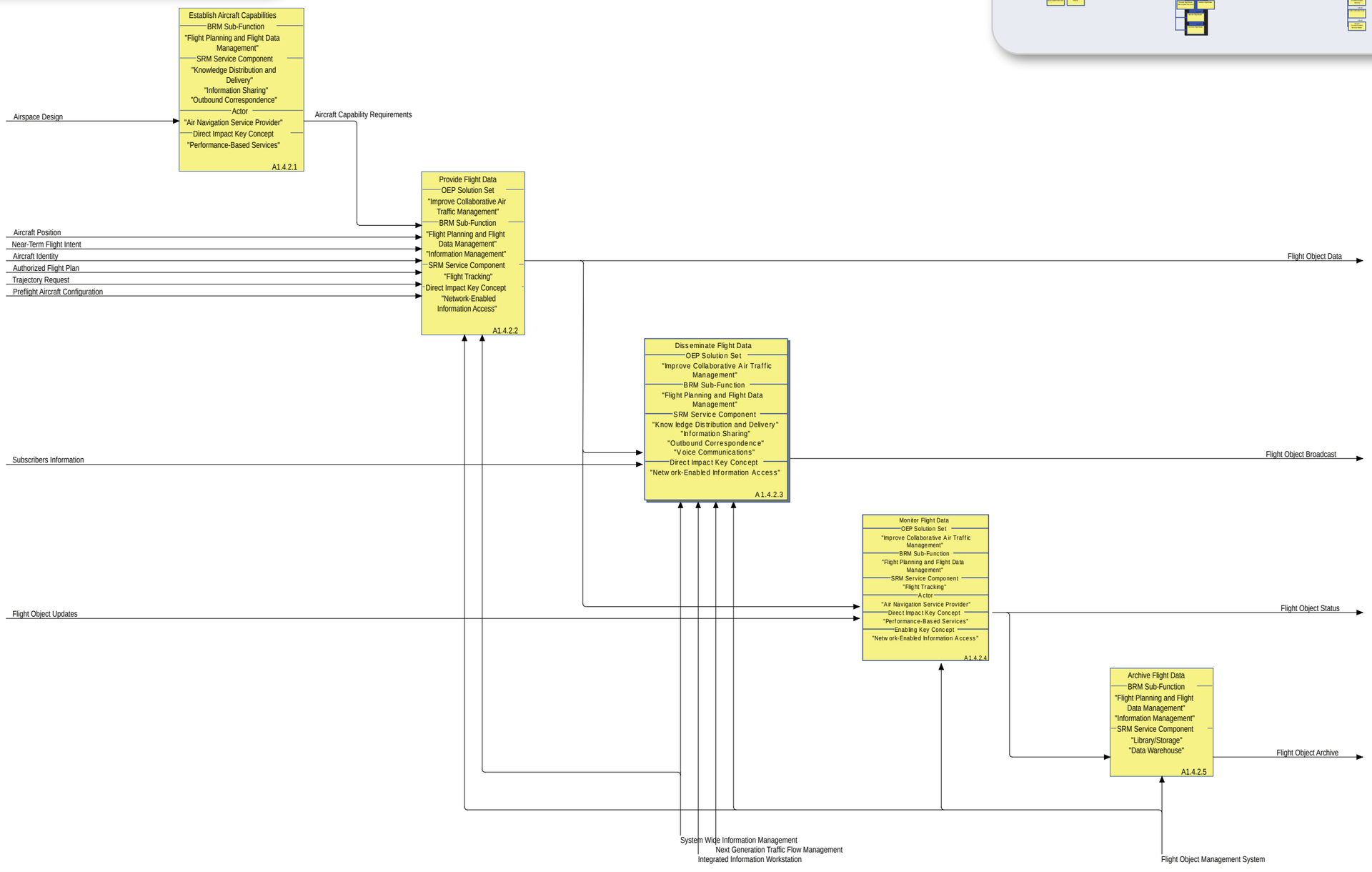


Figure 13 - 1.4.2 Provide Flight Data Management Activity Model Diagram

3.1.6.40 Establish Aircraft Capabilities (1.4.2.1)

3.1.6.40.1 Description

This activity will establish the minimum aircraft capabilities in order to achieve the desired level of service for airport and airspace use. This will be coordinated with the ANSP and disseminated to stakeholders.

3.1.6.40.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Reduced unit level of aircraft emissions	Overall aircraft emissions can be reduced by improvements in aircraft engine and airframe technologies that reduce the unit generation of emissions by the aircraft and used by the fleet.

3.1.6.40.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
ICAO ATMCP Requirement	R 116	Aircraft capabilities consistent with the applicable airspace management requirements shall allow airspace users to fly user-preferred trajectories
ICAO ATMCP Requirement	R177	Ensure aircraft capabilities will be totally integrated in the collaborative decision-making process of the ATM community and allow it to comply with all relevant ATM system requirements.
CONOPS	2.1.1 ATM Goals and Overall Framework	
CONOPS	2.2 CHANGES IN ROLES AND RESPONSIBILITIES	
CONOPS	2.4.5 Separation Management Process	
CONOPS	2.5 CLASSIC AIRSPACE AND OPERATIONS	
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Flight Planning and Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.

3.1.6.40.4 NextGen Future Solutions

3.1.6.41 Provide Flight Data (1.4.2.2)

3.1.6.41.1 Description

This activity provides the distribution of flight information (stored in the flight object) based on a variety of requests (e.g. specific flights or temporal and spatial boundaries). The Flight Object provides access to all relevant information about a particular flight. Different stakeholders will have varying access to elements of the flight object (e.g. for privacy or security concerns).

3.1.6.41.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Collaborative Air Traffic Management	Collaborative ATM covers the both the strategic and tactical interactions with the customers to manage demand when the desired use of capacity can not be accommodated. C-ATM includes the flow programs as well as collaboration on procedures that will establish balance by shifting demand to less desirable capacity alternatives e.g. routings, altitudes, times.

3.1.6.41.3 NextGen Drivers

Type	Name	Description
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
Actor	System	An automation system
ICAO ATMCP Requirement	R 55	The airspace user shall provide the individual aircraft performance.
ICAO ATMCP Requirement	R 56	The airspace user shall provide the individual operating environment.
ICAO ATMCP Requirement	R 98	The ATM system shall use flight trajectory, flight intent and individual aircraft performance characteristics in the provision of ATM services.
CONOPS	5.6 FLIGHT PLAN FILING AND FLIGHT DATA MANAGEMENT SERVICES	

Type	Name	Description
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.
BRM Sub-Function	Flight Planning and Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.
SRM Service Component	Flight Tracking	Defines the set of capabilities that monitor flight object data to track aircraft execution conformance against the flight plan (filed information) and subsequent instructions (clearances).

3.1.6.41.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Flight Object Management System	The Flight Object Management System (FOMS) is a component of the Standard Automation Platform (SAP). FOMS processes flight data received from multiple sources via the System Wide Information Management (SWIM) Management Unit (SMU). FOMS also receives track data from the Surveillance Data Processor (SDP) and associates tracks with flight data, producing the flight object which is published to SWIM for subscriber use. Flight plan support functionality includes end-to-end profile evaluation in all phases of flight and evaluation against static and dynamic constraints (terrain, obstacles, airspace restrictions, etc.). FOMS supports flight planning up to 180 day prior to day of flight. A user can access the flight object from initial to close-out in the same manner.FOMS provides end-to-end flight data management from preflight to post-analysis. Ownership of the flight object begins and ends with TFM and transitions during the flight to clearance delivery, ramp, surface, departure, transition to cruise, cruise, transition to arrival, …..ramp. Flight data management is based on trajectory, assigned volumes, and "necessary" route structure.
FAA Systems	System Wide Information Management	The System Wide Information Management (SWIM) program provides the technology for precise information sharing among users including a common air surveillance picture, improved data exchange, and situational awareness. This system is a command and response database that draws information from other systems and makes it available to authorized users. This system provides the potential for reduced separation standards for Air Traffic Management (ATM) and flight conformance monitoring for homeland security. The SWIM program will improve utilization of airspace by providing users with information on heavily loaded air traffic control (ATC) sectors and other factors that would impact flight delays. It is part of the future planning to upgrade automation systems and provide more accurate and timely information for all system users. This program will demonstrate the effectiveness of seamless information sharing between Flight Operations Centers and air traffic controllers using SWIM. The SWIM program will also provide important business case information, technical analysis and documentation to support the decision process for future National Airspace System (NAS) capacity improvements.

3.1.6.42 Disseminate Flight Data (1.4.2.3)

3.1.6.42.1 Description

This activity is the dissemination of the flight object data.

3.1.6.42.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Collaborative Air Traffic Management	Collaborative ATM covers the both the strategic and tactical interactions with the customers to manage demand when the desired use of capacity can not be accommodated. C-ATM includes the flow programs as well as collaboration on procedures that will establish balance by shifting demand to less desirable capacity alternatives e.g. routings, altitudes, times.

3.1.6.42.3 NextGen Drivers

Type	Name	Description
Actor	System	An automation system
ICAO ATMCP Requirement	R 12	Information exchange protocols and procedures shall be established to ensure that appropriate performance can be achieved within the agreed rules
ICAO ATMCP Requirement	R 78	The ATM system shall support a reduction in transactional friction for the transmission of information across the systems.
ICAO ATMCP Requirement	R 79	A relevant validity period of ATM system information shall be evident to the user of that information.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Flight Planning and Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Voice Communications	Defines the set of capabilities that provide telephony or other voice communications.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.

3.1.6.42.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Flight Object Management System	The Flight Object Management System (FOMS) is a component of the Standard Automation Platform (SAP). FOMS processes flight data received from multiple sources via the System Wide Information Management (SWIM) Management Unit (SMU). FOMS also receives track data from the Surveillance Data Processor (SDP) and associates tracks with flight data, producing the flight object which is published to SWIM for subscriber use. Flight plan support functionality includes end-to-end profile evaluation in all phases of flight and evaluation against static and dynamic constraints (terrain, obstacles, airspace restrictions, etc.). FOMS supports flight planning up to 180 day prior to day of flight. A user can access the flight object from initial to close-out in the same manner.FOMS provides end-to-end flight data management from preflight to post-analysis. Ownership of the flight object begins and ends with TFM and transitions during the flight to clearance delivery, ramp, surface, departure, transition to cruise, cruise, transition to arrival, …..ramp. Flight data management is based on trajectory, assigned volumes, and "necessary" route structure.
FAA Systems	Integrated Information Workstation	The Integrated Information Workstation Build 2 will incorporate new hardware technology and software enhancements through a technical refresh program. However, as of December 2005 the Joint Planning and Development Office (JPDO) is designing the Next Generation Air Transportation System (NEXTGEN) so the IIW Build 1 and Build 2 will have new names.)
FAA Systems	Next Generation Traffic Flow Management	Enhanced decision support systems provide increased information exchange between service providers and FAA users via SWIM. Enhanced information exchange with external users continues via the AOCnet. NG-TFM provides post event analysis, increased predictability, and manages pre- and post- flight information.
FAA Systems	System Wide Information Management	The System Wide Information Management (SWIM) program provides the technology for precise information sharing among users including a common air surveillance picture, improved data exchange, and situational awareness. This system is a command and response database that draws information from other systems and makes it available to authorized users. This system provides the potential for reduced separation standards for Air Traffic Management (ATM) and flight conformance monitoring for homeland security. The SWIM program will improve utilization of airspace by providing users with information on heavily loaded air traffic control (ATC) sectors and other factors that would impact flight delays. It is part of the future planning to upgrade automation systems and provide more accurate and timely information for all system users. This program will demonstrate the effectiveness of seamless information sharing between Flight Operations Centers and air traffic controllers using SWIM. The SWIM program will also provide important business case information, technical analysis and documentation to support the decision process for future National Airspace System (NAS) capacity improvements.

3.1.6.43 Monitor Flight Data (1.4.2.4)

3.1.6.43.1 Description

This activity monitors the flight data to track any changes made to the flight.

3.1.6.43.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Collaborative Air Traffic Management	Collaborative ATM covers the both the strategic and tactical interactions with the customers to manage demand when the desired use of capacity can not be accommodated. C-ATM includes the flow programs as well as collaboration on procedures that will establish balance by shifting demand to less desirable capacity alternatives e.g. routings, altitudes, times.
NAS Operational Improvements	Continuous Flight Day Management	

3.1.6.43.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	System	An automation system
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Flight Planning and Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.
SRM Service Component	Flight Tracking	Defines the set of capabilities that monitor flight object data to track aircraft execution conformance against the flight plan (filed information) and subsequent instructions (clearances).

3.1.6.43.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Flight Object Management System	The Flight Object Management System (FOMS) is a component of the Standard Automation Platform (SAP). FOMS processes flight data received from multiple sources via the System Wide Information Management (SWIM) Management Unit (SMU). FOMS also receives track data from the Surveillance Data Processor (SDP) and associates tracks with flight data, producing the flight object which is published to SWIM for subscriber use. Flight plan support functionality includes end-to-end profile evaluation in all phases of flight and evaluation against static and dynamic constraints (terrain, obstacles, airspace restrictions, etc.). FOMS supports flight planning up to 180 day prior to day of flight. A user can access the flight object from initial to close-out in the same manner.FOMS provides end-to-end flight data management from preflight to post-analysis. Ownership of the flight object begins and ends with TFM and transitions during the flight to clearance delivery, ramp, surface, departure, transition to cruise, cruise, transition to arrival, …..ramp. Flight data management is based on trajectory, assigned volumes, and "necessary" route structure.

3.1.6.44 Archive Flight Data (1.4.2.5)

3.1.6.44.1 Description

This activity will store all flight data information upon completion of a flight. This will enable post-analysis of flight data.

3.1.6.44.2 JPDO Support Alignment

3.1.6.44.3 NextGen Drivers

Type	Name	Description
Actor	System	An automation system
CONOPS	5.6 FLIGHT PLAN FILING AND FLIGHT DATA MANAGEMENT SERVICES	
BRM Sub-Function	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.
BRM Sub-Function	Flight Planning and Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.
SRM Service Component	Library/Storage	Defines the set of capabilities that support document and data warehousing and archiving.
SRM Service Component	Data Warehouse	Defines the set of capabilities that support the archiving and storage of large volumes of data.

3.1.6.44.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Flight Object Management System	The Flight Object Management System (FOMS) is a component of the Standard Automation Platform (SAP). FOMS processes flight data received from multiple sources via the System Wide Information Management (SWIM) Management Unit (SMU). FOMS also receives track data from the Surveillance Data Processor (SDP) and associates tracks with flight data, producing the flight object which is published to SWIM for subscriber use. Flight plan support functionality includes end-to-end profile evaluation in all phases of flight and evaluation against static and dynamic constraints (terrain, obstacles, airspace restrictions, etc.). FOMS supports flight planning up to 180 day prior to day of flight. A user can access the flight object from initial to close-out in the same manner.FOMS provides end-to-end flight data management from preflight to post-analysis. Ownership of the flight object begins and ends with TFM and transitions during the flight to clearance delivery, ramp, surface, departure, transition to cruise, cruise, transition to arrival, …..ramp. Flight data management is based on trajectory, assigned volumes, and "necessary" route structure.

3.1.6.45 Disseminate Flight Data (1.4.2.3)

3.1.6.45.1 Description

This activity is the dissemination of the flight object data.

Enterprise Services A1

Flight Planning and Flight Data Management A1.4

Provide Flight Data Management A1.4.2

Disseminate Flight Data A1.4.2.3

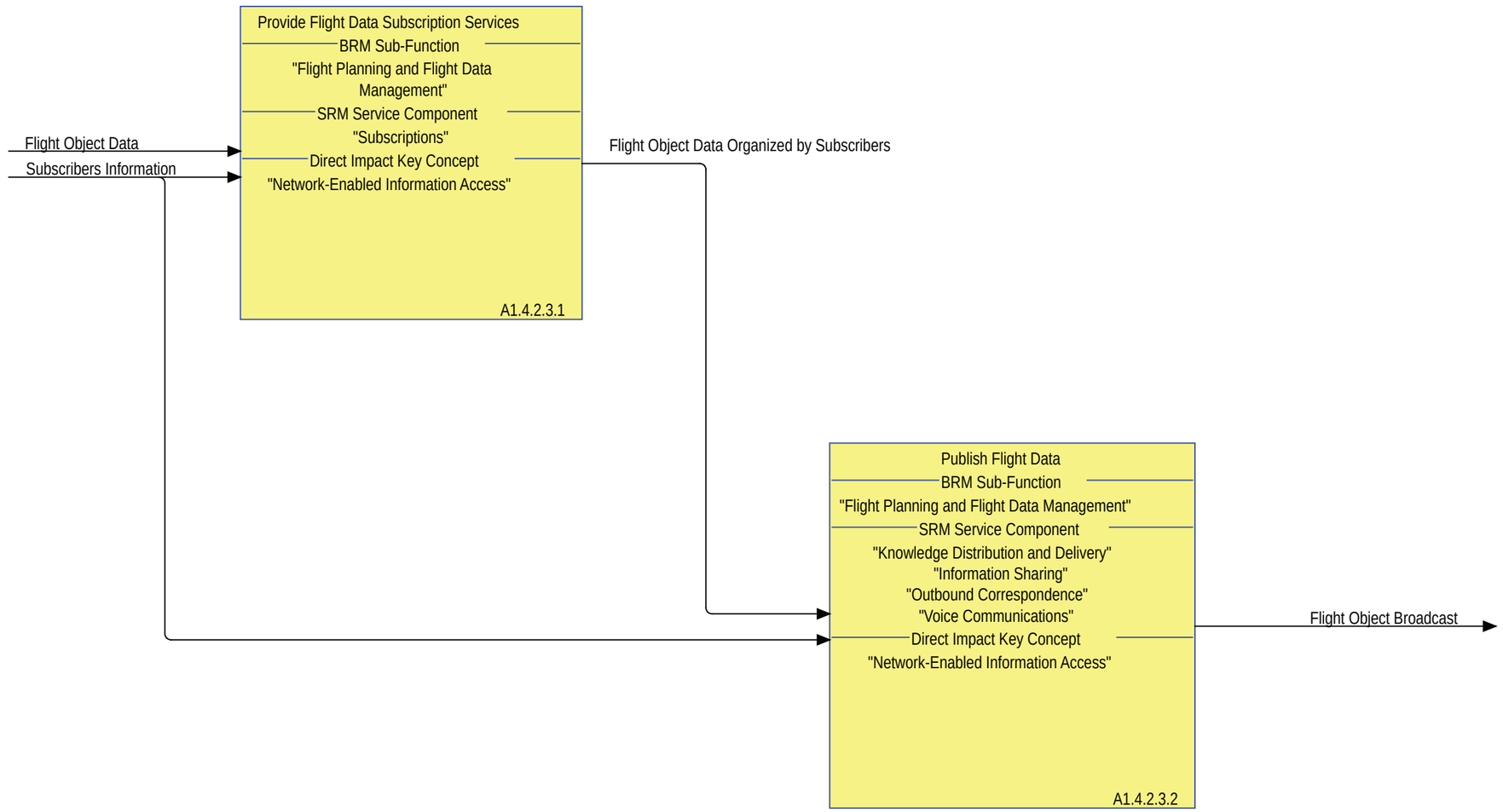


Figure 14 - 1.4.2.3 Disseminate Flight Data Activity Model Diagram

3.1.6.46 Provide Flight Data Subscription Services (1.4.2.3.1)

3.1.6.46.1 Description

This activity is the subscription service for stakeholders to automation systems to receive flight object data.

3.1.6.46.2 JPDO Support Alignment

3.1.6.46.3 NextGen Drivers

Type	Name	Description
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Flight Planning and Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.
SRM Service Component	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.

3.1.6.46.4 NextGen Future Solutions

3.1.6.47 Publish Flight Data (1.4.2.3.2)

3.1.6.47.1 Description

This activity delegates the flight data/object information to users.

3.1.6.47.2 JPDO Support Alignment

3.1.6.47.3 NextGen Drivers

Type	Name	Description
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Flight Planning and Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Voice Communications	Defines the set of capabilities that provide telephony or other voice communications.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.

3.1.6.47.4 NextGen Future Solutions

3.1.6.48 Aeronautical Information Management (1.5)

3.1.6.48.1 Description

This activity provides the capability for aeronautical information to be uploaded, received, and exchanged with more accuracy and in a timely manner. Aeronautical information includes : Current performance requirements for airspace access and operation, special use airspace status and activity, airspace affected by temporary flight restrictions, route information and performance metrics, system outages affecting Global Positioning System (GPS), Wide Area Augmentation System (WAAS), Local Area Augmentation System (LAAS), and other NAVAIDS, including lighting, weather status, such as convective activity, winds aloft, icing, etc. airport status information, including runway availability and planned long- and short-term activities affecting the airport such as construction, snow removal, etc. and definitional data for airspace boundaries, fixes, terminal procedures, runways, and other supporting information.

3.1.6.48.2 Purpose

The purpose of AIM is to provide the subscribers to the system data on the air transportation system in a timely and accurate manner. AIM provides all constraint and condition information (e.g. NOTAMs) to improve planning available to all users.

Enterprise Services A1

Aeronautical Information Management A1.5

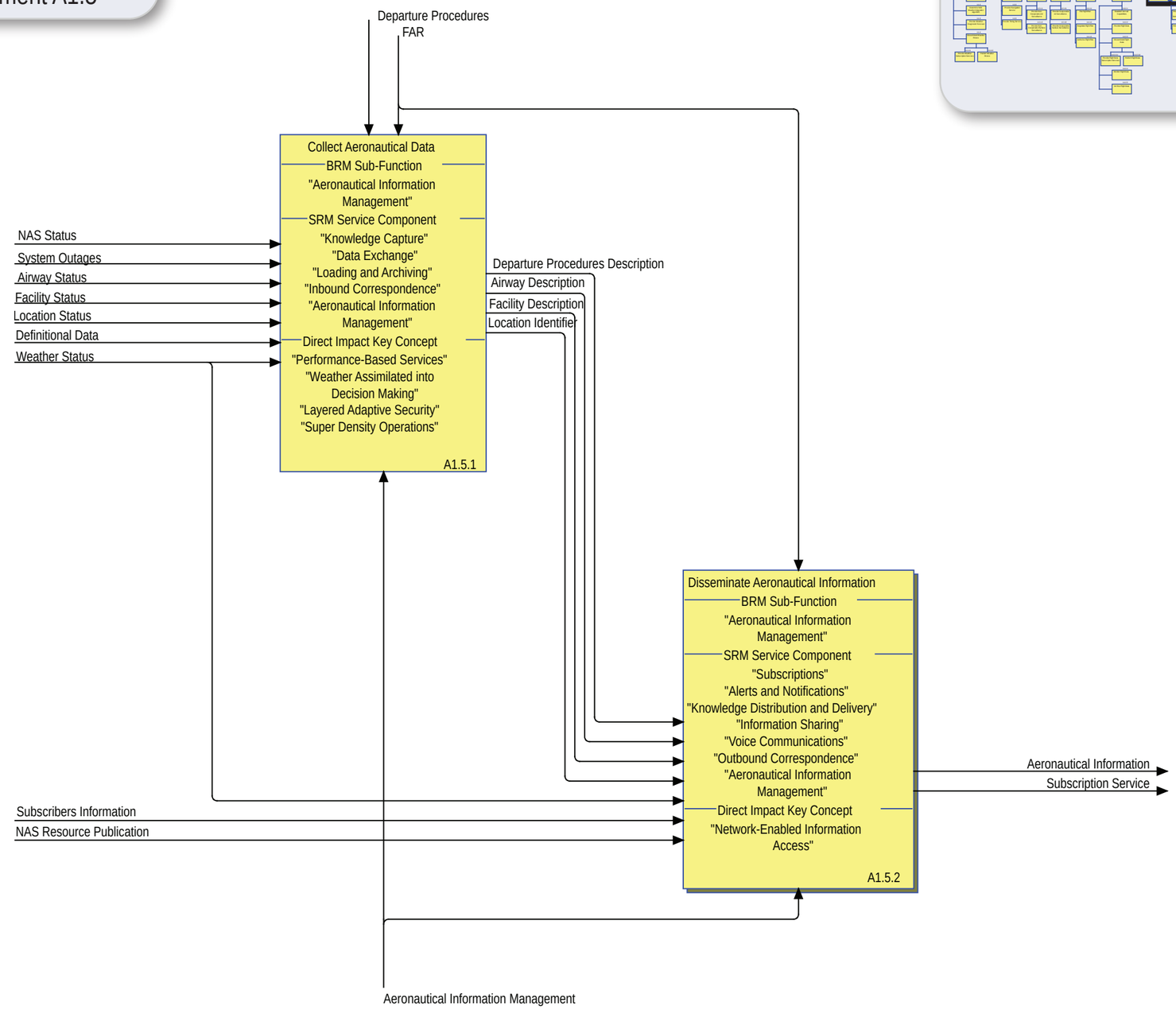


Figure 15 - 1.5 Aeronautical Information Management Activity Model Diagram

3.1.6.49 Collect Aeronautical Data (1.5.1)

3.1.6.49.1 Description

This activity receives aeronautical information such as:
Current performance requirements for airspace access and operation, special use airspace status and activity, airspace affected by temporary flight restrictions, route information and performance metrics, system outages affecting Global Positioning System (GPS), Wide Area Augmentation System (WAAS), Local Area Augmentation System (LAAS), and other NAVAIDS, including lighting, weather status, such as convective activity, winds aloft, icing, etc. airport status information, including runway availability and planned long- and short-term activities affecting the airport such as construction, snow removal, etc. and definitional data for airspace boundaries, fixes, terminal procedures, runways, and other supporting information.

3.1.6.49.2 JPDO Support Alignment

3.1.6.49.3 NextGen Drivers

Type	Name	Description
Actor	System	An automation system
ICAO ATMCP Requirement	R 76	The ATM system shall be capable of collecting and integrating information from diverse sources to produce a complete and accurate view of the ATM system state.
CONOPS	5.8 AERONAUTICAL INFORMATION SERVICES	
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
Key Concept	Weather Assimilated into Decisionmaking	By assimilating weather into decisionmaking, weather information becomes an enabler for optimizing NextGen operations. Directly applying probabilistic weather information to ATM decision tools increases the effective use of weather information and minimizes the adverse effects of weather on operations.
BRM Sub-Function	Aeronautical Information Management	Aeronautical Information Management involves the activities related to managing and disseminating near-real-time aeronautical information/data to critical stakeholders. Aeronautical information includes: current performance requirements for airspace access and operation, special use airspace status and activity, airspace affected by temporary flight restrictions, route information and performance metrics, and National Airspace System (NAS) status.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Aeronautical Information Management	Defines the set of capabilities that allow aeronautical information to be uploaded, received, and exchanged with more accuracy and in a timely manner.
SRM Service Component	Inbound Correspondence	

3.1.6.49.4 NextGen Future Solutions

3.1.6.50 Disseminate Aeronautical Information (1.5.2)

3.1.6.50.1 Description

This activity disseminate aeronautical information to Community of Interest (COI) to ensure shared situational awareness.

3.1.6.50.2 JPDO Support Alignment

Type	Name	Description
NAS Operational Improvements	On-Demand NAS Information	National airspace system (NAS) and aeronautical information is available to users on demand. NAS and aeronautical information is consistent across applications and locations, and available to authorized subscribers and equipped aircraft. Proprietary and security sensitive information is not shared with unauthorized agencies/individuals.

3.1.6.50.3 NextGen Drivers

Type	Name	Description
ICAO ATMCP Requirement	R 12	Information exchange protocols and procedures shall be established to ensure that appropriate performance can be achieved within the agreed rules
ICAO ATMCP Requirement	R 78	The ATM system shall support a reduction in transactional friction for the transmission of information across the systems.
ICAO ATMCP Requirement	R 79	A relevant validity period of ATM system information shall be evident to the user of that information.
CONOPS	5.8 AERONAUTICAL INFORMATION SERVICES	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Aeronautical Information Management	Aeronautical Information Management involves the activities related to managing and disseminating near-real-time aeronautical information/data to critical stakeholders. Aeronautical information includes: current performance requirements for airspace access and operation, special use airspace status and activity, airspace affected by temporary flight restrictions, route information and performance metrics, and National Airspace System (NAS) status.
SRM Service Component	Alerts and Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.
SRM Service Component	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.

Type	Name	Description
SRM Service Component	Voice Communications	Defines the set of capabilities that provide telephony or other voice communications.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Aeronautical Information Management	Defines the set of capabilities that allow aeronautical information to be uploaded, received, and exchanged with more accuracy and in a timely manner.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.

3.1.6.50.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Distribute Aeronautical Information	The distribution of aeronautical information to ATC,pilots and flight operations

3.1.6.51 Disseminate Aeronautical Information (1.5.2)

3.1.6.51.1 Description

This activity disseminate aeronautical information to Community of Interest (COI) to ensure shared situational awareness.

Enterprise Services A1

Aeronautical Information Management A1.5

Disseminate Aeronautical Information A1.5.2

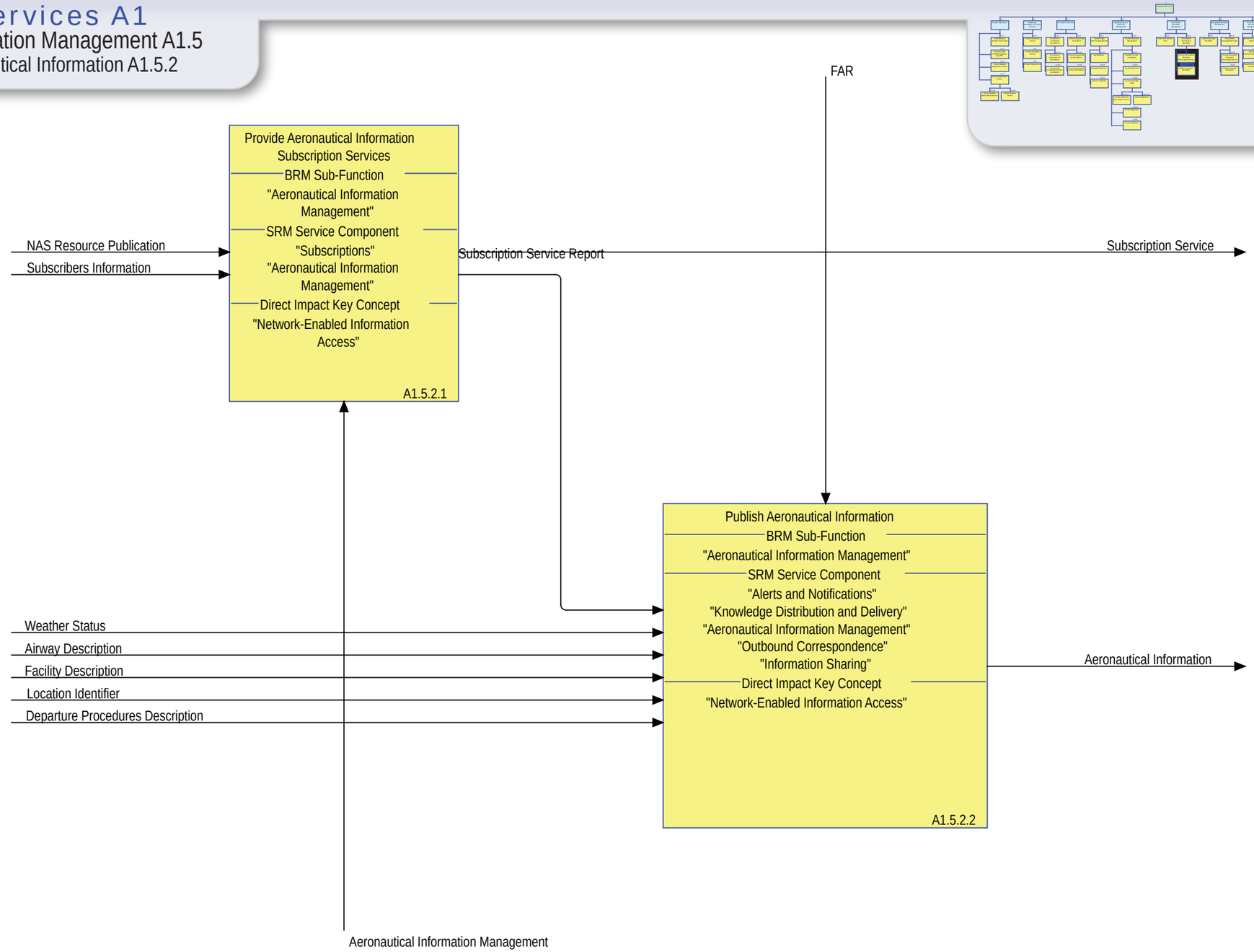


Figure 16 - 1.5.2 Disseminate Aeronautical Information Activity Model Diagram

3.1.6.52 Provide Aeronautical Information Subscription Services (1.5.2.1)

3.1.6.52.1 Description

This activity is the subscription service for stakeholders to automation systems to receive published Aeronautical data.

3.1.6.52.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Reduced controlled flight into terrain	Controlled Flight Into Terrain (CFIT) is reduced through incorporation and integration of synthetic vision technologies and world-wide geospatial databases. Situational awareness enhancements utilize database, sensor, and hazard (terrain, traffic - surface and airborne, etc.) detection technologies merged with display symbology and precise GPS navigational information to create synthetic views of the aircraft's external environment for display to the flight crew. Regional databases and integrity monitoring technologies provide (acquire, verify, and maintain) worldwide geospatial databases suitable for synthetic vision applications.
NextGen Operational Improvements	Reduced human errors in detection and management of malfunctions and off-nominal	Human errors are reduced in detecting and managing malfunctions through off-nominal condition detection and alerting systems. System health monitoring, management, and interface technologies are incorporated in airborne and ground-based systems.
NextGen Operational Improvements	Reduced weather-related incidents	Weather-related incidents are reduced through equipage of aircraft with cockpit weather system technologies for enhanced situational awareness and decision making. Aircraft are equipped with icing detection and avoidance technologies, icing tolerant technologies, icing computational tools, airborne weather reporting sensor technologies, weather information data link systems technologies for ground-to-air dissemination, airborne weather reporting data link systems for air-to-ground and air-to-air dissemination, and turbulence detection, warning and alerting technologies. Improvements are needed in icing experimental methods, icing experimental databases, icing atmospheric characterization technologies, and icing education and training tools.

3.1.6.52.3 NextGen Drivers

Type	Name	Description
CONOPS	5.8 AERONAUTICAL INFORMATION SERVICES	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Aeronautical Information Management	Aeronautical Information Management involves the activities related to managing and disseminating near-real-time aeronautical information/data to critical stakeholders. Aeronautical information includes: current performance requirements for airspace access and operation, special use airspace status and activity, airspace affected by temporary flight restrictions, route information and performance metrics, and National Airspace System (NAS) status.
SRM Service Component	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.
SRM Service Component	Aeronautical Information Management	Defines the set of capabilities that allow aeronautical information to be uploaded, received, and exchanged with more accuracy and in a timely manner.

3.1.6.52.4 NextGen Future Solutions

3.1.6.53 Publish Aeronautical Information (1.5.2.2)

3.1.6.53.1 Description

This activity delegates aeronautical information to subscribed.

3.1.6.53.2 JPDO Support Alignment

3.1.6.53.3 NextGen Drivers

Type	Name	Description
CONOPS	5.8 AERONAUTICAL INFORMATION SERVICES	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Aeronautical Information Management	Aeronautical Information Management involves the activities related to managing and disseminating near-real-time aeronautical information/data to critical stakeholders. Aeronautical information includes: current performance requirements for airspace access and operation, special use airspace status and activity, airspace affected by temporary flight restrictions, route information and performance metrics, and National Airspace System (NAS) status.
SRM Service Component	Alerts and Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Aeronautical Information Management	Defines the set of capabilities that allow aeronautical information to be uploaded, received, and exchanged with more accuracy and in a timely manner.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.

3.1.6.53.4 NextGen Future Solutions

3.1.6.54 Geospatial Information Management (1.6)

3.1.6.54.1 Description

Geospatial Information Management (GIM) provides the capability to access and update information about the physical locations of fixed and mobile assets. Stakeholders are provided the capability to employ a common indexing structure to support the asset information development, exchange of information, as well as to query overall asset inventories. GIM manages current information, as well as maintaining historical information.

3.1.6.54.2 Purpose

The purpose of GIM is to support the dynamic airspace boundary adjustments, trajectory-based operations (TBO), interactive flight planning, and future decision support tools operating in a collaborative environment of delegated data. GIM depends on the ability to describe, communicate, and manage the characteristics of airspace and other asset information at increasingly finer levels of resolution. The increased precision and resolution of GIM data supports decision-making by the Air Navigation Service Provider (ANSP) as well as providing the basis for enterprise service for collaboration (such as C-ATM) among the ANSP, flight operators, and other stakeholders in the NextGen.

Enterprise Services A1

Geospatial Information Management A1.6

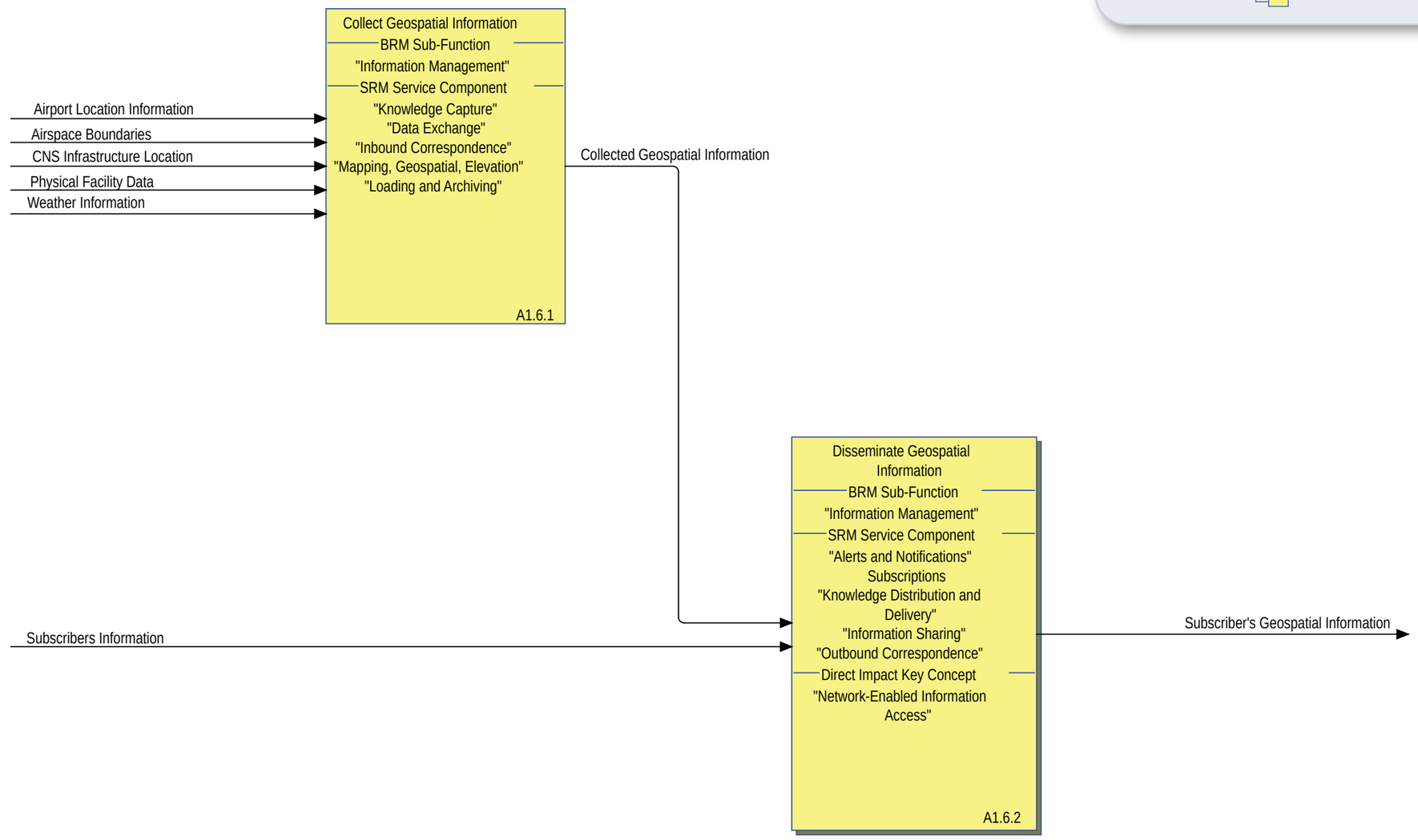


Figure 17 - 1.6 Geospatial Information Management Activity Model Diagram

3.1.6.55 Collect Geospatial Information (1.6.1)

3.1.6.55.1 Description

This activity receives geospatial information such as:
The physical locations of fixed and mobile assets that follow a common indexing structure to support the asset information development, and exchange of information.

3.1.6.55.2 JPDO Support Alignment

3.1.6.55.3 NextGen Drivers

Type	Name	Description
Actor	System	An automation system
ICAO ATMCP Requirement	R 76	The ATM system shall be capable of collecting and integrating information from diverse sources to produce a complete and accurate view of the ATM system state.
CONOPS	5.9 GEOSPATIAL INFORMATION SERVICES	
BRM Sub-Function	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Mapping, Geospatial, Elevation	
SRM Service Component	Inbound Correspondence	

3.1.6.55.4 NextGen Future Solutions

3.1.6.56 Disseminate Geospatial Information (1.6.2)

3.1.6.56.1 Description

This activity disseminate geospatial information based on customized queries by stakeholders to ensure shared situational awareness. Information includes assets such as physical facilities, airspace boundaries, airport survey information, the location of CNS infrastructure elements.

3.1.6.56.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Improved tactical management of airport operations	Airport operators will be able to effectively manage routine and emergency operations through improved data and monitoring capabilities, as well as linkages to NEO and regional/national emergency response resources. This includes real-time push of airport condition information to users. Waterfall deployment: TBD

3.1.6.56.3 NextGen Drivers

Type	Name	Description
ICAO ATMCP Requirement	R 12	Information exchange protocols and procedures shall be established to ensure that appropriate performance can be achieved within the agreed rules
ICAO ATMCP Requirement	R 78	The ATM system shall support a reduction in transactional friction for the transmission of information across the systems.
ICAO ATMCP Requirement	R 79	A relevant validity period of ATM system information shall be evident to the user of that information.
CONOPS	5.9 GEOSPATIAL INFORMATION SERVICES	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.
SRM Service Component	Alerts and Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.
SRM Service Component	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.

3.1.6.56.4 NextGen Future Solutions

3.1.6.57 Disseminate Geospatial Information (1.6.2)

3.1.6.57.1 Description

This activity disseminate geospatial information based on customized queries by stakeholders to ensure shared situational awareness. Information includes assets such as physical facilities, airspace boundaries, airport survey information, the location of CNS infrastructure elements.

Enterprise Services A1

Geospatial Information Management A1.6

Disseminate Geospatial Information A1.6.2

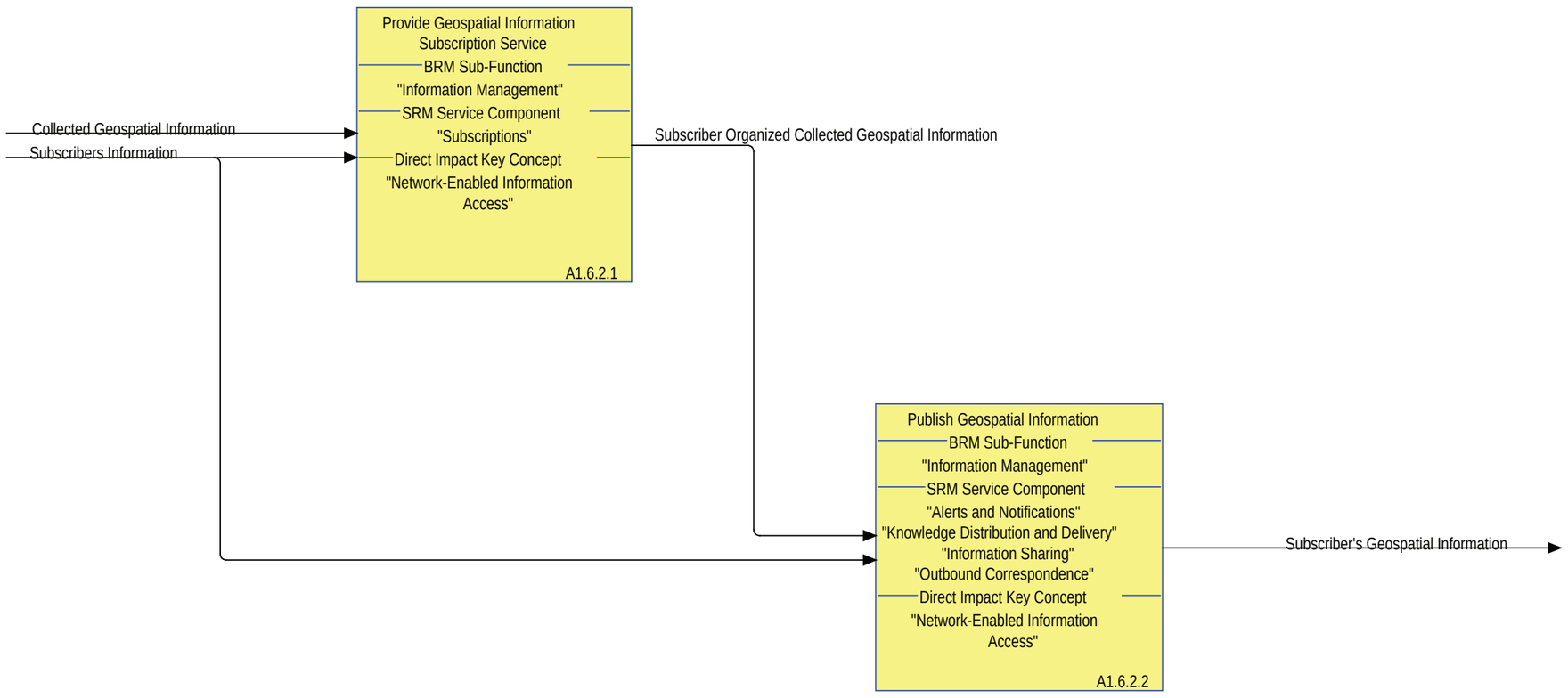


Figure 18 - 1.6.2 Disseminate Geospatial Information Activity Model Diagram

3.1.6.58 Provide Geospatial Information Subscription Service (1.6.2.1)

3.1.6.58.1 Description

This activity is the subscription service for stakeholders to automation systems to receive geospatial information to include assets such as physical facilities, airspace boundaries, airport survey information, the location of CNS infrastructure elements.

3.1.6.58.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational	Coordinated Ramp Operations Management	Surface movements of GSE are monitored and proactively managed, in real-time, to ensure the smooth, efficient, and safe flow of vehicular traffic. GSE has equipment to ensure accurate navigation during low-visibility conditions and to maintain clearance from active runway and taxiways. Congestion is reduced while safety and level of service are improved. Ramp operations management requirements for surveillance and communications that is compatible with those required for surface traffic management. Precise definition of ramp management vs surface management vs gate management is TBD. Waterfall deployment: a) OEP 2016 Start b) Top 100 2018 Start c) Other airports 2021 Start
NextGen Operational	Improved tactical management of airport operations	Airport operators will be able to effectively manage routine and emergency operations through improved data and monitoring capabilities, as well as linkages to NEO and regional/national emergency response resources. This includes real-time push of airport condition information to users. Waterfall deployment: TBD

3.1.6.58.3 NextGen Drivers

Type	Name	Description
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.
SRM Service Component	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.

3.1.6.58.4 NextGen Future Solutions

3.1.6.59 Publish Geospatial Information (1.6.2.2)

3.1.6.59.1 Description

This activity delegates geospatial information to the users. Information includes assets such as physical facilities, airspace boundaries, airport survey information, the location of CNS infrastructure elements.

3.1.6.59.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational	Improved tactical management of airport operations	Airport operators will be able to effectively manage routine and emergency operations through improved data and monitoring capabilities, as well as linkages to NEO and regional/national emergency response resources. This includes real-time push of airport condition information to users. Waterfall deployment: TBD

3.1.6.59.3 NextGen Drivers

Type	Name	Description
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.
SRM Service Component	Alerts and Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.

3.1.6.59.4 NextGen Future Solutions

3.1.6.60 Environmental Information Management (1.7)

3.1.6.60.1 Description

Environmental Information Management (EIM) manages and monitors the environmental impacts and reports them to the various stakeholders. The NextGen is dependent on the effectiveness of EIM to manage and mitigate the environmental constraints to the capacity and the impacts due to aircraft operations.

3.1.6.60.2 Purpose

The purpose of EIM is to manage aviation's environmental impacts in a manner that limits or reduces their "footprint" and enables the air transportation system to meet the nations future transportation needs.

Enterprise Services A1

Environmental Information Management A1.7

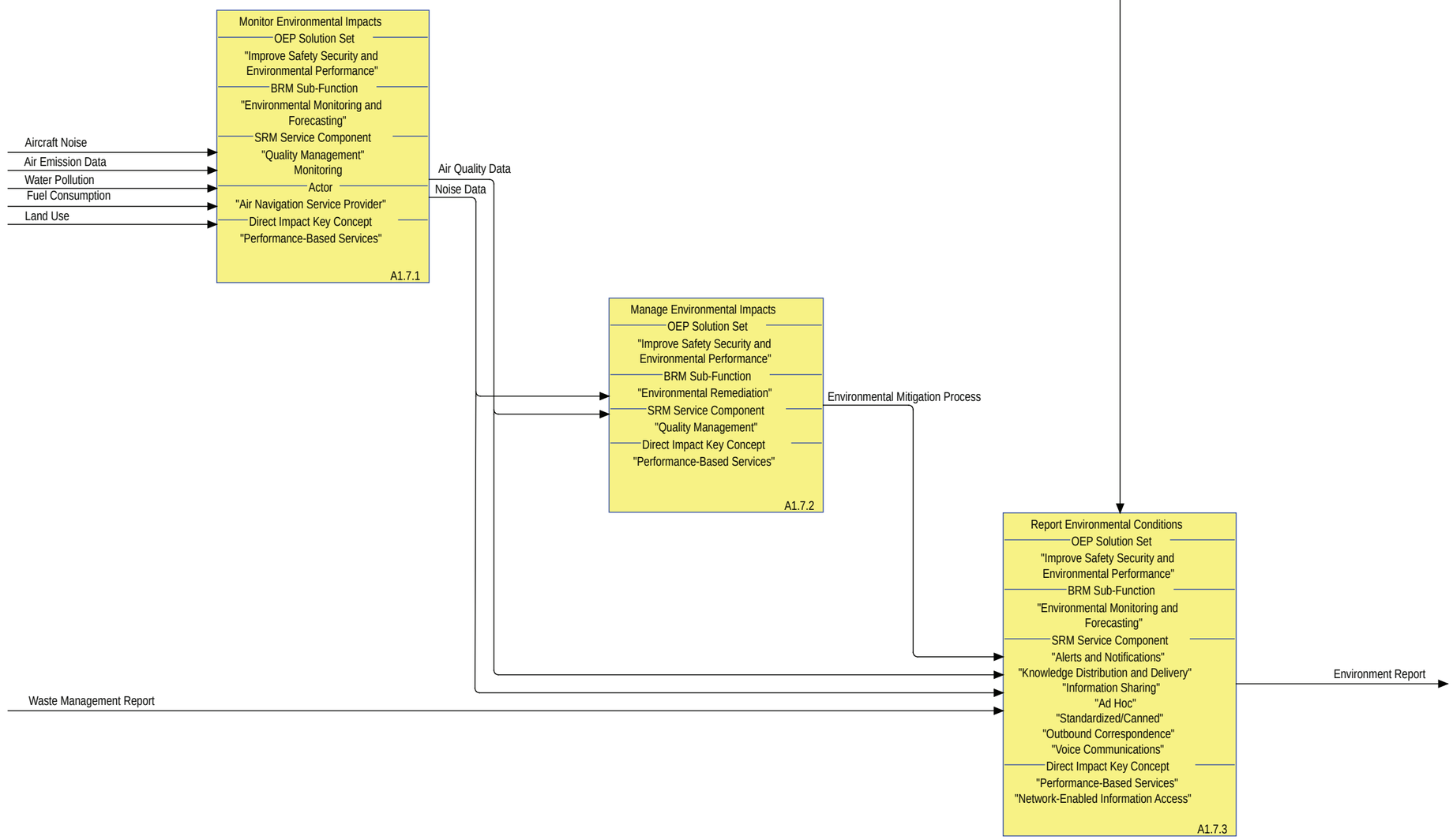


Figure 19 - 1.7 Environmental Information Management Activity Model Diagram

3.1.6.61 Monitor Environmental Impacts (1.7.1)

3.1.6.61.1 Description

This activity monitors the impact of the environment. The monitoring of noise, air emission, water pollution, fuel, climate changes, etc.

3.1.6.61.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Safety Security and Environmental Performance	Involve activities which relate directly to safety, security and environment. This may relate to the deployment of a procedure and system if the purpose is directly about one of the three, e.g. runway status lights. However the inclusion of conformance taxi monitoring to a clearance as part of a Surface Traffic Management System would be categorized as High-Density since safety is only one of the purposes.
NextGen Operational Improvements	Use of environmental management processes integrated across aviation community	This OI involves the use of the EMS framework to address, plan and mitigate environmental issues (see OI 6013)

3.1.6.61.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
CONOPS	7 ENVIRONMENTAL MANAGEMENT FRAMEWORK	
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Environmental Monitoring and Forecasting	Environmental Monitoring and Forecasting involves the observation and prediction of environmental conditions. This includes but is not limited to the monitoring and forecasting of water quality, water levels, ice sheets, air quality, regulated and non-regulated emissions, as well as the observation and prediction of weather patterns and conditions.
SRM Service Component	Quality Management	Defines the set of capabilities that help determine the level of assurance that a product or service will satisfy certain requirements.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.

3.1.6.61.4 NextGen Future Solutions

3.1.6.62 Manage Environmental Impacts (1.7.2)

3.1.6.62.1 Description

This activity manages the impacts on the environment.

3.1.6.62.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Safety Security and Environmental Performance	Involve activities which relate directly to safety, security and environment. This may relate to the deployment of a procedure and system if the purpose is directly about one of the three, e.g. runway status lights. However the inclusion of conformance taxi monitoring to a clearance as part of a Surface Traffic Management System would be categorized as High-Density since safety is only one of the purposes.
NextGen Operational Improvements	Use of environmental management processes integrated across aviation community	This OI involves the use of the EMS framework to address, plan and mitigate environmental issues (see OI 6013)

3.1.6.62.3 NextGen Drivers

Type	Name	Description
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Environmental Remediation	Environmental Remediation supports the immediate and long-term activities associated with the correcting and offsetting of environmental deficiencies or imbalances, including restoration activities.
SRM Service Component	Quality Management	Defines the set of capabilities that help determine the level of assurance that a product or service will satisfy certain requirements.

3.1.6.62.4 NextGen Future Solutions

3.1.6.63 Report Environmental Conditions (1.7.3)

3.1.6.63.1 Description

This activity reports in real time the environmental impacts including air emissions, noise, water pollutions, land use and fuel emissions.

3.1.6.63.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Safety Security and Environmental Performance	Involve activities which relate directly to safety, security and environment. This may relate to the deployment of a procedure and system if the purpose is directly about one of the three, e.g. runway status lights. However the inclusion of conformance taxi monitoring to a clearance as part of a Surface Traffic Management System would be categorized as High-Density since safety is only one of the purposes.
NextGen Operational Improvements	Use of environmental management processes integrated across aviation community	This OI involves the use of the EMS framework to address, plan and mitigate environmental issues (see OI 6013)
NAS Operational Improvements	On-Demand NAS Information	National airspace system (NAS) and aeronautical information is available to users on demand. NAS and aeronautical information is consistent across applications and locations, and available to authorized subscribers and equipped aircraft. Proprietary and security sensitive information is not shared with unauthorized agencies/individuals.

3.1.6.63.3 NextGen Drivers

Type	Name	Description
CONOPS	7 ENVIRONMENTAL MANAGEMENT FRAMEWORK	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Environmental Monitoring and Forecasting	Environmental Monitoring and Forecasting involves the observation and prediction of environmental conditions. This includes but is not limited to the monitoring and forecasting of water quality, water levels, ice sheets, air quality, regulated and non-regulated emissions, as well as the observation and prediction of weather patterns and conditions.
SRM Service Component	Alerts and Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Ad Hoc	Defines the set of capabilities that support the use of dynamic reports on an as needed basis.
SRM Service Component	Standardized/Canned	Defines the set of capabilities that support the use of preconceived or pre-written reports.
SRM Service Component	Voice Communications	Defines the set of capabilities that provide telephony or other voice communications.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.

3.1.6.63.4 NextGen Future Solutions

3.1.6.64 Safety Management Service (1.8)

3.1.6.64.1 Description

Safety Management Service (SMS) is the principle enabler of a safe and efficient higher capacity air transportation system. SMS is the process that provides a systematic method for managing safety. The four components of an SMS are policy, architecture, assurance, and safety promotion.

3.1.6.64.2 Purpose

The National-level SMS are provided to facilitate safety management and cooperation across aviation stakeholder organization. These services provided, among others, coordination of safety activities such as research and risk mitigation strategies, injection of critical and timely safety information and lessons learned, and regulatory oversight to assure the public of the safety of air transportation.

Enterprise Services A1

Safety Management Service A1.8

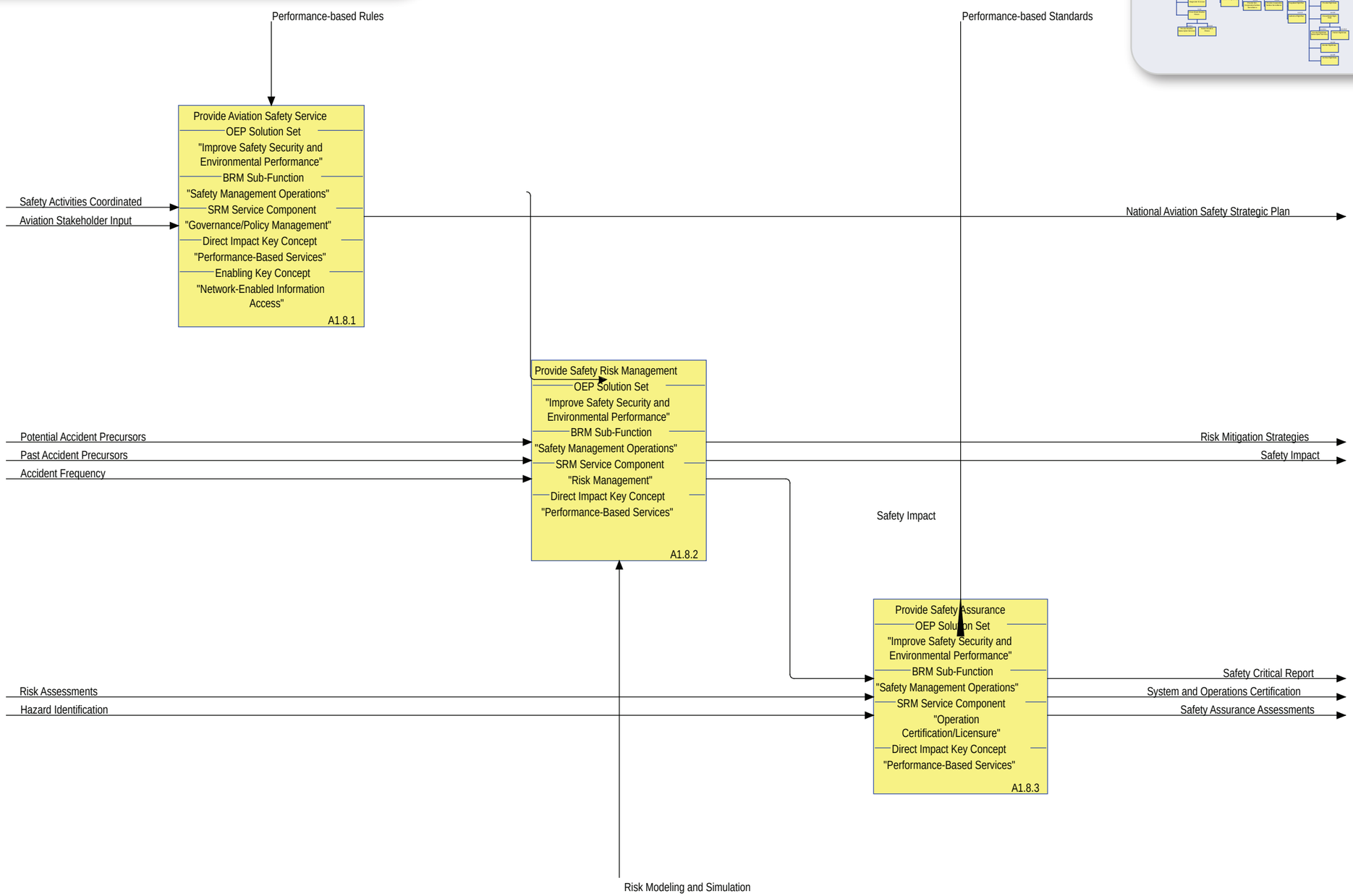


Figure 20 - 1.8 Safety Management Service Activity Model Diagram

3.1.6.65 Provide Aviation Safety Service (1.8.1)

3.1.6.65.1 Description

This activity provides the aviation safety policy service which coordinates and maintains a national safety policy, coordinates cooperation in aviation safety management research, promotes and maintains an effective safety culture, including addressing legal and liability issues, and identifying training, holds organizations' top management responsible for safety performance as they are now for finances, and coordinates with foreign and international organizations and air transportation stakeholders.

3.1.6.65.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Safety Security and Environmental Performance	Involve activities which relate directly to safety, security and environment. This may relate to the deployment of a procedure and system if the purpose is directly about one of the three, e.g. runway status lights. However the inclusion of conformance taxi monitoring to a clearance as part of a Surface Traffic Management System would be categorized as High-Density since safety is only one of the purposes.

3.1.6.65.3 NextGen Drivers

Type	Name	Description
ICAO ATMCP Requirement	R140	ATM system safety shall be maintained during any transition
CONOPS	8.3.1 National Aviation Safety Strategic Plan	
CONOPS	8.4.1 Aviation Safety Strategic Plan Service	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Safety Management Operations	Safety Management Operations involves the activities related to the integration and management of safety (e.g., policy, procedures, risks, and assurance) throughout the Air Transportation System and stakeholder community. It also includes the activities associated with the identification and management of potential problems in a system, organization, or operations in order to mitigate safety risks and improve the level of safety in the US air transportation system, increase the safety of worldwide air transportation, and maintain aviations record as the safest mode of transportation.
SRM Service Component	Governance/Policy Management	Defines the set of capabilities that influence and determine decisions, sections, business rules and other matters within an organization.

3.1.6.65.4 NextGen Future Solutions

3.1.6.66 Provide Safety Risk Management (1.8.2)

3.1.6.66.1 Description

This activity provides a set of process and practices by which a concept and its operation are designed and made to be safe. It is a structured approach for identifying potential breakdowns in the system's operation, understanding the impact they may have on safety, identifying alternative mitigation strategies and evaluating and monitoring their effectiveness.

3.1.6.66.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Safety Security and Environmental Performance	Involve activities which relate directly to safety, security and environment. This may relate to the deployment of a procedure and system if the purpose is directly about one of the three, e.g. runway status lights. However the inclusion of conformance taxi monitoring to a clearance as part of a Surface Traffic Management System would be categorized as High-Density since safety is only one of the purposes.
NextGen Operational Improvements	Integrated risk-based planning and management of security resources	Security resources are planned, and managed using an integrated, adaptive, and responsive risk management capability that supports risk-informed decisions among security mission partners. This capability harmonizes short and long term resource allocation and investments among partners to gain the highest possible security return on investment and to reduce the overall cost of security operations.

3.1.6.66.3 NextGen Drivers

Type	Name	Description
CONOPS	8.3.3 Safety Risk Management	
CONOPS	8.4.2 Safety Risk Management Service	
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Safety Management Operations	Safety Management Operations involves the activities related to the integration and management of safety (e.g., policy, procedures, risks, and assurance) throughout the Air Transportation System and stakeholder community. It also includes the activities associated with the identification and management of potential problems in a system, organization, or operations in order to mitigate safety risks and improve the level of safety in the US air transportation system, increase the safety of worldwide air transportation, and maintain aviations record as the safest mode of transportation.
SRM Service Component	Risk Management	Defines the set of capabilities the support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal; includes risk assessment and risk mitigation.

3.1.6.66.4 NextGen Future Solutions

3.1.6.67 Provide Safety Assurance (1.8.3)

3.1.6.67.1 Description

This activity provides the independent oversight function which tests, evaluates, and certifies, as necessary, products to assure these are safe for the public and stakeholders.

3.1.6.67.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Safety Security and Environmental Performance	Involve activities which relate directly to safety, security and environment. This may relate to the deployment of a procedure and system if the purpose is directly about one of the three, e.g. runway status lights. However the inclusion of conformance taxi monitoring to a clearance as part of a Surface Traffic Management System would be categorized as High-Density since safety is only one of the purposes.
NextGen Operational Improvements	Improved aircraft upset prevention and recovery	Upset prevention and recovery is improved through equipage of aircraft with guidance and control countermeasures. Flight control systems are introduced to implement guidance and control measures for recovery from failure/loss-of-control conditions.
NextGen Operational Improvements	Increased crash survivability - energy absorbing structures	Survivability is improved in survivable accidents by minimizing loads and maintaining habitable volumes through introduction of improved energy absorbing seats, restraints, and energy absorbing aircraft and ground structures.
NextGen Operational Improvements	Increased crash survivability - fire prevention and suppression	Accident survivability is increased through equipage of aircraft with fuel tank fire prevention and fire suppression system technologies. This OI includes development of a fuel tank inerting, cargo compartment suppression, breathing oxygen generation, elevated flash point fuel technologies, and improvements in ground response systems.

3.1.6.67.3 NextGen Drivers

Type	Name	Description
CONOPS	8.3.4 Enhanced Safety Assurance	
CONOPS	8.4.3 Safety Assurance Service	
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Safety Management Operations	Safety Management Operations involves the activities related to the integration and management of safety (e.g., policy, procedures, risks, and assurance) throughout the Air Transportation System and stakeholder community. It also includes the activities associated with the identification and management of potential problems in a system, organization, or operations in order to mitigate safety risks and improve the level of safety in the US air transportation system, increase the safety of worldwide air transportation, and maintain aviations record as the safest mode of transportation.
SRM Service Component	Operation Certification/ Licensure	Defines the set of capabilities that support the certification (e.g., licensing) and qualification of an operation, process, procedure, etc.

3.1.6.67.4 NextGen Future Solutions

3.1.6.68 Communication Service Management (1.9)

3.1.6.68.1 Description

Communication Service (CS) provides the service to exercise executive, administrative, and supervisory direction of the service that enables voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.

3.1.6.68.2 Purpose

The purpose of CS is to improve voice communications, bandwidth capacity, and ensure there is no single point of failure in the system. CS ensures widespread access to secure, accurate, current, and timely information and the capability to delegate this information securely among the operational entities.

Enterprise Services A1

Communication Service Management A1.9

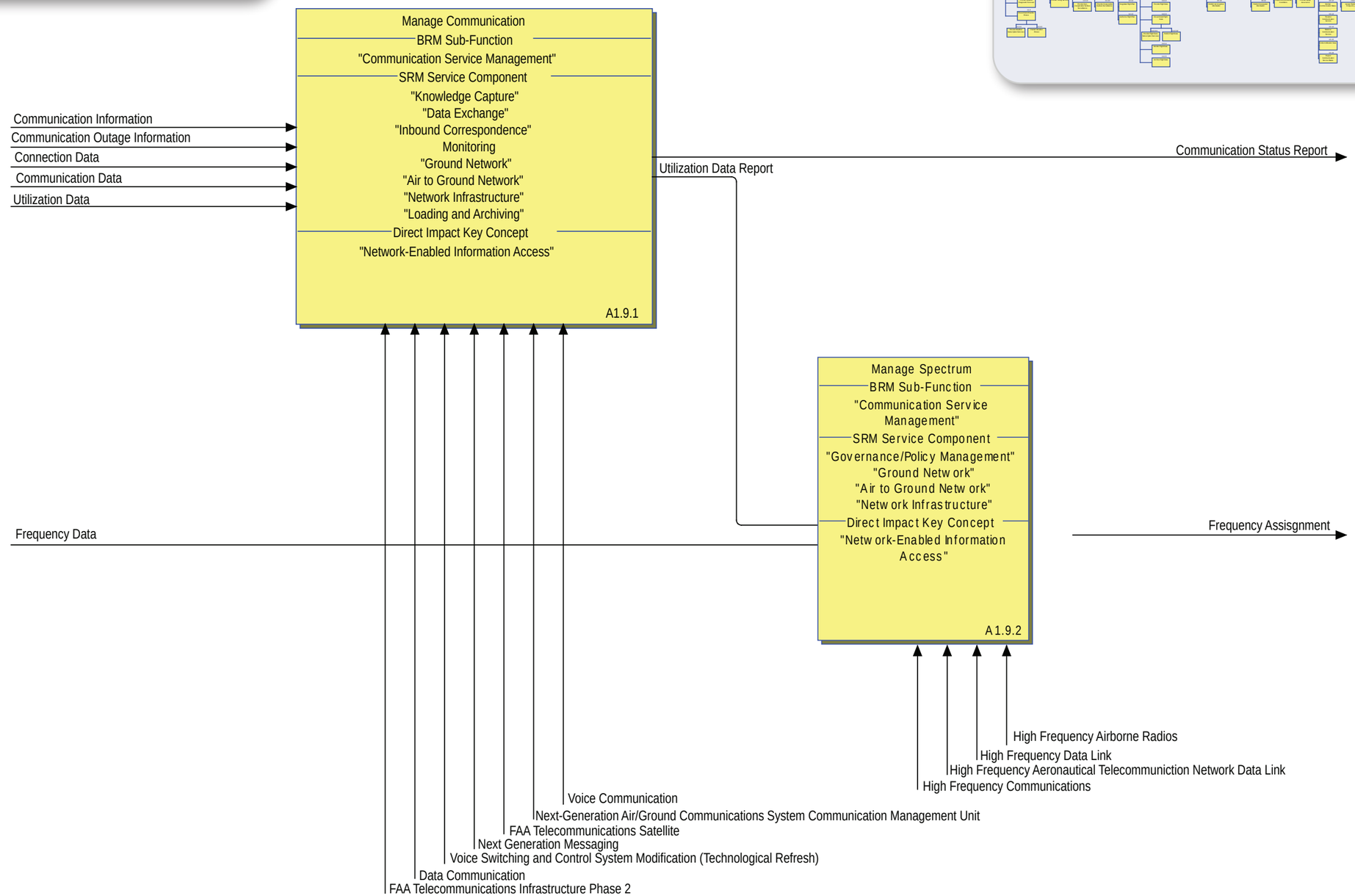


Figure 21 - 1.9 Communication Service Management Activity Model Diagram

3.1.6.69 Manage Communication (1.9.1)

3.1.6.69.1 Description

This activity manages the supervision of the necessary activities involved in regulating the process by which information is exchanged between individuals through a common system of symbols, signs, behavior or technology. This could include: Ground Network Services, Air-Ground Network, Aircraft Data Comm, etc.

3.1.6.69.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Integrated command and control of security resources for incident response and r	Security and defense service providers jointly manage security resources and respond to security incidents by using an integrated security command and control capability that includes unified security operations protocols, communications, procedures, and tactics. This provides a seamless aviation security operation systems that are adaptive and responsive to the emerging threats.
NextGen Operational Improvements	Integrated high-risk flight management and risk mitigation	Flights are continually monitored and assessed risks. High risk flights are identified using an integrated risk assessment capability. Notifications are provided to the ANSP and the defense/ security service providers to coordinate integrated response for risk mitigation facilitate by improved communications and information sharing.
NextGen Operational Improvements	Integrated risk-based planning and management of security resources	Security resources are planned, and managed using an integrated, adaptive, and responsive risk management capability that supports risk-informed decisions among security mission partners. This capability harmonizes short and long term resource allocation and investments among partners to gain the highest possible security return on investment and to reduce the overall cost of security operations.
NextGen Operational Improvements	Net-centric security situational awareness and management of airport.	Information fusion of all data inputs at airport to a central airport operations center, connecting data, intelligence, predictive systems, imagery and risk analysis to national and regional systems. This OI builds off of NEO backbone to support routine and emergency decision-making.

3.1.6.69.3 NextGen Drivers

Type	Name	Description
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Communication Service Management	Communication Service Management involves the activities related to managing the command, control, and communications systems and networks that provide real-time services to enable voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Ground Network	Defines the set of capabilities that support ground-to-ground information sharing (e.g., facilities, communication and data infrastructure, people, and systems) and provide service providers access to surveillance, communications, and flight data management regardless of physical location.
SRM Service Component	Air to Ground Network	Defines the set of capabilities that provide near-real time critical voice/data communications to flight crew and flight deck that ensures data is available for flight deck automation (i.e., avionics to support flight crew decision-making) as well as real-time data to the Air Navigation Service Provider (ANSP) on the operational aspects of flights.
SRM Service Component	Network Infrastructure	Defines the set of capabilities that provide infrastructure security and service continuity through virtual and physical facilities to enable flexible ground and air-to-ground communication networks.
SRM Service Component	Inbound Correspondence	
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.

3.1.6.69.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Next-Generation Air/Ground Communications System Communication Management Unit	The Next-Generation Air-Ground Communications System Communication Management Unit (NEXCOM CMU) is a device that routes data to and from the NEXCOM radios, and incoming data to the appropriate cockpit display. This may be a standalone unit, part of a multifunctional display (MFD) or it may be implemented as part of a Flight Management System (FMS).
FAA Systems	FAA Telecommunications Infrastructure Phase 2	FAA Telecommunications Infrastructure Phase 2 includes all interfacility ground-to-ground communications systems connecting FAA facilities. It will replace the FAA Telecommunications Infrastructure (FTI) Phase 1 services when it expires. FTI-2 will provide services that will meet future FAA and National Airspace System (NAS) telecommunications requirements in preparation for or in support of the Next Generation Air Transportation System (NEXTGEN) vision and requirements.
FAA Systems	FAA Telecommunications Satellite	The FAATSAT services all ended on September 11, 2006. Equipment removal and contract closeout continue.
FAA Systems	Voice Switching and Control System Modification (Technological Refresh)	The technological refresh (TR) for the Voice Switching and Control System (VSCS) is a service life extension. The TR encompasses 1) Video Display Module Replacement (VDMR) - procurement and installation, 2) Power Supply Refurbishment - ongoing depot repair actions, and 3) Workstation Upgrade - production and installation. Software development demonstration and system expansion are being considered for the 2008 timeframe. The VSCS is installed in the Air Route Traffic Control Center (ARTCC). The VSCS is a modular system the size of the switch is based on the number of controller positions in the facility. The VSCS provides the Air Traffic Control (ATC) operational ground-to-ground (G/G) voice communications interconnectivity between controllers within an ARTCC (intercom), interconnectivity between controllers in separate ARTCCs (interphone), and interconnectivity between ARTCC controllers and Terminal Radar Approach Control (TRACON) controllers/Airport Traffic Control Tower (ATCT) controllers/Flight Service Station (FSS) specialists/David J. Hurley Air Traffic Control System Command Center (ATCSCC) specialists. Air-to-ground (A/G) radio connectivity between ARTCC controllers and pilots is also supported by the VSCS.

Type	Name	Description
FAA Systems	Next Generation Messaging	The Next Generation Messaging (NEXGEN Messaging) program is the FAA's enterprise-wide messaging system with a 10-year life cycle. NEXGEN currently serves approximately 43,000 messaging users with twelve message stores located at the nine regional offices, the two centers, and at headquarters. NEXGEN provides support through a three-tier system, which includes 1,200 local support personnel, 12 Regional Messaging Administration Teams, and 24 hours per day, 7 days a week (24/7) National Help Desk.
FAA Systems	Voice Communication	none
FAA Systems	Data Communication	none
NAS Activity	Manage Communication	The supervision of the necessary activities involved in regulating the process by which information is exchanged between individuals through a common system of symbols, signs, behavior or technology.

3.1.6.70 Manage Spectrum (1.9.2)

3.1.6.70.1 Description

This activity manages the supervision of the necessary activities involved in regulating the use of electromagnetic spectrum as to which range of frequencies can be used for a specific purpose.

3.1.6.70.2 JPDO Support Alignment

3.1.6.70.3 NextGen Drivers

Type	Name	Description
ICAO ATMCP Requirement	R132	In supporting ATM expectations, the developers of telecommunication systems shall ensure that adequate radio spectrum is available and that harmful interference from such systems will be neither caused to, nor received from, other authorized users. Frequency and spectrum allocation and management assistance programs shall be established and/or maintained.
ICAO ATMCP Requirement	R133	The ATM System shall provide frequency and spectrum management assistance to all new and existing programs to ensure that national and international standards are complied with and that no new items of equipment are introduced that would interfere with existing systems.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Communication Service Management	Communication Service Management involves the activities related to managing the command, control, and communications systems and networks that provide real-time services to enable voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.
SRM Service Component	Governance/Policy Management	Defines the set of capabilities that influence and determine decisions, sections, business rules and other matters within an organization.
SRM Service Component	Ground Network	Defines the set of capabilities that support ground-to-ground information sharing (e.g., facilities, communication and data infrastructure, people, and systems) and provide service providers access to surveillance, communications, and flight data management regardless of physical location.
SRM Service Component	Air to Ground Network	Defines the set of capabilities that provide near-real time critical voice/data communications to flight crew and flight deck that ensures data is available for flight deck automation (i.e., avionics to support flight crew decision-making) as well as real-time data to the Air Navigation Service Provider (ANSP) on the operational aspects of flights.
SRM Service Component	Network Infrastructure	Defines the set of capabilities that provide infrastructure security and service continuity through virtual and physical facilities to enable flexible ground and air-to-ground communication networks.

3.1.6.70.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	High Frequency Data Link	The High Frequency Data Link (HF Data Link) provides two-way, low-speed, analog data communications over HF radios. A Commercial Communications Service Provider (CCSP) in the transoceanic domain provides HF Data Link.
FAA Systems	High Frequency Airborne Radios	High Frequency (HF) Airborne Radios are analog (HF multi-channel radio transceivers operating in the 2-30 MHz frequency band installed in airborne commercial, cargo, and military aircraft transiting the oceanic, en route, terminal, or flight service station airspace domains. These transceivers are typically used in transoceanic applications.
FAA Systems	High Frequency Communications	High Frequency (HF) communications is used by oceanic and en route facilities that support air traffic control (ATC) services for aircraft flying over oceanic airspace. A commercial communications service provider (CCSP) provides the HF communications service.
FAA Systems	High Frequency Aeronautical Telecommuniction Network Data Link	The High Frequency Aeronautical Telecommunication Network Data Link (HF ATN DL) provides two-way digital data communications over HF radios using International Civil Aviation Organization (ICAO) - compliant ATN digital data link applications in the transoceanic domain. A Commercial Communications Service Provider (CCSP) provides this service. The FAA has no plans to develop its own HF ATN data communications system.
NAS Activity	Manage Spectrum	The supervision of the necessary activities involved in regulating the use of the electromagnetic spectrum as to which range of frequencies can be used for a specific purpose.

3.1.6.71 Manage Communication (1.9.1)

3.1.6.71.1 Description

This activity manages the supervision of the necessary activities involved in regulating the process by which information is exchanged between individuals through a common system of symbols, signs, behavior or technology. This could include: Ground Network Services, Air-Ground Network, Aircraft Data Comm, etc.

Enterprise Services A1

Communication Service Management A1.9

Manage Communication A1.9.1

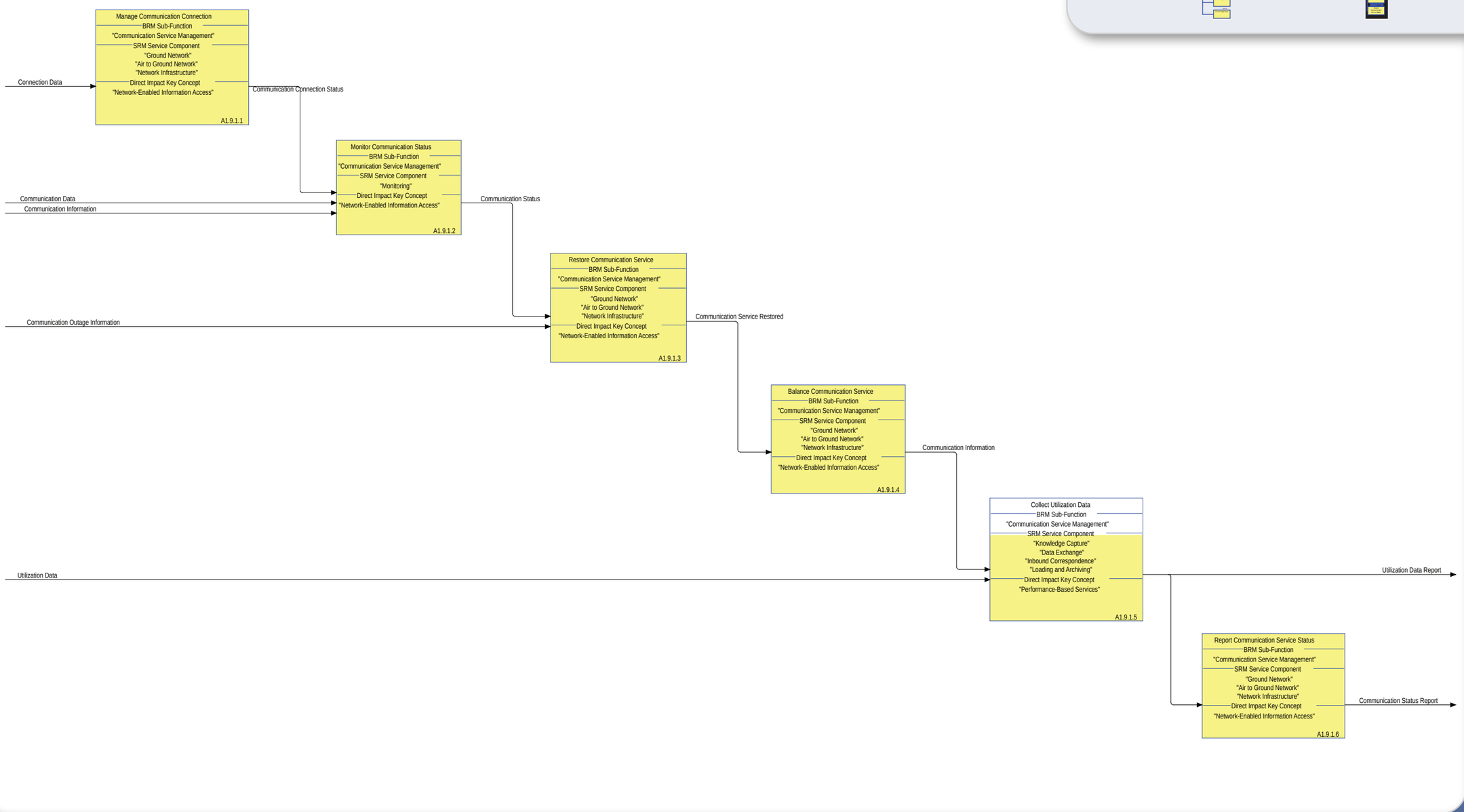


Figure 22 - 1.9.1 Manage Communication Activity Model Diagram

3.1.6.72 Manage Communication Connection (1.9.1.1)

3.1.6.72.1 Description

This activity governs or controls the contract between individuals.

3.1.6.72.2 JPDO Support Alignment

3.1.6.72.3 NextGen Drivers

Type	Name	Description
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Communication Service Management	Communication Service Management involves the activities related to managing the command, control, and communications systems and networks that provide real-time services to enable voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.
SRM Service Component	Ground Network	Defines the set of capabilities that support ground-to-ground information sharing (e.g., facilities, communication and data infrastructure, people, and systems) and provide service providers access to surveillance, communications, and flight data management regardless of physical location.
SRM Service Component	Air to Ground Network	Defines the set of capabilities that provide near-real time critical voice/data communications to flight crew and flight deck that ensures data is available for flight deck automation (i.e., avionics to support flight crew decision-making) as well as real-time data to the Air Navigation Service Provider (ANSP) on the operational aspects of flights.
SRM Service Component	Network Infrastructure	Defines the set of capabilities that provide infrastructure security and service continuity through virtual and physical facilities to enable flexible ground and air-to-ground communication networks.

3.1.6.72.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Manage Communication Connection	To govern or control the contact between individuals

3.1.6.73 Monitor Communication Status (1.9.1.2)

3.1.6.73.1 Description

This activity monitors the status of the communication.

3.1.6.73.2 JPDO Support Alignment

3.1.6.73.3 NextGen Drivers

Type	Name	Description
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Communication Service Management	Communication Service Management involves the activities related to managing the command, control, and communications systems and networks that provide real-time services to enable voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.

3.1.6.73.4 NextGen Future Solutions

3.1.6.74 Restore Communication Service (1.9.1.3)

3.1.6.74.1 Description

This activity restores the original state of the communication service.

3.1.6.74.2 JPDO Support Alignment

3.1.6.74.3 NextGen Drivers

Type	Name	Description
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Communication Service Management	Communication Service Management involves the activities related to managing the command, control, and communications systems and networks that provide real-time services to enable voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.
SRM Service Component	Ground Network	Defines the set of capabilities that support ground-to-ground information sharing (e.g., facilities, communication and data infrastructure, people, and systems) and provide service providers access to surveillance, communications, and flight data management regardless of physical location.
SRM Service Component	Air to Ground Network	Defines the set of capabilities that provide near-real time critical voice/data communications to flight crew and flight deck that ensures data is available for flight deck automation (i.e., avionics to support flight crew decision-making) as well as real-time data to the Air Navigation Service Provider (ANSP) on the operational aspects of flights.
SRM Service Component	Network Infrastructure	Defines the set of capabilities that provide infrastructure security and service continuity through virtual and physical facilities to enable flexible ground and air-to-ground communication networks.

3.1.6.74.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Restore Communication Service	To bring back to the original state the contact between individuals

3.1.6.75 Balance Communication Service (1.9.1.4)

3.1.6.75.1 Description

This activity brings in equilibrium the contact between individuals products that enable and enhance the operations of the aerospace community.

3.1.6.75.2 JPDO Support Alignment

3.1.6.75.3 NextGen Drivers

Type	Name	Description
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Communication Service Management	Communication Service Management involves the activities related to managing the command, control, and communications systems and networks that provide real-time services to enable voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.
SRM Service Component	Ground Network	Defines the set of capabilities that support ground-to-ground information sharing (e.g., facilities, communication and data infrastructure, people, and systems) and provide service providers access to surveillance, communications, and flight data management regardless of physical location.
SRM Service Component	Air to Ground Network	Defines the set of capabilities that provide near-real time critical voice/data communications to flight crew and flight deck that ensures data is available for flight deck automation (i.e., avionics to support flight crew decision-making) as well as real-time data to the Air Navigation Service Provider (ANSP) on the operational aspects of flights.
SRM Service Component	Network Infrastructure	Defines the set of capabilities that provide infrastructure security and service continuity through virtual and physical facilities to enable flexible ground and air-to-ground communication networks.

3.1.6.75.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Balance Communication Service	To bring in equilibrium the contact between individuals products that enable and enhance the operations of the aerospace community

3.1.6.76 Collect Utilization Data (1.9.1.5)

3.1.6.76.1 Description

This activity is the collection of communication utilization information from airborne and ground locations.

3.1.6.76.2 JPDO Support Alignment

3.1.6.76.3 NextGen Drivers

Type	Name	Description
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Communication Service Management	Communication Service Management involves the activities related to managing the command, control, and communications systems and networks that provide real-time services to enable voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Inbound Correspondence	

3.1.6.76.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Collect Utilization Data	Accumulate and put to use information

3.1.6.77 Report Communication Service Status (1.9.1.6)

3.1.6.77.1 Description

This activity is the detailed account of the communication status.

3.1.6.77.2 JPDO Support Alignment

3.1.6.77.3 NextGen Drivers

Type	Name	Description
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Communication Service Management	Communication Service Management involves the activities related to managing the command, control, and communications systems and networks that provide real-time services to enable voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.
SRM Service Component	Ground Network	Defines the set of capabilities that support ground-to-ground information sharing (e.g., facilities, communication and data infrastructure, people, and systems) and provide service providers access to surveillance, communications, and flight data management regardless of physical location.
SRM Service Component	Air to Ground Network	Defines the set of capabilities that provide near-real time critical voice/data communications to flight crew and flight deck that ensures data is available for flight deck automation (i.e., avionics to support flight crew decision-making) as well as real-time data to the Air Navigation Service Provider (ANSP) on the operational aspects of flights.
SRM Service Component	Network Infrastructure	Defines the set of capabilities that provide infrastructure security and service continuity through virtual and physical facilities to enable flexible ground and air-to-ground communication networks.

3.1.6.77.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Report Communication Service State	A detailed account of the condition of the communication service

3.1.6.78 Manage Spectrum (1.9.2)

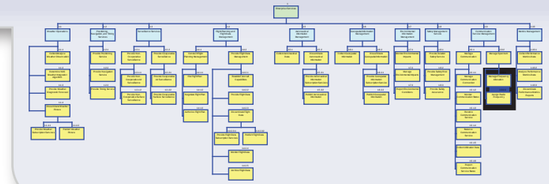
3.1.6.78.1 Description

This activity manages the supervision of the necessary activities involved in regulating the use of electromagnetic spectrum as to which range of frequencies can be used for a specific purpose.

Enterprise Services A1

Communication Service Management A1.9

Manage Spectrum A1.9.2



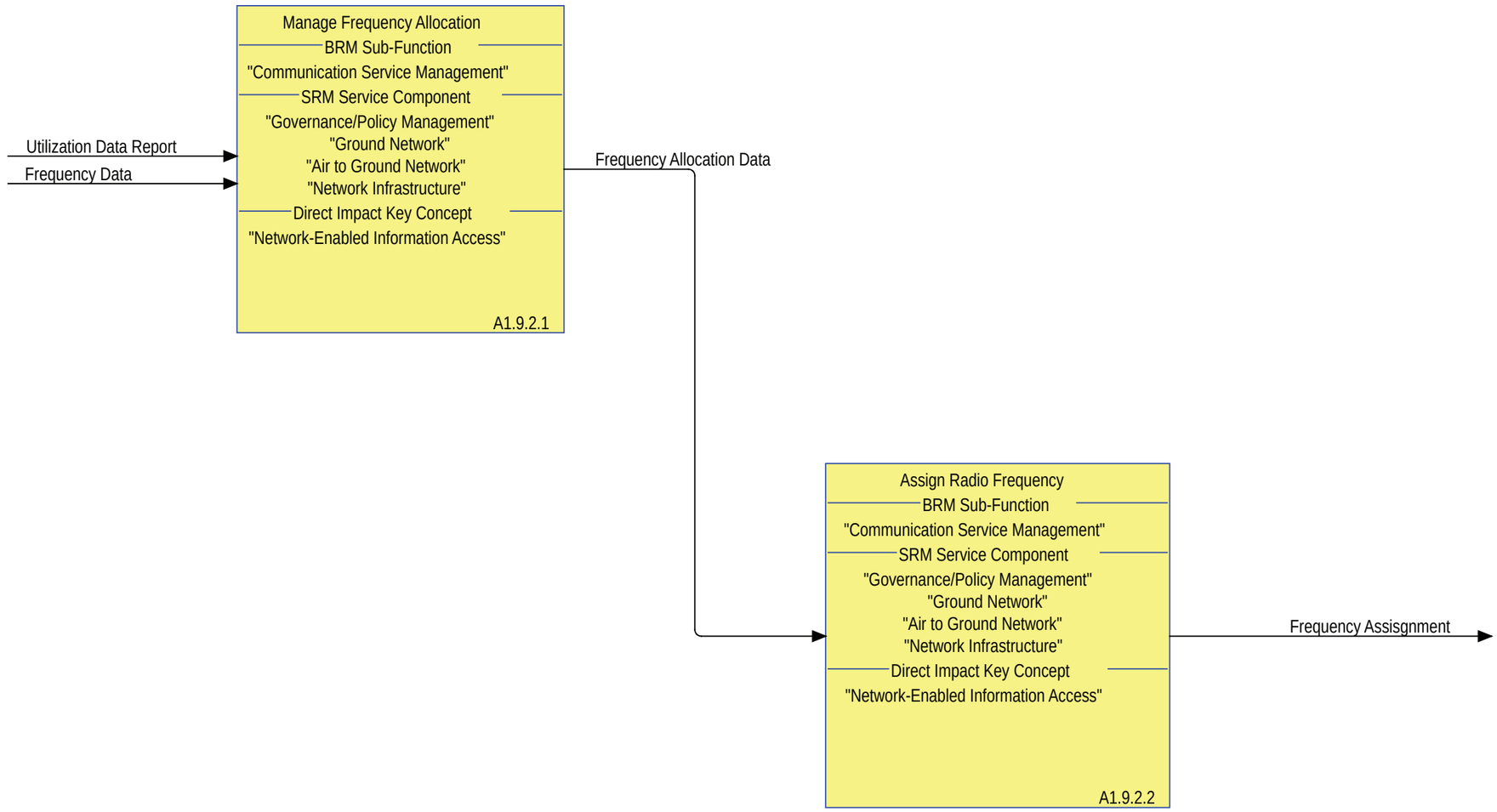


Figure 23 - 1.9.2 Manage Spectrum Activity Model Diagram

3.1.6.79 Manage Frequency Allocation (1.9.2.1)

3.1.6.79.1 Description

This activity governs or controls the distribution of ATC radio frequencies assignments

3.1.6.79.2 JPDO Support Alignment

3.1.6.79.3 NextGen Drivers

Type	Name	Description
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Communication Service Management	Communication Service Management involves the activities related to managing the command, control, and communications systems and networks that provide real-time services to enable voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.
SRM Service Component	Governance/Policy Management	Defines the set of capabilities that influence and determine decisions, sections, business rules and other matters within an organization.
SRM Service Component	Ground Network	Defines the set of capabilities that support ground-to-ground information sharing (e.g., facilities, communication and data infrastructure, people, and systems) and provide service providers access to surveillance, communications, and flight data management regardless of physical location.
SRM Service Component	Air to Ground Network	Defines the set of capabilities that provide near-real time critical voice/data communications to flight crew and flight deck that ensures data is available for flight deck automation (i.e., avionics to support flight crew decision-making) as well as real-time data to the Air Navigation Service Provider (ANSP) on the operational aspects of flights.
SRM Service Component	Network Infrastructure	Defines the set of capabilities that provide infrastructure security and service continuity through virtual and physical facilities to enable flexible ground and air-to-ground communication networks.

3.1.6.79.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Manage Frequency Allocation	To govern or control the distribution ATC radio frequency assignments

3.1.6.80 Assign Radio Frequency (1.9.2.2)

3.1.6.80.1 Description

This activity assigns the ATC radio frequencies.

3.1.6.80.2 JPDO Support Alignment

3.1.6.80.3 NextGen Drivers

Type	Name	Description
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Communication Service Management	Communication Service Management involves the activities related to managing the command, control, and communications systems and networks that provide real-time services to enable voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.
SRM Service Component	Governance/Policy Management	Defines the set of capabilities that influence and determine decisions, sections, business rules and other matters within an organization.
SRM Service Component	Ground Network	Defines the set of capabilities that support ground-to-ground information sharing (e.g., facilities, communication and data infrastructure, people, and systems) and provide service providers access to surveillance, communications, and flight data management regardless of physical location.
SRM Service Component	Air to Ground Network	Defines the set of capabilities that provide near-real time critical voice/data communications to flight crew and flight deck that ensures data is available for flight deck automation (i.e., avionics to support flight crew decision-making) as well as real-time data to the Air Navigation Service Provider (ANSP) on the operational aspects of flights.
SRM Service Component	Network Infrastructure	Defines the set of capabilities that provide infrastructure security and service continuity through virtual and physical facilities to enable flexible ground and air-to-ground communication networks.

3.1.6.80.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Assign Radio Frequency	Distribute ATC radio frequencies

3.1.6.81 Metrics Management (1.10)

3.1.6.81.1 Description

Metrics Management collects information to improve performance. Metrics on overall ATM performance include collecting metrics on all levels in the air transportation system (i.e., airports, national airspace, environments, etc).

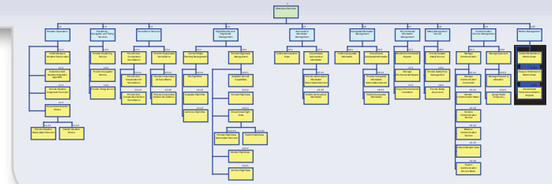
3.1.6.81.2 Purpose

The purpose of Metrics Management is to switch to real-time (operational impact) reviews of the system safety and performance in lieu of historical-based anaylsis, which then allows:

- Use of onboard data monitoring to manage individual aircraft safety among the COIs
- Use of inter-aircraft data to provide inter-element compliance and performance data to systems
- Enhanced use of aircraft-ground monitoring of operational characteristics in the decision making process.

Enterprise Services A1

Metrics Management A1.10



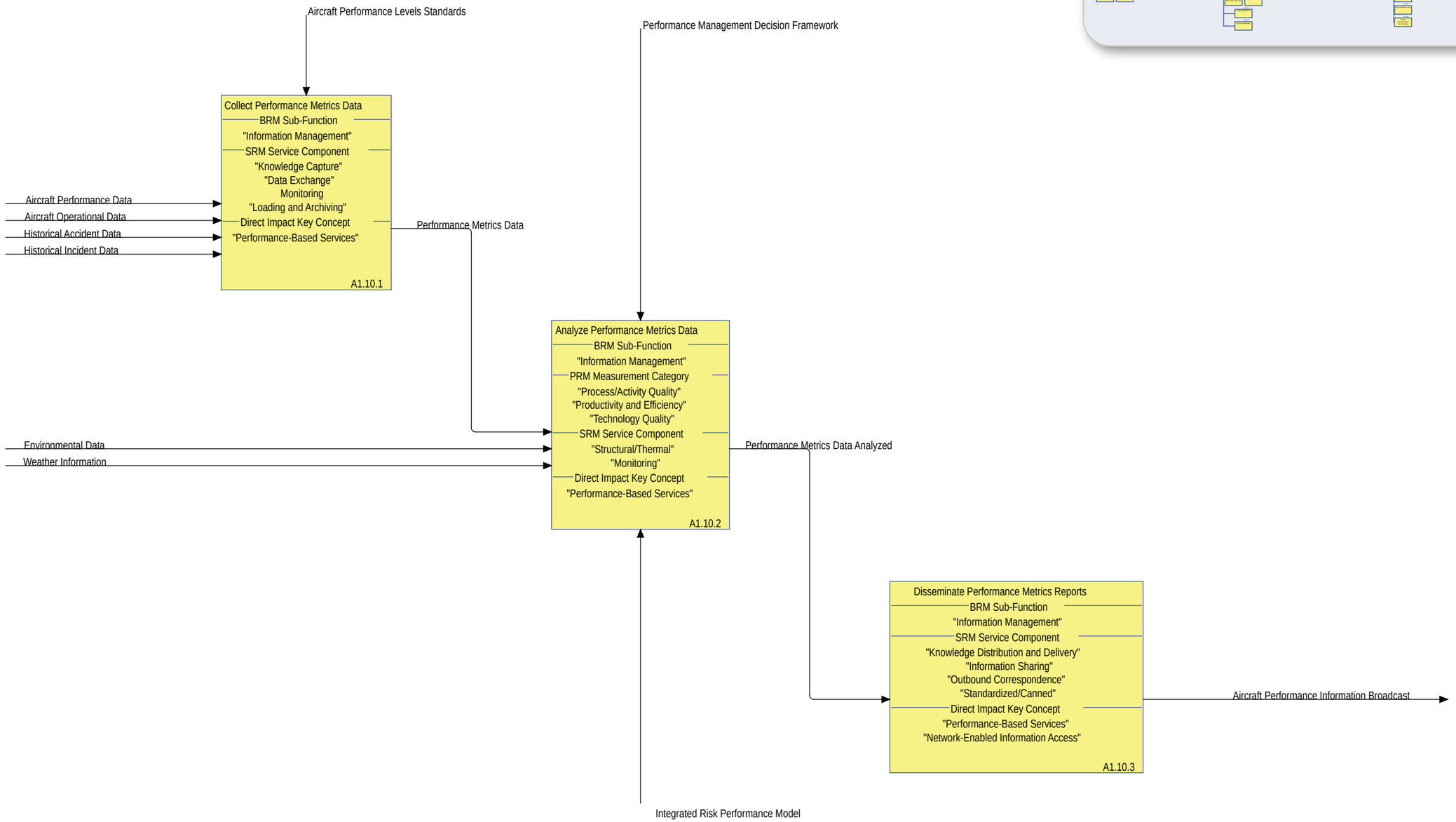


Figure 24 - 1.10 Metrics Management Activity Model Diagram

3.1.6.82 Collect Performance Metrics Data (1.10.1)

3.1.6.82.1 Description

This activity is the collection of performance data that include: the number of operations, delays, cancellations, diversions, filed versus flown miles/altitude, and airport and system efficiency and predictability.

3.1.6.82.2 JPDO Support Alignment

3.1.6.82.3 NextGen Drivers

Type	Name	Description
CONOPS	3 AIRPORT OPERATIONS AND INFRASTRUCTURE SERVICES	
CONOPS	5 SHARED SITUATIONAL AWARENESS SERVICES	
CONOPS	7 ENVIRONMENTAL MANAGEMENT FRAMEWORK	
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.

3.1.6.82.4 NextGen Future Solutions

3.1.6.83 Analyze Performance Metrics Data (1.10.2)

3.1.6.83.1 Description

This activity is the post analysis of performance data collected from airports, environments, systems, etc.

3.1.6.83.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Proactively address emergent environmental issues	This OI will address environmental issues such as maintaining water quality, lowering energy intensity, and minimizing aviation's impact on global climate change.

3.1.6.83.3 NextGen Drivers

Type	Name	Description
ICAO ATMCP Requirement	R161	The ATM System shall provide a capability to evaluate the effectiveness of flow restrictions implemented in the ATM System. Effectiveness criteria shall include overall system performance measures.
CONOPS	3 AIRPORT OPERATIONS AND INFRASTRUCTURE SERVICES	
CONOPS	5 SHARED SITUATIONAL AWARENESS SERVICES	
CONOPS	7 ENVIRONMENTAL MANAGEMENT FRAMEWORK	
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.
SRM Service Component	Structural/Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.
PRM Measurement Category	Productivity and Efficiency	Productivity & Efficiency addresses the amount of work accomplished per relevant units of time and resources applied.
PRM Measurement Category	Process/Activity Quality	Quality assesses the error rates and complaints related to products or services.

Type	Name	Description
PRM Measurement Category	Technology Quality	Quality assesses the extent to which technology satisfies functionality or capability requirements or best practices, and complies with standards.

3.1.6.83.4 NextGen Future Solutions

3.1.6.84 Disseminate Performance Metrics Reports (1.10.3)

3.1.6.84.1 Description

This activity will provide performance reports to various stakeholders that will provides operational trends that assess the performance of the system in the NextGen.

3.1.6.84.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Environmental performance-based air traffic operations	Environmental performance criteria are integrated into the ATM system design and specific operations such as access to airspace, RNP route selection.

3.1.6.84.3 NextGen Drivers

Type	Name	Description
ICAO ATMCP Requirement	R161	The ATM System shall provide a capability to evaluate the effectiveness of flow restrictions implemented in the ATM System. Effectiveness criteria shall include overall system performance measures.
CONOPS	3 AIRPORT OPERATIONS AND INFRASTRUCTURE SERVICES	
CONOPS	5 SHARED SITUATIONAL AWARENESS SERVICES	
CONOPS	9 PERFORMANCE MANAGEMENT SERVICES	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Standardized/Canned	Defines the set of capabilities that support the use of preconceived or pre-written reports.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.

3.1.6.84.4 NextGen Future Solutions

3.2 Airport Support (2)

3.2.1 Description

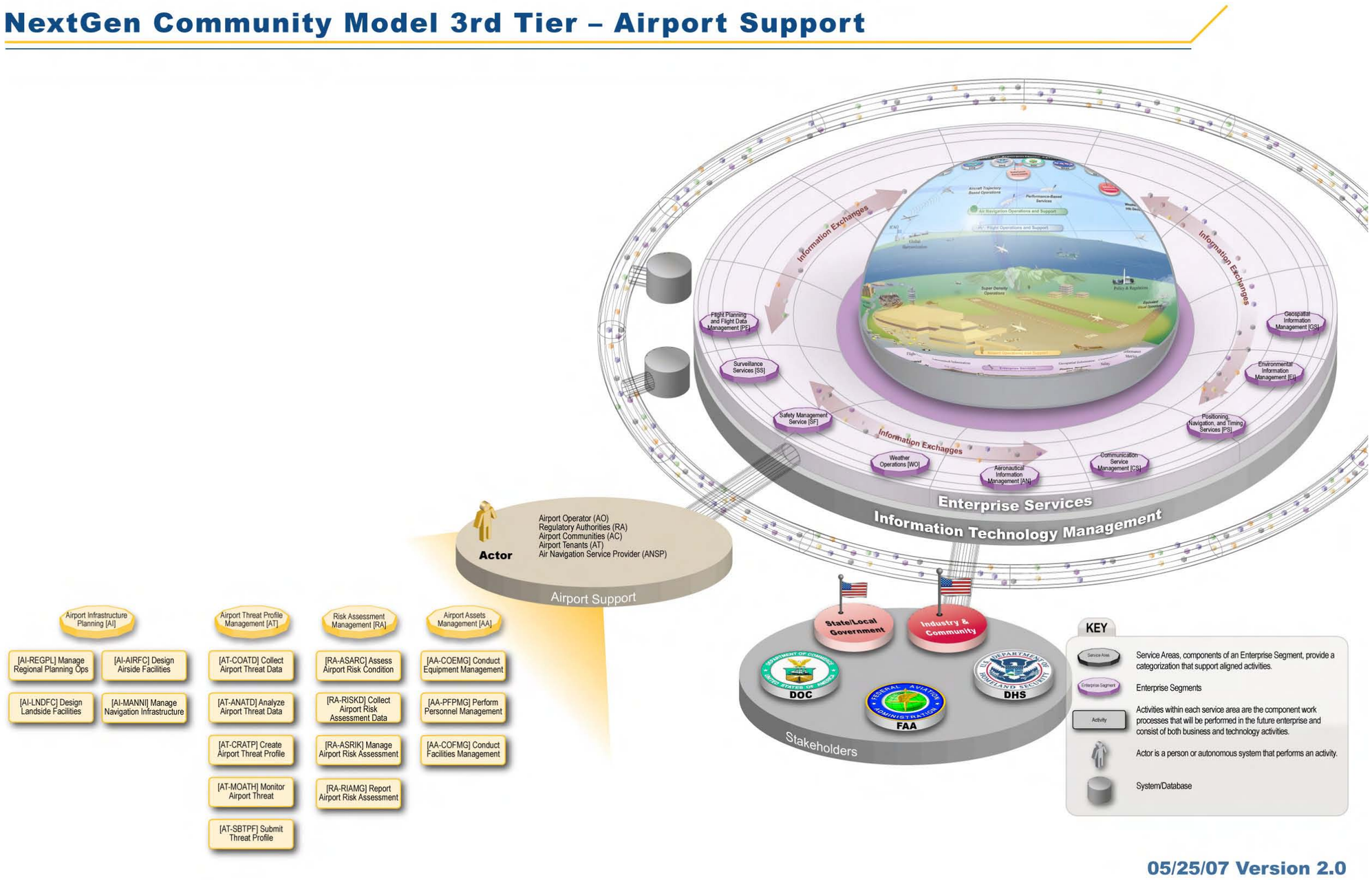
Airport Support Enterprise Segment provides the operational context for the assurance that the proper planning and acquisition of assets when and as needed, is accounted for to support the infrastructure of the airport, and the necessary preventive security measures to mitigate any and all security risks associated with airport operations (i.e., threat profiling and risk assessment)

3.2.2 Purpose

The purpose of this particular enterprise segment is to identify and group specific service areas that are related to supporting the airport operations functions, they are as follows: Airport Asset Management, Risk Assessment Management, Airport Infrastructure Planning, and Airport Threat Profile Management

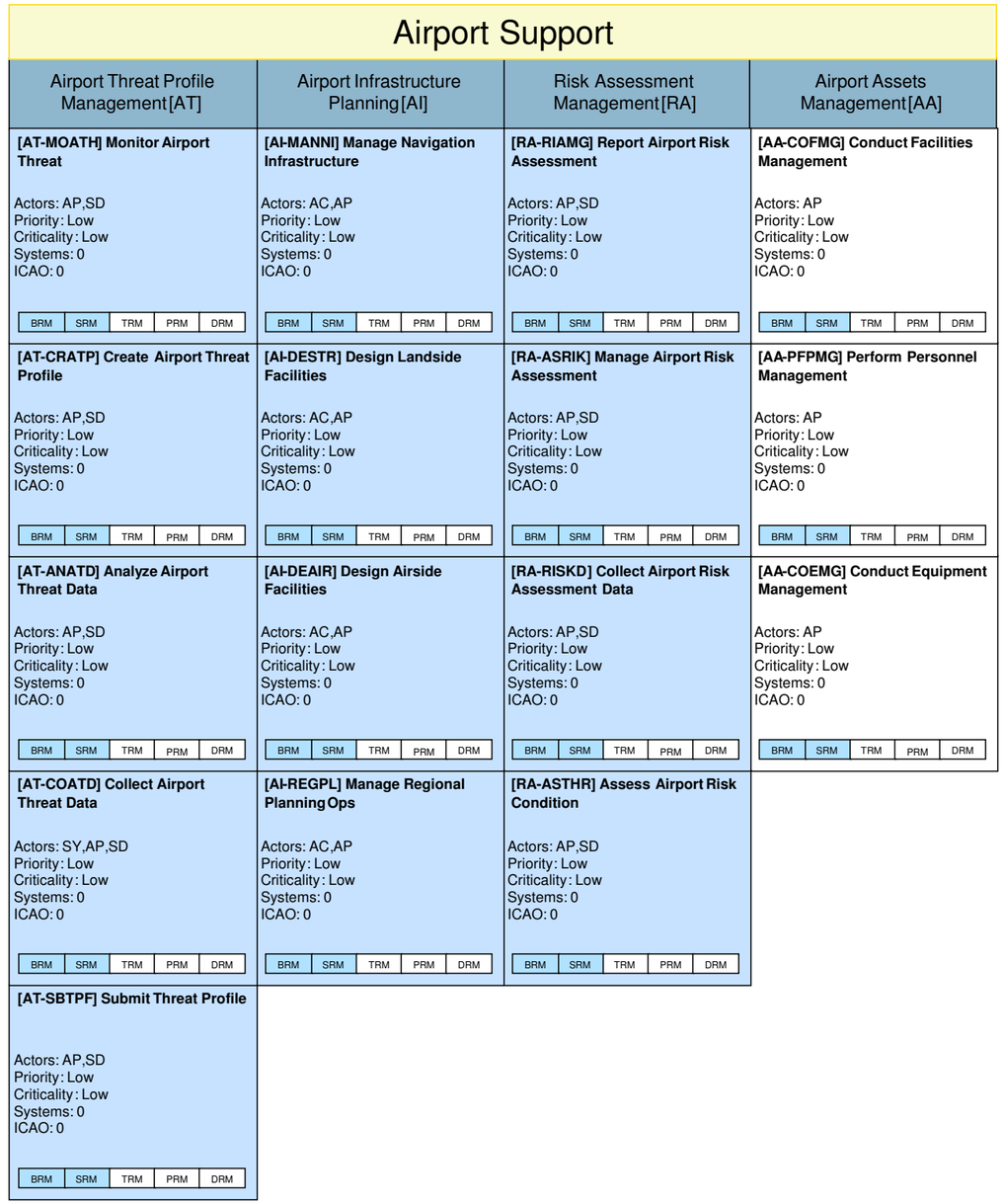
3.2.3 3nd Tier Community Model

Figure 25: Airport Support 3rd tier Community Model



3.2.4 Enterprise Segment Activity Inventory - Airport Support

Figure 26: Airport Support ESAI



3.2.3.1 Airport Support ESAI Actor Table

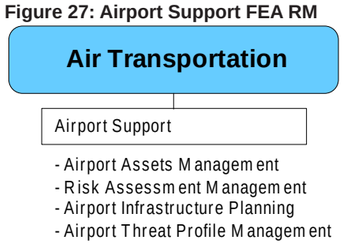
Actor Code	Actor Name	Actor Description
AC	Airport Communities	Cities and towns located in the vicinity of airports that have a vested interest in and are affected by the operation of the airport
AL	Airline Operator	
AN	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
AP	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
PA	Passenger	
SC	Security	This operational node includes all activities by Government organizations to protect people, airports, checked baggage, cargo, airspace, aircraft, and information from intentional harm or unauthorized use.
SD	Security and Defense Providers	Organizations and people responsible for national and homeland defense, homeland security, law enforcement, information security, and physical and operational security of the NGATS
SH	Shipper	A person who ships cargo
SY	System	An automation system

3.2.4 Airport Support FEA RM

The Airport Support Segment describes the requisite functional activities that assure airport installations remain operational. As depicted in figure 7, this segment is primarily categorized under the Air Transportation Line of Business. It describes the management of airport assets, including the planning activities associated with designing new airport capabilities, as well as the assessment and management of airport risks and threats. The following table further describes the Airport Support Segment and identifies how each activity aligns to the other architectural layers of the NextGen EA Reference Architecture.

3.2.5 Airport Support FEA RM

Figure 27: Airport Support FEA RM



3.2.6 Airport Support DoDAF products

List of Activity Models

Figure 28 - 2 Airport Support Activity Model Diagram 133
Figure 29 - 2.1 Airport Assets Management Activity Model Diagram 140
Figure 30 - 2.2 Risk Assessment Management Activity Model Diagram 143
Figure 31 - 2.3 Airport Infrastructure Planning Activity Model Diagram 148
Figure 32 - 2.4 Airport Threat Profile Management Activity Model Diagram 152

NextGen EA
Airport Support A2

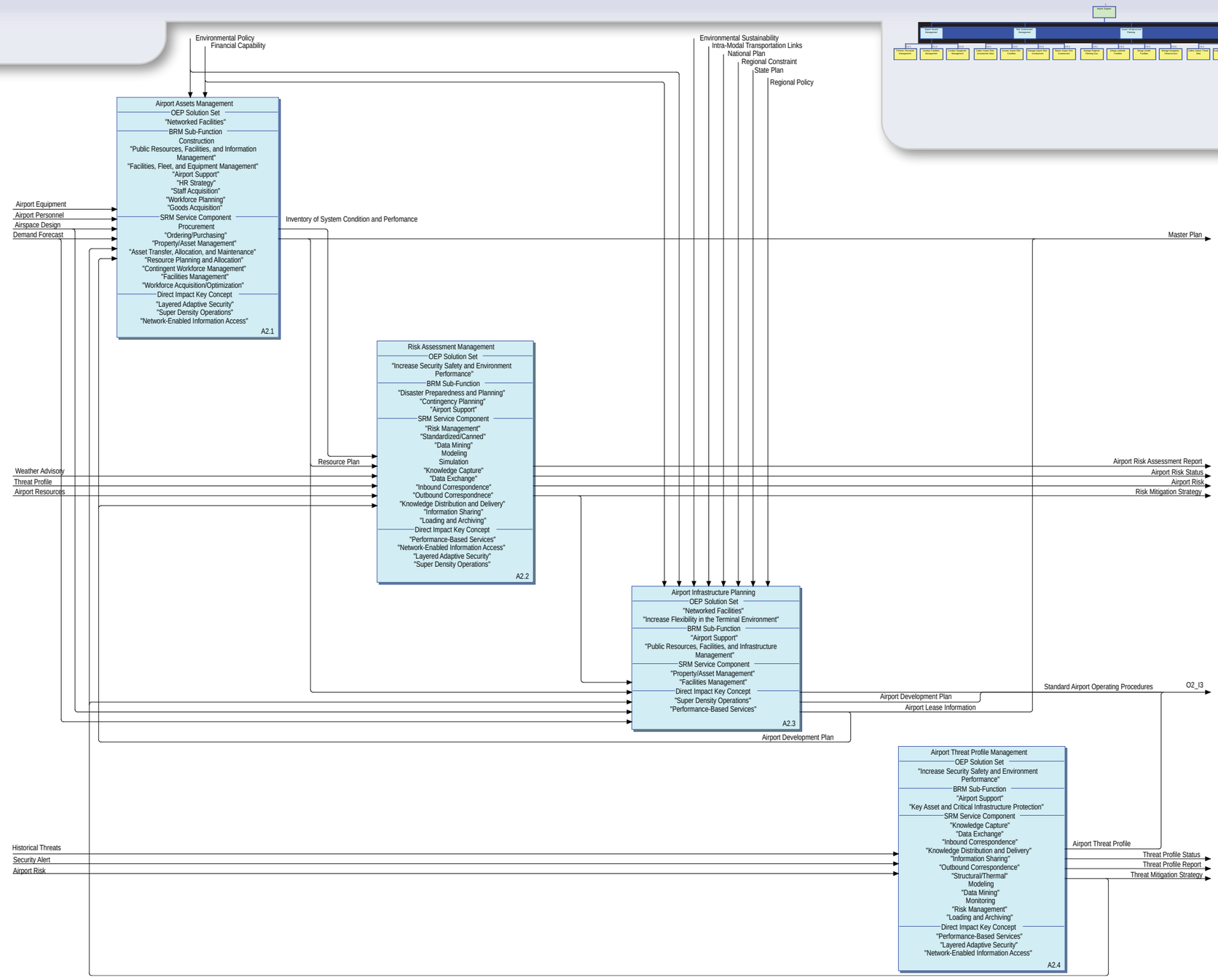


Figure 28- 2. Airpot Support Activity Model

3.2.6.1 Airport Assets Management (2.1)

3.2.6.1.1 Description

Airport Assets Management manages the assets of the airport, such as personnel, equipment, and facilities. The management of these activities include determining if additional resources, systems, or facilities are needed to meet the current and future demand.

3.2.6.1.2 Purpose

The purpose of airport assets management is to achieve balance of the demand by allocating the airport assets to meet the current and future demand at the airport. This includes the acquisition, maintenance, administration, and operation of equipment and facility.

3.2.6.1.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Networked Facilities	
NextGen Operational Improvements	Airport Preservation	A diverse network of airports is preserved throughout the nation in the best interest of a sustainable national air transportation system. The primary goal of the program is to maintain a network of regional airports to support increases in general aviation and commercial service as major airports reach capacity.
NextGen Operational Improvements	All-weather capability for Airside Facilities	Airside facilities are open during all weather conditions. Technology, systems, and procedures support airport operators in more effectively keeping airside facilities open and fully functional during all conditions. This includes the proactive scheduling of maintenance and weather-response activities (such as clearing runways of snow and ice). Delays and congestion that result from winter weather and non-nominal airfield conditions are reduced. Waterfall deployment: a) OEP 2016 Start b) Top 100 2018 Start c) Other airports 2021 start
NextGen Operational Improvements	Improved strategic management of existing infrastructure (Airside)	Use of existing airport airside infrastructure is maximized. Airport airside infrastructure includes tarmac, emergency response vehicles, deicing, and the surface management infrastructure.
NextGen Operational Improvements	Improved strategic management of existing infrastructure (Landside)	Use of existing airport landside infrastructure is maximized. Airport landside infrastructure includes gates, security, customs, baggage handling, cargo handling.

3.2.6.1.4 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
CONOPS	3.5 AIRPORT MISSION SUPPORT	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of “layers of defense” (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	HR Strategy	HR Strategy develops effective human capital management strategies to ensure federal organizations are able to recruit, select, develop, train, and manage a high-quality, productive workforce in accordance with merit system principles. This sub-function includes: conducting both internal and external environmental scans; developing human resources and human capital strategies and plans; establishing human resources policy and practices; managing current and future workforce competencies; developing workforce plans; developing succession plans; managing the human resources budget; providing human resources and human capital consultative support; and measuring and improving human resources performance.
BRM Sub-Function	Staff Acquisition	Staff Acquisition establishes procedures for recruiting and selecting high-quality, productive employees with the right skills and competencies, in accordance with merit system principles. This sub-function includes: developing a staffing strategy and plan; establishing an applicant evaluation approach; announcing the vacancy, sourcing and evaluating candidates against the competency requirements for the position; initiating pre-employment activities; and hiring employees.
BRM Sub-Function	Goods Acquisition	Goods Acquisition involves the procurement of physical goods, products, and capital assets to be used by the federal government.
BRM Sub-Function	Workforce Planning	Workforce Planning involves the processes for identifying the workforce competencies required to meet the agency’s strategic goals and for developing the strategies to meet these requirements.
BRM Sub-Function	Construction	Construction involves all programs and activities in which the federal government builds or constructs facilities, roads, dams, etc.
BRM Sub-Function	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.
BRM Sub-Function	Public Resources, Facilities, and Information Management	
BRM Sub-Function	Facilities, Fleet, and Equipment Management	Facilities, Fleet, and Equipment Management involves the maintenance, administration, certification, and operation of office buildings, fleets, machinery, and other capital assets that are possessions of the federal government.
SRM Service Component	Ordering/ Purchasing	Defines the set of capabilities that allow the placement of request for a product.

Type	Name	Description
SRM Service Component	Procurement	Defines the set of capabilities that support the ordering and purchasing of products and services.
SRM Service Component	Facilities Management	Defines the set of capabilities that support the construction, management and maintenance of facilities for an organization.
SRM Service Component	Property/Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.
SRM Service Component	Contingent Workforce Management	Defines the set of capabilities that support the continuity of operations for an organization's business through the identification of alternative organization personnel.
SRM Service Component	Workforce Acquisition/ Optimization	Defines the set of capabilities that support the hiring and re-structuring of employees and their roles within an organization.
SRM Service Component	Resource Planning and Allocation	Defines the set of capabilities that support the determination of strategic direction, the identification and establishment of programs and processes, and the allocation of resources (capital and labor) among those programs and processes.
SRM Service Component	Asset Transfer, Allocation, and Maintenance	Defines the set of capabilities that support the movement, assignment, and replacement of assets.

3.2.6.1.5 NextGen Future Solutions

Type	Name	Description
NAS Activity	Manage Facility	The supervision of the necessary activities involved in regulating the operation and maintenance of the physical plant at a location. This includes the land, buildings, utilities, and other support equipment.

3.2.6.2 Risk Assessment Management (2.2)

3.2.6.2.1 Description

Risk Assessment Management provides the collection, analysis, management, and reporting on the airport risk. The assessment of risk provides a prioritized list of vulnerabilities and potential mitigation strategies. Risks are measures of potential harm that encompasses threat, vulnerability, and consequences.

3.2.6.2.2 Purpose

The purpose of risk assessment management are evaluating the effects of defined threats, assessing the vulnerability, and evaluating and prioritizing assets and functions for the civil aviation system that is a significant target for our adversaries, including high-value localized targets, such as airport.

3.2.6.2.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Increase Security Safety and Environment Performance	

Type	Name	Description
NextGen Operational Improvements	Integrated command and control of security resources for incident response and r	Security and defense service providers jointly manage security resources and respond to security incidents by using an integrated security command and control capability that includes unified security operations protocols, communications, procedures, and tactics. This provides a seamless aviation security operation systems that are adaptive and responsive to the emerging threats.
NextGen Operational Improvements	Integrated high-risk flight management and risk mitigation	Flights are continually monitored and assessed risks. High risk flights are identified using an integrated risk assessment capability. Notifications are provided to the ANSP and the defense/security service providers to coordinate integrated response for risk mitigation facilitate by improved communications and information sharing.
NextGen Operational Improvements	Integrated risk-based planning and management of security resources	Security resources are planned, and managed using an integrated, adaptive, and responsive risk management capability that supports risk-informed decisions among security mission partners. This capability harmonizes short and long term resource allocation and investments among partners to gain the highest possible security return on investment and to reduce the overall cost of security operations.
NextGen Operational Improvements	Net-centric security situational awareness and management of airport.	Information fusion of all data inputs at airport to a central airport operations center, connecting data, intelligence, predictive systems, imagery and risk analysis to national and regional systems. This OI builds off of NEO backbone to support routine and emergency decision-making.
NextGen Operational Improvements	Reduce CBRNE threats from entering airport property	Mechanisms and procedures will be in place to identify, alert, mitigate or neutralize in order to intercept/ interdict the material threat of CBRNE prior to entering the airport property.
NextGen Operational Improvements	Reduced threat from unauthorized persons in airport secure area	Mechanisms and procedures will be in place to identify, alert, mitigate or neutralize in order to intercept/ interdict the material threat of unauthorized persons prior to entering the airport property.

3.2.6.2.4 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
Actor	Security and Defense Providers	Organizations and people responsible for national and homeland defense, homeland security, law enforcement, information security, and physical and operational security of the NEXTGEN
CONOPS	6.3 IRM ENTERPRISE OPERATIONS	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.

Type	Name	Description
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Disaster Preparedness and Planning	Disaster Preparedness and Planning involves the development of response programs to be used in case of a disaster as well as pre-disaster mitigation efforts to minimize the potential for loss of life and property. This involves the development of emergency management programs and activities as well as staffing and equipping regional response centers, and mitigation focused construction and preparation.
BRM Sub-Function	Contingency Planning	Contingency Planning involves the actions required to plan for, respond to, and mitigate damaging events.
BRM Sub-Function	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.
SRM Service Component	Risk Management	Defines the set of capabilities the support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal; includes risk assessment and risk mitigation.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Data Mining	Defines the set of capabilities that provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.
SRM Service Component	Simulation	Defines the set of capabilities that utilize models to mimic real-world processes.
SRM Service Component	Standardized/ Canned	Defines the set of capabilities that support the use of preconceived or pre-written reports.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Modeling	Defines the set of capabilities that develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.

Type	Name	Description
SRM Service Component	Inbound Correspondence	
SRM Service Component	Outbound Correspondnece	

3.2.6.2.5 NextGen Future Solutions

3.2.6.3 Airport Infrastructure Planning (2.3)

3.2.6.3.1 Description

Airport Infrastructure Planning plans the design, development, and manages the regional system plan of the airport infrastructure. This includes developing new runways, maximizing use of existing infrastructure, and incorporating use of enhanced runway markings, dynamic lighting, and multiple thresholds/touchdown points.

3.2.6.3.2 Purpose

The purpose of airport infrastructure planning will aid the NextGen development that will transform the way air traffic flows and airspace are managed. For airports, this means that the airfields needs to be optimized to take full advantage of NextGen driven airspace improvements. New terminal designs will increasingly incorporate provisions to support energy and resource conservation, including green design and technologies and provide a more flexible design to meet the on going needs. Regional system planning will become vital to the success of NextGen when faced with up to three times the level of operations in existence today.

3.2.6.3.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Increase Flexibility in the Terminal Environment	Flexible Terminals and Airports includes activities to improve both pilot and controller situational awareness to improve the safety and efficiency of operations. Includes activities related to both automated and remote virtual towers for the purpose of providing an improved service. The activities do not rise to a level which requires flow management.
OEP Solution Set	Networked Facilities	
NextGen Operational Improvements	Ground-based and on-board runway incursion alerting equipment.	This OI increases the safety of operations by reducing runway incursions. Operators of suitably equipped commercial, business, and general aviation aircraft receive runway incursion alerts from on-board detection systems and from complementary ground-based detection systems where implemented. Airborne equipage is not required to receive incursion alerts. This OI will require research and development of runway incursion alerting systems appropriate for business, general aviation, and commercial aircraft.
NextGen Operational Improvements	Improved strategic management of existing infrastructure (Airside)	Use of existing airport airside infrastructure is maximized. Airport airside infrastructure includes tarmac, emergency response vehicles, deicing, and the surface management infrastructure.
NextGen Operational Improvements	Improved strategic management of existing infrastructure (Landside)	Use of existing airport landside infrastructure is maximized. Airport landside infrastructure includes gates, security, customs, baggage handling, cargo handling.

Type	Name	Description
NextGen Operational Improvements	Increased intermodal transport use	Passengers increasingly use intermodal transport to/from airports. Comprehensive, easily accessible trip information supports passengers in making informed decisions about ground transportation modes, based upon destination, time enroute, and price. This should make high-density transportation modes (e.g., buses and trains) more accessible and reduce roadway congestion.
NextGen Operational Improvements	Net-centric security situational awareness and management of airport.	Information fusion of all data inputs at airport to a central airport operations center, connecting data, intelligence, predictive systems, imagery and risk analysis to national and regional systems. This OI builds off of NEO backbone to support routine and emergency decision-making.
NextGen Operational Improvements	New Airside Infrastructure - Beyond OEP	New airside airport infrastructure is developed to meet increased demand.
NextGen Operational Improvements	New Landside Infrastructure - Beyond OEP	New landside airport infrastructure is developed to meet increased demand.
NextGen Operational Improvements	Off-Airport Passenger and Baggage Processing	Remote processing locations (e.g., hotels, conference centers, modal transportation, Remote Terminal Security Service facilities) enable check-in, baggage check, and security screening at off-airport locations. Passengers and baggage would be transported to the airport via secure ground transportation for connections directly to the secure portions of the terminal. Passenger and baggage itinerary information is tracked using advanced technology to support synchronization, handling information, remote check-in, and security assurance. Baggage transfer services via third party vendors would be supported. Airports that have limited room to expand their terminal facilities would benefit and be able to support higher passenger volumes while maintaining an acceptable level of service. Roadway congestion to/from the airport would also be reduced.
NextGen Operational Improvements	Reduced at-airport significant noise impact	Significant aircraft noise is contained within the airport boundary and/or neighboring compatible land uses.
NextGen Operational Improvements	Subterranean Ground Support Infrastructure	Subterranean conveyance systems are used to facilitate ground support functions (e.g., baggage transfer and aircraft servicing), thus reducing the need for GSE and related ramp congestion and emissions. This OI will also support improved security at airports.
NAS Operational Improvements	Independent Operations to CSPR	Changes to wake rules are implemented based on improved wind measurements and wake transport prediction capabilities. Procedures allow staggered independent operations to closely spaced parallel or converging runways closer than 2500 feet, to maintain airport/runway capacity in lower visibility conditions.

3.2.6.3.4 NextGen Drivers

Type	Name	Description
Actor	Airport Communities	Cities and towns located in the vicinity of airports that have a vested interest in and are affected by the operation of the airport
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
ICAO ATMCP Requirement	R 22	Overall performance of aerodrome operations shall reflect the nature of the expectations of stakeholders and the performance of the ATM system at large
ICAO ATMCP Requirement	R 24	Aerodrome design and operations shall, through collaborative decision-making, ensure that the most effective means of surface management are employed to respond to demand

Type	Name	Description
CONOPS	3.4.3 Airport System Planning Information Services	
CONOPS	3.5 AIRPORT MISSION SUPPORT	
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
Key Concept	Super-Density Arrival/Departure Operations	With increasing demand, an even greater need exists to achieve peak throughput performance at the busiest airports and in the busiest airspace. New procedures to improve airport surface movements, reduce spacing and separation requirements in place today, and better manage overall flows in and out of busy metropolitan airspace provide maximum use of the highest-demand airports. Airport terminals also maximize efficiency of egress and ingress, matching passenger and cargo flow to airside throughput while maintaining safety and security levels.
BRM Sub-Function	Public Resources, Facilities, and Infrastructure Management	
BRM Sub-Function	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.
SRM Service Component	Facilities Management	Defines the set of capabilities that support the construction, management and maintenance of facilities for an organization.
SRM Service Component	Property/Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.

3.2.6.3.5 NextGen Future Solutions

Type	Name	Description
NAS Activity	Manage Infrastructure Service	To exercise executive, administrative, and supervisory direction of the service that provides the underlying foundation or basic framework (as of a system or organization), the system of public works of a country, state, or region; also: the resources (as personnel, buildings, or equipment) required for an activity.

3.2.6.4 Airport Threat Profile Management (2.4)

3.2.6.4.1 Description

Airport Threat Profile Management provides the assurance that each airport undergoes a threat and vulnerability analysis which is updated periodically. The threat profile could include the entire physical footprint of the airport, out to the fence line, and would include the MANPADS threat. The information is disseminated to airports for planning and construct all airport procedures would

react to the threat profile, passenger screened, checkpoints. This is different from the standard day to day risk assessment process that the airport does as part of normal operations and looks at longer terms risk threat issues.

3.2.6.4.2 Purpose

The purpose of the airport threat profile management is it enables the determination of the threat profile of the airport facility and the identification of the high-threat airports and related facilities that require additional security resources, technology investments, and more robust security operations to receive the appropriate levels of protection. The process also identifies airports that have low-threat profiles that do not mandate much if any security upgrade.

3.2.6.4.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Increase Security Safety and Environment Performance	
NextGen Operational Improvements	Improved passenger checkpoint screening	Security is improved by improved passenger screening for explosives, chemicals, biological agents, nuclear devices, radiological material and weapons that might be introduced into the passenger compartments of civil airliners and used to destroy, disable, and hijack the airplane. Security checkpoints currently screen passengers and their carry on luggage for the presence of these threats, but, at present, these checkpoints, as currently designed, cannot detect the full range of these threats. Current screening methods also need to be improved to be able to process the projected increasing passenger volumes. This improvement would provide for improved levels of threat detection, lower false alarms, increased throughput, and improved resolution of alarming passengers.
NextGen Operational Improvements	Integrated command and control of security resources for incident response and r	Security and defense service providers jointly manage security resources and respond to security incidents by using an integrated security command and control capability that includes unified security operations protocols, communications, procedures, and tactics. This provides a seamless aviation security operation systems that are adaptive and responsive to the emerging threats.
NextGen Operational Improvements	Integrated risk-based planning and management of security resources	Security resources are planned, and managed using an integrated, adaptive, and responsive risk management capability that supports risk-informed decisions among security mission partners. This capability harmonizes short and long term resource allocation and investments among partners to gain the highest possible security return on investment and to reduce the overall cost of security operations.
NextGen Operational Improvements	Reduce CBRNE threats from entering airport property	Mechanisms and procedures will be in place to identify, alert, mitigate or neutralize in order to intercept/ interdict the material threat of CBRNE prior to entering the airport property.
NextGen Operational Improvements	Reduced threat from unauthorized persons in airport secure area	Mechanisms and procedures will be in place to identify, alert, mitigate or neutralize in order to intercept/ interdict the material threat of unauthorized persons prior to entering the airport property.

3.2.6.4.4 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
Actor	Security and Defense Providers	Organizations and people responsible for national and homeland defense, homeland security, law enforcement, information security, and physical and operational security of the NEXTGEN

Type	Name	Description
CONOPS	6.3 IRM ENTERPRISE OPERATIONS	
CONOPS	6.4.2 Service: Secure Airports	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of “layers of defense” (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Key Asset and Critical Infrastructure Protection	Key Asset and Critical Infrastructure Protection involves assessing key asset and critical infrastructure vulnerabilities and taking direct action to mitigate vulnerabilities, enhance security, and ensure continuity and necessary redundancy in government operations and personnel.
BRM Sub-Function	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.
SRM Service Component	Risk Management	Defines the set of capabilities the support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal; includes risk assessment and risk mitigation.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Structural/ Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.
SRM Service Component	Data Mining	Defines the set of capabilities that provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.

Type	Name	Description
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Modeling	Defines the set of capabilities that develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.
SRM Service Component	Inbound Correspondence	
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.

3.2.6.4.5 NextGen Future Solutions

3.2.6.5 Airport Assets Management (2.1)

3.2.6.5.1 Description

Airport Assets Management manages the assets of the airport, such as personnel, equipment, and facilities. The management of these activities include determining if additional resources, systems, or facilities are needed to meet the current and future demand.

3.2.6.5.2 Purpose

The purpose of airport assets management is to achieve balance of the demand by allocating the airport assets to meet the current and future demand at the airport. This includes the acquisition, maintenance, administration, and operation of equipment and facility.

Airport Support A2

Airport Assets Management A2.1

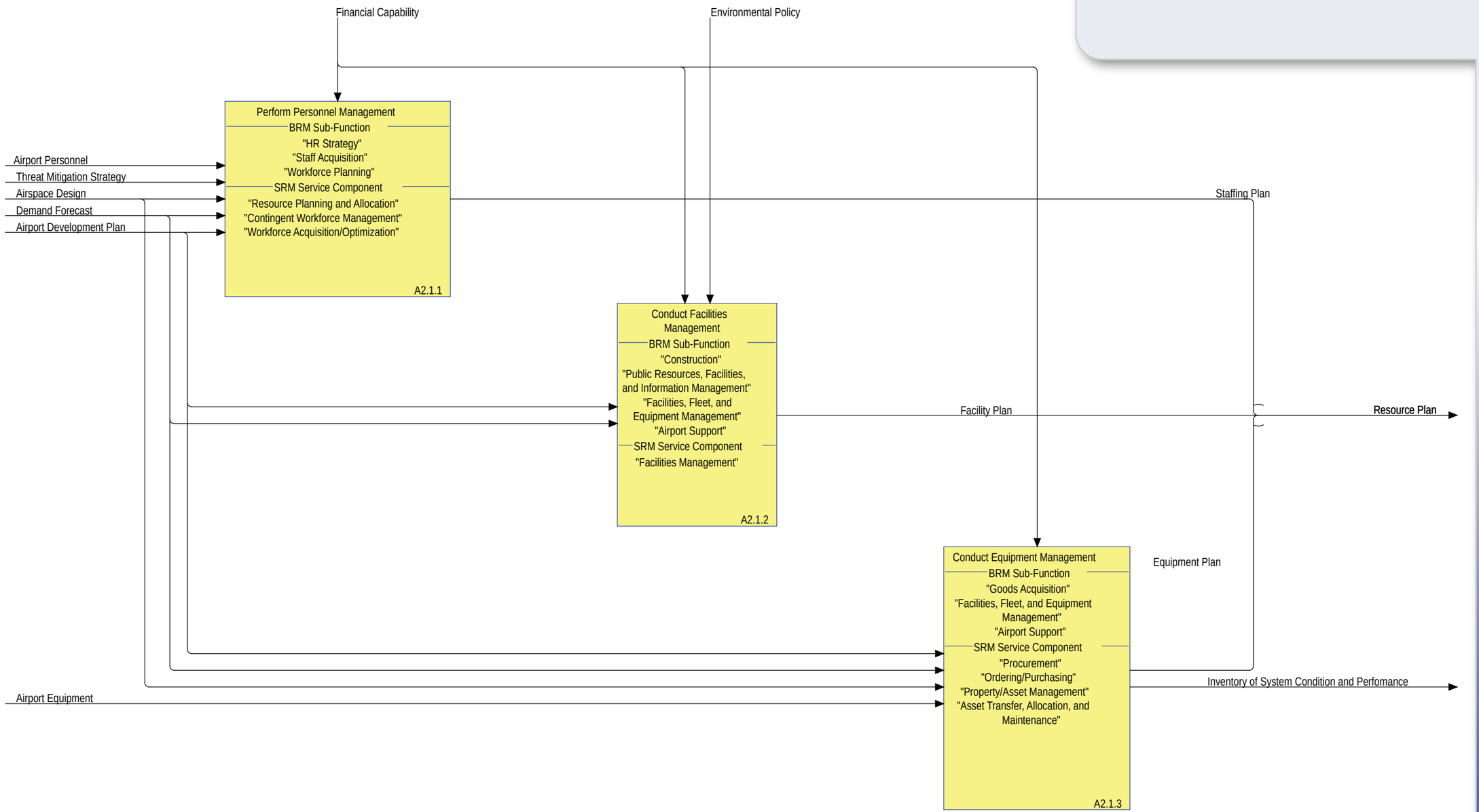


Figure 29 - 2.1 Airport Assets Management Activity Model Diagram

3.2.6.6 Perform Personnel Management (2.1.1)

3.2.6.6.1 Description

This activity is the process for managing personnel including determining if additional resources is required and allocating resources to meet demand.

3.2.6.6.2 JPDO Support Alignment

3.2.6.6.3 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
CONOPS	3 AIRPORT OPERATIONS AND INFRASTRUCTURE SERVICES	
BRM Sub-Function	HR Strategy	HR Strategy develops effective human capital management strategies to ensure federal organizations are able to recruit, select, develop, train, and manage a high-quality, productive workforce in accordance with merit system principles. This sub-function includes: conducting both internal and external environmental scans; developing human resources and human capital strategies and plans; establishing human resources policy and practices; managing current and future workforce competencies; developing workforce plans; developing succession plans; managing the human resources budget; providing human resources and human capital consultative support; and measuring and improving human resources performance.
BRM Sub-Function	Staff Acquisition	Staff Acquisition establishes procedures for recruiting and selecting high-quality, productive employees with the right skills and competencies, in accordance with merit system principles. This sub-function includes: developing a staffing strategy and plan; establishing an applicant evaluation approach; announcing the vacancy, sourcing and evaluating candidates against the competency requirements for the position; initiating pre-employment activities; and hiring employees.
BRM Sub-Function	Workforce Planning	Workforce Planning involves the processes for identifying the workforce competencies required to meet the agency's strategic goals and for developing the strategies to meet these requirements.
SRM Service Component	Contingent Workforce Management	Defines the set of capabilities that support the continuity of operations for an organization's business through the identification of alternative organization personnel.
SRM Service Component	Workforce Acquisition/ Optimization	Defines the set of capabilities that support the hiring and re-structuring of employees and their roles within an organization.
SRM Service Component	Resource Planning and Allocation	Defines the set of capabilities that support the determination of strategic direction, the identification and establishment of programs and processes, and the allocation of resources (capital and labor) among those programs and processes.

3.2.6.6.4 NextGen Future Solutions

3.2.6.7 Conduct Facilities Management (2.1.2)

3.2.6.7.1 Description

This activity is the acquisition, maintenance, administration, and operation of airport facilities.

3.2.6.7.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Airport Preservation	A diverse network of airports is preserved throughout the nation in the best interest of a sustainable national air transportation system. The primary goal of the program is to maintain a network of regional airports to support increases in general aviation and commercial service as major airports reach capacity.
NextGen Operational Improvements	All-weather capability for Airside Facilities	Airside facilities are open during all weather conditions. Technology, systems, and procedures support airport operators in more effectively keeping airside facilities open and fully functional during all conditions. This includes the proactive scheduling of maintenance and weather-response activities (such as clearing runways of snow and ice). Delays and congestion that result from winter weather and non-nominal airfield conditions are reduced. Waterfall deployment: a) OEP 2016 Start b) Top 100 2018 Start c) Other airports 2021 start

3.2.6.7.3 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
CONOPS	3 AIRPORT OPERATIONS AND INFRASTRUCTURE SERVICES	
CONOPS	3.3 AIRPORT ENTERPRISE OPERATIONS	
BRM Sub-Function	Construction	Construction involves all programs and activities in which the federal government builds or constructs facilities, roads, dams, etc.
BRM Sub-Function	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.
BRM Sub-Function	Public Resources, Facilities, and Information Management	
BRM Sub-Function	Facilities, Fleet, and Equipment Management	Facilities, Fleet, and Equipment Management involves the maintenance, administration, certification, and operation of office buildings, fleets, machinery, and other capital assets that are possessions of the federal government.
SRM Service Component	Facilities Management	Defines the set of capabilities that support the construction, management and maintenance of facilities for an organization.

3.2.6.7.4 NextGen Future Solutions

3.2.6.8 Conduct Equipment Management (2.1.3)

3.2.6.8.1 Description

This activity is the acquisition, maintenance, administration and operation of airport equipment.

3.2.6.8.2 JPDO Support Alignment

3.2.6.8.3 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
CONOPS	3 AIRPORT OPERATIONS AND INFRASTRUCTURE SERVICES	
CONOPS	3.3 AIRPORT ENTERPRISE OPERATIONS	
BRM Sub-Function	Goods Acquisition	Goods Acquisition involves the procurement of physical goods, products, and capital assets to be used by the federal government.
BRM Sub-Function	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.
BRM Sub-Function	Facilities, Fleet, and Equipment Management	Facilities, Fleet, and Equipment Management involves the maintenance, administration, certification, and operation of office buildings, fleets, machinery, and other capital assets that are possessions of the federal government.
SRM Service Component	Ordering/Purchasing	Defines the set of capabilities that allow the placement of request for a product.
SRM Service Component	Procurement	Defines the set of capabilities that support the ordering and purchasing of products and services.
SRM Service Component	Property/Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.
SRM Service Component	Asset Transfer, Allocation, and Maintenance	Defines the set of capabilities that support the movement, assignment, and replacement of assets.

3.2.6.8.4 NextGen Future Solutions

3.2.6.9 Risk Assessment Management (2.2)

3.2.6.9.1 Description

Risk Assessment Management provides the collection, analysis, management, and reporting on the airport risk. The assessment of risk provides a prioritized list of vulnerabilities and potential mitigation strategies. Risks are measures of potential harm that encompasses threat, vulnerability, and consequences.

3.2.6.9.2 Purpose

The purpose of risk assessment management are evaluating the effects of defined threats, assessing the vulnerability, and evaluating and prioritizing assets and functions for the civil aviation system that is a significant target for our adversaries, including high-value localized targets, such as airport.

Airport Support A2

Risk Assessment Management A2.2

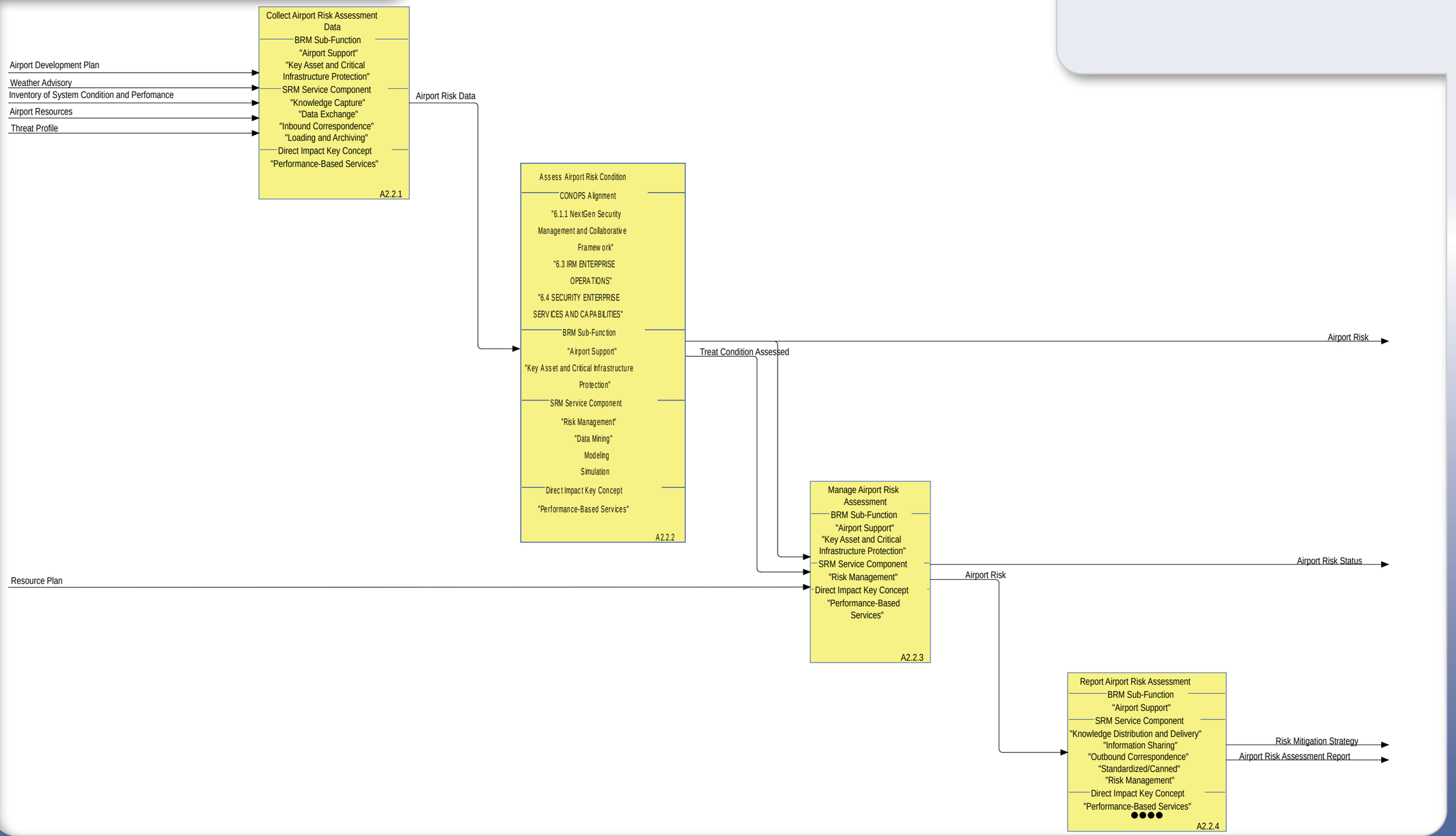


Figure 30 - 2.2 Risk Assessment Management Activity Model Diagram

3.2.6.10 Collect Airport Risk Assessment Data (2.2.1)

3.2.6.10.1 Description

This activity covers the collection of the different airport safety and risk data for use by the risk assessment process.

3.2.6.10.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Net-centric security situational awareness and management of airport.	Information fusion of all data inputs at airport to a central airport operations center, connecting data, intelligence, predictive systems, imagery and risk analysis to national and regional systems. This OI builds off of NEO backbone to support routine and emergency decision-making.
NextGen Operational Improvements	Reduced threat from unauthorized persons in airport secure area	Mechanisms and procedures will be in place to identify, alert, mitigate or neutralize in order to intercept/ interdict the material threat of unauthorized persons prior to entering the airport property.

3.2.6.10.3 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
Actor	Security and Defense Providers	Organizations and people responsible for national and homeland defense, homeland security, law enforcement, information security, and physical and operational security of the NEXTGEN
CONOPS	6.3 IRM ENTERPRISE OPERATIONS	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of “layers of defense” (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Key Asset and Critical Infrastructure Protection	Key Asset and Critical Infrastructure Protection involves assessing key asset and critical infrastructure vulnerabilities and taking direct action to mitigate vulnerabilities, enhance security, and ensure continuity and necessary redundancy in government operations and personnel.
BRM Sub-Function	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Inbound Correspondence	

3.2.6.10.4 NextGen Future Solutions

3.2.6.11 Assess Airport Risk Condition (2.2.2)

3.2.6.11.1 Description

This activity will assess risks and determine the overall threat assessment condition for overall system distribution using prognostic tools, models, and simulations at the strategic, operational, and tactical level to support all stakeholder decision makers and managers in the grafting of cost effective best practices into the design, acquisition, deployment, and operation of aviation security system assets and infrastructures. Knowledge bases concerning threats, vulnerabilities, and practices are tailored to user profiles that proactively determine need/authorization to know.

3.2.6.11.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Reduced threat from unauthorized persons in airport secure area	Mechanisms and procedures will be in place to identify, alert, mitigate or neutralize in order to intercept/ interdict the material threat of unauthorized persons prior to entering the airport property.

3.2.6.11.3 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
Actor	Security and Defense Providers	Organizations and people responsible for national and homeland defense, homeland security, law enforcement, information security, and physical and operational security of the NEXTGEN

Type	Name	Description
CONOPS	6.1.1 NextGen Security Management and Collaborative Framework	
CONOPS	6.3 IRM ENTERPRISE OPERATIONS	
CONOPS	6.4 SECURITY ENTERPRISE SERVICES AND CAPABILITIES	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Key Asset and Critical Infrastructure Protection	Key Asset and Critical Infrastructure Protection involves assessing key asset and critical infrastructure vulnerabilities and taking direct action to mitigate vulnerabilities, enhance security, and ensure continuity and necessary redundancy in government operations and personnel.
BRM Sub-Function	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.
SRM Service Component	Risk Management	Defines the set of capabilities the support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal; includes risk assessment and risk mitigation.
SRM Service Component	Data Mining	Defines the set of capabilities that provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.
SRM Service Component	Simulation	Defines the set of capabilities that utilize models to mimic real-world processes.
SRM Service Component	Modeling	Defines the set of capabilities that develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.

3.2.6.11.4 NextGen Future Solutions

3.2.6.12 Manage Airport Risk Assessment (2.2.3)

3.2.6.12.1 Description

This activity is the continuous review of threat vectors, objects, and materials coupled with intelligence on current National threat levels, civil aviation passengers assure that security stakeholders are prepared with timely and appropriate threat info. A prioritized list of vulnerabilities and potential mitigation strategies are assessed and selected for deployment. This is also managing the contingency plan.

3.2.6.12.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Integrated command and control of security resources for incident response and r	Security and defense service providers jointly manage security resources and respond to security incidents by using an integrated security command and control capability that includes unified security operations protocols, communications, procedures, and tactics. This provides a seamless aviation security operation systems that are adaptive and responsive to the emerging threats.
NextGen Operational Improvements	Integrated risk-based planning and management of security resources	Security resources are planned, and managed using an integrated, adaptive, and responsive risk management capability that supports risk-informed decisions among security mission partners. This capability harmonizes short and long term resource allocation and investments among partners to gain the highest possible security return on investment and to reduce the overall cost of security operations.
NextGen Operational Improvements	Reduce CBRNE threats from entering airport property	Mechanisms and procedures will be in place to identify, alert, mitigate or neutralize in order to intercept/ interdict the material threat of CBRNE prior to entering the airport property.
NextGen Operational Improvements	Reduced threat from unauthorized persons in airport secure area	Mechanisms and procedures will be in place to identify, alert, mitigate or neutralize in order to intercept/ interdict the material threat of unauthorized persons prior to entering the airport property.

3.2.6.12.3 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
Actor	Security and Defense Providers	Organizations and people responsible for national and homeland defense, homeland security, law enforcement, information security, and physical and operational security of the NEXTGEN
CONOPS	6.3 IRM ENTERPRISE OPERATIONS	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.

Type	Name	Description
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Key Asset and Critical Infrastructure Protection	Key Asset and Critical Infrastructure Protection involves assessing key asset and critical infrastructure vulnerabilities and taking direct action to mitigate vulnerabilities, enhance security, and ensure continuity and necessary redundancy in government operations and personnel.
BRM Sub-Function	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.
SRM Service Component	Risk Management	Defines the set of capabilities the support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal; includes risk assessment and risk mitigation.

3.2.6.12.4 NextGen Future Solutions

3.2.6.13 Report Airport Risk Assessment (2.2.4)

3.2.6.13.1 Description

This activity reports the results of the airport risk assessment process for use by the community of interest.

3.2.6.13.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Integrated command and control of security resources for incident response and r	Security and defense service providers jointly manage security resources and respond to security incidents by using an integrated security command and control capability that includes unified security operations protocols, communications, procedures, and tactics. This provides a seamless aviation security operation systems that are adaptive and responsive to the emerging threats.
NextGen Operational Improvements	Integrated risk-based planning and management of security resources	Security resources are planned, and managed using an integrated, adaptive, and responsive risk management capability that supports risk-informed decisions among security mission partners. This capability harmonizes short and long term resource allocation and investments among partners to gain the highest possible security return on investment and to reduce the overall cost of security operations.

3.2.6.13.3 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
Actor	Security and Defense Providers	Organizations and people responsible for national and homeland defense, homeland security, law enforcement, information security, and physical and operational security of the NEXTGEN

Type	Name	Description
CONOPS	6.3 IRM ENTERPRISE OPERATIONS	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.
SRM Service Component	Risk Management	Defines the set of capabilities the support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal; includes risk assessment and risk mitigation.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Standardized/ Canned	Defines the set of capabilities that support the use of preconceived or pre-written reports.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.

3.2.6.13.4 NextGen Future Solutions

3.2.6.14 Airport Infrastructure Planning (2.3)

3.2.6.14.1 Description

Airport Infrastructure Planning plans the design, development, and manages the regional system plan of the airport infrastructure.

This includes developing new runways, maximizing use of existing infrastructure, and incorporating use of enhanced runway markings, dynamic lighting, and multiple thresholds/touchdown points.

3.2.6.14.2 Purpose

The purpose of airport infrastructure planning will aid the NextGen development that will transform the way air traffic flows and airspace are managed. For airports, this means that the airfields needs to be optimized to take full advantage of NextGen driven airspace improvements. New terminal designs will increasingly incorporate provisions to support energy and resource conservation, including green design and technologies and provide a more flexible design to meet the on going needs. Regional system planning will become vital to the success of NextGen when faced with up to three times the level of operations in existence today.

Airport Support A2

Airport Infrastructure Planning A2.3

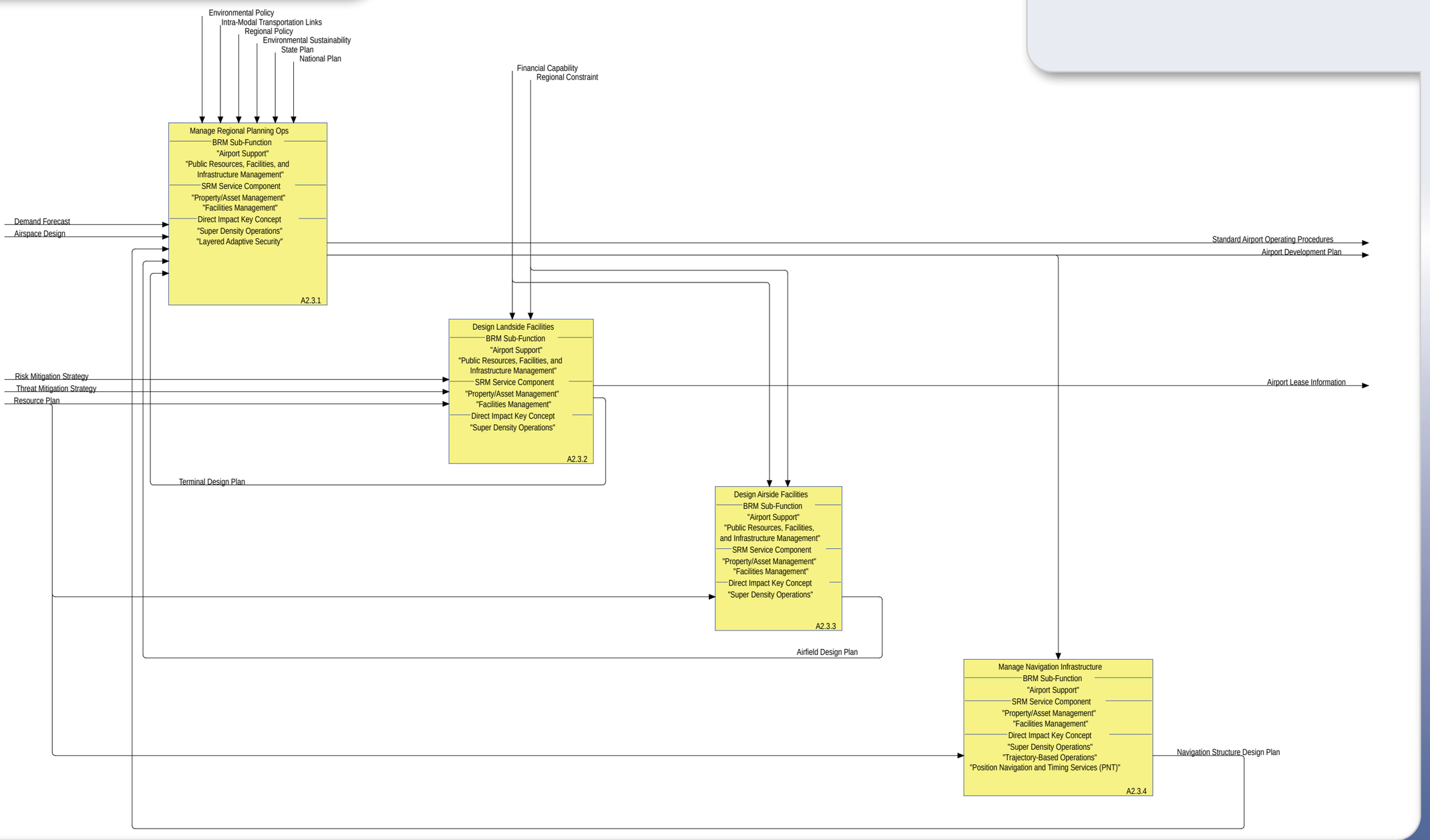


Figure 31 - 2.3 Airport Infrastructure Planning Activity Model Diagram

3.2.6.15 Manage Regional Planning Ops (2.3.1)

3.2.6.15.1 Description

This activity provides the capability to integrate regional planning considerations for multi-modal transportation, land use, and regional development into the airport planning process.

3.2.6.15.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Airport Preservation	A diverse network of airports is preserved throughout the nation in the best interest of a sustainable national air transportation system. The primary goal of the program is to maintain a network of regional airports to support increases in general aviation and commercial service as major airports reach capacity.
NextGen Operational Improvements	Increased intermodal transport use	Passengers increasingly use intermodal transport to/from airports. Comprehensive, easily accessible trip information supports passengers in making informed decisions about ground transportation modes, based upon destination, time enroute, and price. This should make high-density transportation modes (e.g., buses and trains) more accessible and reduce roadway congestion.

3.2.6.15.3 NextGen Drivers

Type	Name	Description
Actor	Airport Communities	Cities and towns located in the vicinity of airports that have a vested interest in and are affected by the operation of the airport
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
CONOPS	3.5.4 Regional System Planning	
BRM Sub-Function	Public Resources, Facilities, and Infrastructure Management	
BRM Sub-Function	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.
SRM Service Component	Facilities Management	Defines the set of capabilities that support the construction, management and maintenance of facilities for an organization.
SRM Service Component	Property/Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.

3.2.6.15.4 NextGen Future Solutions

3.2.6.16 Design Landside Facilities (2.3.2)

3.2.6.16.1 Description

This activity creates the terminal design standards for optimization , enabling airport operations, including advances in passenger processing and security screening.

3.2.6.16.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Net-centric security situational awareness and management of airport.	Information fusion of all data inputs at airport to a central airport operations center, connecting data, intelligence, predictive systems, imagery and risk analysis to national and regional systems. This OI builds off of NEO backbone to support routine and emergency decision-making.
NextGen Operational Improvements	New Landside Infrastructure - Beyond OEP	New landside airport infrastructure is developed to meet increased demand.
NextGen Operational Improvements	Off-Airport Passenger and Baggage Processing	Remote processing locations (e.g., hotels, conference centers, modal transportation, Remote Terminal Security Service facilities) enable check-in, baggage check, and security screening at off-airport locations. Passengers and baggage would be transported to the airport via secure ground transportation for connections directly to the secure portions of the terminal. Passenger and baggage itinerary information is tracked using advanced technology to support synchronization, handling information, remote check-in, and security assurance. Baggage transfer services via third party vendors would be supported. Airports that have limited room to expand their terminal facilities would benefit and be able to support higher passenger volumes while maintaining an acceptable level of service. Roadway congestion to/from the airport would also be reduced.
NextGen Operational Improvements	Reduced at-airport significant noise impact	Significant aircraft noise is contained within the airport boundary and/or neighboring compatible land uses.
NextGen Operational Improvements	Subterranean Ground Support Infrastructure	Subterranean conveyance systems are used to facilitate ground support functions (e.g., baggage transfer and aircraft servicing), thus reducing the need for GSE and related ramp congestion and emissions. This OI will also support improved security at airports.

3.2.6.16.3 NextGen Drivers

Type	Name	Description
Actor	Airport Communities	Cities and towns located in the vicinity of airports that have a vested interest in and are affected by the operation of the airport
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
CONOPS	3.5.6 Flexible Terminal Design	
BRM Sub-Function	Public Resources, Facilities, and Infrastructure Management	
BRM Sub-Function	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.
SRM Service Component	Facilities Management	Defines the set of capabilities that support the construction, management and maintenance of facilities for an organization.

Type	Name	Description
SRM Service Component	Property/Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.

3.2.6.16.4 NextGen Future Solutions

3.2.6.17 Design Airside Facilities (2.3.3)

3.2.6.17.1 Description

This activity provides the capability to establish airfield design standards that maximize runway capacity while ensuring ground separation and safety.

3.2.6.17.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Flexible resource allocation for airspace management Level 2 - Combine facilitie	Optimal en route and terminal airspace allocation to combined ANSP facilities provides ANSP cost reduction and productivity improvement. En-route and terminal airspace is combined and optimized to be served out of ground service delivery facilities. This OI increases agility to match ANSP services to meet demand by supporting the allocation of assets (e.g., personnel, adjustment of airspace structures, or designation of performance-based services) to appropriately create the required capacity to meet anticipated demand. ANSPs are better able to communicate and collaborate on the effects of procedures for flights transiting across areas managed by different ANSP entities. Delivery of services is no longer tied directly to the geographic location of the flight operator or the aircraft; instead ANSP personnel have the ability to acquire needed information and communicate with flight operators independent of their facility location. Operationally, this is transparent to flight operators. This OI also reduces the static assignment of airspace. Benefits: productivity and cost savings. This OI requires one set of research and development tasks, but multiple implementation sequences to implement. This OI also requires a major policy decision. Waterfall deployment: a) targeted terminal areas b) terminal and en route (2023)
NextGen Operational Improvements	Ground-based and on-board runway incursion alerting equipment.	This OI increases the safety of operations by reducing runway incursions. Operators of suitably equipped commercial, business, and general aviation aircraft receive runway incursion alerts from on-board detection systems and from complementary ground-based detection systems where implemented. Airborne equipage is not required to receive incursion alerts. This OI will require research and development of runway incursion alerting systems appropriate for business, general aviation, and commercial aircraft.
NextGen Operational Improvements	Improved strategic management of existing infrastructure (Airside)	Use of existing airport airside infrastructure is maximized. Airport airside infrastructure includes tarmac, emergency response vehicles, deicing, and the surface management infrastructure.
NextGen Operational Improvements	New Landside Infrastructure - Beyond OEP	New landside airport infrastructure is developed to meet increased demand.
NextGen Operational Improvements	Reduced at-airport significant noise impact	Significant aircraft noise is contained within the airport boundary and/or neighboring compatible land uses.
NAS Operational Improvements	Expand Use of Cat II-III Precision Approaches Using GBAS	At specified airports, ground based augmentation systems (GBAS) support precision approaches to Category I, Category II, and Category III minimums for properly equipped runways and aircraft. GBAS supports approach minimums at airports where precision-landing systems cannot meet performance requirements due to terrain, obstacle or other restrictions.

3.2.6.17.3 NextGen Drivers

Type	Name	Description
Actor	Airport Communities	Cities and towns located in the vicinity of airports that have a vested interest in and are affected by the operation of the airport
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
CONOPS	3.5.5 Optimize Airfield Design	
Key Concept	Super-Density Arrival/Departure Operations	With increasing demand, an even greater need exists to achieve peak throughput performance at the busiest airports and in the busiest airspace. New procedures to improve airport surface movements, reduce spacing and separation requirements in place today, and better manage overall flows in and out of busy metropolitan airspace provide maximum use of the highest-demand airports. Airport terminals also maximize efficiency of egress and ingress, matching passenger and cargo flow to airside throughput while maintaining safety and security levels.
BRM Sub-Function	Public Resources, Facilities, and Infrastructure Management	
BRM Sub-Function	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.
SRM Service Component	Facilities Management	Defines the set of capabilities that support the construction, management and maintenance of facilities for an organization.
SRM Service Component	Property/Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.

3.2.6.17.4 NextGen Future Solutions

3.2.6.18 Manage Navigation Infrastructure (2.3.4)

3.2.6.18.1 Description

This activity manages the navigational aids on the airport surface, such as lights, signage, sensors, transmitters, etc.

3.2.6.18.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	New Landside Infrastructure - Beyond OEP	New landside airport infrastructure is developed to meet increased demand.

Type	Name	Description
NextGen Operational Improvements	Off-Airport Passenger and Baggage Processing	Remote processing locations (e.g., hotels, conference centers, modal transportation, Remote Terminal Security Service facilities) enable check-in, baggage check, and security screening at off-airport locations. Passengers and baggage would be transported to the airport via secure ground transportation for connections directly to the secure portions of the terminal. Passenger and baggage itinerary information is tracked using advanced technology to support synchronization, handling information, remote check-in, and security assurance. Baggage transfer services via third party vendors would be supported. Airports that have limited room to expand their terminal facilities would benefit and be able to support higher passenger volumes while maintaining an acceptable level of service. Roadway congestion to/from the airport would also be reduced.
NextGen Operational Improvements	Surface Management Operations - Level 2B	This OI increases efficiency and safety of surface traffic movement, with corresponding reduction in environmental impacts. Efficiency of surface movement is increased through the use of automation, on-board displays and data link of taxi instructions on arrival to properly equipped aircraft to reduce delay and environmental impacts and improve safety. This OI assumes development of surface automation that is fully integrated with airborne operations and applies this to surface management operations. This OI is an extension of OI 321 and contains those improvements as well.
NextGen Operational Improvements	Surface Management Operations - Level 3	Aircraft and ground vehicle movement on airports in low visibility conditions is guided by moving map displays, CDTI, ADS-B (for flight vehicles), and a GSE Cooperative Surveillance System (for ground support equipment). Safety and efficiency of operations at some airports will also be enhanced by intelligent signage on the ground. Policy issue: Will this equipage be mandatory for access to some high-density airports during peak traffic times in low-visibility conditions, or will equipped aircraft be given priority access in low-visibility conditions but unequipped aircraft will be accommodated, or is this equipage simply optional. Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) some airports (Segment 2) b) OEP airports (Segment 3) c) top 100 airports (Segment 4) d) all commercial airports (Segment 6)
NextGen Operational Improvements	Surface Management Operations - Level 4	Aircraft and ground vehicle movement on airports in zero/zero visibility conditions is guided by moving map displays, CDTI, ADS-B (flight vehicles), and a GSE Cooperative Surveillance System (for ground vehicles). Requires all present aircraft and ground vehicles to have cooperative surveillance (ADS-B out). Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) OEP airports (Segment 5) b) top 100 airports (Segment 6) c) all commercial airports (Segment 7)
NAS Operational Improvements	Expand Use of Cat II-III Precision Approaches Using GBAS	At specified airports, ground based augmentation systems (GBAS) support precision approaches to Category I, Category II, and Category III minimums for properly equipped runways and aircraft. GBAS supports approach minimums at airports where precision-landing systems cannot meet performance requirements due to terrain, obstacle or other restrictions.

3.2.6.18.3 NextGen Drivers

Type	Name	Description
Actor	Airport Communities	Cities and towns located in the vicinity of airports that have a vested interest in and are affected by the operation of the airport
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
BRM Sub-Function	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.
SRM Service Component	Facilities Management	Defines the set of capabilities that support the construction, management and maintenance of facilities for an organization.
SRM Service Component	Property/Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.

3.2.6.18.4 NextGen Future Solutions

3.2.6.19 Airport Threat Profile Management (2.4)

3.2.6.19.1 Description

Airport Threat Profile Management provides the assurance that each airport undergoes a threat and vulnerability analysis which is updated periodically. The threat profile could include the entire physical footprint of the airport, out to the fence line, and would include the MANPADS threat. The information is disseminated to airports for planning and construct all airport procedures would react to the threat profile, passenger screened, checkpoints. This is different from the standard day to day risk assessment process that the airport does as part of normal operations and looks at longer terms risk threat issues.

3.2.6.19.2 Purpose

The purpose of the airport threat profile management is it enables the determination of the threat profile of the airport facility and the identification of the high-threat airports and related facilities that require additional security resources, technology investments, and more robust security operations to receive the appropriate levels of protection. The process also identifies airports that have low-threat profiles that do not mandate much if any security upgrade.

Airport Support A2

Airport Threat Profile Management A2.4

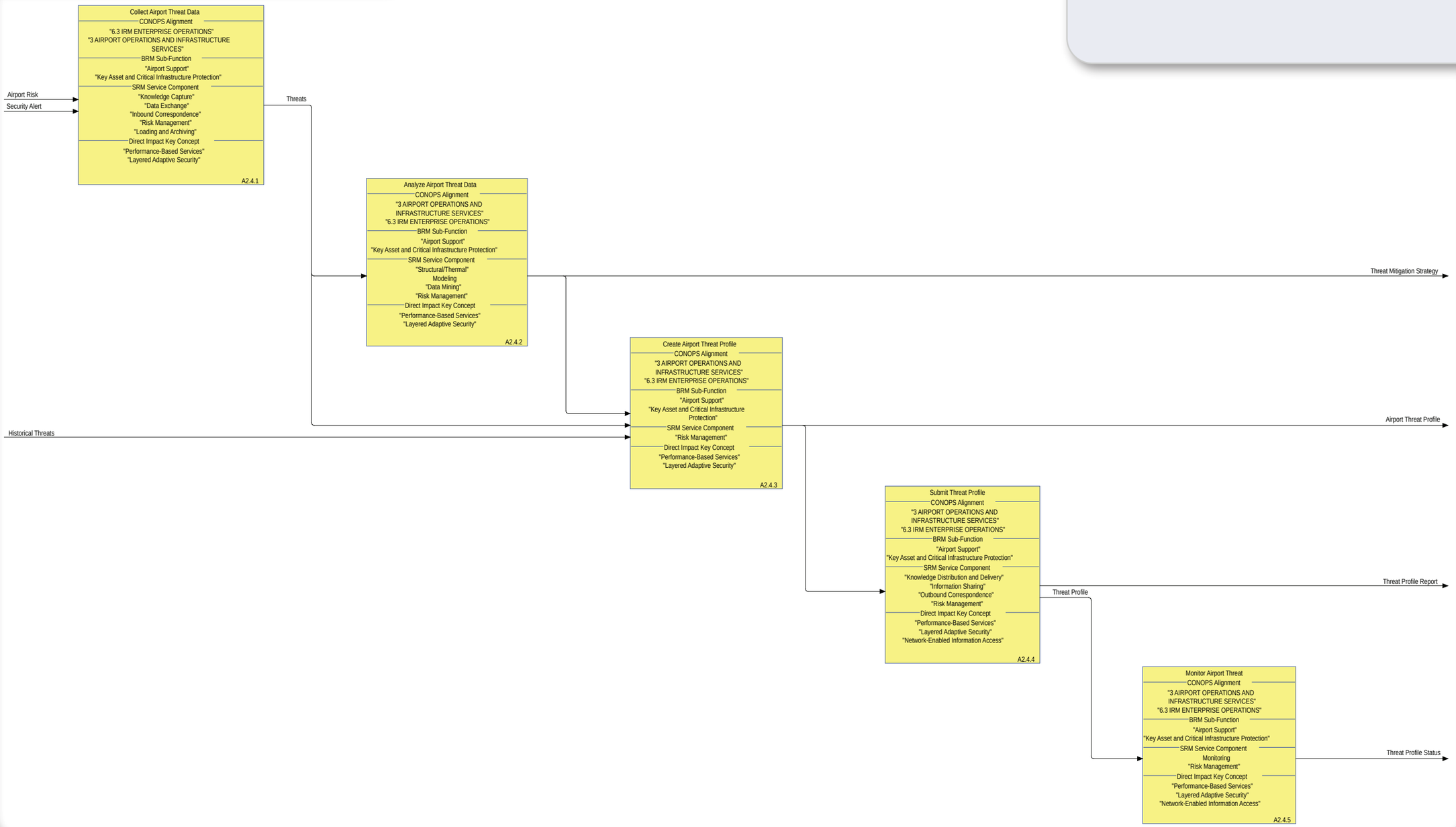


Figure 32 - 2.4 Airport Threat Profile Management Activity Model Diagram

3.2.6.20 Collect Airport Threat Data (2.4.1)

3.2.6.20.1 Description

This activity is the collection of threat and vulnerability data which is updated periodically, which include the entire physical footprint of the airport, out to the fence line, and would include the MANPADS threat.

3.2.6.20.2 JPDO Support Alignment

3.2.6.20.3 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
Actor	Security and Defense Providers	Organizations and people responsible for national and homeland defense, homeland security, law enforcement, information security, and physical and operational security of the NEXTGEN
Actor	System	An automation system
CONOPS	3 AIRPORT OPERATIONS AND INFRASTRUCTURE SERVICES	
CONOPS	6.3 IRM ENTERPRISE OPERATIONS	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Key Asset and Critical Infrastructure Protection	Key Asset and Critical Infrastructure Protection involves assessing key asset and critical infrastructure vulnerabilities and taking direct action to mitigate vulnerabilities, enhance security, and ensure continuity and necessary redundancy in government operations and personnel.
BRM Sub-Function	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.
SRM Service Component	Risk Management	Defines the set of capabilities the support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal; includes risk assessment and risk mitigation.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Inbound Correspondence	

3.2.6.20.4 NextGen Future Solutions

3.2.6.21 Analyze Airport Threat Data (2.4.2)

3.2.6.21.1 Description

This activity is the analysis of threat and vulnerability data of the entire physical footprint of the airport, out to the fence line, and would include the MANPADS threat.

3.2.6.21.2 JPDO Support Alignment

3.2.6.21.3 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
Actor	Security and Defense Providers	Organizations and people responsible for national and homeland defense, homeland security, law enforcement, information security, and physical and operational security of the NEXTGEN
CONOPS	3 AIRPORT OPERATIONS AND INFRASTRUCTURE SERVICES	
CONOPS	6.3 IRM ENTERPRISE OPERATIONS	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.

Type	Name	Description
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Key Asset and Critical Infrastructure Protection	Key Asset and Critical Infrastructure Protection involves assessing key asset and critical infrastructure vulnerabilities and taking direct action to mitigate vulnerabilities, enhance security, and ensure continuity and necessary redundancy in government operations and personnel.
BRM Sub-Function	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.
SRM Service Component	Risk Management	Defines the set of capabilities the support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal; includes risk assessment and risk mitigation.
SRM Service Component	Structural/Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.
SRM Service Component	Data Mining	Defines the set of capabilities that provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.
SRM Service Component	Modeling	Defines the set of capabilities that develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.

3.2.6.21.4 NextGen Future Solutions

3.2.6.22 Create Airport Threat Profile (2.4.3)

3.2.6.22.1 Description

This activity is the generation of threat profile that include the entire physical footprint of the airport, out to the fence line, and would include the MANPADS threat.

3.2.6.22.2 JPDO Support Alignment

3.2.6.22.3 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
Actor	Security and Defense Providers	Organizations and people responsible for national and homeland defense, homeland security, law enforcement, information security, and physical and operational security of the NEXTGEN
CONOPS	3 AIRPORT OPERATIONS AND INFRASTRUCTURE SERVICES	

Type	Name	Description
CONOPS	6.3 IRM ENTERPRISE OPERATIONS	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Key Asset and Critical Infrastructure Protection	Key Asset and Critical Infrastructure Protection involves assessing key asset and critical infrastructure vulnerabilities and taking direct action to mitigate vulnerabilities, enhance security, and ensure continuity and necessary redundancy in government operations and personnel.
BRM Sub-Function	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.
SRM Service Component	Risk Management	Defines the set of capabilities the support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal; includes risk assessment and risk mitigation.

3.2.6.22.4 NextGen Future Solutions

3.2.6.23 Submit Threat Profile (2.4.4)

3.2.6.23.1 Description

This activity is the disseminating of threat profile to airports for planning and construct all airport procedures would react to the threat profile, passenger screened, checkpoints. This is different from the standard day to day risk assessment process that the airport does as part of normal operations and looks at longer terms risk threat issues.

3.2.6.23.2 JPDO Support Alignment

3.2.6.23.3 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
Actor	Security and Defense Providers	Organizations and people responsible for national and homeland defense, homeland security, law enforcement, information security, and physical and operational security of the NEXTGEN

Type	Name	Description
CONOPS	3 AIRPORT OPERATIONS AND INFRASTRUCTURE SERVICES	
CONOPS	6.3 IRM ENTERPRISE OPERATIONS	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Key Asset and Critical Infrastructure Protection	Key Asset and Critical Infrastructure Protection involves assessing key asset and critical infrastructure vulnerabilities and taking direct action to mitigate vulnerabilities, enhance security, and ensure continuity and necessary redundancy in government operations and personnel.
BRM Sub-Function	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.
SRM Service Component	Risk Management	Defines the set of capabilities the support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal; includes risk assessment and risk mitigation.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.

3.2.6.23.4 NextGen Future Solutions

3.2.6.24 Monitor Airport Threat (2.4.5)

3.2.6.24.1 Description

This activity is the monitoring of the threat profiles to ensure continuity of operations.

3.2.6.24.2 JPDO Support Alignment

3.2.6.24.3 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
Actor	Security and Defense Providers	Organizations and people responsible for national and homeland defense, homeland security, law enforcement, information security, and physical and operational security of the NEXTGEN
CONOPS	3 AIRPORT OPERATIONS AND INFRASTRUCTURE SERVICES	
CONOPS	6.3 IRM ENTERPRISE OPERATIONS	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Key Asset and Critical Infrastructure Protection	Key Asset and Critical Infrastructure Protection involves assessing key asset and critical infrastructure vulnerabilities and taking direct action to mitigate vulnerabilities, enhance security, and ensure continuity and necessary redundancy in government operations and personnel.

Type	Name	Description
BRM Sub-Function	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.
SRM Service Component	Risk Management	Defines the set of capabilities the support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal; includes risk assessment and risk mitigation.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.

3.2.6.24.4 NextGen Future Solutions

3.3 Airport Operations (3)

3.3.1 Description

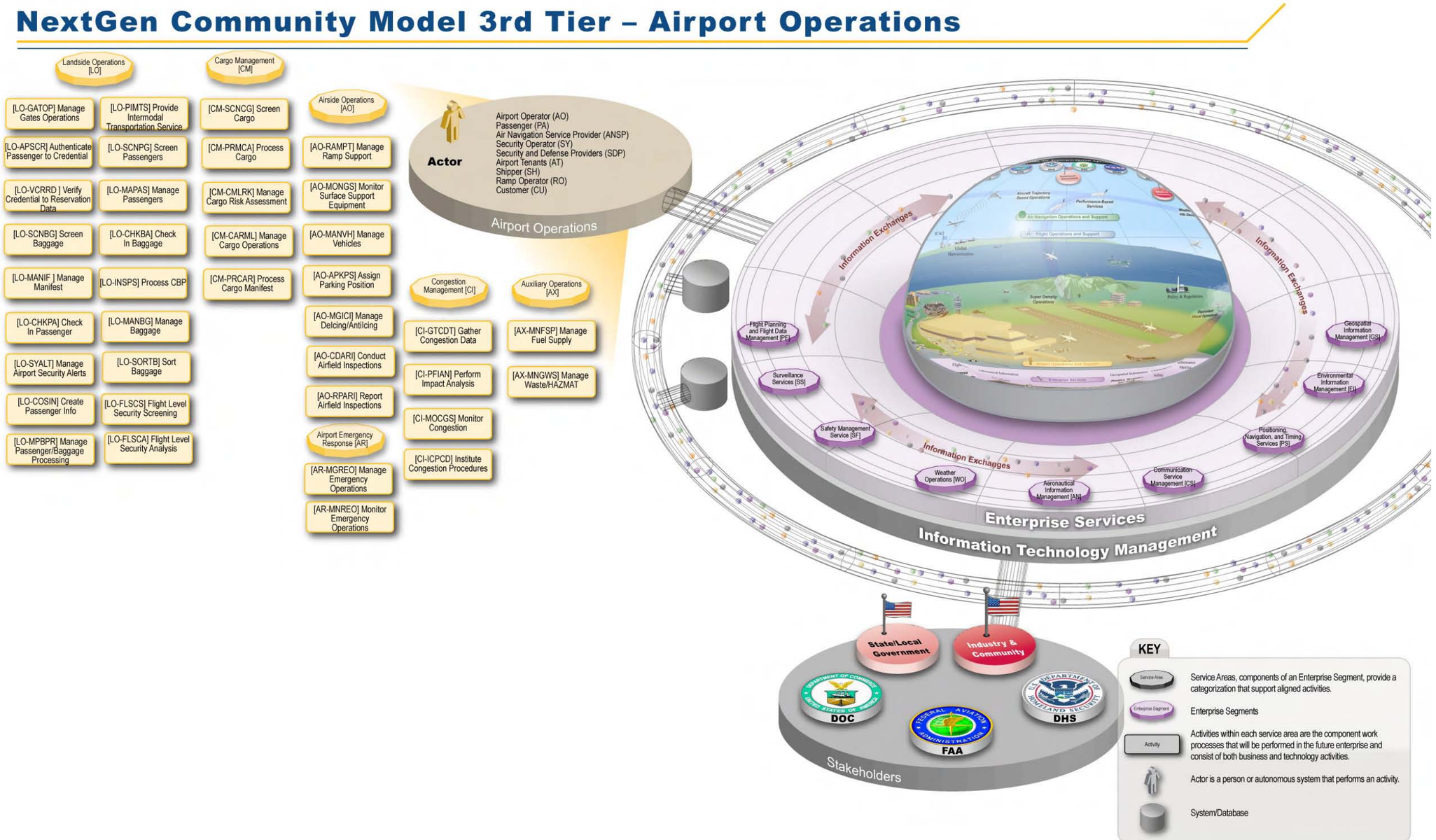
The Airport Operations Enterprise Segment provides the operational context that describes the air and land-side facilities and operations, as well as any auxiliary operations that enable passenger, flight and cargo operations to be conducted within an airport with calculated consideration of safety, efficiency, available resources and local environmental issues. This Enterprise Segment identifies the provision for the continuous monitoring and management of emergency airport operations.

3.3.2 Purpose

The purpose of this particular enterprise segment is to identify and group specific service areas that are related to executing airport operations, they are as follows: Landside Operations, Airside Operations, Airport Emergency Response, Auxiliary Operations, Cargo Management, Congestion Management

3.3.3 3nd Tier Community Model

Figure 33: Airport Operations 3rd tier Community Model



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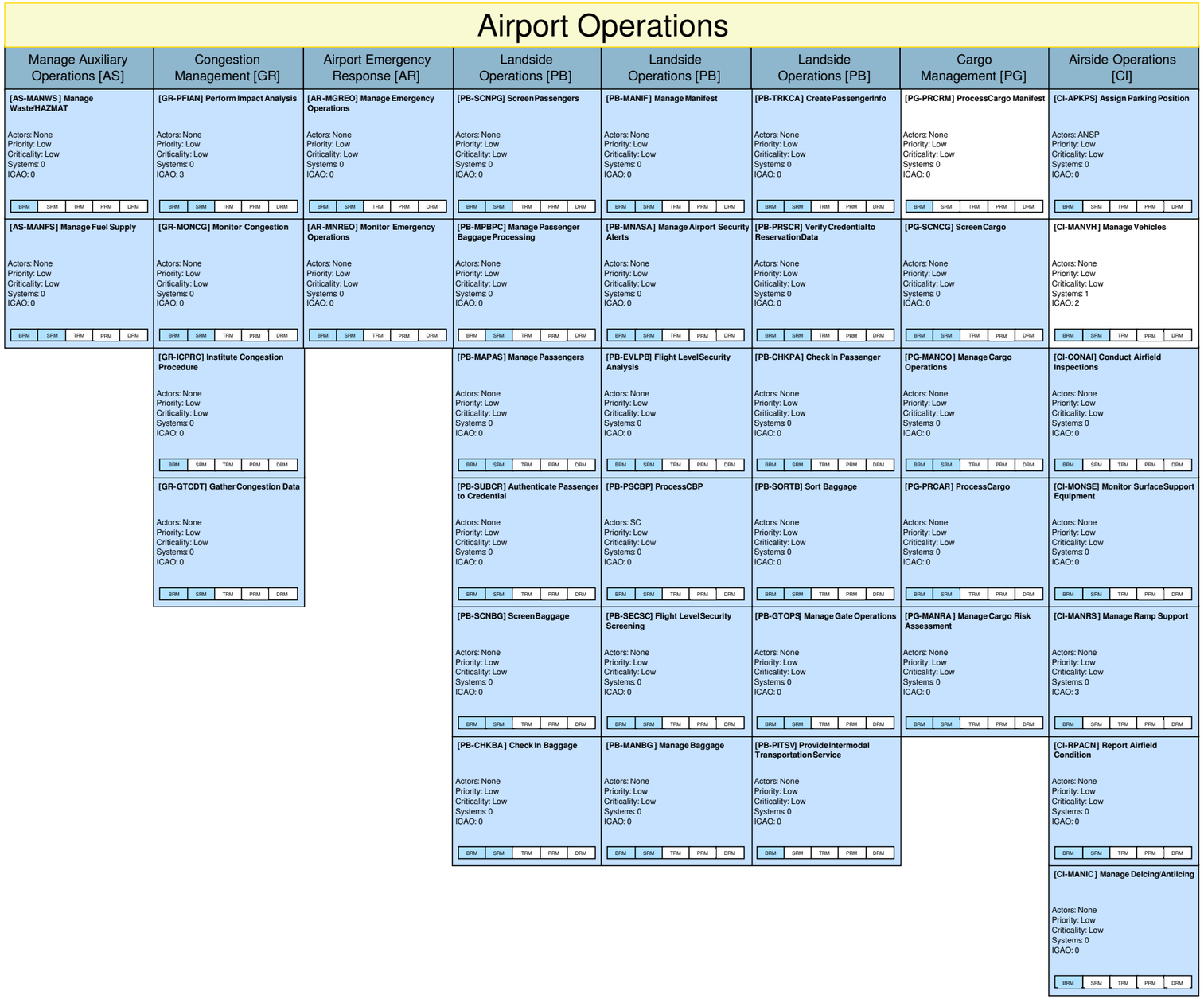
3.3.4 Enterprise Segment Activity Inventory - Airport Operations

Figure 34: Airport Operations ESAI



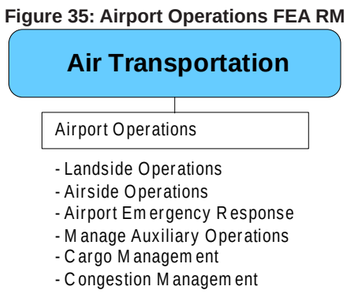
3.3.4.1 Airport Operations ESAI Actor Table

Actor Code	Actor Name	Actor Description
AC	Airport Communities	Cities and towns located in the vicinity of airports that have a vested interest in and are affected by the operation of the airport
AL	Airline Operator	
AN	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
AP	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
PA	Passenger	
SC	Security	This operational node includes all activities by Government organizations to protect people, airports, checked baggage, cargo, airspace, aircraft, and information from intentional harm or unauthorized use.
SD	Security and Defense Providers	Organizations and people responsible for national and homeland defense, homeland security, law enforcement, information security, and physical and operational security of the NGATS

3.3.5 Airport Operations FEA RM

The Airport Operations Segment enables NextGen capabilities to be conducted within an airport with consideration of safety, efficiency, resource limitations and local environmental issues. As depicted in figure 10, this segment is primarily categorized under the Air Transportation Line of Business. It describes the management and processing of passengers, baggage, and cargo within the airport terminal and the management of ground operations around the airport, such as managing surface equipment, auxiliary operations, and congestion. The following table further describes the Airport Operations Segment and identifies how each activity aligns to the other architectural layers of the NextGen EA Reference Architecture.

Figure 35: Airport Operations FEA RM



3.3.6 Airport Operations DoDAF products

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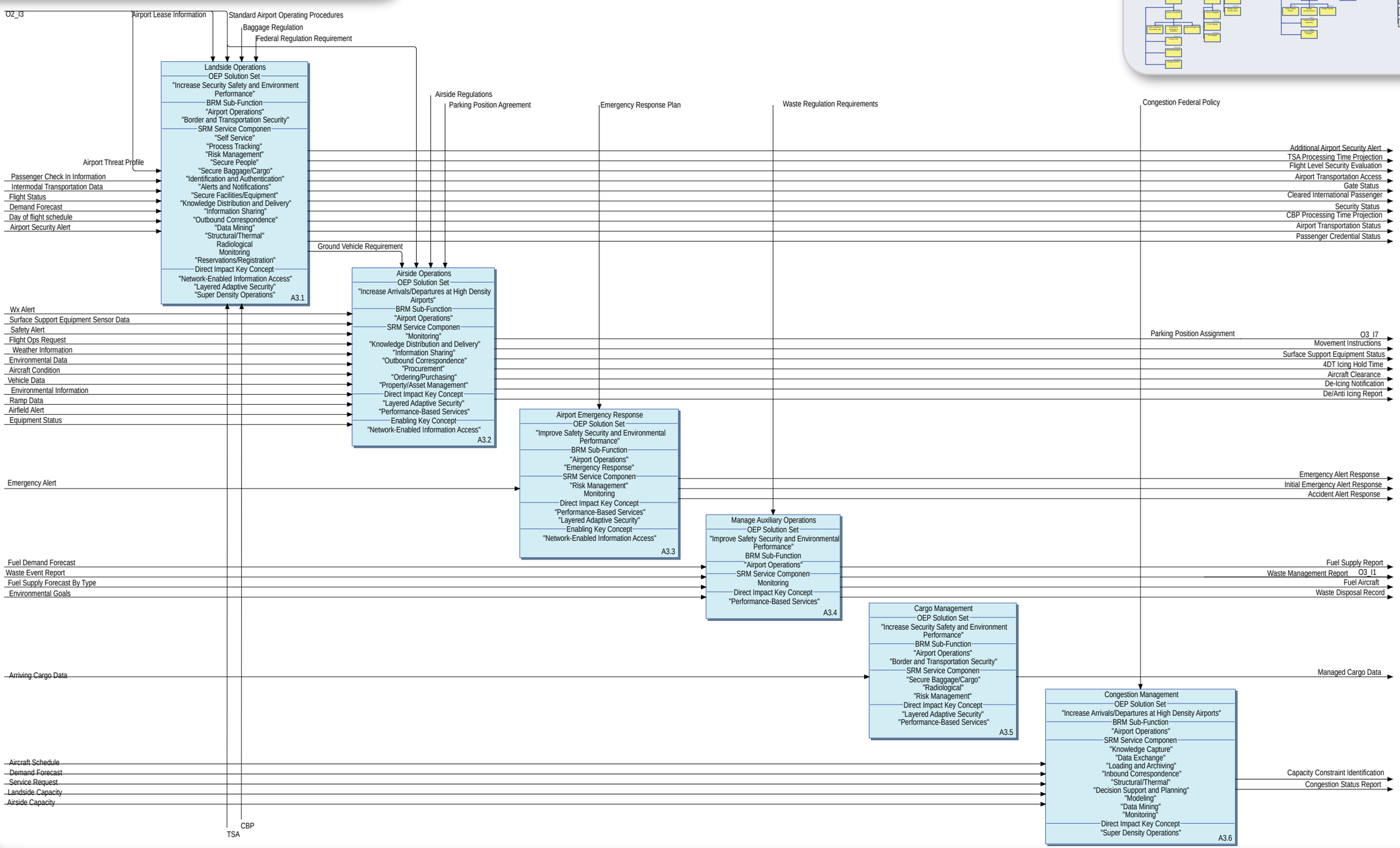


Figure 36 - 3 Airport Operations Activity Model Diagram

3.3.6.1 Landside Operations (3.1)

3.3.6.1.1 Description

Landside operations is the overall operations inside the terminal and the ground transportation system. Terminal operations includes the passenger/baggage management and the security process for screening the passenger/baggage, and the operations of the gate.

3.3.6.1.2 Purpose

The purpose of Landside Operations is to support the increasing passenger demand levels at acceptable levels of service. The ground transportation system provides for effective, efficient transitions across multiple modes of transportation while maintaining security, efficiency, passenger convenience, and choice. Aviation security is provided continuously from the time the reservation is made until the safe arrival of the flight at the destination airport and uneventful retrieval of baggage by the passenger.

3.3.6.1.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Increase Security Safety and Environment Performance	
NextGen Operational Improvements	Common and synchronized airport emergency and disaster response	Acceptance of a standard approach to responding to catastrophic emergency/disaster for airports to enable seamless integration of regional and national response resources when needed (Policy).
NextGen Operational Improvements	Coordinated Ramp Operations Management	Surface movements of GSE are monitored and proactively managed, in real-time, to ensure the smooth, efficient, and safe flow of vehicular traffic. GSE has equipment to ensure accurate navigation during low-visibility conditions and to maintain clearance from active runway and taxiways. Congestion is reduced while safety and level of service are improved. Ramp operations management requirements for surveillance and communications that is compatible with those required for surface traffic management. Precise definition of ramp management vs surface management vs gate management is TBD. Waterfall deployment: a) OEP 2016 Start b) Top 100 2018 Start c) Other airports 2021 Start
NextGen Operational Improvements	Improved baggage screening	Security is improved by improved baggage screening for explosives and chemical, biological, radiological, and nuclear (CBRNE) threat materials intended to destroy or disable the aircraft that can be introduced into the baggage hold of an aircraft by placement in the passenger's checked baggage. The improvement would provide not only for detection, but for decreased levels of false alarm, higher baggage throughput, and smaller, lighter, and hopefully, cheaper detection equipment. It would also provide for screening through the use of systems designed multi technology screening systems to clear alarms faster, and for alternative screening concepts for airports processing a lower volume of passengers.
NextGen Operational Improvements	Improved cargo and mail screening	Cargo/mail screening increases the security and the safety of the air transportation system by reducing the possibility of the introduction of threats to the air transportation system. Cargo/Mail received from an unknown shipper requires screening prior to entry and tracked throughout the air transportation secure system for chemical, biological, radiological, nuclear, and explosive (CBRNE) threat material.
NextGen Operational Improvements	Improved passenger checkpoint screening	Security is improved by improved passenger screening for explosives, chemicals, biological agents, nuclear devices, radiological material and weapons that might be introduced into the passenger compartments of civil airliners and used to destroy, disable, and hijack the airplane. Security checkpoints currently screen passengers and their carry on luggage for the presence of these threats, but, at present, these checkpoints, as currently designed, cannot detect the full range of these threats. Current screening methods also need to be improved to be able to process the projected increasing passenger volumes. This improvement would provide for improved levels of threat detection, lower false alarms, increased throughput, and improved resolution of alarming passengers.
NextGen Operational Improvements	Improved processing of cargo and mail transported via trusted shippers	Air cargo/mail transportation system process includes prevention, detection, and mitigation measures to reduce the likelihood of cargo and mail from being used as a threat endangering aircraft, aviation facilities, and people. The Trusted Shipper Program reduces the quantity of cargo/mail that requires screening prior to entering the air transportation system. This reduction in volume expedites the handling of cargo/mail, reduces shipping time, and increases the capacity of the air transportation system to move cargo/mail. Cargo/Mail is shipped through a Trusted Shipper Program including vetted cargo packers, a verified chain of custody, and tamper resistant/alerting technology to reduce the requirement to screen cargo before loaded on to an aircraft. Cargo shipped through the Trusted Shipper Program will not require further screening before entering the air transportation system.
NextGen Operational Improvements	Improved strategic management of existing infrastructure (Landside)	Use of existing airport landside infrastructure is maximized. Airport landside infrastructure includes gates, security, customs, baggage handling, cargo handling.
NextGen Operational Improvements	Increased intermodal transport use	Passengers increasingly use intermodal transport to/from airports. Comprehensive, easily accessible trip information supports passengers in making informed decisions about ground transportation modes, based upon destination, time enroute, and price. This should make high-density transportation modes (e.g., buses and trains) more accessible and reduce roadway congestion.
NextGen Operational Improvements	Integrated Aviation Worker Screening and Credentialing	Aviation workers are regularly screened and credentialed from initial employment to termination using a comprehensive, integrated, national, common risk assessment capability
NextGen Operational Improvements	Integrated Aviation Worker Secure Access	Only Credentialed Aviation workers are granted access to airport secure areas using integrated access control capabilities
NextGen Operational Improvements	Integrated Customs Border Protection (CBP) and Security Service Provider Functio	Through improved procedures and information flow, CBP processing is more efficient for arriving international passengers, enabling faster processing times while maintaining INS, Customs, and Security requirements. NEO supports transfer of passenger and baggage manifests between aircraft operators, Security Service Provider, and CBP. Connections between flights are smoother.
NextGen Operational Improvements	Integrated Watch List High Risk Passenger Screening	High risk passengers receive a higher level of screening prior to gaining access to the airport sterile area through identification on the integrated watch list.
NextGen Operational Improvements	Integrated Watch List Passenger Prescreening and Identification	High risk passengers are prescreened and identified through an advanced vetting capability that utilizes an integrated watch list

Type	Name	Description
NextGen Operational Improvements	Net-centric security situational awareness and management of airport.	Information fusion of all data inputs at airport to a central airport operations center, connecting data, intelligence, predictive systems, imagery and risk analysis to national and regional systems. This OI builds off of NEO backbone to support routine and emergency decision-making.
NextGen Operational Improvements	Off-Airport Passenger and Baggage Processing	Remote processing locations (e.g., hotels, conference centers, modal transportation, Remote Terminal Security Service facilities) enable check-in, baggage check, and security screening at off-airport locations. Passengers and baggage would be transported to the airport via secure ground transportation for connections directly to the secure portions of the terminal. Passenger and baggage itinerary information is tracked using advanced technology to support synchronization, handling information, remote check-in, and security assurance. Baggage transfer services via third party vendors would be supported. Airports that have limited room to expand their terminal facilities would benefit and be able to support higher passenger volumes while maintaining an acceptable level of service. Roadway congestion to/from the airport would also be reduced.
NextGen Operational Improvements	Reduce CBRNE threats from entering airport property	Mechanisms and procedures will be in place to identify, alert, mitigate or neutralize in order to intercept/ interdict the material threat of CBRNE prior to entering the airport property.
NextGen Operational Improvements	Reduced impact of potential cargo and mail threats	Threat containment and mitigation increases the safety and security of the air transportation system. Cargo/Mail is placed in blast/threat containment/mitigation systems prior to placement on aircraft to reduce the impact to the air transportation system of undetected chemical biological, radiological, nuclear, and explosive (CBRNE) threats.
NextGen Operational Improvements	Reduced threat from unauthorized persons in airport secure area	Mechanisms and procedures will be in place to identify, alert, mitigate or neutralize in order to intercept/ interdict the material threat of unauthorized persons prior to entering the airport property.
NextGen Operational Improvements	Subterranean Ground Support Infrastructure	Subterranean conveyance systems are used to facilitate ground support functions (e.g., baggage transfer and aircraft servicing), thus reducing the need for GSE and related ramp congestion and emissions. This OI will also support improved security at airports.

3.3.6.1.4 NextGen Drivers

Type	Name	Description
Actor	Security	This operational node includes all activities by Government organizations to protect people, airports, checked baggage, cargo, airspace, aircraft, and information from intentional harm or unauthorized use.
Actor	Airline Operator	
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of “layers of defense” (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.

Type	Name	Description
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Border and Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Alerts and Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.
SRM Service Component	Reservations/ Registration	Defines the set of capabilities that allow electronic enrollment and confirmations for services.
SRM Service Component	Process Tracking	Defines the set of capabilities to allow the monitoring of activities within the business cycle.
SRM Service Component	Risk Management	Defines the set of capabilities the support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal; includes risk assessment and risk mitigation.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Radiological	Defines the set of capabilities that support the use of radiation and x-ray technologies for analysis and scientific examination.
SRM Service Component	Structural/ Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.
SRM Service Component	Data Mining	Defines the set of capabilities that provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Identification and Authentication	Defines the set of capabilities that support obtaining information about those parties attempting to log on to a system or application for security purposes and the validation of those users.
SRM Service Component	Self Service	Defines the set of capabilities that allow an organization’s customers to sign up for a particular service at their own initiative.
SRM Service Component	Secure People	Defines the set of capabilities that secure (e.g., screen, credential, identify, etc.) people in order to mitigate security risks to themselves or others.

Type	Name	Description
SRM Service Component	Secure Baggage/ Cargo	Defines the set of capabilities that secure (e.g., screen assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.
SRM Service Component	Secure Facilities/ Equipment	Defines the set of capabilities that secure facilities (e.g. buildings, airports, etc.) and equipment (e.g. aircraft, vehicles, hardware, etc.) to mitigate dynamically evolving security risks and threats (e.g., unauthorized access, hijacking/unauthorized diversion, internal/external attacks, etc.).

3.3.6.1.5 NextGen Future Solutions

3.3.6.2 Airside Operations (3.2)

3.3.6.2.1 Description

This activity is the operations of monitoring, managing , inspecting and reporting of the surface on the airport.

3.3.6.2.2 Purpose

The purpose of Airside Operations is the movement of aircraft and GSE on the airport surface requires new logistics, management, and technology in order to enable the efficiencies required with NextGen.

3.3.6.2.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Increase Arrivals/ Departures at High Density Airports	High density Arr/Dep Terminals and Airports involves airports in which either the demand for the runway capacity is high, there are multiple runways with both airspace and taxiing interactions, or there are airports with close proximity that create the potential for airspace interference. (The current and future major metros (e.g. N90), and other very large airports (DEN).) These airports require all the capabilities of the flexible terminals and airspace plus integrated tactical and strategic flow capabilities. They may require higher performance navigation and communications capabilities to support these additional operational requirements.
NextGen Operational Improvements	Coordinated Ramp Operations Management	Surface movements of GSE are monitored and proactively managed, in real-time, to ensure the smooth, efficient, and safe flow of vehicular traffic. GSE has equipment to ensure accurate navigation during low-visibility conditions and to maintain clearance from active runway and taxiways. Congestion is reduced while safety and level of service are improved. Ramp operations management requirements for surveillance and communications that is compatible with those required for surface traffic management. Precise definition of ramp management vs surface management vs gate management is TBD. Waterfall deployment: a) OEP 2016 Start b) Top 100 2018 Start c) Other airports 2021 Start
NextGen Operational Improvements	Advanced deicing, aniticing and snow removal operations	During winter weather, aircraft are anti-iced/deiced more efficiently. Icing holdover times are incorporated into 4DT in order to facilitate departure queuing. Deicing/anti-icing fluids are more effective with less environmental impact. Collection methods capture spent fluids for recycling.
NextGen Operational Improvements	All-weather capability for Airside Facilities	Airside facilities are open during all weather conditions. Technology, systems, and procedures support airport operators in more effectively keeping airside facilities open and fully functional during all conditions. This includes the proactive scheduling of maintenance and weather-response activities (such as clearing runways of snow and ice). Delays and congestion that result from winter weather and non-nominal airfield conditions are reduced. Waterfall deployment: a) OEP 2016 Start b) Top 100 2018 Start c) Other airports 2021 start
NextGen Operational Improvements	Ground-based and on-board runway incursion alerting equipment.	This OI increases the safety of operations by reducing runway incursions. Operators of suitably equipped commercial, business, and general aviation aircraft receive runway incursion alerts from on-board detection systems and from complementary ground-based detection systems where implemented. Airborne equipage is not required to receive incursion alerts. This OI will require research and development of runway incursion alerting systems appropriate for business, general aviation, and commercial aircraft.
NextGen Operational Improvements	Improved tactical management of airport operations	Airport operators will be able to effectively manage routine and emergency operations through improved data and monitoring capabilities, as well as linkages to NEO and regional/national emergency response resources. This includes real-time push of airport condition information to users. Waterfall deployment: TBD
NextGen Operational Improvements	Near-all weather airport access	This provides affordable near-all-weather access to currently under-utilized regional, smaller commercial, and general aviation airports to support expanded commercial air service and viable air taxi service. Near all-weather airport access is available where needed through a combination of complementary airborne and ground functionality to aid the pilot in approach guidance and acquisition of the runway environment for safe operations. This improvement may not require synthetic vision and enhanced vision. This OI supports near-CAT 1, CAT 1, CAT 2 and CAT 3A, CAT 3B operations. Also included in this OI are improved Instrument Approach procedures and approach/runway lighting systems.
NextGen Operational Improvements	Surface Management Operations - Level 2A	Efficiency of surface traffic movement is increased through the use of automation, on-board displays and data link of departure taxi instructions prior to pushback to properly equipped aircraft to reduce delay, environmental impacts and operational errors. Automation optimizes surface throughput and data links taxi instructions to aircraft. The taxi instructions include the 2D route. Pilot uses onboard displays of taxi route and guidance to efficiently and safely follow taxi instructions. Surface optimization automation includes activities such as runway snow removal, aircraft de-icing, and runway reconfiguration.
NextGen Operational Improvements	Surface Management Operations - Level 3	Aircraft and ground vehicle movement on airports in low visibility conditions is guided by moving map displays, CDTI, ADS-B (for flight vehicles), and a GSE Cooperative Surveillance System (for ground support equipment). Safety and efficiency of operations at some airports will also be enhanced by intelligent signage on the ground. Policy issue: Will this equipage be mandatory for access to some high-density airports during peak traffic times in low-visibility conditions, or will equipped aircraft be given priority access in low-visibility conditions but unequipped aircraft will be accommodated, or is this equipage simply optional. Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) some airports (Segment 2) b) OEP airports (Segment 3) c) top 100 airports (Segment 4) d) all commercial airports (Segment 6)
NAS Operational Improvements	Wake Vortex Transport Prediction	Predicting the dissipation rate, 3-D movement and speed of wake vortices increases airport capacity by enabling reduced separation minima. Air navigation service provider (ANSP) automation and cockpit displays enable a common view of wake transport location. This capability enables reduced separation during periods of peak demand at airports conducting high-density operations.

3.3.6.2.4 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
ICAO ATMCP Requirement	R154	ATM service delivery will participate in the determination of airport capacity and shall be aware of the available airport capacity at relevant airports at all times in order to be able to maximize the use of that capacity
ICAO ATMCP Requirement	R 10	The airspace user community shall participate in collaborative decision-making.
ICAO ATMCP Requirement	R 23	Aerodrome operations shall provide the collaboratively agreed aerodrome capacity.
CONOPS	3.3 AIRPORT ENTERPRISE OPERATIONS	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Ordering/ Purchasing	Defines the set of capabilities that allow the placement of request for a product.
SRM Service Component	Procurement	Defines the set of capabilities that support the ordering and purchasing of products and services.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Property/Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.

3.3.6.2.5 NextGen Future Solutions

3.3.6.3 Airport Emergency Response (3.3)

3.3.6.3.1 Description

Airport Emergency Response is the continuous monitoring and management of routine and emergency airport operations. Issues include: fire, incursion, accident, or other incident.

3.3.6.3.2 Purpose

The purpose of Airport Emergency Response is to provide a clear picture of the incident, enabling the airport operations center to accurately and efficiently manage and support the response.

3.3.6.3.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Safety Security and Environmental Performance	Involve activities which relate directly to safety, security and environment. This may relate to the deployment of a procedure and system if the purpose is directly about one of the three, e.g. runway status lights. However the inclusion of conformance taxi monitoring to a clearance as part of a Surface Traffic Management System would be categorized as High-Density since safety is only one of the purposes.
NextGen Operational Improvements	Common and synchronized airport emergency and disaster response	Acceptance of a standard approach to responding to catastrophic emergency/disaster for airports to enable seamless integration of regional and national response resources when needed (Policy).
NextGen Operational Improvements	Improved tactical management of airport operations	Airport operators will be able to effectively manage routine and emergency operations through improved data and monitoring capabilities, as well as linkages to NEO and regional/national emergency response resources. This includes real-time push of airport condition information to users. Waterfall deployment: TBD

3.3.6.3.4 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues

Type	Name	Description
CONOPS	3.3.1 Airside Operations	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Emergency Response	Emergency Response involves the immediate actions taken to respond to a disaster. These actions include, but are not limited to, providing mobile telecommunications, operational support, power generation, search and rescue, and medical life-saving actions.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Risk Management	Defines the set of capabilities the support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal; includes risk assessment and risk mitigation.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.

3.3.6.3.5 NextGen Future Solutions

3.3.6.4 Manage Auxiliary Operations (3.4)

3.3.6.4.1 Description

This activity is the operations of the fuel and waste operations at the airport. Auxiliary operations also includes the utilities at the airport.

3.3.6.4.2 Purpose

The purpose of Auxiliary Operations is to detect and prevent anomalies such as waste or hazmat spills. The NextGen fuel supply can also be an alternative type of fuel to align with the environmental constraints for the future.

3.3.6.4.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Safety Security and Environmental Performance	Involve activities which relate directly to safety, security and environment. This may relate to the deployment of a procedure and system if the purpose is directly about one of the three, e.g. runway status lights. However the inclusion of conformance taxi monitoring to a clearance as part of a Surface Traffic Management System would be categorized as High-Density since safety is only one of the purposes.
NextGen Operational Improvements	Reduced unit level of GSE emissions	Overall GSE emissions will be reduced by improvements in GSE engine and vehicle technologies that reduce the unit generation of emissions by the GSE and used at the airport.
NextGen Operational Improvements	Use of environmental management processes integrated across aviation community	This OI involves the use of the EMS framework to address, plan and mitigate environmental issues (see OI 6013)

3.3.6.4.4 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.

3.3.6.4.5 NextGen Future Solutions

3.3.6.5 Cargo Management (3.5)

3.3.6.5.1 Description

This acitivity is the operations of processing, screening, and risk management of cargo management.

3.3.6.5.2 Purpose

The purpose of Cargo Management is to manage the cargo operations, including the screening of the shipment and manifest list to ensure the cargo is secure for shipping.

3.3.6.5.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Increase Security Safety and Environment Performance	
NextGen Operational Improvements	Improved cargo and mail screening	Cargo/mail screening increases the security and the safety of the air transportation system by reducing the possibility of the introduction of threats to the air transportation system. Cargo/Mail received from an unknown shipper requires screening prior to entry and tracked throughout the air transportation secure system for chemical, biological, radiological, nuclear, and explosive (CBRNE) threat material.
NextGen Operational Improvements	Improved processing of cargo and mail transported via trusted shippers	Air cargo/mail transportation system process includes prevention, detection, and mitigation measures to reduce the likelihood of cargo and mail from being used as a threat endangering aircraft, aviation facilities, and people. The Trusted Shipper Program reduces the quantity of cargo/mail that requires screening prior to entering the air transportation system. This reduction in volume expedites the handling of cargo/mail, reduces shipping time, and increases the capacity of the air transportation system to move cargo/mail. Cargo/Mail is shipped through a Trusted Shipper Program including vetted cargo packers, a verified chain of custody, and tamper resistant/alerting technology to reduce the requirement to screen cargo before loaded on to an aircraft. Cargo shipped through the Trusted Shipper Program will not require further screening before entering the air transportation system.
NextGen Operational Improvements	Integrated risk-based planning and management of security resources	Security resources are planned, and managed using an integrated, adaptive, and responsive risk management capability that supports risk-informed decisions among security mission partners. This capability harmonizes short and long term resource allocation and investments among partners to gain the highest possible security return on investment and to reduce the overall cost of security operations.
NextGen Operational Improvements	Reduced impact of potential cargo and mail threats	Threat containment and mitigation increases the safety and security of the air transportation system. Cargo/Mail is placed in blast/threat containment/mitigation systems prior to placement on aircraft to reduce the impact to the air transportation system of undetected chemical biological, radiological, nuclear, and explosive (CBRNE) threats.

3.3.6.5.4 NextGen Drivers

Type	Name	Description
Actor	Security	This operational node includes all activities by Government organizations to protect people, airports, checked baggage, cargo, airspace, aircraft, and information from intentional harm or unauthorized use.
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
Actor	Shipper	A person who ships cargo
CONOPS	3.3.2 Passenger Terminal Operations	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Border and Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Risk Management	Defines the set of capabilities the support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal; includes risk assessment and risk mitigation.
SRM Service Component	Radiological	Defines the set of capabilities that support the use of radiation and x-ray technologies for analysis and scientific examination.
SRM Service Component	Secure Baggage/Cargo	Defines the set of capabilities that secure (e.g., screen assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).

3.3.6.5.5 NextGen Future Solutions

3.3.6.6 Congestion Management (3.6)

3.3.6.6.1 Description

Congestion management provides a program for airports to manage short-term situations where demand exceeds the available capacity of the airport infrastructure.

3.3.6.6.2 Purpose

The purpose of congestion management is to provide a combination of regulatory and market-based mechanisms could be used to balance the competing needs of aircraft operators seeking airport access, for airports to provide a reasonable level of service, and for the ANSP to accurately predict the impact of local congestion on the NAS and mitigate the ripple effects throughout the NAS

3.3.6.6.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Increase Arrivals/ Departures at High Density Airports	High density Arr/Dep Terminals and Airports involves airports in which either the demand for the runway capacity is high, there are multiple runways with both airspace and taxiing interactions, or there are airports with close proximity that create the potential for airspace interference. (The current and future major metros (e.g. N90), and other very large airports (DEN).) These airports require all the capabilities of the flexible terminals and airspace plus integrated tactical and strategic flow capabilities. They may require higher performance navigation and communications capabilities to support these additional operational requirements.

3.3.6.6.4 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
ICAO ATMCP Requirement	R 24	Aerodrome design and operations shall, through collaborative decision-making, ensure that the most effective means of surface management are employed to respond to demand
ICAO ATMCP Requirement	R 25	The system shall be able to precisely determine the position and intent of all aircraft and vehicles manoeuvring on the ground
CONOPS	3.3.1 Airside Operations	
Key Concept	Super-Density Arrival/Departure Operations	With increasing demand, an even greater need exists to achieve peak throughput performance at the busiest airports and in the busiest airspace. New procedures to improve airport surface movements, reduce spacing and separation requirements in place today, and better manage overall flows in and out of busy metropolitan airspace provide maximum use of the highest-demand airports. Airport terminals also maximize efficiency of egress and ingress, matching passenger and cargo flow to airside throughput while maintaining safety and security levels.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Structural/Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.
SRM Service Component	Data Mining	Defines the set of capabilities that provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Modeling	Defines the set of capabilities that develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Decision Support and Planning	Defines the set of capabilities that support the analysis of information and predict the impact of decisions before they are made.
SRM Service Component	Inbound Correspondence	
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.

3.3.6.6.5 NextGen Future Solutions

3.3.6.7 Landside Operations (3.1)

3.3.6.7.1 Description

Landside operations is the overall operations inside the terminal and the ground transportation system. Terminal operations includes the passenger/baggage management and the security process for screening the passenger/baggage, and the operations of the gate.

3.3.6.7.2 Purpose

The purpose of Landside Operations is to support the increasing passenger demand levels at acceptable levels of service. The ground transportation system provides for effective, efficient transitions across multiple modes of transportation while maintaining security, efficiency, passenger convenience, and choice. Aviation security is provided continuously from the time the reservation is made until the safe arrival of the flight at the destination airport and uneventful retrieval of baggage by the passenger.

Airport Operations A3

Landside Operations A3.1

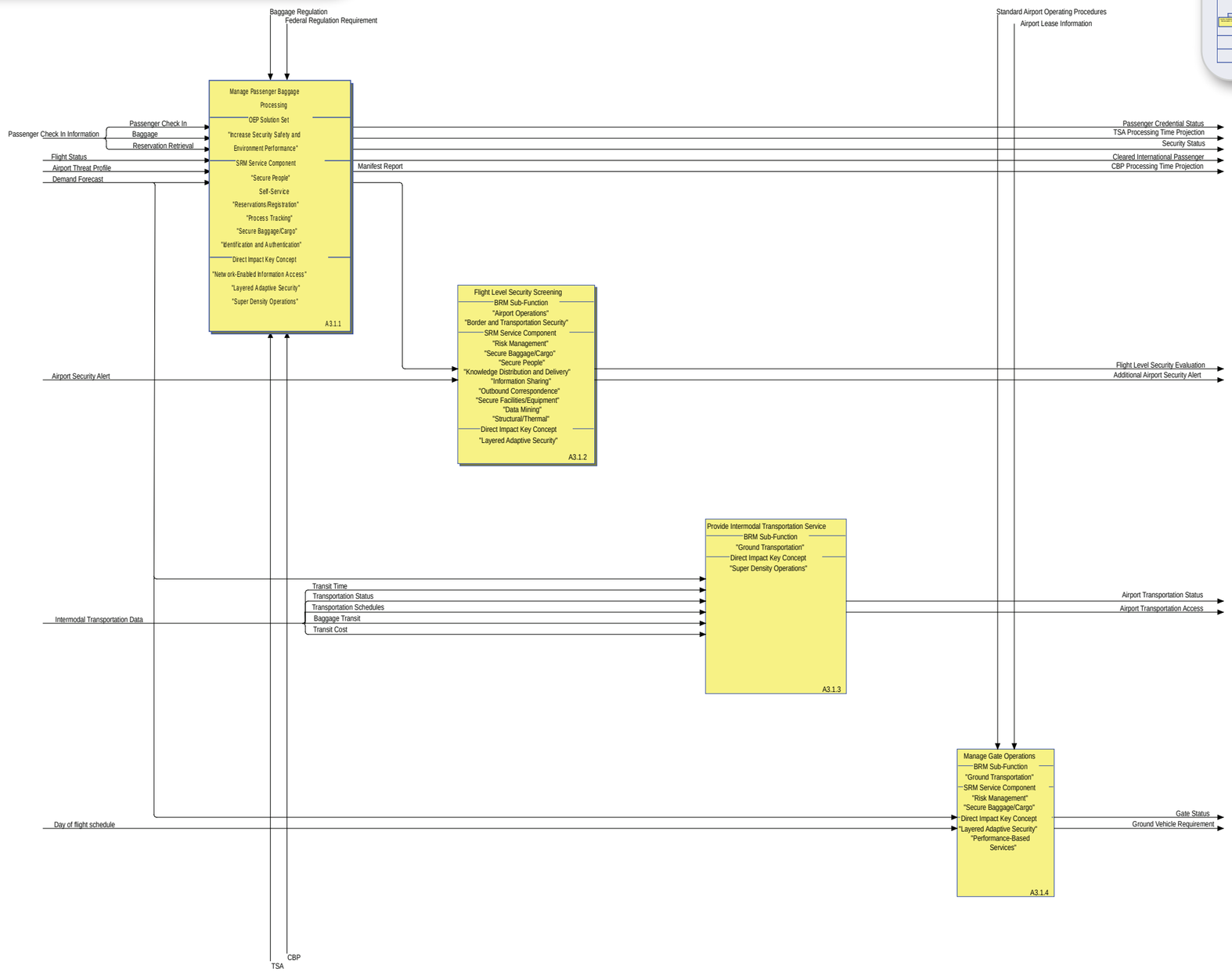


Figure 37 - 3.1 Landside Operations Activity Model Diagram

3.3.6.8 Manage Passenger Baggage Processing (3.1.1)

3.3.6.8.1 Description

This activity provides tracking of passenger, and baggage information, synchronization, itinerary/handling information, remote check-in, and security assurance. Information of the planned intent and current locations of passengers and their baggage is provided. It also provides auto ship of passenger baggage.

3.3.6.8.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Increase Security Safety and Environment Performance	
NextGen Operational Improvements	Integrated Customs Border Protection (CBP) and Security Service Provider Functio	Through improved procedures and information flow, CBP processing is more efficient for arriving international passengers, enabling faster processing times while maintaining INS, Customs, and Security requirements. NEO supports transfer of passenger and baggage manifests between aircraft operators, Security Service Provider, and CBP. Connections between flights are smoother.
NextGen Operational Improvements	Integrated Watch List High Risk Passenger Screening	High risk passengers receive a higher level of screening prior to gaining access to the airport sterile area through identification on the integrated watch list.
NextGen Operational Improvements	Integrated Watch List Passenger Prescreening and Identification	High risk passengers are prescreened and identified through an advanced vetting capability that utilizes an integrated watch list
NextGen Operational Improvements	Off-Airport Passenger and Baggage Processing	Remote processing locations (e.g., hotels, conference centers, modal transportation, Remote Terminal Security Service facilities) enable check-in, baggage check, and security screening at off-airport locations. Passengers and baggage would be transported to the airport via secure ground transportation for connections directly to the secure portions of the terminal. Passenger and baggage itinerary information is tracked using advanced technology to support synchronization, handling information, remote check-in, and security assurance. Baggage transfer services via third party vendors would be supported. Airports that have limited room to expand their terminal facilities would benefit and be able to support higher passenger volumes while maintaining an acceptable level of service. Roadway congestion to/from the airport would also be reduced.

3.3.6.8.3 NextGen Drivers

Type	Name	Description
Actor	Security	This operational node includes all activities by Government organizations to protect people, airports, checked baggage, cargo, airspace, aircraft, and information from intentional harm or unauthorized use.
Actor	Airline Operator	Organizations and people responsible for enabling passenger and baggage operations conducted within an airport. The airline operator checks in the passenger at the ticket counter and the gate.
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
Actor	Passenger	Any person(s) who travels by aircraft, but bears little or no responsibility for the tasks required for that vehicle to arrive at its destination.
Actor	Security and Defense Providers	Organizations and people responsible for national and homeland defense, homeland security, law enforcement, information security, and physical and operational security of the NEXTGEN
CONOPS	3.4.2 Off-Site Pass and Bag Processing Enabled through Integrated Trip Tracking	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
SRM Service Component	Reservations/ Registration	Defines the set of capabilities that allow electronic enrollment and confirmations for services.
SRM Service Component	Self-Service	Defines the set of capabilities that allow an organization's customers to sign up for a particular service at their own initiative.
SRM Service Component	Process Tracking	Defines the set of capabilities to allow the monitoring of activities within the business cycle.
SRM Service Component	Identification and Authentication	Defines the set of capabilities that support obtaining information about those parties attempting to log on to a system or application for security purposes and the validation of those users.
SRM Service Component	Secure People	Defines the set of capabilities that secure (e.g., screen, credential, identify, etc.) people in order to mitigate security risks to themselves or others.
SRM Service Component	Secure Baggage/ Cargo	Defines the set of capabilities that secure (e.g., screen assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).

3.3.6.8.4 NextGen Future Solutions

3.3.6.9 Flight Level Security Screening (3.1.2)

3.3.6.9.1 Description

This activity is the screening of flight threats based on the airport security alerts and flight threat level analysis to ensure the security of the flight.

3.3.6.9.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Integrated high-risk flight management and risk mitigation	Flights are continually monitored and assessed risks. High risk flights are identified using an integrated risk assessment capability. Notifications are provided to the ANSP and the defense/security service providers to coordinate integrated response for risk mitigation facilitate by improved communications and information sharing.

3.3.6.9.3 NextGen Drivers

Type	Name	Description
Actor	Security and Defense Providers	Organizations and people responsible for national and homeland defense, homeland security, law enforcement, information security, and physical and operational security of the NEXTGEN
CONOPS	6.4.1 Service: Secure People	
CONOPS	8.4.1 Aviation Safety Strategic Plan Service	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
BRM Sub-Function	Border and Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Risk Management	Defines the set of capabilities the support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal; includes risk assessment and risk mitigation.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Structural/ Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.
SRM Service Component	Data Mining	Defines the set of capabilities that provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Secure People	Defines the set of capabilities that secure (e.g., screen, credential, identify, etc.) people in order to mitigate security risks to themselves or others.
SRM Service Component	Secure Baggage/ Cargo	Defines the set of capabilities that secure (e.g., screen assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.
SRM Service Component	Secure Facilities/ Equipment	Defines the set of capabilities that secure facilities (e.g. buildings, airports, etc.) and equipment (e.g. aircraft, vehicles, hardware, etc.) to mitigate dynamically evolving security risks and threats (e.g., unauthorized access, hijacking/unauthorized diversion, internal/external attacks, etc.).

3.3.6.9.4 NextGen Future Solutions

3.3.6.10 Provide Intermodal Transportation Service (3.1.3)

3.3.6.10.1 Description

This activity provides transportation service for passenger and personnel. The transportation may include facility for personal transportation, rail, bus connections. However, a major goal of modern intermodal passenger transport is to reduce dependence on the automobile as the major mode of ground transportation and increase use of public transportation.

3.3.6.10.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Integrated Customs Border Protection (CBP) and Security Service Provider Functio	Through improved procedures and information flow, CBP processing is more efficient for arriving international passengers, enabling faster processing times while maintaining INS, Customs, and Security requirements. NEO supports transfer of passenger and baggage manifests between aircraft operators, Security Service Provider, and CBP. Connections between flights are smoother.

3.3.6.10.3 NextGen Drivers

Type	Name	Description
BRM Sub-Function	Ground Transportation	Ground Transportation involves the activities related to ensuring the availability of transit and the safe passage of passengers and goods over land. Note: The protection of ground transportation from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.

3.3.6.10.4 NextGen Future Solutions

3.3.6.11 Manage Gate Operations (3.1.4)

3.3.6.11.1 Description

This activity manages the operations of the gate at the airport. This includes maintenance of the gate and passenger flow through the gate to or from the aircraft.

3.3.6.11.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Integrated risk-based planning and management of security resources	Security resources are planned, and managed using an integrated, adaptive, and responsive risk management capability that supports risk-informed decisions among security mission partners. This capability harmonizes short and long term resource allocation and investments among partners to gain the highest possible security return on investment and to reduce the overall cost of security operations.
NextGen Operational Improvements	Reduced impact of potential cargo and mail threats	Threat containment and mitigation increases the safety and security of the air transportation system. Cargo/Mail is placed in blast/threat containment/mitigation systems prior to placement on aircraft to reduce the impact to the air transportation system of undetected chemical biological, radiological, nuclear, and explosive (CBRNE) threats.

3.3.6.11.3 NextGen Drivers

Type	Name	Description
Actor	Airline Operator	Organizations and people responsible for enabling passenger and baggage operations conducted within an airport. The airline operator checks in the passenger at the ticket counter and the gate.
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
BRM Sub-Function	Ground Transportation	Ground Transportation involves the activities related to ensuring the availability of transit and the safe passage of passengers and goods over land. Note: The protection of ground transportation from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Risk Management	Defines the set of capabilities the support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal; includes risk assessment and risk mitigation.

3.3.6.11.4 NextGen Future Solutions

3.3.6.12 Manage Passenger Baggage Processing (3.1.1)

3.3.6.12.1 Description

This activity provides tracking of passenger, and baggage information, synchronization, itinerary/handling information, remote check-in, and security assurance. Information of the planned intent and current locations of passengers and their baggage is provided. It also provides auto ship of passenger baggage.

Airport Operations A3

Landside Operations A3.1

Manage Passenger Baggage Processing A3.1.1

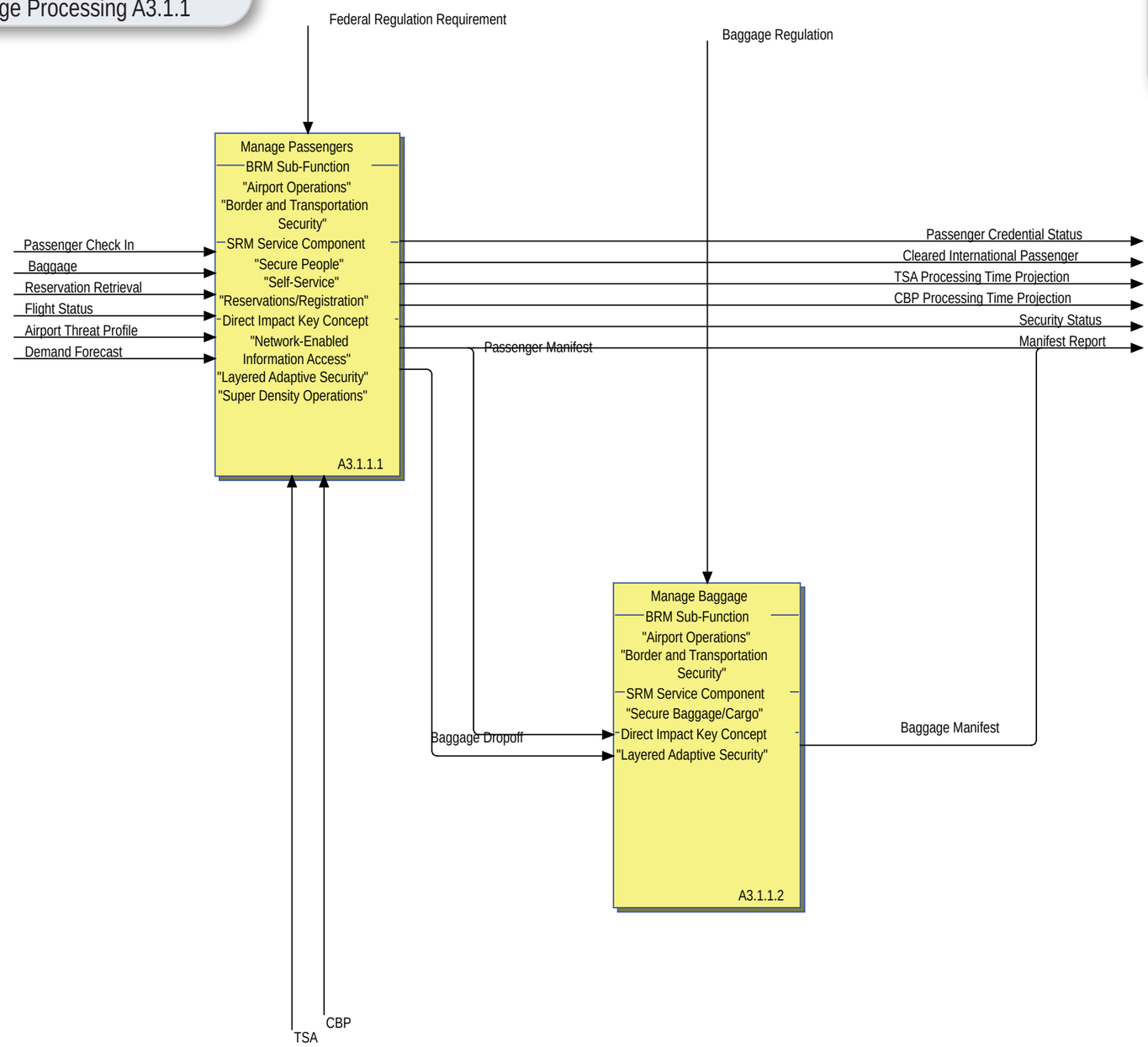


Figure 38 - 3.1.1 Manage Passenger Baggage Processing Activity Model Diagram

3.3.6.13 Manage Passengers (3.1.1.1)

3.3.6.13.1 Description

This activity provides passenger check-in in preparation for aircraft boarding and security screening. Arriving passengers are taken through the CBP process prior to entry into the country. The passenger manifest is maintained for security and planning purposes.

3.3.6.13.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Integrated Customs Border Protection (CBP) and Security Service Provider Functio	Through improved procedures and information flow, CBP processing is more efficient for arriving international passengers, enabling faster processing times while maintaining INS, Customs, and Security requirements. NEO supports transfer of passenger and baggage manifests between aircraft operators, Security Service Provider, and CBP. Connections between flights are smoother.
NextGen Operational Improvements	Integrated Watch List High Risk Passenger Screening	High risk passengers receive a higher level of screening prior to gaining access to the airport sterile area through identification on the integrated watch list.
NextGen Operational Improvements	Integrated Watch List Passenger Prescreening and Identification	High risk passengers are prescreened and identified through an advanced vetting capability that utilizes an integrated watch list
NextGen Operational Improvements	Off-Airport Passenger and Baggage Processing	Remote processing locations (e.g., hotels, conference centers, modal transportation, Remote Terminal Security Service facilities) enable check-in, baggage check, and security screening at off-airport locations. Passengers and baggage would be transported to the airport via secure ground transportation for connections directly to the secure portions of the terminal. Passenger and baggage itinerary information is tracked using advanced technology to support synchronization, handling information, remote check-in, and security assurance. Baggage transfer services via third party vendors would be supported. Airports that have limited room to expand their terminal facilities would benefit and be able to support higher passenger volumes while maintaining an acceptable level of service. Roadway congestion to/from the airport would also be reduced.

3.3.6.13.3 NextGen Drivers

Type	Name	Description
Actor	Security	This operational node includes all activities by Government organizations to protect people, airports, checked baggage, cargo, airspace, aircraft, and information from intentional harm or unauthorized use.
Actor	Airline Operator	Organizations and people responsible for enabling passenger and baggage operations conducted within an airport. The airline operator checks in the passenger at the ticket counter and the gate.
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
Actor	Passenger	Any person(s) who travels by aircraft, but bears little or no responsibility for the tasks required for that vehicle to arrive at its destination.
CONOPS	3.4 AIRPORT ENTERPRISE SERVICES AND CAPABILITIES	
CONOPS	6.4.1 Service: Secure People	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Border and Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Reservations/ Registration	Defines the set of capabilities that allow electronic enrollment and confirmations for services.
SRM Service Component	Self-Service	Defines the set of capabilities that allow an organization's customers to sign up for a particular service at their own initiative.
SRM Service Component	Secure People	Defines the set of capabilities that secure (e.g., screen, credential, identify, etc.) people in order to mitigate security risks to themselves or others.

3.3.6.13.4 NextGen Future Solutions

3.3.6.14 Manage Baggage (3.1.1.2)

3.3.6.14.1 Description

This activity provides the capability to checking in baggage remotely or at the airport, and categorizing baggage for loading onto an aircraft.

3.3.6.14.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Integrated Customs Border Protection (CBP) and Security Service Provider Functio	Through improved procedures and information flow, CBP processing is more efficient for arriving international passengers, enabling faster processing times while maintaining INS, Customs, and Security requirements. NEO supports transfer of passenger and baggage manifests between aircraft operators, Security Service Provider, and CBP. Connections between flights are smoother.
NextGen Operational Improvements	Off-Airport Passenger and Baggage Processing	Remote processing locations (e.g., hotels, conference centers, modal transportation, Remote Terminal Security Service facilities) enable check-in, baggage check, and security screening at off-airport locations. Passengers and baggage would be transported to the airport via secure ground transportation for connections directly to the secure portions of the terminal. Passenger and baggage itinerary information is tracked using advanced technology to support synchronization, handling information, remote check-in, and security assurance. Baggage transfer services via third party vendors would be supported. Airports that have limited room to expand their terminal facilities would benefit and be able to support higher passenger volumes while maintaining an acceptable level of service. Roadway congestion to/from the airport would also be reduced.
NextGen Operational Improvements	Subterranean Ground Support Infrastructure	Subterranean conveyance systems are used to facilitate ground support functions (e.g., baggage transfer and aircraft servicing), thus reducing the need for GSE and related ramp congestion and emissions. This OI will also support improved security at airports.

3.3.6.14.3 NextGen Drivers

Type	Name	Description
Actor	Airline Operator	Organizations and people responsible for enabling passenger and baggage operations conducted within an airport. The airline operator checks in the passenger at the ticket counter and the gate.
CONOPS	3.4.2 Off-Site Pass and Bag Processing Enabled through Integrated Trip Tracking	
CONOPS	6.4.3 Service: Secure Checked Baggage	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of “layers of defense” (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
BRM Sub-Function	Border and Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Secure Baggage/ Cargo	Defines the set of capabilities that secure (e.g., screen assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).

3.3.6.14.4 NextGen Future Solutions

3.3.6.15 Manage Passengers (3.1.1.1)

3.3.6.15.1 Description

This activity provides passenger check-in in preparation for aircraft boarding and security screening. Arriving passengers are taken through the CBP process prior to entry into the country. The passenger manifest is maintained for security and planning purposes.

Airport Operations A3

Landside Operations A3.1

Manage Passenger Baggage Processing A3.1.1

Manage Passengers A3.1.1.1

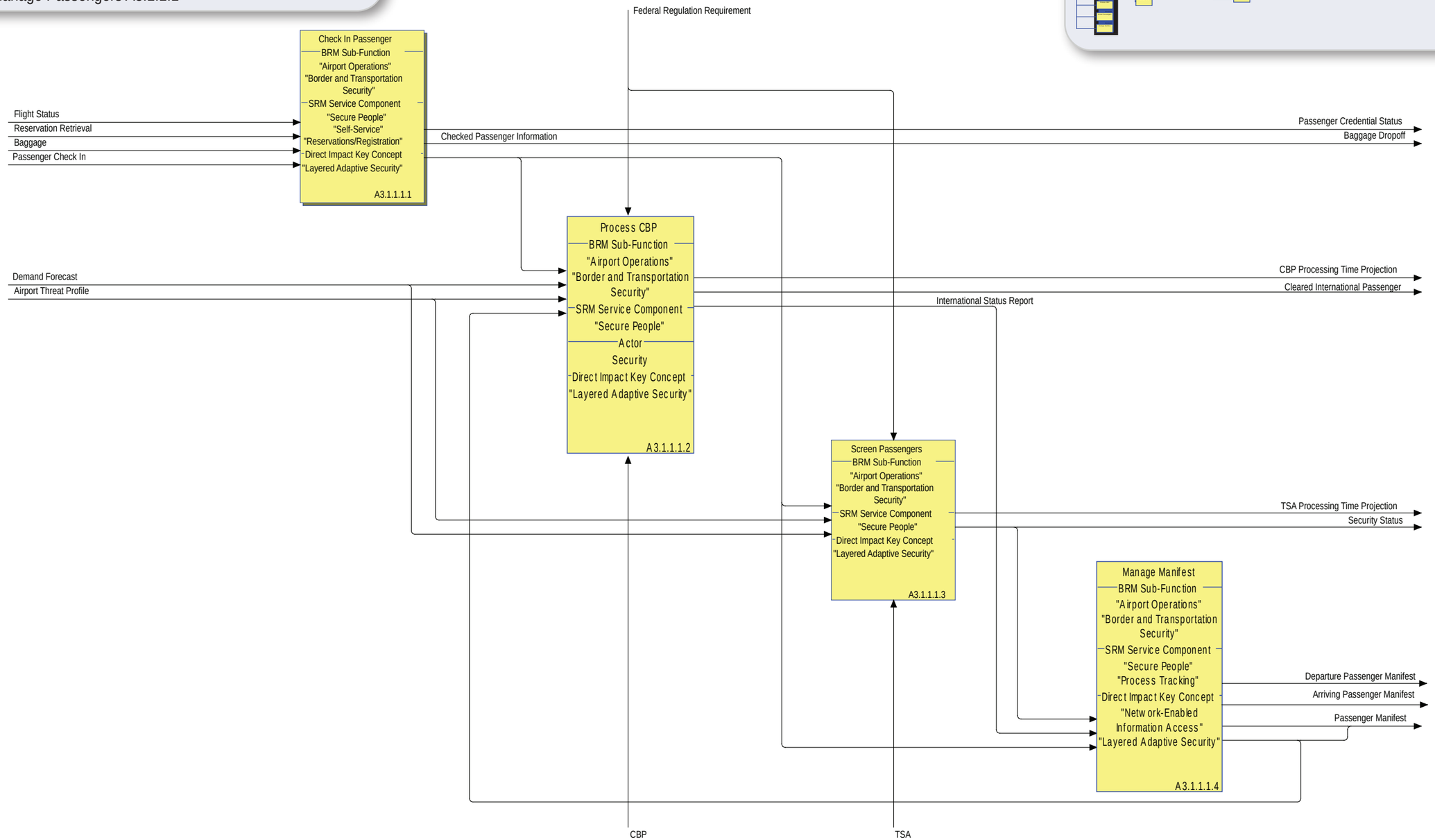


Figure 39 - 3.1.1.1 Manage Passengers Activity Model Diagram

3.3.6.16 Check In Passenger (3.1.1.1.1)

3.3.6.16.1 Description

This activity will allow for passenger's to submit information in preparation for security screening and aircraft boarding. The activity enables ticket purchase, reservation confirmation, boarding pass confirmation/dissemination, and aircraft gate directions.

3.3.6.16.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Integrated Customs Border Protection (CBP) and Security Service Provider Functio	Through improved procedures and information flow, CBP processing is more efficient for arriving international passengers, enabling faster processing times while maintaining INS, Customs, and Security requirements. NEO supports transfer of passenger and baggage manifests between aircraft operators, Security Service Provider, and CBP. Connections between flights are smoother.
NextGen Operational Improvements	Off-Airport Passenger and Baggage Processing	Remote processing locations (e.g., hotels, conference centers, modal transportation, Remote Terminal Security Service facilities) enable check-in, baggage check, and security screening at off-airport locations. Passengers and baggage would be transported to the airport via secure ground transportation for connections directly to the secure portions of the terminal. Passenger and baggage itinerary information is tracked using advanced technology to support synchronization, handling information, remote check-in, and security assurance. Baggage transfer services via third party vendors would be supported. Airports that have limited room to expand their terminal facilities would benefit and be able to support higher passenger volumes while maintaining an acceptable level of service. Roadway congestion to/from the airport would also be reduced.

3.3.6.16.3 NextGen Drivers

Type	Name	Description
Actor	Airline Operator	Organizations and people responsible for enabling passenger and baggage operations conducted within an airport. The airline operator checks in the passenger at the ticket counter and the gate.
Actor	Passenger	Any person(s) who travels by aircraft, but bears little or no responsibility for the tasks required for that vehicle to arrive at its destination.
CONOPS	3.4.1 Passenger Flow Management	
CONOPS	3.4.2 Off-Site Pass and Bag Processing Enabled through Integrated Trip Tracking	
CONOPS	6.4.1 Service: Secure People	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
BRM Sub-Function	Border and Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Reservations/ Registration	Defines the set of capabilities that allow electronic enrollment and confirmations for services.
SRM Service Component	Self-Service	Defines the set of capabilities that allow an organization's customers to sign up for a particular service at their own initiative.
SRM Service Component	Secure People	Defines the set of capabilities that secure (e.g., screen, credential, identify, etc.) people in order to mitigate security risks to themselves or others.

3.3.6.16.4 NextGen Future Solutions

3.3.6.17 Process CBP (3.1.1.1.2)

3.3.6.17.1 Description

This activity will collect and assess passenger information for entry into the country. Processing may occur prior to departure.
CBP - Custom Board Protection

3.3.6.17.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Integrated Customs Border Protection (CBP) and Security Service Provider Functio	Through improved procedures and information flow, CBP processing is more efficient for arriving international passengers, enabling faster processing times while maintaining INS, Customs, and Security requirements. NEO supports transfer of passenger and baggage manifests between aircraft operators, Security Service Provider, and CBP. Connections between flights are smoother.

3.3.6.17.3 NextGen Drivers

Type	Name	Description
Actor	Security	This operational node includes all activities by Government organizations to protect people, airports, checked baggage, cargo, airspace, aircraft, and information from intentional harm or unauthorized use.
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
BRM Sub-Function	Border and Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.

Type	Name	Description
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Secure People	Defines the set of capabilities that secure (e.g., screen, credential, identify, etc.) people in order to mitigate security risks to themselves or others.

3.3.6.17.4 NextGen Future Solutions

3.3.6.18 Screen Passengers (3.1.1.1.3)

3.3.6.18.1 Description

This activity will screen passengers for security.

3.3.6.18.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Improved passenger checkpoint screening	Security is improved by improved passenger screening for explosives, chemicals, biological agents, nuclear devices, radiological material and weapons that might be introduced into the passenger compartments of civil airliners and used to destroy, disable, and hijack the airplane. Security checkpoints currently screen passengers and their carry on luggage for the presence of these threats, but, at present, these checkpoints, as currently designed, cannot detect the full range of these threats. Current screening methods also need to be improved to be able to process the projected increasing passenger volumes. This improvement would provide for improved levels of threat detection, lower false alarms, increased throughput, and improved resolution of alarming passengers.
NextGen Operational Improvements	Integrated Customs Border Protection (CBP) and Security Service Provider Functio	Through improved procedures and information flow, CBP processing is more efficient for arriving international passengers, enabling faster processing times while maintaining INS, Customs, and Security requirements. NEO supports transfer of passenger and baggage manifests between aircraft operators, Security Service Provider, and CBP. Connections between flights are smoother.
NextGen Operational Improvements	Integrated Watch List High Risk Passenger Screening	High risk passengers receive a higher level of screening prior to gaining access to the airport sterile area through identification on the integrated watch list.
NextGen Operational Improvements	Integrated Watch List Passenger Prescreening and Identification	High risk passengers are prescreened and identified through an advanced vetting capability that utilizes an integrated watch list
NextGen Operational Improvements	Reduce CBRNE threats from entering airport property	Mechanisms and procedures will be in place to identify, alert, mitigate or neutralize in order to intercept/ interdict the material threat of CBRNE prior to entering the airport property.

3.3.6.18.3 NextGen Drivers

Type	Name	Description
Actor	Security	This operational node includes all activities by Government organizations to protect people, airports, checked baggage, cargo, airspace, aircraft, and information from intentional harm or unauthorized use.
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of “layers of defense” (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
BRM Sub-Function	Border and Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Secure People	Defines the set of capabilities that secure (e.g., screen, credential, identify, etc.) people in order to mitigate security risks to themselves or others.

3.3.6.18.4 NextGen Future Solutions

3.3.6.19 Manage Manifest (3.1.1.1.4)

3.3.6.19.1 Description

This activity will create, modify, and track passenger manifests.

3.3.6.19.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Integrated Customs Border Protection (CBP) and Security Service Provider Functio	Through improved procedures and information flow, CBP processing is more efficient for arriving international passengers, enabling faster processing times while maintaining INS, Customs, and Security requirements. NEO supports transfer of passenger and baggage manifests between aircraft operators, Security Service Provider, and CBP. Connections between flights are smoother.

3.3.6.19.3 NextGen Drivers

Type	Name	Description
Actor	Security	This operational node includes all activities by Government organizations to protect people, airports, checked baggage, cargo, airspace, aircraft, and information from intentional harm or unauthorized use.
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of “layers of defense” (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.

Type	Name	Description
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Border and Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Process Tracking	Defines the set of capabilities to allow the monitoring of activities within the business cycle.
SRM Service Component	Secure People	Defines the set of capabilities that secure (e.g., screen, credential, identify, etc.) people in order to mitigate security risks to themselves or others.

3.3.6.19.4 NextGen Future Solutions

3.3.6.20 Check In Passenger (3.1.1.1.1)

3.3.6.20.1 Description

This activity will allow for passenger's to submit information in preparation for security screening and aircraft boarding. The activity enables ticket purchase, reservation confirmation, boarding pass confirmation/dissemination, and aircraft gate directions.

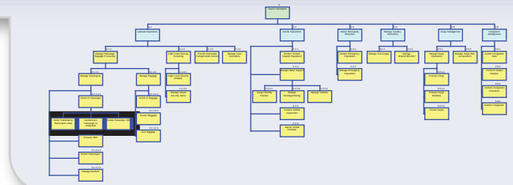
Airport Operations A3

Landside Operations A3.1

Manage Passenger Baggage Processing A3.1.1

Manage Passengers A3.1.1.1

Check In Passenger A3.1.1.1.1



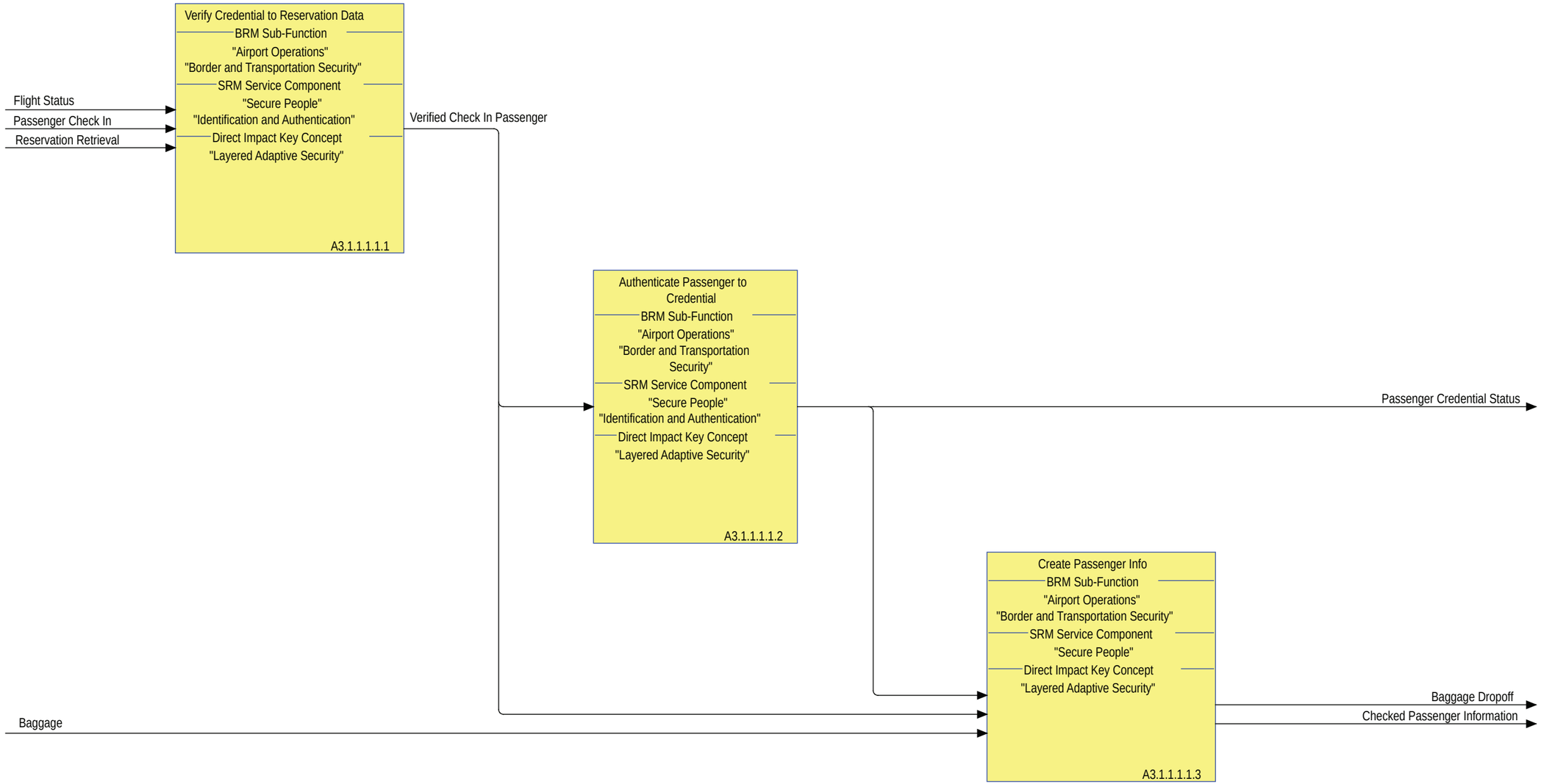


Figure 40 - 3.1.1.1.1 Check In Passenger Activity Model Diagram

3.3.6.21 Verify Credential to Reservation Data (3.1.1.1.1.1)

3.3.6.21.1 Description

This activity is the matching of the passenger's credential to the flight reservation.

3.3.6.21.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Integrated Customs Border Protection (CBP) and Security Service Provider Functio	Through improved procedures and information flow, CBP processing is more efficient for arriving international passengers, enabling faster processing times while maintaining INS, Customs, and Security requirements. NEO supports transfer of passenger and baggage manifests between aircraft operators, Security Service Provider, and CBP. Connections between flights are smoother.
NextGen Operational Improvements	Off-Airport Passenger and Baggage Processing	Remote processing locations (e.g., hotels, conference centers, modal transportation, Remote Terminal Security Service facilities) enable check-in, baggage check, and security screening at off-airport locations. Passengers and baggage would be transported to the airport via secure ground transportation for connections directly to the secure portions of the terminal. Passenger and baggage itinerary information is tracked using advanced technology to support synchronization, handling information, remote check-in, and security assurance. Baggage transfer services via third party vendors would be supported. Airports that have limited room to expand their terminal facilities would benefit and be able to support higher passenger volumes while maintaining an acceptable level of service. Roadway congestion to/from the airport would also be reduced.

3.3.6.21.3 NextGen Drivers

Type	Name	Description
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
BRM Sub-Function	Border and Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Identification and Authentication	Defines the set of capabilities that support obtaining information about those parties attempting to log on to a system or application for security purposes and the validation of those users.
SRM Service Component	Secure People	Defines the set of capabilities that secure (e.g., screen, credential, identify, etc.) people in order to mitigate security risks to themselves or others.

3.3.6.21.4 NextGen Future Solutions

3.3.6.22 Authenticate Passenger to Credential (3.1.1.1.1.2)

3.3.6.22.1 Description

This activity validates the passenger's identification which can be in various forms such as biometrics to the person.

3.3.6.22.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Integrated Customs Border Protection (CBP) and Security Service Provider Functio	Through improved procedures and information flow, CBP processing is more efficient for arriving international passengers, enabling faster processing times while maintaining INS, Customs, and Security requirements. NEO supports transfer of passenger and baggage manifests between aircraft operators, Security Service Provider, and CBP. Connections between flights are smoother.
NextGen Operational Improvements	Integrated Watch List High Risk Passenger Screening	High risk passengers receive a higher level of screening prior to gaining access to the airport sterile area through identification on the integrated watch list.
NextGen Operational Improvements	Integrated Watch List Passenger Prescreening and Identification	High risk passengers are prescreened and identified through an advanced vetting capability that utilizes an integrated watch list
NextGen Operational Improvements	Off-Airport Passenger and Baggage Processing	Remote processing locations (e.g., hotels, conference centers, modal transportation, Remote Terminal Security Service facilities) enable check-in, baggage check, and security screening at off-airport locations. Passengers and baggage would be transported to the airport via secure ground transportation for connections directly to the secure portions of the terminal. Passenger and baggage itinerary information is tracked using advanced technology to support synchronization, handling information, remote check-in, and security assurance. Baggage transfer services via third party vendors would be supported. Airports that have limited room to expand their terminal facilities would benefit and be able to support higher passenger volumes while maintaining an acceptable level of service. Roadway congestion to/from the airport would also be reduced.

3.3.6.22.3 NextGen Drivers

Type	Name	Description
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
BRM Sub-Function	Border and Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Identification and Authentication	Defines the set of capabilities that support obtaining information about those parties attempting to log on to a system or application for security purposes and the validation of those users.

Type	Name	Description
SRM Service Component	Secure People	Defines the set of capabilities that secure (e.g., screen, credential, identify, etc.) people in order to mitigate security risks to themselves or others.

3.3.6.22.4 NextGen Future Solutions

3.3.6.23 Create Passenger Info (3.1.1.1.1.3)

3.3.6.23.1 Description

This activity establishes and integrates all the associated information needed to check in the passenger.

3.3.6.23.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Integrated Customs Border Protection (CBP) and Security Service Provider Functio	Through improved procedures and information flow, CBP processing is more efficient for arriving international passengers, enabling faster processing times while maintaining INS, Customs, and Security requirements. NEO supports transfer of passenger and baggage manifests between aircraft operators, Security Service Provider, and CBP. Connections between flights are smoother.
NextGen Operational Improvements	Off-Airport Passenger and Baggage Processing	Remote processing locations (e.g., hotels, conference centers, modal transportation, Remote Terminal Security Service facilities) enable check-in, baggage check, and security screening at off-airport locations. Passengers and baggage would be transported to the airport via secure ground transportation for connections directly to the secure portions of the terminal. Passenger and baggage itinerary information is tracked using advanced technology to support synchronization, handling information, remote check-in, and security assurance. Baggage transfer services via third party vendors would be supported. Airports that have limited room to expand their terminal facilities would benefit and be able to support higher passenger volumes while maintaining an acceptable level of service. Roadway congestion to/from the airport would also be reduced.

3.3.6.23.3 NextGen Drivers

Type	Name	Description
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of “layers of defense” (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
BRM Sub-Function	Border and Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Secure People	Defines the set of capabilities that secure (e.g., screen, credential, identify, etc.) people in order to mitigate security risks to themselves or others.

3.3.6.23.4 NextGen Future Solutions

3.3.6.24 Manage Baggage (3.1.1.2)

3.3.6.24.1 Description

This activity provides the capability to checking in baggage remotely or at the airport, and categorizing baggage for loading onto an aircraft.

Airport Operations A3

Landside Operations A3.1

Manage Passenger Baggage Processing A3.1.1

Manage Baggage A3.1.1.2

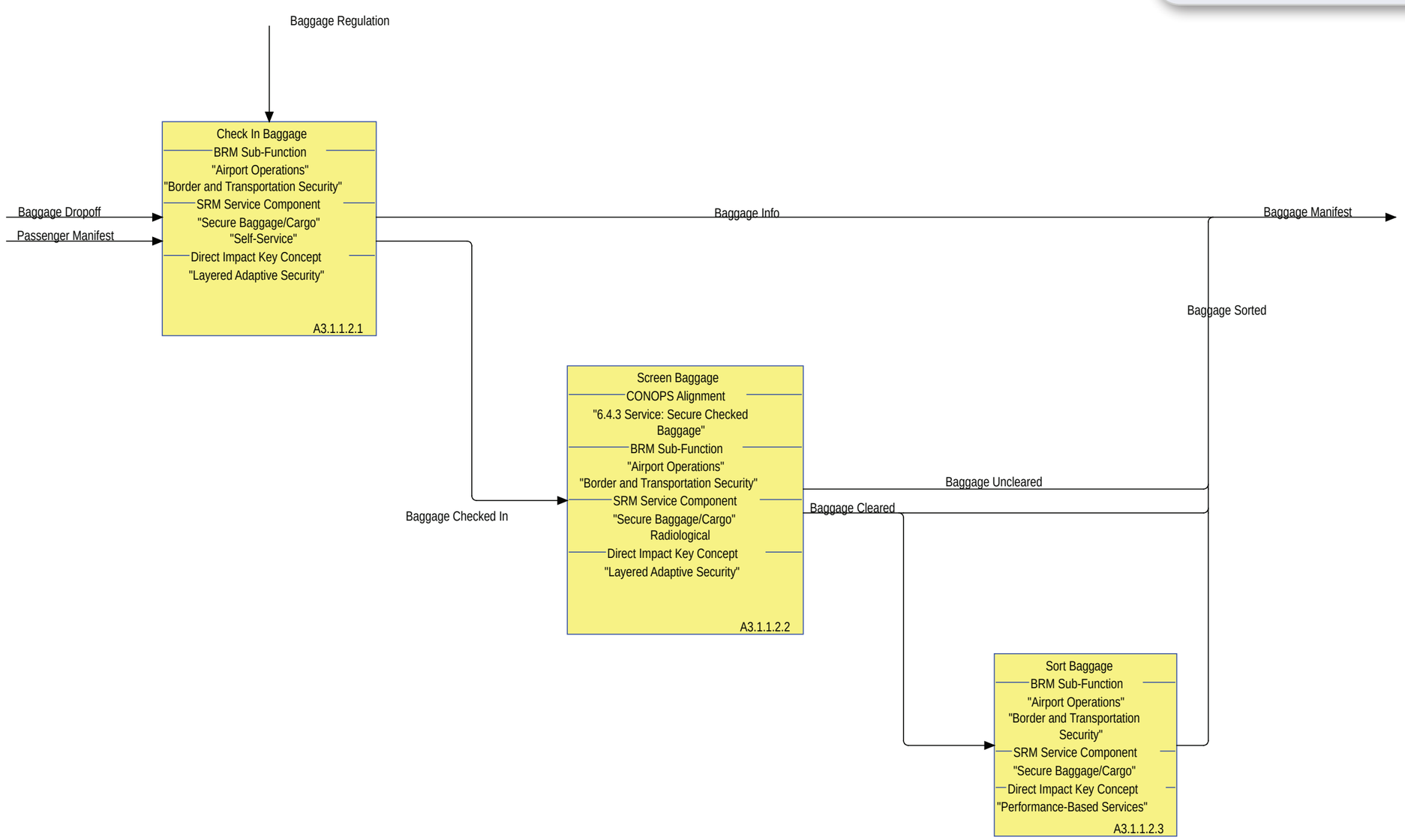


Figure 41 - 3.1.1.2 Manage Baggage Activity Model Diagram

3.3.6.25 Check In Baggage (3.1.1.2.1)

3.3.6.25.1 Description

This activity will check-in baggage in preparation for the security screening process and loading onto the aircraft. Baggage is checked-in offsite (i.e., a location other than the departure airport) or at the airport.

3.3.6.25.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Integrated Customs Border Protection (CBP) and Security Service Provider Functio	Through improved procedures and information flow, CBP processing is more efficient for arriving international passengers, enabling faster processing times while maintaining INS, Customs, and Security requirements. NEO supports transfer of passenger and baggage manifests between aircraft operators, Security Service Provider, and CBP. Connections between flights are smoother.
NextGen Operational Improvements	Off-Airport Passenger and Baggage Processing	Remote processing locations (e.g., hotels, conference centers, modal transportation, Remote Terminal Security Service facilities) enable check-in, baggage check, and security screening at off-airport locations. Passengers and baggage would be transported to the airport via secure ground transportation for connections directly to the secure portions of the terminal. Passenger and baggage itinerary information is tracked using advanced technology to support synchronization, handling information, remote check-in, and security assurance. Baggage transfer services via third party vendors would be supported. Airports that have limited room to expand their terminal facilities would benefit and be able to support higher passenger volumes while maintaining an acceptable level of service. Roadway congestion to/from the airport would also be reduced.

3.3.6.25.3 NextGen Drivers

Type	Name	Description
Actor	Airline Operator	Organizations and people responsible for enabling passenger and baggage operations conducted within an airport. The airline operator checks in the passenger at the ticket counter and the gate.
Actor	Passenger	Any person(s) who travels by aircraft, but bears little or no responsibility for the tasks required for that vehicle to arrive at its destination.
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of “layers of defense” (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
BRM Sub-Function	Border and Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Self-Service	Defines the set of capabilities that allow an organization’s customers to sign up for a particular service at their own initiative.
SRM Service Component	Secure Baggage/ Cargo	Defines the set of capabilities that secure (e.g., screen assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).

3.3.6.25.4 NextGen Future Solutions

3.3.6.26 Screen Baggage (3.1.1.2.2)

3.3.6.26.1 Description

This activity is the screening of baggage for CBRNE and Weapons through multiple security levels in order to determine pass/fail; failed alert will be auto generated to notify Law Enforcement Officer (LEO) for additional security actions.

3.3.6.26.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Improved baggage screening	Security is improved by improved baggage screening for explosives and chemical, biological, radiological, and nuclear (CBRNE) threat materials intended to destroy or disable the aircraft that can be introduced into the baggage hold of an aircraft by placement in the passenger’s checked baggage. The improvement would provide not only for detection, but for decreased levels of false alarm, higher baggage throughput, and smaller, lighter, and hopefully, cheaper detection equipment. It would also provide for screening through the use of systems designed multi technology screening systems to clear alarms faster, and for alternative screening concepts for airports processing a lower volume of passengers.
NextGen Operational Improvements	Integrated Customs Border Protection (CBP) and Security Service Provider Functio	Through improved procedures and information flow, CBP processing is more efficient for arriving international passengers, enabling faster processing times while maintaining INS, Customs, and Security requirements. NEO supports transfer of passenger and baggage manifests between aircraft operators, Security Service Provider, and CBP. Connections between flights are smoother.
NextGen Operational Improvements	Off-Airport Passenger and Baggage Processing	Remote processing locations (e.g., hotels, conference centers, modal transportation, Remote Terminal Security Service facilities) enable check-in, baggage check, and security screening at off-airport locations. Passengers and baggage would be transported to the airport via secure ground transportation for connections directly to the secure portions of the terminal. Passenger and baggage itinerary information is tracked using advanced technology to support synchronization, handling information, remote check-in, and security assurance. Baggage transfer services via third party vendors would be supported. Airports that have limited room to expand their terminal facilities would benefit and be able to support higher passenger volumes while maintaining an acceptable level of service. Roadway congestion to/from the airport would also be reduced.
NextGen Operational Improvements	Reduce CBRNE threats from entering airport property	Mechanisms and procedures will be in place to identify, alert, mitigate or neutralize in order to intercept/ interdict the material threat of CBRNE prior to entering the airport property.

3.3.6.26.3 NextGen Drivers

Type	Name	Description
Actor	Security	This operational node includes all activities by Government organizations to protect people, airports, checked baggage, cargo, airspace, aircraft, and information from intentional harm or unauthorized use.
CONOPS	6.4.3 Service: Secure Checked Baggage	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of “layers of defense” (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.

Type	Name	Description
BRM Sub-Function	Border and Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Radiological	Defines the set of capabilities that support the use of radiation and x-ray technologies for analysis and scientific examination.
SRM Service Component	Secure Baggage/Cargo	Defines the set of capabilities that secure (e.g., screen assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).

3.3.6.26.4 NextGen Future Solutions

3.3.6.27 Sort Baggage (3.1.1.2.3)

3.3.6.27.1 Description

This activity receives the baggage after it is checked-in, sort the baggage into destination and connecting categories, and deliver the baggage to the aircraft.

3.3.6.27.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Subterranean Ground Support Infrastructure	Subterranean conveyance systems are used to facilitate ground support functions (e.g., baggage transfer and aircraft servicing), thus reducing the need for GSE and related ramp congestion and emissions. This OI will also support improved security at airports.

3.3.6.27.3 NextGen Drivers

Type	Name	Description
Actor	Airline Operator	Organizations and people responsible for enabling passenger and baggage operations conducted within an airport. The airline operator checks in the passenger at the ticket counter and the gate.
BRM Sub-Function	Border and Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Secure Baggage/ Cargo	Defines the set of capabilities that secure (e.g., screen assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).

3.3.6.27.4 NextGen Future Solutions

3.3.6.28 Flight Level Security Screening (3.1.2)

3.3.6.28.1 Description

This activity is the screening of flight threats based on the airport security alerts and flight threat level analysis to ensure the security of the flight.

Airport Operations A3

Landside Operations A3.1

Flight Level Security Screening A3.1.2

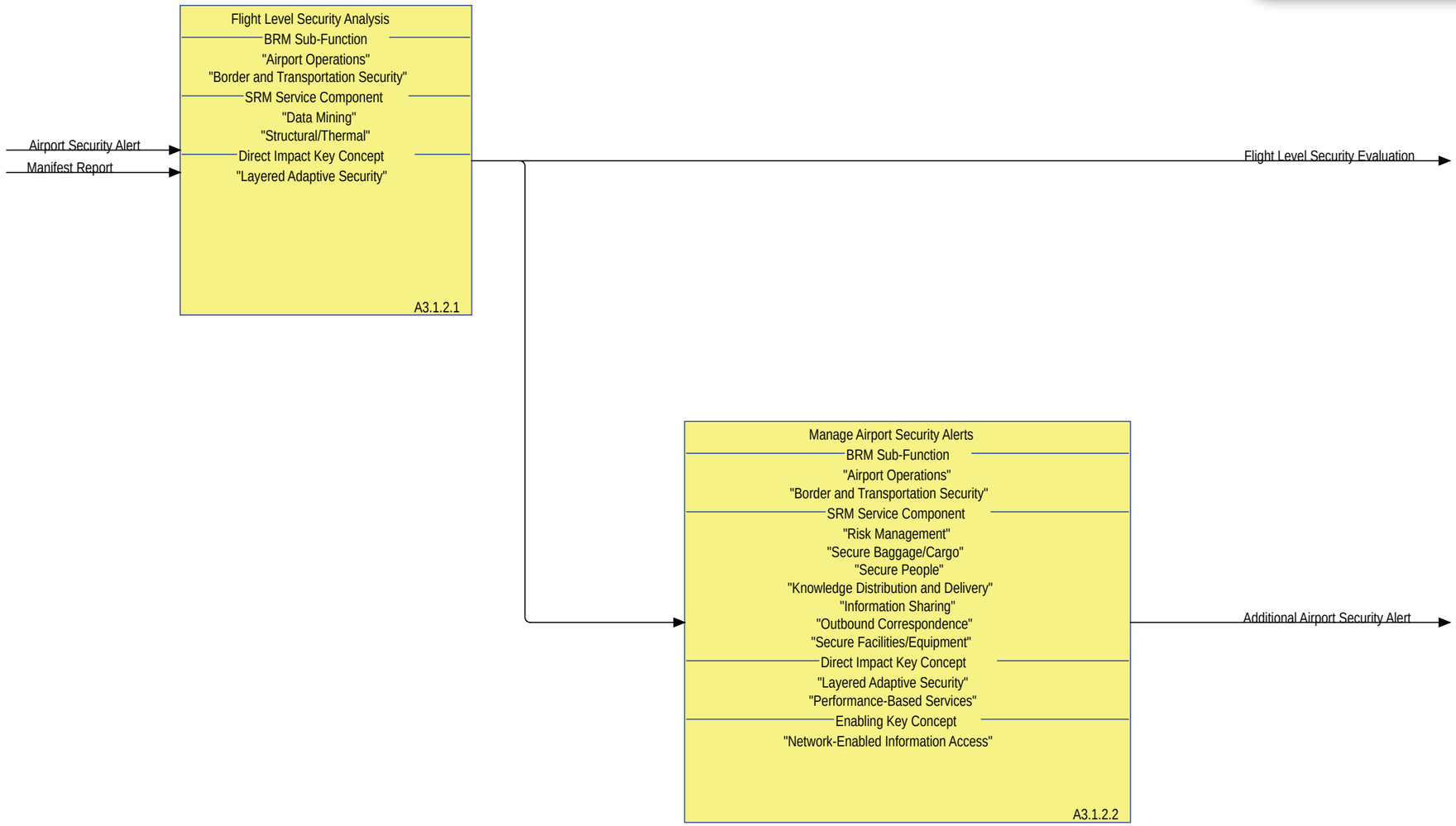


Figure 42 - 3.1.2 Flight Level Security Screening Activity Model Diagram

3.3.6.29 Flight Level Security Analysis (3.1.2.1)

3.3.6.29.1 Description

This activity analyzes the collective threat of all passengers to create a threat profile for the flight.

3.3.6.29.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Integrated high-risk flight management and risk mitigation	Flights are continually monitored and assessed risks. High risk flights are identified using an integrated risk assessment capability. Notifications are provided to the ANSP and the defense/security service providers to coordinate integrated response for risk mitigation facilitate by improved communications and information sharing.

3.3.6.29.3 NextGen Drivers

Type	Name	Description
Actor	Security and Defense Providers	Organizations and people responsible for national and homeland defense, homeland security, law enforcement, information security, and physical and operational security of the NEXTGEN
CONOPS	6 LAYERED, ADAPTIVE SECURITY SERVICES (ENTERPRISE OPERATIONS)	
CONOPS	6.4 SECURITY ENTERPRISE SERVICES AND CAPABILITIES	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of “layers of defense” (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
BRM Sub-Function	Border and Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Structural/ Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.
SRM Service Component	Data Mining	Defines the set of capabilities that provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.

3.3.6.29.4 NextGen Future Solutions

3.3.6.30 Manage Airport Security Alerts (3.1.2.2)

3.3.6.30.1 Description

This activity provides the process controls the use and distribution of the threat assessment data collected by the assess threat condition activity. This is the management of security alerts in the airport, for passenger, baggage, cargo, threat conditions, attacks, etc.

3.3.6.30.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Improved cargo and mail screening	Cargo/mail screening increases the security and the safety of the air transportation system by reducing the possibility of the introduction of threats to the air transportation system. Cargo/Mail received from an unknown shipper requires screening prior to entry and tracked throughout the air transportation secure system for chemical, biological, radiological, nuclear, and explosive (CBRNE) threat material.
NextGen Operational Improvements	Improved processing of cargo and mail transported via trusted shippers	Air cargo/mail transportation system process includes prevention, detection, and mitigation measures to reduce the likelihood of cargo and mail from being used as a threat endangering aircraft, aviation facilities, and people. The Trusted Shipper Program reduces the quantity of cargo/mail that requires screening prior to entering the air transportation system. This reduction in volume expedites the handling of cargo/mail, reduces shipping time, and increases the capacity of the air transportation system to move cargo/mail. Cargo/Mail is shipped through a Trusted Shipper Program including vetted cargo packers, a verified chain of custody, and tamper resistant/alerting technology to reduce the requirement to screen cargo before loaded on to an aircraft. Cargo shipped through the Trusted Shipper Program will not require further screening before entering the air transportation system.
NextGen Operational Improvements	Reduced threat from unauthorized persons in airport secure area	Mechanisms and procedures will be in place to identify, alert, mitigate or neutralize in order to intercept/ interdict the material threat of unauthorized persons prior to entering the airport property.

3.3.6.30.3 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
Actor	Security and Defense Providers	Organizations and people responsible for national and homeland defense, homeland security, law enforcement, information security, and physical and operational security of the NEXTGEN
CONOPS	6.1.1 NextGen Security Management and Collaborative Framework	
CONOPS	6.3 IRM ENTERPRISE OPERATIONS	
CONOPS	6.4 SECURITY ENTERPRISE SERVICES AND CAPABILITIES	

Type	Name	Description
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Border and Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Risk Management	Defines the set of capabilities the support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal; includes risk assessment and risk mitigation.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Secure People	Defines the set of capabilities that secure (e.g., screen, credential, identify, etc.) people in order to mitigate security risks to themselves or others.
SRM Service Component	Secure Baggage/ Cargo	Defines the set of capabilities that secure (e.g., screen assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.

Type	Name	Description
SRM Service Component	Secure Facilities/ Equipment	Defines the set of capabilities that secure facilities (e.g. buildings, airports, etc.) and equipment (e.g. aircraft, vehicles, hardware, etc.) to mitigate dynamically evolving security risks and threats (e.g., unauthorized access, hijacking/unauthorized diversion, internal/external attacks, etc.).

3.3.6.30.4 NextGen Future Solutions

3.3.6.31 Airside Operations (3.2)

3.3.6.31.1 Description

This activity is the operations of monitoring, managing , inspecting and reporting of airport operations.

3.3.6.31.2 Purpose

The purpose of Airside Operations is the movement of aircraft and GSE on the airport surface requires new logistics, management, and technology in order to enable the efficiencies required with NextGen.

Airport Operations A3

Airside Operations A3.2

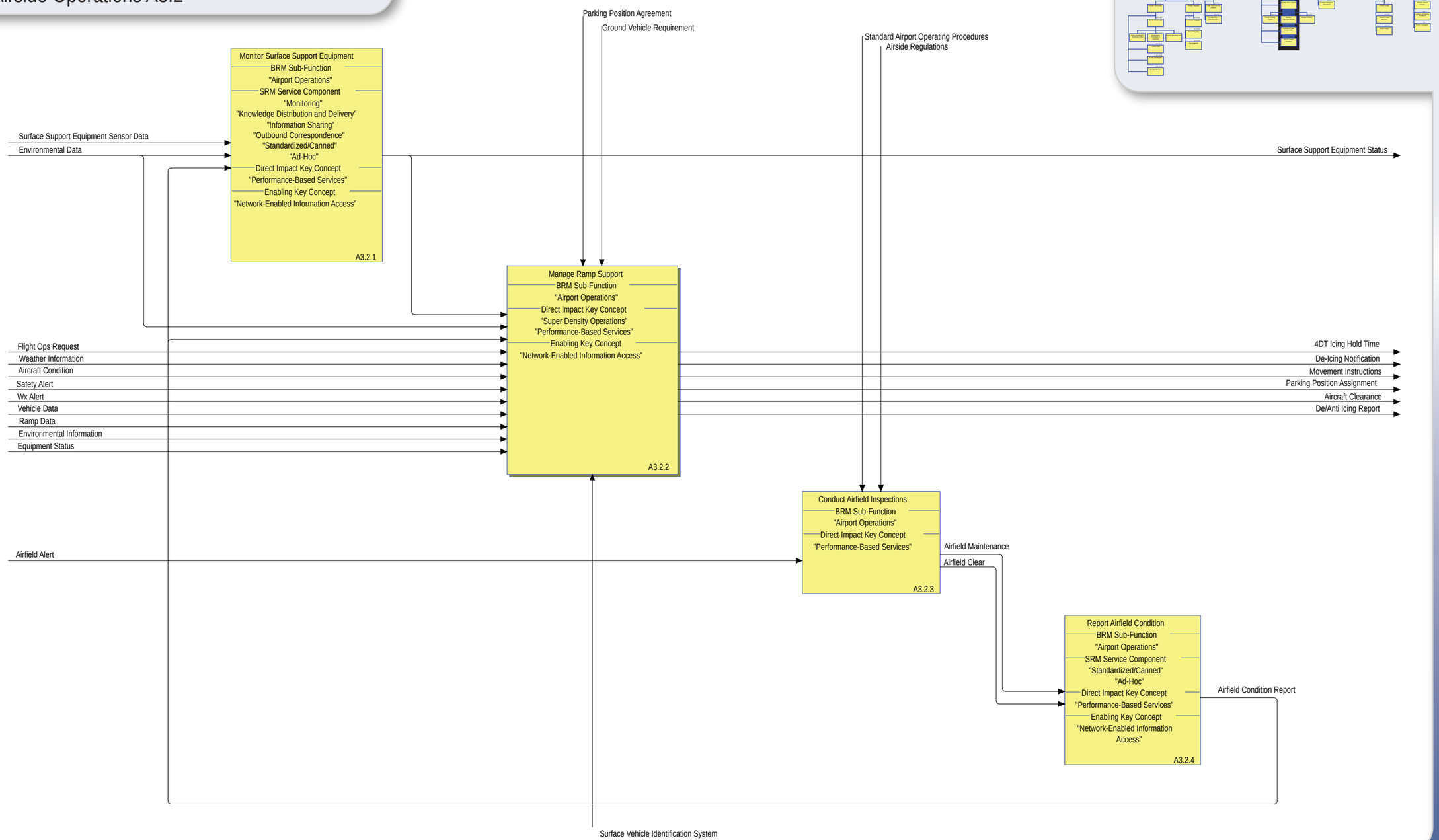


Figure 43 - 3.2 Airside Operations Activity Model Diagram

3.3.6.32 Monitor Surface Support Equipment (3.2.1)

3.3.6.32.1 Description

This activity provides the monitoring the real-time ground support equipment on the surface of the airport.

3.3.6.32.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Coordinated Ramp Operations Management	Surface movements of GSE are monitored and proactively managed, in real-time, to ensure the smooth, efficient, and safe flow of vehicular traffic. GSE has equipment to ensure accurate navigation during low-visibility conditions and to maintain clearance from active runway and taxiways. Congestion is reduced while safety and level of service are improved. Ramp operations management requirements for surveillance and communications that is compatible with those required for surface traffic management. Precise definition of ramp management vs surface management vs gate management is TBD. Waterfall deployment: a) OEP 2016 Start b) Top 100 2018 Start c) Other airports 2021 Start
NextGen Operational Improvements	Ground-based and on-board runway incursion alerting equipment.	This OI increases the safety of operations by reducing runway incursions. Operators of suitably equipped commercial, business, and general aviation aircraft receive runway incursion alerts from on-board detection systems and from complementary ground-based detection systems where implemented. Airborne equipage is not required to receive incursion alerts. This OI will require research and development of runway incursion alerting systems appropriate for business, general aviation, and commercial aircraft.
NextGen Operational Improvements	Improved tactical management of airport operations	Airport operators will be able to effectively manage routine and emergency operations through improved data and monitoring capabilities, as well as linkages to NEO and regional/national emergency response resources. This includes real-time push of airport condition information to users. Waterfall deployment: TBD
NextGen Operational Improvements	Surface Management Operations - Level 2A	Efficiency of surface traffic movement is increased through the use of automation, on-board displays and data link of departure taxi instructions prior to pushback to properly equipped aircraft to reduce delay, environmental impacts and operational errors. Automation optimizes surface throughput and data links taxi instructions to aircraft. The taxi instructions include the 2D route. Pilot uses onboard displays of taxi route and guidance to efficiently and safely follow taxi instructions. Surface optimization automation includes activities such as runway snow removal, aircraft de-icing, and runway reconfiguration.
NextGen Operational Improvements	Surface Management Operations - Level 3	Aircraft and ground vehicle movement on airports in low visibility conditions is guided by moving map displays, CDTI, ADS-B (for flight vehicles), and a GSE Cooperative Surveillance System (for ground support equipment). Safety and efficiency of operations at some airports will also be enhanced by intelligent signage on the ground. Policy issue: Will this equipage be mandatory for access to some high-density airports during peak traffic times in low-visibility conditions, or will equipped aircraft be given priority access in low-visibility conditions but unequipped aircraft will be accommodated, or is this equipage simply optional. Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) some airports (Segment 2) b) OEP airports (Segment 3) c) top 100 airports (Segment 4) d) all commercial airports (Segment 6)

3.3.6.32.3 NextGen Drivers

Type	Name	Description
CONOPS	3.3.1 Airside Operations	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Standardized/ Canned	Defines the set of capabilities that support the use of preconceived or pre-written reports.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.
SRM Service Component	Ad-Hoc	Defines the set of capabilities that support the use of dynamic reports on an as needed basis.

3.3.6.32.4 NextGen Future Solutions

3.3.6.33 Manage Ramp Support (3.2.2)

3.3.6.33.1 Description

This activity will manage all the activities associated with push-back of flights that are ready for departure and transition of these departure flights to the movement area, and acceptance of arrival flights from the movement area and the assignment of the parking positions.

3.3.6.33.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Coordinated Ramp Operations Management	Surface movements of GSE are monitored and proactively managed, in real-time, to ensure the smooth, efficient, and safe flow of vehicular traffic. GSE has equipment to ensure accurate navigation during low-visibility conditions and to maintain clearance from active runway and taxiways. Congestion is reduced while safety and level of service are improved. Ramp operations management requirements for surveillance and communications that is compatible with those required for surface traffic management. Precise definition of ramp management vs surface management vs gate management is TBD. Waterfall deployment: a) OEP 2016 Start b) Top 100 2018 Start c) Other airports 2021 Start
NextGen Operational Improvements	Performance-based terminal operations	Performance-based navigation operations are used on terminal area arrival and departure routes to increase utilization of high-density terminal area airspace. Less noisy and fuel-optimal routes, including CDAs, are used where and when feasible, and environmental constraints are met through routing decisions and dispersion of traffic over multiple RNP routes. Waterfall deployment: a) to/from some runways at OEP airports (2009), b) to/from all runway ends at all OEP airports (2011), c) to/from all runways at the top 100 airports (Segment 5), d) to/from all runways serving commercial traffic (Segment 6).
NAS Operational Improvements	Full Surface Traffic Management with Conformance Monitoring	Improved surveillance tools for airport surface traffic management provide the air navigation service provider (ANSP), equipped aircraft, and airport operators the capability to predict, plan, and manage surface movements. Equipped vehicles provide surface traffic information in real-time to all parties of interest. A comprehensive view of aggregate traffic flows enables ANSP traffic management to project demand, balance runway assignments, and facilitate more efficient arrival and departure flows. Automation monitors surface operations conformance and updates the estimated departure clearance times to renegotiate the 4DT.
NAS Operational Improvements	Provide Surface Situation to Pilots and Service Providers	Automated broadcast of aircraft and vehicle position to ground sensors/receivers provides a digital display of the airport environment. Aircraft and vehicles are identified and tracked to provide a full comprehensive picture of the surface environment to the air navigation service provider (ANSP) and equipped aircraft.
NAS Operational Improvements	Provide Surface Situation to Pilots, Service Providers and Vehicle Operators for	Aircraft and surface vehicle positions are displayed to air navigation service providers (ANSP) and equipped aircraft and vehicles. This capability increases situational awareness in restricted visibility conditions and provides more efficient surface movement.
NAS Operational Improvements	Staffed Virtual Towers	Begin reducing the total number of service delivery points (SDPs) and simultaneously increase service at non-towered and satellite airports by incorporating SVT capabilities into distant ATM facilities, and eventually new GSDP facilities. Remote virtual tower capabilities enable ATM services to be provided for operations into and out of airports without physically constructing, equipping, and/or sustaining tower facilities at these airports, hence controlling increases in life cycle costs to sustain, expand, and improve services in response to steadily increasing demand. Out the window visual observations employed at co located tower facilities are replaced by emerging technology applications that enable equivalent information to be acquired, processed, communicated, and displayed at remote locations for use by ANSPs with the aid of decision support tools.

3.3.6.33.3 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
ICAO ATMCP Requirement	R 21	A facility and/or procedure shall be provided, as required, to monitor or manage aircraft operation safely and expeditiously, within the confines of the aerodrome and its immediate surroundings
ICAO ATMCP Requirement	R 25	The system shall be able to precisely determine the position and intent of all aircraft and vehicles manoeuvring on the ground
ICAO ATMCP Requirement	R 29	At those aerodromes where benefit can be demonstrated, the ATM System shall be designed so that the ratio of IMC to VMC throughput converges to 1.0.
CONOPS	3.3.1 Airside Operations	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
Key Concept	Super-Density Arrival/Departure Operations	With increasing demand, an even greater need exists to achieve peak throughput performance at the busiest airports and in the busiest airspace. New procedures to improve airport surface movements, reduce spacing and separation requirements in place today, and better manage overall flows in and out of busy metropolitan airspace provide maximum use of the highest-demand airports. Airport terminals also maximize efficiency of egress and ingress, matching passenger and cargo flow to airside throughput while maintaining safety and security levels.

Type	Name	Description
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.

3.3.6.33.4 NextGen Future Solutions

3.3.6.34 Conduct Airfield Inspections (3.2.3)

3.3.6.34.1 Description

This activity consists of inspecting the airfield to identify aberrant conditions, determine the severity of the conditions, request maintenance if necessary, and report an “airfield clear” when conditions warrant.

3.3.6.34.2 JPDO Support Alignment

3.3.6.34.3 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
CONOPS	3.5.2.4 Congestion Management	
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users’ existing equipage, thus potentially maximizing the value of the service providers’ and users’ investments.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.

3.3.6.34.4 NextGen Future Solutions

3.3.6.35 Report Airfield Condition (3.2.4)

3.3.6.35.1 Description

This activity provides a detailed airfield condition report.

3.3.6.35.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	All-weather capability for Airside Facilities	Airside facilities are open during all weather conditions. Technology, systems, and procedures support airport operators in more effectively keeping airside facilities open and fully functional during all conditions. This includes the proactive scheduling of maintenance and weather-response activities (such as clearing runways of snow and ice). Delays and congestion that result from winter weather and non-nominal airfield conditions are reduced. Waterfall deployment: a) OEP 2016 Start b) Top 100 2018 Start c) Other airports 2021 start
NextGen Operational Improvements	Improved tactical management of airport operations	Airport operators will be able to effectively manage routine and emergency operations through improved data and monitoring capabilities, as well as linkages to NEO and regional/national emergency response resources. This includes real-time push of airport condition information to users. Waterfall deployment: TBD

3.3.6.35.3 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
CONOPS	3.5.2.4 Congestion Management	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users’ existing equipage, thus potentially maximizing the value of the service providers’ and users’ investments.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.

Type	Name	Description
SRM Service Component	Standardized/ Canned	Defines the set of capabilities that support the use of preconceived or pre-written reports.
SRM Service Component	Ad-Hoc	Defines the set of capabilities that support the use of dynamic reports on an as needed basis.

3.3.6.35.4 NextGen Future Solutions

3.3.6.36 Manage Ramp Support (3.2.2)

3.3.6.36.1 Description

This activity will manage all the activities associated with push-back of flights that are ready for departure and transition of these departure flights to the movement area, and acceptance of arrival flights from the movement area and the assignment of the parking positions.

Airport Operations A3

Airside Operations A3.2

Manage Ramp Support A3.2.2

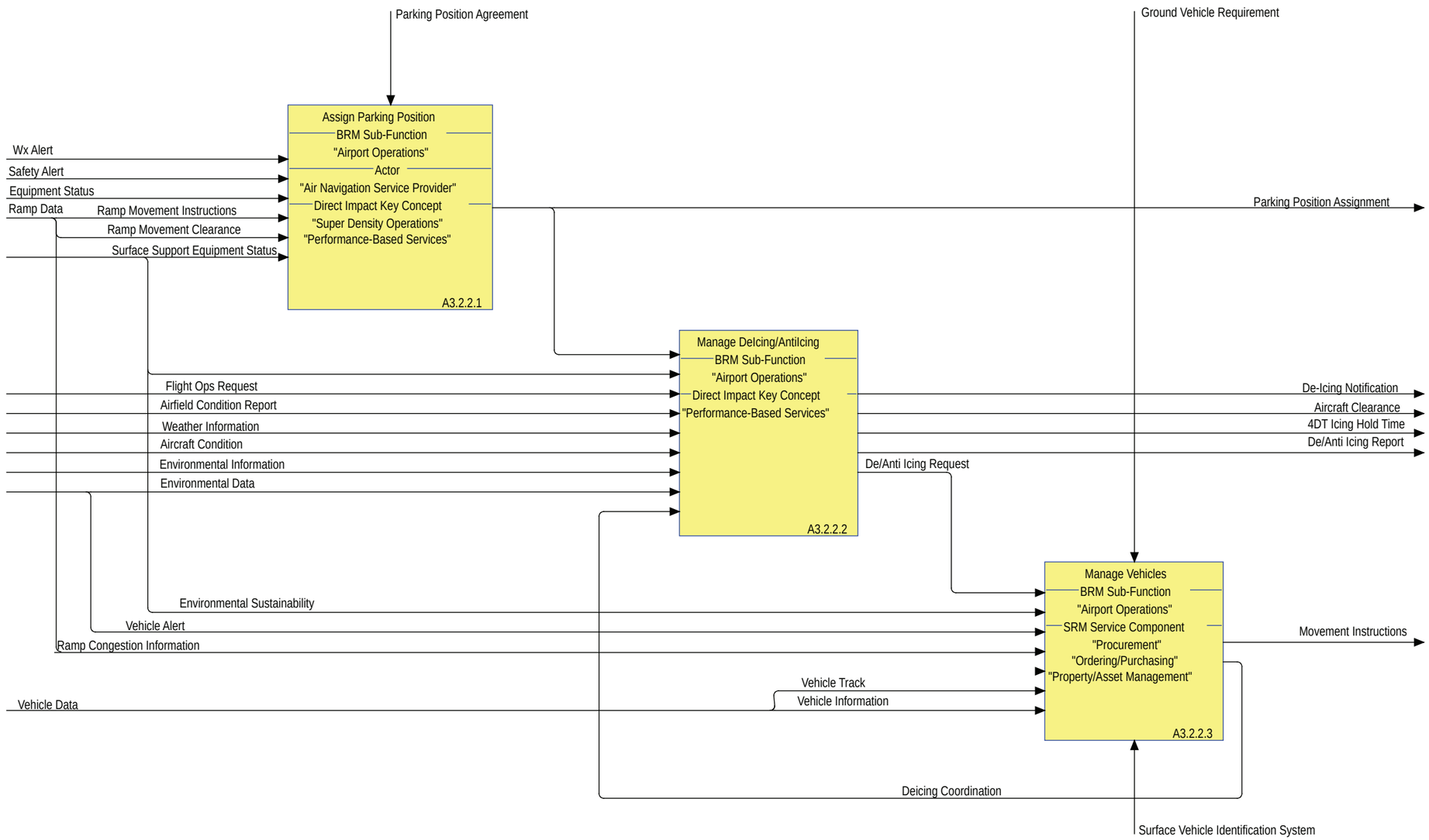


Figure 44 - 3.2.2 Manage Ramp Support Activity Model Diagram

3.3.6.37 Assign Parking Position (3.2.2.1)

3.3.6.37.1 Description

This activity will assign the arriving aircraft a parking position at the airport.

3.3.6.37.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Coordinated Ramp Operations Management	Surface movements of GSE are monitored and proactively managed, in real-time, to ensure the smooth, efficient, and safe flow of vehicular traffic. GSE has equipment to ensure accurate navigation during low-visibility conditions and to maintain clearance from active runway and taxiways. Congestion is reduced while safety and level of service are improved. Ramp operations management requirements for surveillance and communications that is compatible with those required for surface traffic management. Precise definition of ramp management vs surface management vs gate management is TBD. Waterfall deployment: a) OEP 2016 Start b) Top 100 2018 Start c) Other airports 2021 Start
NAS Operational Improvements	Use Data Messaging to Provide Flow and Taxi Assignments	Surface traffic management incorporates flow and taxi instructions into data messages and delivers them to the flight deck. At high-density airports clearances and amendments, requests, NAS status, airport flows, weather information, and surface movement instructions are issued via data communications.

3.3.6.37.3 NextGen Drivers

Type	Name	Description
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
Key Concept	Super-Density Arrival/Departure Operations	With increasing demand, an even greater need exists to achieve peak throughput performance at the busiest airports and in the busiest airspace. New procedures to improve airport surface movements, reduce spacing and separation requirements in place today, and better manage overall flows in and out of busy metropolitan airspace provide maximum use of the highest-demand airports. Airport terminals also maximize efficiency of egress and ingress, matching passenger and cargo flow to airside throughput while maintaining safety and security levels.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.

3.3.6.37.4 NextGen Future Solutions

3.3.6.38 Manage DeIcing/AntiIcing (3.2.2.2)

3.3.6.38.1 Description

This activity manages the de and anti icing operations on the aircraft and at the airport.

3.3.6.38.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Advanced deicing, aniticing and snow removal operations	During winter weather, aircraft are anti-iced/deiced more efficiently. Icing holdover times are incorporated into 4DT in order to facilitate departure queuing. Deicing/anti-icing fluids are more effective with less environmental impact. Collection methods capture spent fluids for recycling.
NextGen Operational Improvements	All-weather capability for Airside Facilities	Airside facilities are open during all weather conditions. Technology, systems, and procedures support airport operators in more effectively keeping airside facilities open and fully functional during all conditions. This includes the proactive scheduling of maintenance and weather-response activities (such as clearing runways of snow and ice). Delays and congestion that result from winter weather and non-nominal airfield conditions are reduced. Waterfall deployment: a) OEP 2016 Start b) Top 100 2018 Start c) Other airports 2021 start

3.3.6.38.3 NextGen Drivers

Type	Name	Description
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.

3.3.6.38.4 NextGen Future Solutions

3.3.6.39 Manage Vehicles (3.2.2.3)

3.3.6.39.1 Description

This activity is the acquisition, maintenance , operation, and monitoring of airport vehicles.

3.3.6.39.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Coordinated Ramp Operations Management	Surface movements of GSE are monitored and proactively managed, in real-time, to ensure the smooth, efficient, and safe flow of vehicular traffic. GSE has equipment to ensure accurate navigation during low-visibility conditions and to maintain clearance from active runway and taxiways. Congestion is reduced while safety and level of service are improved. Ramp operations management requirements for surveillance and communications that is compatible with those required for surface traffic management. Precise definition of ramp management vs surface management vs gate management is TBD. Waterfall deployment: a) OEP 2016 Start b) Top 100 2018 Start c) Other airports 2021 Start

3.3.6.39.3 NextGen Drivers

Type	Name	Description
ICAO ATMCP Requirement	R 25	The system shall be able to precisely determine the position and intent of all aircraft and vehicles manoeuvring on the ground
ICAO ATMCP Requirement	R 46	The ATM system shall be able to accommodate all types of vehicles and associated characteristics
CONOPS	3.3.1 Airside Operations	
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Ordering/ Purchasing	Defines the set of capabilities that allow the placement of request for a product.
SRM Service Component	Procurement	Defines the set of capabilities that support the ordering and purchasing of products and services.
SRM Service Component	Property/Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.

3.3.6.39.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Surface Vehicle Identification System	The Surface Vehicle Identification System (SVIS) is a ground vehicle Automatic Dependent Surveillance-Broadcast (ADS-B) system, which uses augmented Global Navigation Satellite System (GNSS) data to determine its current position. The SVIS broadcasts the vehicle position and discrete identification code for use by the airport surface Automatic Dependent Surveillance (ADS) system.

3.3.6.40 Airport Emergency Response (3.3)

3.3.6.40.1 Description

Airport Emergency Response is the continuous monitoring and management of routine and emergency airport operations. Issues include: fire, incursion, accident, or other incident.

3.3.6.40.2 Purpose

The purpose of Airport Emergency Response is to provide a clear picture of the incident, enabling the airport operations center to accurately and efficiently manage and support the response.

Airport Operations A3

Airport Emergency Response A3.3

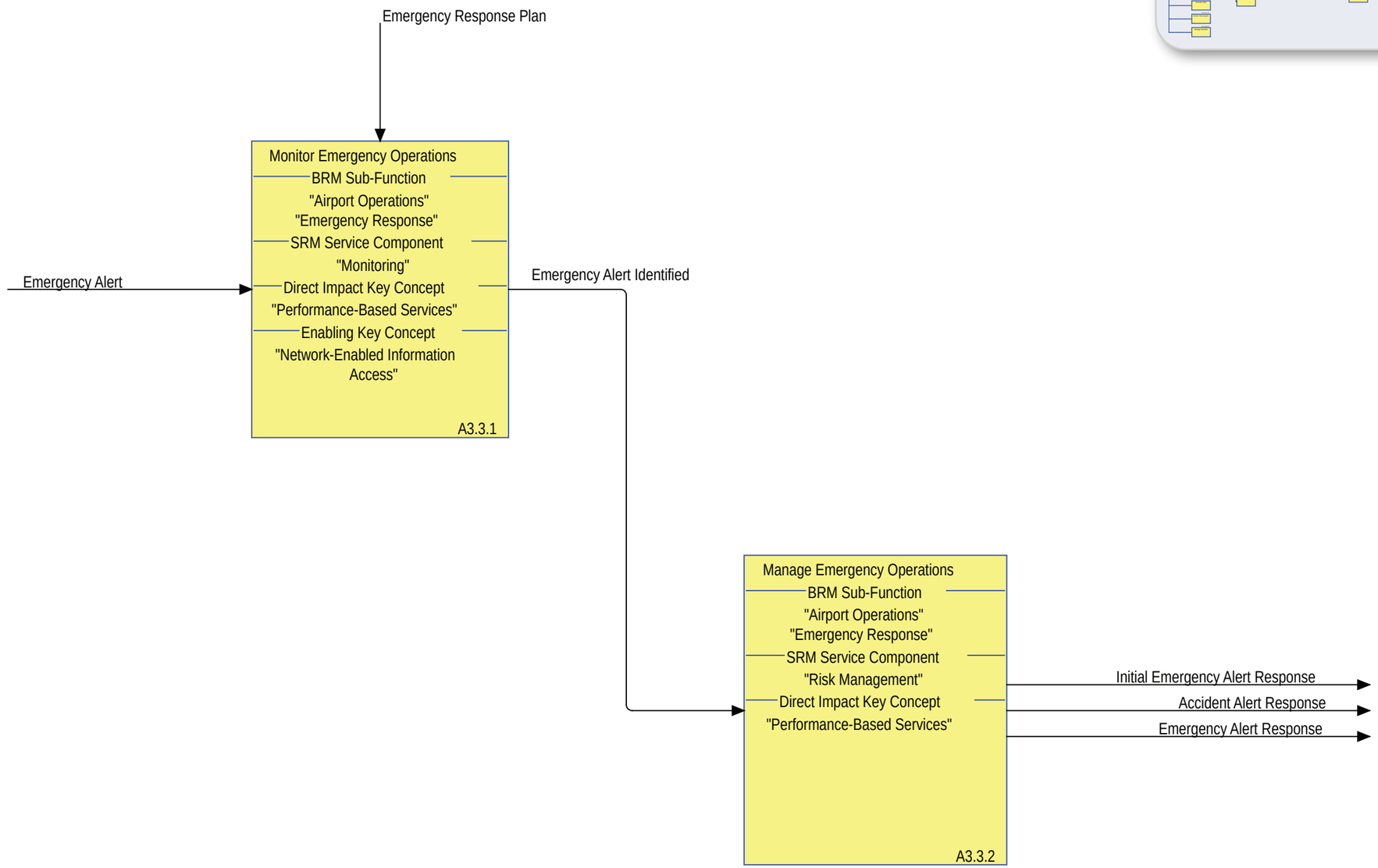


Figure 45 - 3.3 Airport Emergency Response Activity Model Diagram

3.3.6.41 Monitor Emergency Operations (3.3.1)

3.3.6.41.1 Description

This activity is the continuous monitoring of routine and emergency airport operations.

3.3.6.41.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Common and synchronized airport emergency and disaster response	Acceptance of a standard approach to responding to catastrophic emergency/disaster for airports to enable seamless integration of regional and national response resources when needed (Policy).
NextGen Operational Improvements	Improved tactical management of airport operations	Airport operators will be able to effectively manage routine and emergency operations through improved data and monitoring capabilities, as well as linkages to NEO and regional/national emergency response resources. This includes real-time push of airport condition information to users. Waterfall deployment: TBD

3.3.6.41.3 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
CONOPS	3.3.1 Airside Operations	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Emergency Response	Emergency Response involves the immediate actions taken to respond to a disaster. These actions include, but are not limited to, providing mobile telecommunications, operational support, power generation, search and rescue, and medical life-saving actions.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.

3.3.6.41.4 NextGen Future Solutions

3.3.6.42 Manage Emergency Operations (3.3.2)

3.3.6.42.1 Description

This activity is the management of routine and emergency airport operations.

3.3.6.42.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Common and synchronized airport emergency and disaster response	Acceptance of a standard approach to responding to catastrophic emergency/disaster for airports to enable seamless integration of regional and national response resources when needed (Policy).
NextGen Operational Improvements	Improved tactical management of airport operations	Airport operators will be able to effectively manage routine and emergency operations through improved data and monitoring capabilities, as well as linkages to NEO and regional/national emergency response resources. This includes real-time push of airport condition information to users. Waterfall deployment: TBD

3.3.6.42.3 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Emergency Response	Emergency Response involves the immediate actions taken to respond to a disaster. These actions include, but are not limited to, providing mobile telecommunications, operational support, power generation, search and rescue, and medical life-saving actions.

Type	Name	Description
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Risk Management	Defines the set of capabilities the support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal; includes risk assessment and risk mitigation.

3.3.6.42.4 NextGen Future Solutions

3.3.6.43 Manage Auxiliary Operations (3.4)

3.3.6.43.1 Description

This activity is the operations of the fuel and waste operations at the airport. Auxiliary operations also includes the utilities at the airport.

3.3.6.43.2 Purpose

The purpose of Auxiliary Operations is to detect and prevent anomalies such as waste or hazmat spills. The NextGen fuel supply can also be an alternative type of fuel to align with the environmental constraints for the future.

Airport Operations A3

Manage Auxiliary Operations A3.4

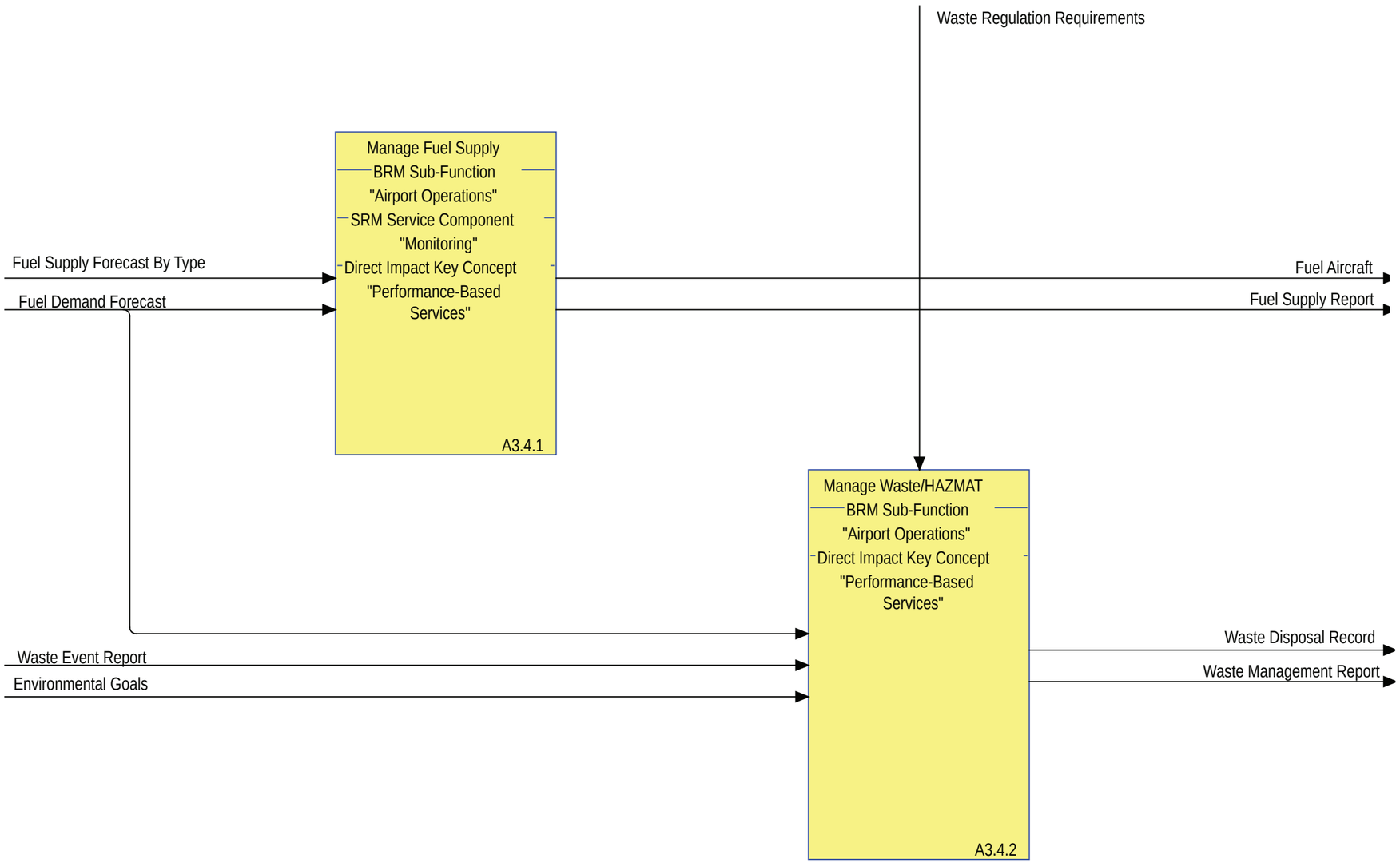


Figure 46 - 3.4 Manage Auxiliary Operations Activity Model Diagram

3.3.6.44 Manage Fuel Supply (3.4.1)

3.3.6.44.1 Description

This activity manages the fuel supply at the airport. The fuel supply at the airport has to monitor the amount of fuel to determine if there will be a shortage. The fuel supply can also be an alternative type of fuel to align with the environmental constraints for the future.

3.3.6.44.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Use of environmental management processes integrated across aviation community	This OI involves the use of the EMS framework to address, plan and mitigate environmental issues (see OI 6013)

3.3.6.44.3 NextGen Drivers

Type	Name	Description
CONOPS	6 LAYERED, ADAPTIVE SECURITY SERVICES (ENTERPRISE OPERATIONS)	
CONOPS	6.4 SECURITY ENTERPRISE SERVICES AND CAPABILITIES	
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.

3.3.6.44.4 NextGen Future Solutions

3.3.6.45 Manage Waste/HAZMAT (3.4.2)

3.3.6.45.1 Description

This activity manages the waste and hazmat incidents at the airport. Waste includes trash, aircraft waste, storm water.

3.3.6.45.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Use of environmental management processes integrated across aviation community	This OI involves the use of the EMS framework to address, plan and mitigate environmental issues (see OI 6013)

3.3.6.45.3 NextGen Drivers

Type	Name	Description
CONOPS	6.1.1 NextGen Security Management and Collaborative Framework	
CONOPS	6.3 IRM ENTERPRISE OPERATIONS	
CONOPS	6.4 SECURITY ENTERPRISE SERVICES AND CAPABILITIES	
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.

3.3.6.45.4 NextGen Future Solutions

3.3.6.46 Cargo Management (3.5)

3.3.6.46.1 Description

This acitivity is the operations of processing, screening, and risk management of cargo management.

3.3.6.46.2 Purpose

The purpose of Cargo Management is to manage the cargo operations, including the screening of the shipment and manifest list to ensure the cargo is secure for shipping.

Airport Operations A3

Cargo Management A3.5

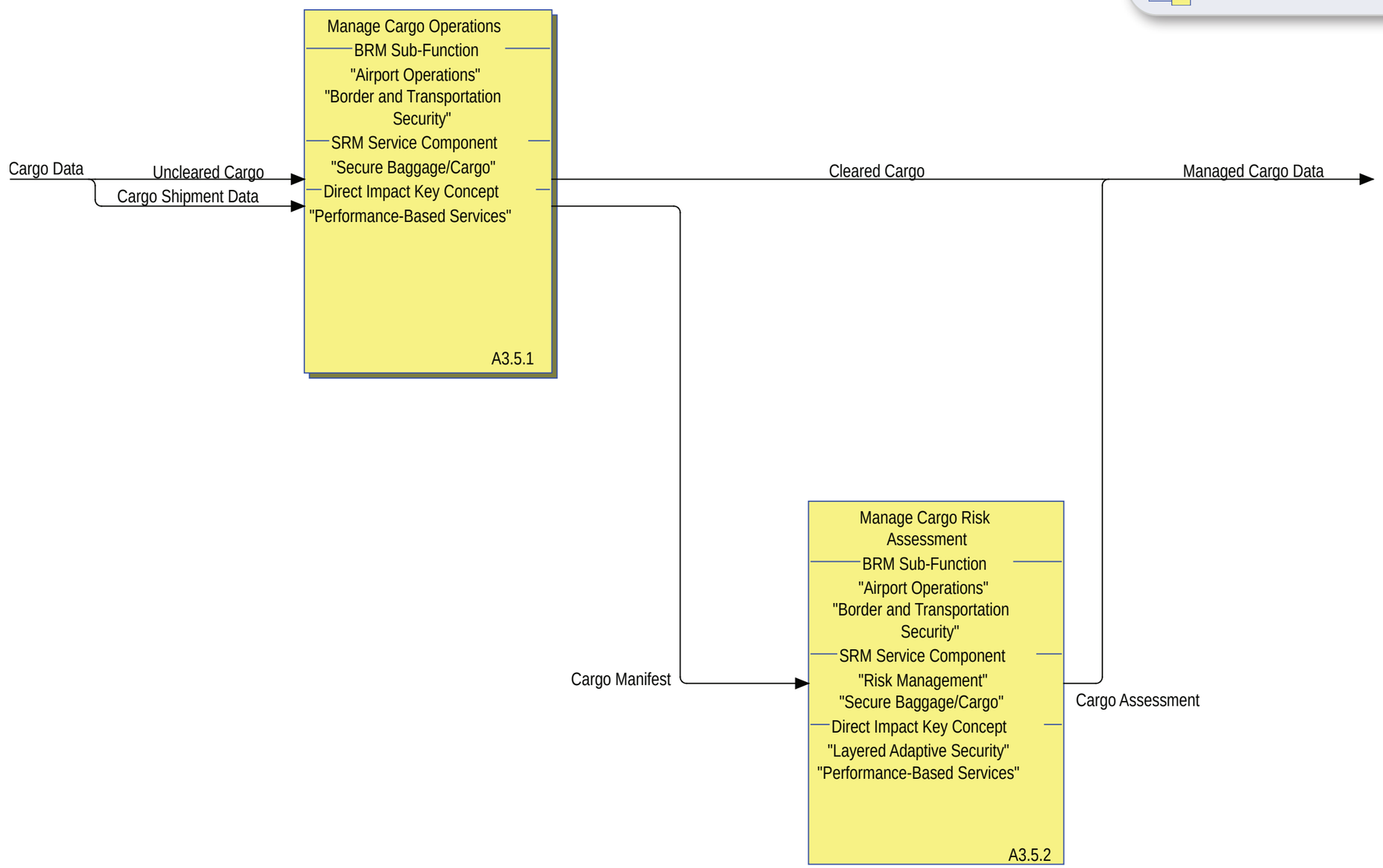


Figure 47 - 3.5 Cargo Management Activity Model Diagram

3.3.6.47 Manage Cargo Operations (3.5.1)

3.3.6.47.1 Description

This activity provides the handling of in-bound and out-bound cargo. This activity includes cargo categorization before boarding/ loading on aircraft, and managing the cargo manifests prior to departure.

3.3.6.47.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Improved cargo and mail screening	Cargo/mail screening increases the security and the safety of the air transportation system by reducing the possibility of the introduction of threats to the air transportation system. Cargo/Mail received from an unknown shipper requires screening prior to entry and tracked throughout the air transportation secure system for chemical, biological, radiological, nuclear, and explosive (CBRNE) threat material.
NextGen Operational Improvements	Improved processing of cargo and mail transported via trusted shippers	Air cargo/mail transportation system process includes prevention, detection, and mitigation measures to reduce the likelihood of cargo and mail from being used as a threat endangering aircraft, aviation facilities, and people. The Trusted Shipper Program reduces the quantity of cargo/mail that requires screening prior to entering the air transportation system. This reduction in volume expedites the handling of cargo/mail, reduces shipping time, and increases the capacity of the air transportation system to move cargo/mail. Cargo/Mail is shipped through a Trusted Shipper Program including vetted cargo packers, a verified chain of custody, and tamper resistant/alerting technology to reduce the requirement to screen cargo before loaded on to an aircraft. Cargo shipped through the Trusted Shipper Program will not require further screening before entering the air transportation system.
NextGen Operational Improvements	Reduced impact of potential cargo and mail threats	Threat containment and mitigation increases the safety and security of the air transportation system. Cargo/Mail is placed in blast/threat containment/mitigation systems prior to placement on aircraft to reduce the impact to the air transportation system of undetected chemical biological, radiological, nuclear, and explosive (CBRNE) threats.

3.3.6.47.3 NextGen Drivers

Type	Name	Description
Actor	Security	This operational node includes all activities by Government organizations to protect people, airports, checked baggage, cargo, airspace, aircraft, and information from intentional harm or unauthorized use.
Actor	Shipper	A person who ships cargo
CONOPS	6.4.4 Service: Secure Cargo/ Mail	
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Border and Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Secure Baggage/ Cargo	Defines the set of capabilities that secure (e.g., screen assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).

3.3.6.47.4 NextGen Future Solutions

3.3.6.48 Manage Cargo Risk Assessment (3.5.2)

3.3.6.48.1 Description

This activity provides the assessment of risks throughout the shipping chain from source to exit. The shipping chain includes cargo source, containerization, freight consolidation/forwarding, cargo/mail screening locations and airport transport to destination.

3.3.6.48.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Improved cargo and mail screening	Cargo/mail screening increases the security and the safety of the air transportation system by reducing the possibility of the introduction of threats to the air transportation system. Cargo/Mail received from an unknown shipper requires screening prior to entry and tracked throughout the air transportation secure system for chemical, biological, radiological, nuclear, and explosive (CBRNE) threat material.
NextGen Operational Improvements	Improved processing of cargo and mail transported via trusted shippers	Air cargo/mail transportation system process includes prevention, detection, and mitigation measures to reduce the likelihood of cargo and mail from being used as a threat endangering aircraft, aviation facilities, and people. The Trusted Shipper Program reduces the quantity of cargo/mail that requires screening prior to entering the air transportation system. This reduction in volume expedites the handling of cargo/mail, reduces shipping time, and increases the capacity of the air transportation system to move cargo/mail. Cargo/Mail is shipped through a Trusted Shipper Program including vetted cargo packers, a verified chain of custody, and tamper resistant/alerting technology to reduce the requirement to screen cargo before loaded on to an aircraft. Cargo shipped through the Trusted Shipper Program will not require further screening before entering the air transportation system.
NextGen Operational Improvements	Integrated risk-based planning and management of security resources	Security resources are planned, and managed using an integrated, adaptive, and responsive risk management capability that supports risk-informed decisions among security mission partners. This capability harmonizes short and long term resource allocation and investments among partners to gain the highest possible security return on investment and to reduce the overall cost of security operations.
NextGen Operational Improvements	Reduced impact of potential cargo and mail threats	Threat containment and mitigation increases the safety and security of the air transportation system. Cargo/Mail is placed in blast/threat containment/mitigation systems prior to placement on aircraft to reduce the impact to the air transportation system of undetected chemical biological, radiological, nuclear, and explosive (CBRNE) threats.

3.3.6.48.3 NextGen Drivers

Type	Name	Description
Actor	Security	This operational node includes all activities by Government organizations to protect people, airports, checked baggage, cargo, airspace, aircraft, and information from intentional harm or unauthorized use.

Type	Name	Description
CONOPS	6.4.4 Service: Secure Cargo/ Mail	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Border and Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Risk Management	Defines the set of capabilities the support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal; includes risk assessment and risk mitigation.
SRM Service Component	Secure Baggage/ Cargo	Defines the set of capabilities that secure (e.g., screen assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).

3.3.6.48.4 NextGen Future Solutions

3.3.6.49 Manage Cargo Operations (3.5.1)

3.3.6.49.1 Description

This activity provides the handling of in-bound and out-bound cargo. This activity includes cargo categorization before boarding/ loading on aircraft, and managing the cargo manifests prior to departure.

Airport Operations A3

Cargo Management A3.5

Manage Cargo Operations A3.5.1

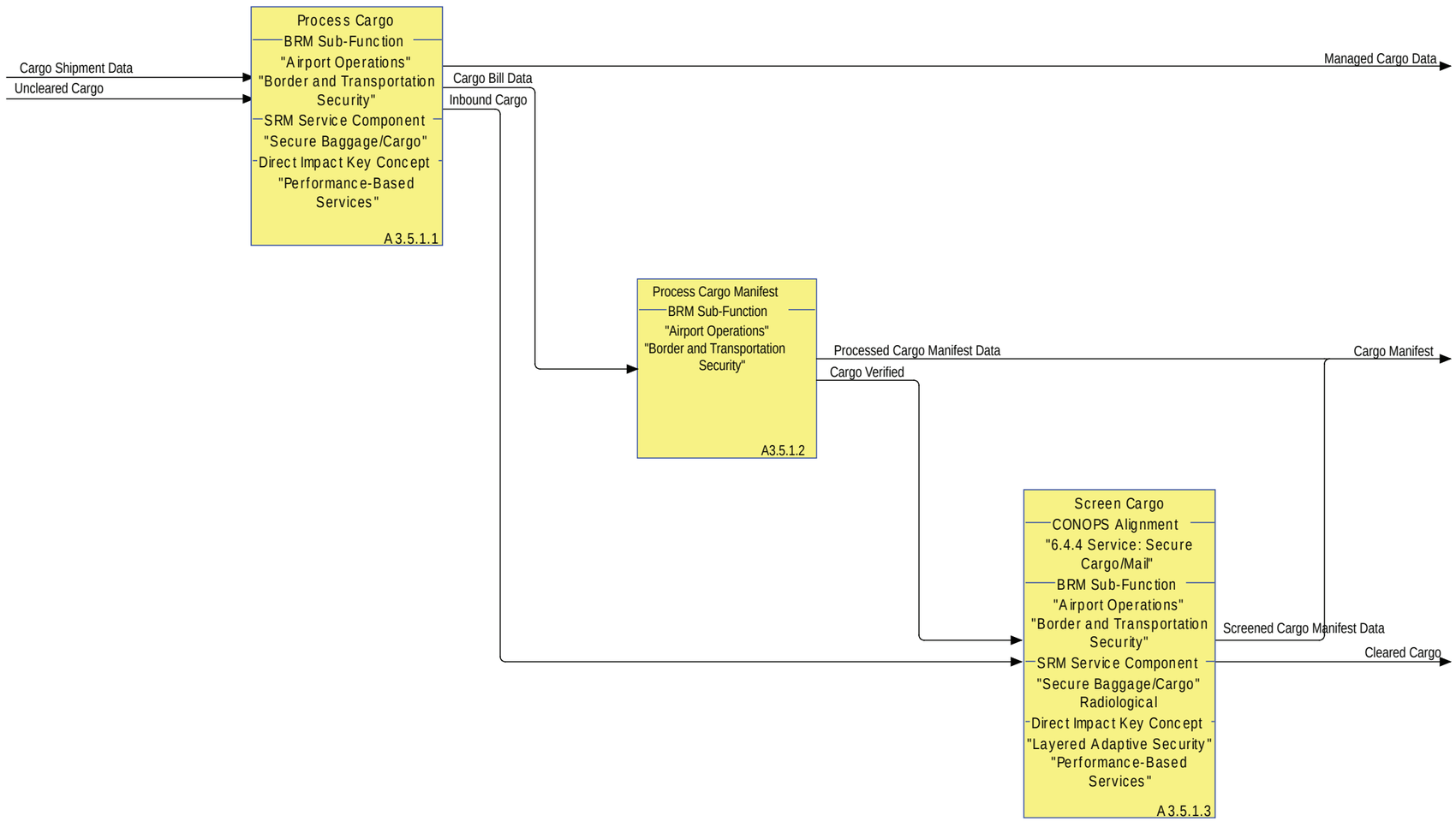


Figure 48 - 3.5.1 Manage Cargo Operations Activity Model Diagram

3.3.6.50 Process Cargo (3.5.1.1)

3.3.6.50.1 Description

This activity will the unload the cargo and deliver the cargo to another flight or distribution point at the airport for inbound cargo and includes receiving packages, sorting the packages, assembling of cargo containers, and loading of cargo onto aircraft for outbound cargo.

3.3.6.50.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Improved cargo and mail screening	Cargo/mail screening increases the security and the safety of the air transportation system by reducing the possibility of the introduction of threats to the air transportation system. Cargo/Mail received from an unknown shipper requires screening prior to entry and tracked throughout the air transportation secure system for chemical, biological, radiological, nuclear, and explosive (CBRNE) threat material.
NextGen Operational Improvements	Reduced impact of potential cargo and mail threats	Threat containment and mitigation increases the safety and security of the air transportation system. Cargo/Mail is placed in blast/threat containment/mitigation systems prior to placement on aircraft to reduce the impact to the air transportation system of undetected chemical biological, radiological, nuclear, and explosive (CBRNE) threats.

3.3.6.50.3 NextGen Drivers

Type	Name	Description
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Border and Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Secure Baggage/ Cargo	Defines the set of capabilities that secure (e.g., screen assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).

3.3.6.50.4 NextGen Future Solutions

3.3.6.51 Process Cargo Manifest (3.5.1.2)

3.3.6.51.1 Description

This activity is the review, verification, and modification of the Cargo Manifest.

3.3.6.51.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Reduced impact of potential cargo and mail threats	Threat containment and mitigation increases the safety and security of the air transportation system. Cargo/Mail is placed in blast/threat containment/mitigation systems prior to placement on aircraft to reduce the impact to the air transportation system of undetected chemical biological, radiological, nuclear, and explosive (CBRNE) threats.

3.3.6.51.3 NextGen Drivers

Type	Name	Description
BRM Sub-Function	Border and Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.

3.3.6.51.4 NextGen Future Solutions

3.3.6.52 Screen Cargo (3.5.1.3)

3.3.6.52.1 Description

This activity is the screening of cargo for CBRNE and Weapons through multiple security levels in order to determine pass/fail; failed alert will be auto generated to notify Law Enforcement Officer (LEO) for additional security actions.

3.3.6.52.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Improved cargo and mail screening	Cargo/mail screening increases the security and the safety of the air transportation system by reducing the possibility of the introduction of threats to the air transportation system. Cargo/Mail received from an unknown shipper requires screening prior to entry and tracked throughout the air transportation secure system for chemical, biological, radiological, nuclear, and explosive (CBRNE) threat material.
NextGen Operational Improvements	Improved processing of cargo and mail transported via trusted shippers	Air cargo/mail transportation system process includes prevention, detection, and mitigation measures to reduce the likelihood of cargo and mail from being used as a threat endangering aircraft, aviation facilities, and people. The Trusted Shipper Program reduces the quantity of cargo/mail that requires screening prior to entering the air transportation system. This reduction in volume expedites the handling of cargo/mail, reduces shipping time, and increases the capacity of the air transportation system to move cargo/mail. Cargo/Mail is shipped through a Trusted Shipper Program including vetted cargo packers, a verified chain of custody, and tamper resistant/alerting technology to reduce the requirement to screen cargo before loaded on to an aircraft. Cargo shipped through the Trusted Shipper Program will not require further screening before entering the air transportation system.
NextGen Operational Improvements	Reduce CBRNE threats from entering airport property	Mechanisms and procedures will be in place to identify, alert, mitigate or neutralize in order to intercept/ interdict the material threat of CBRNE prior to entering the airport property.

3.3.6.52.3 NextGen Drivers

Type	Name	Description
CONOPS	6.4.4 Service: Secure Cargo/ Mail	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Border and Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Radiological	Defines the set of capabilities that support the use of radiation and x-ray technologies for analysis and scientific examination.
SRM Service Component	Secure Baggage/ Cargo	Defines the set of capabilities that secure (e.g., screen assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).

3.3.6.52.4 NextGen Future Solutions

3.3.6.53 Congestion Management (3.6)

3.3.6.53.1 Description

Congestion management provides a program for airports to manage short-term situations where demand exceeds the available capacity of the airport infrastructure.

3.3.6.53.2 Purpose

The purpose of congestion management is to provide a combination of regulatory and market-based mechanisms could be used to balance the competing needs of aircraft operators seeking airport access, for airports to provide a reasonable level of service, and for the ANSP to accurately predict the impact of local congestion on the NAS and mitigate the ripple effects throughout the NAS

Airport Operations A3

Congestion Management A3.6

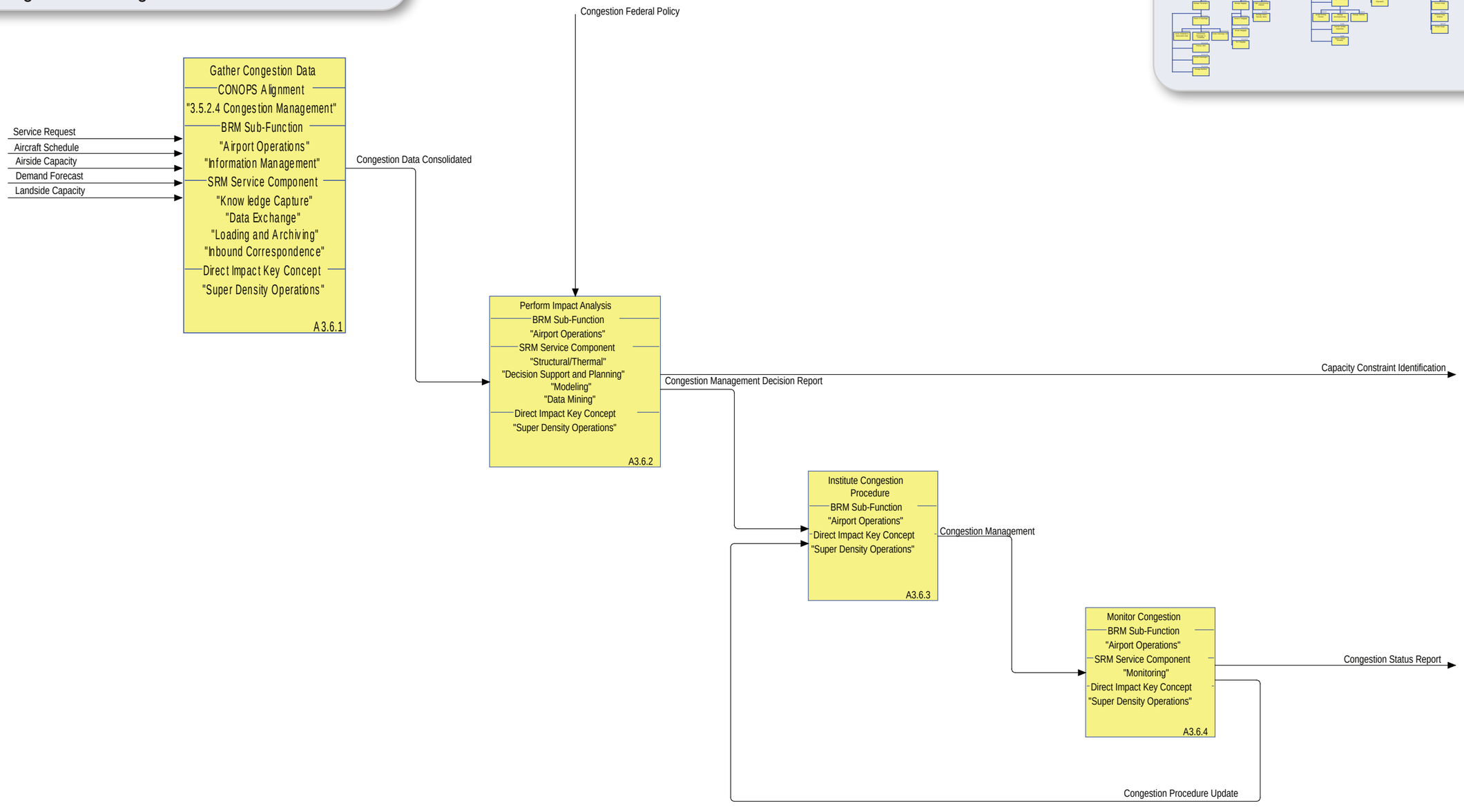


Figure 49 - 3.6 Congestion Management Activity Model Diagram

3.3.6.54 Gather Congestion Data (3.6.1)

3.3.6.54.1 Description

This activity is gathering information to assess if the airport is providing a reasonable level of service to the aircraft operators (i.e. airport access) and to accurately predict the impact of the local congestion on the NAS.

3.3.6.54.2 JPDO Support Alignment

3.3.6.54.3 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
Actor	System	An automation system
CONOPS	3.5.2.4 Congestion Management	
BRM Sub-Function	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Inbound Correspondence	

3.3.6.54.4 NextGen Future Solutions

3.3.6.55 Perform Impact Analysis (3.6.2)

3.3.6.55.1 Description

This activity will take the gathered data and analyze the predicted impact of local congestion on the NAS.

3.3.6.55.2 JPDO Support Alignment

3.3.6.55.3 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
ICAO ATMCP Requirement	R 21	A facility and/or procedure shall be provided, as required, to monitor or manage aircraft operation safely and expeditiously, within the confines of the aerodrome and its immediate surroundings
ICAO ATMCP Requirement	R 25	The system shall be able to precisely determine the position and intent of all aircraft and vehicles manoeuvring on the ground
ICAO ATMCP Requirement	R 29	At those aerodromes where benefit can be demonstrated, the ATM System shall be designed so that the ratio of IMC to VMC throughput converges to 1.0.
CONOPS	5.7 FLOW STRATEGY AND TRAJECTORY IMPACT ANALYSIS SERVICES	
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Structural/Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.
SRM Service Component	Data Mining	Defines the set of capabilities that provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.
SRM Service Component	Modeling	Defines the set of capabilities that develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.
SRM Service Component	Decision Support and Planning	Defines the set of capabilities that support the analysis of information and predict the impact of decisions before they are made.

3.3.6.55.4 NextGen Future Solutions

3.3.6.56 Institute Congestion Procedure (3.6.3)

3.3.6.56.1 Description

This activity institutes the congestion procedure at the airport. Not all airports have a congestion procedure to initiate.

3.3.6.56.2 JPDO Support Alignment

3.3.6.56.3 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.

3.3.6.56.4 NextGen Future Solutions

3.3.6.57 Monitor Congestion (3.6.4)

3.3.6.57.1 Description

This activity is the continuous monitoring airport congestion in order to access impact to the NAS and implement procedures for short-term congestion situations.

3.3.6.57.2 JPDO Support Alignment

3.3.6.57.3 NextGen Drivers

Type	Name	Description
Actor	Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations conducted within an airport with consideration for safety, efficiency, resource limitations, and local environmental issues
CONOPS	3.5.2.4 Congestion Management	
BRM Sub-Function	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.

3.3.6.57.4 NextGen Future Solutions

3.4 Air Navigation Support (4)

3.4.1 Description

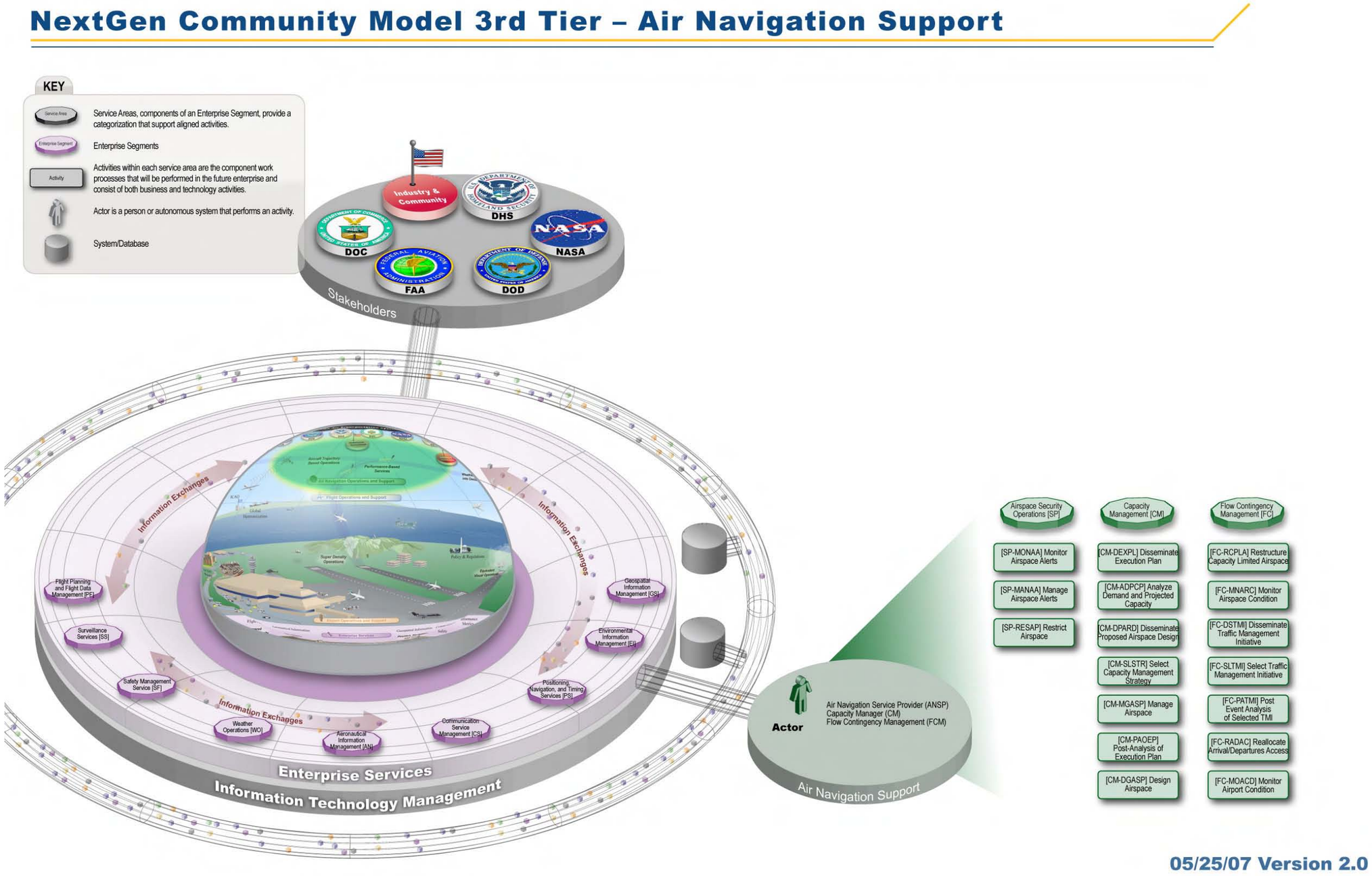
The Air Navigation Support Enterprise Segment provides the operational context that describes the short and long term planning activities needed to assure safe, secure, and efficient access to national airspace by all users within terminal and cruise airspace. The Airport Navigation Support Enterprise Segment further couples the relevant activities necessary to establish the criteria for designing structured airspace to support safety of flight and efficient flow of traffic. The design criteria includes the guidelines for establishing classes of airspace, designation of volumes of airspace for the provision of separation (sectors, special use, etc.), waypoints, published routes etc. The design criteria also include identification of those structures, which require rule-making, publication, environmental evaluations; additionally, information on the ability to support the design process objectives to increase capacity to meet demand, performance criteria for evaluating the efficiency of the design, infrastructure coverage criteria and constraints.

3.4.2 Purpose

The purpose of the Air Navigation Support segment is to identify and group specific service areas that are related to air navigation in the NextGen. These service areas; Airspace Security Operations, Capacity Management, and Flow Contingency management address key capabilities and operational improvement that must be achieved to enable NextGen. These three service areas are further decomposed into specific operational activities that define that service area and provides the foundation for the NextGen EA to further develop detailed architecture products that show trace ability to the NextGen CONOPS and stakeholders investments (material/non-material).

3.4.3 3nd Tier Community Model

Figure 50: Air Navigation Support 3rd tier Community Model



3.4.4 Enterprise Segment Activity Inventory - Air Navigation Support

Figure 51: Air Navigation Support ESAI

Air Navigation Support

Flow Contingency Management [FC]	Capacity Management [CM]	Airspace Security Operations [SP]
[FC-MOACD] Monitor Airport Condition Actors: FM Priority: Low Criticality: Low Systems: 0 ICAO: 1 BRM SRM TRM PRM DRM	**[CM-DGASP] Design Airspace** Actors: CM Priority: High Criticality: Medium Systems: 4 ICAO: 2 BRM SRM TRM PRM DRM	**[SP-RESAP] Restrict Airspace** Actors: AN,SC Priority: Low Criticality: Low Systems: 0 ICAO: 1 BRM SRM TRM PRM DRM
[FC-RADAC] Reallocate Arrival /Departures Access Actors: FM Priority: Low Criticality: Low Systems: 0 ICAO: 3 BRM SRM TRM PRM DRM	**[CM-MGASP] Manage Airspace** Actors: CM Priority: High Criticality: Medium Systems: 4 ICAO: 1 BRM SRM TRM PRM DRM	**[SP-MANAA] Manage Airspace Alerts** Actors: AN,SC Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM
[FC-PATMI] Post-event analysis of selected TMI Actors: FM Priority: Low Criticality: Low Systems: 0 ICAO: 2 BRM SRM TRM PRM DRM	**[CM-PAOEP] Post-analysis of Execution Plan** Actors: CM Priority: Low Criticality: Low Systems: 0 ICAO: 1 BRM SRM TRM PRM DRM	**[SP-MONAA] Monitor Airspace Alerts** Actors: AN,SC Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM
[FC-SLTMI] Select Traffic Management Initiative Actors: FM Priority: Low Criticality: Low Systems: 0 ICAO: 1 BRM SRM TRM PRM DRM	**[CM-SLSTR] Select Capacity Management Strategy** Actors: CM Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	
[FC-DSTMI] Disseminate Traffic Management Initiative Actors: FM Priority: Low Criticality: Low Systems: 0 ICAO: 2 BRM SRM TRM PRM DRM	**[CM-DPARD] Disseminate Proposed Airspace Design** Actors: CM Priority: Low Criticality: Low Systems: 0 ICAO: 2 BRM SRM TRM PRM DRM	
[FC-MNARC] Monitor Airspace Condition Actors: FM Priority: Low Criticality: Low Systems: 0 ICAO: 1 BRM SRM TRM PRM DRM	**[CM-DEXPL] Disseminate Execution Plan** Actors: CM Priority: Low Criticality: Low Systems: 0 ICAO: 2 BRM SRM TRM PRM DRM	
[FC-RCPLA] Restructure Capacity Limited Airspace Actors: FM Priority: Low Criticality: Low Systems: 0 ICAO: 1 BRM SRM TRM PRM DRM	**[CM-ADPCP] Analyze demand and projected capacity** Actors: CM Priority: Medium Criticality: Low Systems: 1 ICAO: 8 BRM SRM TRM PRM DRM	

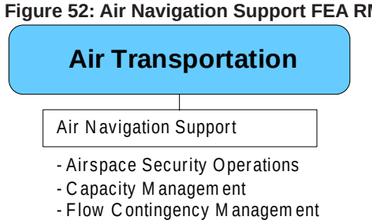
3.4.4.1 Air Navigation Support ESAI Actor Table

Actor Code	Actor Name	Actor Description
AN	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
CM	Capacity Manager	The long-term and short-term management and assignment of NAS airspace and routes to meet expected demand. This includes assigning related NAS assets as well as coordinating longer term staffing plans for airspace assignments. It includes the allocation of airspace to airspace classifications based on demand, as well as the allocation of airspace and routes to ANSP personnel to manage workload
FC	Flow Contingency Manager	The process that identifies potential flow problems, such as large demand capacity imbalances, congestion, high degrees of complexity, blocked or constrained airspace, or other off-nominal conditions. It is a collaborative process between ANSP personnel and airspace users to develop flow strategies to resolve the flow problems. Examples of flow strategies include establishing routing to reduce complexity, restructuring airspace, and allocating access to airspace or runways.
FO	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight schedule, flight planner, and flight crew, and may reside with one individual or be relegated among separate individuals
SC	Security	This operational node includes all activities by Government organizations to protect people, airports, checked baggage, cargo, airspace, aircraft, and information from intentional harm or unauthorized use.
SM	Separation Manager	The function of ensuring aircraft or vehicles maintain safe separation minima from other aircraft or vehicles, protected airspace, terrain, weather, or other hazards. The function may be performed by ANSP personnel, the flight operator, and/or automation.
TM	Trajectory Management	The function of fine-tuning trajectories as required by the airspace plan or an active flow contingency management initiative to minimize pairwise contention and ensure efficient individual trajectories within a flow

3.4.5 Air Navigation Support FEA RM

The Air Navigation Support Segment provides the short and long-term planning aspect for ensuring the safe, secure, and efficient access to the airspace. As depicted in figure 13, this segment is primarily categorized under the Air Transportation Line of Business. It describes the activities associated with the prevention and countering of external attacks on aircraft and other airborne vehicles, the planning and design of the airspace, and the monitoring of current airspace conditions to reallocate if necessary. The following table further describes the Air Navigation Support Segment and identifies how each activity aligns to the other architectural layers of the NextGen EA Reference Architecture.

Figure 52: Air Navigation Support FEA RM



3.4.6 Air Navigation Support DoDAF products

List of Activity Models

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NextGen EA

Air Navigation Support A4

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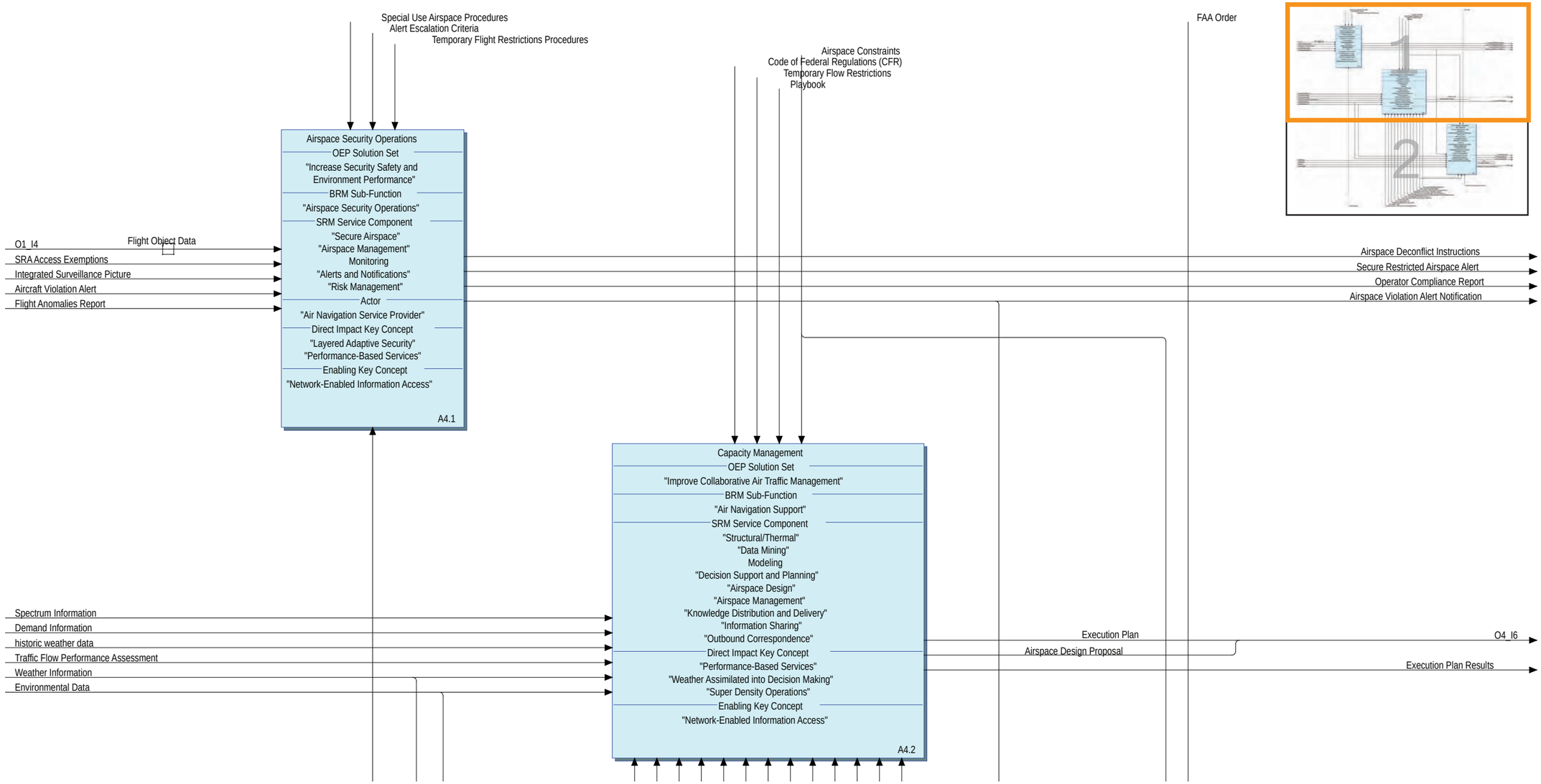

Figure 53 - 4 Air Navigation Support Activity Model Diagram

NextGen EA

Air Navigation Support A4

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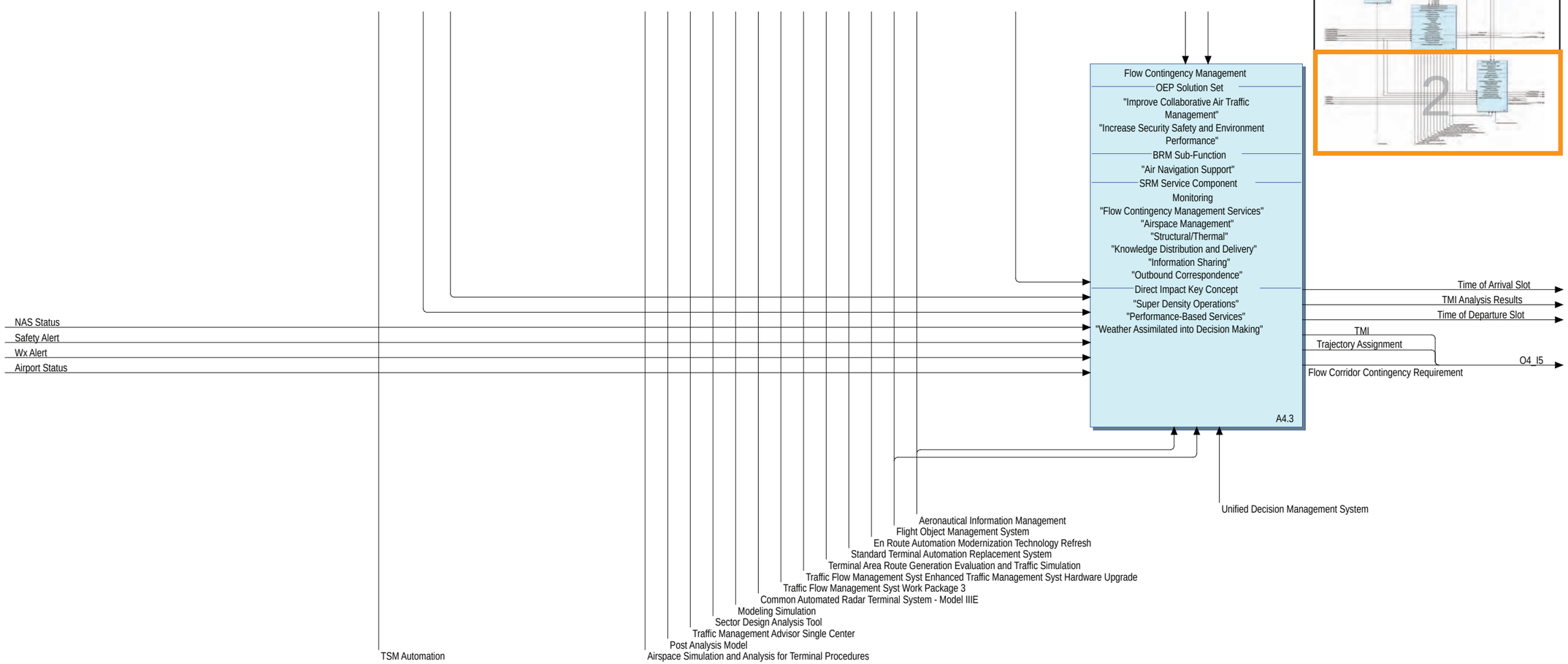


Type	Name	Description
SRM Service Component	Risk Management	Defines the set of capabilities the support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal; includes risk assessment and risk mitigation.
SRM Service Component	Secure Airspace	Defines the set of capabilities that secure the air domain by preventing or countering external attacks on aircraft and other airborne vehicles in the National Airspace System or the use of aircraft as a weapon to attack assets and people on the ground.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.
SRM Service Component	Airspace Management	Defines the set of capabilities by which airspace options are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.

3.4.6.1.5 NextGen Future Solutions

3.4.6.2 Capacity Management (4.2)

3.4.6.2.1 Description

This activity provides the process that could begin years before a flight is in operation, up to and including the day of operation. It includes both the long-term and short-term management and assignment of NAS airspace and trajectories to meet expected demand. Significant structural changes to airspace (e.g., to accommodate a planned runway or analyze the effect of a proposed runway) are planned years in advance. Airspace is structured at the beginning of each day to meet preplanned demand and forecasted conditions. It is dynamically reconfigured during the day to meet flow requirements, reduce delays, increase resource efficiency, and accommodates disruptions (such as pop-up convection) and outages.

3.4.6.2.2 Purpose

The purpose of Capacity Management is to allocate NAS resources to meet overall system goals based on user plans, including the designation of trajectory-based airspace and the determination of procedures required for access to airspace. CM responds to an aggregation of airspace users' expected or desired trajectories, infrastructure, geographic, and environmental constraints, and it provides airspace assignments and dynamic structured routings to manage the resulting short term expected demand.

3.4.6.2.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Collaborative Air Traffic Management	Collaborative ATM covers the both the strategic and tactical interactions with the customers to manage demand when the desired use of capacity can not be accommodated. C-ATM includes the flow programs as well as collaboration on procedures that will establish balance by shifting demand to less desirable capacity alternatives e.g. routings, altitudes, times.
NextGen Operational Improvements	Dynamic airspace reclassification	Airspace is dynamically configured to meet flow requirements and minimize impacts of adverse weather with real-time information access to users, preflight and airborne. Security restrictions such as SUAs and temporary flight restrictions (see OI 4501) are factored into the dynamic reconfiguration process. Examples: changing the designation of airspace from "Classic" to "TBO" for a particular time period. This may be a routine scheduled change or it may be dynamically made in response to forecast demand. This OI affects flight planning, and may affect aircraft already airborne.
NextGen Operational Improvements	Flexible resource allocation for airspace management Level 1 - Limited dynamic e	This OI provides limited dynamic reconfiguration of en route airspace to better match personnel and facilities to forecast demand flows. There are a number of pre-defined configurations that are tailored to typical flow patterns and weather (e.g., arrival/departure routes, airspace boundaries). These configurations are stored in automation adaptations and can be easily selected (either as planned configuration changes or they can be selected to meet unanticipated situations). Roles/Responsibilities: Assume this is transparent to pilots, except for the assignment of different arrival/departure routes, which is done as clearance amendments. When a planned change will affect access (e.g., due to increased performance requirements), this will need to be communicated to operators. Separation managers and trajectory managers will need to be able to adjust to a finer set of changes than is done today with sector splits/recombines. [Note-this corresponds to FAA's Flexible Airspace Management OI]
NextGen Operational Improvements	Flexible resource allocation for airspace management Level 2 - Combine facilitie	Optimal en route and terminal airspace allocation to combined ANSP facilities provides ANSP cost reduction and productivity improvement. En-route and terminal airspace is combined and optimized to be served out of ground service delivery facilities. This OI increases agility to match ANSP services to meet demand by supporting the allocation of assets (e.g., personnel, adjustment of airspace structures, or designation of performance-based services) to appropriately create the required capacity to meet anticipated demand. ANSPs are better able to communicate and collaborate on the effects of procedures for flights transiting across areas managed by different ANSP entities. Delivery of services is no longer tied directly to the geographic location of the flight operator or the aircraft; instead ANSP personnel have the ability to acquire needed information and communicate with flight operators independent of their facility location. Operationally, this is transparent to flight operators. This OI also reduces the static assignment of airspace. Benefits: productivity and cost savings. This OI requires one set of research and development tasks, but multiple implementation sequences to implement. This OI also requires a major policy decision. Waterfall deployment: a) targeted terminal areas b) terminal and en route (2023)
NextGen Operational Improvements	Flexible resource allocation for airspace management Level 3 - Limited Dynamic a	There are a number of pre-defined configurations for arrival/departure airspace (including arrival/departure routes, airspace boundaries, etc) that are tailored to typical flow patterns and weather events. These configurations are stored in automation adaptations and can be easily selected (either as planned configuration changes or they can be selected to meet unanticipated situations). Benefit: Individual flights are less affected by resource availability. Roles/Responsibilities: Assume this is transparent to pilots, except for the assignment of different arrival/departure routes, which is done as clearance amendments. When a planned change will affect access (e.g., due to increased performance requirements), this will have to be communicated to affected flights. Separation managers and trajectory managers will need to be able to adjust to a finer set of changes than is done today with sector splits/recombines. For flight planning, known changes to configuration are available to flight planners.
NextGen Operational Improvements	Added oceanic entry-exit points	This OI increases flight efficiency and productivity in the transition from oceanic/en route phase of flight to the domestic/en route and offshore/descent phases of flight by collaboration to provide additional entry/exit points for oceanic tracks. Flexible entry/exit to/from oceanic tracks will allow the aircraft to fly minimum time/fuel path from gate to gate and not just within the oceanic track system. Multiple entry/exit points also relieve congestion at established gateways. This will be accomplished as an expansion of ATOP Ocean 21, taking full advantage of and validating the use of ATOP's enhanced 4DT profiling, monitor-by-exception, data communications and conflict prediction capabilities.
NextGen Operational Improvements	Flexible resource allocation for airspace management Level 4 - Dynamic Enroute	Dynamic reconfiguration of en route airspace to better match personnel and facilities to forecast demand flows. En route airspace is dynamically reconfigured, allocating personnel, establishing airspace structures where necessary to handle high traffic flow demand, and designating performance-based services to appropriately create the required capacity to meet anticipated demand within anticipated constraints, such as weather. This OI is supported by automation incorporating probabilistic weather information.
NextGen Operational Improvements	Flexible resource allocation for airspace management Level 5 - Dynamic arrival/d	Dynamic reconfiguration of arrival/departure airspace enables better allocation of capacity to meet demand. Automation has algorithms that can generate highly-efficient airspace configurations to better match resources with forecast conditions (demand, weather, etc). This OI assumes this is operationally transparent to pilots when it occurs. However, when a planned change will affect access (e.g., due to increased performance requirements), there will be a need to address advising affected aircraft.

Type	Name	Description
NextGen Operational Improvements	Flexible routing	Equipped aircraft are not restricted to pre-defined routes except when trajectory management or separation management ANSP deem the congestion level to warrant more structure. The ANSP uses ground-based decision support tools (e.g., conflict probe) to maintain separation of aircraft flying on flexible routes. All airspace is available to support RNAV operations. Structure is never imposed unless needed for congestion relief. This supports the ability for operators to fly wherever they want; operators can file any route any way they want except where demand requires that structure be imposed.
NextGen Operational Improvements	General aviation direct routing	This OI results in increased access to busy airspace, such as Class B, for general aviation operators. More direct routing for general aviation is facilitated through improved access to traverse busy terminal area airspace. Typically, GA operators have to fly "around" busy airspace, with associated penalties in efficiency. With this OI a GA flight is more likely to transit through busy airspace when the desired flight path crosses that airspace. Major benefits are access and efficiency. This OI primarily affects arrival/ departure airspace and en route airspace. Roles/Responsibilities: Based on the initial planned solution (static corridors), there are no changes in roles/responsibilities.
NextGen Operational Improvements	High density dynamic flow corridors	High density en route dynamic flow corridors accommodate separation-capable aircraft traveling on similar wind-efficient routes or through airspace restricted by convective weather cells, SUA, or overall congestion. Dynamic high density flow corridors are defined daily and shifted throughout the flight day to avoid severe weather regions and airspace restrictions (e.g., SUA) or take advantage of favorable winds. Dynamic corridor entry and exit points are also defined. This extends static flow corridor technology (see OI-361) via dynamic airspace design capabilities to provide more en route capacity to trajectory-based aircraft when the available airspace is restricted. Real-time information on corridor location, and logistics and procedures for dynamically relocating a corridor while it is in effect must be developed. If corridor use is to be widespread, techniques for merging, diverging, and crossing corridors may also be required. Implementation decision required to determine if this is feasible and cost effective.
NextGen Operational Improvements	High density static flow corridors	High density en route static flow corridors accommodate separation-capable aircraft traveling on similar routes, achieving high traffic throughput by minimizing complexity and crossing traffic. When there are large numbers of suitably equipped aircraft traveling in the same direction on similar routes, the ANSP may implement flow corridors, which consist of long tubes or "bundles" of parallel lanes. Aircraft within the corridors are responsible for separation from other aircraft, and use onboard separation capabilities for entering and exiting the corridors, as well as for overtaking, all of which are accomplished with well-defined procedures to ensure safety. Flow corridors efficiently handle very high traffic densities, increasing throughput and increasing the airspace available to other traffic. Flow corridors are procedurally separated from other traffic not in the corridor. Procedures exist to allow aircraft to safely exit the corridor in the event of a declared emergency.
NextGen Operational Improvements	Minimize impact of SUA through improved coordination	Daily negotiations are held to determine an effective strategy to meet military operational requirements with minimum impact on traffic flows. For example, if a military flight operator plans to reserve airspace for a set of operations, the military operator and the ANSP negotiate to balance the need to reserve the airspace with other civil needs for the airspace. The ANSP and the military operator may agree to adjust the airspace boundaries or the time of operation to accommodate civil needs. However, a military need may also outweigh a civil need and may preempt other planned uses. The philosophy for airspace restrictions is to provide the maximum available airspace to all users at all times, meet national security needs via priority 4DT reservations, and facilitate immediate user notification of "just-in-time" national needs for restricted airspace. This may still be choosing from a set of fixed configurations, or it may be fully dynamic.
NextGen Operational Improvements	Reduced terminal and enroute significant noise impact	Noise- and emissions-favorable RNP routes are used en route. This OI also includes reduction of noise over national parks.
NAS Operational Improvements	Enhance Sector Demand Prediction and Resource Planning	The air navigation service provider (ANSP) adjusts sectors and resources to meet anticipated demand, promoting efficiency and ensuring safety by strategically mitigating the risk of chronic sector level demand and capacity imbalances. This includes proactively adjusting airspace and resource scheduling based on projections of shift in demand due to seasonal changes, as well as city pair business adjustments by airlines.

Type	Name	Description
NAS Operational Improvements	Improved Management of Airspace for Special Use	Airspace for special use assignments, schedules, coordination, and status changes are conducted automation-to-automation. Changes to status of airspace for special use are readily available for operators and air navigation service providers (ANSP). Status changes are transmitted to the flight deck via voice or data communications. Flight trajectory planning is managed dynamically based on real-time use of airspace.
NAS Operational Improvements	Manage Airspace to Flow	Airspace and air navigation service provider (ANSP) resources are allocated to accommodate demand, flows, and system constraints. Automation provides the capability to define and manage airspace and asset assignment (re-mapping of flight information, radar information, etc.) to appropriate ANSP positions. Automation, flexible airspace, and procedures enable sharing airspace across facility boundaries.
NAS Operational Improvements	NAS Wide Sector Demand Prediction and Resource Planning	All NAS resource and collaborative decision making (CDM) data are combined in one integrated decision support tool. Strategic management of resources (e.g., airspace, sectors, personnel, facilities, NAS systems) meet changes in systemic demand due to increases in air traffic, seasonality, or airline city pair business case decisions. Resources are proactively adjusted and assigned based on projections of shifting demand.
NAS Operational Improvements	Provide Full Flight Plan Constraint Evaluation with Feedback	Timely and accurate national airspace system (NAS) information enables users to plan and fly routings that meet their objectives. Constraint information that impacts the proposed route of flight is incorporated into air navigation service provider (ANSP) automation, and is available to users. Examples of constraint information include special use airspace status, SIGMETS, infrastructure outages, and significant congestion events.

3.4.6.2.4 NextGen Drivers

Type	Name	Description
Actor	Capacity Management	The long-term and short-term management and assignment of NAS airspace and routes to meet expected demand. This includes assigning related NAS assets as well as coordinating longer term staffing plans for airspace assignments. It includes the allocation of airspace to airspace classifications based on demand, as well as the allocation of airspace and routes to ANSP personnel to manage workload
ICAO ATMCP Requirement	R159	ATM system demand and capacity projections shall be provided to relevant ATM community members for up to an agreed/specified time in advance
ICAO ATMCP Requirement	R160	Where appropriate capacity and demand projections shall be performed on request and the results shall be available to the ATM service delivery management function
ICAO ATMCP Requirement	R 04	The function of Airspace Organisation shall include collaboratively defining airspace structures and procedures to accommodate all types of air activity.
ICAO ATMCP Requirement	R 17	Any restrictions on airspace availability shall be minimized and never permanent
ICAO ATMCP Requirement	R 19	The ATM system shall accommodate mixed equipage without constraining the primary use of a given volume of airspace
ICAO ATMCP Requirement	R 20	The level of service for a particular airspace volume, whether determined strategically or tactically, shall be determined using collaborative decision-making
ICAO ATMCP Requirement	R 32	The ATM system shall provide timely and accurate information regarding projected demand and capacity levels.
ICAO ATMCP Requirement	R 34	The ATM system shall provide all users the same level of access to collaborative decision-making concerning ATM resources realizing the diverse need to balance expectations and interests of all members of the ATM community in achieving equity and access.

Type	Name	Description
ICAO ATMCP Requirement	R 84	The ATM system shall collaboratively determine suitable aerodrome facilities to enable the efficient maintenance of capacity in adverse weather conditions.
ICAO ATMCP Requirement	R107	Airspace organizational boundaries, divisions and categories shall be adapted to traffic patterns and changing situations, unplanned requirements and shall support the efficient operation of the other ATM services, and should not be constrained by national or facility boundaries
ICAO ATMCP Requirement	R 108	All airspace shall be the concern of ATM, shall be a useable resource, and any restriction on the use of any airspace shall be considered transitory
ICAO ATMCP Requirement	R 111	The ATM system shall ensure that all available capacity is fully and efficiently utilized
ICAO ATMCP Requirement	R 113	System-wide balancing techniques shall be used to resolve local demand and capacity balancing problems
ICAO ATMCP Requirement	R 115	Traffic synchronization shall encompass both the ground and the airborne part of ATM and shall constitute a flexible mechanism for capacity management
CONOPS	2.3.2 Collaborative Air Traffic Management	
CONOPS	2.3.2.1 Capacity Management	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
Key Concept	Super-Density Arrival/Departure Operations	With increasing demand, an even greater need exists to achieve peak throughput performance at the busiest airports and in the busiest airspace. New procedures to improve airport surface movements, reduce spacing and separation requirements in place today, and better manage overall flows in and out of busy metropolitan airspace provide maximum use of the highest-demand airports. Airport terminals also maximize efficiency of egress and ingress, matching passenger and cargo flow to airside throughput while maintaining safety and security levels.
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.

Type	Name	Description
Key Concept	Weather Assimilated into Decisionmaking	By assimilating weather into decisionmaking, weather information becomes an enabler for optimizing NextGen operations. Directly applying probabilistic weather information to ATM decision tools increases the effective use of weather information and minimizes the adverse effects of weather on operations.
BRM Sub-Function	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Structural/Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.
SRM Service Component	Data Mining	Defines the set of capabilities that provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.
SRM Service Component	Modeling	Defines the set of capabilities that develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Decision Support and Planning	Defines the set of capabilities that support the analysis of information and predict the impact of decisions before they are made.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.
SRM Service Component	Airspace Management	Defines the set of capabilities by which airspace options are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.
SRM Service Component	Airspace Design	Defines the set of capabilities that support the establishment of the guidelines for airspace structures in order to accommodate the different types of air activity, volume of traffic, and differing levels of service.

3.4.6.2.5 NextGen Future Solutions

Type	Name	Description
NAS Activity	Evaluate Airspace	The activity of defining the rules for designing airspace, such as types of airspace, separation standards, and procedures.
NAS Activity	Evaluate Airspace Capacity	The activity of determining the number of aircraft an airspace is capable of handling in a given period of time.

3.4.6.3 Flow Contingency Management (4.3)

3.4.6.3.1 Description

This activity identifies potential flow problems, such as large demand capacity imbalances, congestion, high degrees of complexity, blocked or constrained airspace (airspace for special use, weather), or other off-nominal conditions. This collaborative process among flow contingency managers, flight operators, and airport operators facilitates the efficient management of air traffic flow via information on system-wide air traffic flows, weather, airport capacity, and other assets. FCM also involves managing the conflicting objectives of multiple stakeholders regarding the operational use of an airspace volume and airports while taking advantage of available capacity to address demand.

3.4.6.3.2 Purpose

The purpose of FCM is to deal with demand-capacity imbalances that cannot be addressed through the Capacity Management process. FCM becomes more agile in dealing with uncertainties, developing adaptive traffic management plans that use capacity as it becomes available, and safely dealing with scenarios that become more constrained than expected.

3.4.6.3.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Collaborative Air Traffic Management	Collaborative ATM covers the both the strategic and tactical interactions with the customers to manage demand when the desired use of capacity can not be accommodated. C-ATM includes the flow programs as well as collaboration on procedures that will establish balance by shifting demand to less desirable capacity alternatives e.g. routings, altitudes, times.
OEP Solution Set	Increase Security Safety and Environment Performance	
NextGen Operational Improvements	Dynamic airspace reclassification	Airspace is dynamically configured to meet flow requirements and minimize impacts of adverse weather with real-time information access to users, preflight and airborne. Security restrictions such as SUAs and temporary flight restrictions (see OI 4501) are factored into the dynamic reconfiguration process. Examples: changing the designation of airspace from "Classic" to "TBO" for a particular time period. This may be a routine scheduled change or it may be dynamically made in response to forecast demand. This OI affects flight planning, and may affect aircraft already airborne.
NextGen Operational Improvements	Improved collaborative pre-flight rerouting	Pre-flight rerouting to resolve en route flow problems caused by weather or congestion are improved with enhanced weather and demand predictions. Reroutes are targeted only to those flights predicted to be affected by the en route problems, resulting in fewer and shorter duration flight restrictions. Flight operators customize reroutes through flight plan preprocessing based on real-time impact analysis feedback to optimize their own business functions. Flight operators receive real-time feedback from the ANSP on the effect of flight operators planned flight if modification is necessary due to congestion or anticipated weather. Operators have access to universal pre-flight processor; airlines through their Flight Operations Centers (FOCs), other operators through a private service if they choose to pay to participate. Enablers: TFM information (re-routes, departure or en-route delays) provided to flight operators on a continuous basis. Operators have the capability to process TFM information.
NextGen Operational Improvements	Improved identification and mitigation of hazards	The risks of incidents and accidents are reduced by improving the identification and mitigation of latent and emergent safety hazards in the ATS. This OI involves shifting from reactive safety management to a more proactive approach that requires advancing the methods used to identify and mitigate latent and emergent safety risk in the ATS to reduce the risk of accidents and incidents. Vulnerabilities, hazards, threats, etc. are sought, identified, and managed before they result in incidents and accidents.
NextGen Operational Improvements	Improved integrated collaborative ground delay, pre-flight and in-flight rerouti	Rerouting TMIs are developed in collaboration with operators and are distributed across time horizons between pre-flight TFM and in-flight en route solutions. TFM specialists collaborate with operators to select efficient TMIs to solve flow problems. TMIs are distributed to manage ground delays, pre-flight rerouting, and airborne rerouting based on probabilities of weather predictions and other uncertainties. Conflict-free TFM initiatives for en route flights are provided to controllers and other ANSP personnel in a machine-executable form to expedite implementation.
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management	Arrival and departure flows and surface operations are more effectively planned and managed through integrated advanced ANSP automation. This OI develops an Integrated Arrival/Departure and Surface Traffic Flow Manager for improved decision making and flow management. These decision support tools enable ANSP flow managers to work collaboratively with flight operators and with ANSP flow contingency managers to effectively manage high-capacity arrival and departure flows in the presence of various weather conditions. Real-time information distribution enhances operational efficiencies, such as distribution of runway braking action reports. Improved surveillance, automation, and information sharing enhance efficiency of terminal area operations. The ANSP can safely make more efficient use of runways through real-time depiction in the tower of the location and intent of arriving and departing aircraft, as well as any aircraft intending to cross an active runway.
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management for Metroplex	Metroplex traffic flow is more effectively managed through terminal area and surface scheduling automation for increased regional capacity. Metroplex planners at major terminal areas optimize arrival/ departure and surface scheduling for increased regional capacity. TBO is a key element of super-density procedures, allowing the ANSP to maximize access for all traffic, while adhering to the principle of giving advantage to those aircraft with advanced capabilities that support the ATM system. Metroplex Trajectory Management assigns each arriving aircraft to an appropriate runway, arrival stream, and place in sequence.
NAS Operational Improvements	Enhance Sector Demand Prediction and Resource Planning	The air navigation service provider (ANSP) adjusts sectors and resources to meet anticipated demand, promoting efficiency and ensuring safety by strategically mitigating the risk of chronic sector level demand and capacity imbalances. This includes proactively adjusting airspace and resource scheduling based on projections of shift in demand due to seasonal changes, as well as city pair business adjustments by airlines.
NAS Operational Improvements	Flexible Airspace Management	The air navigation service provider (ANSP) uses automation and procedures to dynamically adjust airspace boundaries and aircraft trajectories around flow-constrained areas to maintain throughput.
NAS Operational Improvements	Improved Management of Airspace for Special Use	Airspace for special use assignments, schedules, coordination, and status changes are conducted automation-to-automation. Changes to status of airspace for special use are readily available for operators and air navigation service providers (ANSP). Status changes are transmitted to the flight deck via voice or data communications. Flight trajectory planning is managed dynamically based on real-time use of airspace.
NAS Operational Improvements	Manage Airspace to Flow	Airspace and air navigation service provider (ANSP) resources are allocated to accommodate demand, flows, and system constraints. Automation provides the capability to define and manage airspace and asset assignment (re-mapping of flight information, radar information, etc.) to appropriate ANSP positions. Automation, flexible airspace, and procedures enable sharing airspace across facility boundaries.
NAS Operational Improvements	Provide Full Flight Plan Constraint Evaluation with Feedback	Timely and accurate national airspace system (NAS) information enables users to plan and fly routings that meet their objectives. Constraint information that impacts the proposed route of flight is incorporated into air navigation service provider (ANSP) automation, and is available to users. Examples of constraint information include special use airspace status, SIGMETS, infrastructure outages, and significant congestion events.

3.4.6.3.4 NextGen Drivers

Type	Name	Description
Actor	Flow Contingency Management	The process that identifies potential flow problems, such as large demand capacity imbalances, congestion, high degrees of complexity, blocked or constrained airspace, or other off-nominal conditions. It is a collaborative process between ANSP personnel and airspace users to develop flow strategies to resolve the flow problems. Examples of flow strategies include establishing routing to reduce complexity, restructuring airspace, and allocating access to airspace or runways.
ICAO ATMCP Requirement	R 17	Any restrictions on airspace availability shall be minimized and never permanent
ICAO ATMCP Requirement	R 19	The ATM system shall accommodate mixed equipage without constraining the primary use of a given volume of airspace
ICAO ATMCP Requirement	R 20	The level of service for a particular airspace volume, whether determined strategically or tactically, shall be determined using collaborative decision-making
ICAO ATMCP Requirement	R 57	The ATM system shall accommodate the mission of the airspace users

Type	Name	Description
ICAO ATMCP Requirement	R 65	The ATM system shall support strategic, pre-tactical and tactical conflict management. The selection of the type of conflict management shall be based on meeting ATM system performance targets, both before and after departure
ICAO ATMCP Requirement	R 67	The ATM system shall optimize system level performance as its highest priority with individual component performance subject to that prioritization.
ICAO ATMCP Requirement	R 83	Using traffic synchronisation, the ATM system shall maximise throughput to meet ATM performance requirements
ICAO ATMCP Requirement	R 99	Where approvals are required for civil or State aircraft to operate over, into, or from a particular State, provision for tactical or pre-tactical approval of preferred routing or re-routing shall be facilitated as far as is practicable.
ICAO ATMCP Requirement	R107	Airspace organizational boundaries, divisions and categories shall be adapted to traffic patterns and changing situations, unplanned requirements and shall support the efficient operation of the other ATM services, and should not be constrained by national or facility boundaries
ICAO ATMCP Requirement	R 113	System-wide balancing techniques shall be used to resolve local demand and capacity balancing problems
CONOPS	2.3.2 Collaborative Air Traffic Management	
CONOPS	2.3.2.2 Flow Contigency Management	
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
Key Concept	Super-Density Arrival/Departure Operations	With increasing demand, an even greater need exists to achieve peak throughput performance at the busiest airports and in the busiest airspace. New procedures to improve airport surface movements, reduce spacing and separation requirements in place today, and better manage overall flows in and out of busy metropolitan airspace provide maximum use of the highest-demand airports. Airport terminals also maximize efficiency of egress and ingress, matching passenger and cargo flow to airside throughput while maintaining safety and security levels.
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
Key Concept	Weather Assimilated into Decisionmaking	By assimilating weather into decisionmaking, weather information becomes an enabler for optimizing NextGen operations. Directly applying probabilistic weather information to ATM decision tools increases the effective use of weather information and minimizes the adverse effects of weather on operations.

Type	Name	Description
BRM Sub-Function	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Structural/ Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.
SRM Service Component	Airspace Management	Defines the set of capabilities by which airspace options are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.
SRM Service Component	Flow Contingency Management Services	Defines the set of capabilities that identify and resolve congestion or airspace complexity resulting from blocked or constrained airspace or other off-nominal conditions (e.g. weather, security, etc.).

3.4.6.3.5 NextGen Future Solutions

Type	Name	Description
FAA Systems	Aeronautical Information Management	The Aeronautical Information Management (AIM) system represents the evolution of the acquisition, storage, processing, and dissemination of aeronautical information in the National Airspace System (NAS). Aeronautical information is defined as any information concerning the establishment, condition, or change in any component (facility, service, or procedure, or hazard) of the NAS. Aeronautical information comes in two types with one being a somewhat static type, and the other being a more dynamic type. The static portion represents the aeronautical information baseline as of a particular date, while the dynamic portion updates particular aspects of the static portion due to system impacts or events. The static portion represents data that NAS automation systems and other users use to adapt their software to properly operate. The dynamic portion represents information typically contained in Notices to Airmen (NOTAMs) that indicate short-term changes to the static data. Many NAS systems support the acquisition, generation, and dissemination of the static aeronautical information. Information of this type includes airspace structures, airways, locations of NAS facilities, inter-facility letters of agreement, and memorandums of understanding, obstructions, standard procedures, airspace charts, etc. Several NAS systems also support the acquisition, generation, processing, and dissemination of the dynamic aeronautical information. Information of this type includes, facility outages, runway closures, temporary flight restrictions (TFR), airspace constraints, Significant Meteorological Advisory (SIGMETs), etc. This information must be disseminated to users and providers of air traffic services in a timely and efficient manner. The AIM system will provide the central point for the dissemination of high quality, configuration controlled, information to NAS systems, service providers, and users of the NAS. The AIM system will soon disseminate data based on the Aeronautical Information Exchange Model (AIXM) protocols.
FAA Systems	Flight Object Management System	The Flight Object Management System (FOMS) is a component of the Standard Automation Platform (SAP). FOMS processes flight data received from multiple sources via the System Wide Information Management (SWIM) Management Unit (SMU). FOMS also receives track data from the Surveillance Data Processor (SDP) and associates tracks with flight data, producing the flight object which is published to SWIM for subscriber use. Flight plan support functionality includes end-to-end profile evaluation in all phases of flight and evaluation against static and dynamic constraints (terrain, obstacles, airspace restrictions, etc.). FOMS supports flight planning up to 180 day prior to day of flight. A user can access the flight object from initial to close-out in the same manner.FOMS provides end-to-end flight data management from preflight to post-analysis. Ownership of the flight object begins and ends with TFM and transitions during the flight to clearance delivery, ramp, surface, departure, transition to cruise, cruise, transition to arrival, …..ramp. Flight data management is based on trajectory, assigned volumes, and "necessary" route structure.
FAA Systems	Unified Decision Management System	The Unified Decision Management System (UDMS) enhances the Collaborative Decision Making (CDM) process by enabling National Airspace System (NAS) users and the FAA to share flight schedules, planned traffic initiatives (e.g., Ground Delay Programs), advanced traffic flow predictions, and other NAS data electronically. UDMS upgrades the basic CDM functionality of the Traffic Flow Management-Modernization (TFM-M) system hub that connects to user-owned data networks. NAS users gain access to more sophisticated graphical and textual traffic flow predictions, as well as automated planning and analysis tools.
NAS Activity	Manage Flow Information	The supervision of the necessary activities involved in obtaining and analyzing the information necessary to regulate traffic flow during periods and for locations where predicted demand exceeds predicted capacity.

3.4.6.4 Airspace Security Operations (4.1)

3.4.6.4.1 Description

This activity for secure airspace is to prevent or counter external attacks on aircraft and other airborne vehicles anywhere in the NAS or to use an aircraft as a weapon to attack assets and events on the ground. To reduce the security risk within the Air Domain, NextGen Secure Airspace systems and procedures detect and prevent or mitigate: a) anomalies in aircraft operation that indicate unauthorized use or attempted unauthorized use, b) aircraft not providing the appropriate cooperative data concerning identity and intentions, c) external attacks on aircraft, d) aircraft that can pose a threat from operating in the NAS. These risk management requirements include defining (usually dynamically) the boundaries of security-restricted airspace (SRA) and temporary flight restrictions (TFR), the cooperative division of responsibilities between the DSP and the SSP in the event of security events in flight or by airborne threat aircraft, security personnel on flights, and modifications and equipage to the aircraft. SRA and TFRs will be implemented as a last resort throughout the NextGen network, not as a routine procedure. In addition, secure airspace implements airspace access and flight procedures based on a verification process that dynamically adjusts for aircraft performance capabilities. The model combines credentialing data with performance data as part of developing the risk profile of the flight object. One objective is to permit increased NAS access by low-performance aircraft through most restricted zones because the reaction time to intercept is correspondingly greater than with high-performance aircraft.

3.4.6.4.2 Purpose

The purpose of Secure Airspace is to reduce the security risk in the air, NextGen secure airspace systems and procedures detect and mitigate anomalies in aircraft operation that indicate unauthorized use or pose a threat to prevent these aircraft from operating in the NAS.

Air Navigation Support A4

Airspace Security Operations A4.1

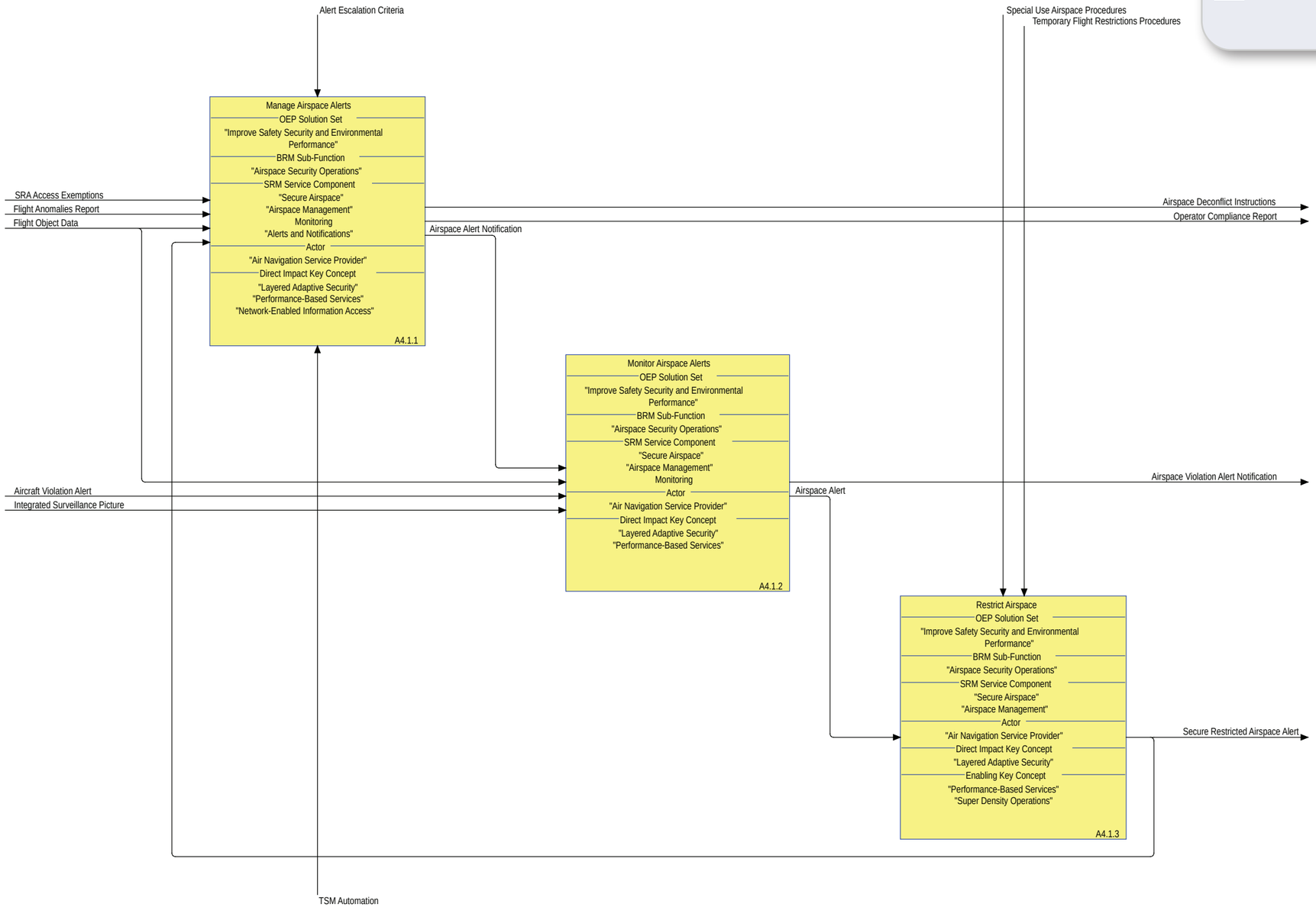


Figure 54 - 4.1 Airspace Security Operations Activity Model Diagram

3.4.6.5 Manage Airspace Alerts (4.1.1)

3.4.6.5.1 Description

This activity manages the airspace security alerts. The TSM automation proposes resolutions (e.g., reroute) to deconflict the airspace violations and the flight operator execute the resolution. Airspace violations are continuously monitored to ensure deconflict maneuvers are implemented. Alert status is escalated when the aircraft does not respond timely or take directed action to achieve authorized trajectories. If an airspace violation alert is not resolved in a timely manner, the NextGen SSP and DSP are notified.
In addition to airspace violations, alerts concerning flight anomalies or behavior on board could be detected by the Federal Air Marshals Service (FAM), crew, or other LEOs and could potentially be reported through the following paths: FAMs/SSP and flight operator/ANSP. Such alerts are shared through the NextGen NEO with the DSP and other stakeholders.
The alert situation is continuously monitored by automation and by the ANSP and SSP personnel to determine when/whether the alert status has to be further escalated. The secure airspace has a set of criteria for alert escalation, for example,
- The same aircraft violates the restricted airspace multiple times.
- An aircraft does not change its flight profile to avoid or exit the unauthorized trajectory or airspace.
- An aircraft with an airspace violation has a security factor that exceeds the security threshold.
- Multiple unauthorized aircraft penetrate the same airspace simultaneously.
- Look-ahead time to point of (critical) violation is short.
- The aircraft fails to communicate with the ANSP repeatedly.
- Aberrant behavior on board is not resolved.

The secure airspace capability also does automated recordkeeping of violations of SRAs. Such data are used for pursuing follow-through actions for noncompliant aircraft operators.

3.4.6.5.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Safety Security and Environmental Performance	Involve activities which relate directly to safety, security and environment. This may relate to the deployment of a procedure and system if the purpose is directly about one of the three, e.g. runway status lights. However the inclusion of conformance taxi monitoring to a clearance as part of a Surface Traffic Management System would be categorized as High-Density since safety is only one of the purposes.
NextGen Operational Improvements	Improved planning and management of security restricted airspace	Security Restricted Airspace is defined and managed using an integrated airspace planning, configuration, and distribution capability to establish time-dependent and risk-based security restriction parameters. Such parameters minimize impact on the overall NAS due to security. In addition, airspace and security information is provided to all users in a timely manner. This OI needs to be harmonized with OI 366.
NextGen Operational Improvements	Integrated command and control of security resources for incident response and r	Security and defense service providers jointly manage security resources and respond to security incidents by using an integrated security command and control capability that includes unified security operations protocols, communications, procedures, and tactics. This provides a seamless aviation security operation systems that are adaptive and responsive to the emerging threats.
NextGen Operational Improvements	Integrated high-risk flight management and risk mitigation	Flights are continually monitored and assessed risks. High risk flights are identified using an integrated risk assessment capability. Notifications are provided to the ANSP and the defense/security service providers to coordinate integrated response for risk mitigation facilitate by improved communications and information sharing.

3.4.6.5.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Security	This operational node includes all activities by Government organizations to protect people, airports, checked baggage, cargo, airspace, aircraft, and information from intentional harm or unauthorized use.
CONOPS	6.4.5 Service: Secure Airspace	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of “layers of defense” (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users’ existing equipage, thus potentially maximizing the value of the service providers’ and users’ investments.
BRM Sub-Function	Airspace Security Operations	Airspace Security Operations involves the activities related to securing the airspace to prevent or counter external attacks on aircraft and other airborne vehicles within the National Airspace System (NAS) or to use an aircraft as a weapon to attack assets and events on the ground. It also includes the activities associated with reducing security risks within the Air Domain, NextGen Secure Airspace systems, and the procedures to detect, prevent, or mitigate: a) anomalies in aircraft operation that indicate unauthorized use or attempted unauthorized use, b) aircraft not providing the appropriate cooperative data concerning identity and intentions, c) external attacks on aircraft, d) aircraft that can pose a threat from operating in the NAS.
SRM Service Component	Alerts and Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.
SRM Service Component	Secure Airspace	Defines the set of capabilities that secure the air domain by preventing or countering external attacks on aircraft and other airborne vehicles in the National Airspace System or the use of aircraft as a weapon to attack assets and people on the ground.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.
SRM Service Component	Airspace Management	Defines the set of capabilities by which airspace options are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.

3.4.6.5.4 NextGen Future Solutions

3.4.6.6 Monitor Airspace Alerts (4.1.2)

3.4.6.6.1 Description

This activity monitors the airspace for security. The total flight monitoring capability in secure aircraft calculates a security factor that is continuously being updated. In real time, the secure airspace capability receives data updating each flight's security factor. The separation management (SM) capability detects potential violations of SRAs from cooperative and non-cooperative flights within a look-ahead time. The detected airspace violation alert notifications are sent to operational personnel who have positive control responsibilities for the aircraft, including the flight operator and ANSP. Depending on aircraft type, the cockpit may also be equipped with airspace violation detection capabilities that could alert the flight operator directly.

3.4.6.6.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Safety Security and Environmental Performance	Involve activities which relate directly to safety, security and environment. This may relate to the deployment of a procedure and system if the purpose is directly about one of the three, e.g. runway status lights. However the inclusion of conformance taxi monitoring to a clearance as part of a Surface Traffic Management System would be categorized as High-Density since safety is only one of the purposes.
NextGen Operational Improvements	Integrated command and control of security resources for incident response and r	Security and defense service providers jointly manage security resources and respond to security incidents by using an integrated security command and control capability that includes unified security operations protocols, communications, procedures, and tactics. This provides a seamless aviation security operation systems that are adaptive and responsive to the emerging threats.
NextGen Operational Improvements	Integrated high-risk flight management and risk mitigation	Flights are continually monitored and assessed risks. High risk flights are identified using an integrated risk assessment capability. Notifications are provided to the ANSP and the defense/security service providers to coordinate integrated response for risk mitigation facilitate by improved communications and information sharing.

3.4.6.6.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Security	This operational node includes all activities by Government organizations to protect people, airports, checked baggage, cargo, airspace, aircraft, and information from intentional harm or unauthorized use.
CONOPS	6.4.5 Service: Secure Airspace	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Airspace Security Operations	Airspace Security Operations involves the activities related to securing the airspace to prevent or counter external attacks on aircraft and other airborne vehicles within the National Airspace System (NAS) or to use an aircraft as a weapon to attack assets and events on the ground. It also includes the activities associated with reducing security risks within the Air Domain, NextGen Secure Airspace systems, and the procedures to detect, prevent, or mitigate: a) anomalies in aircraft operation that indicate unauthorized use or attempted unauthorized use, b) aircraft not providing the appropriate cooperative data concerning identity and intentions, c) external attacks on aircraft, d) aircraft that can pose a threat from operating in the NAS.
SRM Service Component	Secure Airspace	Defines the set of capabilities that secure the air domain by preventing or countering external attacks on aircraft and other airborne vehicles in the National Airspace System or the use of aircraft as a weapon to attack assets and people on the ground.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.
SRM Service Component	Airspace Management	Defines the set of capabilities by which airspace options are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.

3.4.6.6.4 NextGen Future Solutions

3.4.6.7 Restrict Airspace (4.1.3)

3.4.6.7.1 Description

This activity of security restricted airspace is put in place to protect key assets and activities that are of national security significance. Their geometry, volume, and activation schedules are efficiently structured and implemented to balance security and air traffic demand. The use of SRAs for security purposes is kept to the minimum required to maintain security standards and maintains as much flexibility as possible to avoid impeding the flow of commerce.
In the NextGen, it is envisioned that the temporally defined SRAs have the following general types:

Total restriction SRA (few locations):
- Airspace access is limited to only security and defense operations.
- No exemptions.

Continuous restriction SRA:
- Airspace that has some security performance requirements to gain access.
- Access exemptions are risk based.

Intermittent restriction SRA:
- Airspace that has high-security performance requirements for certain time periods; the remainder of the time, no restrictions.
- Access exemptions are risk based

3.4.6.7.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Safety Security and Environmental Performance	Involve activities which relate directly to safety, security and environment. This may relate to the deployment of a procedure and system if the purpose is directly about one of the three, e.g. runway status lights. However the inclusion of conformance taxi monitoring to a clearance as part of a Surface Traffic Management System would be categorized as High-Density since safety is only one of the purposes.
NextGen Operational Improvements	Dynamic airspace reclassification	Airspace is dynamically configured to meet flow requirements and minimize impacts of adverse weather with real-time information access to users, preflight and airborne. Security restrictions such as SUAs and temporary flight restrictions (see OI 4501) are factored into the dynamic reconfiguration process. Examples: changing the designation of airspace from "Classic" to "TBO" for a particular time period. This may be a routine scheduled change or it may be dynamically made in response to forecast demand. This OI affects flight planning, and may affect aircraft already airborne.
NextGen Operational Improvements	Improved planning and management of security restricted airspace	Security Restricted Airspace is defined and managed using an integrated airspace planning, configuration, and distribution capability to establish time-dependent and risk-based security restriction parameters. Such parameters minimize impact on the overall NAS due to security. In addition, airspace and security information is provided to all users in a timely manner. This OI needs to be harmonized with OI 366.
NextGen Operational Improvements	Integrated command and control of security resources for incident response and r	Security and defense service providers jointly manage security resources and respond to security incidents by using an integrated security command and control capability that includes unified security operations protocols, communications, procedures, and tactics. This provides a seamless aviation security operation systems that are adaptive and responsive to the emerging threats.
NextGen Operational Improvements	Integrated high-risk flight management and risk mitigation	Flights are continually monitored and assessed risks. High risk flights are identified using an integrated risk assessment capability. Notifications are provided to the ANSP and the defense/security service providers to coordinate integrated response for risk mitigation facilitate by improved communications and information sharing.
NextGen Operational Improvements	Integrated risk-based planning and management of security resources	Security resources are planned, and managed using an integrated, adaptive, and responsive risk management capability that supports risk-informed decisions among security mission partners. This capability harmonizes short and long term resource allocation and investments among partners to gain the highest possible security return on investment and to reduce the overall cost of security operations.
NAS Operational Improvements	Improved Management of Airspace for Special Use	Airspace for special use assignments, schedules, coordination, and status changes are conducted automation-to-automation. Changes to status of airspace for special use are readily available for operators and air navigation service providers (ANSP). Status changes are transmitted to the flight deck via voice or data communications. Flight trajectory planning is managed dynamically based on real-time use of airspace.

3.4.6.7.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Security	This operational node includes all activities by Government organizations to protect people, airports, checked baggage, cargo, airspace, aircraft, and information from intentional harm or unauthorized use.
ICAO ATMCP Requirement	R 17	Any restrictions on airspace availability shall be minimized and never permanent
CONOPS	6.4.5 Service: Secure Airspace	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
Key Concept	Super-Density Arrival/Departure Operations	With increasing demand, an even greater need exists to achieve peak throughput performance at the busiest airports and in the busiest airspace. New procedures to improve airport surface movements, reduce spacing and separation requirements in place today, and better manage overall flows in and out of busy metropolitan airspace provide maximum use of the highest-demand airports. Airport terminals also maximize efficiency of egress and ingress, matching passenger and cargo flow to airside throughput while maintaining safety and security levels.
BRM Sub-Function	Airspace Security Operations	Airspace Security Operations involves the activities related to securing the airspace to prevent or counter external attacks on aircraft and other airborne vehicles within the National Airspace System (NAS) or to use an aircraft as a weapon to attack assets and events on the ground. It also includes the activities associated with reducing security risks within the Air Domain, NextGen Secure Airspace systems, and the procedures to detect, prevent, or mitigate: a) anomalies in aircraft operation that indicate unauthorized use or attempted unauthorized use, b) aircraft not providing the appropriate cooperative data concerning identity and intentions, c) external attacks on aircraft, d) aircraft that can pose a threat from operating in the NAS.
SRM Service Component	Secure Airspace	Defines the set of capabilities that secure the air domain by preventing or countering external attacks on aircraft and other airborne vehicles in the National Airspace System or the use of aircraft as a weapon to attack assets and people on the ground.
SRM Service Component	Airspace Management	Defines the set of capabilities by which airspace options are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.

3.4.6.7.4 NextGen Future Solutions

3.4.6.8 Capacity Management (4.2)

3.4.6.8.1 Description

This activity provides the process that could begin years before a flight is in operation, up to and including the day of operation. It includes both the long-term and short-term management and assignment of NAS airspace and trajectories to meet expected demand. Significant structural changes to airspace (e.g., to accommodate a planned runway or analyze the effect of a proposed runway) are planned years in advance. Airspace is structured at the beginning of each day to meet preplanned demand and forecasted conditions. It is dynamically reconfigured during the day to meet flow requirements, reduce delays, increase resource efficiency, and accommodates disruptions (such as pop-up convection) and outages.

3.4.6.8.2 Purpose

The purpose of Capacity Management is to allocate NAS resources to meet overall system goals based on user plans, including the designation of trajectory-based airspace and the determination of procedures required for access to airspace. CM responds to an aggregation of airspace users' expected or desired trajectories, infrastructure, geographic, and environmental constraints, and it provides airspace assignments and dynamic structured routings to manage the resulting short term expected demand.

Air Navigation Support A4

Capacity Management A4.2

1 of 2

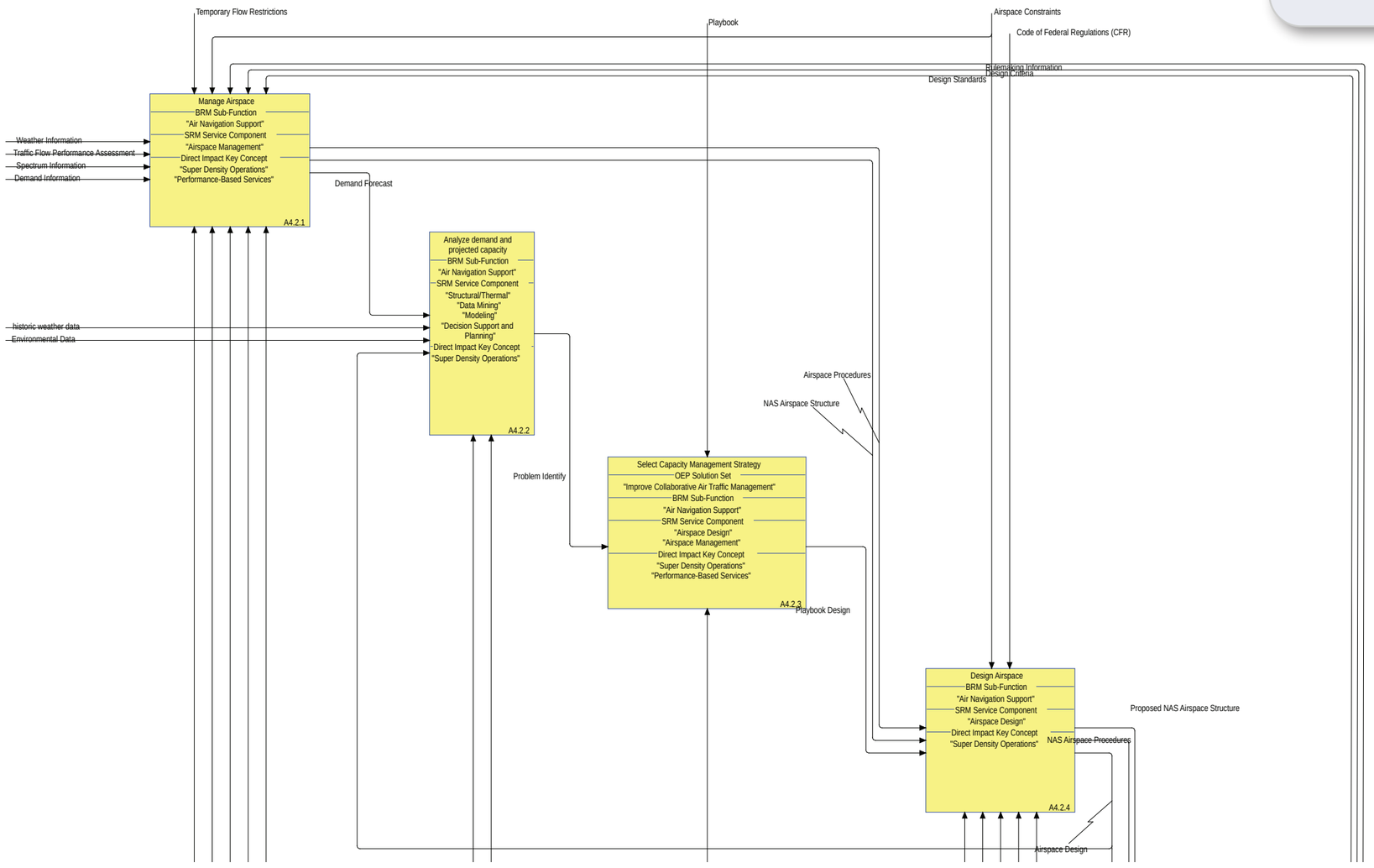
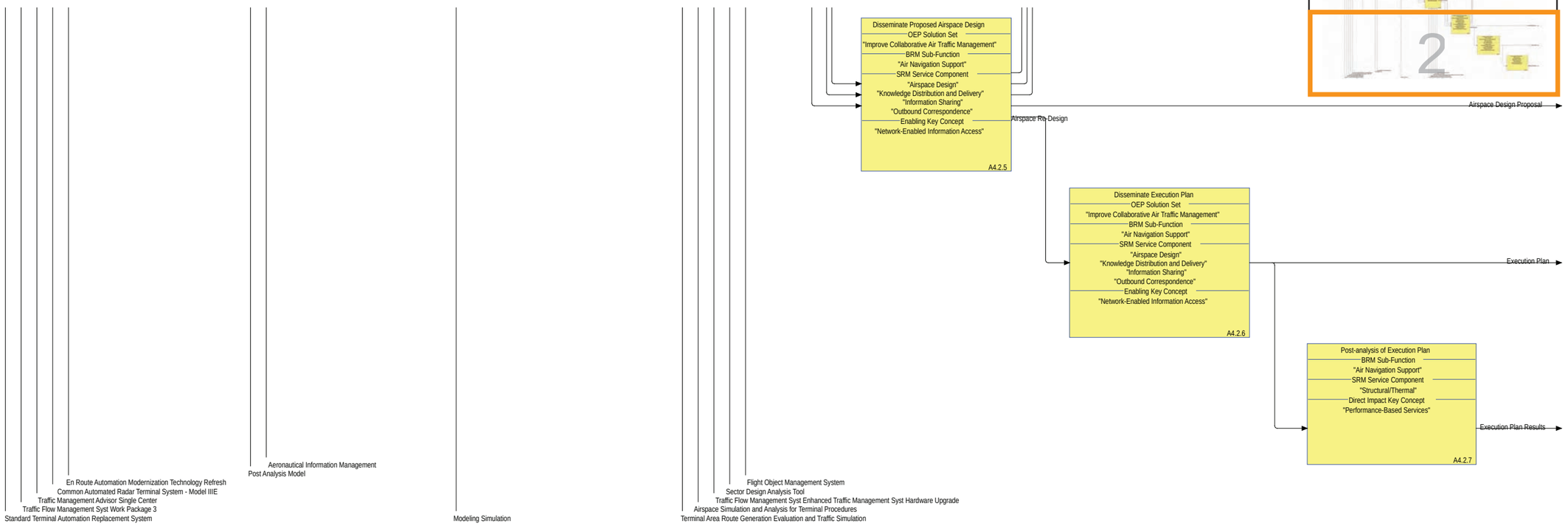


Figure 55 - 4.2 Capacity Management Activity Model Diagram

Air Navigation Support A4

Capacity Management A4.2

2 of 2



3.4.6.9 Manage Airspace (4.2.1)

3.4.6.9.1 Description

This activity is the management of the airspace. Managing SUA's, TFR's, NOTAMS. The supervision of the necessary activities involved in regulating the Earth's layer of surrounding air, from the surface to at least 70,000 feet

3.4.6.9.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Dynamic airspace reclassification	Airspace is dynamically configured to meet flow requirements and minimize impacts of adverse weather with real-time information access to users, preflight and airborne. Security restrictions such as SUAs and temporary flight restrictions (see OI 4501) are factored into the dynamic reconfiguration process. Examples: changing the designation of airspace from "Classic" to "TBO" for a particular time period. This may be a routine scheduled change or it may be dynamically made in response to forecast demand. This OI affects flight planning, and may affect aircraft already airborne.
NextGen Operational Improvements	Flexible resource allocation for airspace management Level 1 - Limited dynamic e	This OI provides limited dynamic reconfiguration of en route airspace to better match personnel and facilities to forecast demand flows. There are a number of pre-defined configurations that are tailored to typical flow patterns and weather (e.g., arrival/departure routes, airspace boundaries). These configurations are stored in automation adaptations and can be easily selected (either as planned configuration changes or they can be selected to meet unanticipated situations). Roles/Responsibilities: Assume this is transparent to pilots, except for the assignment of different arrival/departure routes, which is done as clearance amendments. When a planned change will affect access (e.g., due to increased performance requirements), this will need to be communicated to operators. Separation managers and trajectory managers will need to be able to adjust to a finer set of changes than is done today with sector splits/recombines. [Note-this corresponds to FAA's Flexible Airspace Management OI]
NextGen Operational Improvements	Flexible resource allocation for airspace management Level 3 - Limited Dynamic a	There are a number of pre-defined configurations for arrival/departure airspace (including arrival/departure routes, airspace boundaries, etc) that are tailored to typical flow patterns and weather events. These configurations are stored in automation adaptations and can be easily selected (either as planned configuration changes or they can be selected to meet unanticipated situations). Benefit: Individual flights are less affected by resource availability. Roles/Responsibilities: Assume this is transparent to pilots, except for the assignment of different arrival/departure routes, which is done as clearance amendments. When a planned change will affect access (e.g., due to increased performance requirements), this will have to be communicated to affected flights. Separation managers and trajectory managers will need to be able to adjust to a finer set of changes than is done today with sector splits/recombines. For flight planning, known changes to configuration are available to flight planners.
NextGen Operational Improvements	Flexible resource allocation for airspace management Level 4 - Dynamic Enroute	Dynamic reconfiguration of en route airspace to better match personnel and facilities to forecast demand flows. En route airspace is dynamically reconfigured, allocating personnel, establishing airspace structures where necessary to handle high traffic flow demand, and designating performance-based services to appropriately create the required capacity to meet anticipated demand within anticipated constraints, such as weather. This OI is supported by automation incorporating probabilistic weather information.
NextGen Operational Improvements	Flexible resource allocation for airspace management Level 5 - Dynamic arrival/d	Dynamic reconfiguration of arrival/departure airspace enables better allocation of capacity to meet demand. Automation has algorithms that can generate highly-efficient airspace configurations to better match resources with forecast conditions (demand, weather, etc). This OI assumes this is operationally transparent to pilots when it occurs. However, when a planned change will affect access (e.g., due to increased performance requirements), there will be a need to address advising affected aircraft.
NextGen Operational Improvements	Flexible routing	Equipped aircraft are not restricted to pre-defined routes except when trajectory management or separation management ANSP deem the congestion level to warrant more structure. The ANSP uses ground-based decision support tools (e.g., conflict probe) to maintain separation of aircraft flying on flexible routes. All airspace is available to support RNAV operations. Structure is never imposed unless needed for congestion relief. This supports the ability for operators to fly wherever they want; operators can file any route any way they want except where demand requires that structure be imposed.
NextGen Operational Improvements	General aviation direct routing	This OI results in increased access to busy airspace, such as Class B, for general aviation operators. More direct routing for general aviation is facilitated through improved access to traverse busy terminal area airspace. Typically, GA operators have to fly "around" busy airspace, with associated penalties in efficiency. With this OI a GA flight is more likely to transit through busy airspace when the desired flight path crosses that airspace. Major benefits are access and efficiency. This OI primarily affects arrival/departure airspace and en route airspace. Roles/Responsibilities: Based on the initial planned solution (static corridors), there are no changes in roles/responsibilities.
NextGen Operational Improvements	High density dynamic flow corridors	High density en route dynamic flow corridors accommodate separation-capable aircraft traveling on similar wind-efficient routes or through airspace restricted by convective weather cells, SUA, or overall congestion. Dynamic high density flow corridors are defined daily and shifted throughout the flight day to avoid severe weather regions and airspace restrictions (e.g., SUA) or take advantage of favorable winds. Dynamic corridor entry and exit points are also defined. This extends static flow corridor technology (see OI-361) via dynamic airspace design capabilities to provide more en route capacity to trajectory-based aircraft when the available airspace is restricted. Real-time information on corridor location, and logistics and procedures for dynamically relocating a corridor while it is in effect must be developed. If corridor use is to be widespread, techniques for merging, diverging, and crossing corridors may also be required. Implementation decision required to determine if this is feasible and cost effective.
NextGen Operational Improvements	Minimize impact of SUA through improved coordination	Daily negotiations are held to determine an effective strategy to meet military operational requirements with minimum impact on traffic flows. For example, if a military flight operator plans to reserve airspace for a set of operations, the military operator and the ANSP negotiate to balance the need to reserve the airspace with other civil needs for the airspace. The ANSP and the military operator may agree to adjust the airspace boundaries or the time of operation to accommodate civil needs. However, a military need may also outweigh a civil need and may preempt other planned uses. The philosophy for airspace restrictions is to provide the maximum available airspace to all users at all times, meet national security needs via priority 4DT reservations, and facilitate immediate user notification of "just-in-time" national needs for restricted airspace. This may still be choosing from a set of fixed configurations, or it may be fully dynamic.

3.4.6.9.3 NextGen Drivers

Type	Name	Description
Actor	Capacity Management	The long-term and short-term management and assignment of NAS airspace and routes to meet expected demand. This includes assigning related NAS assets as well as coordinating longer term staffing plans for airspace assignments. It includes the allocation of airspace to airspace classifications based on demand, as well as the allocation of airspace and routes to ANSP personnel to manage workload
ICAO ATMCP Requirement	R 109	All airspace shall be managed, and all related activity within airspace shall be known to the ATM system to the degree necessary to meet performance expectations.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.
SRM Service Component	Airspace Management	Defines the set of capabilities by which airspace options are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.

3.4.6.9.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Common Automated Radar Terminal System - Model IIIE	The Common Automated Radar Terminal System - Model IIIE (CARTS IIIE) consists of the hardware platform and software required providing radar data processing (RDP) and decision support tools to the controller in the terminal environment. The ARTS IIIE is used at consolidated Terminal Radar Approach Control (TRACON) facilities. The Common ARTS program provided an ARTS IIIE capable of receiving input from up to 15 sensors, the ability to process up to 10,000 tracks simultaneously, and support up to 223 displays. CARTS provides continuous real-time support to air traffic controllers at terminal sites including surveillance/tracking, controller data entry and display, aircraft separation assistance (safety functions), flight plan processing, data recording, external data publishing, and system monitoring and control functions. CARTS performs the following functions: a. Track Processing (TP) – tracks aircraft and provides track and radar data to the LAN b. Common Processing (CP)- provides flight plan processing, safety functions [Minimum Safe Altitude Warning (MSAW), Conflict Alert (CA), Mode C intruder alert, Converging Runway Display Aid (CRDA), and Controller Automation Spacing Aid (CASA)], ARTCC interface processing, keyboard functional processing, Digital Altimeter Setting Indicator (DASI) interface processing, and ETMS interface processing c. Display Processing (DP)- provides controller display and keyboard functions and provides the interface to tower displays d. System Monitoring Console (SMC)- provides system management for CARTS hardware and software e. ARTS Gateway Processing (AGW)- shares data with external systems f. ARTS Radar Gateway (RGW)- provides most CARTS functions on an independent LAN for backing up the primary LAN functions g. Subsystem Interface Subsystem (SSI)- provides the LAN The TP, CP, and SMC functions can be combined into one processing element or each subsystem can be a separate processing element.
FAA Systems	Standard Terminal Automation Replacement System	The Standard Terminal Automation Replacement System (STARS) processes primary and secondary radar information to acquire and track data points to display aircraft position for air traffic controllers. The STARS provides safety tools such as, conflict alert (CA), Mode C intruder (MCI), final monitoring aid (FMA), Minimum Safe Altitude Warning (MSAW), Converging Runway Display Aid (CRDA), and Controller Automated Spacing Aid (CASA). Also, the STARS provides the capability to implement the following enhancements: improved radar processing, Navstar Global Positioning System (GPS) compatibility, adaptive routing, Center Terminal Radar Approach Control (TRACON) Automation System (CTAS), data link implementation, improved weather display, and better utilization of traffic management information. The rebaselining of STARS Phase 1 on 30 June 2005 ended future terminal replacement and modernization program using the STARS-only solution. As of the rebaseline date 47 sites were approved for replacement. Through Fiscal Year (FY) 2005: 47 systems had been ordered, 45 systems had been delivered, and 37 systems are in service. Originally, STARS was to have been deployed at all 172 TRACON facilities, but now the plan is for STARS to be installed at 47 TRACON facilities by FY 2007. The first STARS deployment occurred in 2002, and 39 of the 47 systems had been installed as of January 2006. The latest site to receive the STARS was Pittsburgh, PA in November 2005, and five more are scheduled for FY 2006. They are: Shreveport, LA; Jacksonville, FL; Tampa, FL; and two larger facilities at Indianapolis, IN, and Houston TX. This will leave Phoenix AZ, Dayton OH, and Norfolk, VA to round out the 47 sites in Fiscal 2007. Terminal replacement and modernization for FY 2008 and beyond, originally scheduled for STARS, will be determined under the Terminal Automation Modernization Replacement (TAMR) program and may or may not use the STARS.
FAA Systems	En Route Automation Modernization Technology Refresh	En Route Automation Modernization Technology Refresh (ERAM Tech Refresh) provides a technology refresh of ERAM in the FY 2012 through FY 2019 time frame.
FAA Systems	Traffic Flow Management Syst Work Package 3	The Traffic Flow Management System Work Package 3 (TFMS WP3) segment will consist mainly of software releases that will provide the necessary functionalities to integrate the modernized TFMS with the Next Generation Air Traffic System (NextGen).
FAA Systems	Traffic Management Advisor-Single Center	
NAS Activity	Manage Airspace	The supervision of the necessary activities involved in regulating the the Earth's layer of surrounding air, from the surface to at least 70,000 feet.

3.4.6.10 Analyze demand and projected capacity (4.2.2)

3.4.6.10.1 Description

This activity will analyze historical and current demand data, and identifying future project capacity needs.

3.4.6.10.2 JPDO Support Alignment

3.4.6.10.3 NextGen Drivers

Type	Name	Description
Actor	Capacity Management	The long-term and short-term management and assignment of NAS airspace and routes to meet expected demand. This includes assigning related NAS assets as well as coordinating longer term staffing plans for airspace assignments. It includes the allocation of airspace to airspace classifications based on demand, as well as the allocation of airspace and routes to ANSP personnel to manage workload
ICAO ATMCP Requirement	R145	The ATM System shall provide a capability to meter traffic to achieve a balance between traffic demand and capacity of the ATM System.
ICAO ATMCP Requirement	R159	ATM system demand and capacity projections shall be provided to relevant ATM community members for up to an agreed/specified time in advance
ICAO ATMCP Requirement	R160	Where appropriate capacity and demand projections shall be performed on request and the results shall be available to the ATM service delivery management function
ICAO ATMCP Requirement	R 32	The ATM system shall provide timely and accurate information regarding projected demand and capacity levels.
ICAO ATMCP Requirement	R 33	The ATM system shall provide timely access to all relevant weather information for Demand and Capacity Balancing purposes
ICAO ATMCP Requirement	R 35	The ATM system shall collaborate on projections and responses with regard to demand, capacity, predictability, capacity utilization and cost effectiveness
ICAO ATMCP Requirement	R 114	Demand and capacity balancing shall take into account current and predicted airspace conditions and projected demand as well as past performance
ICAO ATMCP Requirement	R176	Ensure that ATM community members provide past, current and predicted information as required by the system for predictability of services.
CONOPS	2.3.2 Collaborative Air Traffic Management	
BRM Sub-Function	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.
SRM Service Component	Structural/Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.
SRM Service Component	Data Mining	Defines the set of capabilities that provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.
SRM Service Component	Modeling	Defines the set of capabilities that develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.

Type	Name	Description
SRM Service Component	Decision Support and Planning	Defines the set of capabilities that support the analysis of information and predict the impact of decisions before they are made.

3.4.6.10.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Aeronautical Information Management	The Aeronautical Information Management (AIM) system represents the evolution of the acquisition, storage, processing, and dissemination of aeronautical information in the National Airspace System (NAS). Aeronautical information is defined as any information concerning the establishment, condition, or change in any component (facility, service, or procedure, or hazard) of the NAS. Aeronautical information comes in two types with one being a somewhat static type, and the other being a more dynamic type. The static portion represents the aeronautical information baseline as of a particular date, while the dynamic portion updates particular aspects of the static portion due to system impacts or events. The static portion represents data that NAS automation systems and other users use to adapt their software to properly operate. The dynamic portion represents information typically contained in Notices to Airmen (NOTAMs) that indicate short-term changes to the static data. Many NAS systems support the acquisition, generation, and dissemination of the static aeronautical information. Information of this type includes airspace structures, airways, locations of NAS facilities, inter-facility letters of agreement, and memorandums of understanding, obstructions, standard procedures, airspace charts, etc. Several NAS systems also support the acquisition, generation, processing, and dissemination of the dynamic aeronautical information. Information of this type includes, facility outages, runway closures, temporary flight restrictions (TFR), airspace constraints, Significant Meteorological Advisory (SIGMETs), etc. This information must be disseminated to users and providers of air traffic services in a timely and efficient manner. The AIM system will provide the central point for the dissemination of high quality, configuration controlled, information to NAS systems, service providers, and users of the NAS. The AIM system will soon disseminate data based on the Aeronautical Information Exchange Model (AIXM) protocols.
NAS Activity	Conduct Airspace Study	The activity of researching the possible demands and capacities that may influence the design of a piece of airspace.
NAS Activity	Evaluate Airspace Capacity	The activity of determining the number of aircraft an airspace is capable of handling in a given period of time.

3.4.6.11 Select Capacity Management Strategy (4.2.3)

3.4.6.11.1 Description

The ANSP will select the strategy that it will implement to meet the needs based on the demand, current capacity, regulation, etc. There are three options:
1. Regulatory Actions - This may have a close link to a New technology or may not. Airspace Performance Rule, establishes criteria and constraints for assigning airspace to performance category. Changes from specific airspace rule to an airspace characteristics rule. Execution of the rule to a specific airspace is handled via the redesign (change within existing rules beyond ANSP).
2. Change within existing rules (requires design & development) (redesign) (impact beyond ANSP) - This activity could take weeks to years to implement. (e.g., new master airspace design, new RNP routes into an airport, opening a new runway) No change in regulation, but require major design work.
3. Change within existing rules (of the ANSP) (refine a predefined play book) (reconfigure) - Requires coordination within the ANSP. Executed more quickly, but the scope is more limited since it involves things within the ANSP (asset management) (e.g., minor modification to staffing, airspace). Timeframe: 5 + days

3.4.6.11.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Collaborative Air Traffic Management	Collaborative ATM covers the both the strategic and tactical interactions with the customers to manage demand when the desired use of capacity can not be accommodated. C-ATM includes the flow programs as well as collaboration on procedures that will establish balance by shifting demand to less desirable capacity alternatives e.g. routings, altitudes, times.
NextGen Operational	Flexible routing	Equipped aircraft are not restricted to pre-defined routes except when trajectory management or separation management ANSP deem the congestion level to warrant more structure. The ANSP uses ground-based decision support tools (e.g., conflict probe) to maintain separation of aircraft flying on flexible routes. All airspace is available to support RNAV operations. Structure is never imposed unless needed for congestion relief. This supports the ability for operators to fly wherever they want; operators can file any route any way they want except where demand requires that structure be imposed.
NextGen Operational	Improved collaborative in-flight rerouting	Flight operators file multiple flight plans and ANSP selects the one that most efficiently meets flow management goals during operations, but may change to another selection during the flight as unexpected delays occur.
NextGen Operational	Reduced terminal and enroute significant noise impact	Noise- and emissions-favorable RNP routes are used en route. This OI also includes reduction of noise over national parks.

3.4.6.11.3 NextGen Drivers

Type	Name	Description
Actor	Capacity Management	The long-term and short-term management and assignment of NAS airspace and routes to meet expected demand. This includes assigning related NAS assets as well as coordinating longer term staffing plans for airspace assignments. It includes the allocation of airspace to airspace classifications based on demand, as well as the allocation of airspace and routes to ANSP personnel to manage workload
CONOPS	2.3.2 Collaborative Air Traffic Management	
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.
SRM Service Component	Airspace Management	Defines the set of capabilities by which airspace options are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.
SRM Service Component	Airspace Design	Defines the set of capabilities that support the establishment of the guidelines for airspace structures in order to accommodate the different types of air activity, volume of traffic, and differing levels of service.

3.4.6.11.4 NextGen Future Solutions

3.4.6.12 Design Airspace (4.2.4)

3.4.6.12.1 Description

This activity will design the airspace. It will use the LOAs and SOPs. Airspace design creates the boundaries both vertically and horizontally for a volume of airspace to include procedures, airways, NAVAIDS, fixes, intersections, waypoints, etc.

3.4.6.12.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational	Flexible resource allocation for airspace management Level 1 - Limited dynamic e	This OI provides limited dynamic reconfiguration of en route airspace to better match personnel and facilities to forecast demand flows. There are a number of pre-defined configurations that are tailored to typical flow patterns and weather (e.g., arrival/departure routes, airspace boundaries). These configurations are stored in automation adaptations and can be easily selected (either as planned configuration changes or they can be selected to meet unanticipated situations). Roles/Responsibilities: Assume this is transparent to pilots, except for the assignment of different arrival/departure routes, which is done as clearance amendments. When a planned change will affect access (e.g., due to increased performance requirements), this will need to be communicated to operators. Separation managers and trajectory managers will need to be able to adjust to a finer set of changes than is done today with sector splits/recombines. [Note-this corresponds to FAA's Flexible Airspace Management OI]
NextGen Operational	Flexible resource allocation for airspace management Level 3 - Limited Dynamic a	There are a number of pre-defined configurations for arrival/departure airspace (including arrival/departure routes, airspace boundaries, etc) that are tailored to typical flow patterns and weather events. These configurations are stored in automation adaptations and can be easily selected (either as planned configuration changes or they can be selected to meet unanticipated situations). Benefit: Individual flights are less affected by resource availability. Roles/Responsibilities: Assume this is transparent to pilots, except for the assignment of different arrival/departure routes, which is done as clearance amendments. When a planned change will affect access (e.g., due to increased performance requirements), this will have to be communicated to affected flights. Separation managers and trajectory managers will need to be able to adjust to a finer set of changes than is done today with sector splits/recombines. For flight planning, known changes to configuration are available to flight planners.
NextGen Operational	Flexible resource allocation for airspace management Level 5 - Dynamic arrival/d	Dynamic reconfiguration of arrival/departure airspace enables better allocation of capacity to meet demand. Automation has algorithms that can generate highly-efficient airspace configurations to better match resources with forecast conditions (demand, weather, etc). This OI assumes this is operationally transparent to pilots when it occurs. However, when a planned change will affect access (e.g., due to increased performance requirements), there will be a need to address advising affected aircraft.
NextGen Operational	General aviation direct routing	This OI results in increased access to busy airspace, such as Class B, for general aviation operators. More direct routing for general aviation is facilitated through improved access to traverse busy terminal area airspace. Typically, GA operators have to fly "around" busy airspace, with associated penalties in efficiency. With this OI a GA flight is more likely to transit through busy airspace when the desired flight path crosses that airspace. Major benefits are access and efficiency. This OI primarily affects arrival/ departure airspace and en route airspace. Roles/Responsibilities: Based on the initial planned solution (static corridors), there are no changes in roles/responsibilities.

3.4.6.12.3 NextGen Drivers

Type	Name	Description
Actor	Capacity Management	The long-term and short-term management and assignment of NAS airspace and routes to meet expected demand. This includes assigning related NAS assets as well as coordinating longer term staffing plans for airspace assignments. It includes the allocation of airspace to airspace classifications based on demand, as well as the allocation of airspace and routes to ANSP personnel to manage workload
ICAO ATMCP Requirement	R 04	The function of Airspace Organisation shall include collaboratively defining airspace structures and procedures to accommodate all types of air activity.
ICAO ATMCP Requirement	R 16	Airspace shall be managed on the basis of flexible allocation
BRM Sub-Function	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.
SRM Service Component	Airspace Design	Defines the set of capabilities that support the establishment of the guidelines for airspace structures in order to accommodate the different types of air activity, volume of traffic, and differing levels of service.

3.4.6.12.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Flight Object Management System	The Flight Object Management System (FOMS) is a component of the Standard Automation Platform (SAP). FOMS processes flight data received from multiple sources via the System Wide Information Management (SWIM) Management Unit (SMU). FOMS also receives track data from the Surveillance Data Processor (SDP) and associates tracks with flight data, producing the flight object which is published to SWIM for subscriber use. Flight plan support functionality includes end-to-end profile evaluation in all phases of flight and evaluation against static and dynamic constraints (terrain, obstacles, airspace restrictions, etc.). FOMS supports flight planning up to 180 day prior to day of flight. A user can access the flight object from initial to close-out in the same manner.FOMS provides end-to-end flight data management from preflight to post-analysis. Ownership of the flight object begins and ends with TFM and transitions during the flight to clearance delivery, ramp, surface, departure, transition to cruise, cruise, transition to arrival, …..ramp. Flight data management is based on trajectory, assigned volumes, and "necessary" route structure.
FAA Systems	Airspace Simulation and Analysis for Terminal Procedures	Airspace Simulation and Analysis for Terminal Procedures (ASAT) is the primary simulation facility in use today for the development of standards and criteria, risk analyses, and complex modeling and analysis work by the Flight Standards Service and other FAA agencies.
FAA Systems	Sector Design Analysis Tool	The Sector Design Analysis Tool (SDAT) is an analytic tool that evaluates changes in airspace design and traffic routing. SDAT is a component of the SDAT Enterprise, an FAA-owned decision support tool for analysis and design of airspace and traffic flows. Its primary focus is supporting the activities undertaken by FAA airspace offices at local, regional, and national levels. SDAT applications include airspace visualization, traffic flow analysis, and model integration. The SDAT Enterprise tool suite currently consists of three components: SDAT, the high-end visualization and analysis tool; SDAT Construct, for data and project management; and AT Vista, an air traffic control (ATC) display emulator.
FAA Systems	Terminal Area Route Generation Evaluation and Traffic Simulation	The Terminal Area Route Generation, Evaluation, and Traffic Simulation (TARGETS) is used in procedure development to overlay area navigation (RNAV) routes on existing airspace. TARGETS can simulate aircraft flying the procedure with existing traffic flows and evaluate the flyability of proposed procedures.

Type	Name	Description
FAA Systems	Traffic Flow Management Syst Enhanced Traffic Management Syst Hardware Upgrade	The Traffic Flow Management System - Enhanced Traffic Management System Hardware Upgrade (TFMS - ETMS HW Up) mechanism is a technology refresh of existing equipment and workstations at the FAA David J. Hurley Air Traffic Control System Command Center (ATCSCC), the hub at the John A Volpe National Transportation Systems Center (Volpe Center), and Traffic Management Units (TMUs) located at Air Route Traffic Control Centers (ARTCCs), Terminal Radar Approach Control (TRACON) facilities and some Airport Traffic Control Towers (ATCTs). As a program under the Traffic Flow Management-Modernization (TFM-M) program and Collaborative ATM (CATM) Segment, the TFMS-ETMS Hardware Upgrade will prepare the Traffic Flow Management Infrastructure for the software upgrade described under "TFMS-CATM-T Apps Upgrade". The hardware refresh on the ETMS was completed at the Volpe Center Hub Site in June 2003 and at 77 remote FAA sites by December 2004. A System Design Review (SDR) for the TFM-M was held in April 2005 and a Preliminary Design Review (PDR) TFM-M was held in September 2005. A build-out of TFM Enhanced Disaster Recovery Capability at the FAA William J. Hughes Technical Center (WJHTC) began in January 2006.
NAS Activity	Design Airspace	To create the boundries both vertically and horizonally for a volume of airspace to include procedures, airways, NAVAIDs, fixes, intersections, waypoints, etc.
NAS Activity	Determine Airspace Structure	The activity of designing a defined path, consisting of one or more courses in a horizontal plane, which aircraft traverse over the surface of the earth.
NAS Activity	Establish Airspace Design Criteria	The activity of defining the rules for designing airspace, such as types of airspace, separation standards, and procedures.

3.4.6.13 Disseminate Proposed Airspace Design (4.2.5)

3.4.6.13.1 Description

This activity will disseminate the proposed airspace design to the Community of Interest (COI) to assist in planning of flight schedule(s). This proposed design is the outcome of the assessment of future demand, capacity, historic weather, etc.

3.4.6.13.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Collaborative Air Traffic Management	Collaborative ATM covers the both the strategic and tactical interactions with the customers to manage demand when the desired use of capacity can not be accommodated. C-ATM includes the flow programs as well as collaboration on procedures that will establish balance by shifting demand to less desirable capacity alternatives e.g. routings, altitudes, times.

3.4.6.13.3 NextGen Drivers

Type	Name	Description
Actor	Capacity Management	The long-term and short-term management and assignment of NAS airspace and routes to meet expected demand. This includes assigning related NAS assets as well as coordinating longer term staffing plans for airspace assignments. It includes the allocation of airspace to airspace classifications based on demand, as well as the allocation of airspace and routes to ANSP personnel to manage workload
ICAO ATMCP Requirement	R 15	The ATM system shall ensure that airspace users are included in all aspects of airspace management via the collaborative decision-making process
ICAO ATMCP Requirement	R 109	All airspace shall be managed, and all related activity within airspace shall be known to the ATM system to the degree necessary to meet performance expectations.

Type	Name	Description
CONOPS	2.3.2 Collaborative Air Traffic Management	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.
SRM Service Component	Airspace Design	Defines the set of capabilities that support the establishment of the guidelines for airspace structures in order to accommodate the different types of air activity, volume of traffic, and differing levels of service.

3.4.6.13.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Design Airspace	To create the boundries both vertically and horizonally for a volume of airspace to include procedures, airways, NAVAIDs, fixes, intersections, waypoints, etc.
NAS Activity	Publish Airspace Design Criteria	The activity of issuing the rules for designing airspace for public use.
NAS Activity	Publish Airspace Design Options	The activity of issuing airspace options for possible use by the NAS

3.4.6.14 Disseminate Execution Plan (4.2.6)

3.4.6.14.1 Description

This activity will disseminate the execution plan that assigns individual responsibility for implementing the plan, and identifies training needs, identified policy issues, new technologies needs, new rules, new minimum performance requirements, and publishing the schedule for the new service delivery.

3.4.6.14.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Collaborative Air Traffic Management	Collaborative ATM covers the both the strategic and tactical interactions with the customers to manage demand when the desired use of capacity can not be accommodated. C-ATM includes the flow programs as well as collaboration on procedures that will establish balance by shifting demand to less desirable capacity alternatives e.g. routings, altitudes, times.

3.4.6.14.3 NextGen Drivers

Type	Name	Description
Actor	Capacity Management	The long-term and short-term management and assignment of NAS airspace and routes to meet expected demand. This includes assigning related NAS assets as well as coordinating longer term staffing plans for airspace assignments. It includes the allocation of airspace to airspace classifications based on demand, as well as the allocation of airspace and routes to ANSP personnel to manage workload
ICAO ATMCP Requirement	R 15	The ATM system shall ensure that airspace users are included in all aspects of airspace management via the collaborative decision-making process
ICAO ATMCP Requirement	R 109	All airspace shall be managed, and all related activity within airspace shall be known to the ATM system to the degree necessary to meet performance expectations.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.
SRM Service Component	Airspace Design	Defines the set of capabilities that support the establishment of the guidelines for airspace structures in order to accommodate the different types of air activity, volume of traffic, and differing levels of service.

3.4.6.14.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Present Airspace Study Result	The activity of issuing airspace options for possible use by the NAS.

3.4.6.15 Post-analysis of Execution Plan (4.2.7)

3.4.6.15.1 Description

This activity will analyze the execution plan to determine how well the plan performed against the performance targets, and to provide that information back into the forecasting process

3.4.6.15.2 JPDO Support Alignment

3.4.6.15.3 NextGen Drivers

Type	Name	Description
Actor	Capacity Management	The long-term and short-term management and assignment of NAS airspace and routes to meet expected demand. This includes assigning related NAS assets as well as coordinating longer term staffing plans for airspace assignments. It includes the allocation of airspace to airspace classifications based on demand, as well as the allocation of airspace and routes to ANSP personnel to manage workload
ICAO ATMCP Requirement	R 36	In order to increase service predictability, maximize capacity utilization and meet performance targets, the ATM system shall: a. utilize historical and forecasted weather information, including seasonal pattern and major weather phenomena; b. use information on changes in infrastructure status to increase predictability, maximize capacity utilization to meet performance targets; c. collaborate on post event analysis to support strategic planning; d. utilize projected traffic demand and planned trajectories; e. accommodate revisions to trajectory requests and resources status; f. collaborate on projections and responses; and facilitate collaboration on trajectory changes and traffic demands
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.
SRM Service Component	Structural/Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.

3.4.6.15.4 NextGen Future Solutions

3.4.6.16 Flow Contingency Management (4.3)

3.4.6.16.1 Description

This activity identifies potential flow problems, such as large demand capacity imbalances, congestion, high degrees of complexity, blocked or constrained airspace (airspace for special use, weather), or other off-nominal conditions. This collaborative process among flow contingency managers, flight operators, and airport operators facilitates the efficient management of air traffic flow via information on system-wide air traffic flows, weather, airport capacity, and other assets. FCM also involves managing the conflicting objectives of multiple stakeholders regarding the operational use of an airspace volume and airports while taking advantage of available capacity to address demand.

3.4.6.16.2 Purpose

The purpose of FCM is to deal with demand-capacity imbalances that cannot be addressed through the Capacity Management process. FCM becomes more agile in dealing with uncertainties, developing adaptive traffic management plans that use capacity as it becomes available, and safely dealing with scenarios that become more constrained than expected.

Air Navigation Support A4

Flow Contingency Management A4.3

1 of 2

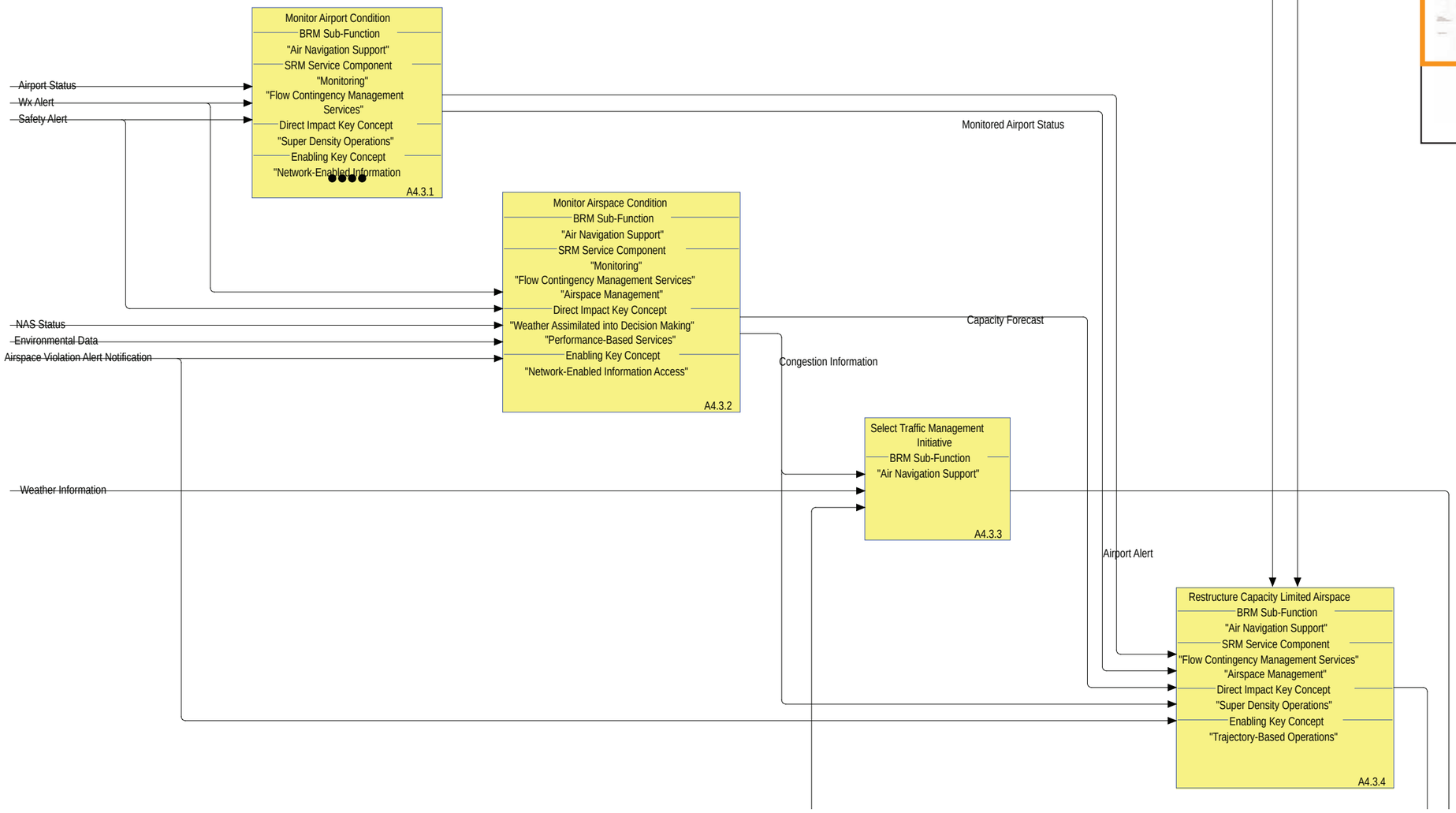
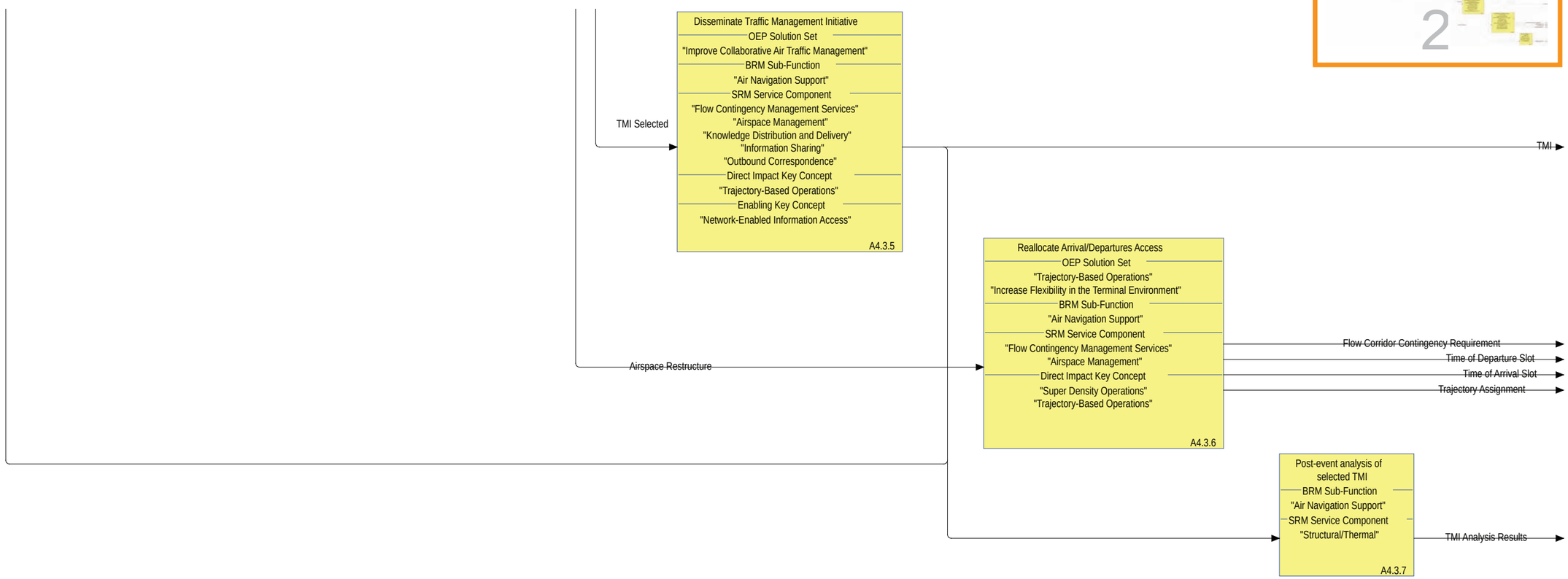


Figure 56 - 4.3 Flow Contingency Management Activity Model Diagram

Air Navigation Support A4

Flow Contingency Management A4.3

2 of 2



3.4.6.17 Monitor Airport Condition (4.3.1)

3.4.6.17.1 Description

This activity monitors the condition at the airport for delays on the ground and supports the ground delay program.

3.4.6.17.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational	Improved collaborative pre-flight rerouting	Pre-flight rerouting to resolve en route flow problems caused by weather or congestion are improved with enhanced weather and demand predictions. Reroutes are targeted only to those flights predicted to be affected by the en route problems, resulting in fewer and shorter duration flight restrictions. Flight operators customize reroutes through flight plan preprocessing based on real-time impact analysis feedback to optimize their own business functions. Flight operators receive real-time feedback from the ANSP on the effect of flight operators planned flight if modification is necessary due to congestion or anticipated weather. Operators have access to universal pre-flight processor; airlines through their Flight Operations Centers (FOCs), other operators through a private service if they choose to pay to participate. Enablers: TFM information (re-routes, departure or en-route delays) provided to flight operators on a continuous basis. Operators have the capability to process TFM information.

3.4.6.17.3 NextGen Drivers

Type	Name	Description
Actor	Flow Contingency Management	The process that identifies potential flow problems, such as large demand capacity imbalances, congestion, high degrees of complexity, blocked or constrained airspace, or other off-nominal conditions. It is a collaborative process between ANSP personnel and airspace users to develop flow strategies to resolve the flow problems. Examples of flow strategies include establishing routing to reduce complexity, restructuring airspace, and allocating access to airspace or runways.
ICAO ATMCP Requirement	R154	ATM service delivery will participate in the determination of airport capacity and shall be aware of the available airport capacity at relevant airports at all times in order to be able to maximize the use of that capacity
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.
SRM Service Component	Flow Contingency Management Services	Defines the set of capabilities that identify and resolve congestion or airspace complexity resulting from blocked or constrained airspace or other off-nominal conditions (e.g. weather, security, etc.).

3.4.6.17.4 NextGen Future Solutions

3.4.6.18 Monitor Airspace Condition (4.3.2)

3.4.6.18.1 Description

This activity will monitor the current conditions of the airspace (weather, traffic)

3.4.6.18.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Improved integrated collaborative ground delay, pre-flight and in-flight rerouti	Rerouting TMIs are developed in collaboration with operators and are distributed across time horizons between pre-flight TFM and in-flight en route solutions. TFM specialists collaborate with operators to select efficient TMIs to solve flow problems. TMIs are distributed to manage ground delays, pre-flight rerouting, and airborne rerouting based on probabilities of weather predictions and other uncertainties. Conflict-free TFM initiatives for en route flights are provided to controllers and other ANSP personnel in a machine-executable form to expedite implementation.
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management for Metroplex	Metroplex traffic flow is more effectively managed through terminal area and surface scheduling automation for increased regional capacity. Metroplex planners at major terminal areas optimize arrival/ departure and surface scheduling for increased regional capacity. TBO is a key element of super-density procedures, allowing the ANSP to maximize access for all traffic, while adhering to the principle of giving advantage to those aircraft with advanced capabilities that support the ATM system. Metroplex Trajectory Management assigns each arriving aircraft to an appropriate runway, arrival stream, and place in sequence.

3.4.6.18.3 NextGen Drivers

Type	Name	Description
Actor	Flow Contingency Management	The process that identifies potential flow problems, such as large demand capacity imbalances, congestion, high degrees of complexity, blocked or constrained airspace, or other off-nominal conditions. It is a collaborative process between ANSP personnel and airspace users to develop flow strategies to resolve the flow problems. Examples of flow strategies include establishing routing to reduce complexity, restructuring airspace, and allocating access to airspace or runways.
ICAO ATMCP Requirement	R 99	Where approvals are required for civil or State aircraft to operate over, into, or from a particular State, provision for tactical or pre-tactical approval of preferred routing or re-routing shall be facilitated as far as is practicable.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.

Type	Name	Description
Key Concept	Weather Assimilated into Decisionmaking	By assimilating weather into decisionmaking, weather information becomes an enabler for optimizing NextGen operations. Directly applying probabilistic weather information to ATM decision tools increases the effective use of weather information and minimizes the adverse effects of weather on operations.
BRM Sub-Function	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.
SRM Service Component	Airspace Management	Defines the set of capabilities by which airspace options are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.
SRM Service Component	Flow Contingency Management Services	Defines the set of capabilities that identify and resolve congestion or airspace complexity resulting from blocked or constrained airspace or other off-nominal conditions (e.g. weather, security, etc.).

3.4.6.18.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Evaluate Airspace State	The activity of determining the current characteristics of a given volume of airspace.

3.4.6.19 Select Traffic Management Initiative (4.3.3)

3.4.6.19.1 Description

This activity will allow the option to select the appropriate traffic management initiative to implement to minimize pair wise contention and ensure efficient individual trajectories within a flow.

3.4.6.19.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Improved integrated collaborative ground delay, pre-flight and in-flight rerouti	Rerouting TMIs are developed in collaboration with operators and are distributed across time horizons between pre-flight TFM and in-flight en route solutions. TFM specialists collaborate with operators to select efficient TMIs to solve flow problems. TMIs are distributed to manage ground delays, pre-flight rerouting, and airborne rerouting based on probabilities of weather predictions and other uncertainties. Conflict-free TFM initiatives for en route flights are provided to controllers and other ANSP personnel in a machine-executable form to expedite implementation.
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management for Metroplex	Metroplex traffic flow is more effectively managed through terminal area and surface scheduling automation for increased regional capacity. Metroplex planners at major terminal areas optimize arrival/ departure and surface scheduling for increased regional capacity. TBO is a key element of super-density procedures, allowing the ANSP to maximize access for all traffic, while adhering to the principle of giving advantage to those aircraft with advanced capabilities that support the ATM system. Metroplex Trajectory Management assigns each arriving aircraft to an appropriate runway, arrival stream, and place in sequence.

3.4.6.19.3 NextGen Drivers

Type	Name	Description
Actor	Flow Contingency Management	The process that identifies potential flow problems, such as large demand capacity imbalances, congestion, high degrees of complexity, blocked or constrained airspace, or other off-nominal conditions. It is a collaborative process between ANSP personnel and airspace users to develop flow strategies to resolve the flow problems. Examples of flow strategies include establishing routing to reduce complexity, restructuring airspace, and allocating access to airspace or runways.
ICAO ATMCP Requirement	R151	The ATM system shall be capable of demonstrating an increased responsiveness across the spectrum of ATM services to real-time changes in airspace users' needs. Furthermore, the system shall provide the user with at least one alternative in case of changes imposed by the ATM system.
CONOPS	2.3.2 Collaborative Air Traffic Management	
BRM Sub-Function	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.

3.4.6.19.4 NextGen Future Solutions

3.4.6.20 Restructure Capacity Limited Airspace (4.3.4)

3.4.6.20.1 Description

This activity will restructure capacity limited airspace when the airspace is unable to meet the projected demands as determined by the capacity manager. Options to mitigate the capacity include the options to alter the existing airspace design to allow greater capacity. This may include changing the local boundaries of adding performance constraints on operations within the airspace. (e.g., delegate self-separation)

3.4.6.20.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	General aviation direct routing	This OI results in increased access to busy airspace, such as Class B, for general aviation operators. More direct routing for general aviation is facilitated through improved access to traverse busy terminal area airspace. Typically, GA operators have to fly "around" busy airspace, with associated penalties in efficiency. With this OI a GA flight is more likely to transit through busy airspace when the desired flight path crosses that airspace. Major benefits are access and efficiency. This OI primarily affects arrival/ departure airspace and en route airspace. Roles/Responsibilities: Based on the initial planned solution (static corridors), there are no changes in roles/responsibilities.

3.4.6.20.3 NextGen Drivers

Type	Name	Description
Actor	Flow Contingency Management	The process that identifies potential flow problems, such as large demand capacity imbalances, congestion, high degrees of complexity, blocked or constrained airspace, or other off-nominal conditions. It is a collaborative process between ANSP personnel and airspace users to develop flow strategies to resolve the flow problems. Examples of flow strategies include establishing routing to reduce complexity, restructuring airspace, and allocating access to airspace or runways.
ICAO ATMCP Requirement	R 04	The function of Airspace Organisation shall include collaboratively defining airspace structures and procedures to accommodate all types of air activity.

Type	Name	Description
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.
SRM Service Component	Airspace Management	Defines the set of capabilities by which airspace options are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.
SRM Service Component	Flow Contingency Management Services	Defines the set of capabilities that identify and resolve congestion or airspace complexity resulting from blocked or constrained airspace or other off-nominal conditions (e.g. weather, security, etc.).

3.4.6.20.4 NextGen Future Solutions

3.4.6.21 Disseminate Traffic Management Initiative (4.3.5)

3.4.6.21.1 Description

This activity will disseminate the traffic management initiative once the TMI is selected. The plan many include airspace changes, new trajectories for use by the ANSP or new arrival or departure goals.

3.4.6.21.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Collaborative Air Traffic Management	Collaborative ATM covers the both the strategic and tactical interactions with the customers to manage demand when the desired use of capacity can not be accommodated. C-ATM includes the flow programs as well as collaboration on procedures that will establish balance by shifting demand to less desirable capacity alternatives e.g. routings, altitudes, times.
NextGen Operational Improvements	CDA with airborne merging and spacing	Fuel consumption and noise on approaches are reduced while maintaining throughput in heavy traffic through Continuous Descent Approaches (CDA) combined with airborne merging and spacing in moderate-to-heavy traffic. This OI requires airborne guidance to perform optimized CDA while staying within assigned lateral and vertical airspace corridor limits. This OI is complementary to OI-325 which delivers the aircraft at top of descent with spacing to initiate a successful CDA. This OI also enables reduced spacing buffers and hence increased throughput from precision airborne spacing. Mixed equipage can be supported within a single arrival stream, with some aircraft self-spacing and other aircraft managed by ANSP. This OI requires an Implementation Decision to determine appropriate trajectory restrictions laterally, vertically, and in time, based on tradeoff between aircraft performance/efficiency versus optimal use of airspace.
NextGen Operational Improvements	Improved Collaborative Oceanic Routing	Oceanic route efficiency is improved through collaborative negotiation of entry times and track loading and oceanic traffic handling is improved through comparison of current routes against desired profiles to identify beneficial control actions. Aircraft dispatchers and traffic flow managers negotiate oceanic entry times prior to departure. The negotiation includes looking ahead to plan near-term climbs when loading tracks. Oceanic 4D profiles of active flights are continually examined to determine control actions that enhance oceanic capacity while providing improved efficiency within traffic flows. This is an extension of "tailored arrivals," where either a) aircraft send desired profiles (pre-departure and real-time), or b) ground automation predicts desired profiles.
NextGen Operational Improvements	Improved identification and mitigation of hazards	The risks of incidents and accidents are reduced by improving the identification and mitigation of latent and emergent safety hazards in the ATS. This OI involves shifting from reactive safety management to a more proactive approach that requires advancing the methods used to identify and mitigate latent and emergent safety risk in the ATS to reduce the risk of accidents and incidents. Vulnerabilities, hazards, threats, etc. are sought, identified, and managed before they result in incidents and accidents.
NextGen Operational Improvements	Improved integrated collaborative ground delay, pre-flight and in-flight rerouti	Rerouting TMIs are developed in collaboration with operators and are distributed across time horizons between pre-flight TFM and in-flight en route solutions. TFM specialists collaborate with operators to select efficient TMIs to solve flow problems. TMIs are distributed to manage ground delays, pre-flight rerouting, and airborne rerouting based on probabilities of weather predictions and other uncertainties. Conflict-free TFM initiatives for en route flights are provided to controllers and other ANSP personnel in a machine-executable form to expedite implementation.
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management	Arrival and departure flows and surface operations are more effectively planned and managed through integrated advanced ANSP automation. This OI develops an Integrated Arrival/Departure and Surface Traffic Flow Manager for improved decision making and flow management. These decision support tools enable ANSP flow managers to work collaboratively with flight operators and with ANSP flow contingency managers to effectively manage high-capacity arrival and departure flows in the presence of various weather conditions. Real-time information distribution enhances operational efficiencies, such as distribution of runway braking action reports. Improved surveillance, automation, and information sharing enhance efficiency of terminal area operations. The ANSP can safely make more efficient use of runways through real-time depiction in the tower of the location and intent of arriving and departing aircraft, as well as any aircraft intending to cross an active runway.
NextGen Operational Improvements	Limited CDAs	Limited CDAs reduce fuel use and noise on approaches to target airports. In the near-term new operational CDA procedures are implemented for specific traffic flows at target airports in low to moderate traffic situations using existing airborne technologies with enhanced sharing of information between operator and ANSP. Waterfall development: Low traffic demonstration (TBD) Higher traffic implementation (TBD)

3.4.6.21.3 NextGen Drivers

Type	Name	Description
Actor	Flow Contingency Management	The process that identifies potential flow problems, such as large demand capacity imbalances, congestion, high degrees of complexity, blocked or constrained airspace, or other off-nominal conditions. It is a collaborative process between ANSP personnel and airspace users to develop flow strategies to resolve the flow problems. Examples of flow strategies include establishing routing to reduce complexity, restructuring airspace, and allocating access to airspace or runways.
ICAO ATMCP Requirement	R151	The ATM system shall be capable of demonstrating an increased responsiveness across the spectrum of ATM services to real-time changes in airspace users' needs. Furthermore, the system shall provide the user with at least one alternative in case of changes imposed by the ATM system.
ICAO ATMCP Requirement	R 15	The ATM system shall ensure that airspace users are included in all aspects of airspace management via the collaborative decision-making process
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.

Type	Name	Description
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.
SRM Service Component	Airspace Management	Defines the set of capabilities by which airspace options are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.
SRM Service Component	Flow Contingency Management Services	Defines the set of capabilities that identify and resolve congestion or airspace complexity resulting from blocked or constrained airspace or other off-nominal conditions (e.g. weather, security, etc.).

3.4.6.21.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Issue Traffic Flow Information	During period and for locations where predicted demand exceeds predicted capacity, traffic flow initiatives are taken to reduce the imbalance.
NAS Activity	Issue Traffic Flow State	The activity of taking traffic flow initiatives to reduce imbalance during periods and for locations where predicted demand exceeds predicted capacity.

3.4.6.22 Reallocate Arrival/Departures Access (4.3.6)

3.4.6.22.1 Description

This activity will re-allocate the arrival/departure access to the airspace and airports. This occurs when airspace or airports becomes capacity limited. One method for alleviating the constraints is to limit access to the arrival and departure streams. This includes the ability for operators with multiple aircraft involved in an initiative have the flexibility to adjust individual aircraft schedules and trajectories within those allocations to accommodate their own internal concerns (e.g., business, military).

3.4.6.22.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Trajectory-Based Operations	Trajectory Based Operations are a shift from clearance based control to trajectory based control. Aircraft will fly negotiated trajectories and control moves to management by trajectory. The focus of these capabilities are on environments/airspace in which all aircraft are equipped to fully participate in trajectory based operations. Included under TBO are operational paradigms and airspace structures which support the move to trajectory based operations. Mixed environments and the advantages that the procedures and tools required for trajectory based operations and airspace are included either as transition steps to the end NextGen Trajectory based operations objectives. It is also assumed that the system will use the capabilities to provide some advantage in environments which will remain mixed.
OEP Solution Set	Increase Flexibility in the Terminal Environment	Flexible Terminals and Airports includes activities to improve both pilot and controller situational awareness to improve the safety and efficiency of operations. Includes activities related to both automated and remote virtual towers for the purpose of providing an improved service. The activities do not rise to a level which requires flow management.
NextGen Operational Improvements	CDA with airborne merging and spacing	Fuel consumption and noise on approaches are reduced while maintaining throughput in heavy traffic through Continuous Descent Approaches (CDA) combined with airborne merging and spacing in moderate-to-heavy traffic. This OI requires airborne guidance to perform optimized CDA while staying within assigned lateral and vertical airspace corridor limits. This OI is complementary to OI-325 which delivers the aircraft at top of descent with spacing to initiate a successful CDA. This OI also enables reduced spacing buffers and hence increased throughput from precision airborne spacing. Mixed equipage can be supported within a single arrival stream, with some aircraft self-spacing and other aircraft managed by ANSP. This OI requires an Implementation Decision to determine appropriate trajectory restrictions laterally, vertically, and in time, based on tradeoff between aircraft performance/efficiency versus optimal use of airspace.
NextGen Operational Improvements	Dynamic airspace reclassification	Airspace is dynamically configured to meet flow requirements and minimize impacts of adverse weather with real-time information access to users, preflight and airborne. Security restrictions such as SUAs and temporary flight restrictions (see OI 4501) are factored into the dynamic reconfiguration process. Examples: changing the designation of airspace from "Classic" to "TBO" for a particular time period. This may be a routine scheduled change or it may be dynamically made in response to forecast demand. This OI affects flight planning, and may affect aircraft already airborne.
NextGen Operational Improvements	Flexible resource allocation for airspace management Level 3 - Limited Dynamic a	There are a number of pre-defined configurations for arrival/departure airspace (including arrival/departure routes, airspace boundaries, etc) that are tailored to typical flow patterns and weather events. These configurations are stored in automation adaptations and can be easily selected (either as planned configuration changes or they can be selected to meet unanticipated situations). Benefit: Individual flights are less affected by resource availability. Roles/Responsibilities: Assume this is transparent to pilots, except for the assignment of different arrival/departure routes, which is done as clearance amendments. When a planned change will affect access (e.g., due to increased performance requirements), this will have to be communicated to affected flights. Separation managers and trajectory managers will need to be able to adjust to a finer set of changes than is done today with sector splits/recombines. For flight planning, known changes to configuration are available to flight planners.
NextGen Operational Improvements	Flexible resource allocation for airspace management Level 4 - Dynamic Enroute	Dynamic reconfiguration of en route airspace to better match personnel and facilities to forecast demand flows. En route airspace is dynamically reconfigured, allocating personnel, establishing airspace structures where necessary to handle high traffic flow demand, and designating performance-based services to appropriately create the required capacity to meet anticipated demand within anticipated constraints, such as weather. This OI is supported by automation incorporating probabilistic weather information.
NextGen Operational Improvements	Flexible resource allocation for airspace management Level 5 - Dynamic arrival/d	Dynamic reconfiguration of arrival/departure airspace enables better allocation of capacity to meet demand. Automation has algorithms that can generate highly-efficient airspace configurations to better match resources with forecast conditions (demand, weather, etc). This OI assumes this is operationally transparent to pilots when it occurs. However, when a planned change will affect access (e.g., due to increased performance requirements), there will be a need to address advising affected aircraft.

Type	Name	Description
NextGen Operational Improvements	General aviation direct routing	This OI results in increased access to busy airspace, such as Class B, for general aviation operators. More direct routing for general aviation is facilitated through improved access to traverse busy terminal area airspace. Typically, GA operators have to fly "around" busy airspace, with associated penalties in efficiency. With this OI a GA flight is more likely to transit through busy airspace when the desired flight path crosses that airspace. Major benefits are access and efficiency. This OI primarily affects arrival/ departure airspace and en route airspace. Roles/Responsibilities: Based on the initial planned solution (static corridors), there are no changes in roles/responsibilities.
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management for Metroplex	Metroplex traffic flow is more effectively managed through terminal area and surface scheduling automation for increased regional capacity. Metroplex planners at major terminal areas optimize arrival/ departure and surface scheduling for increased regional capacity. TBO is a key element of super-density procedures, allowing the ANSP to maximize access for all traffic, while adhering to the principle of giving advantage to those aircraft with advanced capabilities that support the ATM system. Metroplex Trajectory Management assigns each arriving aircraft to an appropriate runway, arrival stream, and place in sequence.
NextGen Operational Improvements	Time Based Arrivals	Improved regularity of arrival flows into busy terminal areas through providing time-based metering advisories to controllers reduces "bunching" and the number of lost landing opportunities at the runway thresholds. Arrival time-based metering is available at least one TRACON in every ARTCC. The benefit of this OI is increased terminal throughput, better achievement of full capacity, and improved operator efficiency (less holding, fewer airborne delays). This OI is based on TMA to provide metering advisories to controllers. It provides decreased uncertainty in delivery to terminal boundaries for arrivals. Enablers: ability to predict desired time for an aircraft to arrive at a terminal boundary; ability to schedule time of arrival ensuring all realizable landing slots are filled; ability to "control" conflict free aircraft to arrive at the desired time into terminal boundaries (done manually today through controllers using metering times from TMA and their controller skills). Waterfall deployment: (TBD)
NextGen Operational Improvements	Time Based Departures and Enroute Operations	This OI provides increased departure throughput via manual time-based control of departing aircraft into an overflight stream using a decision support tool insuring that all available gaps in the en route stream are filled. It also provides departure and en-route time-based control for complex metropolitan airspace where there are multiple conflicting departure streams. Waterfall deployment: a) NY and Phil TRACONS (2007) b) all complex metropolitan airspace with multiple conflicting departure streams (Segment 1)
NextGen Operational Improvements	Wake-based arrival/departure spacing management - Level 2 Dynamic	Longitudinal arrival and departure spacing are dynamically adjusted at OEP airports based on ground-based wake vortex detection and wake drift prediction. Dynamic adjustment can be made when favorable conditions are forecast to persist for a half hour or more. Controller automation will be required to aid controllers in handling dynamic spacing, and these spacing may also include a larger matrix of separation standards than the current 4x4 matrix, with more specific pair wise spacing requirements.

3.4.6.22.3 NextGen Drivers

Type	Name	Description
Actor	Flow Contingency Management	The process that identifies potential flow problems, such as large demand capacity imbalances, congestion, high degrees of complexity, blocked or constrained airspace, or other off-nominal conditions. It is a collaborative process between ANSP personnel and airspace users to develop flow strategies to resolve the flow problems. Examples of flow strategies include establishing routing to reduce complexity, restructuring airspace, and allocating access to airspace or runways.
ICAO ATMCP Requirement	R154	ATM service delivery will participate in the determination of airport capacity and shall be aware of the available airport capacity at relevant airports at all times in order to be able to maximize the use of that capacity

Type	Name	Description
ICAO ATMCP Requirement	R 16	Airspace shall be managed on the basis of flexible allocation
ICAO ATMCP Requirement	R 99	Where approvals are required for civil or State aircraft to operate over, into, or from a particular State, provision for tactical or pre-tactical approval of preferred routing or re-routing shall be facilitated as far as is practicable.
CONOPS	2.4.8 Trajectory-Based Arrival and Departure Operations	
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.
SRM Service Component	Airspace Management	Defines the set of capabilities by which airspace options are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.
SRM Service Component	Flow Contingency Management Services	Defines the set of capabilities that identify and resolve congestion or airspace complexity resulting from blocked or constrained airspace or other off-nominal conditions (e.g. weather, security, etc.).

3.4.6.22.4 NextGen Future Solutions

3.4.6.23 Post-event analysis of selected TMI (4.3.7)

3.4.6.23.1 Description

This activity will analyze the implementation of a selected TMI to determine if there was an imbalance in the plan. This process will allow future refinements of TMI's.

3.4.6.23.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Improved identification and mitigation of hazards	The risks of incidents and accidents are reduced by improving the identification and mitigation of latent and emergent safety hazards in the ATS. This OI involves shifting from reactive safety management to a more proactive approach that requires advancing the methods used to identify and mitigate latent and emergent safety risk in the ATS to reduce the risk of accidents and incidents. Vulnerabilities, hazards, threats, etc. are sought, identified, and managed before they result in incidents and accidents.

3.4.6.23.3 NextGen Drivers

Type	Name	Description
Actor	Flow Contingency Management	The process that identifies potential flow problems, such as large demand capacity imbalances, congestion, high degrees of complexity, blocked or constrained airspace, or other off-nominal conditions. It is a collaborative process between ANSP personnel and airspace users to develop flow strategies to resolve the flow problems. Examples of flow strategies include establishing routing to reduce complexity, restructuring airspace, and allocating access to airspace or runways.
ICAO ATMCP Requirement	R146	The ATM System shall provide a capability to evaluate the effectiveness of flow restrictions implemented in the ATM System. Effectiveness criteria shall include overall system performance measures.
ICAO ATMCP Requirement	R 36	In order to increase service predictability, maximize capacity utilization and meet performance targets, the ATM system shall: a. utilize historical and forecasted weather information, including seasonal pattern and major weather phenomena; b. use information on changes in infrastructure status to increase predictability, maximize capacity utilization to meet performance targets; c. collaborate on post event analysis to support strategic planning; d. utilize projected traffic demand and planned trajectories; e. accommodate revisions to trajectory requests and resources status; f. collaborate on projections and responses; and facilitate collaboration on trajectory changes and traffic demands
CONOPS	2.3.2 Collaborative Air Traffic Management	
BRM Sub-Function	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.
SRM Service Component	Structural/Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.

3.4.6.23.4 NextGen Future Solutions

3.5 Air Navigation Operations (5)

3.5.1 Description

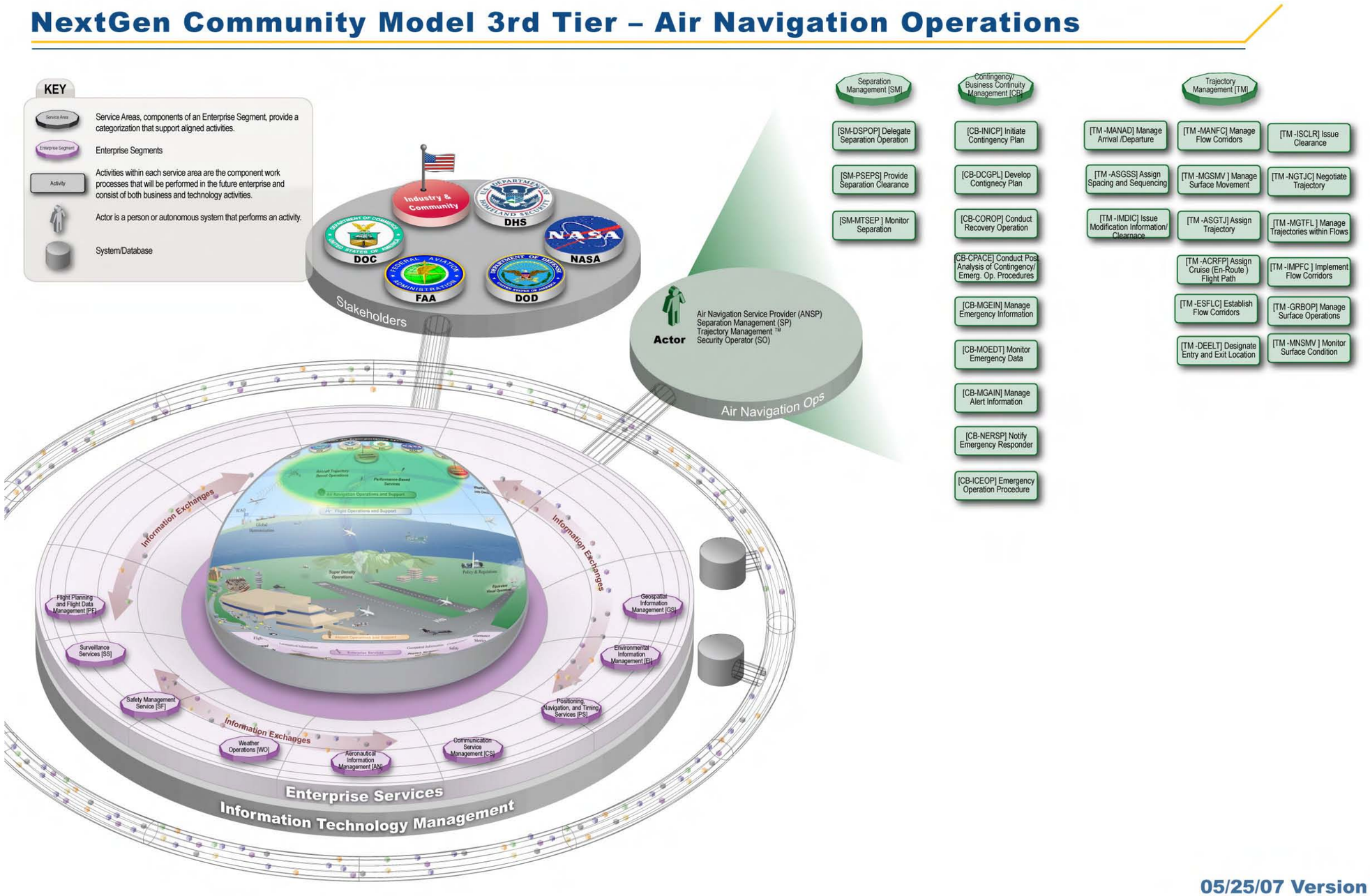
The Air Navigation Operations Enterprise Segment provides the operational context for the terminal and cruise airspace environments to assure safe, secure, and efficient access to national airspace by all users to accommodate high levels of demand and maximize the use of capacity-limited airspace and airport resources. Additionally, the Air Navigation Operations Enterprise Segment captures information on the differing types of operations that are conducted, distinguished by the manner in which procedures are selected and clearance are initiated, transmitted, negotiated, monitored and revised.

3.5.2 Purpose

The purpose of the Air Navigation Operations segment is to identify and group specific service areas that are related to air navigation in the NextGen. These service areas; Trajectory Management, Separation Management, and Contingency Business Continuity Management address key concepts and operational improvement that must be achieved to enable NextGen. These three service areas are further decomposed into specific operational activities that define that service area and provides the foundation for the NextGen EA to further develop detailed architecture products that show trace ability to the NextGen CONOPS and stakeholders investments (material/non-material).

3.5.3 3nd Tier Community Model

Figure 57: Air Navigation Operations 3rd tier Community Model



3.5.4 Enterprise Segment Activity Inventory - Air Navigation Operations

Figure 58: Air Navigation Operations ESAI

Air Navigation Operation

Contingency/Business Continuity Management [CB]	Contingency/Business Continuity Management [CB]	Separation Management [SM]	Trajectory Management [TM]	Trajectory Management [TM]	Trajectory Management [TM]
[CB-MGEIN] Manage Emergency Information Actors: None Priority: High Criticality: Medium Systems: 3 ICAO: 0 BRM SRM TRM PRM DRM	**[CB-CPACE] Conduct Post Analysis of Contingency Emergency Operation Procedure** Actors: AN Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[SM-DSPOP] Delegate Separation Operation** Actors: AN,SM Priority: Low Criticality: Low Systems: 0 ICAO: 2 BRM SRM TRM PRM DRM	**[TM-MGTFL] Manage Trajectories within Flows** Actors: AN,TM Priority: High Criticality: Medium Systems: 4 ICAO: 4 BRM SRM TRM PRM DRM	**[TM-MGDOP] Issue Modification Information/Clearance** Actors: AN,TM Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[TM-IMPFC] Implement Flow Corridors** Actors: AN,TM Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM
[CB-EOPPC] Emergency Operation Procedure Actors: AN Priority: High Criticality: Medium Systems: 3 ICAO: 0 BRM SRM TRM PRM DRM	**[CB-MOEDT] Monitor Emergency Data** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[SM-PSEPC] Provide Separation Clearance** Actors: AN,SM Priority: Low Criticality: Low Systems: 0 ICAO: 3 BRM SRM TRM PRM DRM	**[TM-MANAD] Manage Arrival/Departure** Actors: AN,TM Priority: High Criticality: Medium Systems: 5 ICAO: 5 BRM SRM TRM PRM DRM	**[TM-ITXMC] Issue Clearance** Actors: AN,TM Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[TM-DEELT] Designate Entry and Exit Location and Time** Actors: AN,TM Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM
[CB-INICP] Initiate Contingency Plan Actors: AN Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[CB-MGAIN] Manage Alert Information** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[SM-MTSEP] Monitor Separation** Actors: AN,SM Priority: Low Criticality: Low Systems: 0 ICAO: 1 BRM SRM TRM PRM DRM	**[TM-ASGSS] Assign Spacing and Sequencing** Actors: AN,TM Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[TM-MANFC] Manage Flow Corridors** Actors: AN,TM Priority: Low Criticality: Low Systems: 0 ICAO: 5 BRM SRM TRM PRM DRM	**[TM-ESFLC] Establish Flow Corridors** Actors: AN,TM Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM
[CB-DCGPL] Develop Contingency Plan Actors: AN Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[CB-NERSP] Notify Emergency Responder** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM		**[TM-NGTJC] Negotiate Trajectory** Actors: AN,FO,TM Priority: Low Criticality: Low Systems: 0 ICAO: 3 BRM SRM TRM PRM DRM	**[TM-MGSMV] Manage Surface Movement** Actors: AN,TM Priority: Low Criticality: Low Systems: 0 ICAO: 1 BRM SRM TRM PRM DRM	**[TM-MANSO] Manage Surface Operations** Actors: AN,TM Priority: Low Criticality: Low Systems: 0 ICAO: 2 BRM SRM TRM PRM DRM
[CB-COROP] Conduct Recovery Operation Actors: AN Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM			**[TM-ASGTJ] Assign Trajectory** Actors: AN,TM Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[TM-ACRFP] Assign Cruise (En-Route) Flight Path** Actors: AN,TM Priority: Low Criticality: Low Systems: 0 ICAO: 1 BRM SRM TRM PRM DRM	**[TM-MNSCN] Monitor Surface Condition** Actors: AN,TM Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM

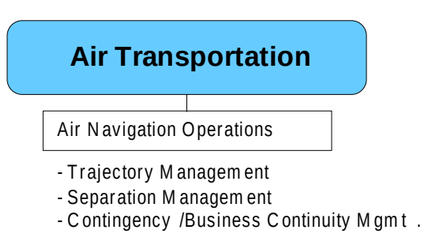
3.5.4.1 Air Navigation Operations ESAI Actor Table

Actor Code	Actor Name	Actor Description
AN	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
CM	Capacity Manager	The long-term and short-term management and assignment of NAS airspace and routes to meet expected demand. This includes assigning related NAS assets as well as coordinating longer term staffing plans for airspace assignments. It includes the allocation of airspace to airspace classifications based on demand, as well as the allocation of airspace and routes to ANSP personnel to manage workload
FC	Flow Contingency Manager	The process that identifies potential flow problems, such as large demand capacity imbalances, congestion, high degrees of complexity, blocked or constrained airspace, or other off-nominal conditions. It is a collaborative process between ANSP personnel and airspace users to develop flow strategies to resolve the flow problems. Examples of flow strategies include establishing routing to reduce complexity, restructuring airspace, and allocating access to airspace or runways.
FO	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight schedule, flight planner, and flight crew, and may reside with one individual or be relegated among separate individuals
SC	Security	This operational node includes all activities by Government organizations to protect people, airports, checked baggage, cargo, airspace, aircraft, and information from intentional harm or unauthorized use.
SM	Separation Manager	The function of ensuring aircraft or vehicles maintain safe separation minima from other aircraft or vehicles, protected airspace, terrain, weather, or other hazards. The function may be performed by ANSP personnel, the flight operator, and/or automation.
TM	Trajectory Management	The function of fine-tuning trajectories as required by the airspace plan or an active flow contingency management initiative to minimize pairwise contention and ensure efficient individual trajectories within a flow

3.5.5 Air Navigation Operations FEA RM

The Air Navigation Operations Segment collectively includes the activities within the terminal and in the air to ensure the safe, secure, and efficient access to the airspace. As depicted in figure 16, this segment is primarily categorized under the Air Transportation Line of Business. It describes the activities associated with managing aircraft assignments and trajectories to ensure aircraft and other vehicles maintain safe separation distances to ultimately mitigate incidents/ accidents on or near the airport. The following table further describes the Air Navigation Operations Segment and identifies how each activity aligns to the other architectural layers of the NextGen EA Reference Architecture.

Figure 59: Air Navigation Operations FEA RM



3.5.6 Air Navigation Operations DoDAF products

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NextGen EA

Air Navigation Operations A5

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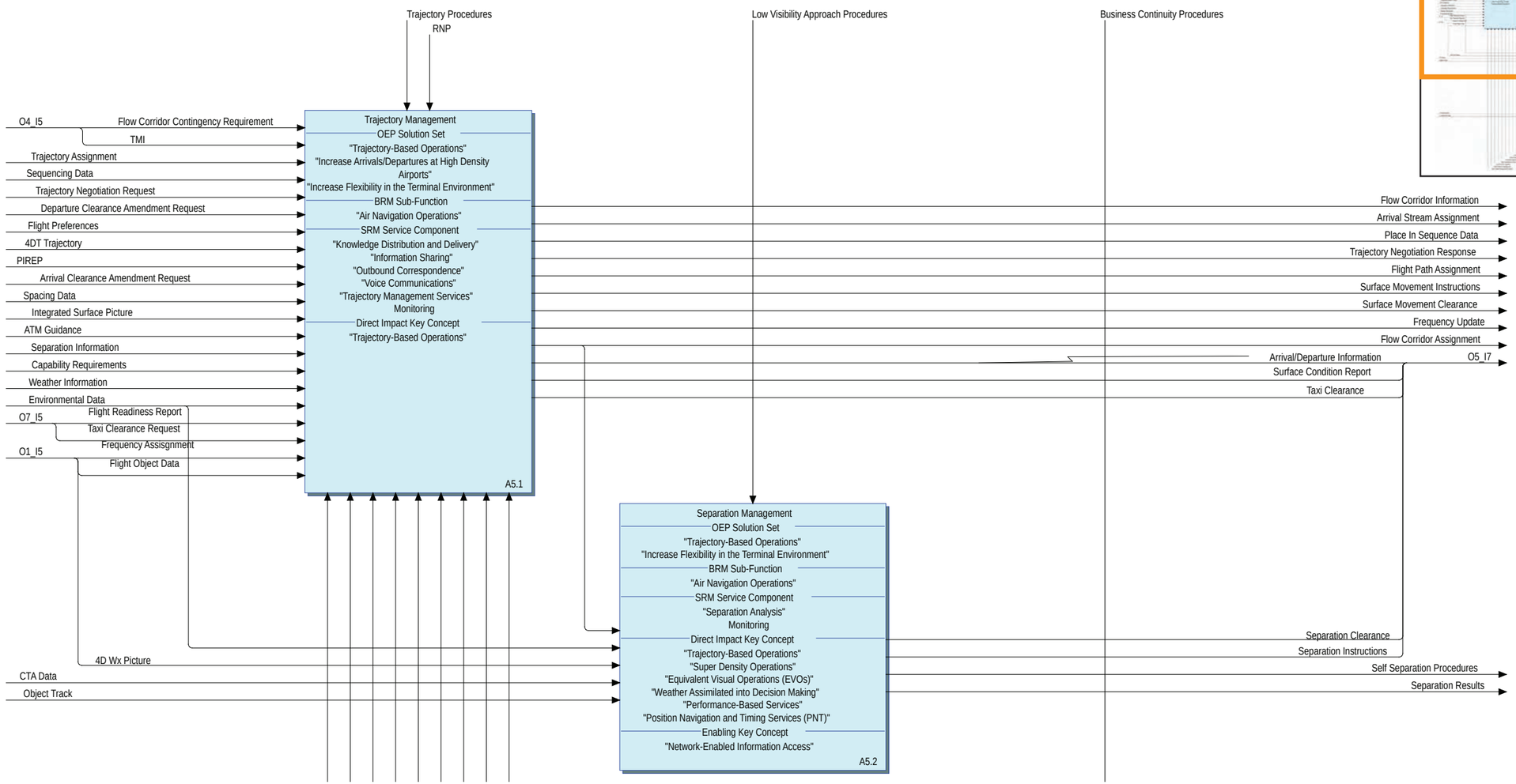

Figure 60 - 5 Air Navigation Operations Activity Model Diagram

NextGen EA

Air Navigation Operations A5

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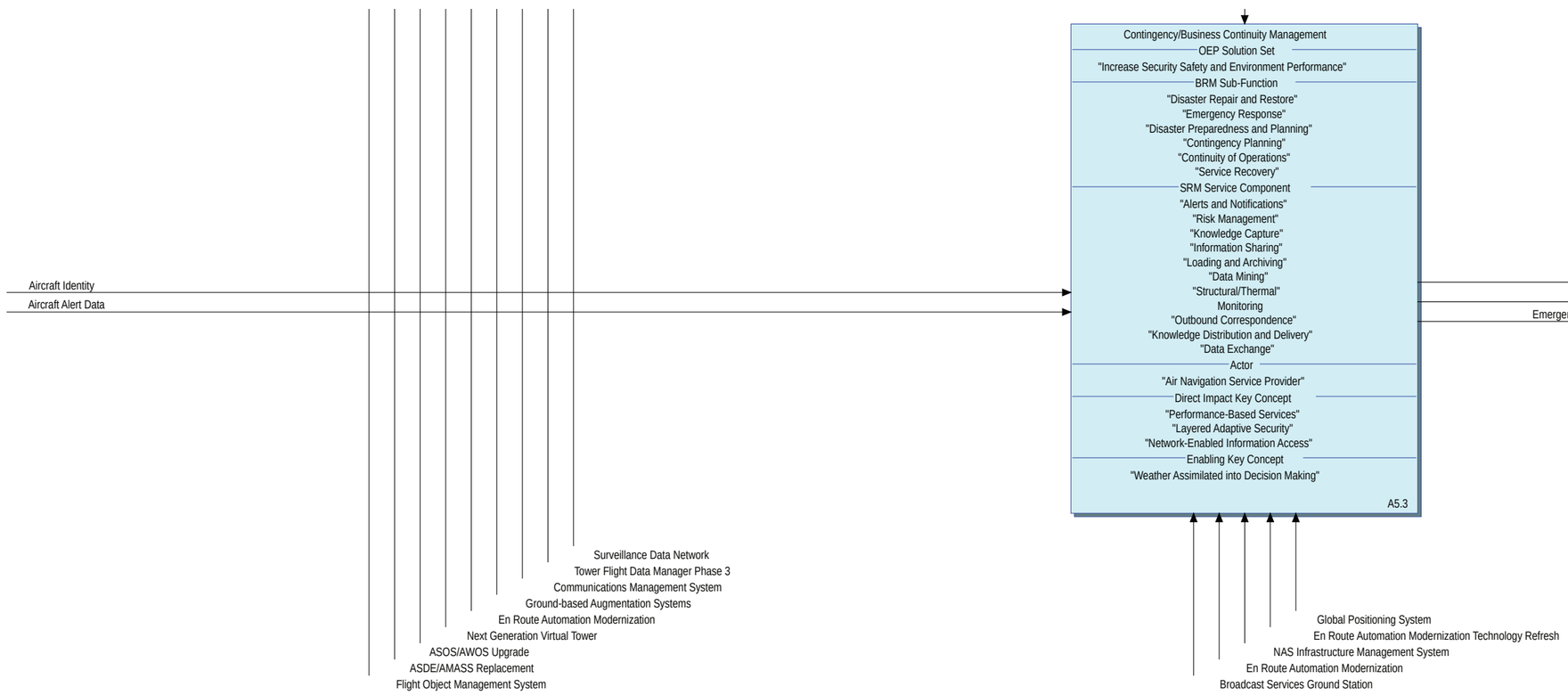
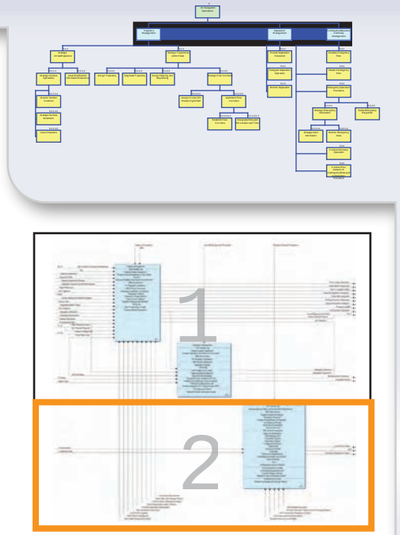




3.5.6.1 Trajectory Management (5.1)

3.5.6.1.1 Description

This activity is the process by which individual aircraft trajectories are managed just before and during the flight to ensure efficient individual trajectories within a flow. Trajectory management corrects imbalances within an established flow to ensure that congestion is managable.

3.5.6.1.2 Purpose

The purpose of TM is the management of frequency and complexity of aircraft conflicts and reduces, but does not eliminate, the need for tactical separation maneuvers. In high-density or high-complex operations, and especially for climbing and descending aircraft around airports, some conflicts occur; otherwise, aircraft over-constrain the system and underused available capacity.

3.5.6.1.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Trajectory-Based Operations	Trajectory Based Operations are a shift from clearance based control to trajectory based control. Aircraft will fly negotiated trajectories and control moves to management by trajectory. The focus of these capabilities are on environments/airspace in which all aircraft are equipped to fully participate in trajectory based operations. Included under TBO are operational paradigms and airspace structures which support the move to trajectory based operations. Mixed environments and the advantages that the procedures and tools required for trajectory based operations and airspace are included either as transition steps to the end NextGen Trajectory based operations objectives. It is also assumed that the system will use the capabilities to provide some advantage in environments which will remain mixed.
OEP Solution Set	Increase Arrivals/ Departures at High Density Airports	High density Arr/Dep Terminals and Airports involves airports in which either the demand for the runway capacity is high, there are multiple runways with both airspace and taxiing interactions, or there are airports with close proximity that create the potential for airspace interference. (The current and future major metros (e.g. N90), and other very large airports (DEN).) These airports require all the capabilities of the flexible terminals and airspace plus integrated tactical and strategic flow capabilities. They may require higher performance navigation and communications capabilities to support these additional operational requirements.
OEP Solution Set	Increase Flexibility in the Terminal Environment	Flexible Terminals and Airports includes activities to improve both pilot and controller situational awareness to improve the safety and efficiency of operations. Includes activities related to both automated and remote virtual towers for the purpose of providing an improved service. The activities do not rise to a level which requires flow management.
NextGen Operational Improvements	Automation-Assisted Trajectory Negotiation and Separation Management	Trajectory management is enhanced by automated assistance to negotiation with properly equipped aircraft operators. Human ANSPs are responsible for separation management, supported by automation. 4DTs are negotiated between the ground-based automation and the operator, which may be the pilot, a UAS operator, or perhaps even FOC personnel, who would then relay information to the aircraft. This will enable higher density of operations thus higher capacity as well as decrease human errors in trajectory negotiation and entry.
NextGen Operational Improvements	CDA with airborne merging and spacing	Fuel consumption and noise on approaches are reduced while maintaining throughput in heavy traffic through Continuous Descent Approaches (CDA) combined with airborne merging and spacing in moderate-to-heavy traffic. This OI requires airborne guidance to perform optimized CDA while staying within assigned lateral and vertical airspace corridor limits. This OI is complementary to OI-325 which delivers the aircraft at top of descent with spacing to initiate a successful CDA. This OI also enables reduced spacing buffers and hence increased throughput from precision airborne spacing. Mixed equipage can be supported within a single arrival stream, with some aircraft self-spacing and other aircraft managed by ANSP. This OI requires an Implementation Decision to determine appropriate trajectory restrictions laterally, vertically, and in time, based on tradeoff between aircraft performance/efficiency versus optimal use of airspace.
NextGen Operational Improvements	CDA with ground-based merging and spacing	Time-based and metered RNP routes are flown. Where practical, arrival routes support CDA operations under moderate to heavy traffic conditions, with ground-based automation providing conflict-free, time-based metering solutions over entire CDA trajectory to the runway. This enables aircraft with minimal equipage to perform CDAs. This OI requires an Implementation Decision to determine most effective method for negotiating time-based route and an Implementation Decision to determine how restricted the trajectory will be laterally, vertically, and in time, based on tradeoff between aircraft performance/efficiency versus optimal use of airspace. Waterfall deployment: a) all runway ends at all OEP airports (Segment 4), b) all runways at the top 100 airports (Segment 5).
NextGen Operational Improvements	CDA-enhanced Time Based Arrivals	Time-based metering replaces miles in trail restrictions. This OI provides consistent delivery of aircraft into the terminal area to match runway acceptance rates, enabling efficient, high-throughput operations. Where practical, this OI enables CDA operations under moderate traffic conditions, with ground-based automation providing conflict-free, time-based metering solutions for en route and transition airspace segments. This sets up a stream of aircraft to perform CDAs, including aircraft with minimal equipage performing basic CDAs as well as aircraft with onboard energy management guidance and airborne spacing guidance performing optimized CDAs.
NextGen Operational Improvements	Airborne, single runway, approach and departure merging and spacing	Arriving or departing aircraft to/from single runways are instructed to achieve and maintain a given spacing in time or distance from a designated lead aircraft as defined by an ANSP clearance. Onboard displays and automation support the aircraft conducting the merging and spacing procedure to enable accurate adherence to the required spacing. Flight crews are responsible for maintaining safe and efficient spacing from the lead aircraft. Responsibility for separation from all other aircraft remains with the ANSP. Assigned spacing may include a gap to allow for an intervening departure between subsequent arrivals. Mixed-equipage operations are supported; a spacing-capable aircraft can perform airborne spacing behind a non-capable aircraft as long as it is transmitting cooperative surveillance information. This OI includes multiple streams merging to a single runway and includes development of ANSP capability and procedures.
NextGen Operational Improvements	Automated Trajectory Negotiation and Separation Management	Trajectory management is enhanced by automated negotiation of 4DTs between properly equipped aircraft and ground automation for separation management. All aircraft in TBO airspace must be equipped for this function. The ANSP Separation Management function is fully automated, and separation responsibility is delegated to automation. For specified operations, tasks are delegated to the flight crew to take advantage of aircraft capabilities. To manage separation, ANSP automation negotiates short-term, conflict-driven updates to the 4DT agreements with the aircraft. This will enable higher density of operations thus higher capacity as well as increased safety due to the elimination of human directed trajectory negotiation and automation input decrease in human errors in trajectory negotiation and entry. This OI requires a Policy/Implementation Decision to determine appropriate roles/responsibilities allocated between humans/automation and air/ground.
NextGen Operational Improvements	Improved Collaborative Oceanic Routing	Oceanic route efficiency is improved through collaborative negotiation of entry times and track loading and oceanic traffic handling is improved through comparison of current routes against desired profiles to identify beneficial control actions. Aircraft dispatchers and traffic flow managers negotiate oceanic entry times prior to departure. The negotiation includes looking ahead to plan near-term climbs when loading tracks. Oceanic 4D profiles of active flights are continually examined to determine control actions that enhance oceanic capacity while providing improved efficiency within traffic flows. This is an extension of "tailored arrivals," where either a) aircraft send desired profiles (pre-departure and real-time), or b) ground automation predicts desired profiles.
NextGen Operational Improvements	Increased IMC access-1	Performance-based navigation operations are used to provide greater IMC access to terrain-challenged airports and airports without expensive ground infrastructure. This OI also opens more options for airport access in various meteorological conditions. Waterfall deployment: a) to/from some runways at OEP airports (2009), b) to/from all runway ends at all OEP airports (2011), c) to/from all runways at the top 100 airports (Segment 5), d) to/from all runways serving commercial traffic (Segment 6).

Type	Name	Description
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management for Metroplex	Metroplex traffic flow is more effectively managed through terminal area and surface scheduling automation for increased regional capacity. Metroplex planners at major terminal areas optimize arrival/ departure and surface scheduling for increased regional capacity. TBO is a key element of super-density procedures, allowing the ANSP to maximize access for all traffic, while adhering to the principle of giving advantage to those aircraft with advanced capabilities that support the ATM system. Metroplex Trajectory Management assigns each arriving aircraft to an appropriate runway, arrival stream, and place in sequence.
NextGen Operational Improvements	Limited CDAs	Limited CDAs reduce fuel use and noise on approaches to target airports. In the near-term new operational CDA procedures are implemented for specific traffic flows at target airports in low to moderate traffic situations using existing airborne technologies with enhanced sharing of information between operator and ANSP. Waterfall development: Low traffic demonstration (TBD) Higher traffic implementation (TBD)
NextGen Operational Improvements	Reduced human errors in operation of automated systems	Human errors are reduced through equipage of aircraft and ground systems with human-centered automation interfaces and skill training for automation. Interfaces are developed that increase usefulness and understandability of information, maintain appropriate human engagement, increase situation comprehension, increase situation comprehension, increase awareness of systems health, ensure the availability and the accessibility of needed information, and improve collaborative decision making. This OI includes development of improved training methods for flight crews and ground employees that focus on the increased use of, and integration of, automation, and the development of training modules and simulators targeted at improving and maintaining skills in areas especially vulnerable to error.
NextGen Operational Improvements	Sequencing, separation, and spacing services for IMC operations are provided thr	This OI increases IMC throughput at non-towered single-runway airports. Expected use is either: Staffed Virtual Towers (SVTs), with remote personnel providing needed services or potentially, Automated Virtual Towers (AVTs), with sequencing, spacing, and separation functions provided either by ground automation or through aircraft-based conflict detection/resolution algorithms. Benefits: Capacity and ANSP productivity plus cost avoidance for not building towers. Major implementation alternatives: 1) Remotely Staffed Virtual Towers 2) Automated Virtual Towers with separation functions provided by ground automation 3) Automated Virtual Towers with separation functions provided by aircraft Implementation of any of these 3 alternatives will require a Policy Decision concerning safety of operations and appropriate allocation of roles and responsibilities to humans vs automation and to ANSP vs flight operator. There will also be required an Implementation Decision between the 3 implementation alternatives. It is likely that both SVTs and one or both types of AVTs will be implemented, with SVTs used at larger, busier, and more complex airports, and AVTs used at simpler, less-busy airports. Waterfall deployment (include virtual towers at GA airports to support to VMC operations and to replace existing manned towers at lower traffic airports): TBD
NextGen Operational Improvements	Sequencing, separation, spacing and surface management services through virtual	This adds provision of surface management services (TBD) to OI 313 through use of virtual towers. Expected use is SVTs or AVTs, with separation functions provided either by ground automation or through aircraft-based conflict detection/resolution algorithms. Increases IMC throughput at non-towered, multiple-runway airports and small airports in metroplex environments. Benefits: capacity and ANSP productivity. Requires and Implementation Decision to determine what complex airport operations, such as multiple runway operations, can be safely and effectively supported by AVTs vs SVTs. This OI includes deployment of virtual towers at GA airports and supports VMC operations. It also will permit replacing existing manned towers at lower traffic airports with either AVTs or SVTs. Waterfall deployment: TBD

Type	Name	Description
NextGen Operational Improvements	Surface Management Operations - Level 1	This OI enhances surface operations to reduce delay and environmental impacts at target airports to manage surface traffic (aircraft and GSE) and generate taxi instructions.
NextGen Operational Improvements	Surface Management Operations - Level 2A	Efficiency of surface traffic movement is increased through the use of automation, on-board displays and data link of departure taxi instructions prior to pushback to properly equipped aircraft to reduce delay, environmental impacts and operational errors. Automation optimizes surface throughput and data links taxi instructions to aircraft. The taxi instructions include the 2D route. Pilot uses onboard displays of taxi route and guidance to efficiently and safely follow taxi instructions. Surface optimization automation includes activities such as runway snow removal, aircraft de-icing, and runway reconfiguration.
NextGen Operational Improvements	Surface Management Operations - Level 2B	This OI increases efficiency and safety of surface traffic movement, with corresponding reduction in environmental impacts. Efficiency of surface movement is increased through the use of automation, on-board displays and data link of taxi instructions on arrival to properly equipped aircraft to reduce delay and environmental impacts and improve safety. This OI assumes development of surface automation that is fully integrated with airborne operations and applies this to surface management operations. This OI is an extension of OI 321 and contains those improvements as well.
NextGen Operational Improvements	Terminal area airborne merging and spacing for multiple runways	Arriving or departing aircraft to/from multiple runways are instructed to achieve and maintain a given spacing in time or distance from a designated lead aircraft as defined by an ANSP clearance. Onboard displays and automation support the aircraft conducting the merging and spacing procedure to enable accurate adherence to the required spacing. Flight crews are responsible for maintaining safe and efficient spacing from the lead aircraft. Responsibility for separation from all other aircraft remains with the ANSP. Assigned spacing may include a gap to allow for an intervening departure between subsequent arrivals. Mixed-equipage operations are supported; a spacing-capable aircraft can perform airborne spacing behind a non-capable aircraft as long as it is transmitting cooperative surveillance information. This OI includes complex merging and spacing, such as for crossing and diverging streams and includes development of ANSP capability and procedures. Because an aircraft is spacing from its lead aircraft according to whatever spacing timing he is assigned by the ANSP, dynamic spacing with specific pair wise spacing requirements are supported.
NextGen Operational Improvements	Time Based Departures and Enroute Operations	This OI provides increased departure throughput via manual time-based control of departing aircraft into an overflight stream using a decision support tool insuring that all available gaps in the en route stream are filled. It also provides departure and en-route time-based control for complex metropolitan airspace where there are multiple conflicting departure streams. Waterfall deployment: a) NY and Phil TRACONS (2007) b) all complex metropolitan airspace with multiple conflicting departure streams (Segment 1)
NextGen Operational Improvements	Trajectory-Based Traffic Management - Level 1	All in-flight aircraft operating in Trajectory-Based Airspace are managed by 4D trajectory in en route climb, cruise, and descent. This may be considered a staging of the 4D trajectory-based capability. This would require the ability to calculate, negotiate, and perform conformance monitoring by ANSPs, including the integration of separation assurance and traffic management (time constraints, e.g., RTAs). This will be enabled by the trajectory exchange through electronic data communications. In high-density or high-complexity airspace, precise 4DTs will be used, dramatically reducing the uncertainty of an aircraft's future flight path, in terms of predicted spatial position (latitude, longitude, and altitude) and times along points in its path. This enhances the capacity and throughput of the airspace to accommodate high levels of demand.

Type	Name	Description
NextGen Operational Improvements	Trajectory-Based Traffic Management - Level 2	All aircraft operating in Trajectory-Based Airspace and Airport Surfaces are managed by 4D trajectory in en route climb, cruise, descent, and airport surface phases of the flight. This is the end state 4D trajectory-based capability. This would require the ability to calculate, negotiate, and perform conformance monitoring by ANSPs, including the integration of separation assurance and traffic management time constraints (e.g., RTAs, runway times of arrival, gate times of arrival). This will be enabled by the trajectory exchange through electronic data communications, as well as many new surface automation and 3D (x, y, and time) trajectory operations. In high-density or high-complexity airspace, precise 4DTs will be used, dramatically reducing the uncertainty of an aircraft's future flight path, in terms of predicted spatial position (latitude, longitude, and altitude) and times along points in its path. This enhances the capacity and throughput of the airspace to accommodate high levels of demand. In trajectory-based airspace, differing types of operations are conducted, with performance-based services applied based on the anticipated traffic characteristics. User preferences are accommodated to the greatest extent possible, and trajectories are constrained only to the extent required to accommodate demand or other national concerns, such as security or safety.
NextGen Operational Improvements	Wake-based arrival/departure spacing management - Level 2 Dynamic	Longitudinal arrival and departure spacing are dynamically adjusted at OEP airports based on ground-based wake vortex detection and wake drift prediction. Dynamic adjustment can be made when favorable conditions are forecast to persist for a half hour or more. Controller automation will be required to aid controllers in handling dynamic spacing, and these spacing may also include a larger matrix of separation standards than the current 4x4 matrix, with more specific pair wise spacing requirements.
NextGen Operational Improvements	Wake-based arrival/departure spacing management Level 1 - Static	Longitudinal departure spacing requirements are reduced (based on wake vortex drift) for dual-use and closely spaced parallel runways based on ground-based wake vortex drift prediction and detection. This is static reduction, i.e., reduction for periods of perhaps 4 or more hours when persistently favorable conditions are forecast. Ground-based departure controllers use wake vortex avoidance systems (based on wake drift) to achieve the regulatory minimum spacing for aircraft departing on closely spaced parallel runways.

3.5.6.1.4 NextGen Drivers

Type	Name	Description
Actor	Trajectory Management	The function of fine-tuning trajectories as required by the airspace plan or an active flow contingency management initiative to minimize pairwise contention and ensure efficient individual trajectories within a flow
ICAO ATMCP Requirement	R 09	The ATM system shall use relevant data to dynamically optimize 4-D trajectory planning.
ICAO ATMCP Requirement	R 10	The airspace user community shall participate in collaborative decision-making.
ICAO ATMCP Requirement	R 36	In order to increase service predictability, maximize capacity utilization and meet performance targets, the ATM system shall: a. utilize historical and forecasted weather information, including seasonal pattern and major weather phenomena; b. use information on changes in infrastructure status to increase predictability, maximize capacity utilization to meet performance targets; c. collaborate on post event analysis to support strategic planning; d. utilize projected traffic demand and planned trajectories; e. accommodate revisions to trajectory requests and resources status; f. collaborate on projections and responses; and facilitate collaboration on trajectory changes and traffic demands
ICAO ATMCP Requirement	R 80	The ATM system shall provide for an orderly flow of traffic from gate-to-gate by dynamically renegotiating the 4D trajectory contract
ICAO ATMCP Requirement	R 81	The ATM system shall determine the separator for each renegotiated 4D trajectory

Type	Name	Description
ICAO ATMCP Requirement	R 82	The ATM system shall manage 4-D trajectory contracts in order to achieve safe and efficient conflict-free trajectories.
ICAO ATMCP Requirement	R 87	The ATM system's traffic synchronization shall use the time-based portion of the 4D trajectory to meet the ATM system performance targets, unless under certain conditions another means is determined to be more effective.
CONOPS	2.4.4 Trajectory Management Process	
Key Concept	Super-Density Arrival/Departure Operations	With increasing demand, an even greater need exists to achieve peak throughput performance at the busiest airports and in the busiest airspace. New procedures to improve airport surface movements, reduce spacing and separation requirements in place today, and better manage overall flows in and out of busy metropolitan airspace provide maximum use of the highest-demand airports. Airport terminals also maximize efficiency of egress and ingress, matching passenger and cargo flow to airside throughput while maintaining safety and security levels.
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Voice Communications	Defines the set of capabilities that provide telephony or other voice communications.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.
SRM Service Component	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.

3.5.6.1.5 NextGen Future Solutions

Type	Name	Description
NAS Activity	Evaluate Advisory State	The activity of reviewing information that may be essential to assist pilots in the safe conduct of flight and aircraft movement. This includes weather advisories, NAS Status advisories, or traffic advisories.

Type	Name	Description
NAS Activity	Evaluate Synchronization State	The activity of reviewing the planned sequence of aircraft movement at a location and comparing the plan with actual information on the flights.
NAS Activity	Manage Synchronization Information	The activity of supervising the necessary activities involved in regulating the spacing and sequencing of air traffic throughout the cruise, arrival, and departure phases of flight.

3.5.6.2 Separation Management (5.2)

3.5.6.2.1 Description

This activity provides the function of ensuring aircraft or vehicles maintain safe separation minima from other aircraft or vehicles, protected airspace, terrain, weather, or other hazards. The function may be performed by ANSP personnel, the flight operator, and/or automation. This activity can delegate the separation operations based on trajectories or maneuver and provide the standards for self-separation.

3.5.6.2.2 Purpose

The purpose of SM is to ensure that aircrafts maintain a safe separation from other aircrafts and other hazards. The operating norm for SM is that the ANSP delegates tasks to aircraft to take advantage of aircraft capabilities; however, the trajectory manager may identify the need for the ANSP to maintain separation responsibility. For aircraft not delegated separation, whether this is because the aircraft are capable, or because the ANSP wishes to retain separation authority, ANSP automation manages separation and negotiates short-term, conflict driven updates to the 4DT agreements with the aircraft. The delegated separation operations include both a single aircraft having separation authority for a specific maneuver, or more general separation responsibility, such as flow corridors.

3.5.6.2.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Trajectory-Based Operations	Trajectory Based Operations are a shift from clearance based control to trajectory based control. Aircraft will fly negotiated trajectories and control moves to management by trajectory. The focus of these capabilities are on environments/airspace in which all aircraft are equipped to fully participate in trajectory based operations. Included under TBO are operational paradigms and airspace structures which support the move to trajectory based operations. Mixed environments and the advantages that the procedures and tools required for trajectory based operations and airspace are included either as transition steps to the end NextGen Trajectory based operations objectives. It is also assumed that the system will use the capabilities to provide some advantage in environments which will remain mixed.
OEP Solution Set	Increase Flexibility in the Terminal Environment	Flexible Terminals and Airports includes activities to improve both pilot and controller situational awareness to improve the safety and efficiency of operations. Includes activities related to both automated and remote virtual towers for the purpose of providing an improved service. The activities do not rise to a level which requires flow management.
NextGen Operational Improvements	Automation-Assisted Trajectory Negotiation and Separation Management	Trajectory management is enhanced by automated assistance to negotiation with properly equipped aircraft operators. Human ANSPs are responsible for separation management, supported by automation. 4DTs are negotiated between the ground-based automation and the operator, which may be the pilot, a UAS operator, or perhaps even FOC personnel, who would then relay information to the aircraft. This will enable higher density of operations thus higher capacity as well as decrease human errors in trajectory negotiation and entry.
NextGen Operational Improvements	Delegated self-separation - Oceanic	Oceanic user efficiency and ANSP productivity are improved through self-separation operations in designated oceanic airspace for capable aircraft. Aircraft-to-aircraft separation is delegated to the flight deck in designated airspace, such as on designated oceanic tracks, for capable aircraft with ADS-B and onboard conflict detection and alerting.
NextGen Operational Improvements	Delegated self-separation - Pair wise	In ANSP-managed airspace, the ANSP delegates pair wise separation tasks to capable aircraft to improve operator routing, enhance operational efficiency, or increase ANSP productivity. The ANSP delegates responsibility to capable aircraft to perform specific separation operations. This includes passing, crossing, turn-behind, and other simple separation tasks that require onboard display of traffic information. This does not include complex separation situations that would require onboard conflict alerting. The ANSP is responsible for separation from all other traffic while the designated aircraft performs the specified maneuver.
NextGen Operational Improvements	Electronic VFR Operations - Level 1	Visibility and cloud clearance requirements for VFR flights are reduced through use of onboard traffic displays, increasing utility of VFR operations. Electronic VFR provides the ability of an aircraft to transition through a light cloud layer or operate in lower visibility, using CDTI (with ADS-B or TIS B) to augment continuation of visual separation after initial visual contact.
NextGen Operational Improvements	Enroute airborne merging and spacing	Flow of traffic through constrained en route airspace is expedited through the use of airborne merging and spacing to increase capacity while reducing ANSP workload. This OI includes development of ANSP capabilities and procedures and provides greater traffic throughput, reduced ANSP workload/transactions, and greater trajectory maneuver efficiencies than via ANSP clearances. Design decisions are required before implementation to determine the most cost/beneficial and effective method for expediting flow of traffic through constrained en route airspace and to develop how this would be implemented in TBO airspace.
NextGen Operational Improvements	Added oceanic entry-exit points	This OI increases flight efficiency and productivity in the transition from oceanic/en route phase of flight to the domestic/en route and offshore/descent phases of flight by collaboration to provide additional entry/exit points for oceanic tracks. Flexible entry/exit to/from oceanic tracks will allow the aircraft to fly minimum time/fuel path from gate to gate and not just within the oceanic track system. Multiple entry/exit points also relieve congestion at established gateways. This will be accomplished as an expansion of ATOP Ocean 21, taking full advantage of and validating the use of ATOP's enhanced 4DT profiling, monitor-by-exception, data communications and conflict prediction capabilities.
NextGen Operational Improvements	Automated Trajectory Negotiation and Separation Management	Trajectory management is enhanced by automated negotiation of 4DTs between properly equipped aircraft and ground automation for separation management. All aircraft in TBO airspace must be equipped for this function. The ANSP Separation Management function is fully automated, and separation responsibility is delegated to automation. For specified operations, tasks are delegated to the flight crew to take advantage of aircraft capabilities. To manage separation, ANSP automation negotiates short-term, conflict-driven updates to the 4DT agreements with the aircraft. This will enable higher density of operations thus higher capacity as well as increased safety due to the elimination of human directed trajectory negotiation and automation input decrease in human errors in trajectory negotiation and entry. This OI requires a Policy/Implementation Decision to determine appropriate roles/responsibilities allocated between humans/automation and air/ground.
NextGen Operational Improvements	Improved oceanic maneuvers and profiles - Level 2	Availability of user preferred oceanic profiles for capable aircraft is increased through pair-wise altitude change maneuvers with ground-based separation responsibility. Aircraft-to-aircraft oceanic longitudinal and lateral spacing is reduced to 10 nm during altitude change maneuver. Pair wise maneuvers (in-trail climbs and descents) are enabled through the use of improved oceanic cooperative surveillance information. This may be implemented using either 1) ADS-B, CDTI and satellite-based communications, or 2) ADS-C and satellite-based communication.
NextGen Operational Improvements	Improved oceanic maneuvers and profiles -Level 1	Availability of user preferred oceanic profiles is increased through reduction of horizontal and longitudinal spacing to 30 nm for pair wise maneuvers between capable aircraft. Provides increased capacity and improved operational flexibility. The procedures rely on RNP, satellite-based voice and data communications, and increased ADS-C update rate.

Type	Name	Description
NextGen Operational Improvements	Improved oceanic maneuvers and profiles -Level 3	Availability of user preferred oceanic profiles is further increased through reduction of horizontal spacing to below 30 nm for pair wise co-altitude maneuvers between capable aircraft. Co-altitude maneuvers, such as passing a similar-speed aircraft, have much longer risk exposure times than altitude change maneuvers, resulting in higher collision risk, so communication uncertainties play a significant role in defining safe separation standards. With Implementation Alternative 1 (ADS-C surveillance information and ground-based separation assurance), the goal is 15 nm. With Implementation Alternative 2 (ADS-B and delegated self-separation for pair wise maneuver), spacing can be reduced at least to 10 nm, and perhaps to 5 nm during altitude change maneuvers. Benefit is to provide increased capacity and improved operational flexibility. The procedures rely on RNP, satellite based voice and data communications, and either 1) increased ADS-C update rate and ground-based separation assurance, or 2) ADS-B and delegated self-separation for pair wise maneuver.
NextGen Operational Improvements	Increased use of 3-mile separation	3-mile separation procedures are applied to new airspace based on RSP. This assumes a homegeneous environment (e.g., 3-mile separation becomes the "default" in some airspace). The current 3-mile separation standard is based on the controllers using a single radar system and aircraft within a 50-mile radius of the radar. In the future, this constraint may be eliminated through the use of advanced surveillance techniquest or technologies, e.g., ADS-B, modern radar processing technologies and/or the use of appropriate RSP procedures and technologies. Expected use: high density integrated arrival/departure flows, and transition from en route into high density terminal airspace. Waterfall deployment: a) Targetted high density transition airspace b) Additional areas of high density extended transition and en route airspace
NextGen Operational Improvements	Increased use of 5 mile separation	There are a significant number of non-radar areas in the domestic airspace where surveillance-based separation standards and/or delegated self-separation might be employed in place of today's less efficient route separation. 5 mile separation procedures are used in some airspace, such as specific oceanic regions, to provide increased capacity and greater operational flexibility. It is intended for implementation in the Gulf of Mexico or other busy areas of oceanic airspace close to shore. ADS-B provides accurate aircraft positional information to ground-based controllers. Satellite based data and voice communications provides direct controller-pilot communications. Backup is graceful degradation to procedural separation. Waterfall deployment: a) Gulf of Mexico b) Other locations (e.g., Western mountainous regions, Alaska statewide)
NextGen Operational Improvements	Reduced controlled flight into terrain	Controlled Flight Into Terrain (CFIT) is reduced through incorporation and integration of synthetic vision technologies and world-wide geospatial databases. Situational awareness enhancements utilize database, sensor, and hazard (terrain, traffic - surface and airborne, etc.) detection technologies merged with display symbology and precise GPS navigational information to create synthetic views of the aircraft's external environment for display to the flight crew. Regional databases and integrity monitoring technologies provide (acquire, verify, and maintain) worldwide geospatial databases suitable for synthetic vision applications.
NextGen Operational Improvements	Reduced human errors in operation of automated systems	Human errors are reduced through equipage of aircraft and ground systems with human-centered automation interfaces and skill training for automation. Interfaces are developed that increase usefulness and understandability of information, maintain appropriate human engagement, increase situation comprehension, increase situation comprehension, increase awareness of systems health, ensure the availability and the accessibility of needed information, and improve collaborative decision making. This OI includes development of improved training methods for flight crews and ground employees that focus on the increased use of, and integration of, automation, and the development of training modules and simulators targeted at improving and maintaining skills in areas especially vulnerable to error.

Type	Name	Description
NextGen Operational Improvements	Reduced weather-related incidents	Weather-related incidents are reduced through equipage of aircraft with cockpit weather system technologies for enhanced situational awareness and decision making. Aircraft are equipped with icing detection and avoidance technologies, icing tolerant technologies, icing computational tools, airborne weather reporting sensor technologies, weather information data link systems technologies for ground-to-air dissemination, airborne weather reporting data link systems for air-to-ground and air-to-air dissemination, and turbulence detection, warning and alerting technologies. Improvements are needed in icing experimental methods, icing experimental databases, icing atmospheric characterization technologies, and icing education and training tools.
NextGen Operational Improvements	Self-separation and flexible routing airspace	In self-separation airspace, capable aircraft are responsible for separating themselves from one another, and the ANSP provides no separation services, enabling preferred operator routing with increased ANSP productivity. Research will determine whether the ANSP will provide any traffic flow management services within self-separation airspace. Aircraft must meet equipage requirements to enter self-separation airspace, including transmission of trajectory intent information through cooperative surveillance. Transition into self-separation airspace includes an explicit hand-off and acceptance of separation responsibility by the aircraft. Transition into ANSP-managed airspace is facilitated through assigned waypoints with CTAs, allowing the ANSP to sequence and schedule entry into congested airspace, and self-separating aircraft are responsible for meeting assigned CTAs. Self-separating aircraft execute standardized algorithms to detect and provide resolutions to conflicts. Right-of-way rules determine which aircraft should maneuver to maintain separation when a conflict is predicted. Contingency procedures ensure safe separation in the event of failures and operational errors.
NextGen Operational Improvements	Special aircraft separation standards	Variable separation standards are used in en route airspace to accommodate new larger aircraft requiring greater than current separation standards, to mitigate loss of capacity due to need for increased separation behind new aircraft type (e.g., A380). This affects the conflict probe capability and metering. This is to be implemented in ERAM, providing automation support for efficiently managing parameter-driven separation handling, and requires development of standards and procedures. Separation management automation enables use of separation standards that are no longer based on a simple circular shape and can factor in aircraft capabilities, encounter geometries, and environmental conditions.
NextGen Operational Improvements	Surface Management Operations - Level 3	Aircraft and ground vehicle movement on airports in low visibility conditions is guided by moving map displays, CDTI, ADS-B (for flight vehicles), and a GSE Cooperative Surveillance System (for ground support equipment). Safety and efficiency of operations at some airports will also be enhanced by intelligent signage on the ground. Policy issue: Will this equipage be mandatory for access to some high-density airports during peak traffic times in low-visibility conditions, or will equipped aircraft be given priority access in low-visibility conditions but unequipped aircraft will be accommodated, or is this equipage simply optional. Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) some airports (Segment 2) b) OEP airports (Segment 3) c) top 100 airports (Segment 4) d) all commercial airports (Segment 6)
NextGen Operational Improvements	Terminal airborne merging and spacing metroplex	This OI uses airborne merging and spacing to allow greater traffic throughput and reduced ANSP workload in terminal areas by reducing spacing buffers between streams approaching and departing multiple metroplex runways. This OI includes development of ANSP capability and procedures and requires an Implementation Decision to determine what complex airborne merging and spacing operations will be required for effective use of high-density metroplex airspace, such as crossing streams, merging and diverging streams, etc.

Type	Name	Description
NextGen Operational Improvements	Terminal area airborne merging and spacing for multiple runways	Arriving or departing aircraft to/from multiple runways are instructed to achieve and maintain a given spacing in time or distance from a designated lead aircraft as defined by an ANSP clearance. Onboard displays and automation support the aircraft conducting the merging and spacing procedure to enable accurate adherence to the required spacing. Flight crews are responsible for maintaining safe and efficient spacing from the lead aircraft. Responsibility for separation from all other aircraft remains with the ANSP. Assigned spacing may include a gap to allow for an intervening departure between subsequent arrivals. Mixed-equipage operations are supported; a spacing-capable aircraft can perform airborne spacing behind a non-capable aircraft as long as it is transmitting cooperative surveillance information. This OI includes complex merging and spacing, such as for crossing and diverging streams and includes development of ANSP capability and procedures. Because an aircraft is spacing from its lead aircraft according to whatever spacing timing he is assigned by the ANSP, dynamic spacing with specific pair wise spacing requirements are supported.
NextGen Operational Improvements	Trajectory-Based Traffic Management - Level 1	All in-flight aircraft operating in Trajectory-Based Airspace are managed by 4D trajectory in en route climb, cruise, and descent. This may be considered a staging of the 4D trajectory-based capability. This would require the ability to calculate, negotiate, and perform conformance monitoring by ANSPs, including the integration of separation assurance and traffic management (time constraints, e.g., RTAs). This will be enabled by the trajectory exchange through electronic data communications. In high-density or high-complexity airspace, precise 4DTs will be used, dramatically reducing the uncertainty of an aircraft's future flight path, in terms of predicted spatial position (latitude, longitude, and altitude) and times along points in its path. This enhances the capacity and throughput of the airspace to accommodate high levels of demand.
NextGen Operational Improvements	Trajectory-Based Traffic Management - Level 2	All aircraft operating in Trajectory-Based Airspace and Airport Surfaces are managed by 4D trajectory in en route climb, cruise, descent, and airport surface phases of the flight. This is the end state 4D trajectory-based capability. This would require the ability to calculate, negotiate, and perform conformance monitoring by ANSPs, including the integration of separation assurance and traffic management time constraints (e.g., RTAs, runway times of arrival, gate times of arrival). This will be enabled by the trajectory exchange through electronic data communications, as well as many new surface automation and 3D (x, y, and time) trajectory operations. In high-density or high-complexity airspace, precise 4DTs will be used, dramatically reducing the uncertainty of an aircraft's future flight path, in terms of predicted spatial position (latitude, longitude, and altitude) and times along points in its path. This enhances the capacity and throughput of the airspace to accommodate high levels of demand. In trajectory-based airspace, differing types of operations are conducted, with performance-based services applied based on the anticipated traffic characteristics. User preferences are accommodated to the greatest extent possible, and trajectories are constrained only to the extent required to accommodate demand or other national concerns, such as security or safety.
NextGen Operational Improvements	Use of less than 3-mile separation	Metroplex airspace capacity is increased through implementing separation standards of less than 3 nm between high navigation precision arrival and departure routes. This OI increases metroplex airspace capacity and supports superdensity airport operations by implementing separation standards for inter-aircraft separations of less than 3 nm. Arrival/departure routes with lower RNP values (e.g., RNP<1 nm) are defined with less than 3 miles lateral separation between routes, subject to wake vortex constraints, enabling the use of more routes in a given airspace. This may require airborne lateral separation between routes. Enhanced RSP is required. This requires a Policy Decision to determine what RNP values to require based on performance benefit versus equipage requirements and operational considerations. Expected use: high density terminal and transition airspace.
NextGen Operational Improvements	Wake-based arrival/departure spacing management Level 1 - Static	Longitudinal departure spacing requirements are reduced (based on wake vortex drift) for dual-use and closely spaced parallel runways based on ground-based wake vortex drift prediction and detection. This is static reduction, i.e., reduction for periods of perhaps 4 or more hours when persistently favorable conditions are forecast. Ground-based departure controllers use wake vortex avoidance systems (based on wake drift) to achieve the regulatory minimum spacing for aircraft departing on closely spaced parallel runways.
NAS Operational Improvements	Automation Support for Variable Separation	Performance-based services use variable separation standards according to aircraft geometry and crew capabilities. Users and air navigation service providers (ANSP) have a common understanding of which variable separation is being used.

Type	Name	Description
NAS Operational Improvements	Delegated Responsibility for Horizontal Separation	Enhanced surveillance and new procedures enable air navigation service providers (ANSP) to delegate aircraft-to-aircraft separation. Improved avionics and traffic information broadcast provide common situational awareness to the flight deck. Pilots implement delegated separation between equipped aircraft using established procedures.
NAS Operational Improvements	Increase Capacity and Efficiency Using RNAV and RNP	Area Navigation (RNAV)/Required Navigational Performance (RNP) enables reduced separation requirements between aircraft trajectories and flows. RNAV/RNP and trajectory-based operations (TBO), combined with airspace changes, increase airspace efficiency and capacity.
NAS Operational Improvements	NextGen Oceanic Procedures	Enhanced communication, surveillance, and flight deck avionics capabilities enable reduced oceanic separation minima when operationally advantageous and aircraft meet required total system performance requirements. Data communications between aircraft and between the aircraft and the air navigation service provider (ANSP) enable real-time control instructions by the ANSP and aircraft-to-aircraft delegation of separation authority. Accurate and immediate feedback of routing or altitude changes provides immediate acknowledgement for separation assurance, trajectory changes, and deviations around air traffic or weather.
NAS Operational Improvements	Reduce Horizontal Separation Standards -3 Miles	The Air Navigation Service Provider (ANSP) provides reduced and more efficient separation between aircraft where the required performance criteria are met, regardless of location.
NAS Operational Improvements	Tactical Trajectory Management	Tactical trajectory management adjusts individual aircraft within a flow to provide efficient trajectories, manage complexity, and ensure separation assurance. Flight deck and/or air navigation service provider (ANSP) automation resolves pair-wise conflicts. The ANSP role evolves into managing trajectory-based airspace by maintaining largely conflict-free, user-preferred flows. This evolution allows the flexibility required to maximize capacity and en route throughput.
NAS Operational Improvements	Trajectory-Based Airspace	Trajectory based airspace (TBA) and automation enable air navigation service providers (ANSPs) to manage traffic flows without specific local knowledge. ANSPs are certified for airspace, not for specific local regions. ANSP automation includes decision support tools, conflict resolution, and aids for local knowledge.

3.5.6.2.4 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Separation Management	The function of ensuring aircraft or vehicles maintain safe separation minima from other aircraft or vehicles, protected airspace, terrain, weather, or other hazards. The function may be performed by ANSP personnel, the flight operator, and/or automation.
ICAO ATMCP Requirement	R 61	The ATM system shall implement the/a function of conflict management
ICAO ATMCP Requirement	R 65	The ATM system shall support strategic, pre-tactical and tactical conflict management. The selection of the type of conflict management shall be based on meeting ATM system performance targets, both before and after departure
ICAO ATMCP Requirement	R 66	Tactical conflict management shall be applied when strategic conflict management cannot be used efficiently.

Type	Name	Description
ICAO ATMCP Requirement	R 117	Conflict management shall limit, to an acceptable level, the risk of collision between aircraft and hazards
ICAO ATMCP Requirement	R 119	The separator must be pre-determined prior to the commencement of separation provision, however the role of separator may be delegated
ICAO ATMCP Requirement	R 120	The pre-determined separator shall be the airspace user, unless safety or ATM system design requires a separation provision service
ICAO ATMCP Requirement	R 121	Services to be delivered by the ATM service delivery system shall be established on an on-request basis subject to ATM system design
ICAO ATMCP Requirement	R 122	ATM service delivery management shall manage the distribution of the responsibilities for the various services and their seamless performance, including the designation of pre-determined separator for separation provision
CONOPS	2.4.5 Separation Management Process	
Key Concept	Equivalent Visual Operations (EVO)	Improved information availability allows aircraft to conduct operations without regard for visibility or direct visual observation. For aircraft, this capability, in combination with PNT, enables increased accessibility, both on the airport surface and during arrival and departure operations. This capability also enables those providing services at airports (such as ATM or other ramp services) to provide services in all visibility conditions, leading to more predictable and efficient operations.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
Key Concept	Positioning, Navigation, and Timing (PNT) Services	PNT services are provided where and when needed, in accordance with demand and safety considerations, to enable reliable aircraft operations in nearly all conditions. Instead of being driven by the geographic location of a ground-based navigational aid (NAVAID), PNT services allow operators to define the desired flight path based on their own objectives.
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.

Type	Name	Description
Key Concept	Weather Assimilated into Decisionmaking	By assimilating weather into decisionmaking, weather information becomes an enabler for optimizing NextGen operations. Directly applying probabilistic weather information to ATM decision tools increases the effective use of weather information and minimizes the adverse effects of weather on operations.
BRM Sub-Function	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.
SRM Service Component	Separation Analysis	Defines the set of capabilities that identify and tactically resolve airspace conflicts among aircraft (i.e., automatic issuance of revised four-dimensional trajectories) to ensure the avoidance of weather, airspace, terrain, or other hazards.

3.5.6.2.5 NextGen Future Solutions

Type	Name	Description
NAS Activity	Evaluate Advisory State	The activity of reviewing information that may be essential to assist pilots in the safe conduct of flight and aircraft movement. This includes weather advisories, NAS Status advisories, or traffic advisories.

3.5.6.3 Contingency/Business Continuity Management (5.3)

3.5.6.3.1 Description

This activity provides the capability to monitor and notify the local, state, and authorities. To mitigate aircraft incidents/accidents on or near the airport, as well as security incidents (e.g. Natural Hazards and Human & Technology).
Overall, the NextGen is more resilient in responding to failures and disruptions and includes contingency measures to provide maximum continuity of service, including business continuity,
in the face of major outages, natural disasters, security threats, or other unusual circumstances. Moreover, the increased reliance on automation is coupled with fail-safe modes that do not require full reliance on human cognition as a backup for automation failures. Because individual systems and system components can fail, the NextGen maintains a balance of reliability, redundancy, and procedural backups. It provides a system that not only has high availability but also requires minimal time to restore failed functionality.

3.5.6.3.2 Purpose

Overall, the NextGen is more resilient in responding to failures and disruptions and includes contingency measures to provide maximum continuity of service, including business continuity, in the face of major outages, natural disasters, security threats, or other unusual circumstances. Moreover, the increased reliance on automation is coupled with fail-safe modes that do not require full reliance on human cognition as a backup for automation failures. Because individual systems and system components can fail, the NextGen maintains a balance of reliability, redundancy, and procedural backups. It provides a system that not only has high availability but also requires minimal time to restore failed functionality.

3.5.6.3.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Increase Security Safety and Environment Performance	

Type	Name	Description
NextGen Operational Improvements	Common and synchronized airport emergency and disaster response	Acceptance of a standard approach to responding to catastrophic emergency/disaster for airports to enable seamless integration of regional and national response resources when needed (Policy).
NAS Operational Improvements	Enhance Emergency and Alerting Services	Surveillance broadcast equipped aircraft provide precise geographic location information to the air navigation service provider (ANSP) via data communications. This capability enhances alerting services and expands emergency services beyond normal radar coverage areas. ANSP and the rescue coordination center respond to an emergency situation better informed as to the location and intent of the aircraft.

3.5.6.3.4 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
ICAO ATMCP Requirement	R131	To ensure safety and a continuous operation, the ATM system shall have contingency plans at all levels of operation to deal with anomalies.
ICAO ATMCP Requirement	R162	In the design or continued evolution of the ATM system, facility shall be provided for a pilot, and/or appropriate aircraft system, to indicate emergency situations.
CONOPS	1 INTRODUCTION	
CONOPS	3.3.1 Airside Operations	
CONOPS	4.3.1 Ground Network Services	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.

Type	Name	Description
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
Key Concept	Weather Assimilated into Decisionmaking	By assimilating weather into decisionmaking, weather information becomes an enabler for optimizing NextGen operations. Directly applying probabilistic weather information to ATM decision tools increases the effective use of weather information and minimizes the adverse effects of weather on operations.
BRM Sub-Function	Disaster Preparedness and Planning	Disaster Preparedness and Planning involves the development of response programs to be used in case of a disaster as well as pre-disaster mitigation efforts to minimize the potential for loss of life and property. This involves the development of emergency management programs and activities as well as staffing and equipping regional response centers, and mitigation focused construction and preparation.
BRM Sub-Function	Disaster Repair and Restore	Disaster Repair and Restore involves the cleanup and restoration activities that take place after a disaster. This involves the cleanup and rebuilding of homes, buildings, roads, environmental resources, or infrastructure that may be damaged due to a disaster.
BRM Sub-Function	Emergency Response	Emergency Response involves the immediate actions taken to respond to a disaster. These actions include, but are not limited to, providing mobile telecommunications, operational support, power generation, search and rescue, and medical life-saving actions.
BRM Sub-Function	Contingency Planning	Contingency Planning involves the actions required to plan for, respond to, and mitigate damaging events.
BRM Sub-Function	Continuity of Operations	Continuity of Operations involves the activities associated with the identification of critical systems and processes, and the planning and preparation required to ensure that these systems and processes will be available in the event of a catastrophic event.
BRM Sub-Function	Service Recovery	Service Recovery involves the internal actions necessary to develop a plan for resuming operations after a catastrophic event occurs.
SRM Service Component	Alerts and Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.
SRM Service Component	Risk Management	Defines the set of capabilities the support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal; includes risk assessment and risk mitigation.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Structural/Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.
SRM Service Component	Data Mining	Defines the set of capabilities that provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.

Type	Name	Description
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.

3.5.6.3.5 NextGen Future Solutions

Type	Name	Description
FAA Systems	NAS Infrastructure Management System	
NAS Activity	Manage Emergency Assistance	An activity in which appropriate assistance is provided to aircraft in an emergency state, and coordination of efforts are managed between all necessary facilities.
NAS Activity	Manage Emergency Information	The supervision of the necessary activities that provide the information to ensure appropriate assistance is provided to aircraft in an emergency state, and coordination of efforts are managed between all necessary facilities.

3.5.6.4 Trajectory Management (5.1)

3.5.6.4.1 Description

This activity is the process by which individual aircraft trajectories are managed just before and during the flight to ensure efficient individual trajectories within a flow. Trajectory management corrects imbalances within an established flow to ensure that congestion is managable.

3.5.6.4.2 Purpose

The purpose of TM is the management of frequency and complexity of aircraft conflicts and reduces, but does not eliminate, the need for tactical separation maneuvers. In high-density or high-complex operations, and especially for climbing and descending aircraft around airports, some conflicts occur; otherwise, aircraft over-constrain the system and underused available capacity.

Air Navigation Operations A5

Trajectory Management A5.1

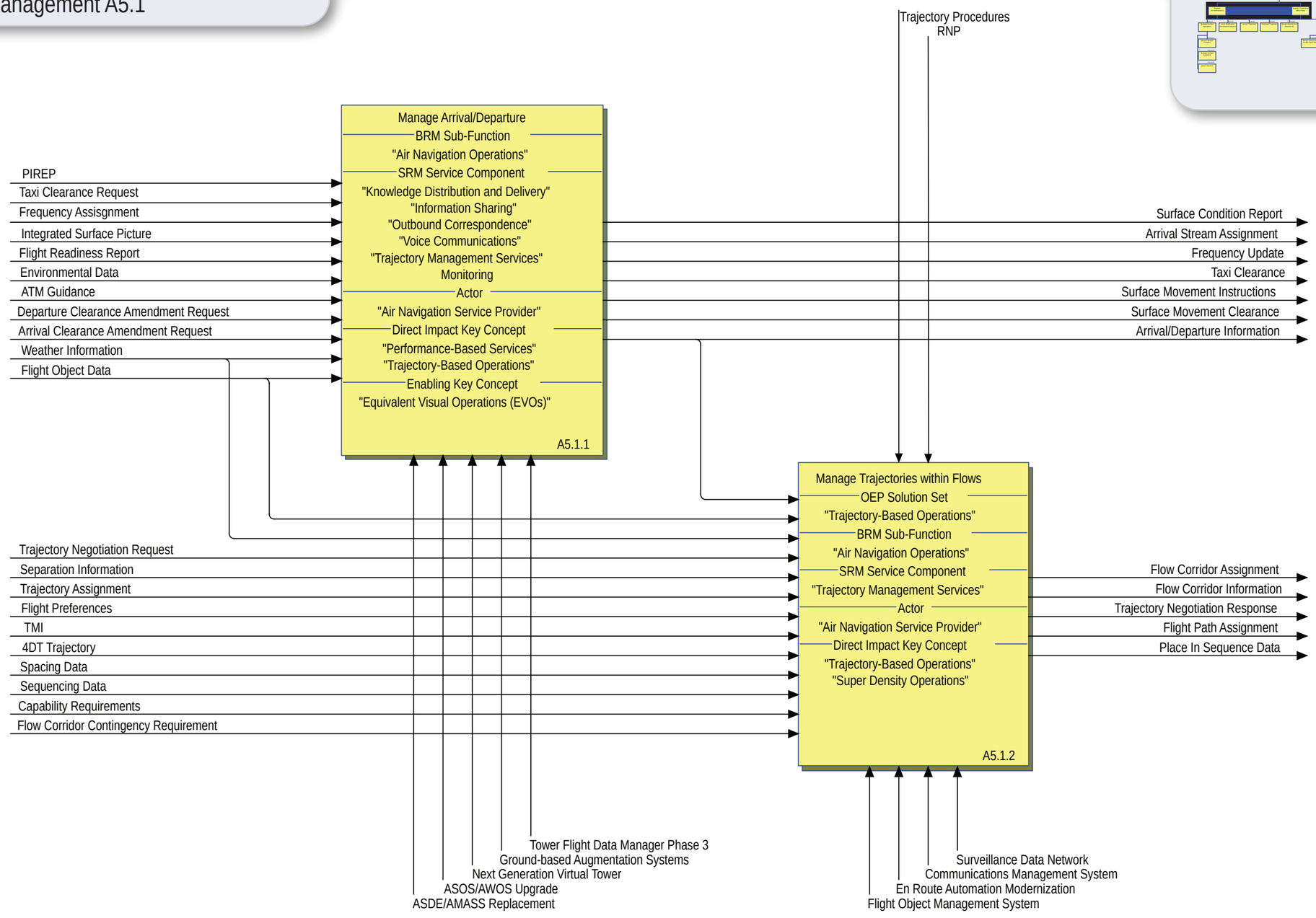


Figure 61 - 5.1 Trajectory Management Activity Model Diagram

3.5.6.5 Manage Arrival/Departure (5.1.1)

3.5.6.5.1 Description

This activity provides the arriving and departing aircrafts the assignments (i.e., taxi instructions, streams, sequencing) and procedures for operating on the surface and terminal airspace. This includes the monitoring of surface surveillance to ensure safe operations.

3.5.6.5.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	CDA-enhanced Time Based Arrivals	Time-based metering replaces miles in trail restrictions. This OI provides consistent delivery of aircraft into the terminal area to match runway acceptance rates, enabling efficient, high-throughput operations. Where practical, this OI enables CDA operations under moderate traffic conditions, with ground-based automation providing conflict-free, time-based metering solutions for en route and transition airspace segments. This sets up a stream of aircraft to perform CDAs, including aircraft with minimal equipage performing basic CDAs as well as aircraft with onboard energy management guidance and airborne spacing guidance performing optimized CDAs.
NextGen Operational Improvements	Improved Collaborative Oceanic Routing	Oceanic route efficiency is improved through collaborative negotiation of entry times and track loading and oceanic traffic handling is improved through comparison of current routes against desired profiles to identify beneficial control actions. Aircraft dispatchers and traffic flow managers negotiate oceanic entry times prior to departure. The negotiation includes looking ahead to plan near-term climbs when loading tracks. Oceanic 4D profiles of active flights are continually examined to determine control actions that enhance oceanic capacity while providing improved efficiency within traffic flows. This is an extension of "tailored arrivals," where either a) aircraft send desired profiles (pre-departure and real-time), or b) ground automation predicts desired profiles.
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management	Arrival and departure flows and surface operations are more effectively planned and managed through integrated advanced ANSP automation. This OI develops an Integrated Arrival/Departure and Surface Traffic Flow Manager for improved decision making and flow management. These decision support tools enable ANSP flow managers to work collaboratively with flight operators and with ANSP flow contingency managers to effectively manage high-capacity arrival and departure flows in the presence of various weather conditions. Real-time information distribution enhances operational efficiencies, such as distribution of runway braking action reports. Improved surveillance, automation, and information sharing enhance efficiency of terminal area operations. The ANSP can safely make more efficient use of runways through real-time depiction in the tower of the location and intent of arriving and departing aircraft, as well as any aircraft intending to cross an active runway.
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management for Metroplex	Metroplex traffic flow is more effectively managed through terminal area and surface scheduling automation for increased regional capacity. Metroplex planners at major terminal areas optimize arrival/ departure and surface scheduling for increased regional capacity. TBO is a key element of super-density procedures, allowing the ANSP to maximize access for all traffic, while adhering to the principle of giving advantage to those aircraft with advanced capabilities that support the ATM system. Metroplex Trajectory Management assigns each arriving aircraft to an appropriate runway, arrival stream, and place in sequence.
NextGen Operational Improvements	Limited CDAs	Limited CDAs reduce fuel use and noise on approaches to target airports. In the near-term new operational CDA procedures are implemented for specific traffic flows at target airports in low to moderate traffic situations using existing airborne technologies with enhanced sharing of information between operator and ANSP. Waterfall development: Low traffic demonstration (TBD) Higher traffic implementation (TBD)
NextGen Operational Improvements	Performance-based terminal operations	Performance-based navigation operations are used on terminal area arrival and departure routes to increase utilization of high-density terminal area airspace. Less noisy and fuel-optimal routes, including CDAs, are used where and when feasible, and environmental constraints are met through routing decisions and dispersion of traffic over multiple RNP routes. Waterfall deployment: a) to/from some runways at OEP airports (2009), b) to/from all runway ends at all OEP airports (2011), c) to/from all runways at the top 100 airports (Segment 5), d) to/from all runways serving commercial traffic (Segment 6).
NextGen Operational Improvements	Sequencing, separation, and spacing services for IMC operations are provided thr	This OI increases IMC throughput at non-towered single-runway airports. Expected use is either: Staffed Virtual Towers (SVTs), with remote personnel providing needed services or potentially, Automated Virtual Towers (AVTs), with sequencing, spacing, and separation functions provided either by ground automation or through aircraft-based conflict detection/resolution algorithms. Benefits: Capacity and ANSP productivity plus cost avoidance for not building towers. Major implementation alternatives: 1) Remotely Staffed Virtual Towers 2) Automated Virtual Towers with separation functions provided by ground automation 3) Automated Virtual Towers with separation functions provided by aircraft Implementation of any of these 3 alternatives will require a Policy Decision concerning safety of operations and appropriate allocation of roles and responsibilities to humans vs automation and to ANSP vs flight operator. There will also be required an Implementation Decision between the 3 implementation alternatives. It is likely that both SVTs and one or both types of AVTs will be implemented, with SVTs used at larger, busier, and more complex airports, and AVTs used at simpler, less-busy airports. Waterfall deployment (include virtual towers at GA airports to support to VMC operations and to replace existing manned towers at lower traffic airports): TBD
NextGen Operational Improvements	Sequencing, separation, spacing and surface management services through virtual	This adds provision of surface management services (TBD) to OI 313 through use of virtual towers. Expected use is SVTs or AVTs, with separation functions provided either by ground automation or through aircraft-based conflict detection/resolution algorithms. Increases IMC throughput at non-towered, multiple-runway airports and small airports in metroplex environments. Benefits: capacity and ANSP productivity. Requires and Implementation Decision to determine what complex airport operations, such as multiple runway operations, can be safely and effectively supported by AVTs vs SVTs. This OI includes deployment of virtual towers at GA airports and supports VMC operations. It also will permit replacing existing manned towers at lower traffic airports with either AVTs or SVTs. Waterfall deployment: TBD
NextGen Operational Improvements	Surface Management Operations - Level 1	This OI enhances surface operations to reduce delay and environmental impacts at target airports to manage surface traffic (aircraft and GSE) and generate taxi instructions.
NextGen Operational Improvements	Surface Management Operations - Level 2A	Efficiency of surface traffic movement is increased through the use of automation, on-board displays and data link of departure taxi instructions prior to pushback to properly equipped aircraft to reduce delay, environmental impacts and operational errors. Automation optimizes surface throughput and data links taxi instructions to aircraft. The taxi instructions include the 2D route. Pilot uses onboard displays of taxi route and guidance to efficiently and safely follow taxi instructions. Surface optimization automation includes activities such as runway snow removal, aircraft de-icing, and runway reconfiguration.

Type	Name	Description
NextGen Operational Improvements	Surface Management Operations - Level 2B	This OI increases efficiency and safety of surface traffic movement, with corresponding reduction in environmental impacts. Efficiency of surface movement is increased through the use of automation, on-board displays and data link of taxi instructions on arrival to properly equipped aircraft to reduce delay and environmental impacts and improve safety. This OI assumes development of surface automation that is fully integrated with airborne operations and applies this to surface management operations. This OI is an extension of OI 321 and contains those improvements as well.
NextGen Operational Improvements	Surface Management Operations - Level 3	Aircraft and ground vehicle movement on airports in low visibility conditions is guided by moving map displays, CDTI, ADS-B (for flight vehicles), and a GSE Cooperative Surveillance System (for ground support equipment). Safety and efficiency of operations at some airports will also be enhanced by intelligent signage on the ground. Policy issue: Will this equipage be mandatory for access to some high-density airports during peak traffic times in low-visibility conditions, or will equipped aircraft be given priority access in low-visibility conditions but unequipped aircraft will be accommodated, or is this equipage simply optional. Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) some airports (Segment 2) b) OEP airports (Segment 3) c) top 100 airports (Segment 4) d) all commercial airports (Segment 6)
NextGen Operational Improvements	Surface Management Operations - Level 4	Aircraft and ground vehicle movement on airports in zero/zero visibility conditions is guided by moving map displays, CDTI, ADS-B (flight vehicles), and a GSE Cooperative Surveillance System (for ground vehicles). Requires all present aircraft and ground vehicles to have cooperative surveillance (ADS-B out). Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) OEP airports (Segment 5) b) top 100 airports (Segment 6) c) all commercial airports (Segment 7)
NextGen Operational Improvements	Time Based Departures and Enroute Operations	This OI provides increased departure throughput via manual time-based control of departing aircraft into an overflight stream using a decision support tool insuring that all available gaps in the en route stream are filled. It also provides departure and en-route time-based control for complex metropolitan airspace where there are multiple conflicting departure streams. Waterfall deployment: a) NY and Phil TRACONS (2007) b) all complex metropolitan airspace with multiple conflicting departure streams (Segment 1)
NextGen Operational Improvements	Wake-based arrival/departure spacing management Level 1 - Static	Longitudinal departure spacing requirements are reduced (based on wake vortex drift) for dual-use and closely spaced parallel runways based on ground-based wake vortex drift prediction and detection. This is static reduction, i.e., reduction for periods of perhaps 4 or more hours when persistently favorable conditions are forecast. Ground-based departure controllers use wake vortex avoidance systems (based on wake drift) to achieve the regulatory minimum spacing for aircraft departing on closely spaced parallel runways.
NAS Operational Improvements	Enhanced Tower Data Link System with Coded Taxi Clearance	Digital data communication between aircraft and air navigation service provider (ANSP) is used to exchange clearances, amendments, requests, NAS status, weather information, and surface movement instructions. At specified airports data communications is the primary means of communication between ANSP and equipped aircraft.
NAS Operational Improvements	Expand Use of Cat II-III Precision Approaches Using GBAS	At specified airports, ground based augmentation systems (GBAS) support precision approaches to Category I, Category II, and Category III minimums for properly equipped runways and aircraft. GBAS supports approach minimums at airports where precision-landing systems cannot meet performance requirements due to terrain, obstacle or other restrictions.

Type	Name	Description
NAS Operational Improvements	Integrated Arrival/Departure Management	Air navigation service provider (ANSP) decision support tools schedule and stage arrivals and departures based on airport demand, aircraft capabilities, and gate assignments. RNP/RNAV equipped aircraft are procedurally separated into and out of high-density airports.
NAS Operational Improvements	Optimize Runway Assignments	Arrivals and departures are sequenced and staged to maintain throughput. Air navigation service provider (ANSP) automation uses arrival and departure-scheduling tools and 4DT agreements to flow traffic at high-density airports. Automation incorporates user provided gate assignments, requested runway, aircraft wake characteristics, and flight performance profiles. ANSP and airport operators monitor airport operational efficiency and make real-time adjustments to schedules and sequencing to optimize throughput.
NAS Operational Improvements	Provide Surface Situation to Pilots and Service Providers	Automated broadcast of aircraft and vehicle position to ground sensors/receivers provides a digital display of the airport environment. Aircraft and vehicles are identified and tracked to provide a full comprehensive picture of the surface environment to the air navigation service provider (ANSP) and equipped aircraft.
NAS Operational Improvements	Provide Surface Situation to Pilots, Service Providers and Vehicle Operators for	Aircraft and surface vehicle positions are displayed to air navigation service providers (ANSP) and equipped aircraft and vehicles. This capability increases situational awareness in restricted visibility conditions and provides more efficient surface movement.
NAS Operational Improvements	Staffed Virtual Towers	Begin reducing the total number of service delivery points (SDPs) and simultaneously increase service at non-towered and satellite airports by incorporating SVT capabilities into distant ATM facilities, and eventually new GSDP facilities. Remote virtual tower capabilities enable ATM services to be provided for operations into and out of airports without physically constructing, equipping, and/or sustaining tower facilities at these airports, hence controlling increases in life cycle costs to sustain, expand, and improve services in response to steadily increasing demand. Out the window visual observations employed at co located tower facilities are replaced by emerging technology applications that enable equivalent information to be acquired, processed, communicated, and displayed at remote locations for use by ANSPs with the aid of decision support tools.
NAS Operational Improvements	Time-Based Metering Using RNAV/ RNP Route Assignments	Integrating RNAV/RNP and traffic management advisor (TMA) provides efficient use of runways and airspace in high-density airport environments. RNAV/RNP provides users with more efficient and consistent arrival and departure routings and fuel-efficient operations. TMA manages the flow of aircraft to meter fixes to provide efficient use of runways and airspace.
NAS Operational Improvements	Use Aircraft Provided Intent Data to Improve Conflict Resolution	Air navigation service provider (ANSP) automation uses aircraft position broadcast reports, velocity, and intent data to provide tactical and strategic separation services and more efficient flows. Aircraft exchange of intent data enables aircraft-to-aircraft delegated separation authority when operationally advantageous.
NAS Operational Improvements	Use Aircraft Provided Intent Data to Improve Flow Conflict Resolution	Air navigation service provider (ANSP) automation uses aircraft provided intent data (4D trajectory contracts) to improve modeling of conflict-free flows at high-density airports. Conformance monitoring tools ensure 4D trajectories reflect the aircraft's actual and intended state.
NAS Operational Improvements	Use CDA to Support User Efficiency and Noise Reduction	Continuous descent approaches (CDAs) permit aircraft to remain at higher altitudes on approach to the airport and use lower power settings during descent. CDA arrival procedures provide for lower noise and more fuel-efficient operations. The air navigation service provider procedures and automation accommodate CDAs when operationally advantageous.
NAS Operational Improvements	Use Data Messaging to Provide Flow and Taxi Assignments	Surface traffic management incorporates flow and taxi instructions into data messages and delivers them to the flight deck. At high-density airports clearances and amendments, requests, NAS status, airport flows, weather information, and surface movement instructions are issued via data communications.

Type	Name	Description
NAS Operational Improvements	Wake Vortex Integrated to Flow	Air navigation service provider (ANSP) automation and decision support tools incorporate aircraft wake characteristics into arrival/departure flows, runway staging, and taxi assignments to enhance efficiency at high-density airports. Arrival and departure flows are planned and executed based on a comprehensive view of real time airport operations. Automation provides optimal departure staging and arrival sequencing based on aircraft wake and airborne performance characteristics.
NAS Operational Improvements	Wake Vortex Wind Based Procedures	Changes to wake rules are implemented based on improved wind measurements and wake transport prediction capabilities. Procedures allow more closely spaced operations to maintain airport/runway capacity.

3.5.6.5.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Trajectory Management	The function of fine-tuning trajectories as required by the airspace plan or an active flow contingency management initiative to minimize pairwise contention and ensure efficient individual trajectories within a flow
ICAO ATMCP Requirement	R169	Traffic Synchronisation shall be applied for the purpose of maximising throughput of a particular ATM environment in the most effective and efficient manner
ICAO ATMCP Requirement	R 21	A facility and/or procedure shall be provided, as required, to monitor or manage aircraft operation safely and expeditiously, within the confines of the aerodrome and its immediate surroundings
ICAO ATMCP Requirement	R 29	At those aerodromes where benefit can be demonstrated, the ATM System shall be designed so that the ratio of IMC to VMC throughput converges to 1.0.
ICAO ATMCP Requirement	R 84	The ATM system shall collaboratively determine suitable aerodrome facilities to enable the efficient maintenance of capacity in adverse weather conditions.
ICAO ATMCP Requirement	R 106	Airspace management shall be dynamic, flexible and based on services demanded
CONOPS	2.4 TRAJECTORY-BASED AIRSPACE AND OPERATIONS	
CONOPS	2.5 CLASSIC AIRSPACE AND OPERATIONS	
Key Concept	Equivalent Visual Operations (EVO)	Improved information availability allows aircraft to conduct operations without regard for visibility or direct visual observation. For aircraft, this capability, in combination with PNT, enables increased accessibility, both on the airport surface and during arrival and departure operations. This capability also enables those providing services at airports (such as ATM or other ramp services) to provide services in all visibility conditions, leading to more predictable and efficient operations.

Type	Name	Description
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
Key Concept	Super-Density Arrival/Departure Operations	With increasing demand, an even greater need exists to achieve peak throughput performance at the busiest airports and in the busiest airspace. New procedures to improve airport surface movements, reduce spacing and separation requirements in place today, and better manage overall flows in and out of busy metropolitan airspace provide maximum use of the highest-demand airports. Airport terminals also maximize efficiency of egress and ingress, matching passenger and cargo flow to airside throughput while maintaining safety and security levels.
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Voice Communications	Defines the set of capabilities that provide telephony or other voice communications.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting o perational environments, systems, services, processes, etc. against predefined measurement indicators.
SRM Service Component	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.

3.5.6.5.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Ground-based Augmentation Systems	

Type	Name	Description
FAA Systems	Next Generation Virtual Tower	Tower services may be provided remotely from a location away from at the aerodrome. These Staffed Virtual Towers, (SVTs) provide services similar to existing towered aerodromes. Reliable surface surveillance and robust procedures will help this occur safely. The benefits of SVT operations include the provision of tower services to a larger number of aerodromes than is provided today, significantly reduced physical infrastructure costs, and the potential for ANSP personnel to service multiple airfields from a single physical location. Because more aerodromes will have sequencing and separation services, the system is capable of additional throughput compare one-in-one-out operations at non-towered aerodromes today. Improved services to some currently uncontrolled and lower density aerodromes will be provided by Automated Virtual Towers (AVTs). AVTs provide sequencing services and basic aerodrome information without the use of Air Navigation Service Provider (ANSP) personnel at an enhanced level compared to the typical non-towered aerodrome today. The NextGen envisions AVTs can be deployed for non-towered aerodromes and provide services at smaller towered or Staffed Virtual Towers (SVT) facilities during off-peak hours. Because more aerodromes will have sequencing services, the system will receive a throughput compared to one-in-one-out operations at non-towered aerodromes today. Aircraft will conduct self-separation procedures to enable simultaneous operations in instrument meteorological benefit from more reliable access to smaller aerodromes, more efficient air-taxi operations, avoidance of major aerodromes, and increased transportation services to rural communities.
FAA Systems	Tower Flight Data Manager Phase 3	The Tower Flight Data Manager Phase 3 (TFDM3) mechanism provides ...
FAA Systems	Auto Surface Observing Syst	The Automated Surface Observing System (ASOS) is an automated observing weather system sponsored and funded by the FAA. ASOS provides surface weather observations, which include: temperature, dew point, wind, altimeter setting, visibility, sky condition, and precipitation. ASOS routinely and automatically provides a computer-generated voice to provide weather information directly to aircraft in the vicinity of airports using FAA very high frequency (VHF) ground-to-air radio. In addition, the same information is available through a dial-in telephone and most of the data is provided on the national weather data network, and to NWS via ADAS and WMSCR.
FAA Systems	Airport Movement Area Safety System	The Airport Movement Area Safety System (AMASS) with Airport Surface Detection Equipment (ASDE) provides controllers with automatically generated visual and aural alerts of potential runway incursions and other potential unsafe conditions. AMASS includes the Terminal Automation Interface Unit (TAIU) that processes arrival data from the Airport Surface Detection Equipment (ASDE-3). AMASS adds an automation enhancement to the ASDE-3 and tracks the movement of aircraft and ground vehicles on the airport surface and presents the data to the tower controllers via the ASDE display. AMASS integrates and displays data from ASDE-3 and the Runway Status Lights (RWSL).
FAA Systems	Auto Wx/Surface Observing Syst Data Acquisition Syst Upgrade	Automated Weather Observing System/Automated Surface Observing System Data Acquisition System Upgrade (ADAS Upgrade) entails a major upgrade to increase its processing and dissemination efficiency as well as incorporating data from new ASOS sensors (e.g., 25kt ceilometers, enhanced precipitation identifier, etc). This upgrade will also ingest and process new data sets from snowfall gauges as well as cloud-cloud lightning data correlating the position to the appropriate ASOS/AWOS site.
FAA Systems	Airport Surface Detection Equip Model 3 Airport Mvmnt Area Safety Syst Upgrade	The Airport Surface Detection Equipment Model 3/Airport Movement Area Safety System (ASDE-3/AMASS) Upgrade provides for the technical refresh of the ASDE-3 and AMASS. Selected system components will be replaced or upgraded to extend the service life of these systems through 2023 (ASDE-X End of Service Life (EOSL)), at which point all ASDE systems (ASDE-3/AMASS, ASDE-3X, ASDE-X) will be replaced with a common system.
FAA Systems	Automated Surface Observing System	
NAS Activity	Evaluate Traffic Flow State	This activity compares demand profiles projections of NAS capacity for the current day and identify periods and locations where predicted demand exceeds predicted capacity.
NAS Activity	Manage Flow Information	The supervision of the necessary activities involved in obtaining and analyzing the information necessary to regulate traffic flow during periods and for locations where predicted demand exceeds predicted capacity.

3.5.6.6 Manage Trajectories within Flows (5.1.2)

3.5.6.6.1 Description

This activity manages the trajectories within the flow. This involves assigning trajectories and negotiating trajectories.

3.5.6.6.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Trajectory-Based Operations	Trajectory Based Operations are a shift from clearance based control to trajectory based control. Aircraft will fly negotiated trajectories and control moves to management by trajectory. The focus of these capabilities are on environments/airspace in which all aircraft are equipped to fully participate in trajectory based operations. Included under TBO are operational paradigms and airspace structures which support the move to trajectory based operations. Mixed environments and the advantages that the procedures and tools required for trajectory based operations and airspace are included either as transition steps to the end NextGen Trajectory based operations objectives. It is also assumed that the system will use the capabilities to provide some advantage in environments which will remain mixed.
NextGen Operational Improvements	Automation-Assisted Trajectory Negotiation and Separation Management	Trajectory management is enhanced by automated assistance to negotiation with properly equipped aircraft operators. Human ANSPs are responsible for separation management, supported by automation. 4DTs are negotiated between the ground-based automation and the operator, which may be the pilot, a UAS operator, or perhaps even FOC personnel, who would then relay information to the aircraft. This will enable higher density of operations thus higher capacity as well as decrease human errors in trajectory negotiation and entry.
NextGen Operational Improvements	Automated Trajectory Negotiation and Separation Management	Trajectory management is enhanced by automated negotiation of 4DTs between properly equipped aircraft and ground automation for separation management. All aircraft in TBO airspace must be equipped for this function. The ANSP Separation Management function is fully automated, and separation responsibility is delegated to automation. For specified operations, tasks are delegated to the flight crew to take advantage of aircraft capabilities. To manage separation, ANSP automation negotiates short-term, conflict-driven updates to the 4DT agreements with the aircraft. This will enable higher density of operations thus higher capacity as well as increased safety due to the elimination of human directed trajectory negotiation and automation input decrease in human errors in trajectory negotiation and entry. This OI requires a Policy/Implementation Decision to determine appropriate roles/responsibilities allocated between humans/automation and air/ground.
NextGen Operational Improvements	Improved collaborative in-flight rerouting	Flight operators file multiple flight plans and ANSP selects the one that most efficiently meets flow management goals during operations, but may change to another selection during the flight as unexpected delays occur.
NextGen Operational Improvements	Improved Collaborative Oceanic Routing	Oceanic route efficiency is improved through collaborative negotiation of entry times and track loading and oceanic traffic handling is improved through comparison of current routes against desired profiles to identify beneficial control actions. Aircraft dispatchers and traffic flow managers negotiate oceanic entry times prior to departure. The negotiation includes looking ahead to plan near-term climbs when loading tracks. Oceanic 4D profiles of active flights are continually examined to determine control actions that enhance oceanic capacity while providing improved efficiency within traffic flows. This is an extension of "tailored arrivals," where either a) aircraft send desired profiles (pre-departure and real-time), or b) ground automation predicts desired profiles.
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management	Arrival and departure flows and surface operations are more effectively planned and managed through integrated advanced ANSP automation. This OI develops an Integrated Arrival/Departure and Surface Traffic Flow Manager for improved decision making and flow management. These decision support tools enable ANSP flow managers to work collaboratively with flight operators and with ANSP flow contingency managers to effectively manage high-capacity arrival and departure flows in the presence of various weather conditions. Real-time information distribution enhances operational efficiencies, such as distribution of runway braking action reports. Improved surveillance, automation, and information sharing enhance efficiency of terminal area operations. The ANSP can safely make more efficient use of runways through real-time depiction in the tower of the location and intent of arriving and departing aircraft, as well as any aircraft intending to cross an active runway.

Type	Name	Description
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management for Metroplex	Metroplex traffic flow is more effectively managed through terminal area and surface scheduling automation for increased regional capacity. Metroplex planners at major terminal areas optimize arrival/ departure and surface scheduling for increased regional capacity. TBO is a key element of super-density procedures, allowing the ANSP to maximize access for all traffic, while adhering to the principle of giving advantage to those aircraft with advanced capabilities that support the ATM system. Metroplex Trajectory Management assigns each arriving aircraft to an appropriate runway, arrival stream, and place in sequence.
NextGen Operational Improvements	Time Based Departures and Enroute Operations	This OI provides increased departure throughput via manual time-based control of departing aircraft into an overflight stream using a decision support tool insuring that all available gaps in the en route stream are filled. It also provides departure and en-route time-based control for complex metropolitan airspace where there are multiple conflicting departure streams. Waterfall deployment: a) NY and Phil TRACONS (2007) b) all complex metropolitan airspace with multiple conflicting departure streams (Segment 1)
NextGen Operational Improvements	Trajectory-Based Traffic Management - Level 1	All in-flight aircraft operating in Trajectory-Based Airspace are managed by 4D trajectory in en route climb, cruise, and descent. This may be considered a staging of the 4D trajectory-based capability. This would require the ability to calculate, negotiate, and perform conformance monitoring by ANSPs, including the integration of separation assurance and traffic management (time constraints, e.g., RTAs). This will be enabled by the trajectory exchange through electronic data communications. In high-density or high-complexity airspace, precise 4DTs will be used, dramatically reducing the uncertainty of an aircraft's future flight path, in terms of predicted spatial position (latitude, longitude, and altitude) and times along points in its path. This enhances the capacity and throughput of the airspace to accommodate high levels of demand.
NextGen Operational Improvements	Trajectory-Based Traffic Management - Level 2	All aircraft operating in Trajectory-Based Airspace and Airport Surfaces are managed by 4D trajectory in en route climb, cruise, descent, and airport surface phases of the flight. This is the end state 4D trajectory-based capability. This would require the ability to calculate, negotiate, and perform conformance monitoring by ANSPs, including the integration of separation assurance and traffic management time constraints (e.g., RTAs, runway times of arrival, gate times of arrival). This will be enabled by the trajectory exchange through electronic data communications, as well as many new surface automation and 3D (x, y, and time) trajectory operations. In high-density or high-complexity airspace, precise 4DTs will be used, dramatically reducing the uncertainty of an aircraft's future flight path, in terms of predicted spatial position (latitude, longitude, and altitude) and times along points in its path. This enhances the capacity and throughput of the airspace to accommodate high levels of demand. In trajectory-based airspace, differing types of operations are conducted, with performance-based services applied based on the anticipated traffic characteristics. User preferences are accommodated to the greatest extent possible, and trajectories are constrained only to the extent required to accommodate demand or other national concerns, such as security or safety.
NAS Operational Improvements	Expanded Conflict Resolution via Data Communication	In trajectory-based airspace, decision support tools support the air navigation service provider (ANSP) by identifying conflicts/complexity/density conditions and providing alternatives to resolve the conditions. These alternatives include proposed trajectories that are exchanged with the operator via data communications. This allows multi-step solutions that are not subject to constraints imposed by voice.
NAS Operational Improvements	Flexible Airspace Management	The air navigation service provider (ANSP) uses automation and procedures to dynamically adjust airspace boundaries and aircraft trajectories around flow-constrained areas to maintain throughput.
NAS Operational Improvements	Flexible Entry for Oceanic Tracks	Flexible entry times into oceanic tracks or flows allow greater use of user-preferred trajectories.
NAS Operational Improvements	Increase Capacity and Efficiency Using RNAV and RNP	Area Navigation (RNAV)/Required Navigational Performance (RNP) enables reduced separation requirements between aircraft trajectories and flows. RNAV/RNP and trajectory-based operations (TBO), combined with airspace changes, increase airspace efficiency and capacity.

Type	Name	Description
NAS Operational Improvements	Manage Airspace as Trajectories	The air navigation service provider (ANSP) collaborates with users and develops airspace assignments and flows to accommodate user-requested trajectories based on 4DT. Static airspace assignments are used for limited applications.
NAS Operational Improvements	Oceanic Pairwise Maneuvers	Air navigation service provider (ANSP) and flight deck automation enhancements improve communication, navigation, and surveillance coverage in the oceanic domain. Aircraft transmission of position, velocity, and intent information allows the delegation of aircraft-to-aircraft separation when operationally advantageous for climbs, descents, crossing, and merging.
NAS Operational Improvements	Point-in-Space Metering	Air Navigation Service Providers (ANSP) use scheduling tools and trajectory based operations (TBO)/four-dimensional trajectory (4DT) agreements to flow traffic into flow-constrained areas. This assures smooth entry into the airspace and reduces capacity restrictions.
NAS Operational Improvements	Tactical Trajectory Management	Tactical trajectory management adjusts individual aircraft within a flow to provide efficient trajectories, manage complexity, and ensure separation assurance. Flight deck and/or air navigation service provider (ANSP) automation resolves pair-wise conflicts. The ANSP role evolves into managing trajectory-based airspace by maintaining largely conflict-free, user-preferred flows. This evolution allows the flexibility required to maximize capacity and en route throughput.
NAS Operational Improvements	Time-Based Metering Using RNAV/ RNP Route Assignments	Integrating RNAV/RNP and traffic management advisor (TMA) provides efficient use of runways and airspace in high-density airport environments. RNAV/RNP provides users with more efficient and consistent arrival and departure routings and fuel-efficient operations. TMA manages the flow of aircraft to meter fixes to provide efficient use of runways and airspace.
NAS Operational Improvements	Trajectory Flight Data Management	Flight planning and trajectory processing incorporates flight data information from the flight deck into trajectory and conformance modeling tools. Trajectories are negotiated and updated with respect to actual versus projected trajectory through collaboration processes that ensure requested changes are consistent with flow objectives.
NAS Operational Improvements	Trajectory-Based Airspace	Trajectory based airspace (TBA) and automation enable air navigation service providers (ANSPs) to manage traffic flows without specific local knowledge. ANSPs are certified for airspace, not for specific local regions. ANSP automation includes decision support tools, conflict resolution, and aids for local knowledge.
NAS Operational Improvements	Use Aircraft Provided Intent Data to Improve Conflict Resolution	Air navigation service provider (ANSP) automation uses aircraft position broadcast reports, velocity, and intent data to provide tactical and strategic separation services and more efficient flows. Aircraft exchange of intent data enables aircraft-to-aircraft delegated separation authority when operationally advantageous.
NAS Operational Improvements	Use Aircraft Provided Intent Data to Improve Flow Conflict Resolution	Air navigation service provider (ANSP) automation uses aircraft provided intent data (4D trajectory contracts) to improve modeling of conflict-free flows at high-density airports. Conformance monitoring tools ensure 4D trajectories reflect the aircraft's actual and intended state.
NAS Operational Improvements	Wake Vortex Integrated to Flow	Air navigation service provider (ANSP) automation and decision support tools incorporate aircraft wake characteristics into arrival/departure flows, runway staging, and taxi assignments to enhance efficiency at high-density airports. Arrival and departure flows are planned and executed based on a comprehensive view of real time airport operations. Automation provides optimal departure staging and arrival sequencing based on aircraft wake and airborne performance characteristics.

3.5.6.6.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Trajectory Management	The function of fine-tuning trajectories as required by the airspace plan or an active flow contingency management initiative to minimize pairwise contention and ensure efficient individual trajectories within a flow
ICAO ATMCP Requirement	R 03	Airspace management shall allocate volumes that enable safe and efficient trajectory allocation and modification, from strategic to tactical.
ICAO ATMCP Requirement	R 16	Airspace shall be managed on the basis of flexible allocation
ICAO ATMCP Requirement	R 68	The ATM system shall provide services predicated on management by trajectory and shall monitor compliance with the agreed trajectory.
ICAO ATMCP Requirement	R 71	The airspace user shall provide flight and aircraft intent to the ATM system for use in planning and management of 4D trajectories.
CONOPS	2.4.4 Trajectory Management Process	
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.
SRM Service Component	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.

3.5.6.6.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Aeronautical Information Management	The Aeronautical Information Management (AIM) system represents the evolution of the acquisition, storage, processing, and dissemination of aeronautical information in the National Airspace System (NAS). Aeronautical information is defined as any information concerning the establishment, condition, or change in any component (facility, service, or procedure, or hazard) of the NAS. Aeronautical information comes in two types with one being a somewhat static type, and the other being a more dynamic type. The static portion represents the aeronautical information baseline as of a particular date, while the dynamic portion updates particular aspects of the static portion due to system impacts or events. The static portion represents data that NAS automation systems and other users use to adapt their software to properly operate. The dynamic portion represents information typically contained in Notices to Airmen (NOTAMs) that indicate short-term changes to the static data. Many NAS systems support the acquisition, generation, and dissemination of the static aeronautical information. Information of this type includes airspace structures, airways, locations of NAS facilities, inter-facility letters of agreement, and memorandums of understanding, obstructions, standard procedures, airspace charts, etc. Several NAS systems also support the acquisition, generation, processing, and dissemination of the dynamic aeronautical information. Information of this type includes, facility outages, runway closures, temporary flight restrictions (TFR), airspace constraints, Significant Meteorological Advisory (SIGMETs), etc. This information must be disseminated to users and providers of air traffic services in a timely and efficient manner. The AIM system will provide the central point for the dissemination of high quality, configuration controlled, information to NAS systems, service providers, and users of the NAS. The AIM system will soon disseminate data based on the Aeronautical Information Exchange Model (AIXM) protocols.
FAA Systems	Flight Object Management System	The Flight Object Management System (FOMS) is a component of the Standard Automation Platform (SAP). FOMS processes flight data received from multiple sources via the System Wide Information Management (SWIM) Management Unit (SMU). FOMS also receives track data from the Surveillance Data Processor (SDP) and associates tracks with flight data, producing the flight object which is published to SWIM for subscriber use. Flight plan support functionality includes end-to-end profile evaluation in all phases of flight and evaluation against static and dynamic constraints (terrain, obstacles, airspace restrictions, etc.). FOMS supports flight planning up to 180 day prior to day of flight. A user can access the flight object from initial to close-out in the same manner.FOMS provides end-to-end flight data management from preflight to post-analysis. Ownership of the flight object begins and ends with TFM and transitions during the flight to clearance delivery, ramp, surface, departure, transition to cruise, cruise, transition to arrival, …..ramp. Flight data management is based on trajectory, assigned volumes, and "necessary" route structure.
FAA Systems	Surveillance Data Network	National Airspace System (NAS) surveillance systems, including radar and automatic dependent surveillance (ADS) systems will provide surveillance data objects via the Surveillance Data Network (SDN), which is a sub-network of the proposed System Wide Information Management (SWIM) and the FAA Telecommunication Infrastructure (FTI). The published Surveillance Data Objects (SDO) will be made available to users of the National Airspace System (NAS), including the Transportation Security Administration (TSA), U.S. Department of Defense (DoD), and others. Surveillance data availability supports 3-mile separation standards, gate-to-gate traffic management, seamless airspace, and dynamic resectorization. Improved surveillance information is provided in a timely and consistent manner seamlessly across the NAS for operations, planning, and decision-making. The information will be available to all users and service providers via SDO in near real time. This information enables decisions to be based on a shared common view of situations, even as conditions are changing. Improved surveillance with SDOs will provide the automation higher quality of data for seamless surveillance and, in combination with other capabilities and new procedures, enable capacity and safety improvements. These benefits accrue from increased situation awareness by decision makers and improved operation of decision support and analysis tools that use surveillance information.

Type	Name	Description
FAA Systems	En Route Automation Modernization	The En Route Automation Modernization System (ERAM System) will replace the existing diverse but functionally unequal primary and backup channels (Host Computer System (HCS) and the Direct Access Radar Channel (DARC)) with redundant, functionally equivalent primary and backup channels. The new primary and backup channels achieve identical full functionality by using highly reliable fault tolerant processing elements running identical software. A tertiary system with diverse software, and physical and electronic isolation from the ERAM primary and back-up systems, will be maintained as fall back until the functionality, reliability, and availability of ERAM is demonstrated in the field. A training subsystem with functionality identical to the operational system will permit training to be conducted in parallel with operations. In the past decade, several functions (Conflict Probe (CP), Traffic Management Advisor (TMA), etc.) were implemented as outboard processors/processes to the HCS. This functionality will be supported by ERAM through a replacement Intermediate Point of Presence (IPOP), (i.e., Host Air Traffic Management (ATM) Data Distribution System (HADDS)), which will connect to the ERAM local area network (LAN) for exchange of Common Message Set (extended) data with the LAN connected processors (i.e., CP, TMA, etc.) ERAM's enhanced flight data processor (FDP) will accommodate flexible routing around congestion, weather, and restrictions and improve efficiency by providing improved traffic flows. The enhanced ERAM surveillance processing will accommodate a larger geographic coverage, increased quantity of radar inputs and, when available, integration of Automatic Dependent Surveillance Broadcast (ADS-B) data. In addition ERAM will use the improved accuracy and information disseminated by the sensors using the All-purpose Structured EUROCONTROL Radar Information Exchange (ASTERIX) format. ERAM will allow for improved performance of decision support tools such as the Enhanced Traffic Management System (ETMS). ERAM will also incorporate TMA functions and multi-center metering using miles-in-trail or time-based scheduling and meter lists. ERAM will employ an industry standard LAN-based system to improve the efficiency of integrating commercial-off-the-shelf solutions in the future. ERAM software will be developed using a common high-level language to increase the FAA""s access to market-based skills and lower the cost of development and lifecycle maintenance. ERAM""s design will enable future enhancements and maintenance of components without affecting operational availability and increased productivity from an integrated monitor and control capability. The En Route Monitor and Control (EMAC) will consolidate the Monitor & Control (M&C) functions of legacy Air Route Traffic Control Center (ARTCC) systems into an open system architecture. It will reduce the size of the area needed for displaying system status of separate systems and provide a common Human-Computer Interface (HCI) functionality among them. The EMAC will include power system displays and will support prioritization of operational equipment maintenance and restoration efforts along the lines of the classification categories of critical, essential, and routine systems. EMAC will reduce the number of ARTCC M&Cs located in the ARTCC Monitor and Control Center (AMCC) and will be compatible with National Airspace System Infrastructure Management System (NIMS), which alternately refers to AMCC as the Systems Operation Center (SOC). EMAC will reduce M&C software development and training costs and, based on use of a common HCI, will ensure uniformity of functions performed by Airway Facilities specialists.
FAA Systems	Communications Management System	The Communications Management System (CMS) Management and Control function performs tasks for overall management and control of all air-to-ground (A/G) and ground-to-ground (G/G) voice and data communications to support the System Wide Information Management (SWIM) system. CMS will also incorporate a reconfiguration control function to support reconfigurable airspace assignments, data routing, and a digital recording for both voice and data. The CMS routing function is a data router that ensures transport of data communications among air traffic control (ATC) facilities and users of SWIM. Additionally, CMS integrates functionalities inherently provided by the voice switches, the voice recorders, and the Aeronautical Telecommunication Network (ATN) A/G router.

3.5.6.7 Manage Arrival/Departure (5.1.1)

3.5.6.7.1 Description

This activity provides the arriving and departing aircrafts the assignments (i.e., taxi instructions, streams, sequencing) and procedures for operating on the surface and terminal airspace. This includes the monitoring of surface surveillance to ensure safe operations.

Air Navigation Operations A5

Trajectory Management A5.1

Manage Arrival/Departure A5.1.1

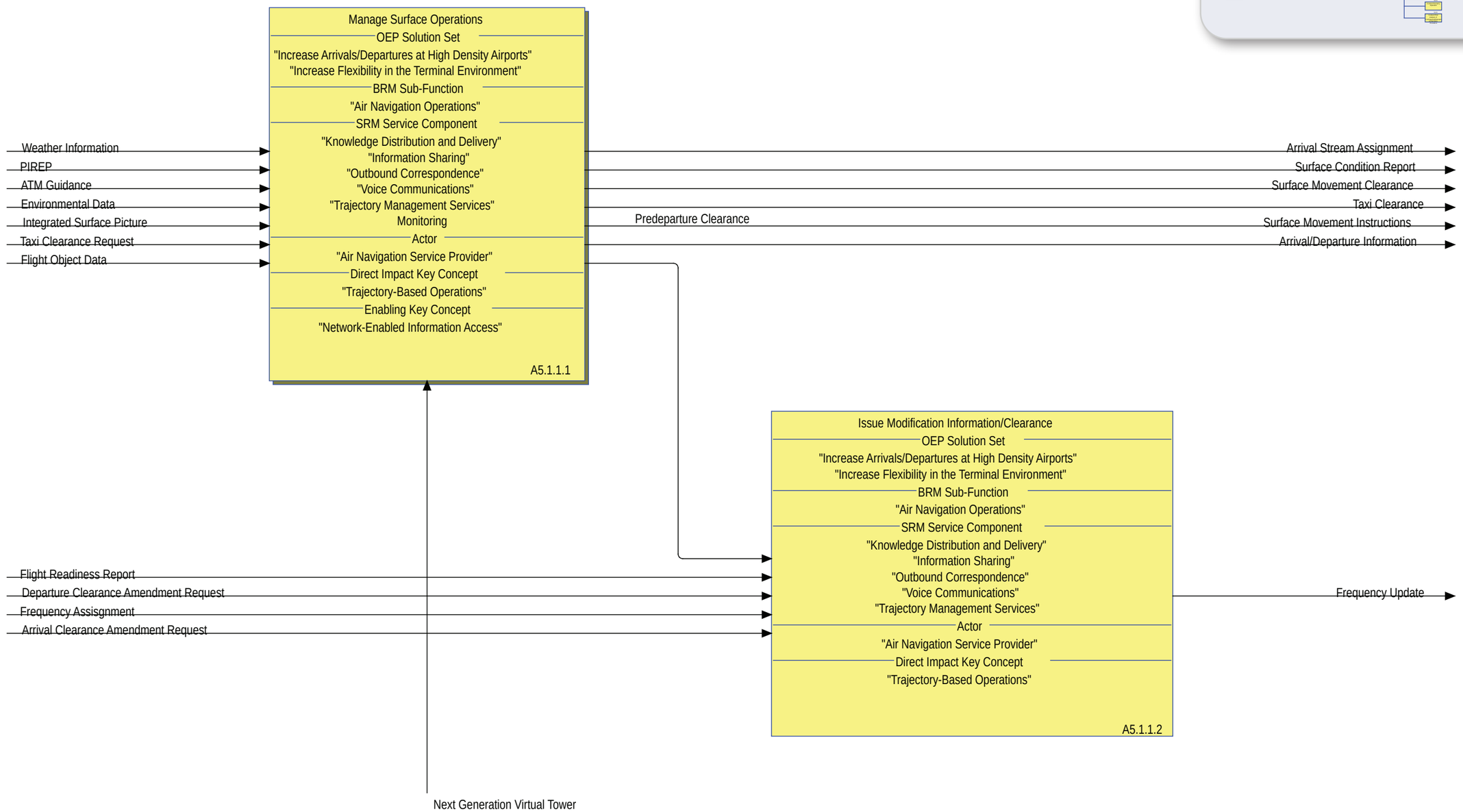


Figure 62 - 5.1.1 Manage Arrival/Departure Activity Model Diagram

3.5.6.8 Manage Surface Operations (5.1.1.1)

3.5.6.8.1 Description

This activity provides the aircraft with up to date assignments (taxi path and parking position) and enables efficient use of the airport. This activity is the ground control and clearance delivery. This is the supervision of the activities necessary for formulating taxi sequencing and communicating instructions to pilots and vehicle operators for the safe and efficient flow of traffic on the airport surface through tower operations.

3.5.6.8.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Increase Arrivals/ Departures at High Density Airports	High density Arr/Dep Terminals and Airports involves airports in which either the demand for the runway capacity is high, there are multiple runways with both airspace and taxiing interactions, or there are airports with close proximity that create the potential for airspace interference. (The current and future major metros (e.g. N90), and other very large airports (DEN).) These airports require all the capabilities of the flexible terminals and airspace plus integrated tactical and strategic flow capabilities. They may require higher performance navigation and communications capabilities to support these additional operational requirements.
OEP Solution Set	Increase Flexibility in the Terminal Environment	Flexible Terminals and Airports includes activities to improve both pilot and controller situational awareness to improve the safety and efficiency of operations. Includes activities related to both automated and remote virtual towers for the purpose of providing an improved service. The activities do not rise to a level which requires flow management.
NextGen Operational Improvements	Ground-based and on-board runway incursion alerting equipment.	This OI increases the safety of operations by reducing runway incursions. Operators of suitably equipped commercial, business, and general aviation aircraft receive runway incursion alerts from on-board detection systems and from complementary ground-based detection systems where implemented. Airborne equipage is not required to receive incursion alerts. This OI will require research and development of runway incursion alerting systems appropriate for business, general aviation, and commercial aircraft.
NextGen Operational Improvements	Improved tactical management of airport operations	Airport operators will be able to effectively manage routine and emergency operations through improved data and monitoring capabilities, as well as linkages to NEO and regional/national emergency response resources. This includes real-time push of airport condition information to users. Waterfall deployment: TBD
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management	Arrival and departure flows and surface operations are more effectively planned and managed through integrated advanced ANSP automation. This OI develops an Integrated Arrival/Departure and Surface Traffic Flow Manager for improved decision making and flow management. These decision support tools enable ANSP flow managers to work collaboratively with flight operators and with ANSP flow contingency managers to effectively manage high-capacity arrival and departure flows in the presence of various weather conditions. Real-time information distribution enhances operational efficiencies, such as distribution of runway braking action reports. Improved surveillance, automation, and information sharing enhance efficiency of terminal area operations. The ANSP can safely make more efficient use of runways through real-time depiction in the tower of the location and intent of arriving and departing aircraft, as well as any aircraft intending to cross an active runway.
NextGen Operational Improvements	Performance-based terminal operations	Performance-based navigation operations are used on terminal area arrival and departure routes to increase utilization of high-density terminal area airspace. Less noisy and fuel-optimal routes, including CDAs, are used where and when feasible, and environmental constraints are met through routing decisions and dispersion of traffic over multiple RNP routes. Waterfall deployment: a) to/from some runways at OEP airports (2009), b) to/from all runway ends at all OEP airports (2011), c) to/from all runways at the top 100 airports (Segment 5), d) to/from all runways serving commercial traffic (Segment 6).
NextGen Operational Improvements	Sequencing, separation, and spacing services for IMC operations are provided thr	This OI increases IMC throughput at non-towered single-runway airports. Expected use is either: Staffed Virtual Towers (SVTs), with remote personnel providing needed services or potentially, Automated Virtual Towers (AVTs), with sequencing, spacing, and separation functions provided either by ground automation or through aircraft-based conflict detection/resolution algorithms. Benefits: Capacity and ANSP productivity plus cost avoidance for not building towers. Major implementation alternatives: 1) Remotely Staffed Virtual Towers 2) Automated Virtual Towers with separation functions provided by ground automation 3) Automated Virtual Towers with separation functions provided by aircraft Implementation of any of these 3 alternatives will require a Policy Decision concerning safety of operations and appropriate allocation of roles and responsibilities to humans vs automation and to ANSP vs flight operator. There will also be required an Implementation Decision between the 3 implementation alternatives. It is likely that both SVTs and one or both types of AVTs will be implemented, with SVTs used at larger, busier, and more complex airports, and AVTs used at simpler, less-busy airports. Waterfall deployment (include virtual towers at GA airports to support to VMC operations and to replace existing manned towers at lower traffic airports): TBD
NextGen Operational Improvements	Surface Management Operations - Level 1	This OI enhances surface operations to reduce delay and environmental impacts at target airports to manage surface traffic (aircraft and GSE) and generate taxi instructions.
NextGen Operational Improvements	Surface Management Operations - Level 2A	Efficiency of surface traffic movement is increased through the use of automation, on-board displays and data link of departure taxi instructions prior to pushback to properly equipped aircraft to reduce delay, environmental impacts and operational errors. Automation optimizes surface throughput and data links taxi instructions to aircraft. The taxi instructions include the 2D route. Pilot uses onboard displays of taxi route and guidance to efficiently and safely follow taxi instructions. Surface optimization automation includes activities such as runway snow removal, aircraft de-icing, and runway reconfiguration.
NextGen Operational Improvements	Surface Management Operations - Level 2B	This OI increases efficiency and safety of surface traffic movement, with corresponding reduction in environmental impacts. Efficiency of surface movement is increased through the use of automation, on-board displays and data link of taxi instructions on arrival to properly equipped aircraft to reduce delay and environmental impacts and improve safety. This OI assumes development of surface automation that is fully integrated with airborne operations and applies this to surface management operations. This OI is an extension of OI 321 and contains those improvements as well.
NextGen Operational Improvements	Surface Management Operations - Level 3	Aircraft and ground vehicle movement on airports in low visibility conditions is guided by moving map displays, CDTI, ADS-B (for flight vehicles), and a GSE Cooperative Surveillance System (for ground support equipment). Safety and efficiency of operations at some airports will also be enhanced by intelligent signage on the ground. Policy issue: Will this equipage be mandatory for access to some high-density airports during peak traffic times in low-visibility conditions, or will equipped aircraft be given priority access in low-visibility conditions but unequipped aircraft will be accommodated, or is this equipage simply optional. Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) some airports (Segment 2) b) OEP airports (Segment 3) c) top 100 airports (Segment 4) d) all commercial airports (Segment 6)

Type	Name	Description
NextGen Operational Improvements	Surface Management Operations - Level 4	Aircraft and ground vehicle movement on airports in zero/zero visibility conditions is guided by moving map displays, CDTI, ADS-B (flight vehicles), and a GSE Cooperative Surveillance System (for ground vehicles). Requires all present aircraft and ground vehicles to have cooperative surveillance (ADS-B out). Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) OEP airports (Segment 5) b) top 100 airports (Segment 6) c) all commercial airports (Segment 7)
NextGen Operational Improvements	Wake-based arrival/departure spacing management Level 1 - Static	Longitudinal departure spacing requirements are reduced (based on wake vortex drift) for dual-use and closely spaced parallel runways based on ground-based wake vortex drift prediction and detection. This is static reduction, i.e., reduction for periods of perhaps 4 or more hours when persistently favorable conditions are forecast. Ground-based departure controllers use wake vortex avoidance systems (based on wake drift) to achieve the regulatory minimum spacing for aircraft departing on closely spaced parallel runways.
NAS Operational Improvements	Full Surface Traffic Management with Conformance Monitoring	Improved surveillance tools for airport surface traffic management provide the air navigation service provider (ANSP), equipped aircraft, and airport operators the capability to predict, plan, and manage surface movements. Equipped vehicles provide surface traffic information in real-time to all parties of interest. A comprehensive view of aggregate traffic flows enables ANSP traffic management to project demand, balance runway assignments, and facilitate more efficient arrival and departure flows. Automation monitors surface operations conformance and updates the estimated departure clearance times to renegotiate the 4DT.

3.5.6.8.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Trajectory Management	The function of fine-tuning trajectories as required by the airspace plan or an active flow contingency management initiative to minimize pairwise contention and ensure efficient individual trajectories within a flow
ICAO ATMCP Requirement	R 24	Aerodrome design and operations shall, through collaborative decision-making, ensure that the most effective means of surface management are employed to respond to demand
ICAO ATMCP Requirement	R 25	The system shall be able to precisely determine the position and intent of all aircraft and vehicles manoeuvring on the ground
CONOPS	3.3.1 Airside Operations	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Super-Density Arrival/Departure Operations	With increasing demand, an even greater need exists to achieve peak throughput performance at the busiest airports and in the busiest airspace. New procedures to improve airport surface movements, reduce spacing and separation requirements in place today, and better manage overall flows in and out of busy metropolitan airspace provide maximum use of the highest-demand airports. Airport terminals also maximize efficiency of egress and ingress, matching passenger and cargo flow to airside throughput while maintaining safety and security levels.
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Voice Communications	Defines the set of capabilities that provide telephony or other voice communications.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.
SRM Service Component	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.

3.5.6.8.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Manage Surface Operations	The supervision of the activities necessary for formulating taxi sequences and communicating instructions to pilots and vehicle operators for the safe and efficient flow of traffic on the airport surface.

3.5.6.9 Issue Modification Information/Clearance (5.1.1.2)

3.5.6.9.1 Description

This activity is the modification of information/clearances, due to request or NAS Status information. The modification information to the arrival clearance and departure information is sent to the aircraft

3.5.6.9.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Increase Arrivals/ Departures at High Density Airports	High density Arr/Dep Terminals and Airports involves airports in which either the demand for the runway capacity is high, there are multiple runways with both airspace and taxiing interactions, or there are airports with close proximity that create the potential for airspace interference. (The current and future major metros (e.g. N90), and other very large airports (DEN).) These airports require all the capabilities of the flexible terminals and airspace plus integrated tactical and strategic flow capabilities. They may require higher performance navigation and communications capabilities to support these additional operational requirements.
OEP Solution Set	Increase Flexibility in the Terminal Environment	Flexible Terminals and Airports includes activities to improve both pilot and controller situational awareness to improve the safety and efficiency of operations. Includes activities related to both automated and remote virtual towers for the purpose of providing an improved service. The activities do not rise to a level which requires flow management.
NextGen Operational Improvements	Improved Collaborative Oceanic Routing	Oceanic route efficiency is improved through collaborative negotiation of entry times and track loading and oceanic traffic handling is improved through comparison of current routes against desired profiles to identify beneficial control actions. Aircraft dispatchers and traffic flow managers negotiate oceanic entry times prior to departure. The negotiation includes looking ahead to plan near-term climbs when loading tracks. Oceanic 4D profiles of active flights are continually examined to determine control actions that enhance oceanic capacity while providing improved efficiency within traffic flows. This is an extension of "tailored arrivals," where either a) aircraft send desired profiles (pre-departure and real-time), or b) ground automation predicts desired profiles.
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management	Arrival and departure flows and surface operations are more effectively planned and managed through integrated advanced ANSP automation. This OI develops an Integrated Arrival/Departure and Surface Traffic Flow Manager for improved decision making and flow management. These decision support tools enable ANSP flow managers to work collaboratively with flight operators and with ANSP flow contingency managers to effectively manage high-capacity arrival and departure flows in the presence of various weather conditions. Real-time information distribution enhances operational efficiencies, such as distribution of runway braking action reports. Improved surveillance, automation, and information sharing enhance efficiency of terminal area operations. The ANSP can safely make more efficient use of runways through real-time depiction in the tower of the location and intent of arriving and departing aircraft, as well as any aircraft intending to cross an active runway.
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management for Metroplex	Metroplex traffic flow is more effectively managed through terminal area and surface scheduling automation for increased regional capacity. Metroplex planners at major terminal areas optimize arrival/ departure and surface scheduling for increased regional capacity. TBO is a key element of super-density procedures, allowing the ANSP to maximize access for all traffic, while adhering to the principle of giving advantage to those aircraft with advanced capabilities that support the ATM system. Metroplex Trajectory Management assigns each arriving aircraft to an appropriate runway, arrival stream, and place in sequence.
NextGen Operational Improvements	Surface Management Operations - Level 1	This OI enhances surface operations to reduce delay and environmental impacts at target airports to manage surface traffic (aircraft and GSE) and generate taxi instructions.
NextGen Operational Improvements	Surface Management Operations - Level 2A	Efficiency of surface traffic movement is increased through the use of automation, on-board displays and data link of departure taxi instructions prior to pushback to properly equipped aircraft to reduce delay, environmental impacts and operational errors. Automation optimizes surface throughput and data links taxi instructions to aircraft. The taxi instructions include the 2D route. Pilot uses onboard displays of taxi route and guidance to efficiently and safely follow taxi instructions. Surface optimization automation includes activities such as runway snow removal, aircraft de-icing, and runway reconfiguration.

3.5.6.9.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Trajectory Management	The function of fine-tuning trajectories as required by the airspace plan or an active flow contingency management initiative to minimize pairwise contention and ensure efficient individual trajectories within a flow
CONOPS	2.4 TRAJECTORY-BASED AIRSPACE AND OPERATIONS	
CONOPS	2.5 CLASSIC AIRSPACE AND OPERATIONS	
Key Concept	Super-Density Arrival/Departure Operations	With increasing demand, an even greater need exists to achieve peak throughput performance at the busiest airports and in the busiest airspace. New procedures to improve airport surface movements, reduce spacing and separation requirements in place today, and better manage overall flows in and out of busy metropolitan airspace provide maximum use of the highest-demand airports. Airport terminals also maximize efficiency of egress and ingress, matching passenger and cargo flow to airside throughput while maintaining safety and security levels.
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Voice Communications	Defines the set of capabilities that provide telephony or other voice communications.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.
SRM Service Component	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.

3.5.6.9.4 NextGen Future Solutions

3.5.6.10 Manage Surface Operations (5.1.1.1)

3.5.6.10.1 Description

This activity provides the aircraft with up to date assignments (taxi path and parking position) and enables efficient use of the airport. This activity is the ground control and clearance delivery. This is the supervision of the activities necessary for formulating taxi sequencing and communicating instructions to pilots and vehicle operators for the safe and efficient flow of traffic on the airport surface through tower operations.

Air Navigation Operations A5

Trajectory Management A5.1

Manage Arrival/Departure A5.1.1

Manage Surface Operations A5.1.1.1

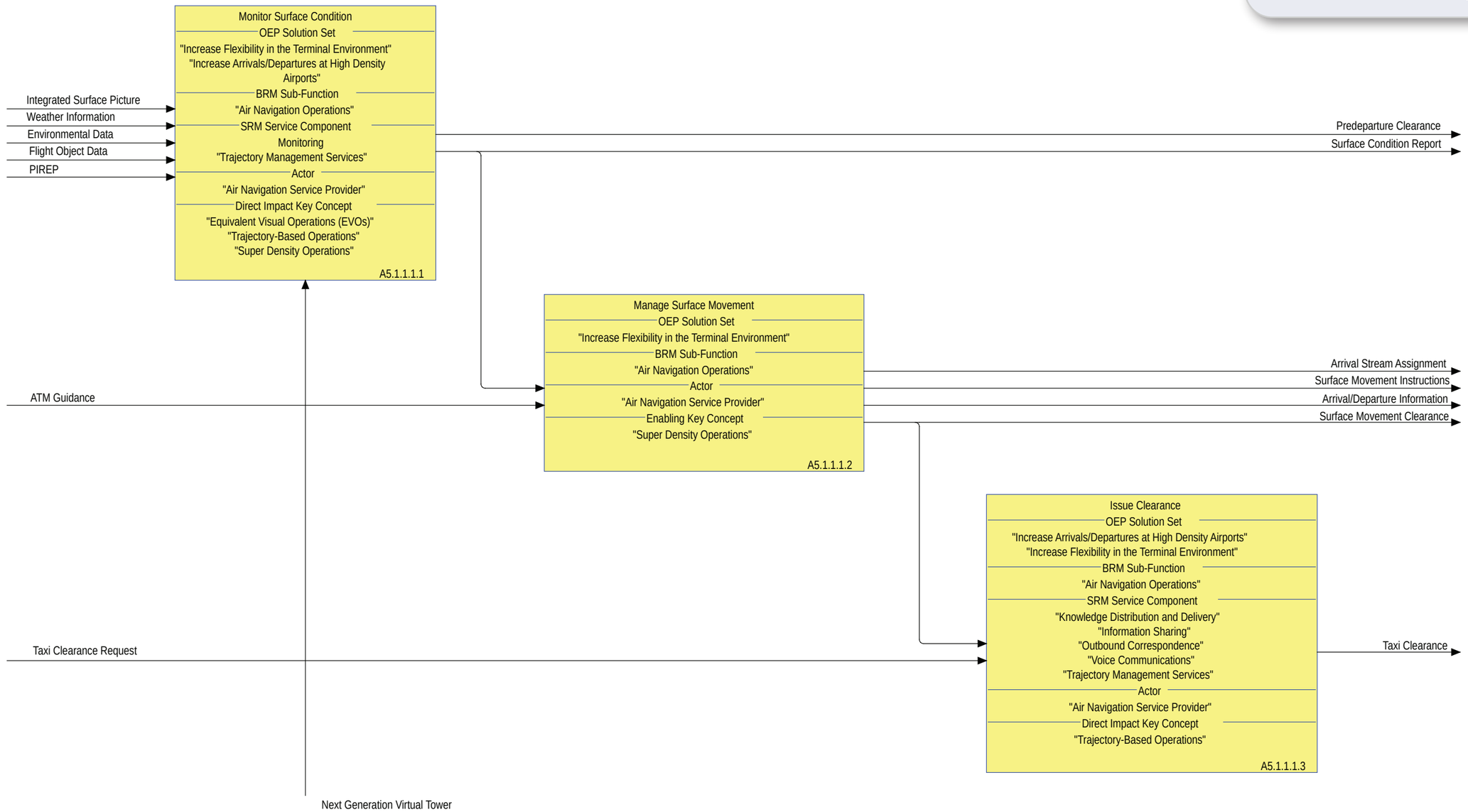


Figure 63 - 5.1.1.1 Manage Surface Operations Activity Model Diagram

3.5.6.11 Monitor Surface Condition (5.1.1.1.1)

3.5.6.11.1 Description

This activity will monitor aircraft and ground support equipment on the surface of the airport, including runways, taxiways, and apron/ramp. Includes functionality to prevent runway incursions, loss of separation, ensure security, support environmental management, and define approved operating areas.

3.5.6.11.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Increase Arrivals/ Departures at High Density Airports	High density Arr/Dep Terminals and Airports involves airports in which either the demand for the runway capacity is high, there are multiple runways with both airspace and taxiing interactions, or there are airports with close proximity that create the potential for airspace interference. (The current and future major metros (e.g. N90), and other very large airports (DEN).) These airports require all the capabilities of the flexible terminals and airspace plus integrated tactical and strategic flow capabilities. They may require higher performance navigation and communications capabilities to support these additional operational requirements.
OEP Solution Set	Increase Flexibility in the Terminal Environment	Flexible Terminals and Airports includes activities to improve both pilot and controller situational awareness to improve the safety and efficiency of operations. Includes activities related to both automated and remote virtual towers for the purpose of providing an improved service. The activities do not rise to a level which requires flow management.
NextGen Operational Improvements	Coordinated Ramp Operations Management	Surface movements of GSE are monitored and proactively managed, in real-time, to ensure the smooth, efficient, and safe flow of vehicular traffic. GSE has equipment to ensure accurate navigation during low-visibility conditions and to maintain clearance from active runway and taxiways. Congestion is reduced while safety and level of service are improved. Ramp operations management requirements for surveillance and communications that is compatible with those required for surface traffic management. Precise definition of ramp management vs surface management vs gate management is TBD. Waterfall deployment: a) OEP 2016 Start b) Top 100 2018 Start c) Other airports 2021 Start
NextGen Operational Improvements	Ground-based and on-board runway incursion alerting equipment.	This OI increases the safety of operations by reducing runway incursions. Operators of suitably equipped commercial, business, and general aviation aircraft receive runway incursion alerts from on-board detection systems and from complementary ground-based detection systems where implemented. Airborne equipage is not required to receive incursion alerts. This OI will require research and development of runway incursion alerting systems appropriate for business, general aviation, and commercial aircraft.
NextGen Operational Improvements	Reduced at-airport significant noise impact	Significant aircraft noise is contained within the airport boundary and/or neighboring compatible land uses.
NextGen Operational Improvements	Reduced unit level of GSE emissions	Overall GSE emissions will be reduced by improvements in GSE engine and vehicle technologies that reduce the unit generation of emissions by the GSE and used at the airport.
NextGen Operational Improvements	Surface Management Operations - Level 1	This OI enhances surface operations to reduce delay and environmental impacts at target airports to manage surface traffic (aircraft and GSE) and generate taxi instructions.
NextGen Operational Improvements	Surface Management Operations - Level 2A	Efficiency of surface traffic movement is increased through the use of automation, on-board displays and data link of departure taxi instructions prior to pushback to properly equipped aircraft to reduce delay, environmental impacts and operational errors. Automation optimizes surface throughput and data links taxi instructions to aircraft. The taxi instructions include the 2D route. Pilot uses onboard displays of taxi route and guidance to efficiently and safely follow taxi instructions. Surface optimization automation includes activities such as runway snow removal, aircraft de-icing, and runway reconfiguration.
NextGen Operational Improvements	Surface Management Operations - Level 2B	This OI increases efficiency and safety of surface traffic movement, with corresponding reduction in environmental impacts. Efficiency of surface movement is increased through the use of automation, on-board displays and data link of taxi instructions on arrival to properly equipped aircraft to reduce delay and environmental impacts and improve safety. This OI assumes development of surface automation that is fully integrated with airborne operations and applies this to surface management operations. This OI is an extension of OI 321 and contains those improvements as well.
NextGen Operational Improvements	Surface Management Operations - Level 3	Aircraft and ground vehicle movement on airports in low visibility conditions is guided by moving map displays, CDTI, ADS-B (for flight vehicles), and a GSE Cooperative Surveillance System (for ground support equipment). Safety and efficiency of operations at some airports will also be enhanced by intelligent signage on the ground. Policy issue: Will this equipage be mandatory for access to some high-density airports during peak traffic times in low-visibility conditions, or will equipped aircraft be given priority access in low-visibility conditions but unequipped aircraft will be accommodated, or is this equipage simply optional. Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) some airports (Segment 2) b) OEP airports (Segment 3) c) top 100 airports (Segment 4) d) all commercial airports (Segment 6)
NextGen Operational Improvements	Surface Management Operations - Level 4	Aircraft and ground vehicle movement on airports in zero/zero visibility conditions is guided by moving map displays, CDTI, ADS-B (flight vehicles), and a GSE Cooperative Surveillance System (for ground vehicles). Requires all present aircraft and ground vehicles to have cooperative surveillance (ADS-B out). Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) OEP airports (Segment 5) b) top 100 airports (Segment 6) c) all commercial airports (Segment 7)
NextGen Operational Improvements	Wake-based arrival/departure spacing management Level 1 - Static	Longitudinal departure spacing requirements are reduced (based on wake vortex drift) for dual-use and closely spaced parallel runways based on ground-based wake vortex drift prediction and detection. This is static reduction, i.e., reduction for periods of perhaps 4 or more hours when persistently favorable conditions are forecast. Ground-based departure controllers use wake vortex avoidance systems (based on wake drift) to achieve the regulatory minimum spacing for aircraft departing on closely spaced parallel runways.

3.5.6.11.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Trajectory Management	The function of fine-tuning trajectories as required by the airspace plan or an active flow contingency management initiative to minimize pairwise contention and ensure efficient individual trajectories within a flow

Type	Name	Description
CONOPS	2.4.8 Trajectory-Based Arrival and Departure Operations	
CONOPS	3.3.1 Airside Operations	
Key Concept	Equivalent Visual Operations (EVO)	Improved information availability allows aircraft to conduct operations without regard for visibility or direct visual observation. For aircraft, this capability, in combination with PNT, enables increased accessibility, both on the airport surface and during arrival and departure operations. This capability also enables those providing services at airports (such as ATM or other ramp services) to provide services in all visibility conditions, leading to more predictable and efficient operations.
Key Concept	Super-Density Arrival/ Departure Operations	With increasing demand, an even greater need exists to achieve peak throughput performance at the busiest airports and in the busiest airspace. New procedures to improve airport surface movements, reduce spacing and separation requirements in place today, and better manage overall flows in and out of busy metropolitan airspace provide maximum use of the highest-demand airports. Airport terminals also maximize efficiency of egress and ingress, matching passenger and cargo flow to airside throughput while maintaining safety and security levels.
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.
SRM Service Component	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.

3.5.6.11.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Manage Surface Operations	The supervision of the activities necessary for formulating taxi sequences and communicating instructions to pilots and vehicle operators for the safe and efficient flow of traffic on the airport surface.

3.5.6.12 Manage Surface Movement (5.1.1.1.2)

3.5.6.12.1 Description

This activity manages the movement on the surface for aircrafts on the taxiways to the runways.

3.5.6.12.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Increase Flexibility in the Terminal Environment	Flexible Terminals and Airports includes activities to improve both pilot and controller situational awareness to improve the safety and efficiency of operations. Includes activities related to both automated and remote virtual towers for the purpose of providing an improved service. The activities do not rise to a level which requires flow management.
NextGen Operational Improvements	Coordinated Ramp Operations Management	Surface movements of GSE are monitored and proactively managed, in real-time, to ensure the smooth, efficient, and safe flow of vehicular traffic. GSE has equipment to ensure accurate navigation during low-visibility conditions and to maintain clearance from active runway and taxiways. Congestion is reduced while safety and level of service are improved. Ramp operations management requirements for surveillance and communications that is compatible with those required for surface traffic management. Precise definition of ramp management vs surface management vs gate management is TBD. Waterfall deployment: a) OEP 2016 Start b) Top 100 2018 Start c) Other airports 2021 Start
NextGen Operational Improvements	Surface Management Operations - Level 1	This OI enhances surface operations to reduce delay and environmental impacts at target airports to manage surface traffic (aircraft and GSE) and generate taxi instructions.
NextGen Operational Improvements	Surface Management Operations - Level 2A	Efficiency of surface traffic movement is increased through the use of automation, on-board displays and data link of departure taxi instructions prior to pushback to properly equipped aircraft to reduce delay, environmental impacts and operational errors. Automation optimizes surface throughput and data links taxi instructions to aircraft. The taxi instructions include the 2D route. Pilot uses onboard displays of taxi route and guidance to efficiently and safely follow taxi instructions. Surface optimization automation includes activities such as runway snow removal, aircraft de-icing, and runway reconfiguration.
NextGen Operational Improvements	Surface Management Operations - Level 2B	This OI increases efficiency and safety of surface traffic movement, with corresponding reduction in environmental impacts. Efficiency of surface movement is increased through the use of automation, on-board displays and data link of taxi instructions on arrival to properly equipped aircraft to reduce delay and environmental impacts and improve safety. This OI assumes development of surface automation that is fully integrated with airborne operations and applies this to surface management operations. This OI is an extension of OI 321 and contains those improvements as well.
NextGen Operational Improvements	Surface Management Operations - Level 3	Aircraft and ground vehicle movement on airports in low visibility conditions is guided by moving map displays, CDTI, ADS-B (for flight vehicles), and a GSE Cooperative Surveillance System (for ground support equipment). Safety and efficiency of operations at some airports will also be enhanced by intelligent signage on the ground. Policy issue: Will this equipage be mandatory for access to some high-density airports during peak traffic times in low-visibility conditions, or will equipped aircraft be given priority access in low-visibility conditions but unequipped aircraft will be accommodated, or is this equipage simply optional. Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) some airports (Segment 2) b) OEP airports (Segment 3) c) top 100 airports (Segment 4) d) all commercial airports (Segment 6)
NextGen Operational Improvements	Surface Management Operations - Level 4	Aircraft and ground vehicle movement on airports in zero/zero visibility conditions is guided by moving map displays, CDTI, ADS-B (flight vehicles), and a GSE Cooperative Surveillance System (for ground vehicles). Requires all present aircraft and ground vehicles to have cooperative surveillance (ADS-B out). Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) OEP airports (Segment 5) b) top 100 airports (Segment 6) c) all commercial airports (Segment 7)

3.5.6.12.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Trajectory Management	The function of fine-tuning trajectories as required by the airspace plan or an active flow contingency management initiative to minimize pairwise contention and ensure efficient individual trajectories within a flow
ICAO ATMCP Requirement	R 25	The system shall be able to precisely determine the position and intent of all aircraft and vehicles manoeuvring on the ground
Key Concept	Equivalent Visual Operations (EVO)	Improved information availability allows aircraft to conduct operations without regard for visibility or direct visual observation. For aircraft, this capability, in combination with PNT, enables increased accessibility, both on the airport surface and during arrival and departure operations. This capability also enables those providing services at airports (such as ATM or other ramp services) to provide services in all visibility conditions, leading to more predictable and efficient operations.
Key Concept	Super-Density Arrival/Departure Operations	With increasing demand, an even greater need exists to achieve peak throughput performance at the busiest airports and in the busiest airspace. New procedures to improve airport surface movements, reduce spacing and separation requirements in place today, and better manage overall flows in and out of busy metropolitan airspace provide maximum use of the highest-demand airports. Airport terminals also maximize efficiency of egress and ingress, matching passenger and cargo flow to airside throughput while maintaining safety and security levels.
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.

3.5.6.12.4 NextGen Future Solutions

3.5.6.13 Issue Clearance (5.1.1.1.3)

3.5.6.13.1 Description

This activity will assign or renegotiate the surface movement instructions/clearance to an aircraft for departure and arrivals. Arrival and departures clearance is issue to clear the aircraft to the taxiway and runway.

3.5.6.13.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Increase Arrivals/ Departures at High Density Airports	High density Arr/Dep Terminals and Airports involves airports in which either the demand for the runway capacity is high, there are multiple runways with both airspace and taxiing interactions, or there are airports with close proximity that create the potential for airspace interference. (The current and future major metros (e.g. N90), and other very large airports (DEN).) These airports require all the capabilities of the flexible terminals and airspace plus integrated tactical and strategic flow capabilities. They may require higher performance navigation and communications capabilities to support these additional operational requirements.
OEP Solution Set	Increase Flexibility in the Terminal Environment	Flexible Terminals and Airports includes activities to improve both pilot and controller situational awareness to improve the safety and efficiency of operations. Includes activities related to both automated and remote virtual towers for the purpose of providing an improved service. The activities do not rise to a level which requires flow management.
NextGen Operational Improvements	Improved Collaborative Oceanic Routing	Oceanic route efficiency is improved through collaborative negotiation of entry times and track loading and oceanic traffic handling is improved through comparison of current routes against desired profiles to identify beneficial control actions. Aircraft dispatchers and traffic flow managers negotiate oceanic entry times prior to departure. The negotiation includes looking ahead to plan near-term climbs when loading tracks. Oceanic 4D profiles of active flights are continually examined to determine control actions that enhance oceanic capacity while providing improved efficiency within traffic flows. This is an extension of "tailored arrivals," where either a) aircraft send desired profiles (pre-departure and real-time), or b) ground automation predicts desired profiles.
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management	Arrival and departure flows and surface operations are more effectively planned and managed through integrated advanced ANSP automation. This OI develops an Integrated Arrival/Departure and Surface Traffic Flow Manager for improved decision making and flow management. These decision support tools enable ANSP flow managers to work collaboratively with flight operators and with ANSP flow contingency managers to effectively manage high-capacity arrival and departure flows in the presence of various weather conditions. Real-time information distribution enhances operational efficiencies, such as distribution of runway braking action reports. Improved surveillance, automation, and information sharing enhance efficiency of terminal area operations. The ANSP can safely make more efficient use of runways through real-time depiction in the tower of the location and intent of arriving and departing aircraft, as well as any aircraft intending to cross an active runway.
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management for Metroplex	Metroplex traffic flow is more effectively managed through terminal area and surface scheduling automation for increased regional capacity. Metroplex planners at major terminal areas optimize arrival/ departure and surface scheduling for increased regional capacity. TBO is a key element of super-density procedures, allowing the ANSP to maximize access for all traffic, while adhering to the principle of giving advantage to those aircraft with advanced capabilities that support the ATM system. Metroplex Trajectory Management assigns each arriving aircraft to an appropriate runway, arrival stream, and place in sequence.
NextGen Operational Improvements	Surface Management Operations - Level 1	This OI enhances surface operations to reduce delay and environmental impacts at target airports to manage surface traffic (aircraft and GSE) and generate taxi instructions.
NextGen Operational Improvements	Surface Management Operations - Level 2A	Efficiency of surface traffic movement is increased through the use of automation, on-board displays and data link of departure taxi instructions prior to pushback to properly equipped aircraft to reduce delay, environmental impacts and operational errors. Automation optimizes surface throughput and data links taxi instructions to aircraft. The taxi instructions include the 2D route. Pilot uses onboard displays of taxi route and guidance to efficiently and safely follow taxi instructions. Surface optimization automation includes activities such as runway snow removal, aircraft de-icing, and runway reconfiguration.

Type	Name	Description
NextGen Operational Improvements	Surface Management Operations - Level 3	Aircraft and ground vehicle movement on airports in low visibility conditions is guided by moving map displays, CDTI, ADS-B (for flight vehicles), and a GSE Cooperative Surveillance System (for ground support equipment). Safety and efficiency of operations at some airports will also be enhanced by intelligent signage on the ground. Policy issue: Will this equipage be mandatory for access to some high-density airports during peak traffic times in low-visibility conditions, or will equipped aircraft be given priority access in low-visibility conditions but unequipped aircraft will be accommodated, or is this equipage simply optional. Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) some airports (Segment 2) b) OEP airports (Segment 3) c) top 100 airports (Segment 4) d) all commercial airports (Segment 6)
NextGen Operational Improvements	Time Based Departures and Enroute Operations	This OI provides increased departure throughput via manual time-based control of departing aircraft into an overflight stream using a decision support tool insuring that all available gaps in the en route stream are filled. It also provides departure and en-route time-based control for complex metropolitan airspace where there are multiple conflicting departure streams. Waterfall deployment: a) NY and Phil TRACONS (2007) b) all complex metropolitan airspace with multiple conflicting departure streams (Segment 1)

3.5.6.13.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Trajectory Management	The function of fine-tuning trajectories as required by the airspace plan or an active flow contingency management initiative to minimize pairwise contention and ensure efficient individual trajectories within a flow
CONOPS	2.4.4 Trajectory Management Process	
CONOPS	2.4.8 Trajectory-Based Arrival and Departure Operations	
CONOPS	3.3.1 Airside Operations	
Key Concept	Super-Density Arrival/Departure Operations	With increasing demand, an even greater need exists to achieve peak throughput performance at the busiest airports and in the busiest airspace. New procedures to improve airport surface movements, reduce spacing and separation requirements in place today, and better manage overall flows in and out of busy metropolitan airspace provide maximum use of the highest-demand airports. Airport terminals also maximize efficiency of egress and ingress, matching passenger and cargo flow to airside throughput while maintaining safety and security levels.
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Voice Communications	Defines the set of capabilities that provide telephony or other voice communications.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.
SRM Service Component	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.

3.5.6.13.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Issue Predeparture Clearance	An activity that provides (as required or requested) the route for an aircraft to follow on the movement area in concise and easy to understand terms.
NAS Activity	Issue Surface Clearance	An activity that provides, as required or requested, the clearance to an aircraft to transition onto the active runway.

3.5.6.14 Manage Trajectories within Flows (5.1.2)

3.5.6.14.1 Description

This activity manages the trajectories within the flow. This involves assigning trajectories and negotiating trajectories.

Air Navigation Operations A5

Trajectory Management A5.1

Manage Trajectories within Flows A5.1.2

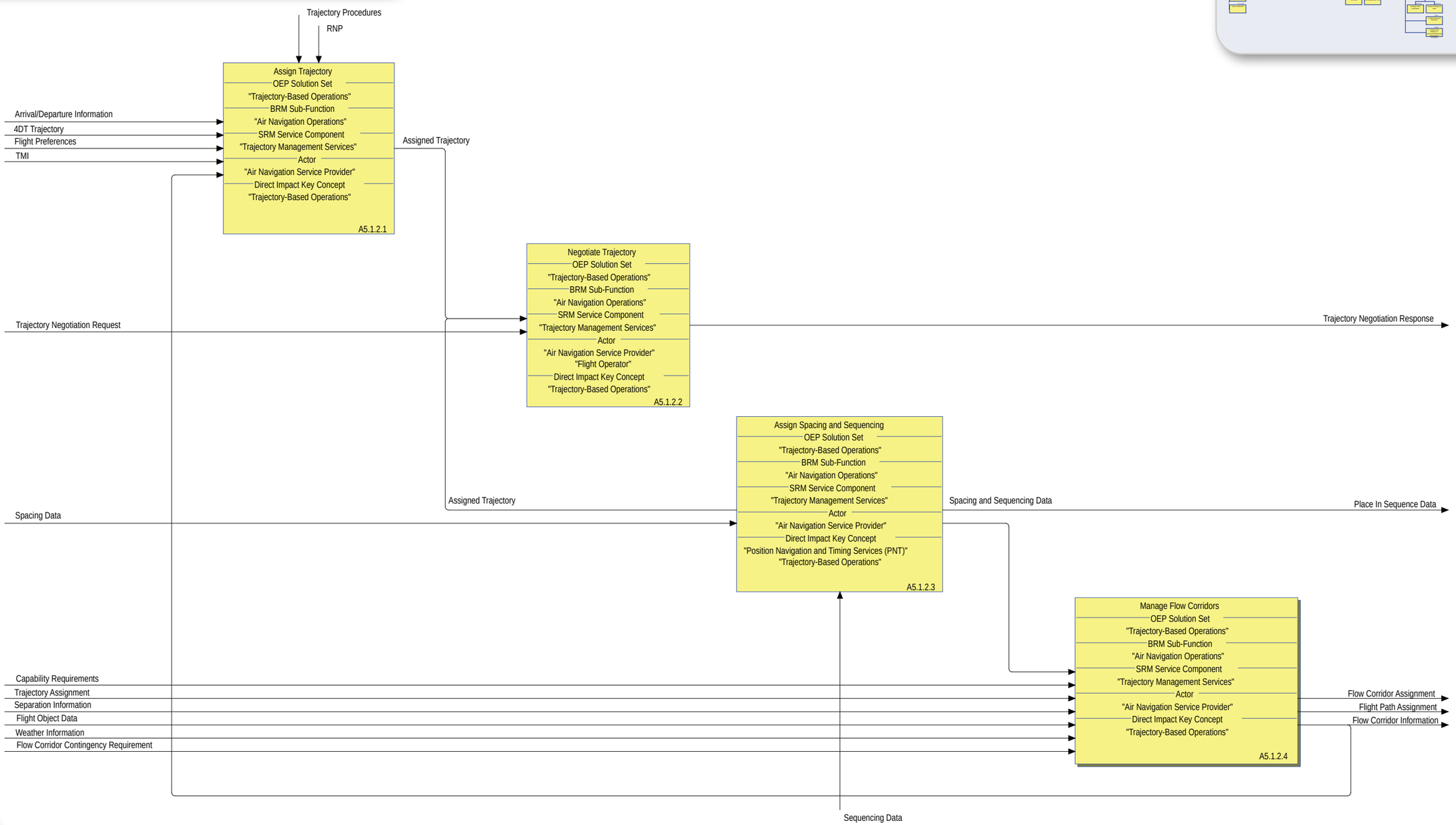


Figure 64 - 5.1.2 Manage Trajectories within Flows Activity Model Diagram

3.5.6.15 Assign Trajectory (5.1.2.1)

3.5.6.15.1 Description

This activity is the assignment of a trajectory for aircraft transitioning between self-separation and ANSP managed airspace, and for aircraft entering and leaving flow corridors.

3.5.6.15.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Trajectory-Based Operations	Trajectory Based Operations are a shift from clearance based control to trajectory based control. Aircraft will fly negotiated trajectories and control moves to management by trajectory. The focus of these capabilities are on environments/airspace in which all aircraft are equipped to fully participate in trajectory based operations. Included under TBO are operational paradigms and airspace structures which support the move to trajectory based operations. Mixed environments and the advantages that the procedures and tools required for trajectory based operations and airspace are included either as transition steps to the end NextGen Trajectory based operations objectives. It is also assumed that the system will use the capabilities to provide some advantage in environments which will remain mixed.
NextGen Operational Improvements	Automation-Assisted Trajectory Negotiation and Separation Management	Trajectory management is enhanced by automated assistance to negotiation with properly equipped aircraft operators. Human ANSPs are responsible for separation management, supported by automation. 4DTs are negotiated between the ground-based automation and the operator, which may be the pilot, a UAS operator, or perhaps even FOC personnel, who would then relay information to the aircraft. This will enable higher density of operations thus higher capacity as well as decrease human errors in trajectory negotiation and entry.
NextGen Operational Improvements	Automated Trajectory Negotiation and Separation Management	Trajectory management is enhanced by automated negotiation of 4DTs between properly equipped aircraft and ground automation for separation management. All aircraft in TBO airspace must be equipped for this function. The ANSP Separation Management function is fully automated, and separation responsibility is delegated to automation. For specified operations, tasks are delegated to the flight crew to take advantage of aircraft capabilities. To manage separation, ANSP automation negotiates short-term, conflict-driven updates to the 4DT agreements with the aircraft. This will enable higher density of operations thus higher capacity as well as increased safety due to the elimination of human directed trajectory negotiation and automation input decrease in human errors in trajectory negotiation and entry. This OI requires a Policy/Implementation Decision to determine appropriate roles/responsibilities allocated between humans/automation and air/ground.
NextGen Operational Improvements	Improved Collaborative Oceanic Routing	Oceanic route efficiency is improved through collaborative negotiation of entry times and track loading and oceanic traffic handling is improved through comparison of current routes against desired profiles to identify beneficial control actions. Aircraft dispatchers and traffic flow managers negotiate oceanic entry times prior to departure. The negotiation includes looking ahead to plan near-term climbs when loading tracks. Oceanic 4D profiles of active flights are continually examined to determine control actions that enhance oceanic capacity while providing improved efficiency within traffic flows. This is an extension of "tailored arrivals," where either a) aircraft send desired profiles (pre-departure and real-time), or b) ground automation predicts desired profiles.
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management	Arrival and departure flows and surface operations are more effectively planned and managed through integrated advanced ANSP automation. This OI develops an Integrated Arrival/Departure and Surface Traffic Flow Manager for improved decision making and flow management. These decision support tools enable ANSP flow managers to work collaboratively with flight operators and with ANSP flow contingency managers to effectively manage high-capacity arrival and departure flows in the presence of various weather conditions. Real-time information distribution enhances operational efficiencies, such as distribution of runway braking action reports. Improved surveillance, automation, and information sharing enhance efficiency of terminal area operations. The ANSP can safely make more efficient use of runways through real-time depiction in the tower of the location and intent of arriving and departing aircraft, as well as any aircraft intending to cross an active runway.
NextGen Operational Improvements	Trajectory Negotiation - Level 1	ANSP productivity is increased through digital exchange of route and trajectory changes with aircraft in high-altitude airspace. Trajectories are negotiated between flight deck and ground via data link.
NextGen Operational Improvements	Trajectory-Based Traffic Management - Level 1	All in-flight aircraft operating in Trajectory-Based Airspace are managed by 4D trajectory in en route climb, cruise, and descent. This may be considered a staging of the 4D trajectory-based capability. This would require the ability to calculate, negotiate, and perform conformance monitoring by ANSPs, including the integration of separation assurance and traffic management (time constraints, e.g., RTAs). This will be enabled by the trajectory exchange through electronic data communications. In high-density or high-complexity airspace, precise 4DTs will be used, dramatically reducing the uncertainty of an aircraft's future flight path, in terms of predicted spatial position (latitude, longitude, and altitude) and times along points in its path. This enhances the capacity and throughput of the airspace to accommodate high levels of demand.
NextGen Operational Improvements	Trajectory-Based Traffic Management - Level 2	All aircraft operating in Trajectory-Based Airspace and Airport Surfaces are managed by 4D trajectory in en route climb, cruise, descent, and airport surface phases of the flight. This is the end state 4D trajectory-based capability. This would require the ability to calculate, negotiate, and perform conformance monitoring by ANSPs, including the integration of separation assurance and traffic management time constraints (e.g., RTAs, runway times of arrival, gate times of arrival). This will be enabled by the trajectory exchange through electronic data communications, as well as many new surface automation and 3D (x, y, and time) trajectory operations. In high-density or high-complexity airspace, precise 4DTs will be used, dramatically reducing the uncertainty of an aircraft's future flight path, in terms of predicted spatial position (latitude, longitude, and altitude) and times along points in its path. This enhances the capacity and throughput of the airspace to accommodate high levels of demand. In trajectory-based airspace, differing types of operations are conducted, with performance-based services applied based on the anticipated traffic characteristics. User preferences are accommodated to the greatest extent possible, and trajectories are constrained only to the extent required to accommodate demand or other national concerns, such as security or safety.

3.5.6.15.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Trajectory Management	The function of fine-tuning trajectories as required by the airspace plan or an active flow contingency management initiative to minimize pairwise contention and ensure efficient individual trajectories within a flow
CONOPS	2.4.4 Trajectory Management Process	
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.
SRM Service Component	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.

3.5.6.15.4 NextGen Future Solutions

3.5.6.16 Negotiate Trajectory (5.1.2.2)

3.5.6.16.1 Description

This activity negotiates the trajectory of the flight between the flight operator and air navigation operator.

3.5.6.16.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Trajectory-Based Operations	Trajectory Based Operations are a shift from clearance based control to trajectory based control. Aircraft will fly negotiated trajectories and control moves to management by trajectory. The focus of these capabilities are on environments/airspace in which all aircraft are equipped to fully participate in trajectory based operations. Included under TBO are operational paradigms and airspace structures which support the move to trajectory based operations. Mixed environments and the advantages that the procedures and tools required for trajectory based operations and airspace are included either as transition steps to the end NextGen Trajectory based operations objectives. It is also assumed that the system will use the capabilities to provide some advantage in environments which will remain mixed.
NextGen Operational Improvements	Automation-Assisted Trajectory Negotiation and Separation Management	Trajectory management is enhanced by automated assistance to negotiation with properly equipped aircraft operators. Human ANSPs are responsible for separation management, supported by automation. 4DTs are negotiated between the ground-based automation and the operator, which may be the pilot, a UAS operator, or perhaps even FOC personnel, who would then relay information to the aircraft. This will enable higher density of operations thus higher capacity as well as decrease human errors in trajectory negotiation and entry.
NextGen Operational Improvements	Automated Trajectory Negotiation and Separation Management	Trajectory management is enhanced by automated negotiation of 4DTs between properly equipped aircraft and ground automation for separation management. All aircraft in TBO airspace must be equipped for this function. The ANSP Separation Management function is fully automated, and separation responsibility is delegated to automation. For specified operations, tasks are delegated to the flight crew to take advantage of aircraft capabilities. To manage separation, ANSP automation negotiates short-term, conflict-driven updates to the 4DT agreements with the aircraft. This will enable higher density of operations thus higher capacity as well as increased safety due to the elimination of human directed trajectory negotiation and automation input decrease in human errors in trajectory negotiation and entry. This OI requires a Policy/Implementation Decision to determine appropriate roles/responsibilities allocated between humans/automation and air/ground.
NextGen Operational Improvements	Improved collaborative in-flight rerouting	Flight operators file multiple flight plans and ANSP selects the one that most efficiently meets flow management goals during operations, but may change to another selection during the flight as unexpected delays occur.
NextGen Operational Improvements	Improved Collaborative Oceanic Routing	Oceanic route efficiency is improved through collaborative negotiation of entry times and track loading and oceanic traffic handling is improved through comparison of current routes against desired profiles to identify beneficial control actions. Aircraft dispatchers and traffic flow managers negotiate oceanic entry times prior to departure. The negotiation includes looking ahead to plan near-term climbs when loading tracks. Oceanic 4D profiles of active flights are continually examined to determine control actions that enhance oceanic capacity while providing improved efficiency within traffic flows. This is an extension of "tailored arrivals," where either a) aircraft send desired profiles (pre-departure and real-time), or b) ground automation predicts desired profiles.
NextGen Operational Improvements	Increased IMC access-1	Performance-based navigation operations are used to provide greater IMC access to terrain-challenged airports and airports without expensive ground infrastructure. This OI also opens more options for airport access in various meteorological conditions. Waterfall deployment: a) to/from some runways at OEP airports (2009), b) to/from all runway ends at all OEP airports (2011), c) to/from all runways at the top 100 airports (Segment 5), d) to/from all runways serving commercial traffic (Segment 6).
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management for Metroplex	Metroplex traffic flow is more effectively managed through terminal area and surface scheduling automation for increased regional capacity. Metroplex planners at major terminal areas optimize arrival/ departure and surface scheduling for increased regional capacity. TBO is a key element of super-density procedures, allowing the ANSP to maximize access for all traffic, while adhering to the principle of giving advantage to those aircraft with advanced capabilities that support the ATM system. Metroplex Trajectory Management assigns each arriving aircraft to an appropriate runway, arrival stream, and place in sequence.
NextGen Operational Improvements	Trajectory Negotiation - Level 1	ANSP productivity is increased through digital exchange of route and trajectory changes with aircraft in high-altitude airspace. Trajectories are negotiated between flight deck and ground via data link.
NextGen Operational Improvements	Trajectory-Based Traffic Management - Level 1	All in-flight aircraft operating in Trajectory-Based Airspace are managed by 4D trajectory in en route climb, cruise, and descent. This may be considered a staging of the 4D trajectory-based capability. This would require the ability to calculate, negotiate, and perform conformance monitoring by ANSPs, including the integration of separation assurance and traffic management (time constraints, e.g., RTAs). This will be enabled by the trajectory exchange through electronic data communications. In high-density or high-complexity airspace, precise 4DTs will be used, dramatically reducing the uncertainty of an aircraft's future flight path, in terms of predicted spatial position (latitude, longitude, and altitude) and times along points in its path. This enhances the capacity and throughput of the airspace to accommodate high levels of demand.
NextGen Operational Improvements	Trajectory-Based Traffic Management - Level 2	All aircraft operating in Trajectory-Based Airspace and Airport Surfaces are managed by 4D trajectory in en route climb, cruise, descent, and airport surface phases of the flight. This is the end state 4D trajectory-based capability. This would require the ability to calculate, negotiate, and perform conformance monitoring by ANSPs, including the integration of separation assurance and traffic management time constraints (e.g., RTAs, runway times of arrival, gate times of arrival). This will be enabled by the trajectory exchange through electronic data communications, as well as many new surface automation and 3D (x, y, and time) trajectory operations. In high-density or high-complexity airspace, precise 4DTs will be used, dramatically reducing the uncertainty of an aircraft's future flight path, in terms of predicted spatial position (latitude, longitude, and altitude) and times along points in its path. This enhances the capacity and throughput of the airspace to accommodate high levels of demand. In trajectory-based airspace, differing types of operations are conducted, with performance-based services applied based on the anticipated traffic characteristics. User preferences are accommodated to the greatest extent possible, and trajectories are constrained only to the extent required to accommodate demand or other national concerns, such as security or safety.

3.5.6.16.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
Actor	Trajectory Management	The function of fine-tuning trajectories as required by the airspace plan or an active flow contingency management initiative to minimize pairwise contention and ensure efficient individual trajectories within a flow
ICAO ATMCP Requirement	R 15	The ATM system shall ensure that airspace users are included in all aspects of airspace management via the collaborative decision-making process

Type	Name	Description
ICAO ATMCP Requirement	R 36	In order to increase service predictability, maximize capacity utilization and meet performance targets, the ATM system shall: a. utilize historical and forecasted weather information, including seasonal pattern and major weather phenomena; b. use information on changes in infrastructure status to increase predictability, maximize capacity utilization to meet performance targets; c. collaborate on post event analysis to support strategic planning; d. utilize projected traffic demand and planned trajectories; e. accommodate revisions to trajectory requests and resources status; f. collaborate on projections and responses; and facilitate collaboration on trajectory changes and traffic demands
ICAO ATMCP Requirement	R 44	The airspace users shall have the capability to generate, negotiate and adhere to user-preferred 4D trajectories
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.
SRM Service Component	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.

3.5.6.16.4 NextGen Future Solutions

3.5.6.17 Assign Spacing and Sequencing (5.1.2.3)

3.5.6.17.1 Description

This activities assigns each arrival aircraft to an appropriate runway, arrival stream, and place in sequence.

3.5.6.17.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Trajectory-Based Operations	Trajectory Based Operations are a shift from clearance based control to trajectory based control. Aircraft will fly negotiated trajectories and control moves to management by trajectory. The focus of these capabilities are on environments/airspace in which all aircraft are equipped to fully participate in trajectory based operations. Included under TBO are operational paradigms and airspace structures which support the move to trajectory based operations. Mixed environments and the advantages that the procedures and tools required for trajectory based operations and airspace are included either as transition steps to the end NextGen Trajectory based operations objectives. It is also assumed that the system will use the capabilities to provide some advantage in environments which will remain mixed.

Type	Name	Description
NextGen Operational Improvements	CDA with airborne merging and spacing	Fuel consumption and noise on approaches are reduced while maintaining throughput in heavy traffic through Continuous Descent Approaches (CDA) combined with airborne merging and spacing in moderate-to-heavy traffic. This OI requires airborne guidance to perform optimized CDA while staying within assigned lateral and vertical airspace corridor limits. This OI is complementary to OI-325 which delivers the aircraft at top of descent with spacing to initiate a successful CDA. This OI also enables reduced spacing buffers and hence increased throughput from precision airborne spacing. Mixed equipage can be supported within a single arrival stream, with some aircraft self-spacing and other aircraft managed by ANSP. This OI requires an Implementation Decision to determine appropriate trajectory restrictions laterally, vertically, and in time, based on tradeoff between aircraft performance/efficiency versus optimal use of airspace.
NextGen Operational Improvements	CDA with ground-based merging and spacing	Time-based and metered RNP routes are flown. Where practical, arrival routes support CDA operations under moderate to heavy traffic conditions, with ground-based automation providing conflict-free, time-based metering solutions over entire CDA trajectory to the runway. This enables aircraft with minimal equipage to perform CDAs. This OI requires an Implementation Decision to determine most effective method for negotiating time-based route and an Implementation Decision to determine how restricted the trajectory will be laterally, vertically, and in time, based on tradeoff between aircraft performance/efficiency versus optimal use of airspace. Waterfall deployment: a) all runway ends at all OEP airports (Segment 4), b) all runways at the top 100 airports (Segment 5).
NextGen Operational Improvements	CDA-enhanced Time Based Arrivals	Time-based metering replaces miles in trail restrictions. This OI provides consistent delivery of aircraft into the terminal area to match runway acceptance rates, enabling efficient, high-throughput operations. Where practical, this OI enables CDA operations under moderate traffic conditions, with ground-based automation providing conflict-free, time-based metering solutions for en route and transition airspace segments. This sets up a stream of aircraft to perform CDAs, including aircraft with minimal equipage performing basic CDAs as well as aircraft with onboard energy management guidance and airborne spacing guidance performing optimized CDAs.
NextGen Operational Improvements	Improved Collaborative Oceanic Routing	Oceanic route efficiency is improved through collaborative negotiation of entry times and track loading and oceanic traffic handling is improved through comparison of current routes against desired profiles to identify beneficial control actions. Aircraft dispatchers and traffic flow managers negotiate oceanic entry times prior to departure. The negotiation includes looking ahead to plan near-term climbs when loading tracks. Oceanic 4D profiles of active flights are continually examined to determine control actions that enhance oceanic capacity while providing improved efficiency within traffic flows. This is an extension of "tailored arrivals," where either a) aircraft send desired profiles (pre-departure and real-time), or b) ground automation predicts desired profiles.
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management	Arrival and departure flows and surface operations are more effectively planned and managed through integrated advanced ANSP automation. This OI develops an Integrated Arrival/Departure and Surface Traffic Flow Manager for improved decision making and flow management. These decision support tools enable ANSP flow managers to work collaboratively with flight operators and with ANSP flow contingency managers to effectively manage high-capacity arrival and departure flows in the presence of various weather conditions. Real-time information distribution enhances operational efficiencies, such as distribution of runway braking action reports. Improved surveillance, automation, and information sharing enhance efficiency of terminal area operations. The ANSP can safely make more efficient use of runways through real-time depiction in the tower of the location and intent of arriving and departing aircraft, as well as any aircraft intending to cross an active runway.
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management for Metroplex	Metroplex traffic flow is more effectively managed through terminal area and surface scheduling automation for increased regional capacity. Metroplex planners at major terminal areas optimize arrival/ departure and surface scheduling for increased regional capacity. TBO is a key element of super-density procedures, allowing the ANSP to maximize access for all traffic, while adhering to the principle of giving advantage to those aircraft with advanced capabilities that support the ATM system. Metroplex Trajectory Management assigns each arriving aircraft to an appropriate runway, arrival stream, and place in sequence.

Type	Name	Description
NextGen Operational Improvements	Limited CDAs	Limited CDAs reduce fuel use and noise on approaches to target airports. In the near-term new operational CDA procedures are implemented for specific traffic flows at target airports in low to moderate traffic situations using existing airborne technologies with enhanced sharing of information between operator and ANSP. Waterfall development: Low traffic demonstration (TBD) Higher traffic implementation (TBD)
NextGen Operational Improvements	Sequencing, separation, and spacing services for IMC operations are provided thr	This OI increases IMC throughput at non-towered single-runway airports. Expected use is either: Staffed Virtual Towers (SVTs), with remote personnel providing needed services or potentially, Automated Virtual Towers (AVTs), with sequencing, spacing, and separation functions provided either by ground automation or through aircraft-based conflict detection/resolution algorithms. Benefits: Capacity and ANSP productivity plus cost avoidance for not building towers. Major implementation alternatives: 1) Remotely Staffed Virtual Towers 2) Automated Virtual Towers with separation functions provided by ground automation 3) Automated Virtual Towers with separation functions provided by aircraft Implementation of any of these 3 alternatives will require a Policy Decision concerning safety of operations and appropriate allocation of roles and responsibilities to humans vs automation and to ANSP vs flight operator. There will also be required an Implementation Decision between the 3 implementation alternatives. It is likely that both SVTs and one or both types of AVTs will be implemented, with SVTs used at larger, busier, and more complex airports, and AVTs used at simpler, less-busy airports. Waterfall deployment (include virtual towers at GA airports to support to VMC operations and to replace existing manned towers at lower traffic airports): TBD
NextGen Operational Improvements	Sequencing, separation, spacing and surface management services through virtual	This adds provision of surface management services (TBD) to OI 313 through use of virtual towers. Expected use is SVTs or AVTs, with separation functions provided either by ground automation or through aircraft-based conflict detection/resolution algorithms. Increases IMC throughput at non-towered, multiple-runway airports and small airports in metroplex environments. Benefits: capacity and ANSP productivity. Requires and Implementation Decision to determine what complex airport operations, such as multiple runway operations, can be safely and effectively supported by AVTs vs SVTs. This OI includes deployment of virtual towers at GA airports and supports VMC operations. It also will permit replacing existing manned towers at lower traffic airports with either AVTs or SVTs. Waterfall deployment: TBD
NextGen Operational Improvements	Time Based Departures and Enroute Operations	This OI provides increased departure throughput via manual time-based control of departing aircraft into an overflight stream using a decision support tool insuring that all available gaps in the en route stream are filled. It also provides departure and en-route time-based control for complex metropolitan airspace where there are multiple conflicting departure streams. Waterfall deployment: a) NY and Phil TRACONS (2007) b) all complex metropolitan airspace with multiple conflicting departure streams (Segment 1)
NAS Operational Improvements	Optimize Runway Assignments	Arrivals and departures are sequenced and staged to maintain throughput. Air navigation service provider (ANSP) automation uses arrival and departure-scheduling tools and 4DT agreements to flow traffic at high-density airports. Automation incorporates user provided gate assignments, requested runway, aircraft wake characteristics, and flight performance profiles. ANSP and airport operators monitor airport operational efficiency and make real-time adjustments to schedules and sequencing to optimize throughput.

3.5.6.17.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Trajectory Management	The function of fine-tuning trajectories as required by the airspace plan or an active flow contingency management initiative to minimize pairwise contention and ensure efficient individual trajectories within a flow
CONOPS	2.4.4 Trajectory Management Process	
Key Concept	Positioning, Navigation, and Timing (PNT) Services	PNT services are provided where and when needed, in accordance with demand and safety considerations, to enable reliable aircraft operations in nearly all conditions. Instead of being driven by the geographic location of a ground-based navigational aid (NAVAID), PNT services allow operators to define the desired flight path based on their own objectives.
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.
SRM Service Component	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.

3.5.6.17.4 NextGen Future Solutions

3.5.6.18 Manage Flow Corridors (5.1.2.4)

3.5.6.18.1 Description

This activity is the management of flow corridor operations in en route airspace with traffic in trajectory en route airspace.

3.5.6.18.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Trajectory-Based Operations	Trajectory Based Operations are a shift from clearance based control to trajectory based control. Aircraft will fly negotiated trajectories and control moves to management by trajectory. The focus of these capabilities are on environments/airspace in which all aircraft are equipped to fully participate in trajectory based operations. Included under TBO are operational paradigms and airspace structures which support the move to trajectory based operations. Mixed environments and the advantages that the procedures and tools required for trajectory based operations and airspace are included either as transition steps to the end NextGen Trajectory based operations objectives. It is also assumed that the system will use the capabilities to provide some advantage in environments which will remain mixed.

Type	Name	Description
NextGen Operational Improvements	Automation-Assisted Trajectory Negotiation and Separation Management	Trajectory management is enhanced by automated assistance to negotiation with properly equipped aircraft operators. Human ANSPs are responsible for separation management, supported by automation. 4DTs are negotiated between the ground-based automation and the operator, which may be the pilot, a UAS operator, or perhaps even FOC personnel, who would then relay information to the aircraft. This will enable higher density of operations thus higher capacity as well as decrease human errors in trajectory negotiation and entry.
NextGen Operational Improvements	Automated Trajectory Negotiation and Separation Management	Trajectory management is enhanced by automated negotiation of 4DTs between properly equipped aircraft and ground automation for separation management. All aircraft in TBO airspace must be equipped for this function. The ANSP Separation Management function is fully automated, and separation responsibility is delegated to automation. For specified operations, tasks are delegated to the flight crew to take advantage of aircraft capabilities. To manage separation, ANSP automation negotiates short-term, conflict-driven updates to the 4DT agreements with the aircraft. This will enable higher density of operations thus higher capacity as well as increased safety due to the elimination of human directed trajectory negotiation and automation input decrease in human errors in trajectory negotiation and entry. This OI requires a Policy/Implementation Decision to determine appropriate roles/responsibilities allocated between humans/automation and air/ground.
NextGen Operational Improvements	Improved collaborative in-flight rerouting	Flight operators file multiple flight plans and ANSP selects the one that most efficiently meets flow management goals during operations, but may change to another selection during the flight as unexpected delays occur.
NextGen Operational Improvements	Improved Collaborative Oceanic Routing	Oceanic route efficiency is improved through collaborative negotiation of entry times and track loading and oceanic traffic handling is improved through comparison of current routes against desired profiles to identify beneficial control actions. Aircraft dispatchers and traffic flow managers negotiate oceanic entry times prior to departure. The negotiation includes looking ahead to plan near-term climbs when loading tracks. Oceanic 4D profiles of active flights are continually examined to determine control actions that enhance oceanic capacity while providing improved efficiency within traffic flows. This is an extension of "tailored arrivals," where either a) aircraft send desired profiles (pre-departure and real-time), or b) ground automation predicts desired profiles.
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management	Arrival and departure flows and surface operations are more effectively planned and managed through integrated advanced ANSP automation. This OI develops an Integrated Arrival/Departure and Surface Traffic Flow Manager for improved decision making and flow management. These decision support tools enable ANSP flow managers to work collaboratively with flight operators and with ANSP flow contingency managers to effectively manage high-capacity arrival and departure flows in the presence of various weather conditions. Real-time information distribution enhances operational efficiencies, such as distribution of runway braking action reports. Improved surveillance, automation, and information sharing enhance efficiency of terminal area operations. The ANSP can safely make more efficient use of runways through real-time depiction in the tower of the location and intent of arriving and departing aircraft, as well as any aircraft intending to cross an active runway.
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management for Metroplex	Metroplex traffic flow is more effectively managed through terminal area and surface scheduling automation for increased regional capacity. Metroplex planners at major terminal areas optimize arrival/ departure and surface scheduling for increased regional capacity. TBO is a key element of super-density procedures, allowing the ANSP to maximize access for all traffic, while adhering to the principle of giving advantage to those aircraft with advanced capabilities that support the ATM system. Metroplex Trajectory Management assigns each arriving aircraft to an appropriate runway, arrival stream, and place in sequence.

Type	Name	Description
NextGen Operational Improvements	Sequencing, separation, and spacing services for IMC operations are provided thr	This OI increases IMC throughput at non-towered single-runway airports. Expected use is either: Staffed Virtual Towers (SVTs), with remote personnel providing needed services or potentially, Automated Virtual Towers (AVTs), with sequencing, spacing, and separation functions provided either by ground automation or through aircraft-based conflict detection/resolution algorithms. Benefits: Capacity and ANSP productivity plus cost avoidance for not building towers. Major implementation alternatives: 1) Remotely Staffed Virtual Towers 2) Automated Virtual Towers with separation functions provided by ground automation 3) Automated Virtual Towers with separation functions provided by aircraft Implementation of any of these 3 alternatives will require a Policy Decision concerning safety of operations and appropriate allocation of roles and responsibilities to humans vs automation and to ANSP vs flight operator. There will also be required an Implementation Decision between the 3 implementation alternatives. It is likely that both SVTs and one or both types of AVTs will be implemented, with SVTs used at larger, busier, and more complex airports, and AVTs used at simpler, less-busy airports. Waterfall deployment (include virtual towers at GA airports to support to VMC operations and to replace existing manned towers at lower traffic airports): TBD
NextGen Operational Improvements	Trajectory-Based Traffic Management - Level 1	All in-flight aircraft operating in Trajectory-Based Airspace are managed by 4D trajectory in en route climb, cruise, and descent. This may be considered a staging of the 4D trajectory-based capability. This would require the ability to calculate, negotiate, and perform conformance monitoring by ANSPs, including the integration of separation assurance and traffic management (time constraints, e.g., RTAs). This will be enabled by the trajectory exchange through electronic data communications. In high-density or high-complexity airspace, precise 4DTs will be used, dramatically reducing the uncertainty of an aircraft's future flight path, in terms of predicted spatial position (latitude, longitude, and altitude) and times along points in its path. This enhances the capacity and throughput of the airspace to accommodate high levels of demand.
NextGen Operational Improvements	Trajectory-Based Traffic Management - Level 2	All aircraft operating in Trajectory-Based Airspace and Airport Surfaces are managed by 4D trajectory in en route climb, cruise, descent, and airport surface phases of the flight. This is the end state 4D trajectory-based capability. This would require the ability to calculate, negotiate, and perform conformance monitoring by ANSPs, including the integration of separation assurance and traffic management time constraints (e.g., RTAs, runway times of arrival, gate times of arrival). This will be enabled by the trajectory exchange through electronic data communications, as well as many new surface automation and 3D (x, y, and time) trajectory operations. In high-density or high-complexity airspace, precise 4DTs will be used, dramatically reducing the uncertainty of an aircraft's future flight path, in terms of predicted spatial position (latitude, longitude, and altitude) and times along points in its path. This enhances the capacity and throughput of the airspace to accommodate high levels of demand. In trajectory-based airspace, differing types of operations are conducted, with performance-based services applied based on the anticipated traffic characteristics. User preferences are accommodated to the greatest extent possible, and trajectories are constrained only to the extent required to accommodate demand or other national concerns, such as security or safety.

3.5.6.18.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Trajectory Management	The function of fine-tuning trajectories as required by the airspace plan or an active flow contingency management initiative to minimize pairwise contention and ensure efficient individual trajectories within a flow

Type	Name	Description
ICAO ATMCP Requirement	R169	Traffic Synchronisation shall be applied for the purpose of maximising throughput of a particular ATM environment in the most effective and efficient manner
ICAO ATMCP Requirement	R 18	The ATM System shall manage all airspace, and where necessary, shall be responsible for amending priorities relating to access and equity that may have been established for particular volumes of airspace. Where such authority is exercised, it shall be subject to rules or procedures established through collaborative decision-making. [R18].
ICAO ATMCP Requirement	R 99	Where approvals are required for civil or State aircraft to operate over, into, or from a particular State, provision for tactical or pre-tactical approval of preferred routing or re-routing shall be facilitated as far as is practicable.
ICAO ATMCP Requirement	R 105	The organization, the flexible allocation and the use of airspace shall be based on the principles of access and equity [
ICAO ATMCP Requirement	R 106	Airspace management shall be dynamic, flexible and based on services demanded
CONOPS	2.4.7 En Route and Cruise Trajectory-Based Operations	
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.
SRM Service Component	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.

3.5.6.18.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Manage Air Traffic Command & Control Service	To direct the safe and efficient movement of passengers and cargo through the National Airspace by systmatic analysis of revelant information and notification to appropriate authority.

3.5.6.19 Manage Flow Corridors (5.1.2.4)

3.5.6.19.1 Description

This activity is the management of flow corridor operations in en route airspace with traffic in trajectory en route airspace.

Air Navigation Operations A5

Trajectory Management A5.1

Manage Trajectories within Flows A5.1.2

Manage Flow Corridors A5.1.2.4

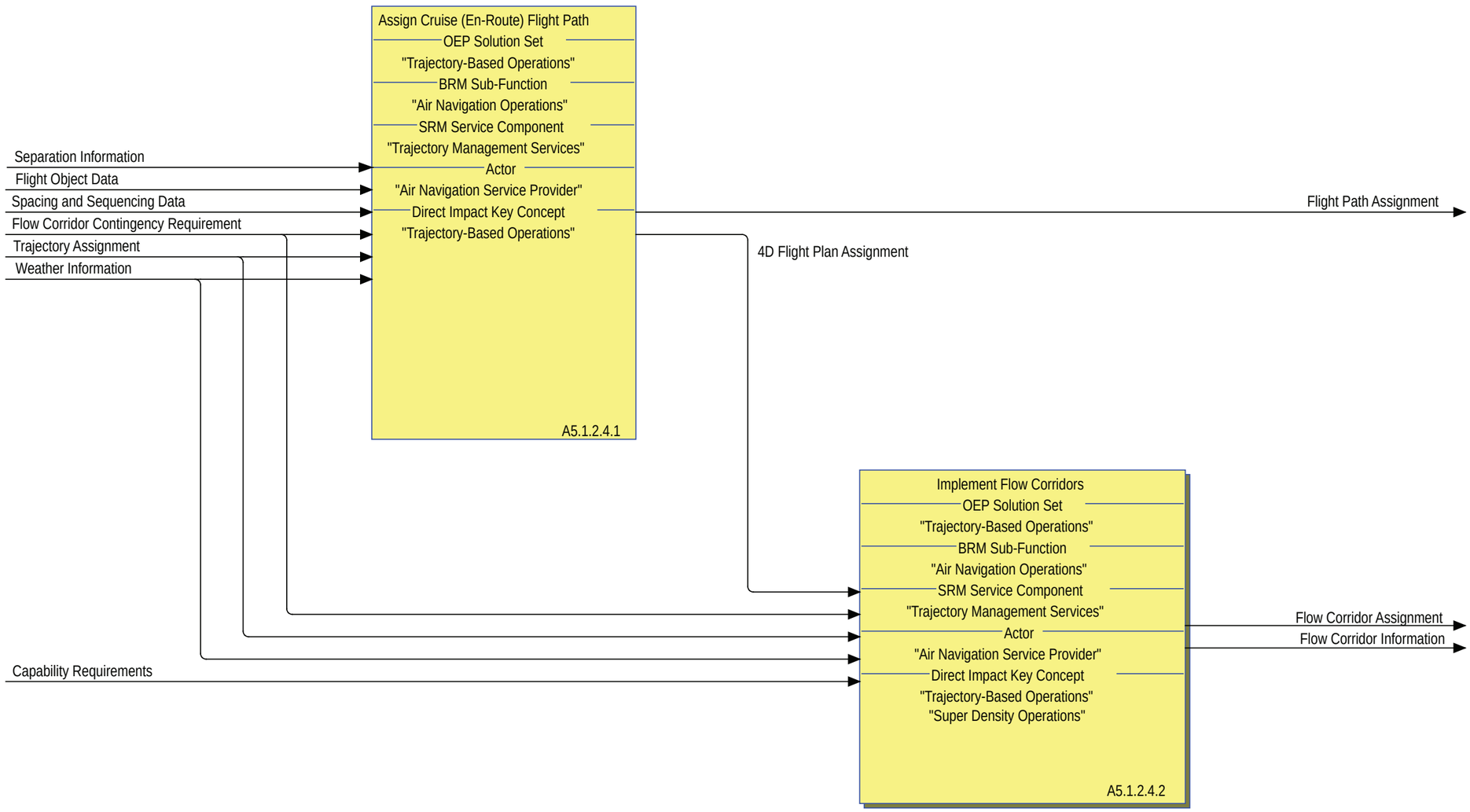


Figure 65 - 5.1.2.4 Manage Flow Corridors Activity Model Diagram

3.5.6.20 Assign Cruise (En-Route) Flight Path (5.1.2.4.1)

3.5.6.20.1 Description

This activity provides the aircraft with an en route flight path.

3.5.6.20.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Trajectory-Based Operations	Trajectory Based Operations are a shift from clearance based control to trajectory based control. Aircraft will fly negotiated trajectories and control moves to management by trajectory. The focus of these capabilities are on environments/airspace in which all aircraft are equipped to fully participate in trajectory based operations. Included under TBO are operational paradigms and airspace structures which support the move to trajectory based operations. Mixed environments and the advantages that the procedures and tools required for trajectory based operations and airspace are included either as transition steps to the end NextGen Trajectory based operations objectives. It is also assumed that the system will use the capabilities to provide some advantage in environments which will remain mixed.
NextGen Operational Improvements	Automation-Assisted Trajectory Negotiation and Separation Management	Trajectory management is enhanced by automated assistance to negotiation with properly equipped aircraft operators. Human ANSPs are responsible for separation management, supported by automation. 4DTs are negotiated between the ground-based automation and the operator, which may be the pilot, a UAS operator, or perhaps even FOC personnel, who would then relay information to the aircraft. This will enable higher density of operations thus higher capacity as well as decrease human errors in trajectory negotiation and entry.
NextGen Operational Improvements	Automated Trajectory Negotiation and Separation Management	Trajectory management is enhanced by automated negotiation of 4DTs between properly equipped aircraft and ground automation for separation management. All aircraft in TBO airspace must be equipped for this function. The ANSP Separation Management function is fully automated, and separation responsibility is delegated to automation. For specified operations, tasks are delegated to the flight crew to take advantage of aircraft capabilities. To manage separation, ANSP automation negotiates short-term, conflict-driven updates to the 4DT agreements with the aircraft. This will enable higher density of operations thus higher capacity as well as increased safety due to the elimination of human directed trajectory negotiation and automation input decrease in human errors in trajectory negotiation and entry. This OI requires a Policy/Implementation Decision to determine appropriate roles/responsibilities allocated between humans/automation and air/ground.
NextGen Operational Improvements	Improved collaborative in-flight rerouting	Flight operators file multiple flight plans and ANSP selects the one that most efficiently meets flow management goals during operations, but may change to another selection during the flight as unexpected delays occur.
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management for Metroplex	Metroplex traffic flow is more effectively managed through terminal area and surface scheduling automation for increased regional capacity. Metroplex planners at major terminal areas optimize arrival/ departure and surface scheduling for increased regional capacity. TBO is a key element of super-density procedures, allowing the ANSP to maximize access for all traffic, while adhering to the principle of giving advantage to those aircraft with advanced capabilities that support the ATM system. Metroplex Trajectory Management assigns each arriving aircraft to an appropriate runway, arrival stream, and place in sequence.
NextGen Operational Improvements	Time Based Departures and Enroute Operations	This OI provides increased departure throughput via manual time-based control of departing aircraft into an overflight stream using a decision support tool insuring that all available gaps in the en route stream are filled. It also provides departure and en-route time-based control for complex metropolitan airspace where there are multiple conflicting departure streams. Waterfall deployment: a) NY and Phil TRACONS (2007) b) all complex metropolitan airspace with multiple conflicting departure streams (Segment 1)
NextGen Operational Improvements	Trajectory-Based Traffic Management - Level 1	All in-flight aircraft operating in Trajectory-Based Airspace are managed by 4D trajectory in en route climb, cruise, and descent. This may be considered a staging of the 4D trajectory-based capability. This would require the ability to calculate, negotiate, and perform conformance monitoring by ANSPs, including the integration of separation assurance and traffic management (time constraints, e.g., RTAs). This will be enabled by the trajectory exchange through electronic data communications. In high-density or high-complexity airspace, precise 4DTs will be used, dramatically reducing the uncertainty of an aircraft's future flight path, in terms of predicted spatial position (latitude, longitude, and altitude) and times along points in its path. This enhances the capacity and throughput of the airspace to accommodate high levels of demand.
NextGen Operational Improvements	Trajectory-Based Traffic Management - Level 2	All aircraft operating in Trajectory-Based Airspace and Airport Surfaces are managed by 4D trajectory in en route climb, cruise, descent, and airport surface phases of the flight. This is the end state 4D trajectory-based capability. This would require the ability to calculate, negotiate, and perform conformance monitoring by ANSPs, including the integration of separation assurance and traffic management time constraints (e.g., RTAs, runway times of arrival, gate times of arrival). This will be enabled by the trajectory exchange through electronic data communications, as well as many new surface automation and 3D (x, y, and time) trajectory operations. In high-density or high-complexity airspace, precise 4DTs will be used, dramatically reducing the uncertainty of an aircraft's future flight path, in terms of predicted spatial position (latitude, longitude, and altitude) and times along points in its path. This enhances the capacity and throughput of the airspace to accommodate high levels of demand. In trajectory-based airspace, differing types of operations are conducted, with performance-based services applied based on the anticipated traffic characteristics. User preferences are accommodated to the greatest extent possible, and trajectories are constrained only to the extent required to accommodate demand or other national concerns, such as security or safety.

3.5.6.20.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Trajectory Management	The function of fine-tuning trajectories as required by the airspace plan or an active flow contingency management initiative to minimize pairwise contention and ensure efficient individual trajectories within a flow
ICAO ATMCP Requirement	R 72	The ATM system shall approve the execution of 4D trajectory agreements through the issuance of clearances.
CONOPS	2.4.7 En Route and Cruise Trajectory-Based Operations	
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.

Type	Name	Description
SRM Service Component	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.

3.5.6.20.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Determine Air Route Structure	The activity of designing a defined path, consisting of one or more courses in a horizontal plane, which aircraft traverse over the surface of the earth.

3.5.6.21 Implement Flow Corridors (5.1.2.4.2)

3.5.6.21.1 Description

This activity will implement the flow corridors that have been established. Flow corridors will provide the safe and smooth implementation of flow corridors when demand and volume is above normal conditions. Entry and exit location and times will be designated to aircrafts.

3.5.6.21.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Trajectory-Based Operations	Trajectory Based Operations are a shift from clearance based control to trajectory based control. Aircraft will fly negotiated trajectories and control moves to management by trajectory. The focus of these capabilities are on environments/airspace in which all aircraft are equipped to fully participate in trajectory based operations. Included under TBO are operational paradigms and airspace structures which support the move to trajectory based operations. Mixed environments and the advantages that the procedures and tools required for trajectory based operations and airspace are included either as transition steps to the end NextGen Trajectory based operations objectives. It is also assumed that the system will use the capabilities to provide some advantage in environments which will remain mixed.
NextGen Operational Improvements	Improved Collaborative Oceanic Routing	Oceanic route efficiency is improved through collaborative negotiation of entry times and track loading and oceanic traffic handling is improved through comparison of current routes against desired profiles to identify beneficial control actions. Aircraft dispatchers and traffic flow managers negotiate oceanic entry times prior to departure. The negotiation includes looking ahead to plan near-term climbs when loading tracks. Oceanic 4D profiles of active flights are continually examined to determine control actions that enhance oceanic capacity while providing improved efficiency within traffic flows. This is an extension of "tailored arrivals," where either a) aircraft send desired profiles (pre-departure and real-time), or b) ground automation predicts desired profiles.
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management	Arrival and departure flows and surface operations are more effectively planned and managed through integrated advanced ANSP automation. This OI develops an Integrated Arrival/Departure and Surface Traffic Flow Manager for improved decision making and flow management. These decision support tools enable ANSP flow managers to work collaboratively with flight operators and with ANSP flow contingency managers to effectively manage high-capacity arrival and departure flows in the presence of various weather conditions. Real-time information distribution enhances operational efficiencies, such as distribution of runway braking action reports. Improved surveillance, automation, and information sharing enhance efficiency of terminal area operations. The ANSP can safely make more efficient use of runways through real-time depiction in the tower of the location and intent of arriving and departing aircraft, as well as any aircraft intending to cross an active runway.
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management for Metroplex	Metroplex traffic flow is more effectively managed through terminal area and surface scheduling automation for increased regional capacity. Metroplex planners at major terminal areas optimize arrival/ departure and surface scheduling for increased regional capacity. TBO is a key element of super-density procedures, allowing the ANSP to maximize access for all traffic, while adhering to the principle of giving advantage to those aircraft with advanced capabilities that support the ATM system. Metroplex Trajectory Management assigns each arriving aircraft to an appropriate runway, arrival stream, and place in sequence.
NextGen Operational Improvements	Time Based Departures and Enroute Operations	This OI provides increased departure throughput via manual time-based control of departing aircraft into an overflight stream using a decision support tool insuring that all available gaps in the en route stream are filled. It also provides departure and en-route time-based control for complex metropolitan airspace where there are multiple conflicting departure streams. Waterfall deployment: a) NY and Phil TRACONS (2007) b) all complex metropolitan airspace with multiple conflicting departure streams (Segment 1)

3.5.6.21.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Trajectory Management	The function of fine-tuning trajectories as required by the airspace plan or an active flow contingency management initiative to minimize pairwise contention and ensure efficient individual trajectories within a flow
CONOPS	2.3.2 Collaborative Air Traffic Management	
CONOPS	2.4.4 Trajectory Management Process	
CONOPS	2.4.5 Separation Management Process	
CONOPS	2.4.7 En Route and Cruise Trajectory-Based Operations	
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.

Type	Name	Description
SRM Service Component	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.

3.5.6.21.4 NextGen Future Solutions

3.5.6.22 Implement Flow Corridors (5.1.2.4.2)

3.5.6.22.1 Description

This activity will implement the flow corridors that have been established. Flow corridors will provide the safe and smooth implementation of flow corridors when demand and volume is above normal conditions. Entry and exit location and times will be designated to aircrafts.

Air Navigation Operations A5

Trajectory Management A5.1

Manage Trajectories within Flows A5.1.2

Manage Flow Corridors A5.1.2.4

Implement Flow Corridors A5.1.2.4.2

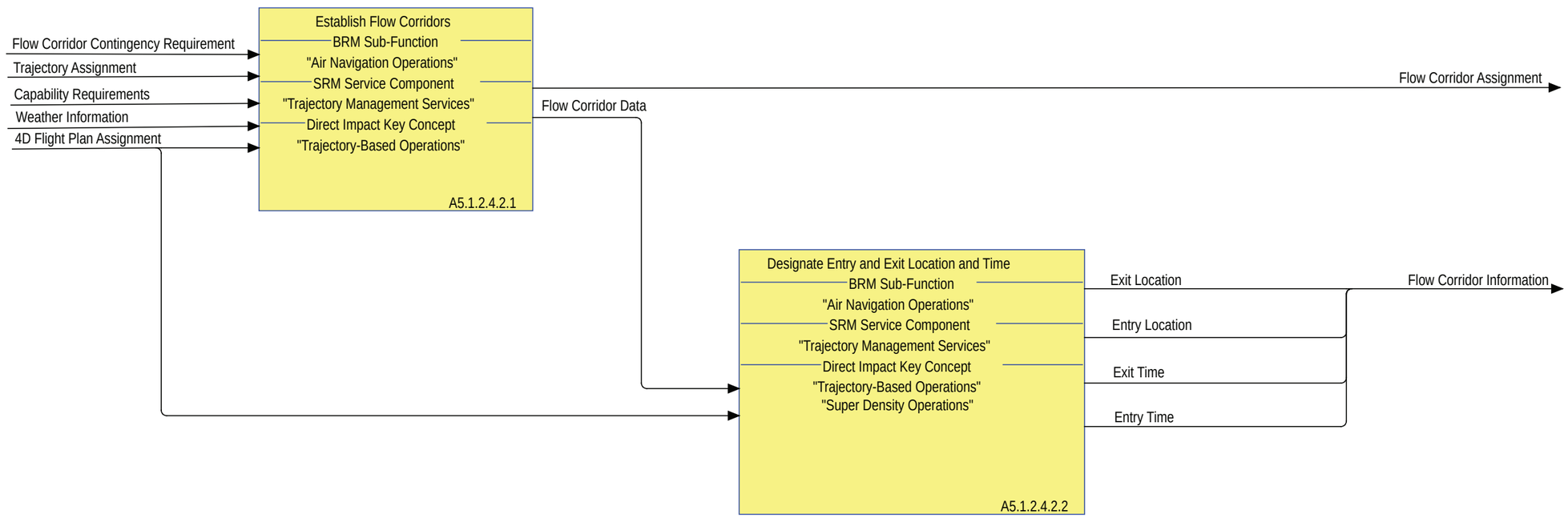


Figure 66 - 5.1.2.4.2 Implement Flow Corridors Activity Model Diagram

3.5.6.23 Establish Flow Corridors (5.1.2.4.2.1)

3.5.6.23.1 Description

This activity establishes flow corridors in a high demand airspace. These corridors are for aircrafts that capable of conducting delegated separation, merging and spacing procedures within the corridor, and 4DT procedures.

3.5.6.23.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	CDA with airborne merging and spacing	Fuel consumption and noise on approaches are reduced while maintaining throughput in heavy traffic through Continuous Descent Approaches (CDA) combined with airborne merging and spacing in moderate-to-heavy traffic. This OI requires airborne guidance to perform optimized CDA while staying within assigned lateral and vertical airspace corridor limits. This OI is complementary to OI-325 which delivers the aircraft at top of descent with spacing to initiate a successful CDA. This OI also enables reduced spacing buffers and hence increased throughput from precision airborne spacing. Mixed equipage can be supported within a single arrival stream, with some aircraft self-spacing and other aircraft managed by ANSP. This OI requires an Implementation Decision to determine appropriate trajectory restrictions laterally, vertically, and in time, based on tradeoff between aircraft performance/efficiency versus optimal use of airspace.
NextGen Operational Improvements	Advanced deicing, aniticing and snow removal operations	During winter weather, aircraft are anti-iced/deiced more efficiently. Icing holdover times are incorporated into 4DT in order to facilitate departure queuing. Deicing/anti-icing fluids are more effective with less environmental impact. Collection methods capture spent fluids for recycling.

3.5.6.23.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Trajectory Management	The function of fine-tuning trajectories as required by the airspace plan or an active flow contingency management initiative to minimize pairwise contention and ensure efficient individual trajectories within a flow
CONOPS	2.4.4 Trajectory Management Process	
CONOPS	2.4.5 Separation Management Process	
CONOPS	2.4.7 En Route and Cruise Trajectory-Based Operations	
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.
SRM Service Component	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.

3.5.6.23.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Manage Flow Information	The supervision of the necessary activities involved in obtaining and analyzing the information necessary to regulate traffic flow during periods and for locations where predicted demand exceeds predicted capacity.

3.5.6.24 Designate Entry and Exit Location and Time (5.1.2.4.2.2)

3.5.6.24.1 Description

This activity will designate the entry and exit points and times for the aircraft to enter/exit a flow corridor for smooth transition. This activity is defined by the tactical trajectory management (TTM) tool. This activity can be renegotiated with the TTM and aircraft.

3.5.6.24.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Improved Collaborative Oceanic Routing	Oceanic route efficiency is improved through collaborative negotiation of entry times and track loading and oceanic traffic handling is improved through comparison of current routes against desired profiles to identify beneficial control actions. Aircraft dispatchers and traffic flow managers negotiate oceanic entry times prior to departure. The negotiation includes looking ahead to plan near-term climbs when loading tracks. Oceanic 4D profiles of active flights are continually examined to determine control actions that enhance oceanic capacity while providing improved efficiency within traffic flows. This is an extension of "tailored arrivals," where either a) aircraft send desired profiles (pre-departure and real-time), or b) ground automation predicts desired profiles.
NextGen Operational Improvements	Increased IMC access-1	Performance-based navigation operations are used to provide greater IMC access to terrain-challenged airports and airports without expensive ground infrastructure. This OI also opens more options for airport access in various meteorological conditions. Waterfall deployment: a) to/from some runways at OEP airports (2009), b) to/from all runway ends at all OEP airports (2011), c) to/from all runways at the top 100 airports (Segment 5), d) to/from all runways serving commercial traffic (Segment 6).

Type	Name	Description
NextGen Operational Improvements	Time Based Arrivals	Improved regularity of arrival flows into busy terminal areas through providing time-based metering advisories to controllers reduces "bunching" and the number of lost landing opportunities at the runway thresholds. Arrival time-based metering is available at least one TRACON in every ARTCC. The benefit of this OI is increased terminal throughput, better achievement of full capacity, and improved operator efficiency (less holding, fewer airborne delays). This OI is based on TMA to provide metering advisories to controllers. It provides decreased uncertainty in delivery to terminal boundaries for arrivals. Enablers: ability to predict desired time for an aircraft to arrive at a terminal boundary; ability to schedule time of arrival ensuring all realizable landing slots are filled; ability to "control" conflict free aircraft to arrive at the desired time into terminal boundaries (done manually today through controllers using metering times from TMA and their controller skills). Waterfall deployment: (TBD)
NextGen Operational Improvements	Time Based Departures and Enroute Operations	This OI provides increased departure throughput via manual time-based control of departing aircraft into an overflight stream using a decision support tool insuring that all available gaps in the en route stream are filled. It also provides departure and en-route time-based control for complex metropolitan airspace where there are multiple conflicting departure streams. Waterfall deployment: a) NY and Phil TRACONS (2007) b) all complex metropolitan airspace with multiple conflicting departure streams (Segment 1)

3.5.6.24.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Trajectory Management	The function of fine-tuning trajectories as required by the airspace plan or an active flow contingency management initiative to minimize pairwise contention and ensure efficient individual trajectories within a flow
CONOPS	2.4.4 Trajectory Management Process	
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.
SRM Service Component	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.

3.5.6.24.4 NextGen Future Solutions

3.5.6.25 Separation Management (5.2)

3.5.6.25.1 Description

This activity provides the function of ensuring aircraft or vehicles maintain safe separation minima from other aircraft or vehicles, protected airspace, terrain, weather, or other hazards. The function may be performed by ANSP personnel, the flight operator, and/or automation. This activity can delegate the separation operations based on trajectories or maneuver and provide the standards for self-separation.

3.5.6.25.2 Purpose

The purpose of SM is to ensure that aircrafts maintain a safe separation from other aircrafts and other hazards. The operating norm for SM is that the ANSP delegates tasks to aircraft to take advantage of aircraft capabilities; however, the trajectory manager may identify the need for the ANSP to maintain separation responsibility. For aircraft not delegated separation, whether this is because the aircraft are capable, or because the ANSP wishes to retain separation authority, ANSP automation manages separation and negotiates short-term, conflict driven updates to the 4DT agreements with the aircraft. The delegated separation operations include both a single aircraft having separation authority for a specific maneuver, or more general separation responsibility, such as flow corridors.

Air Navigation Operations A5

Separation Management A5.2

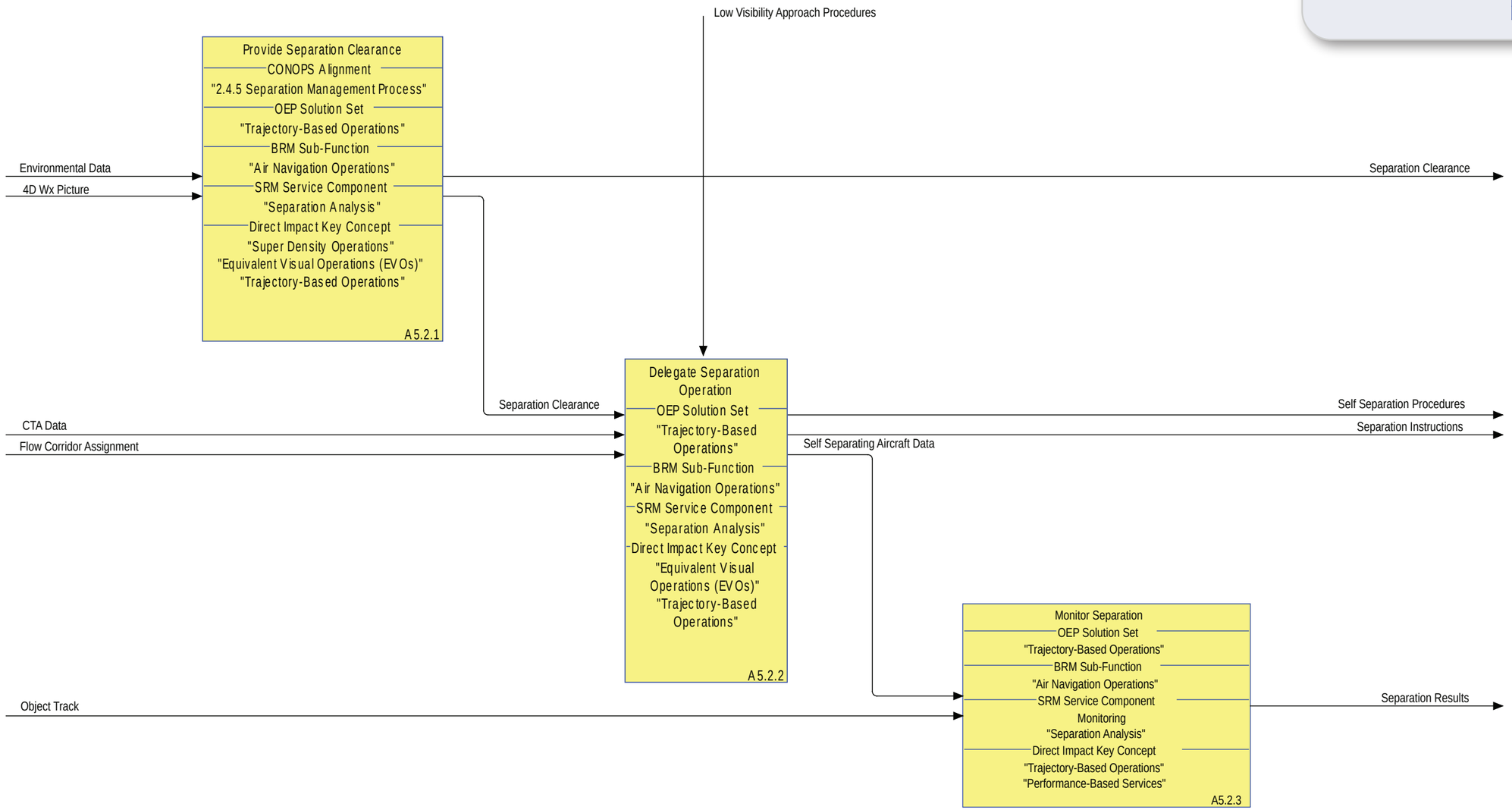


Figure 67 - 5.2 Separation Management Activity Model Diagram

3.5.6.26 Provide Separation Clearance (5.2.1)

3.5.6.26.1 Description

This activity provides separation clearances to aircraft based on the established (based on aircraft capabilities and airspace) minimum separation standards (longitudinal, lateral, and vertical separation standards) for all aircraft operating in trajectory based operations. This activity will authorize and delegate self-separation to aircraft (based on their respective capabilities). Self-separation is continuously monitored to ensure safe operations, maximize capacity and meet demand.

3.5.6.26.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Trajectory-Based Operations	Trajectory Based Operations are a shift from clearance based control to trajectory based control. Aircraft will fly negotiated trajectories and control moves to management by trajectory. The focus of these capabilities are on environments/airspace in which all aircraft are equipped to fully participate in trajectory based operations. Included under TBO are operational paradigms and airspace structures which support the move to trajectory based operations. Mixed environments and the advantages that the procedures and tools required for trajectory based operations and airspace are included either as transition steps to the end NextGen Trajectory based operations objectives. It is also assumed that the system will use the capabilities to provide some advantage in environments which will remain mixed.
NextGen Operational Improvements	Automation-Assisted Trajectory Negotiation and Separation Management	Trajectory management is enhanced by automated assistance to negotiation with properly equipped aircraft operators. Human ANSPs are responsible for separation management, supported by automation. 4DTs are negotiated between the ground-based automation and the operator, which may be the pilot, a UAS operator, or perhaps even FOC personnel, who would then relay information to the aircraft. This will enable higher density of operations thus higher capacity as well as decrease human errors in trajectory negotiation and entry.
NextGen Operational Improvements	Electronic VFR Operations - Level 1	Visibility and cloud clearance requirements for VFR flights are reduced through use of onboard traffic displays, increasing utility of VFR operations. Electronic VFR provides the ability of an aircraft to transition through a light cloud layer or operate in lower visibility, using CDTI (with ADS-B or TIS B) to augment continuation of visual separation after initial visual contact.
NextGen Operational Improvements	Increased use of 3-mile separation	3-mile separation procedures are applied to new airspace based on RSP. This assumes a homegeneous environment (e.g., 3-mile separation becomes the "default" in some airspace). The current 3-mile separation standard is based on the controllers using a single radar system and aircraft within a 50-mile radius of the radar. In the future, this constraint may be eliminated through the use of advanced surveillance techniquest or technologies, e.g., ADS-B, modern radar processing technologies and/or the use of appropriate RSP procedures and technologies. Expected use: high density integrated arrival/ departure flows, and transition from en route into high density terminal airspace. Waterfall deployment: a) Targetted high density transition airspace b) Additional areas of high density extended transition and en route airspace
NextGen Operational Improvements	Terminal airborne merging and spacing metroplex	This OI uses airborne merging and spacing to allow greater traffic throughput and reduced ANSP workload in terminal areas by reducing spacing buffers between streams approaching and departing multiple metroplex runways. This OI includes development of ANSP capability and procedures and requires an Implementation Decision to determine what complex airborne merging and spacing operations will be required for effective use of high-density metroplex airspace, such as crossing streams, merging and diverging streams, etc.
NextGen Operational Improvements	Terminal area airborne merging and spacing for multiple runways	Arriving or departing aircraft to/from multiple runways are instructed to achieve and maintain a given spacing in time or distance from a designated lead aircraft as defined by an ANSP clearance. Onboard displays and automation support the aircraft conducting the merging and spacing procedure to enable accurate adherence to the required spacing. Flight crews are responsible for maintaining safe and efficient spacing from the lead aircraft. Responsibility for separation from all other aircraft remains with the ANSP. Assigned spacing may include a gap to allow for an intervening departure between subsequent arrivals. Mixed-equipage operations are supported; a spacing-capable aircraft can perform airborne spacing behind a non-capable aircraft as long as it is transmitting cooperative surveillance information. This OI includes complex merging and spacing, such as for crossing and diverging streams and includes development of ANSP capability and procedures. Because an aircraft is spacing from its lead aircraft according to whatever spacing timing he is assigned by the ANSP, dynamic spacing with specific pair wise spacing requirements are supported.
NextGen Operational Improvements	Trajectory-Based Traffic Management - Level 1	All in-flight aircraft operating in Trajectory-Based Airspace are managed by 4D trajectory in en route climb, cruise, and descent. This may be considered a staging of the 4D trajectory-based capability. This would require the ability to calculate, negotiate, and perform conformance monitoring by ANSPs, including the integration of separation assurance and traffic management (time constraints, e.g., RTAs). This will be enabled by the trajectory exchange through electronic data communications. In high-density or high-complexity airspace, precise 4DTs will be used, dramatically reducing the uncertainty of an aircraft's future flight path, in terms of predicted spatial position (latitude, longitude, and altitude) and times along points in its path. This enhances the capacity and throughput of the airspace to accommodate high levels of demand.
NextGen Operational Improvements	Trajectory-Based Traffic Management - Level 2	All aircraft operating in Trajectory-Based Airspace and Airport Surfaces are managed by 4D trajectory in en route climb, cruise, descent, and airport surface phases of the flight. This is the end state 4D trajectory-based capability. This would require the ability to calculate, negotiate, and perform conformance monitoring by ANSPs, including the integration of separation assurance and traffic management time constraints (e.g., RTAs, runway times of arrival, gate times of arrival). This will be enabled by the trajectory exchange through electronic data communications, as well as many new surface automation and 3D (x, y, and time) trajectory operations. In high-density or high-complexity airspace, precise 4DTs will be used, dramatically reducing the uncertainty of an aircraft's future flight path, in terms of predicted spatial position (latitude, longitude, and altitude) and times along points in its path. This enhances the capacity and throughput of the airspace to accommodate high levels of demand. In trajectory-based airspace, differing types of operations are conducted, with performance-based services applied based on the anticipated traffic characteristics. User preferences are accommodated to the greatest extent possible, and trajectories are constrained only to the extent required to accommodate demand or other national concerns, such as security or safety.

3.5.6.26.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Separation Management	The function of ensuring aircraft or vehicles maintain safe separation minima from other aircraft or vehicles, protected airspace, terrain, weather, or other hazards. The function may be performed by ANSP personnel, the flight operator, and/or automation.
ICAO ATMCP Requirement	R 62	Selection of the applicable separation minima for conflict management shall be that which best meets the ATM system performance targets.
ICAO ATMCP Requirement	R 63	The ATM System shall define separation modes for separation from all hazards, including weather
ICAO ATMCP Requirement	R 64	The ATM System shall define separation modes applicable to all airspace, the manoeuvring area and the apron

Type	Name	Description
CONOPS	2.4.5 Separation Management Process	
Key Concept	Equivalent Visual Operations (EVO)	Improved information availability allows aircraft to conduct operations without regard for visibility or direct visual observation. For aircraft, this capability, in combination with PNT, enables increased accessibility, both on the airport surface and during arrival and departure operations. This capability also enables those providing services at airports (such as ATM or other ramp services) to provide services in all visibility conditions, leading to more predictable and efficient operations.
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.
SRM Service Component	Separation Analysis	Defines the set of capabilities that identify and tactically resolve airspace conflicts among aircraft (i.e., automatic issuance of revised four-dimensional trajectories) to ensure the avoidance of weather, airspace, terrain, or other hazards.

3.5.6.26.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Evaluate Separation State	The activity of reviewing current information in order to predict possible losses of separation minima between aircraft and restricted airspace, terrain and obstables, or other vehicles.
NAS Activity	Issue Separation Instruction	The dissemination of instructions to pilots for the purpose of not breaching separation minima with restricted airspace, terrain and obstacles, or other vehicles.

3.5.6.27 Delegate Separation Operation (5.2.2)

3.5.6.27.1 Description

This activity will delegate separation operations including both a single aircraft having separation authority for a specific maneuver (e.g., for crossing or passing another aircraft), or more general separation responsibility, such as for flow corridors. ANSP and aircraft automation track the delegation of responsibility and its limits, and ensure that the delegation is always unambiguous and clearly communicated.

3.5.6.27.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Trajectory-Based Operations	Trajectory Based Operations are a shift from clearance based control to trajectory based control. Aircraft will fly negotiated trajectories and control moves to management by trajectory. The focus of these capabilities are on environments/airspace in which all aircraft are equipped to fully participate in trajectory based operations. Included under TBO are operational paradigms and airspace structures which support the move to trajectory based operations. Mixed environments and the advantages that the procedures and tools required for trajectory based operations and airspace are included either as transition steps to the end NextGen Trajectory based operations objectives. It is also assumed that the system will use the capabilities to provide some advantage in environments which will remain mixed.
NextGen Operational Improvements	Delegated self-separation - complex operations	In ANSP-managed airspace, the ANSP delegates separation responsibilities to capable aircraft to improve operator routing, enhance operational efficiency, or increase ANSP productivity. This OI involves more complex delegated separation responsibilities that may be supported in ANSP-managed en route and transition airspace. After early concept exploration and feasibility research, an implementation decision will be made by 2015 to determine whether it is cost beneficial to develop additional delegated separation responsibilities beyond those covered in OI-356 and OI 359 taking advantage of advanced airborne technologies, such as conflict detection and alerting.
NextGen Operational Improvements	Delegated self-separation - Oceanic	Oceanic user efficiency and ANSP productivity are improved through self-separation operations in designated oceanic airspace for capable aircraft. Aircraft-to-aircraft separation is delegated to the flight deck in designated airspace, such as on designated oceanic tracks, for capable aircraft with ADS-B and onboard conflict detection and alerting.
NextGen Operational Improvements	Airborne, single runway, approach and departure merging and spacing	Arriving or departing aircraft to/from single runways are instructed to achieve and maintain a given spacing in time or distance from a designated lead aircraft as defined by an ANSP clearance. Onboard displays and automation support the aircraft conducting the merging and spacing procedure to enable accurate adherence to the required spacing. Flight crews are responsible for maintaining safe and efficient spacing from the lead aircraft. Responsibility for separation from all other aircraft remains with the ANSP. Assigned spacing may include a gap to allow for an intervening departure between subsequent arrivals. Mixed-equipage operations are supported; a spacing-capable aircraft can perform airborne spacing behind a non-capable aircraft as long as it is transmitting cooperative surveillance information. This OI includes multiple streams merging to a single runway and includes development of ANSP capability and procedures.
NextGen Operational Improvements	Automated Trajectory Negotiation and Separation Management	Trajectory management is enhanced by automated negotiation of 4DTs between properly equipped aircraft and ground automation for separation management. All aircraft in TBO airspace must be equipped for this function. The ANSP Separation Management function is fully automated, and separation responsibility is delegated to automation. For specified operations, tasks are delegated to the flight crew to take advantage of aircraft capabilities. To manage separation, ANSP automation negotiates short-term, conflict-driven updates to the 4DT agreements with the aircraft. This will enable higher density of operations thus higher capacity as well as increased safety due to the elimination of human directed trajectory negotiation and automation input decrease in human errors in trajectory negotiation and entry. This OI requires a Policy/Implementation Decision to determine appropriate roles/responsibilities allocated between humans/automation and air/ground.
NextGen Operational Improvements	Special aircraft separation standards	Variable separation standards are used in en route airspace to accommodate new larger aircraft requiring greater than current separation standards, to mitigate loss of capacity due to need for increased separation behind new aircraft type (e.g., A380). This affects the conflict probe capability and metering. This is to be implemented in ERAM, providing automation support for efficiently managing parameter-driven separation handling, and requires development of standards and procedures. Separation management automation enables use of separation standards that are no longer based on a simple circular shape and can factor in aircraft capabilities, encounter geometries, and environmental conditions.

3.5.6.27.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Separation Management	The function of ensuring aircraft or vehicles maintain safe separation minima from other aircraft or vehicles, protected airspace, terrain, weather, or other hazards. The function may be performed by ANSP personnel, the flight operator, and/or automation.
ICAO ATMCP Requirement	R 62	Selection of the applicable separation minima for conflict management shall be that which best meets the ATM system performance targets.
ICAO ATMCP Requirement	R 69	The ATM system shall define the predetermined separation responsibility.
Key Concept	Equivalent Visual Operations (EVO)	Improved information availability allows aircraft to conduct operations without regard for visibility or direct visual observation. For aircraft, this capability, in combination with PNT, enables increased accessibility, both on the airport surface and during arrival and departure operations. This capability also enables those providing services at airports (such as ATM or other ramp services) to provide services in all visibility conditions, leading to more predictable and efficient operations.
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.
SRM Service Component	Separation Analysis	Defines the set of capabilities that identify and tactically resolve airspace conflicts among aircraft (i.e., automatic issuance of revised four-dimensional trajectories) to ensure the avoidance of weather, airspace, terrain, or other hazards.

3.5.6.27.4 NextGen Future Solutions

3.5.6.28 Monitor Separation (5.2.3)

3.5.6.28.1 Description

This activity will monitor separation assurance to ensure safe separation among all aircraft.

3.5.6.28.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Trajectory-Based Operations	Trajectory Based Operations are a shift from clearance based control to trajectory based control. Aircraft will fly negotiated trajectories and control moves to management by trajectory. The focus of these capabilities are on environments/airspace in which all aircraft are equipped to fully participate in trajectory based operations. Included under TBO are operational paradigms and airspace structures which support the move to trajectory based operations. Mixed environments and the advantages that the procedures and tools required for trajectory based operations and airspace are included either as transition steps to the end NextGen Trajectory based operations objectives. It is also assumed that the system will use the capabilities to provide some advantage in environments which will remain mixed.
NextGen Operational Improvements	Automation-Assisted Trajectory Negotiation and Separation Management	Trajectory management is enhanced by automated assistance to negotiation with properly equipped aircraft operators. Human ANSPs are responsible for separation management, supported by automation. 4DTs are negotiated between the ground-based automation and the operator, which may be the pilot, a UAS operator, or perhaps even FOC personnel, who would then relay information to the aircraft. This will enable higher density of operations thus higher capacity as well as decrease human errors in trajectory negotiation and entry.
NextGen Operational Improvements	Automated Trajectory Negotiation and Separation Management	Trajectory management is enhanced by automated negotiation of 4DTs between properly equipped aircraft and ground automation for separation management. All aircraft in TBO airspace must be equipped for this function. The ANSP Separation Management function is fully automated, and separation responsibility is delegated to automation. For specified operations, tasks are delegated to the flight crew to take advantage of aircraft capabilities. To manage separation, ANSP automation negotiates short-term, conflict-driven updates to the 4DT agreements with the aircraft. This will enable higher density of operations thus higher capacity as well as increased safety due to the elimination of human directed trajectory negotiation and automation input decrease in human errors in trajectory negotiation and entry. This OI requires a Policy/Implementation Decision to determine appropriate roles/responsibilities allocated between humans/automation and air/ground.
NextGen Operational Improvements	Trajectory-Based Traffic Management - Level 1	All in-flight aircraft operating in Trajectory-Based Airspace are managed by 4D trajectory in en route climb, cruise, and descent. This may be considered a staging of the 4D trajectory-based capability. This would require the ability to calculate, negotiate, and perform conformance monitoring by ANSPs, including the integration of separation assurance and traffic management (time constraints, e.g., RTAs). This will be enabled by the trajectory exchange through electronic data communications. In high-density or high-complexity airspace, precise 4DTs will be used, dramatically reducing the uncertainty of an aircraft's future flight path, in terms of predicted spatial position (latitude, longitude, and altitude) and times along points in its path. This enhances the capacity and throughput of the airspace to accommodate high levels of demand.
NextGen Operational Improvements	Trajectory-Based Traffic Management - Level 2	All aircraft operating in Trajectory-Based Airspace and Airport Surfaces are managed by 4D trajectory in en route climb, cruise, descent, and airport surface phases of the flight. This is the end state 4D trajectory-based capability. This would require the ability to calculate, negotiate, and perform conformance monitoring by ANSPs, including the integration of separation assurance and traffic management time constraints (e.g., RTAs, runway times of arrival, gate times of arrival). This will be enabled by the trajectory exchange through electronic data communications, as well as many new surface automation and 3D (x, y, and time) trajectory operations. In high-density or high-complexity airspace, precise 4DTs will be used, dramatically reducing the uncertainty of an aircraft's future flight path, in terms of predicted spatial position (latitude, longitude, and altitude) and times along points in its path. This enhances the capacity and throughput of the airspace to accommodate high levels of demand. In trajectory-based airspace, differing types of operations are conducted, with performance-based services applied based on the anticipated traffic characteristics. User preferences are accommodated to the greatest extent possible, and trajectories are constrained only to the extent required to accommodate demand or other national concerns, such as security or safety.

3.5.6.28.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Actor	Separation Management	The function of ensuring aircraft or vehicles maintain safe separation minima from other aircraft or vehicles, protected airspace, terrain, weather, or other hazards. The function may be performed by ANSP personnel, the flight operator, and/or automation.
ICAO ATMCP Requirement	R 73	The ATM system shall monitor and alert when the clearance is inconsistent with the agreement.
CONOPS	2.2.1 Benefits and Rationale	
CONOPS	2.4.3 Use of 4DTs for Integrated Trajectory-Based Operations	
CONOPS	2.4.5 Separation Management Process	
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.
SRM Service Component	Separation Analysis	Defines the set of capabilities that identify and tactically resolve airspace conflicts among aircraft (i.e., automatic issuance of revised four-dimensional trajectories) to ensure the avoidance of weather, airspace, terrain, or other hazards.

3.5.6.28.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Evaluate Conflict State	The activity of reviewing information pertaining to an immenent loss of separation minima.
NAS Activity	Evaluate Separation State	The activity of reviewing current information in order to predict possible losses of separation minima between aircraft and restricted airspace, terrain and obstables, or other vehicles.
NAS Activity	Issue Separation Instruction	The dissemination of instructions to pilots for the purpose of not breaching separation minima with restricted airspace, terrain and obstacles, or other vehicles.
NAS Activity	Resolve Conflict	The activity of providing pilots with instructions in order to resolve immenent losses of separation minima between aircraft.

3.5.6.29 Contingency/Business Continuity Management (5.3)

3.5.6.29.1 Description

This activity provides the capability to monitor and notify the local, state, and authorities. To mitigate aircraft incidents/accidents on or near the airport, as well as security incidents (e.g. Natural Hazards and Human & Technology).
Overall, the NextGen is more resilient in responding to failures and disruptions and includes contingency measures to provide maximum continuity of service, including business continuity,
in the face of major outages, natural disasters, security threats, or other unusual circumstances. Moreover, the increased reliance on automation is coupled with fail-safe modes that do not require full reliance on human cognition as a backup for automation failures. Because individual systems and system components can fail, the NextGen maintains a balance of reliability, redundancy, and procedural backups. It provides a system that not only has high availability but also requires minimal time to restore failed functionality.

3.5.6.29.2 Purpose

Overall, the NextGen is more resilient in responding to failures and disruptions and includes contingency measures to provide maximum continuity of service, including business continuity, in the face of major outages, natural disasters, security threats, or other unusual circumstances. Moreover, the increased reliance on automation is coupled with fail-safe modes that do not require full reliance on human cognition as a backup for automation failures. Because individual systems and system components can fail, the NextGen maintains a balance of reliability, redundancy, and procedural backups. It provides a system that not only has high availability but also requires minimal time to restore failed functionality.

Air Navigation Operations A5

Contingency/Business Continuity Management A5.3

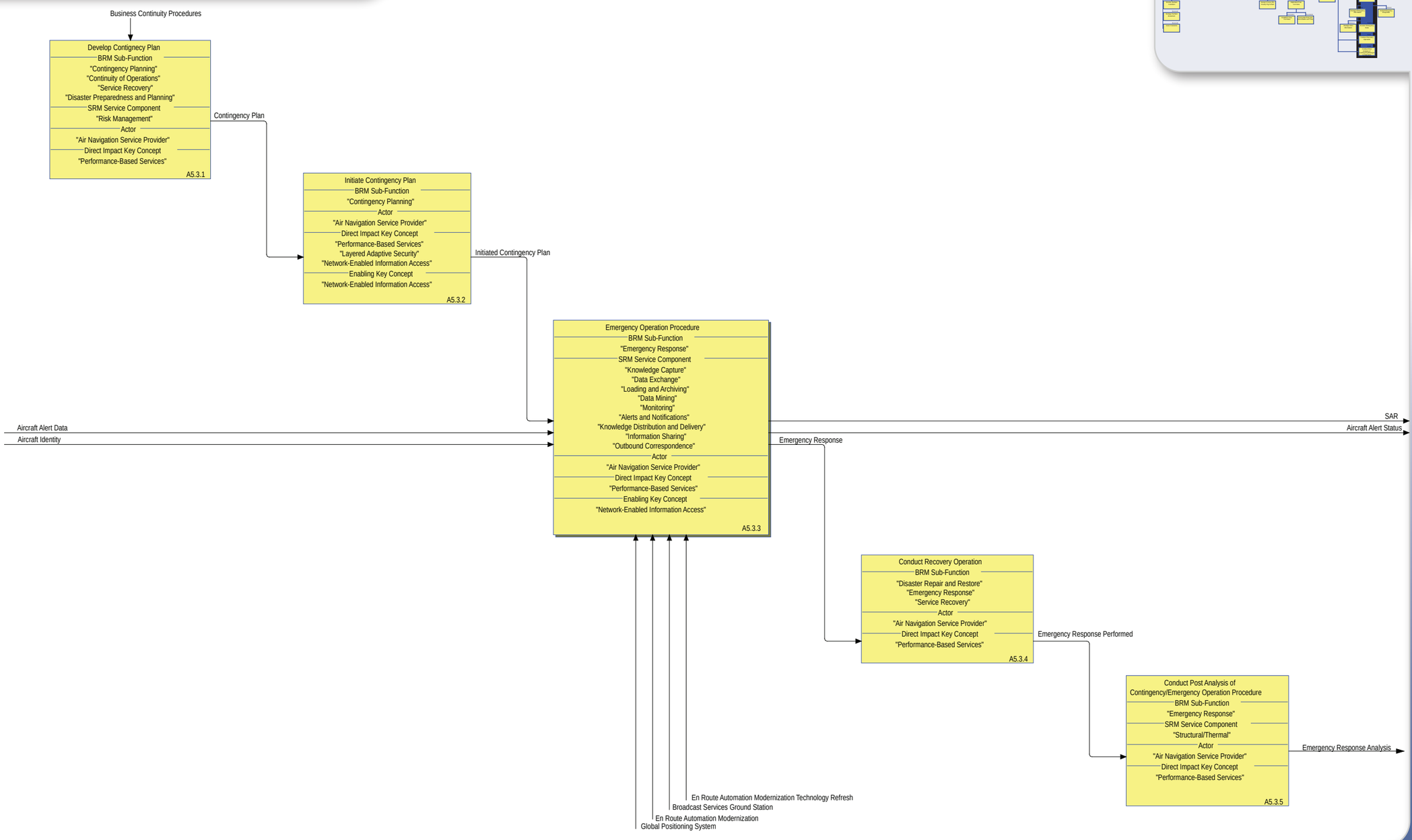


Figure 68 - 5.3 Contingency/Business Continuity Management Activity Model Diagram

3.5.6.30 Develop Contingency Plan (5.3.1)

3.5.6.30.1 Description

This is the activity to develop a contingency plan in the event that there is an emergency, such as a major outage, natural disaster, security threat, or other unusual circumstance. This plan will determine how to respond to the emergency.

3.5.6.30.2 JPDO Support Alignment

3.5.6.30.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Disaster Preparedness and Planning	Disaster Preparedness and Planning involves the development of response programs to be used in case of a disaster as well as pre-disaster mitigation efforts to minimize the potential for loss of life and property. This involves the development of emergency management programs and activities as well as staffing and equipping regional response centers, and mitigation focused construction and preparation.
BRM Sub-Function	Contingency Planning	Contingency Planning involves the actions required to plan for, respond to, and mitigate damaging events.
BRM Sub-Function	Continuity of Operations	Continuity of Operations involves the activities associated with the identification of critical systems and processes, and the planning and preparation required to ensure that these systems and processes will be available in the event of a catastrophic event.
BRM Sub-Function	Service Recovery	Service Recovery involves the internal actions necessary to develop a plan for resuming operations after a catastrophic event occurs.
SRM Service Component	Risk Management	Defines the set of capabilities the support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal; includes risk assessment and risk mitigation.

3.5.6.30.4 NextGen Future Solutions

3.5.6.31 Initiate Contingency Plan (5.3.2)

3.5.6.31.1 Description

This activity initiates the contingency plan for the facilities.

3.5.6.31.2 JPDO Support Alignment

3.5.6.31.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Contingency Planning	Contingency Planning involves the actions required to plan for, respond to, and mitigate damaging events.

3.5.6.31.4 NextGen Future Solutions

3.5.6.32 Emergency Operation Procedure (5.3.3)

3.5.6.32.1 Description

This activity is triggered by an emergency event for or from an aircraft, which causes initialization of emergency reaction plan and notification of first responder, .

3.5.6.32.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Common and synchronized airport emergency and disaster response	Acceptance of a standard approach to responding to catastrophic emergency/disaster for airports to enable seamless integration of regional and national response resources when needed (Policy).

3.5.6.32.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
CONOPS	3.3.1 Airside Operations	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Emergency Response	Emergency Response involves the immediate actions taken to respond to a disaster. These actions include, but are not limited to, providing mobile telecommunications, operational support, power generation, search and rescue, and medical life-saving actions.
SRM Service Component	Alerts and Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Data Mining	Defines the set of capabilities that provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.

3.5.6.32.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Global Positioning System	The Global Positioning System (GPS) is a (nominal) 24 satellite constellation orbiting at approximately 12,000 miles above the earth in six equally-spaced planes. GPS satellites broadcast a precisely timed L-band signal that is received and processed onboard aircraft, in ground vehicles or hand-held receivers to determine the users three-dimensional position (i.e., latitude, longitude and altitude), velocity (if applicable) and the precise time of day. The GPS was developed, and is maintained & operated by, the U.S Department of Defense. GPS equipped aircraft can navigate on published jetways or utilize Area Navigation (RNAV) to fly a desired route between two locations. Approval has been granted for properly certified GPS avionics to be used as a primary means of navigation in oceanic airspace and in certain remote areas. In July 2003 the Wide Area Augmentation System (WAAS)was commissioned, thereby ensuring GPS/WAAS enabled primary navigation service throughout the NAS. WAAS ensures that GPS sourced data meets requirements for accuracy, availability, and integrity.

Type	Name	Description
FAA Systems	En Route Automation Modernization	The En Route Automation Modernization System (ERAM System) will replace the existing diverse but functionally unequal primary and backup channels (Host Computer System (HCS) and the Direct Access Radar Channel (DARC)) with redundant, functionally equivalent primary and backup channels. The new primary and backup channels achieve identical full functionality by using highly reliable fault tolerant processing elements running identical software. A tertiary system with diverse software, and physical and electronic isolation from the ERAM primary and back-up systems, will be maintained as fall back until the functionality, reliability, and availability of ERAM is demonstrated in the field. A training subsystem with functionality identical to the operational system will permit training to be conducted in parallel with operations. In the past decade, several functions (Conflict Probe (CP), Traffic Management Advisor (TMA), etc.) were implemented as outboard processors/processes to the HCS. This functionality will be supported by ERAM through a replacement Intermediate Point of Presence (IPOP), (i.e., Host Air Traffic Management (ATM) Data Distribution System (HADDS)), which will connect to the ERAM local area network (LAN) for exchange of Common Message Set (extended) data with the LAN connected processors (i.e., CP, TMA, etc.) ERAM's enhanced flight data processor (FDP) will accommodate flexible routing around congestion, weather, and restrictions and improve efficiency by providing improved traffic flows. The enhanced ERAM surveillance processing will accommodate a larger geographic coverage, increased quantity of radar inputs and, when available, integration of Automatic Dependent Surveillance Broadcast (ADS-B) data. In addition ERAM will use the improved accuracy and information disseminated by the sensors using the All-purpose Structured EUROCONTROL Radar Information Exchange (ASTERIX) format. ERAM will allow for improved performance of decision support tools such as the Enhanced Traffic Management System (ETMS). ERAM will also incorporate TMA functions and multi-center metering using miles-in-trail or time-based scheduling and meter lists. ERAM will employ an industry standard LAN-based system to improve the efficiency of integrating commercial-off-the-shelf solutions in the future. ERAM software will be developed using a common high-level language to increase the FAA""s access to market-based skills and lower the cost of development and lifecycle maintenance. ERAM""s design will enable future enhancements and maintenance of components without affecting operational availability and increased productivity from an integrated monitor and control capability. The En Route Monitor and Control (EMAC) will consolidate the Monitor & Control (M&C) functions of legacy Air Route Traffic Control Center (ARTCC) systems into an open system architecture. It will reduce the size of the area needed for displaying system status of separate systems and provide a common Human-Computer Interface (HCI) functionality among them. The EMAC will include power system displays and will support prioritization of operational equipment maintenance and restoration efforts along the lines of the classification categories of critical, essential, and routine systems. EMAC will reduce the number of ARTCC M&Cs located in the ARTCC Monitor and Control Center (AMCC) and will be compatible with National Airspace System Infrastructure Management System (NIMS), which alternately refers to AMCC as the Systems Operation Center (SOC). EMAC will reduce M&C software development and training costs and, based on use of a common HCI, will ensure uniformity of functions performed by Airway Facilities specialists.

Type	Name	Description
FAA Systems	Broadcast Services Ground Station	The Broadcast Services Ground Station (BSGS) supports Air-Ground broadcast services. This includes the reception of Automatic Dependent Surveillance-Broadcast (ADS-B) from equipped aircraft/vehicles and the transmission of Traffic Information Service-Broadcast (TIS-B) and Flight Information Service-Broadcast (FIS-B) reports from the TIS-FIS Broadcast Servers for use by equipped aircraft. Generally, the BSGS will interface via the Surveillance Data Network (SDN) to provide ADS-B information to air traffic control (ATC) automation and receive TIS-B and FIS-B reports from TIS-FIS Broadcast Servers. The BSGS includes antenna(s), one or more dual link (i.e., 1090 MHz Extended Squitter-1090ES (Extended Squitter) and Universal Access Transceiver (UAT) Ground Based Transceiver(s)(GBT), processing functions and communications functions. Several configurations of the BSGS are required to support variations in the geographic service volume and functions to be supported at specific categories of operational sites. BSGSs will be installed at 448 airports and 100 en route locations. Included are those airports equipped with Secondary Surveillance Radar (SSR) and about 140 additional towered airports (currently without SSR). The BSGS will support ADS-B and TIS-B services via both the 1090ES link and by the UAT link. The BSGS will also support FIS-B via the UAT link. BSGSs incorporate a multi-link gateway function that provides ADS-B rebroadcasts via the ADS-B alternate link. A BSGS incorporating two GBTs are required for airport surface and terminal surveillance coverage at each of 268 smaller airports, a BSGS incorporating three GBTs (on average) are required at 120 of the mid-sized airports, and a BSGS incorporating six GBTs (on average) are required at the 60 largest airport (those equipped with Airport Surveillance Detection Equipment-Model X (ASDE-X) or ASDE-3 surface surveillance systems). The following BSGS functions are required to support the various categories of National Airspace System (NAS) BSGS sites, except as noted below: (1) 1090ES and UAT receive/transmit (i.e., the GBT function); (2) multi-link gateway function; (3) process received ADS-B messages and output (via the SDN) ADS-B reports for use by ATC automation; (4) accept TIS-B and FIS-B reports from ground TIS-FIS Broadcast Servers and manage the generation and broadcast of link specific TIS-B messages via the 1090ES and UAT links and FIS-B messages via the UAT link. The following BSGS configurations are assumed based on the category of the operational site. Except as noted below all BSGS configuration support the above-described functions. En route (100 sites): (1) One multi-sector antenna with each sector connected to the individual 1090ES and UAT receivers. Supports up to 250 nautical miles (nmi). ADS-B reception. En route locations that are intended to provide only low-altitude gap filler coverage do not require the long-range capability. (2) One omni-directional transmit antenna. Transmitter power sized to support the required TIS-B and FIS-B coverage for that specific site. Terminal/Airport without ASDE-X (415 airports incl. 27 ASDE-3 equipped airports) with each site having: (1) BSGS with at least two GBTs with omni-directional antennas sited for both airport surface and terminal airspace coverage; (2) additional GBTs as needed to provide coverage of the primary airport surface movement area. Terminal/Airport with ASDE-X (26 ASDE-X plus 7 upgraded ASDE-3 airports with an average of 6 GBTs per BSGS): (1) ASDE-X ground stations upgraded to support GBT functionality; (2) At least two of the GBTs provide ADS-B coverage to the edge of the terminal airspace and the TIS-B coverage; and (3) ASDE provides the surveillance data source to support TIS-B for surface traffic.
NAS Activity	Identify Overdue Aircraft	Controllers can identify aircraft as overdue when more than 30 minutes have passed since the last communication or radar contact, or the controller has reason to belive the aircraft is overdue.

3.5.6.33 Conduct Recovery Operation (5.3.4)

3.5.6.33.1 Description

This activity is describes the methods and procedures to be used by the airport in order to safeguard and restore original operational state, in the event of an emergency disaster.

3.5.6.33.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Common and synchronized airport emergency and disaster response	Acceptance of a standard approach to responding to catastrophic emergency/disaster for airports to enable seamless integration of regional and national response resources when needed (Policy).

3.5.6.33.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
CONOPS	3.3.1 Airside Operations	
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Disaster Repair and Restore	Disaster Repair and Restore involves the cleanup and restoration activities that take place after a disaster. This involves the cleanup and rebuilding of homes, buildings, roads, environmental resources, or infrastructure that may be damaged due to a disaster.
BRM Sub-Function	Emergency Response	Emergency Response involves the immediate actions taken to respond to a disaster. These actions include, but are not limited to, providing mobile telecommunications, operational support, power generation, search and rescue, and medical life-saving actions.
BRM Sub-Function	Service Recovery	Service Recovery involves the internal actions necessary to develop a plan for resuming operations after a catastrophic event occurs.

3.5.6.33.4 NextGen Future Solutions

3.5.6.34 Conduct Post Analysis of Contingency/Emergency Operation Procedure (5.3.5)

3.5.6.34.1 Description

This activity analyzes the effectiveness of the Contingency/Emergency Operation Procedures processes.

3.5.6.34.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Common and synchronized airport emergency and disaster response	Acceptance of a standard approach to responding to catastrophic emergency/disaster for airports to enable seamless integration of regional and national response resources when needed (Policy).

3.5.6.34.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
CONOPS	3.3.1 Airside Operations	
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Emergency Response	Emergency Response involves the immediate actions taken to respond to a disaster. These actions include, but are not limited to, providing mobile telecommunications, operational support, power generation, search and rescue, and medical life-saving actions.
SRM Service Component	Structural/Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.

3.5.6.34.4 NextGen Future Solutions

3.5.6.35 Emergency Operation Procedure (5.3.3)

3.5.6.35.1 Description

This activity is triggered by an emergency event for or from an aircraft, which causes initialization of emergency reaction plan and notification of first responder, .

Air Navigation Operations A5

Contingency/Business Continuity Management A5.3

Emergency Operation Procedure A5.3.3

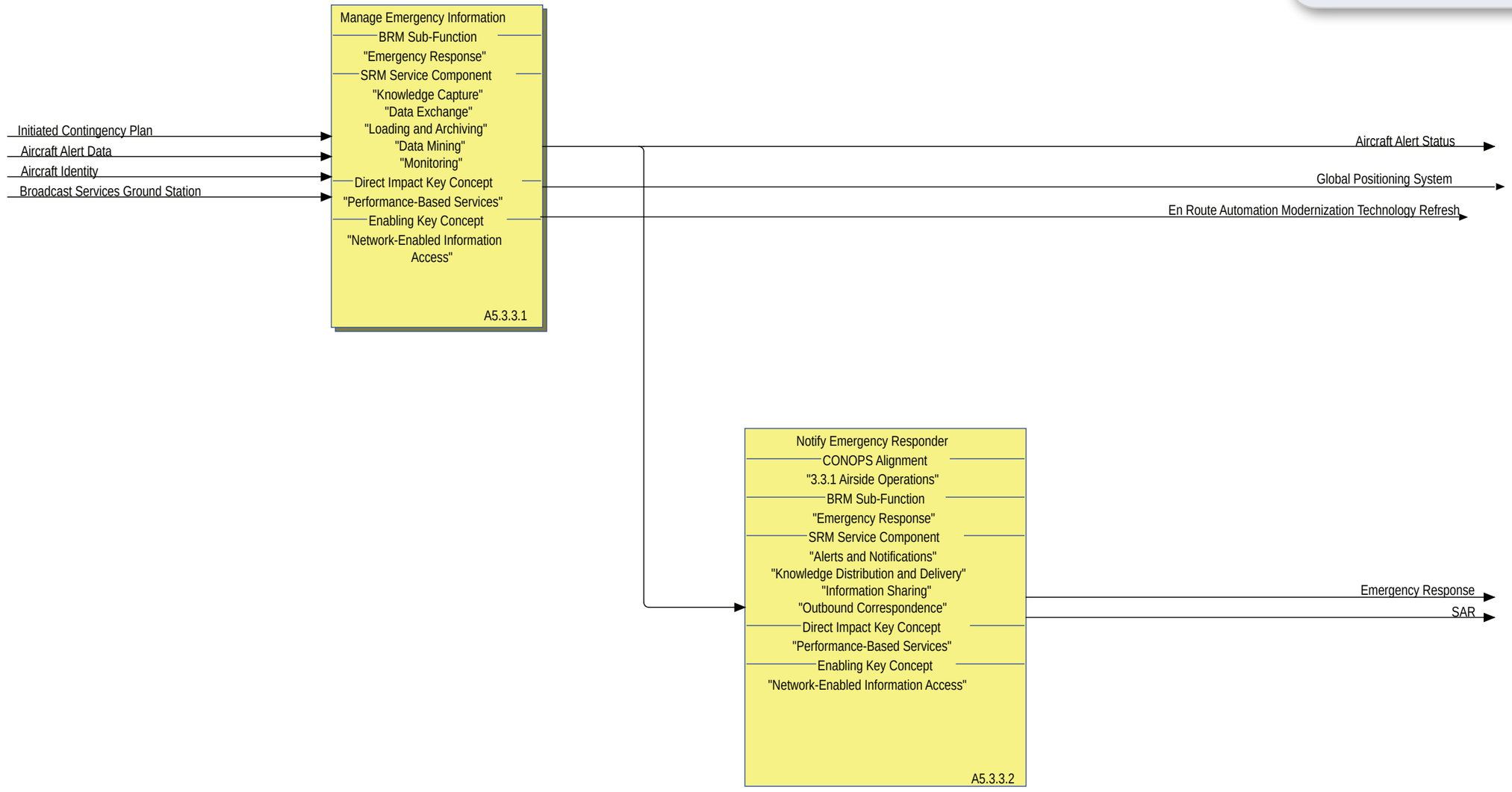


Figure 69 - 5.3.3 Emergency Operation Procedure Activity Model Diagram

3.5.6.36 Manage Emergency Information (5.3.3.1)

3.5.6.36.1 Description

This activity is the supervision of the necessary activities that provide the information to ensure appropriate assistance is provided to aircraft in an emergency state, and coordination of efforts are managed between all necessary facilities.

3.5.6.36.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Common and synchronized airport emergency and disaster response	Acceptance of a standard approach to responding to catastrophic emergency/disaster for airports to enable seamless integration of regional and national response resources when needed (Policy).

3.5.6.36.3 NextGen Drivers

Type	Name	Description
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Emergency Response	Emergency Response involves the immediate actions taken to respond to a disaster. These actions include, but are not limited to, providing mobile telecommunications, operational support, power generation, search and rescue, and medical life-saving actions.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Data Mining	Defines the set of capabilities that provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.

3.5.6.36.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Global Positioning System	The Global Positioning System (GPS) is a (nominal) 24 satellite constellation orbiting at approximately 12,000 miles above the earth in six equally-spaced planes. GPS satellites broadcast a precisely timed L-band signal that is received and processed onboard aircraft, in ground vehicles or hand-held receivers to determine the users three-dimensional position (i.e., latitude, longitude and altitude), velocity (if applicable) and the precise time of day. The GPS was developed, and is maintained & operated by, the U.S Department of Defense. GPS equipped aircraft can navigate on published jetways or utilize Area Navigation (RNAV) to fly a desired route between two locations. Approval has been granted for properly certified GPS avionics to be used as a primary means of navigation in oceanic airspace and in certain remote areas. In July 2003 the Wide Area Augmentation System (WAAS)was commissioned, thereby ensuring GPS/WAAS enabled primary navigation service throughout the NAS. WAAS ensures that GPS sourced data meets requirements for accuracy, availability, and integrity.
FAA Systems	En Route Automation Modernization Technology Refresh	En Route Automation Modernization Technology Refresh (ERAM Tech Refresh) provides a technology refresh of ERAM in the FY 2012 through FY 2019 time frame.

Type	Name	Description
FAA Systems	Broadcast Services Ground Station	The Broadcast Services Ground Station (BSGS) supports Air-Ground broadcast services. This includes the reception of Automatic Dependent Surveillance-Broadcast (ADS-B) from equipped aircraft/vehicles and the transmission of Traffic Information Service-Broadcast (TIS-B) and Flight Information Service-Broadcast (FIS-B) reports from the TIS-FIS Broadcast Servers for use by equipped aircraft. Generally, the BSGS will interface via the Surveillance Data Network (SDN) to provide ADS-B information to air traffic control (ATC) automation and receive TIS-B and FIS-B reports from TIS-FIS Broadcast Servers. The BSGS includes antenna(s), one or more dual link (i.e., 1090 MHz Extended Squitter-1090ES (Extended Squitter) and Universal Access Transceiver (UAT) Ground Based Transceiver(s)(GBT), processing functions and communications functions. Several configurations of the BSGS are required to support variations in the geographic service volume and functions to be supported at specific categories of operational sites. BSGSs will be installed at 448 airports and 100 en route locations. Included are those airports equipped with Secondary Surveillance Radar (SSR) and about 140 additional towered airports (currently without SSR). The BSGS will support ADS-B and TIS-B services via both the 1090ES link and by the UAT link. The BSGS will also support FIS-B via the UAT link. BSGSs incorporate a multi-link gateway function that provides ADS-B rebroadcasts via the ADS-B alternate link. A BSGS incorporating two GBTs are required for airport surface and terminal surveillance coverage at each of 268 smaller airports, a BSGS incorporating three GBTs (on average) are required at 120 of the mid-sized airports, and a BSGS incorporating six GBTs (on average) are required at the 60 largest airport (those equipped with Airport Surveillance Detection Equipment-Model X (ASDE-X) or ASDE-3 surface surveillance systems). The following BSGS functions are required to support the various categories of National Airspace System (NAS) BSGS sites, except as noted below: (1) 1090ES and UAT receive/transmit (i.e., the GBT function); (2) multi-link gateway function; (3) process received ADS-B messages and output (via the SDN) ADS-B reports for use by ATC automation; (4) accept TIS-B and FIS-B reports from ground TIS-FIS Broadcast Servers and manage the generation and broadcast of link specific TIS-B messages via the 1090ES and UAT links and FIS-B messages via the UAT link. The following BSGS configurations are assumed based on the category of the operational site. Except as noted below all BSGS configuration support the above-described functions. En route (100 sites): (1) One multi-sector antenna with each sector connected to the individual 1090ES and UAT receivers. Supports up to 250 nautical miles (nmi). ADS-B reception. En route locations that are intended to provide only low-altitude gap filler coverage do not require the long-range capability. (2) One omni-directional transmit antenna. Transmitter power sized to support the required TIS-B and FIS-B coverage for that specific site. Terminal/Airport without ASDE-X (415 airports incl. 27 ASDE-3 equipped airports) with each site having: (1) BSGS with at least two GBTs with omni-directional antennas sited for both airport surface and terminal airspace coverage; (2) additional GBTs as needed to provide coverage of the primary airport surface movement area. Terminal/Airport with ASDE-X (26 ASDE-X plus 7 upgraded ASDE-3 airports with an average of 6 GBTs per BSGS): (1) ASDE-X ground stations upgraded to support GBT functionality; (2) At least two of the GBTs provide ADS-B coverage to the edge of the terminal airspace and the TIS-B coverage; and (3) ASDE provides the surveillance data source to support TIS-B for surface traffic.
NAS Activity	Manage Emergency Information	The supervision of the necessary activities that provide the information to ensure appropriate assistance is provided to aircraft in an emergency state, and coordination of efforts are managed between all necessary facilities.

3.5.6.37 Notify Emergency Responder (5.3.3.2)

3.5.6.37.1 Description

This activity notifies the emergency responder that an emergency has occurred (i.e. local, state and federal).

3.5.6.37.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Common and synchronized airport emergency and disaster response	Acceptance of a standard approach to responding to catastrophic emergency/disaster for airports to enable seamless integration of regional and national response resources when needed (Policy).

3.5.6.37.3 NextGen Drivers

Type	Name	Description
CONOPS	3.3.1 Airside Operations	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Emergency Response	Emergency Response involves the immediate actions taken to respond to a disaster. These actions include, but are not limited to, providing mobile telecommunications, operational support, power generation, search and rescue, and medical life-saving actions.
SRM Service Component	Alerts and Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.
SRM Service Component	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Outbound	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.

3.5.6.37.4 NextGen Future Solutions

3.5.6.38 Manage Emergency Information (5.3.3.1)

3.5.6.38.1 Description

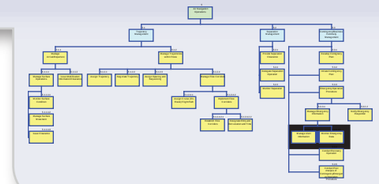
This activity is the supervision of the necessary activities that provide the information to ensure appropriate assistance is provided to aircraft in an emergency state, and coordination of efforts are managed between all necessary facilities.

Air Navigation Operations A5

Contingency/Business Continuity Management A5.3

Emergency Operation Procedure A5.3.3

Manage Emergency Information A5.3.3.1



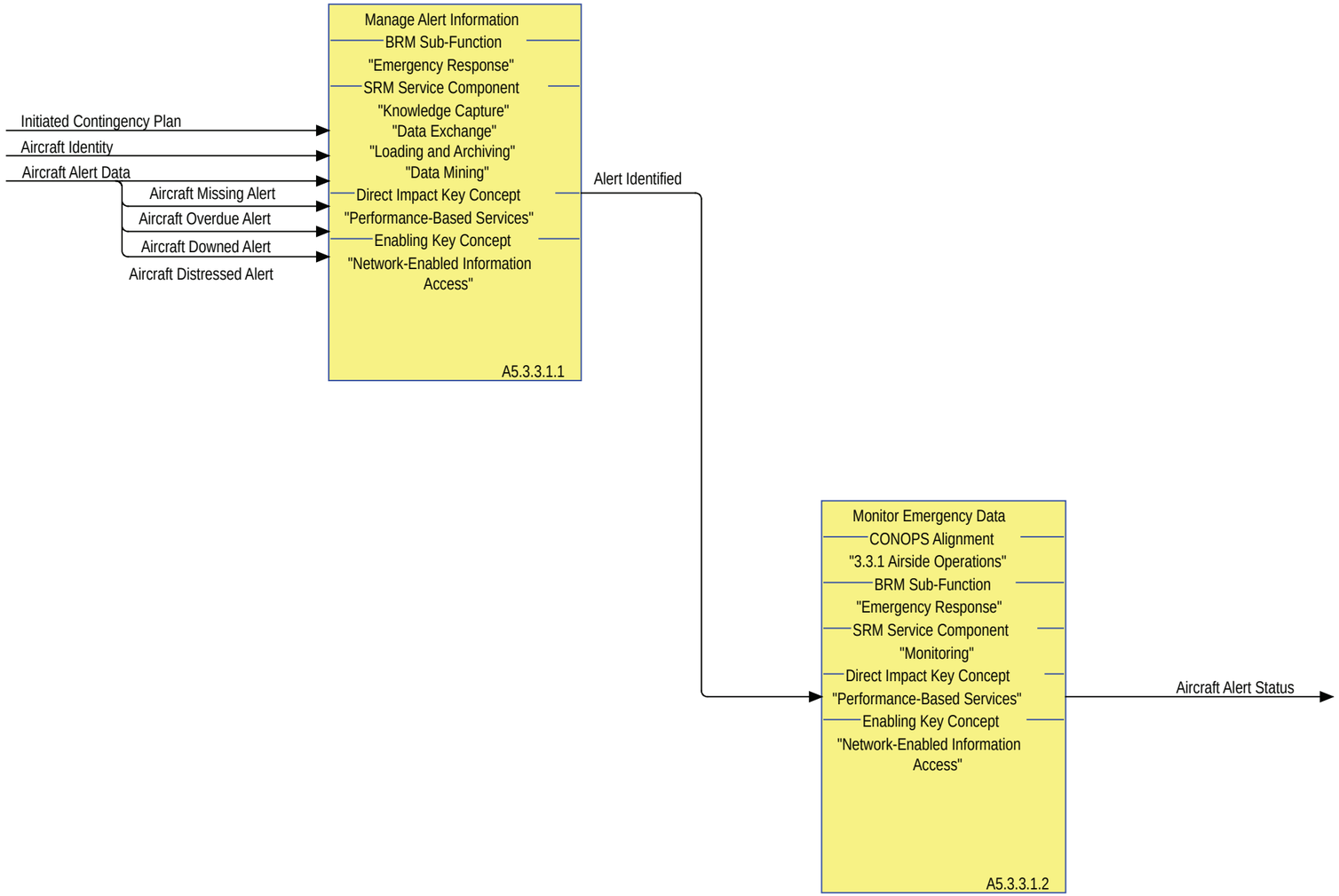


Figure 70 - 5.3.3.1 Manage Emergency Information Activity Model Diagram

3.5.6.39 Manage Alert Information (5.3.3.1.1)

3.5.6.39.1 Description

This activity involves obtaining information on an aircraft in an emergency state, interpreting that information, and disseminating that information to facilities whose assistance may be required.

3.5.6.39.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Common and synchronized airport emergency and disaster response	Acceptance of a standard approach to responding to catastrophic emergency/disaster for airports to enable seamless integration of regional and national response resources when needed (Policy).
NextGen Operational Improvements	Ground-based and on-board runway incursion alerting equipment.	This OI increases the safety of operations by reducing runway incursions. Operators of suitably equipped commercial, business, and general aviation aircraft receive runway incursion alerts from on-board detection systems and from complementary ground-based detection systems where implemented. Airborne equipage is not required to receive incursion alerts. This OI will require research and development of runway incursion alerting systems appropriate for business, general aviation, and commercial aircraft.

3.5.6.39.3 NextGen Drivers

Type	Name	Description
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Emergency Response	Emergency Response involves the immediate actions taken to respond to a disaster. These actions include, but are not limited to, providing mobile telecommunications, operational support, power generation, search and rescue, and medical life-saving actions.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Data Mining	Defines the set of capabilities that provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.

3.5.6.39.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Manage Alert Information	An activity involving obtaining information on an aircraft in an emergency state, interpreting that information, and disseminating that information to facilities whose assitance may be required.

3.5.6.40 Monitor Emergency Data (5.3.3.1.2)

3.5.6.40.1 Description

This activity monitor for the different emergency profiles.

3.5.6.40.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Common and synchronized airport emergency and disaster response	Acceptance of a standard approach to responding to catastrophic emergency/disaster for airports to enable seamless integration of regional and national response resources when needed (Policy).

3.5.6.40.3 NextGen Drivers

Type	Name	Description
CONOPS	3.3.1 Airside Operations	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Emergency Response	Emergency Response involves the immediate actions taken to respond to a disaster. These actions include, but are not limited to, providing mobile telecommunications, operational support, power generation, search and rescue, and medical life-saving actions.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.

3.5.6.40.4 NextGen Future Solutions

3.6 Flight Support (6)

3.6.1 Description

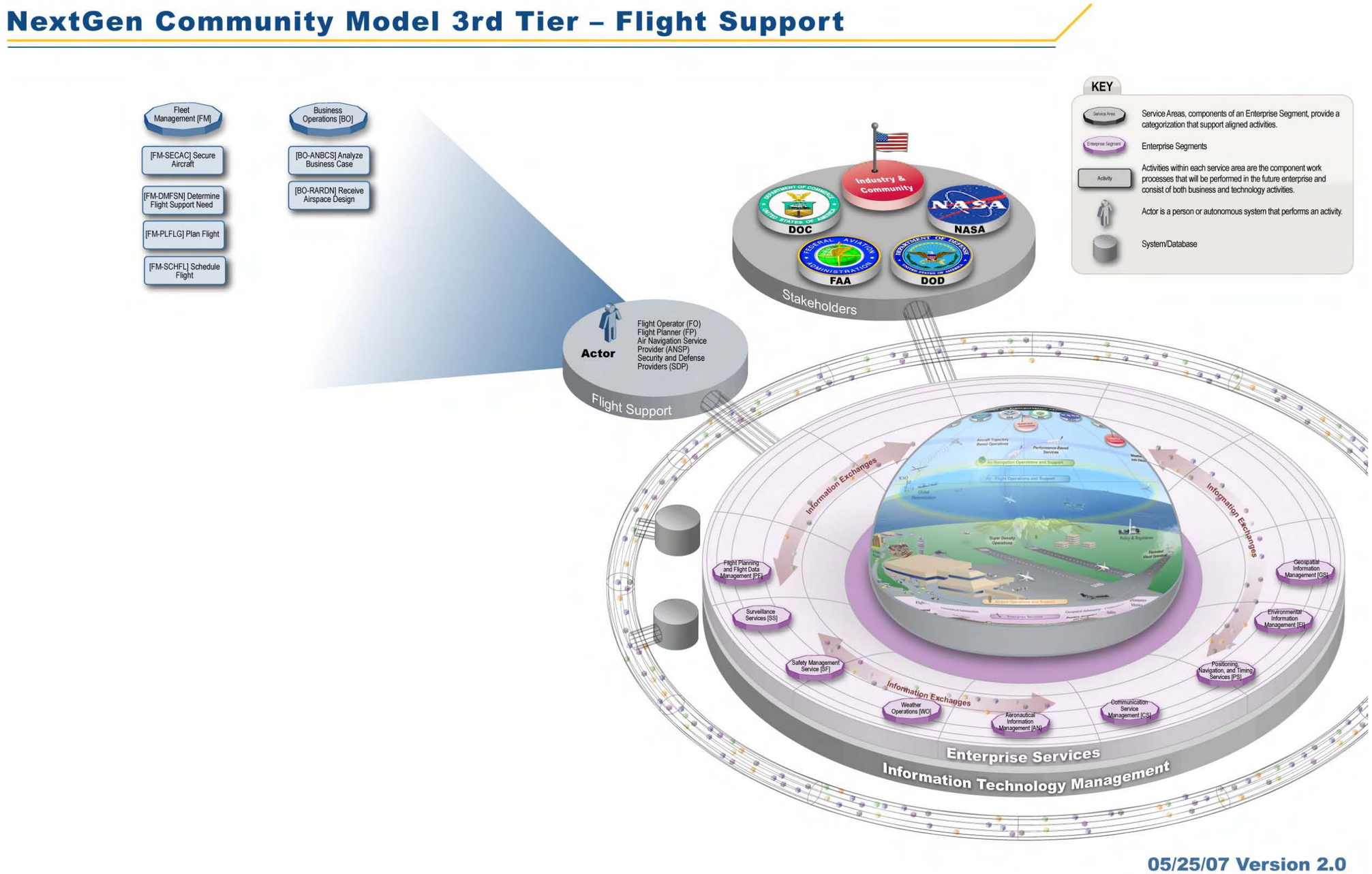
The Flight Support Enterprise Segment provides the operational context for the business objectives and management of respective stakeholder resources, which include operational activities of scheduling, planning, and securing of flight(s) and analyzing business objectives in attempt to reduce operating cost.

3.6.2 Purpose

The purpose of the Flight Support segment is to identify and group specific service areas that are related to flight support in the NextGen. These service areas; Business Operations and Flight Management address key concepts and operational improvement that must be achieved to enable NextGen. These two service areas are further decomposed into specific operational activities that define that service area and provides the foundation for the NextGen EA to further develop detailed architecture products that show trace ability to the NextGen CONOPS and stakeholders investments (material/non-material).

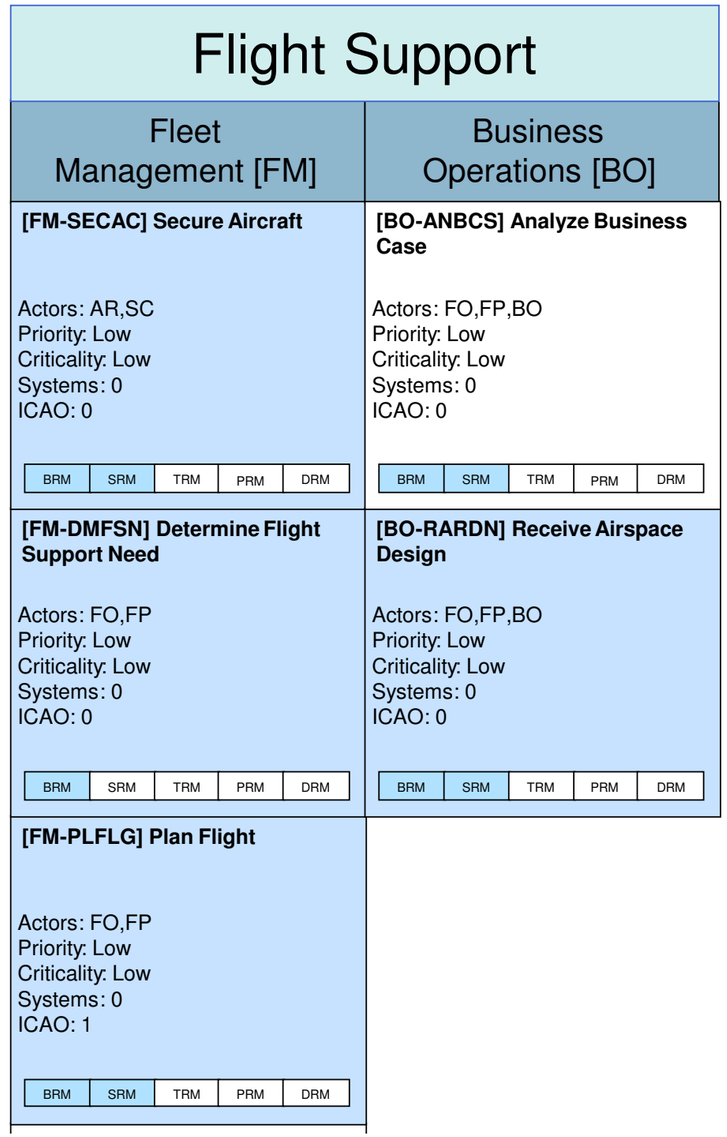
3.6.3 3nd Tier Community Model

Figure 71: Flight Support 3rd tier Community Model



3.6.4 Enterprise Segment Activity Inventory - Flight Support

Figure 72: Flight Support ESAI



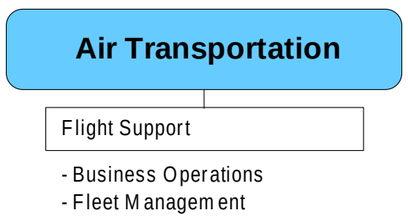
3.6.4.1 Flight Support ESAI Actor Table

Actor Code	Actor Name	Actor Description
FO	Flight Operator	The flight Operator node represents the commercial entities responsible for providing, scheduling, provisioning, and staffing aircraft. The node also includes the ground side activities required to board and de-board passengers, baggage, and cargo, and the business operations necessary to keep the commercial enterprise viable.
AR	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
BO	Business Operator	Business operators, using aircraft to support their core business, need access to airports and airspace for the conduct of commerce.
FP	Flight Planner	Person or organization responsible for making tactical decisions about what flights to operate and when and where they will operate. May be the same as flight crew. Flight planner is the interface with the ANSP in trajectory negotiation. Operators with multiple aircraft involved in the initiative have the flexibility to adjust individual aircraft schedules and trajectories within those allocations to accommodate their own internal business concerns, both preflight and in flight.
SC	Security	This operational node includes all activities by Government organizations to protect people, airports, checked baggage, cargo, airspace, aircraft, and information from intentional harm or unauthorized use.

3.6.5 Flight Support FEA RM

The Flight Support Segment provides a functional view of how business objectives are met through the efficient management of fleet. As depicted in figure 19, this segment is primarily categorized under the Air Transportation Line of Business. It describes the activities associated with determining the impacts a proposed airspace design has on business objectives, as well as the monitoring of fleet operations, such as route scheduling and aircraft capabilities to meet those objectives. The following table further describes the Flight Support Segment and identifies how each activity aligns to the other architectural layers of the NextGen EA Reference Architecture.

Figure 73: Flight Support FEA RM



3.6.6 Flight Support DoDAF products

List of Activity Models

Figure 74 - 6 Flight Support Activity Model Diagram 310
Figure 75 - 6.1 Business Operations Activity Model Diagram. 313
Figure 76 - 6.2 Fleet Management Activity Model Diagram 315

NextGen EA
Flight Support A6

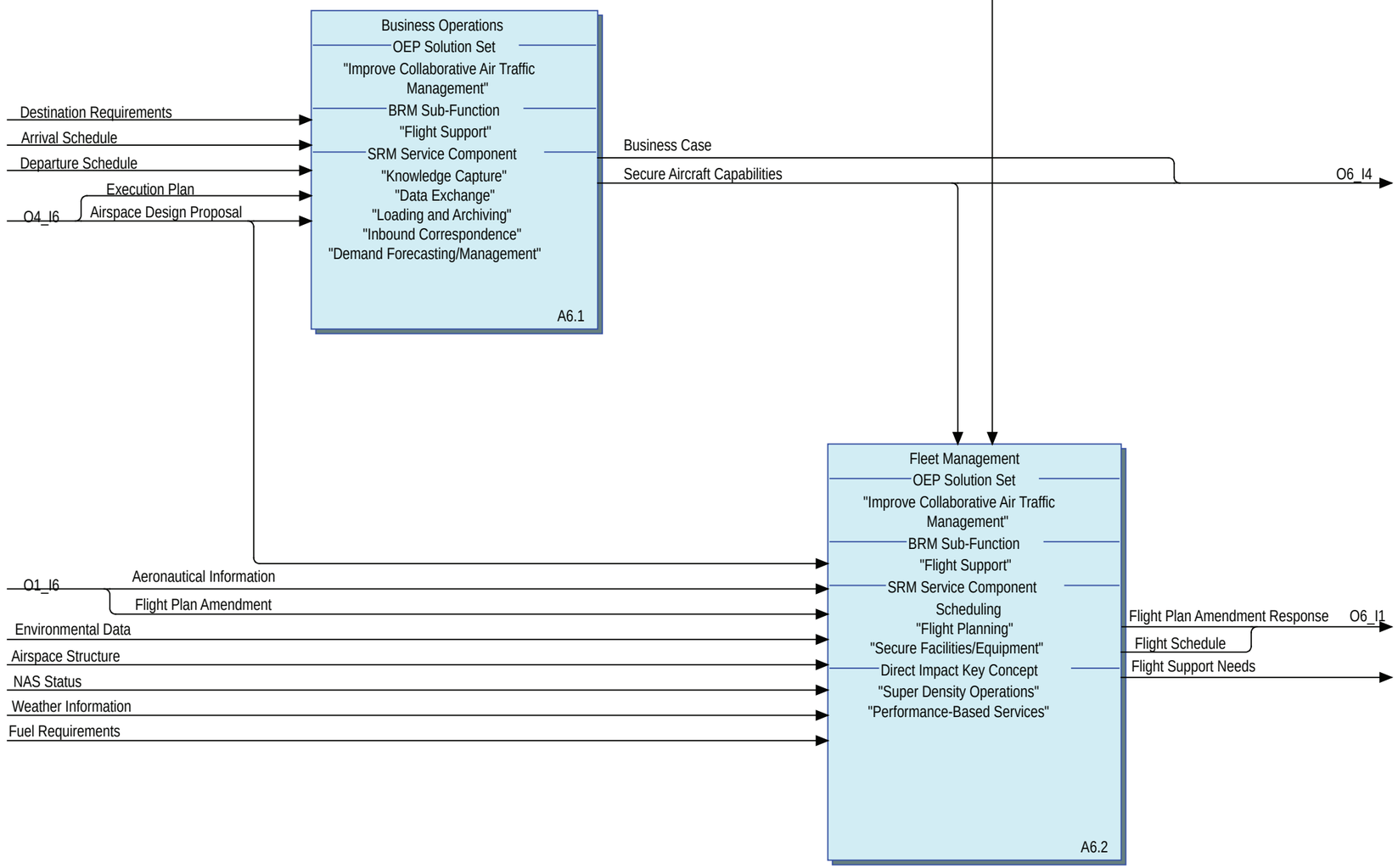


Figure 74 - 6 Flight Support Activity Model Diagram

3.6.6.1 Business Operations (6.1)

3.6.6.1.1 Description

This activity will review the Execution Plan and proposed airspace design, in order to determine how if it will affect business objectives (cost, planning, etc.)

3.6.6.1.2 Purpose

The purpose of Business Operations is the transformation of the ATM customers ability with NextGen to achieve their business and operational objectives through access to reliable real-time information relevant to their proposed operations, to understand the impact of their decisions related to their operations, and to negotiate with the ANSP to achieve their objectives.

3.6.6.1.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Collaborative Air Traffic Management	Collaborative ATM covers the both the strategic and tactical interactions with the customers to manage demand when the desired use of capacity can not be accommodated. C-ATM includes the flow programs as well as collaboration on procedures that will establish balance by shifting demand to less desirable capacity alternatives e.g. routings, altitudes, times.
NAS Operational Improvements	NAS Wide Sector Demand Prediction and Resource Planning	All NAS resource and collaborative decision making (CDM) data are combined in one integrated decision support tool. Strategic management of resources (e.g., airspace, sectors, personnel, facilities, NAS systems) meet changes in systemic demand due to increases in air traffic, seasonality, or airline city pair business case decisions. Resources are proactively adjusted and assigned based on projections of shifting demand.

3.6.6.1.4 NextGen Drivers

Type	Name	Description
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
Actor	Business Operator	Business operators, using aircraft to support their core business, need access to airports and airspace for the conduct of commerce.
Actor	Flight Planner	Person or organization responsible for making tactical decisions about what flights to operate and when and where they will operate. May be the same as flight crew. Flight planner is the interface with the ANSP in trajectory negotiation. Operators with multiple aircraft involved in the initiative have the flexibility to adjust individual aircraft schedules and trajectories within those allocations to accommodate their own internal business concerns, both preflight and in flight.
ICAO ATMCP Requirement	R 47	The evolution of ATM services shall be based on business, safety or environmental analysis as appropriate.
BRM Sub-Function	Flight Support	Flight Support involves the activities that support business objectives and the management and monitoring of the fleet to determine how execution plans and proposed airspace designs will affect business objectives (e.g., cost, planning, scheduling, etc.).
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Demand Forecasting/ Management	Defines the set of capabilities that facilitate the prediction of sufficient production to meet an organization's sales of a product or service.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Inbound Correspondence	

3.6.6.1.5 NextGen Future Solutions

Type	Name	Description
NAS Activity	Manage Air Traffic Business Service	TBD

3.6.6.2 Fleet Management (6.2)

3.6.6.2.1 Description

This activity will plan and monitor fleet operations, ensuring business objectives are met. The information includes the review of scheduled routes, aircraft capabilities, and the execution plan.

3.6.6.2.2 Purpose

The purpose of Fleet Management is that the transformed operations provided benefit for any operator that invests in the needed capability, whether GA, commercial, civil, or military. The adoption of performance standards rather than equipment standards encourages innovation in avionics suppliers to produce affordable capabilities supporting trajectory-based procedures and real-time flight information in the cockpit.

3.6.6.2.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Collaborative Air Traffic Management	Collaborative ATM covers the both the strategic and tactical interactions with the customers to manage demand when the desired use of capacity can not be accommodated. C-ATM includes the flow programs as well as collaboration on procedures that will establish balance by shifting demand to less desirable capacity alternatives e.g. routings, altitudes, times.
NAS Operational Improvements	Automation Support for Variable Separation	Performance-based services use variable separation standards according to aircraft geometry and crew capabilities. Users and air navigation service providers (ANSP) have a common understanding of which variable separation is being used.
NAS Operational Improvements	Improved Management of Airspace for Special Use	Airspace for special use assignments, schedules, coordination, and status changes are conducted automation-to-automation. Changes to status of airspace for special use are readily available for operators and air navigation service providers (ANSP). Status changes are transmitted to the flight deck via voice or data communications. Flight trajectory planning is managed dynamically based on real-time use of airspace.
NAS Operational Improvements	Provide Full Flight Plan Constraint Evaluation with Feedback	Timely and accurate national airspace system (NAS) information enables users to plan and fly routings that meet their objectives. Constraint information that impacts the proposed route of flight is incorporated into air navigation service provider (ANSP) automation, and is available to users. Examples of constraint information include special use airspace status, SIGMETS, infrastructure outages, and significant congestion events.

3.6.6.2.4 NextGen Drivers

Type	Name	Description
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
Actor	Business Operator	Business operators, using aircraft to support their core business, need access to airports and airspace for the conduct of commerce.
Actor	Flight Planner	Person or organization responsible for making tactical decisions about what flights to operate and when and where they will operate. May be the same as flight crew. Flight planner is the interface with the ANSP in trajectory negotiation. Operators with multiple aircraft involved in the initiative have the flexibility to adjust individual aircraft schedules and trajectories within those allocations to accommodate their own internal business concerns, both preflight and in flight.
ICAO ATMCP Requirement	R166	A key consideration of aircraft design shall be ATM orientation so as to provide maximum effectiveness of ATM system operation
ICAO ATMCP Requirement	R 48	The evolution of the ATM system shall provide incentives to upgrade to new capabilities
ICAO ATMCP Requirement	R 49	The ATM system shall provide benefits commensurate with the level of aircraft capabilities or performance.
ICAO ATMCP Requirement	R 52	The aircraft design, including avionics, and operational characteristics shall maintain or improve ATM system performance.
CONOPS	2.6 TRANSFORMED FLIGHT OPERATIONS	
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Flight Support	Flight Support involves the activities that support business objectives and the management and monitoring of the fleet to determine how execution plans and proposed airspace designs will affect business objectives (e.g., cost, planning, scheduling, etc.).
SRM Service Component	Scheduling	Defines the set of capabilities that support the plan for performing work or service to meet the needs of an organization's customers.
SRM Service Component	Flight Planning	Defines the set of capabilities that optimize flights based on individual mission objectives, available aircraft, security and airspace constraints, and forecasted weather.
SRM Service Component	Secure Facilities/ Equipment	Defines the set of capabilities that secure facilities (e.g. buildings, airports, etc.) and equipment (e.g. aircraft, vehicles, hardware, etc.) to mitigate dynamically evolving security risks and threats (e.g., unauthorized access, hijacking/unauthorized diversion, internal/external attacks, etc.).

3.6.6.2.5 NextGen Future Solutions

3.6.6.3 Business Operations (6.1)

3.6.6.3.1 Description

This activity will review the Execution Plan and proposed airspace design, in order to determine how if it will affect business objectives (cost, planning, etc.)

3.6.6.3.2 Purpose

The purpose of Business Operations is the transformation of the ATM customers ability with NextGen to achieve their business and operational objectives through access to reliable real-time information relevant to their proposed operations, to understand the impact of their decisions related to their operations, and to negotiate with the ANSP to achieve their objectives.

Flight Support A6

Business Operations A6.1

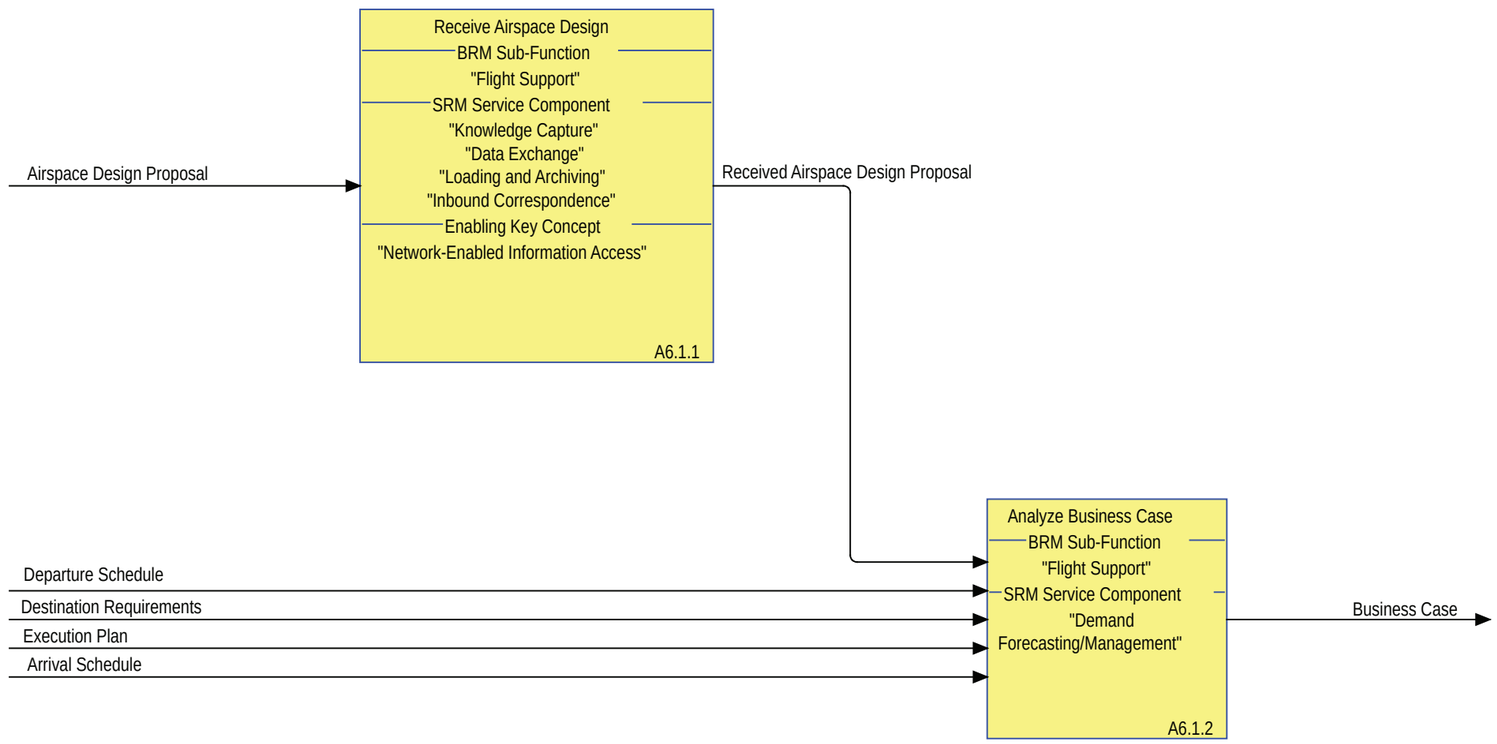


Figure 75 - 6.1 Business Operations Activity Model Diagram

3.6.6.4 Receive Airspace Design (6.1.1)

3.6.6.4.1 Description

This activity will receive the proposed airspace design from the capacity management. The airlines, flight operator, schedulers will review and analyze in order to meet their business objectives.

3.6.6.4.2 JPDO Support Alignment

Type	Name	Description
NAS Operational Improvements	Improved Management of Airspace for Special Use	Airspace for special use assignments, schedules, coordination, and status changes are conducted automation-to-automation. Changes to status of airspace for special use are readily available for operators and air navigation service providers (ANSP). Status changes are transmitted to the flight deck via voice or data communications. Flight trajectory planning is managed dynamically based on real-time use of airspace.

3.6.6.4.3 NextGen Drivers

Type	Name	Description
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
Actor	Business Operator	Business operators, using aircraft to support their core business, need access to airports and airspace for the conduct of commerce.
Actor	Flight Planner	Person or organization responsible for making tactical decisions about what flights to operate and when and where they will operate. May be the same as flight crew. Flight planner is the interface with the ANSP in trajectory negotiation. Operators with multiple aircraft involved in the initiative have the flexibility to adjust individual aircraft schedules and trajectories within those allocations to accommodate their own internal business concerns, both preflight and in flight.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Flight Support	Flight Support involves the activities that support business objectives and the management and monitoring of the fleet to determine how execution plans and proposed airspace designs will affect business objectives (e.g., cost, planning, scheduling, etc.).
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Inbound Correspondence	

3.6.6.4.4 NextGen Future Solutions

3.6.6.5 Analyze Business Case (6.1.2)

3.6.6.5.1 Description

This activity analyzes the business case of the airlines. Determines schedules and flights to meet demand.

3.6.6.5.2 JPDO Support Alignment

3.6.6.5.3 NextGen Drivers

Type	Name	Description
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
Actor	Business Operator	Business operators, using aircraft to support their core business, need access to airports and airspace for the conduct of commerce.
Actor	Flight Planner	Person or organization responsible for making tactical decisions about what flights to operate and when and where they will operate. May be the same as flight crew. Flight planner is the interface with the ANSP in trajectory negotiation. Operators with multiple aircraft involved in the initiative have the flexibility to adjust individual aircraft schedules and trajectories within those allocations to accommodate their own internal business concerns, both preflight and in flight.
CONOPS	2.7 TRANSFORMATIONS IN AIR NAVIGATION SERVICE PROVIDER PROCESSES	
BRM Sub-Function	Flight Support	Flight Support involves the activities that support business objectives and the management and monitoring of the fleet to determine how execution plans and proposed airspace designs will affect business objectives (e.g., cost, planning, scheduling, etc.).
SRM Service Component	Demand Forecasting/ Management	Defines the set of capabilities that facilitate the prediction of sufficient production to meet an organization's sales of a product or service.

3.6.6.5.4 NextGen Future Solutions

3.6.6.6 Fleet Management (6.2)

3.6.6.6.1 Description

This activity will plan and monitor fleet operations, ensuring business objectives are met. The information includes the review of scheduled routes, aircraft capabilities, and the execution plan.

3.6.6.6.2 Purpose

The purpose of Fleet Management is that the transformed operations provided benefit for any operator that invests in the needed capability, whether GA, commercial, civil, or military. The adoption of performance standards rather than equipment standards encourages innovation in avionics suppliers to produce affordable capabilities supporting trajectory-based procedures and real-time flight information in the cockpit.

Flight Support A6

Fleet Management A6.2

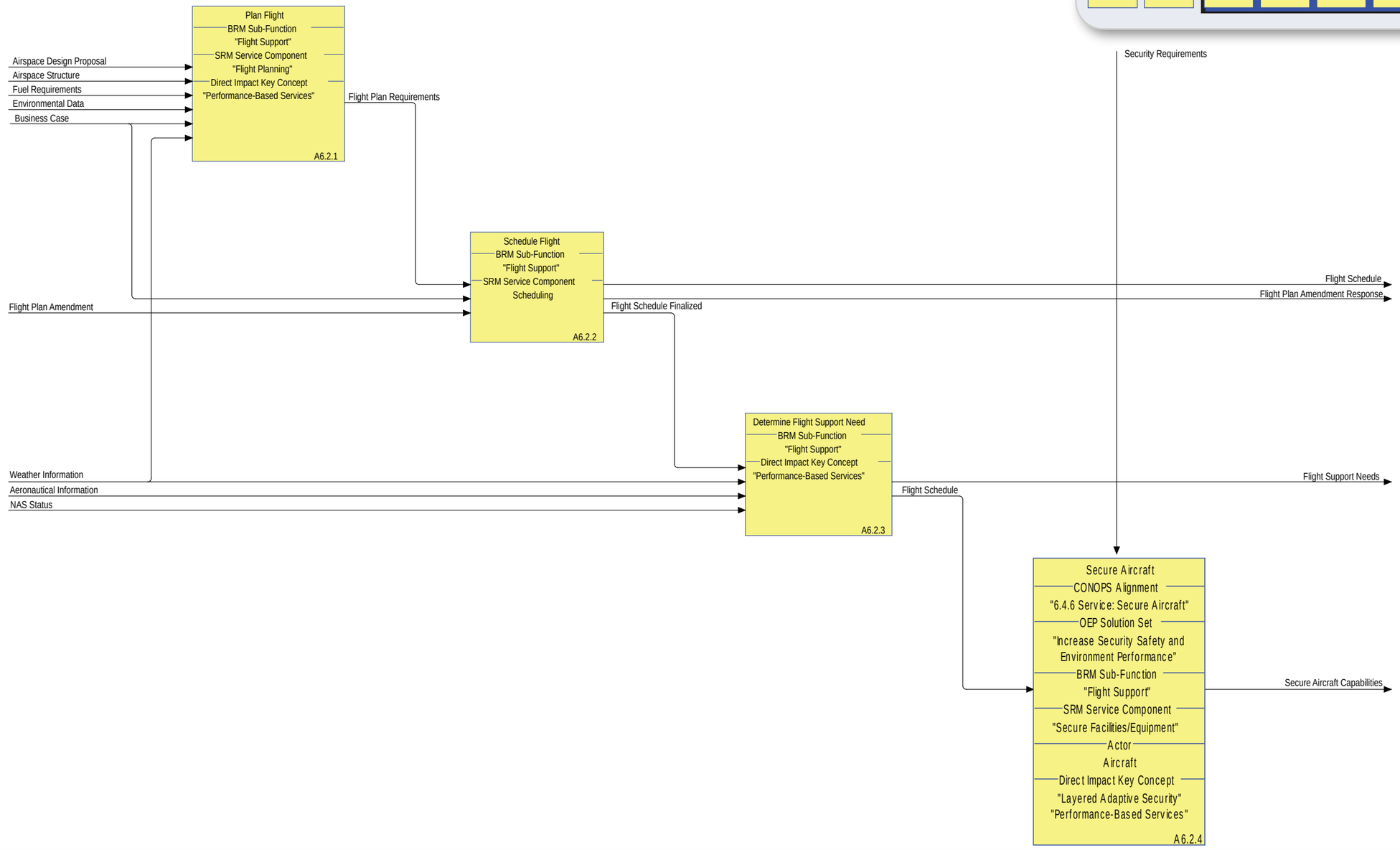


Figure 76 - 6.2 Fleet Management Activity Model Diagram

3.6.6.7 Plan Flight (6.2.1)

3.6.6.7.1 Description

This activity is the flight preparation such as determining the route of flight, fuel requirements, checking the weather, etc.

3.6.6.7.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Integrated environmental air traffic management planning and operations	An agile air traffic system has flexibility to achieve better fuel efficiency and emissions reductions enroute flight through the use of environmentally friendly procedures such as RNP procedures.
NextGen Operational Improvements	Reduced terminal and enroute significant noise impact	Noise- and emissions-favorable RNP routes are used en route. This OI also includes reduction of noise over national parks.
NAS Operational Improvements	Improved Management of Airspace for Special Use	Airspace for special use assignments, schedules, coordination, and status changes are conducted automation-to-automation. Changes to status of airspace for special use are readily available for operators and air navigation service providers (ANSP). Status changes are transmitted to the flight deck via voice or data communications. Flight trajectory planning is managed dynamically based on real-time use of airspace.

3.6.6.7.3 NextGen Drivers

Type	Name	Description
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
Actor	Flight Planner	Person or organization responsible for making tactical decisions about what flights to operate and when and where they will operate. May be the same as flight crew. Flight planner is the interface with the ANSP in trajectory negotiation. Operators with multiple aircraft involved in the initiative have the flexibility to adjust individual aircraft schedules and trajectories within those allocations to accommodate their own internal business concerns, both preflight and in flight.
ICAO ATMCP Requirement	R 45	The ATM system shall accommodate all types of airspace user missions
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Flight Support	Flight Support involves the activities that support business objectives and the management and monitoring of the fleet to determine how execution plans and proposed airspace designs will affect business objectives (e.g., cost, planning, scheduling, etc.).
SRM Service Component	Flight Planning	Defines the set of capabilities that optimize flights based on individual mission objectives, available aircraft, security and airspace constraints, and forecasted weather.

3.6.6.7.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Plan Flight	Verb phrase: The activity necessary for preparing for a flight I.e., determining the route of flight, fuel requirements, checking the weather, etc.

3.6.6.8 Schedule Flight (6.2.2)

3.6.6.8.1 Description

The activity required to determine the destination and the departure and arrival times for a flight

3.6.6.8.2 JPDO Support Alignment

Type	Name	Description
NAS Operational Improvements	Improved Management of Airspace for Special Use	Airspace for special use assignments, schedules, coordination, and status changes are conducted automation-to-automation. Changes to status of airspace for special use are readily available for operators and air navigation service providers (ANSP). Status changes are transmitted to the flight deck via voice or data communications. Flight trajectory planning is managed dynamically based on real-time use of airspace.

3.6.6.8.3 NextGen Drivers

Type	Name	Description
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
Actor	Flight Planner	Person or organization responsible for making tactical decisions about what flights to operate and when and where they will operate. May be the same as flight crew. Flight planner is the interface with the ANSP in trajectory negotiation. Operators with multiple aircraft involved in the initiative have the flexibility to adjust individual aircraft schedules and trajectories within those allocations to accommodate their own internal business concerns, both preflight and in flight.
BRM Sub-Function	Flight Support	Flight Support involves the activities that support business objectives and the management and monitoring of the fleet to determine how execution plans and proposed airspace designs will affect business objectives (e.g., cost, planning, scheduling, etc.).
SRM Service Component	Scheduling	Defines the set of capabilities that support the plan for performing work or service to meet the needs of an organization's customers.

3.6.6.8.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Schedule Flight	The activity required to determine the destination and the departure and arrival times for a flight.

3.6.6.9 Determine Flight Support Need (6.2.3)

3.6.6.9.1 Description

This activity decides what aeronautical information is needed and types of NAVAIDS will be required for a specific flight.

3.6.6.9.2 JPDO Support Alignment

3.6.6.9.3 NextGen Drivers

Type	Name	Description
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
Actor	Flight Planner	Person or organization responsible for making tactical decisions about what flights to operate and when and where they will operate. May be the same as flight crew. Flight planner is the interface with the ANSP in trajectory negotiation. Operators with multiple aircraft involved in the initiative have the flexibility to adjust individual aircraft schedules and trajectories within those allocations to accommodate their own internal business concerns, both preflight and in flight.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Flight Support	Flight Support involves the activities that support business objectives and the management and monitoring of the fleet to determine how execution plans and proposed airspace designs will affect business objectives (e.g., cost, planning, scheduling, etc.).

3.6.6.9.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Determine Flight Support Need	To decide what aeronauticaal information is needed and types of NAVAIDS will be required for a specific flight.

3.6.6.10 Secure Aircraft (6.2.4)

3.6.6.10.1 Description

This activity of securing aircraft increases the safety and security of the NextGen aircraft in flight through various hardware, software, personnel, and procedural methods. The threats that require mitigation are hijacking and unauthorized diversion, internal explosive destruction, external attack, onboard CBRN or other attack of crew, passengers, or aircraft systems, aircraft use as a transport for CBNRE, and aircraft use as a WMD. Secure aircraft applies to civilian passenger aircraft and civilian cargo aircraft. UAS aircraft (surveillance or cargo) also is included for threats related to unauthorized diversion, internal explosive destruction, and as a transport for CBRNE.

3.6.6.10.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Increase Security Safety and Environment Performance	
NextGen Operational Improvements	External Aircraft/ UAS Threat Protection	The safety and security of aircraft and unmanned aircraft systems (UAS) against external threats is increased by incorporating on-board systems that leverage safety modifications, supplemented by ground based and procedural systems to provide protection against LASERS, MANPADS, directed energy or electronic pulse threats (EMP).
NextGen Operational Improvements	Integrated command and control of security resources for incident response and r	Security and defense service providers jointly manage security resources and respond to security incidents by using an integrated security command and control capability that includes unified security operations protocols, communications, procedures, and tactics. This provides a seamless aviation security operation systems that are adaptive and responsive to the emerging threats.
NextGen Operational Improvements	Integrated high-risk flight management and risk mitigation	Flights are continually monitored and assessed risks. High risk flights are identified using an integrated risk assessment capability. Notifications are provided to the ANSP and the defense/security service providers to coordinate integrated response for risk mitigation facilitate by improved communications and information sharing.
NextGen Operational Improvements	Integrated risk-based planning and management of security resources	Security resources are planned, and managed using an integrated, adaptive, and responsive risk management capability that supports risk-informed decisions among security mission partners. This capability harmonizes short and long term resource allocation and investments among partners to gain the highest possible security return on investment and to reduce the overall cost of security operations.
NextGen Operational Improvements	Reduced impact of potential cargo and mail threats	Threat containment and mitigation increases the safety and security of the air transportation system. Cargo/Mail is placed in blast/threat containment/mitigation systems prior to placement on aircraft to reduce the impact to the air transportation system of undetected chemical biological, radiological, nuclear, and explosive (CBRNE) threats.
NextGen Operational Improvements	Reduced threat of aircraft and UAS used as weapon	The security and safety of aircraft and unmanned aircraft systems (UAS) is increased by reducing the probability of aircraft, including UAS, from being hijacked, used as a weapon of mass destruction (WMD), internal explosive destruction, onboard chemical, biological, radiological, nuclear, and explosive (CBRNE) threat, or as a transport for CBRNE.

3.6.6.10.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
Actor	Security	This operational node includes all activities by Government organizations to protect people, airports, checked baggage, cargo, airspace, aircraft, and information from intentional harm or unauthorized use.
CONOPS	6.4.6 Service: Secure Aircraft	
Key Concept	Layered, Adaptive Security	Through layered, adaptive security, the security system is constructed of "layers of defense" (including techniques, tools, sensors, processes, information, etc.) that help reduce the overall risk of a threat reaching its objective while minimally affecting efficient operations. Layered security is additive; failures in any one component should not have a catastrophic effect on other components. For that reason, the system can handle attacks and incidents with minimal overall disruption. Layered, adaptive security adjusts the deployment of security assets in response to the changing profile of risks; responses to anomalies and incidents are proportional to the assessed risk of involved individuals or cargo.
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Flight Support	Flight Support involves the activities that support business objectives and the management and monitoring of the fleet to determine how execution plans and proposed airspace designs will affect business objectives (e.g., cost, planning, scheduling, etc.).
SRM Service Component	Secure Facilities/ Equipment	Defines the set of capabilities that secure facilities (e.g. buildings, airports, etc.) and equipment (e.g. aircraft, vehicles, hardware, etc.) to mitigate dynamically evolving security risks and threats (e.g., unauthorized access, hijacking/unauthorized diversion, internal/external attacks, etc.).

3.6.6.10.4 NextGen Future Solutions

3.7 Flight Operations (7)

3.7.1 Description

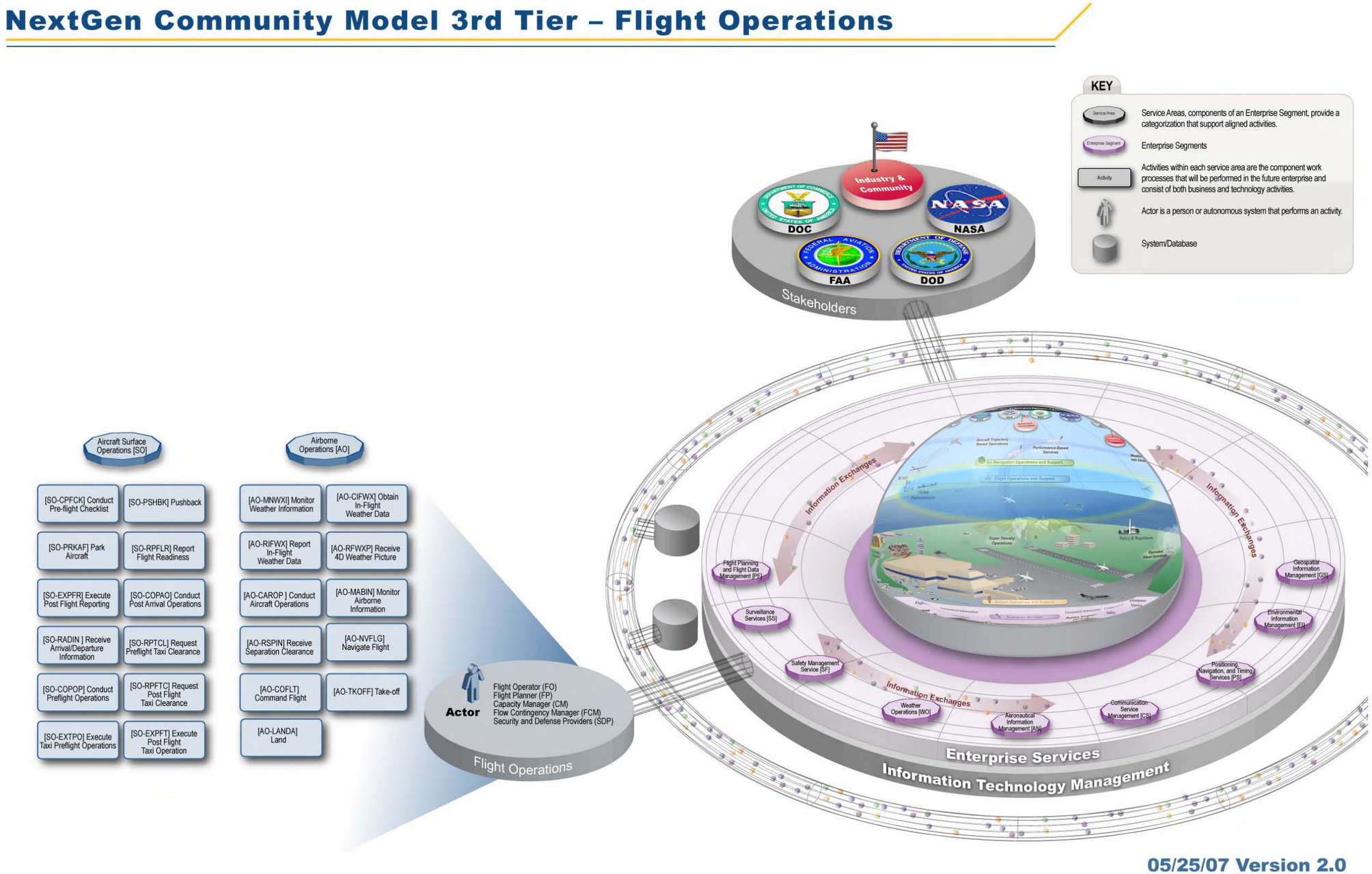
Flight Operations Enterprise Segment provides the operational context for the aircraft surface and airborne operations, including ground/airborne 4DT Navigation.

3.7.2 Purpose

The purpose of the Flight Operation segment is to identify and group specific service areas that are related to flight operations in the NextGen. These service areas; Aircraft Surface Operations and Airborne Operations address key concepts and operational improvement that must be achieved to enable NextGen. These two service areas are further decomposed into specific operational activities that define that service area and provides the foundation for the NextGen EA to further develop detailed architecture products that show trace ability to the NextGen CONOPS and stakeholders investments (material/non-material)

3.7.3 3nd Tier Community Model

Figure 77: Flight Operations 3rd tier Community Model



3.7.4 Enterprise Segment Activity Inventory - Flight Operations

Figure 78: Flight Operations ESAI

Flight Operations

Aircraft Surface Operations [SO]	Aircraft Surface Operations [SO]	Aircraft Surface Operations [SO]	Airborne Operations [AO]	Airborne Operations [AO]	Airborne Operations [AO]
[SO-EXPFT] Execute Post Flight Taxi Operation Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[SO-RPTCL] Request Preflight Taxi Clearance** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[SO-RPFLR] Report Flight Readiness** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[AO-MABIN] Monitor Airborne Information** Actors: AR Priority: High Criticality: Low Systems: 1 ICAO: 0 BRM SRM TRM PRM DRM	**[AO-MNWXI] Monitor Weather Information** Actors: AR Priority: High Criticality: Low Systems: 2 ICAO: 0 BRM SRM TRM PRM DRM	**[AO-TKOFF] Take-off** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM
[SO-RPFTC] Request Post Flight Taxi Clearance Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[SO-RADIN] Receive Arrival/Departure Information** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[SO-PRKAF] Park Aircraft** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[AO-RWXPT] Receive 4D Weather Picture** Actors: AR,FO Priority: High Criticality: Medium Systems: 4 ICAO: 0 BRM SRM TRM PRM DRM	**[AO-COFLT] Command Flight** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[AO-RSPCL] Receive Separation Clearance** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM
[SO-EXTPO] Execute Taxi Preflight Operations Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[SO-COPAO] Conduct Post Arrival Operations** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[SO-PSHBK] Pushback** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[AO-RIFWX] Report In-Flight Weather Data** Actors: AR,FO Priority: High Criticality: Low Systems: 2 ICAO: 1 BRM SRM TRM PRM DRM	**[AO-NVFLG] Navigate Flight** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 2 BRM SRM TRM PRM DRM	**[AO-CAROP] Conduct Aircraft Operations** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 2 BRM SRM TRM PRM DRM
[SO-COPOP] Conduct Preflight Operations Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[SO-EXPFR] Execute Post Flight Reporting** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[SO-CPFCK] Conduct Pre-flight Checklist** Actors: FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[AO-OIFWX] Obtain In-Flight Weather Data** Actors: AR,FO Priority: High Criticality: Medium Systems: 3 ICAO: 0 BRM SRM TRM PRM DRM	**[AO-LANDG] Land** Actors: AR,FO Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	

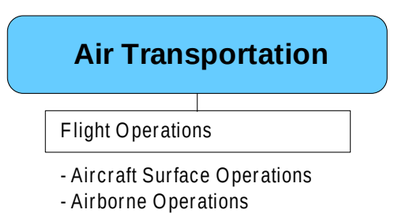
3.7.4.1 Flight Operations ESAI Actor Table

Actor Code	Actor Name	Actor Description
FO	Flight Operator	The flight Operator node represents the commercial entities responsible for providing, scheduling, provisioning, and staffing aircraft. The node also includes the ground side activities required to board and de-board passengers, baggage, and cargo, and the business operations necessary to keep the commercial enterprise viable.
AR	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
BO	Business Operator	Business operators, using aircraft to support their core business, need access to airports and airspace for the conduct of commerce.
FP	Flight Planner	Person or organization responsible for making tactical decisions about what flights to operate and when and where they will operate. May be the same as flight crew. Flight planner is the interface with the ANSP in trajectory negotiation. Operators with multiple aircraft involved in the initiative have the flexibility to adjust individual aircraft schedules and trajectories within those allocations to accommodate their own internal business concerns, both preflight and in flight.
SC	Security	This operational node includes all activities by Government organizations to protect people, airports, checked baggage, cargo, airspace, aircraft, and information from intentional harm or unauthorized use.

3.7.5 Flight Operations FEA RM

The Flight Operations Segment provides a functional view of the executable aspect of a flight both on the ground and in the air. As depicted in figure 22, this segment is primarily categorized under the Air Transportation Line of Business. It describes the pre- and post-flight operations, as well as the activities associated with operating an aircraft on the surface and during flight. The following table further describes the Flight Operations Segment and identifies how each activity aligns to the other architectural layers of the NextGen EA Reference Architecture.

Figure 79: Flight Operations FEA RM



3.7.6 Flight Operations DoDAF products

List of Activity Models

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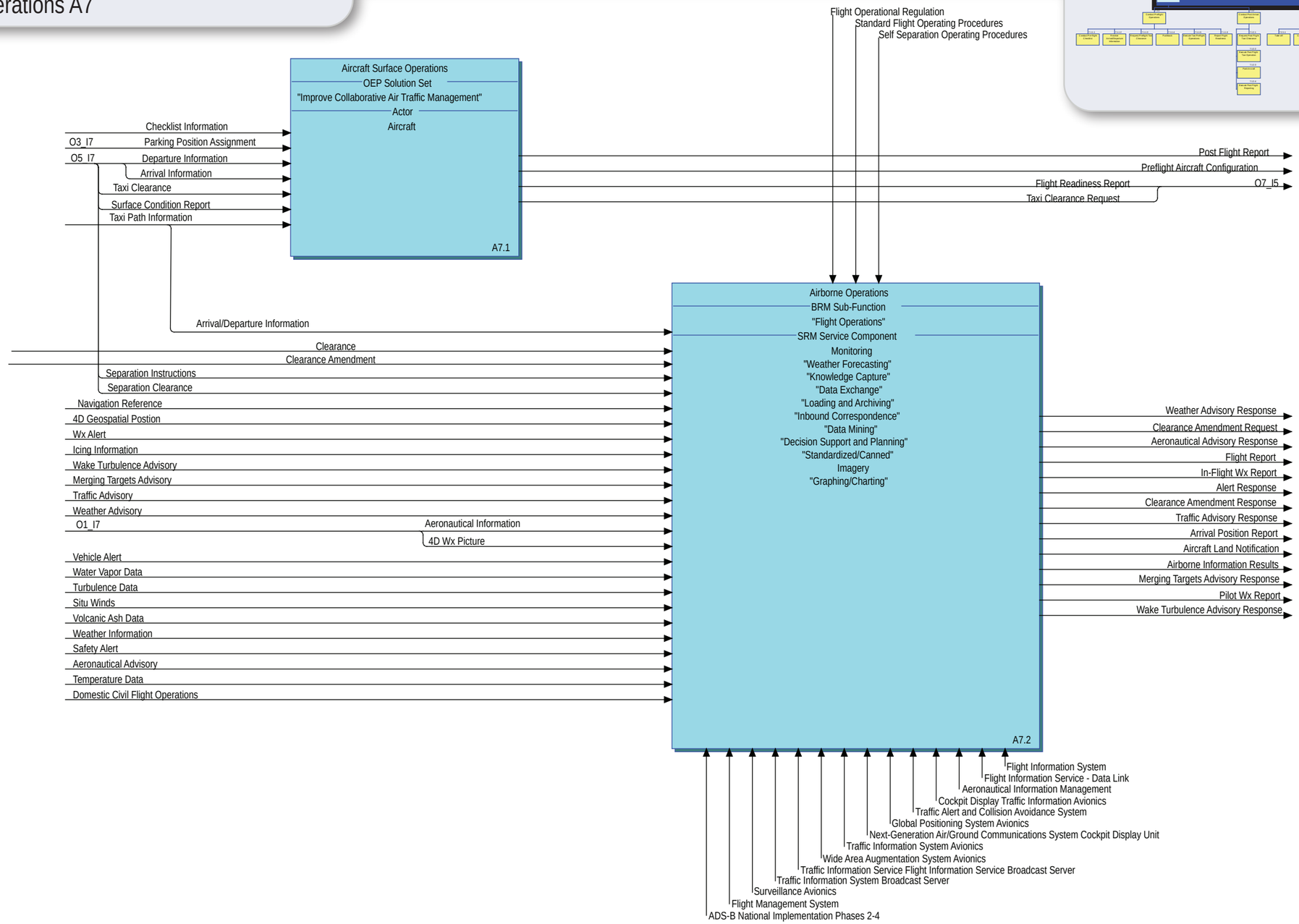


Figure 80 - 7 Flight Operations Activity Model Diagram

3.7.6.1 Aircraft Surface Operations (7.1)

3.7.6.1.1 Description

This activity provides the preparation and execution of the aircraft surface operations.

3.7.6.1.2 Purpose

The purpose of Aircraft Surface Operations is to conduct the pre-departure and post arrival operations. The aircraft on the surface receives the clearances to clear the aircraft for movement. Integrated surface operations provides the capability of the aircraft to receive the information an negotiate if needed.

3.7.6.1.3 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Improve Collaborative Air Traffic Management	Collaborative ATM covers the both the strategic and tactical interactions with the customers to manage demand when the desired use of capacity can not be accommodated. C-ATM includes the flow programs as well as collaboration on procedures that will establish balance by shifting demand to less desirable capacity alternatives e.g. routings, altitudes, times.
NextGen Operational Improvements	Electronic VFR Operations for independent parallel or converging runways	This OI allows maintaining VMC arrival and departure rates in IMC through use of onboard displays and alerting for independent parallel or converging runways. Using precision navigation, cooperative surveillance, and onboard algorithms and displays allows the reduction of lateral separation requirements for converging and parallel runway operations in IMC. Includes independent approaches to converging and parallel runways that are 4300 - 2500 ft centerline distances. The timing of implementation of this OI is strongly dependent on when an airline decides this is important and steps forward to advocate for it. Waterfall deployment: a) At selected locations b) All applicable OEP airports (2018+)
NextGen Operational Improvements	Enroute airborne merging and spacing	Flow of traffic through constrained en route airspace is expedited through the use of airborne merging and spacing to increase capacity while reducing ANSP workload. This OI includes development of ANSP capabilities and procedures and provides greater traffic throughput, reduced ANSP workload/ transactions, and greater trajectory maneuver efficiencies than via ANSP clearances. Design decisions are required before implementation to determine the most cost/beneficial and effective method for expediting flow of traffic through constrained en route airspace and to develop how this would be implemented in TBO airspace.
NextGen Operational Improvements	Airborne, single runway, approach and departure merging and spacing	Arriving or departing aircraft to/from single runways are instructed to achieve and maintain a given spacing in time or distance from a designated lead aircraft as defined by an ANSP clearance. Onboard displays and automation support the aircraft conducting the merging and spacing procedure to enable accurate adherence to the required spacing. Flight crews are responsible for maintaining safe and efficient spacing from the lead aircraft. Responsibility for separation from all other aircraft remains with the ANSP. Assigned spacing may include a gap to allow for an intervening departure between subsequent arrivals. Mixed-equipage operations are supported; a spacing-capable aircraft can perform airborne spacing behind a non-capable aircraft as long as it is transmitting cooperative surveillance information. This OI includes multiple streams merging to a single runway and includes development of ANSP capability and procedures.
NextGen Operational Improvements	Ground-based and on-board runway incursion alerting equipment.	This OI increases the safety of operations by reducing runway incursions. Operators of suitably equipped commercial, business, and general aviation aircraft receive runway incursion alerts from on-board detection systems and from complementary ground-based detection systems where implemented. Airborne equipage is not required to receive incursion alerts. This OI will require research and development of runway incursion alerting systems appropriate for business, general aviation, and commercial aircraft.
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management	Arrival and departure flows and surface operations are more effectively planned and managed through integrated advanced ANSP automation. This OI develops an Integrated Arrival/Departure and Surface Traffic Flow Manager for improved decision making and flow management. These decision support tools enable ANSP flow managers to work collaboratively with flight operators and with ANSP flow contingency managers to effectively manage high-capacity arrival and departure flows in the presence of various weather conditions. Real-time information distribution enhances operational efficiencies, such as distribution of runway braking action reports. Improved surveillance, automation, and information sharing enhance efficiency of terminal area operations. The ANSP can safely make more efficient use of runways through real-time depiction in the tower of the location and intent of arriving and departing aircraft, as well as any aircraft intending to cross an active runway.
NextGen Operational Improvements	Surface Management Operations - Level 2A	Efficiency of surface traffic movement is increased through the use of automation, on-board displays and data link of departure taxi instructions prior to pushback to properly equipped aircraft to reduce delay, environmental impacts and operational errors. Automation optimizes surface throughput and data links taxi instructions to aircraft. The taxi instructions include the 2D route. Pilot uses onboard displays of taxi route and guidance to efficiently and safely follow taxi instructions. Surface optimization automation includes activities such as runway snow removal, aircraft de-icing, and runway reconfiguration.
NextGen Operational Improvements	Surface Management Operations - Level 3	Aircraft and ground vehicle movement on airports in low visibility conditions is guided by moving map displays, CDTI, ADS-B (for flight vehicles), and a GSE Cooperative Surveillance System (for ground support equipment). Safety and efficiency of operations at some airports will also be enhanced by intelligent signage on the ground. Policy issue: Will this equipage be mandatory for access to some high-density airports during peak traffic times in low-visibility conditions, or will equipped aircraft be given priority access in low-visibility conditions but unequipped aircraft will be accommodated, or is this equipage simply optional. Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) some airports (Segment 2) b) OEP airports (Segment 3) c) top 100 airports (Segment 4) d) all commercial airports (Segment 6)
NAS Operational Improvements	Expanded Traffic Advisory Services Using Digital Traffic Data	Surrounding traffic information is available to the flight deck, including automatic dependent surveillance (ADS) information and the rebroadcast of non-transmitting targets to equipped aircraft. Surveillance and traffic broadcast services improve situational awareness in the cockpit with more accurate and timely digital traffic data provided directly to aircraft avionics for display to the pilot.
NAS Operational Improvements	Optimize Runway Assignments	Arrivals and departures are sequenced and staged to maintain throughput. Air navigation service provider (ANSP) automation uses arrival and departure-scheduling tools and 4DT agreements to flow traffic at high-density airports. Automation incorporates user provided gate assignments, requested runway, aircraft wake characteristics, and flight performance profiles. ANSP and airport operators monitor airport operational efficiency and make real-time adjustments to schedules and sequencing to optimize throughput.
NAS Operational Improvements	Provide Surface Situation to Pilots and Service Providers	Automated broadcast of aircraft and vehicle position to ground sensors/receivers provides a digital display of the airport environment. Aircraft and vehicles are identified and tracked to provide a full comprehensive picture of the surface environment to the air navigation service provider (ANSP) and equipped aircraft.
NAS Operational Improvements	Provide Surface Situation to Pilots and Service Providers-1	

Type	Name	Description
NAS Operational Improvements	Provide Surface Situation to Pilots, Service Providers and Vehicle Operators for	Aircraft and surface vehicle positions are displayed to air navigation service providers (ANSP) and equipped aircraft and vehicles. This capability increases situational awareness in restricted visibility conditions and provides more efficient surface movement.
NAS Operational Improvements	Wake Vortex Integrated to Flow	Air navigation service provider (ANSP) automation and decision support tools incorporate aircraft wake characteristics into arrival/departure flows, runway staging, and taxi assignments to enhance efficiency at high-density airports. Arrival and departure flows are planned and executed based on a comprehensive view of real time airport operations. Automation provides optimal departure staging and arrival sequencing based on aircraft wake and airborne performance characteristics.

3.7.6.1.4 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
Key Concept	Equivalent Visual Operations (EVO)	Improved information availability allows aircraft to conduct operations without regard for visibility or direct visual observation. For aircraft, this capability, in combination with PNT, enables increased accessibility, both on the airport surface and during arrival and departure operations. This capability also enables those providing services at airports (such as ATM or other ramp services) to provide services in all visibility conditions, leading to more predictable and efficient operations.
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.

3.7.6.1.5 NextGen Future Solutions

3.7.6.2 Airborne Operations (7.2)

3.7.6.2.1 Description

This activity provides the aircraft airborne operations with and without 4DT Navigation. Aircraft may perform autonomous operations, monitor weather and other airspace events to negotiate the best flight path.

3.7.6.2.2 Purpose

The purpose of Airborne Operations is to meet the mission of the flight. The minimum capability for operating in any managed airspace is cooperative surveillance, the ability to perform RNAV operations (if operating under instrument flight rules [IFR]), and communication with the ANSP via voice radio. In airspace where TBO is used, the minimum capability includes the ability to conduct RNP operations combined with the exchange (via a digital data link) and execution of precision 4DTs. Some airspace requires the ability to perform delegated or self-separation operations. Many operators also are able to communicate between aircraft and their flight operations center (FOC) for exchanging flight planning and trajectory information, aircraft performance and maintenance data, flight following information, and passenger-related information. Flight planning systems also have a range of capabilities, including the ability to exchange and negotiate information supporting the C-ATM process.

3.7.6.2.3 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Delegated self-separation - complex operations	In ANSP-managed airspace, the ANSP delegates separation responsibilities to capable aircraft to improve operator routing, enhance operational efficiency, or increase ANSP productivity. This OI involves more complex delegated separation responsibilities that may be supported in ANSP-managed en route and transition airspace. After early concept exploration and feasibility research, an implementation decision will be made by 2015 to determine whether it is cost beneficial to develop additional delegated separation responsibilities beyond those covered in OI-356 and OI 359 taking advantage of advanced airborne technologies, such as conflict detection and alerting.
NextGen Operational Improvements	Delegated self-separation - Pair wise	In ANSP-managed airspace, the ANSP delegates pair wise separation tasks to capable aircraft to improve operator routing, enhance operational efficiency, or increase ANSP productivity. The ANSP delegates responsibility to capable aircraft to perform specific separation operations. This includes passing, crossing, turn-behind, and other simple separation tasks that require onboard display of traffic information. This does not include complex separation situations that would require onboard conflict alerting. The ANSP is responsible for separation from all other traffic while the designated aircraft performs the specified maneuver.
NextGen Operational Improvements	Electronic VFR Operations - Level 1	Visibility and cloud clearance requirements for VFR flights are reduced through use of onboard traffic displays, increasing utility of VFR operations. Electronic VFR provides the ability of an aircraft to transition through a light cloud layer or operate in lower visibility, using CDTI (with ADS-B or TIS B) to augment continuation of visual separation after initial visual contact.
NextGen Operational Improvements	Advanced deicing, aniticing and snow removal operations	During winter weather, aircraft are anti-iced/deiced more efficiently. Icing holdover times are incorporated into 4DT in order to facilitate departure queuing. Deicing/anti-icing fluids are more effective with less environmental impact. Collection methods capture spent fluids for recycling.
NextGen Operational Improvements	All weather airport access	All-weather airport access is available where needed through a combination of complementary airborne and ground functionality to aid the pilot in approach guidance and acquisition of the runway environment for safe operations. All weather (Cat IIIc) approaches are available for all users where needed through a combination of complementary airborne and ground equipage. Implementation may involve on-board synthetic and enhanced vision systems, and ground-based augmentation systems (GBAS), and low-cost runway/taxiway lighting.
NextGen Operational Improvements	Reduced weather-related incidents	Weather-related incidents are reduced through equipage of aircraft with cockpit weather system technologies for enhanced situational awareness and decision making. Aircraft are equipped with icing detection and avoidance technologies, icing tolerant technologies, icing computational tools, airborne weather reporting sensor technologies, weather information data link systems technologies for ground-to-air dissemination, airborne weather reporting data link systems for air-to-ground and air-to-air dissemination, and turbulence detection, warning and alerting technologies. Improvements are needed in icing experimental methods, icing experimental databases, icing atmospheric characterization technologies, and icing education and training tools.
NextGen Operational Improvements	Self-separation and flexible routing airspace	In self-separation airspace, capable aircraft are responsible for separating themselves from one another, and the ANSP provides no separation services, enabling preferred operator routing with increased ANSP productivity. Research will determine whether the ANSP will provide any traffic flow management services within self-separation airspace. Aircraft must meet equipage requirements to enter self-separation airspace, including transmission of trajectory intent information through cooperative surveillance. Transition into self-separation airspace includes an explicit hand-off and acceptance of separation responsibility by the aircraft. Transition into ANSP-managed airspace is facilitated through assigned waypoints with CTAs, allowing the ANSP to sequence and schedule entry into congested airspace, and self-separating aircraft are responsible for meeting assigned CTAs. Self-separating aircraft execute standardized algorithms to detect and provide resolutions to conflicts. Right-of-way rules determine which aircraft should maneuver to maintain separation when a conflict is predicted. Contingency procedures ensure safe separation in the event of failures and operational errors.

Type	Name	Description
NextGen Operational Improvements	Surface Management Operations - Level 3	Aircraft and ground vehicle movement on airports in low visibility conditions is guided by moving map displays, CDTI, ADS-B (for flight vehicles), and a GSE Cooperative Surveillance System (for ground support equipment). Safety and efficiency of operations at some airports will also be enhanced by intelligent signage on the ground. Policy issue: Will this equipage be mandatory for access to some high-density airports during peak traffic times in low-visibility conditions, or will equipped aircraft be given priority access in low-visibility conditions but unequipped aircraft will be accommodated, or is this equipage simply optional. Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) some airports (Segment 2) b) OEP airports (Segment 3) c) top 100 airports (Segment 4) d) all commercial airports (Segment 6)
NextGen Operational Improvements	Trajectory-Based Traffic Management - Level 1	All in-flight aircraft operating in Trajectory-Based Airspace are managed by 4D trajectory in en route climb, cruise, and descent. This may be considered a staging of the 4D trajectory-based capability. This would require the ability to calculate, negotiate, and perform conformance monitoring by ANSPs, including the integration of separation assurance and traffic management (time constraints, e.g., RTAs). This will be enabled by the trajectory exchange through electronic data communications. In high-density or high-complexity airspace, precise 4DTs will be used, dramatically reducing the uncertainty of an aircraft's future flight path, in terms of predicted spatial position (latitude, longitude, and altitude) and times along points in its path. This enhances the capacity and throughput of the airspace to accommodate high levels of demand.
NAS Operational Improvements	Expanded Traffic Advisory Services Using Digital Traffic Data	Surrounding traffic information is available to the flight deck, including automatic dependent surveillance (ADS) information and the rebroadcast of non-transmitting targets to equipped aircraft. Surveillance and traffic broadcast services improve situational awareness in the cockpit with more accurate and timely digital traffic data provided directly to aircraft avionics for display to the pilot.
NAS Operational Improvements	Optimize Runway Assignments	Arrivals and departures are sequenced and staged to maintain throughput. Air navigation service provider (ANSP) automation uses arrival and departure-scheduling tools and 4DT agreements to flow traffic at high-density airports. Automation incorporates user provided gate assignments, requested runway, aircraft wake characteristics, and flight performance profiles. ANSP and airport operators monitor airport operational efficiency and make real-time adjustments to schedules and sequencing to optimize throughput.

3.7.6.2.4 NextGen Drivers

Type	Name	Description
ICAO ATMCP Requirement	R 08	The ATM system shall use relevant airspace user operational information for optimization of flight operation management.
CONOPS	2 AIR TRAFFIC MANAGEMENT OPERATIONS	
Key Concept	Equivalent Visual Operations (EVO)	Improved information availability allows aircraft to conduct operations without regard for visibility or direct visual observation. For aircraft, this capability, in combination with PNT, enables increased accessibility, both on the airport surface and during arrival and departure operations. This capability also enables those providing services at airports (such as ATM or other ramp services) to provide services in all visibility conditions, leading to more predictable and efficient operations.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Positioning, Navigation, and Timing (PNT) Services	PNT services are provided where and when needed, in accordance with demand and safety considerations, to enable reliable aircraft operations in nearly all conditions. Instead of being driven by the geographic location of a ground-based navigational aid (NAVAID), PNT services allow operators to define the desired flight path based on their own objectives.
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
Key Concept	Weather Assimilated into Decisionmaking	By assimilating weather into decisionmaking, weather information becomes an enabler for optimizing NextGen operations. Directly applying probabilistic weather information to ATM decision tools increases the effective use of weather information and minimizes the adverse effects of weather on operations.
BRM Sub-Function	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Graphing/Charting	Defines the set of capabilities that support the presentation of information in the form of diagrams or tables.
SRM Service Component	Imagery	Defines the set of capabilities that support the creation of film or electronic images from pictures or paper forms.
SRM Service Component	Data Mining	Defines the set of capabilities that provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.
SRM Service Component	Standardized/ Canned	Defines the set of capabilities that support the use of preconceived or pre-written reports.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Weather Forecasting	Defines the set of capabilities that provide stakeholders with a common picture of current (i.e. real-time) and forecasted weather information, including weather attributes organized by horizontal, vertical, altitude, time, and probability components.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Decision Support and Planning	Defines the set of capabilities that support the analysis of information and predict the impact of decisions before they are made.
SRM Service Component	Inbound Correspondence	

Type	Name	Description
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.

3.7.6.2.5 NextGen Future Solutions

Type	Name	Description
FAA Systems	Flight Management System	A Flight Management System (FMS) is a computer system that uses a database to allow routes to be preprogrammed and stored. The system is constantly updated with respect to position accuracy by reference to one or more conventional radio navigation aids (i.e., multi-sensor systems). The system may also use information from an inertial reference unit (IRU) or from a stand-alone inertial navigation system (INS). A sophisticated program and its associated database ensure that the most appropriate navaids are automatically selected during the update cycle. FMSs combine the relative position information from two or more point-referenced navigation aids such as Very High Frequency Omnirange (VOR) or Distance Measuring Equipment (DME) to determine the absolute position of the aircraft (latitude, longitude). The resulting Area Navigation (RNAV) capability permits operation on any desired course.
FAA Systems	Traffic Alert and Collision Avoidance System	A Traffic Alert and Collision Avoidance System (TCAS) broadcasts interrogations and receives responses from Air Traffic Control Radar Beacon System (ATCRBS) Mode A/C and Mode Select (Mode S) transponders within range. TCAS processes these responses to provide warnings, advisories, and visual proximity information to the flight crew via a cockpit display.
FAA Systems	Cockpit Display Traffic Information Avionics	The Cockpit Display of Traffic Information Avionics (CDTI Avionics) is a generic name for a display that provides the flight crew with surveillance information about other suitably equipped proximate aircraft, including their position.
FAA Systems	Global Positioning System Avionics	Global Positioning System (GPS) Avionics process the signals received from four or more Navstar GPS satellites and determine the three-dimensional position (i.e., latitude, longitude and altitude) and velocity of an aircraft, as well as the precise time of day. GPS avionics provide an area navigation (RNAV) capability that permits operation on any desired course. GPS avionics built to Technical Standard Order TSO-C129 do not have augmentation such as the FAA Wide Area Augmentation System (WAAS) or Local Area Augmentation System (LAAS) and are approved only as a supplemental navigation system in the National Airspace System (NAS), meaning that they must be used in conjunction with a primary navigation system. TSO-C129 avionics support en route and terminal area navigation, as well as non-precision instrument approach operations. Approval has been granted for properly certified GPS avionics to be used as a primary means of navigation in oceanic airspace and in certain remote areas. In certain regions of the world (including the NAS), GPS will be augmented by both wide area and local area systems to satisfy additional requirements for accuracy, coverage, availability, and integrity. Augmented GPS avionics (WAAS, LAAS) are expected to support precision instrument approach operations, and to gain approval as a primary navigation system throughout the NAS. It is anticipated that users will migrate from TSO-C129 avionics to augmented GPS avionics (WAAS, LAAS).
FAA Systems	Wide Area Augmentation System Avionics	Update: November 9, 2006 - the Garmin GNS 400/500 series earned the FAA's TSO C146a Gamma-3 certification, which enables pilots who upgrade their Garmin receiver to fly Lateral-Precision with Vertical (LPV) guidance approaches and receive GPS navigation via the Wide Area Augmentation System (WAAS). This upgrade will allow thousands of Garmin 400 or 500 series receivers to utilize WAAS starting in 2007. Aircraft Navstar Global Positioning System (GPS) avionics that are WAAS) capable support both en route and terminal navigation. GPS/WAAS avionics are approved for use as a primary means of navigation within the conterminous United States (CONUS) for en route, terminal area, and non-precision approaches that require altitude and course guidance. WAAS equipped aircraft are capable of Lateral Navigation (LNAV)/Vertical Navigation (VNAV) non-precision approaches, and LPV guidance to near Category I altitude minimums, in accordance with published Standard Instrument Approach Procedures (SIAP). See SatNav News at http://gps.faa.gov/Library/indexSatnav.htm for additional information.

Type	Name	Description
FAA Systems	ADS-B National Implementation Phases 2-4	To provide for a national deployment of ground-based stations to broadcast Flight Information Service (FIS), Traffic Information Services (TIS), and Automatic Dependent Surveillance (ADS) data.
FAA Systems	Next-Generation Air/Ground Communications System Cockpit Display Unit	The Next-Generation Air/Ground Communications System Cockpit Display Unit (NEXCOM CDU) displays NEXCOM messages in aircraft cockpit. This display may be a standalone device or may be part of a multifunction, switchable, display unit.

3.7.6.3 Aircraft Surface Operations (7.1)

3.7.6.3.1 Description

This activity provides the preparation and execution of the aircraft surface operations.

3.7.6.3.2 Purpose

The purpose of Aircraft Surface Operations is to conduct the pre-departure and post arrival operations. The aircraft on the surface receives the clearances to clear the aircraft for movement. Integrated surface operations provides the capability of the aircraft to receive the information an negotiate if needed.

Flight Operations A7

Aircraft Surface Operations A7.1

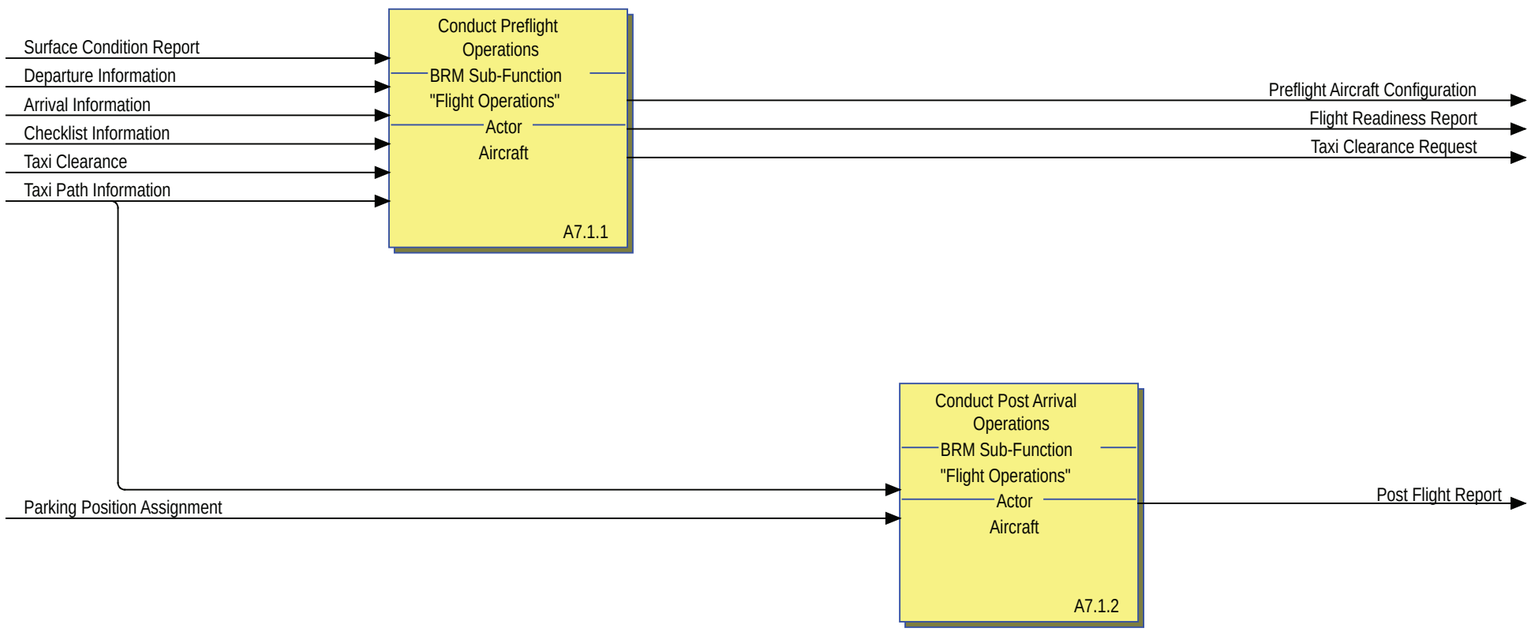


Figure 81 - 7.1 Aircraft Surface Operations Activity Model Diagram

3.7.6.4 Conduct Preflight Operations (7.1.1)

3.7.6.4.1 Description

This activity performs the operations necessary prior to takeoff and departure.

3.7.6.4.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Surface Management Operations - Level 2A	Efficiency of surface traffic movement is increased through the use of automation, on-board displays and data link of departure taxi instructions prior to pushback to properly equipped aircraft to reduce delay, environmental impacts and operational errors. Automation optimizes surface throughput and data links taxi instructions to aircraft. The taxi instructions include the 2D route. Pilot uses onboard displays of taxi route and guidance to efficiently and safely follow taxi instructions. Surface optimization automation includes activities such as runway snow removal, aircraft de-icing, and runway reconfiguration.
NextGen Operational Improvements	Surface Management Operations - Level 3	Aircraft and ground vehicle movement on airports in low visibility conditions is guided by moving map displays, CDTI, ADS-B (for flight vehicles), and a GSE Cooperative Surveillance System (for ground support equipment). Safety and efficiency of operations at some airports will also be enhanced by intelligent signage on the ground. Policy issue: Will this equipage be mandatory for access to some high-density airports during peak traffic times in low-visibility conditions, or will equipped aircraft be given priority access in low-visibility conditions but unequipped aircraft will be accommodated, or is this equipage simply optional. Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) some airports (Segment 2) b) OEP airports (Segment 3) c) top 100 airports (Segment 4) d) all commercial airports (Segment 6)

3.7.6.4.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
BRM Sub-Function	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.

3.7.6.4.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Execute Pre-Departure Operation	Perform the activities that are necessary prior to takeoff and departure.
NAS Activity	Manage Pre-Flight Flight Plan	The activity which accepts, processes, and validates flight plan data from all users.
NAS Activity	Manage Pre-Flight Information	The supervision of the necessary activities involved in regulating the

3.7.6.5 Conduct Post Arrival Operations (7.1.2)

3.7.6.5.1 Description

This activity performs the operations necessary by the flight operator/flight crew after landing and when clear of the runway.

3.7.6.5.2 JPDO Support Alignment

3.7.6.5.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
BRM Sub-Function	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.

3.7.6.5.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Execute Post-Arrival Operation	Performance o the necessary activities by the flight crew after landing and when clear o the runway.
NAS Activity	Manage Post-Flight Information	

3.7.6.6 Conduct Preflight Operations (7.1.1)

3.7.6.6.1 Description

This activity performs the operations necessary prior to takeoff and departure.

Flight Operations A7

Aircraft Surface Operations A7.1

Conduct Preflight Operations A7.1.1

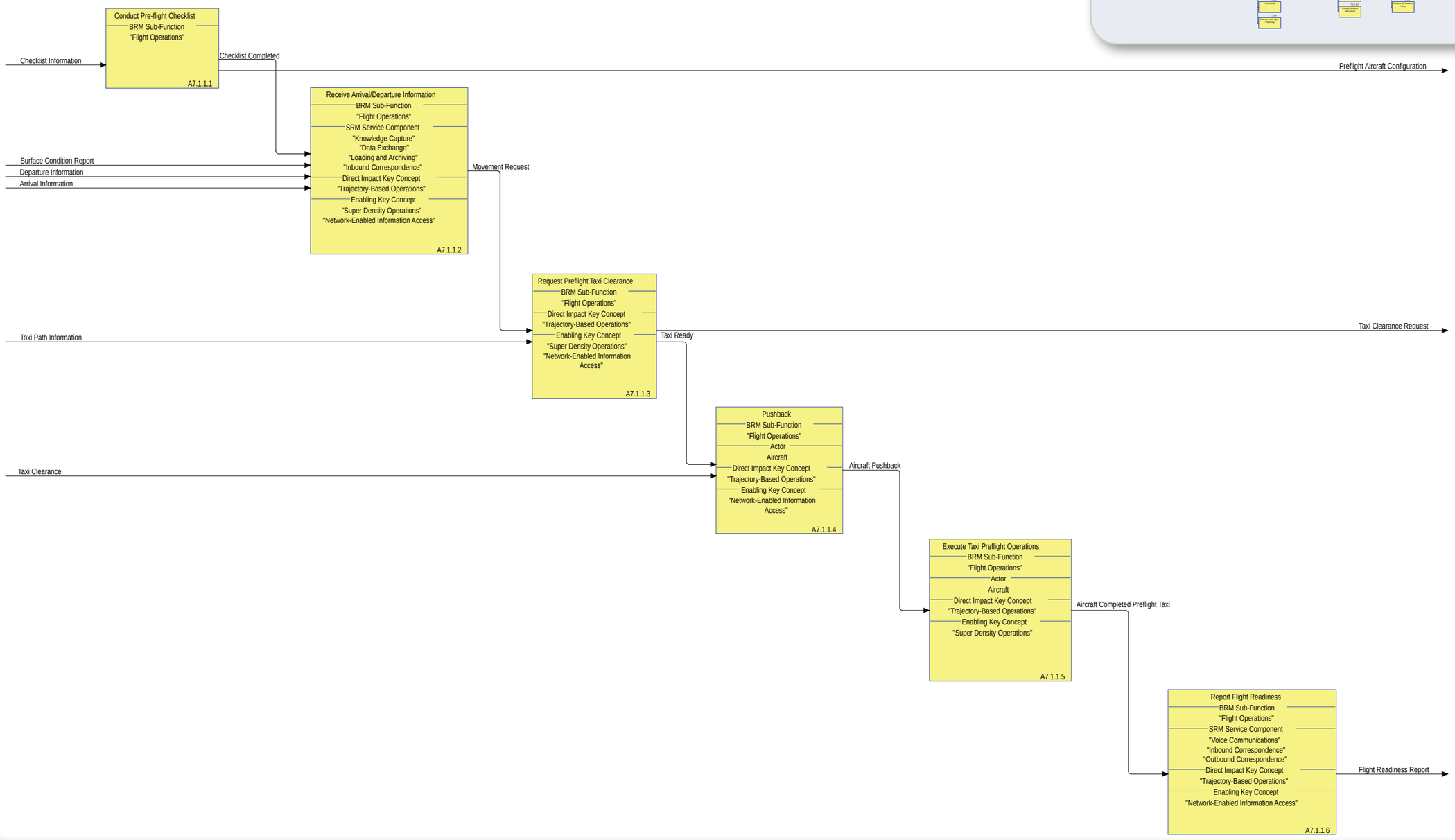


Figure 82 - 7.1.1 Conduct Preflight Operations Activity Model Diagram

3.7.6.7 Conduct Pre-flight Checklist (7.1.1.1)

3.7.6.7.1 Description

This activity is the review to assurance that the checklist items have be checked prior to aircraft movement.

3.7.6.7.2 JPDO Support Alignment

3.7.6.7.3 NextGen Drivers

Type	Name	Description
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
CONOPS	2.6 TRANSFORMED FLIGHT OPERATIONS	
BRM Sub-Function	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.

3.7.6.7.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Execute Aircraft Inspection	Activity that ensures the integrity and safety of an aircraft is thoroughly checked prior to taxiing or departure.
NAS Activity	Execute Flight Planning Operation	To perform the activities necessary before flight,I.e., plan the route of flight, obtain a weather briefing, check NOTAMS, file the flight plan, etc.
NAS Activity	Plan Flight	Verb phrase: The activity necessary for preparing for a flight I.e., determining the route of flight, fuel requirements, checking the weather, etc.

3.7.6.8 Receive Arrival/Departure Information (7.1.1.2)

3.7.6.8.1 Description

This activity receives arrival and departure information in advance to the aircraft.

3.7.6.8.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management	Arrival and departure flows and surface operations are more effectively planned and managed through integrated advanced ANSP automation. This OI develops an Integrated Arrival/Departure and Surface Traffic Flow Manager for improved decision making and flow management. These decision support tools enable ANSP flow managers to work collaboratively with flight operators and with ANSP flow contingency managers to effectively manage high-capacity arrival and departure flows in the presence of various weather conditions. Real-time information distribution enhances operational efficiencies, such as distribution of runway braking action reports. Improved surveillance, automation, and information sharing enhance efficiency of terminal area operations. The ANSP can safely make more efficient use of runways through real-time depiction in the tower of the location and intent of arriving and departing aircraft, as well as any aircraft intending to cross an active runway.
NextGen Operational Improvements	Surface Management Operations - Level 2A	Efficiency of surface traffic movement is increased through the use of automation, on-board displays and data link of departure taxi instructions prior to pushback to properly equipped aircraft to reduce delay, environmental impacts and operational errors. Automation optimizes surface throughput and data links taxi instructions to aircraft. The taxi instructions include the 2D route. Pilot uses onboard displays of taxi route and guidance to efficiently and safely follow taxi instructions. Surface optimization automation includes activities such as runway snow removal, aircraft de-icing, and runway reconfiguration.
NAS Operational Improvements	Enhanced Tower Data Link System with Coded Taxi Clearance	Digital data communication between aircraft and air navigation service provider (ANSP) is used to exchange clearances, amendments, requests, NAS status, weather information, and surface movement instructions. At specified airports data communications is the primary means of communication between ANSP and equipped aircraft.
NAS Operational Improvements	Integrated Arrival/Departure Management	Air navigation service provider (ANSP) decision support tools schedule and stage arrivals and departures based on airport demand, aircraft capabilities, and gate assignments. RNP/RNAV equipped aircraft are procedurally separated into and out of high-density airports.
NAS Operational Improvements	Use Data Messaging to Provide Flow and Taxi Assignments	Surface traffic management incorporates flow and taxi instructions into data messages and delivers them to the flight deck. At high-density airports clearances and amendments, requests, NAS status, airport flows, weather information, and surface movement instructions are issued via data communications.

3.7.6.8.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Super-Density Arrival/Departure Operations	With increasing demand, an even greater need exists to achieve peak throughput performance at the busiest airports and in the busiest airspace. New procedures to improve airport surface movements, reduce spacing and separation requirements in place today, and better manage overall flows in and out of busy metropolitan airspace provide maximum use of the highest-demand airports. Airport terminals also maximize efficiency of egress and ingress, matching passenger and cargo flow to airside throughput while maintaining safety and security levels.
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.

Type	Name	Description
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Inbound Correspondence	

3.7.6.8.4 NextGen Future Solutions

3.7.6.9 Request Preflight Taxi Clearance (7.1.1.3)

3.7.6.9.1 Description

This activity is the request approval for taxiing an aircraft onto the movement area during the hours of Airport Traffic Control Tower Operations.

3.7.6.9.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Surface Management Operations - Level 2A	Efficiency of surface traffic movement is increased through the use of automation, on-board displays and data link of departure taxi instructions prior to pushback to properly equipped aircraft to reduce delay, environmental impacts and operational errors. Automation optimizes surface throughput and data links taxi instructions to aircraft. The taxi instructions include the 2D route. Pilot uses onboard displays of taxi route and guidance to efficiently and safely follow taxi instructions. Surface optimization automation includes activities such as runway snow removal, aircraft de-icing, and runway reconfiguration.
NextGen Operational Improvements	Surface Management Operations - Level 3	Aircraft and ground vehicle movement on airports in low visibility conditions is guided by moving map displays, CDTI, ADS-B (for flight vehicles), and a GSE Cooperative Surveillance System (for ground support equipment). Safety and efficiency of operations at some airports will also be enhanced by intelligent signage on the ground. Policy issue: Will this equipage be mandatory for access to some high-density airports during peak traffic times in low-visibility conditions, or will equipped aircraft be given priority access in low-visibility conditions but unequipped aircraft will be accommodated, or is this equipage simply optional. Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) some airports (Segment 2) b) OEP airports (Segment 3) c) top 100 airports (Segment 4) d) all commercial airports (Segment 6)
NAS Operational Improvements	Use Data Messaging to Provide Flow and Taxi Assignments	Surface traffic management incorporates flow and taxi instructions into data messages and delivers them to the flight deck. At high-density airports clearances and amendments, requests, NAS status, airport flows, weather information, and surface movement instructions are issued via data communications.

3.7.6.9.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Super-Density Arrival/Departure Operations	With increasing demand, an even greater need exists to achieve peak throughput performance at the busiest airports and in the busiest airspace. New procedures to improve airport surface movements, reduce spacing and separation requirements in place today, and better manage overall flows in and out of busy metropolitan airspace provide maximum use of the highest-demand airports. Airport terminals also maximize efficiency of egress and ingress, matching passenger and cargo flow to airside throughput while maintaining safety and security levels.
BRM Sub-Function	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.

3.7.6.9.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Request Pre-Flight Taxi Clearance	An operational activity in which Pilots request approval for taxiing an aircraft onto the movement area during the hours an Airport Traffic Control Tower is in operation.

3.7.6.10 Pushback (7.1.1.4)

3.7.6.10.1 Description

This activity is the aircraft pushing back from the parking spot.

3.7.6.10.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Surface Management Operations - Level 1	This OI enhances surface operations to reduce delay and environmental impacts at target airports to manage surface traffic (aircraft and GSE) and generate taxi instructions.
NextGen Operational Improvements	Surface Management Operations - Level 2A	Efficiency of surface traffic movement is increased through the use of automation, on-board displays and data link of departure taxi instructions prior to pushback to properly equipped aircraft to reduce delay, environmental impacts and operational errors. Automation optimizes surface throughput and data links taxi instructions to aircraft. The taxi instructions include the 2D route. Pilot uses onboard displays of taxi route and guidance to efficiently and safely follow taxi instructions. Surface optimization automation includes activities such as runway snow removal, aircraft de-icing, and runway reconfiguration.

Type	Name	Description
NextGen Operational Improvements	Surface Management Operations - Level 2B	This OI increases efficiency and safety of surface traffic movement, with corresponding reduction in environmental impacts. Efficiency of surface movement is increased through the use of automation, on-board displays and data link of taxi instructions on arrival to properly equipped aircraft to reduce delay and environmental impacts and improve safety. This OI assumes development of surface automation that is fully integrated with airborne operations and applies this to surface management operations. This OI is an extension of OI 321 and contains those improvements as well.
NextGen Operational Improvements	Surface Management Operations - Level 3	Aircraft and ground vehicle movement on airports in low visibility conditions is guided by moving map displays, CDTI, ADS-B (for flight vehicles), and a GSE Cooperative Surveillance System (for ground support equipment). Safety and efficiency of operations at some airports will also be enhanced by intelligent signage on the ground. Policy issue: Will this equipage be mandatory for access to some high-density airports during peak traffic times in low-visibility conditions, or will equipped aircraft be given priority access in low-visibility conditions but unequipped aircraft will be accommodated, or is this equipage simply optional. Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) some airports (Segment 2) b) OEP airports (Segment 3) c) top 100 airports (Segment 4) d) all commercial airports (Segment 6)
NextGen Operational Improvements	Surface Management Operations - Level 4	Aircraft and ground vehicle movement on airports in zero/zero visibility conditions is guided by moving map displays, CDTI, ADS-B (flight vehicles), and a GSE Cooperative Surveillance System (for ground vehicles). Requires all present aircraft and ground vehicles to have cooperative surveillance (ADS-B out). Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) OEP airports (Segment 5) b) top 100 airports (Segment 6) c) all commercial airports (Segment 7)

3.7.6.10.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.

3.7.6.10.4 NextGen Future Solutions

3.7.6.11 Execute Taxi Preflight Operations (7.1.1.5)

3.7.6.11.1 Description

This activity in which the aircraft/flight operator follows taxiing instructions.

3.7.6.11.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Surface Management Operations - Level 2A	Efficiency of surface traffic movement is increased through the use of automation, on-board displays and data link of departure taxi instructions prior to pushback to properly equipped aircraft to reduce delay, environmental impacts and operational errors. Automation optimizes surface throughput and data links taxi instructions to aircraft. The taxi instructions include the 2D route. Pilot uses onboard displays of taxi route and guidance to efficiently and safely follow taxi instructions. Surface optimization automation includes activities such as runway snow removal, aircraft de-icing, and runway reconfiguration.
NextGen Operational Improvements	Surface Management Operations - Level 3	Aircraft and ground vehicle movement on airports in low visibility conditions is guided by moving map displays, CDTI, ADS-B (for flight vehicles), and a GSE Cooperative Surveillance System (for ground support equipment). Safety and efficiency of operations at some airports will also be enhanced by intelligent signage on the ground. Policy issue: Will this equipage be mandatory for access to some high-density airports during peak traffic times in low-visibility conditions, or will equipped aircraft be given priority access in low-visibility conditions but unequipped aircraft will be accommodated, or is this equipage simply optional. Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) some airports (Segment 2) b) OEP airports (Segment 3) c) top 100 airports (Segment 4) d) all commercial airports (Segment 6)

3.7.6.11.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
Key Concept	Equivalent Visual Operations (EVO)	Improved information availability allows aircraft to conduct operations without regard for visibility or direct visual observation. For aircraft, this capability, in combination with PNT, enables increased accessibility, both on the airport surface and during arrival and departure operations. This capability also enables those providing services at airports (such as ATM or other ramp services) to provide services in all visibility conditions, leading to more predictable and efficient operations.
Key Concept	Super-Density Arrival/Departure Operations	With increasing demand, an even greater need exists to achieve peak throughput performance at the busiest airports and in the busiest airspace. New procedures to improve airport surface movements, reduce spacing and separation requirements in place today, and better manage overall flows in and out of busy metropolitan airspace provide maximum use of the highest-demand airports. Airport terminals also maximize efficiency of egress and ingress, matching passenger and cargo flow to airside throughput while maintaining safety and security levels.
BRM Sub-Function	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.

3.7.6.11.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Execute Taxi Pre-Flight Operation	The operational activity in which pilots follow the taxiing instructions issued.

3.7.6.12 Report Flight Readiness (7.1.1.6)

3.7.6.12.1 Description

This activity reports to the contacting tower at the runway hold-short line indicating the aircrafts readiness to depart

3.7.6.12.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Surface Management Operations - Level 2A	Efficiency of surface traffic movement is increased through the use of automation, on-board displays and data link of departure taxi instructions prior to pushback to properly equipped aircraft to reduce delay, environmental impacts and operational errors. Automation optimizes surface throughput and data links taxi instructions to aircraft. The taxi instructions include the 2D route. Pilot uses onboard displays of taxi route and guidance to efficiently and safely follow taxi instructions. Surface optimization automation includes activities such as runway snow removal, aircraft de-icing, and runway reconfiguration.
NextGen Operational Improvements	Surface Management Operations - Level 3	Aircraft and ground vehicle movement on airports in low visibility conditions is guided by moving map displays, CDTI, ADS-B (for flight vehicles), and a GSE Cooperative Surveillance System (for ground support equipment). Safety and efficiency of operations at some airports will also be enhanced by intelligent signage on the ground. Policy issue: Will this equipage be mandatory for access to some high-density airports during peak traffic times in low-visibility conditions, or will equipped aircraft be given priority access in low-visibility conditions but unequipped aircraft will be accommodated, or is this equipage simply optional. Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) some airports (Segment 2) b) OEP airports (Segment 3) c) top 100 airports (Segment 4) d) all commercial airports (Segment 6)

3.7.6.12.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.
SRM Service Component	Voice Communications	Defines the set of capabilities that provide telephony or other voice communications.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.
SRM Service Component	Inbound Correspondence	

3.7.6.12.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Report Flight Readiness	Pilot initial report on contacting tower at the runway hold-short line indicating the aircraft's redness to depart.

3.7.6.13 Conduct Post Arrival Operations (7.1.2)

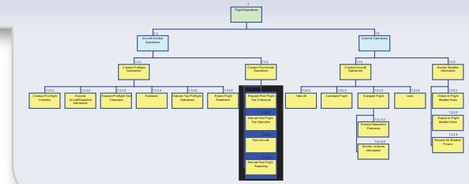
3.7.6.13.1 Description

This activity performs the operations necessary by the flight operator/flight crew after landing and when clear of the runway.

Flight Operations A7

Aircraft Surface Operations A7.1

Conduct Post Arrival Operations A7.1.2



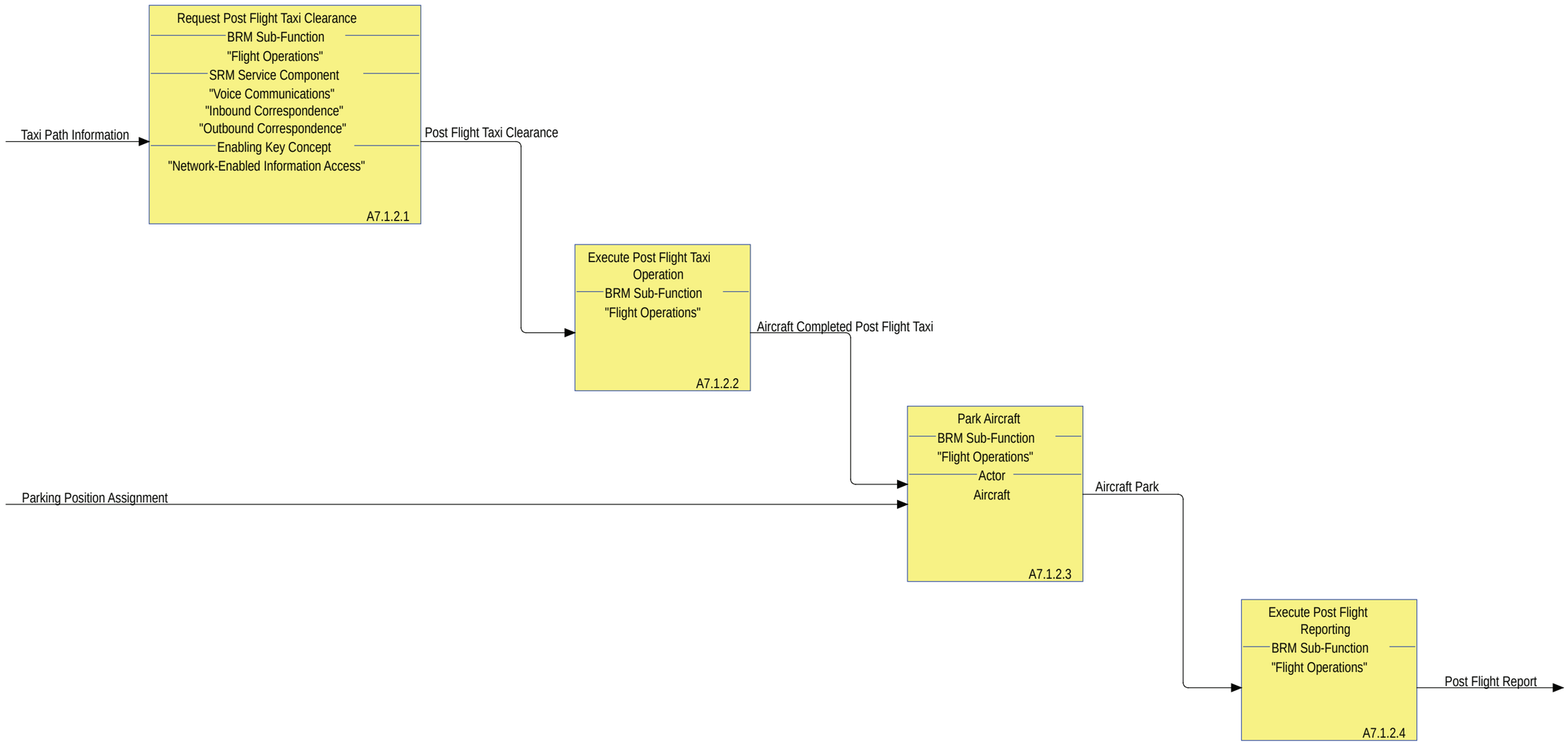


Figure 83 - 7.1.2 Conduct Post Arrival Operations Activity Model Diagram

3.7.6.14 Request Post Flight Taxi Clearance (7.1.2.1)

3.7.6.14.1 Description

This activity is the request for approval for taxiing a post-flight aircraft onto the movement area during the hours an Airport Control Tower is in operation.

3.7.6.14.2 JPDO Support Alignment

Type	Name	Description
NAS Operational Improvements	Use Data Messaging to Provide Flow and Taxi Assignments	Surface traffic management incorporates flow and taxi instructions into data messages and delivers them to the flight deck. At high-density airports clearances and amendments, requests, NAS status, airport flows, weather information, and surface movement instructions are issued via data communications.

3.7.6.14.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
CONOPS	2.6 TRANSFORMED FLIGHT OPERATIONS	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.
SRM Service Component	Voice Communications	Defines the set of capabilities that provide telephony or other voice communications.
SRM Service Component	Outbound Correspondence	Defines the set of capabilities that manage internallly initiated communication between an organization and its stakeholders.
SRM Service Component	Inbound Correspondence	

3.7.6.14.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Request Post-Flight Taxi Clearance	An operational activity in which Pilots must always request approval for taxiing a post-flight aircraft onto the movement area during the hours an Airport Traffic Control Tower is in operation.

3.7.6.15 Execute Post Flight Taxi Operation (7.1.2.2)

3.7.6.15.1 Description

This activity follows the post flight taxiing instructions issued

3.7.6.15.2 JPDO Support Alignment

3.7.6.15.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
BRM Sub-Function	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.

3.7.6.15.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Execute Post-Flight Taxi Operation	The operational activity in which pilots follow the post-flight taxiing instructions issued.

3.7.6.16 Park Aircraft (7.1.2.3)

3.7.6.16.1 Description

This activity is the parking of the aircraft in the assigned parking spot

3.7.6.16.2 JPDO Support Alignment

3.7.6.16.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.

Type	Name	Description
BRM Sub-Function	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.

3.7.6.16.4 NextGen Future Solutions

3.7.6.17 Execute Post Flight Reporting (7.1.2.4)

3.7.6.17.1 Description

This activity is in case some VFR aircraft, flight operators must cancel their VFR clearance with either the Tower or the local FSS after their flight is complete.

3.7.6.17.2 JPDO Support Alignment

3.7.6.17.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
BRM Sub-Function	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.

3.7.6.17.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Execute Post Flight Reporting	In the case of some VFR aircraft, pilots must cancel their VFR clearence with either the Tower or the local FSS after their flight is complete.

3.7.6.18 Airborne Operations (7.2)

3.7.6.18.1 Description

This activity provides the aircraft airborne operations with and without 4DT Navigation. Aircraft may perform autonomous operations, monitor weather and other airspace events to negotiate the best flight path.

3.7.6.18.2 Purpose

The purpose of Airborne Operations is to meet the mission of the flight. The minimum capability for operating in any managed airspace is cooperative surveillance, the ability to perform RNAV operations (if operating under instrument flight rules [IFR]), and communication with the ANSP via voice radio. In airspace where TBO is used, the minimum capability includes the ability to conduct RNP operations combined with the exchange (via a digital data link) and execution of precision 4DTs. Some airspace requires the ability to perform delegated or self-separation operations. Many operators also are able to communicate between aircraft and their flight operations center (FOC) for exchanging flight planning and trajectory information, aircraft performance and maintenance data, flight following information, and passenger-related information. Flight planning systems also have a range of capabilities, including the ability to exchange and negotiate information supporting the C-ATM process.

Flight Operations A7

Airborne Operations A7.2

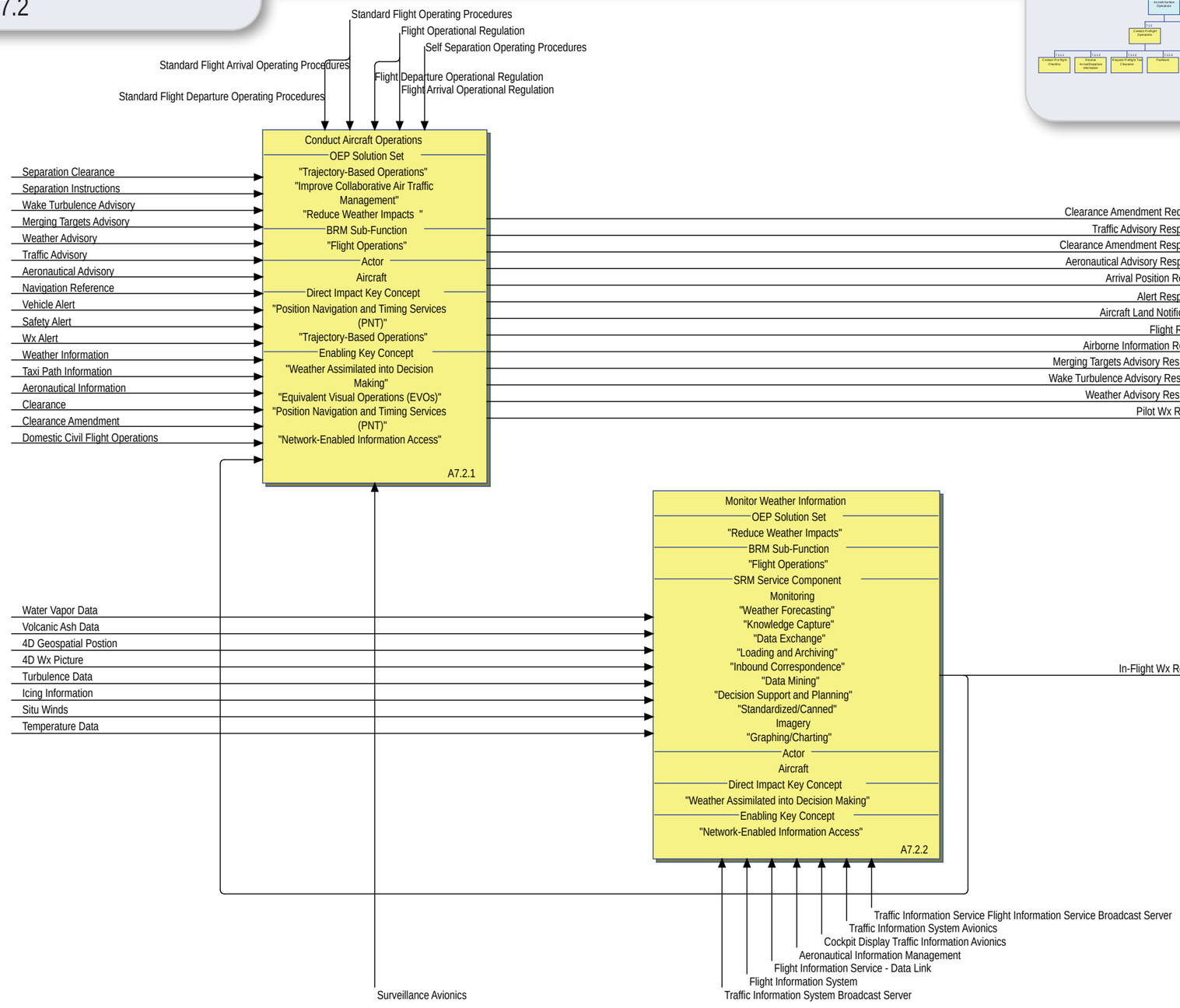


Figure 84 - 7.2 Airborne Operations Activity Model Diagram

3.7.6.19 Conduct Aircraft Operations (7.2.1)

3.7.6.19.1 Description

This activity conducts the aircraft operation, including receiving separation instructions and performing in near-space operations.

3.7.6.19.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Trajectory-Based Operations	Trajectory Based Operations are a shift from clearance based control to trajectory based control. Aircraft will fly negotiated trajectories and control moves to management by trajectory. The focus of these capabilities are on environments/airspace in which all aircraft are equipped to fully participate in trajectory based operations. Included under TBO are operational paradigms and airspace structures which support the move to trajectory based operations. Mixed environments and the advantages that the procedures and tools required for trajectory based operations and airspace are included either as transition steps to the end NextGen Trajectory based operations objectives. It is also assumed that the system will use the capabilities to provide some advantage in environments which will remain mixed.
OEP Solution Set	Improve Collaborative Air Traffic Management	Collaborative ATM covers the both the strategic and tactical interactions with the customers to manage demand when the desired use of capacity can not be accommodated. C-ATM includes the flow programs as well as collaboration on procedures that will establish balance by shifting demand to less desirable capacity alternatives e.g. routings, altitudes, times.
OEP Solution Set	Reduce Weather Impacts	Reduced weather impact is a closely kin to the other capabilities. The focus here is in specific actions to improve the forecast or the use of forecast. Development if the weather product and ascertaining impact on individual flights and flows is a reduced weather impact issue. Note: The actual allocation in the response to individual flights etc. is C-ATM. The detection of the wake for purposes of changing pair-wise separation is reduce weather impact, inclusion of that data into traffic management tools for arrivals and departures would be high-density arr/departure terminals and airports.
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management	Arrival and departure flows and surface operations are more effectively planned and managed through integrated advanced ANSP automation. This OI develops an Integrated Arrival/Departure and Surface Traffic Flow Manager for improved decision making and flow management. These decision support tools enable ANSP flow managers to work collaboratively with flight operators and with ANSP flow contingency managers to effectively manage high-capacity arrival and departure flows in the presence of various weather conditions. Real-time information distribution enhances operational efficiencies, such as distribution of runway braking action reports. Improved surveillance, automation, and information sharing enhance efficiency of terminal area operations. The ANSP can safely make more efficient use of runways through real-time depiction in the tower of the location and intent of arriving and departing aircraft, as well as any aircraft intending to cross an active runway.
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management for Metroplex	Metroplex traffic flow is more effectively managed through terminal area and surface scheduling automation for increased regional capacity. Metroplex planners at major terminal areas optimize arrival/ departure and surface scheduling for increased regional capacity. TBO is a key element of super-density procedures, allowing the ANSP to maximize access for all traffic, while adhering to the principle of giving advantage to those aircraft with advanced capabilities that support the ATM system. Metroplex Trajectory Management assigns each arriving aircraft to an appropriate runway, arrival stream, and place in sequence.
NextGen Operational Improvements	Self-separation and flexible routing airspace	In self-separation airspace, capable aircraft are responsible for separating themselves from one another, and the ANSP provides no separation services, enabling preferred operator routing with increased ANSP productivity. Research will determine whether the ANSP will provide any traffic flow management services within self-separation airspace. Aircraft must meet equipage requirements to enter self-separation airspace, including transmission of trajectory intent information through cooperative surveillance. Transition into self-separation airspace includes an explicit hand-off and acceptance of separation responsibility by the aircraft. Transition into ANSP-managed airspace is facilitated through assigned waypoints with CTAs, allowing the ANSP to sequence and schedule entry into congested airspace, and self-separating aircraft are responsible for meeting assigned CTAs. Self-separating aircraft execute standardized algorithms to detect and provide resolutions to conflicts. Right-of-way rules determine which aircraft should maneuver to maintain separation when a conflict is predicted. Contingency procedures ensure safe separation in the event of failures and operational errors.
NextGen Operational Improvements	Trajectory-Based Traffic Management - Level 1	All in-flight aircraft operating in Trajectory-Based Airspace are managed by 4D trajectory in en route climb, cruise, and descent. This may be considered a staging of the 4D trajectory-based capability. This would require the ability to calculate, negotiate, and perform conformance monitoring by ANSPs, including the integration of separation assurance and traffic management (time constraints, e.g., RTAs). This will be enabled by the trajectory exchange through electronic data communications. In high-density or high-complexity airspace, precise 4DTs will be used, dramatically reducing the uncertainty of an aircraft's future flight path, in terms of predicted spatial position (latitude, longitude, and altitude) and times along points in its path. This enhances the capacity and throughput of the airspace to accommodate high levels of demand.
NAS Operational Improvements	Automation Support for Variable Separation	Performance-based services use variable separation standards according to aircraft geometry and crew capabilities. Users and air navigation service providers (ANSP) have a common understanding of which variable separation is being used.
NAS Operational Improvements	Delegated Responsibility for Horizontal Separation	Enhanced surveillance and new procedures enable air navigation service providers (ANSP) to delegate aircraft-to-aircraft separation. Improved avionics and traffic information broadcast provide common situational awareness to the flight deck. Pilots implement delegated separation between equipped aircraft using established procedures.
NAS Operational Improvements	Flexible Entry for Oceanic Tracks	Flexible entry times into oceanic tracks or flows allow greater use of user-preferred trajectories.
NAS Operational Improvements	Increase Capacity and Efficiency Using RNAV and RNP	Area Navigation (RNAV)/Required Navigational Performance (RNP) enables reduced separation requirements between aircraft trajectories and flows. RNAV/RNP and trajectory-based operations (TBO), combined with airspace changes, increase airspace efficiency and capacity.
NAS Operational Improvements	NextGen Oceanic Procedures	Enhanced communication, surveillance, and flight deck avionics capabilities enable reduced oceanic separation minima when operationally advantageous and aircraft meet required total system performance requirements. Data communications between aircraft and between the aircraft and the air navigation service provider (ANSP) enable real-time control instructions by the ANSP and aircraft-to-aircraft delegation of separation authority. Accurate and immediate feedback of routing or altitude changes provides immediate acknowledgement for separation assurance, trajectory changes, and deviations around air traffic or weather.
NAS Operational Improvements	Oceanic Pairwise Maneuvers	Air navigation service provider (ANSP) and flight deck automation enhancements improve communication, navigation, and surveillance coverage in the oceanic domain. Aircraft transmission of position, velocity, and intent information allows the delegation of aircraft-to-aircraft separation when operationally advantageous for climbs, descents, crossing, and merging.
NAS Operational Improvements	Point-in-Space Metering	Air Navigation Service Providers (ANSP) use scheduling tools and trajectory based operations (TBO)/four-dimensional trajectory (4DT) agreements to flow traffic into flow-constrained areas. This assures smooth entry into the airspace and reduces capacity restrictions.
NAS Operational Improvements	Reduce Horizontal Separation Standards -3 Miles	The Air Navigation Service Provider (ANSP) provides reduced and more efficient separation between aircraft where the required performance criteria are met, regardless of location.
NAS Operational Improvements	Tactical Trajectory Management	Tactical trajectory management adjusts individual aircraft within a flow to provide efficient trajectories, manage complexity, and ensure separation assurance. Flight deck and/or air navigation service provider (ANSP) automation resolves pair-wise conflicts. The ANSP role evolves into managing trajectory-based airspace by maintaining largely conflict-free, user-preferred flows. This evolution allows the flexibility required to maximize capacity and en route throughput.

Type	Name	Description
NAS Operational Improvements	Trajectory-Based Airspace	Trajectory based airspace (TBA) and automation enable air navigation service providers (ANSPs) to manage traffic flows without specific local knowledge. ANSPs are certified for airspace, not for specific local regions. ANSP automation includes decision support tools, conflict resolution, and aids for local knowledge.
NAS Operational Improvements	Use Improved Terrain Information to Share	Satellite position reports provide actual aircraft position on cockpit displays of moving maps with geographical data. Other means of displaying terrain information includes enhanced vision systems and virtual displays. These avionics systems increase pilot situational awareness of the aircraft-to-ground environment, reduce controlled flight into terrain, and enable lower minimum en route altitudes on designated routes for equipped aircraft.
NAS Operational Improvements	Wake Vortex Integrated to Flow	Air navigation service provider (ANSP) automation and decision support tools incorporate aircraft wake characteristics into arrival/departure flows, runway staging, and taxi assignments to enhance efficiency at high-density airports. Arrival and departure flows are planned and executed based on a comprehensive view of real time airport operations. Automation provides optimal departure staging and arrival sequencing based on aircraft wake and airborne performance characteristics.

3.7.6.19.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
ICAO ATMCP Requirement	R 43	Consistent with available ATM system resources the airspace users shall have the capability to fly dynamic user-preferred 4D trajectories.
ICAO ATMCP Requirement	R 44	The airspace users shall have the capability to generate, negotiate and adhere to user-preferred 4D trajectories
CONOPS	2 AIR TRAFFIC MANAGEMENT OPERATIONS	
CONOPS	2.6 TRANSFORMED FLIGHT OPERATIONS	
Key Concept	Equivalent Visual Operations (EVO)	Improved information availability allows aircraft to conduct operations without regard for visibility or direct visual observation. For aircraft, this capability, in combination with PNT, enables increased accessibility, both on the airport surface and during arrival and departure operations. This capability also enables those providing services at airports (such as ATM or other ramp services) to provide services in all visibility conditions, leading to more predictable and efficient operations.
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Positioning, Navigation, and Timing (PNT) Services	PNT services are provided where and when needed, in accordance with demand and safety considerations, to enable reliable aircraft operations in nearly all conditions. Instead of being driven by the geographic location of a ground-based navigational aid (NAVAID), PNT services allow operators to define the desired flight path based on their own objectives.
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
Key Concept	Weather Assimilated into Decisionmaking	By assimilating weather into decisionmaking, weather information becomes an enabler for optimizing NextGen operations. Directly applying probabilistic weather information to ATM decision tools increases the effective use of weather information and minimizes the adverse effects of weather on operations.
BRM Sub-Function	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.

3.7.6.19.4 NextGen Future Solutions

3.7.6.20 Monitor Weather Information (7.2.2)

3.7.6.20.1 Description

This activity provide access to weather information sources, which are used to populate the official weather information system, and are certified to be valid, current information. The weather information is monitored with a set of tolls and processes to allow for continuous forecasts.

3.7.6.20.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Reduce Weather Impacts	Reduced weather impact is a closely kin to the other capabilities. The focus here is in specific actions to improve the forecast or the use of forecast. Development if the weather product and ascertaining impact on individual flights and flows is a reduced weather impact issue. Note: The actual allocation in the response to individual flights etc. is C-ATM. The detection of the wake for purposes of changing pair-wise separation is reduce weather impact, inclusion of that data into traffic management tools for arrivals and departures would be high-density arr/departure terminals and airports.
NextGen Operational Improvements	Electronic VFR Operations for dependent parallel or converging runways	This OI allows additional reduction of arrival lateral spacing for very closely spaced parallel runways at OEP airports. This includes approaches with altitude offsets at suitable airports, and co-altitude approaches where necessary. This OI may result in more capacity than is achieved today, i.e., VMC rates may increase. This OI applies to runways that are closer than 2500 ft centerline to centerline and converging runways. This enables new runways to be built much closer to existing runways, potentially reducing the cost for new runway construction. Avoidance of wake vortices is an important consideration. Waterfall deployment: a) At selected locations b) All applicable OEP airports (2018+)

Type	Name	Description
NextGen Operational Improvements	Electronic VFR Operations for independent parallel or converging runways	This OI allows maintaining VMC arrival and departure rates in IMC through use of onboard displays and alerting for independent parallel or converging runways. Using precision navigation, cooperative surveillance, and onboard algorithms and displays allows the reduction of lateral separation requirements for converging and parallel runway operations in IMC. Includes independent approaches to converging and parallel runways that are 4300 - 2500 ft centerline distances. The timing of implementation of this OI is strongly dependent on when an airline decides this is important and steps forward to advocate for it. Waterfall deployment: a) At selected locations b) All applicable OEP airports (2018+)
NextGen Operational Improvements	All weather airport access	All-weather airport access is available where needed through a combination of complementary airborne and ground functionality to aid the pilot in approach guidance and acquisition of the runway environment for safe operations. All weather (Cat IIIc) approaches are available for all users where needed through a combination of complementary airborne and ground equipage. Implementation may involve on-board synthetic and enhanced vision systems, and ground-based augmentation systems (GBAS), and low-cost runway/taxiway lighting.
NextGen Operational Improvements	Reduced human errors in detection and management of malfunctions and off-nominal	Human errors are reduced in detecting and managing malfunctions through off-nominal condition detection and alerting systems. System health monitoring, management, and interface technologies are incorporated in airborne and ground-based systems.
NextGen Operational Improvements	Reduced weather-related incidents	Weather-related incidents are reduced through equipage of aircraft with cockpit weather system technologies for enhanced situational awareness and decision making. Aircraft are equipped with icing detection and avoidance technologies, icing tolerant technologies, icing computational tools, airborne weather reporting sensor technologies, weather information data link systems technologies for ground-to-air dissemination, airborne weather reporting data link systems for air-to-ground and air-to-air dissemination, and turbulence detection, warning and alerting technologies. Improvements are needed in icing experimental methods, icing experimental databases, icing atmospheric characterization technologies, and icing education and training tools.
NextGen Operational Improvements	Surface Management Operations - Level 3	Aircraft and ground vehicle movement on airports in low visibility conditions is guided by moving map displays, CDTI, ADS-B (for flight vehicles), and a GSE Cooperative Surveillance System (for ground support equipment). Safety and efficiency of operations at some airports will also be enhanced by intelligent signage on the ground. Policy issue: Will this equipage be mandatory for access to some high-density airports during peak traffic times in low-visibility conditions, or will equipped aircraft be given priority access in low-visibility conditions but unequipped aircraft will be accommodated, or is this equipage simply optional. Research issue/policy question: responsibility for all aspects of separation for operator vs ANSP and humans vs automation. Waterfall deployment: a) some airports (Segment 2) b) OEP airports (Segment 3) c) top 100 airports (Segment 4) d) all commercial airports (Segment 6)
NAS Operational Improvements	Automatic Hazardous Weather Alert Notification	Hazardous weather alerts are automatically sent to NAS users and air navigation service providers (ANSPs) via voice and data communications. Hazardous weather impacting NAS operations is detected, forecast, reported, and disseminated in real-time. Equipped aircraft and ground and space-based systems provide timely and accurate hazardous weather information.
NAS Operational Improvements	Deploy FIS-B Nationally	Flight Information Service-Broadcast (FIS-B) is deployed to provide weather services on the airport surface, in terminal and en route airspace to equipped aircraft. FIS-B improves flight deck situational awareness relative to hazardous weather and reduces frequency congestion. The air navigation service provider (ANSP) provides weather advisories to unequipped aircraft via other means.

Type	Name	Description
NAS Operational Improvements	Full Operational Weather Capability	Reducing the impact of weather on NAS operations enhances NAS performance. NextGen network enabled weather (NNEW) facilitates widespread distribution and integration of weather products into ground and airborne decision support systems, enabling collaborative and dynamic NAS decision-making.
NAS Operational Improvements	Near Real Time Dissemination of Weather Information to All Ground and Air Users	NextGen Network Enabled Weather (NNEW) provides near real-time notification of changing weather situations to strategic and tactical decision-makers. The update frequency of weather information is commensurate with the need to react to unanticipated, rapidly changing circumstances. Near real-time weather information integrated into decision-support automation systems enables airspace or configuration changes (e.g., realigning sectors, flows, or runway configurations) based on changing or forecast weather conditions.
NAS Operational Improvements	Turbulence and Icing Available on Meteorological Data Collection and Reporting S	The accuracy of weather forecast model output (e.g., in-flight icing and turbulence forecasts) improves as additional atmospheric conditions (humidity, turbulence, winds aloft, etc.) are provided by expanded data sources. Satellite and airborne nodes actively participate in collecting and transmitting network-enabled weather observations to ground-based systems for integration with other weather information.
NAS Operational Improvements	Wake Vortex Transport Prediction	Predicting the dissipation rate, 3-D movement and speed of wake vortices increases airport capacity by enabling reduced separation minima. Air navigation service provider (ANSP) automation and cockpit displays enable a common view of wake transport location. This capability enables reduced separation during periods of peak demand at airports conducting high-density operations.

3.7.6.20.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
CONOPS	5.3 WEATHER INFORMATION SERVICES	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Weather Assimilated into Decisionmaking	By assimilating weather into decisionmaking, weather information becomes an enabler for optimizing NextGen operations. Directly applying probabilistic weather information to ATM decision tools increases the effective use of weather information and minimizes the adverse effects of weather on operations.
BRM Sub-Function	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Graphing/Charting	Defines the set of capabilities that support the presentation of information in the form of diagrams or tables.
SRM Service Component	Imagery	Defines the set of capabilities that support the creation of film or electronic images from pictures or paper forms.

Type	Name	Description
SRM Service Component	Data Mining	Defines the set of capabilities that provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.
SRM Service Component	Standardized/ Canned	Defines the set of capabilities that support the use of preconceived or pre-written reports.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Weather Forecasting	Defines the set of capabilities that provide stakeholders with a common picture of current (i.e. real-time) and forecasted weather information, including weather attributes organized by horizontal, vertical, altitude, time, and probability components.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Decision Support and Planning	Defines the set of capabilities that support the analysis of information and predict the impact of decisions before they are made.
SRM Service Component	Inbound Correspondence	
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.

3.7.6.20.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Traffic Information System Broadcast Server	TIS/FIS Broadcast Servers are located at 20 ARTCCs & 12 consoidated TRACONs/ICCs. TIS-B is needed unless full ADS-B equipage is achieved. Servers will receive surveillance data (i.e., based on SSR, etc.) for each target aircraft and create TIS-B reports. Servers will receive FIS data from weather processors. The TIS and FIS data will be geographically filtered for the defined service volume of each GBT and TIS data also filtered for only non-ADS-B equipped targets.
FAA Systems	Flight Information System	The Flight Information System (FIS) will provide the automated means for collecting and distributing weather (Service A messages), flight plan data, Pilot Report messages, and other operational information (Service B messages). The Flight Information System (rehosted) will provide a web-enabled means for collecting and distributing the above information to all air traffic facilities.
FAA Systems	Flight Information Service - Data Link	The Flight Information Service - Data Link (FISDL) provides pilots weather, Notices to Airmen (NOTAMs), airfield information and other selected data through a commercial communications service provider (CCSP) operating on very high frequency (VHF) frequencies that the FAA obtained from the Federal Communications Commission (FCC). The FISDL service is being facilitated through a Government-Industry Project Performance Agreement (G-IPPA) allowing a commercial weather service provider (CWSP) to offer graphical and textual FIS/weather products to the cockpit of properly equipped aircraft. This commercially-operated service is being provided as a near-term capability consistent with the FAA FIS Policy Statement of 1998. This CCSP process will be phased out when the FAA is able to offer similar FISDL services through FAA operated data link resources (e.g., via the universal access transceiver (UAT) link using the Broadcast Services Ground Station (BSGS) and Traffic Information Service (TIS)-FIS Broadcast Server mechanism).
NAS Activity	Interpret (ATIS) Information	The activity of evaluating advance nonccontrol airport/terminal area and meteorological information.

3.7.6.21 Conduct Aircraft Operations (7.2.1)

3.7.6.21.1 Description

This activity conducts the aircraft operation, including receiving separation instructions and performing in near-space operations.

Flight Operations A7

Airborne Operations A7.2

Conduct Aircraft Operations A7.2.1

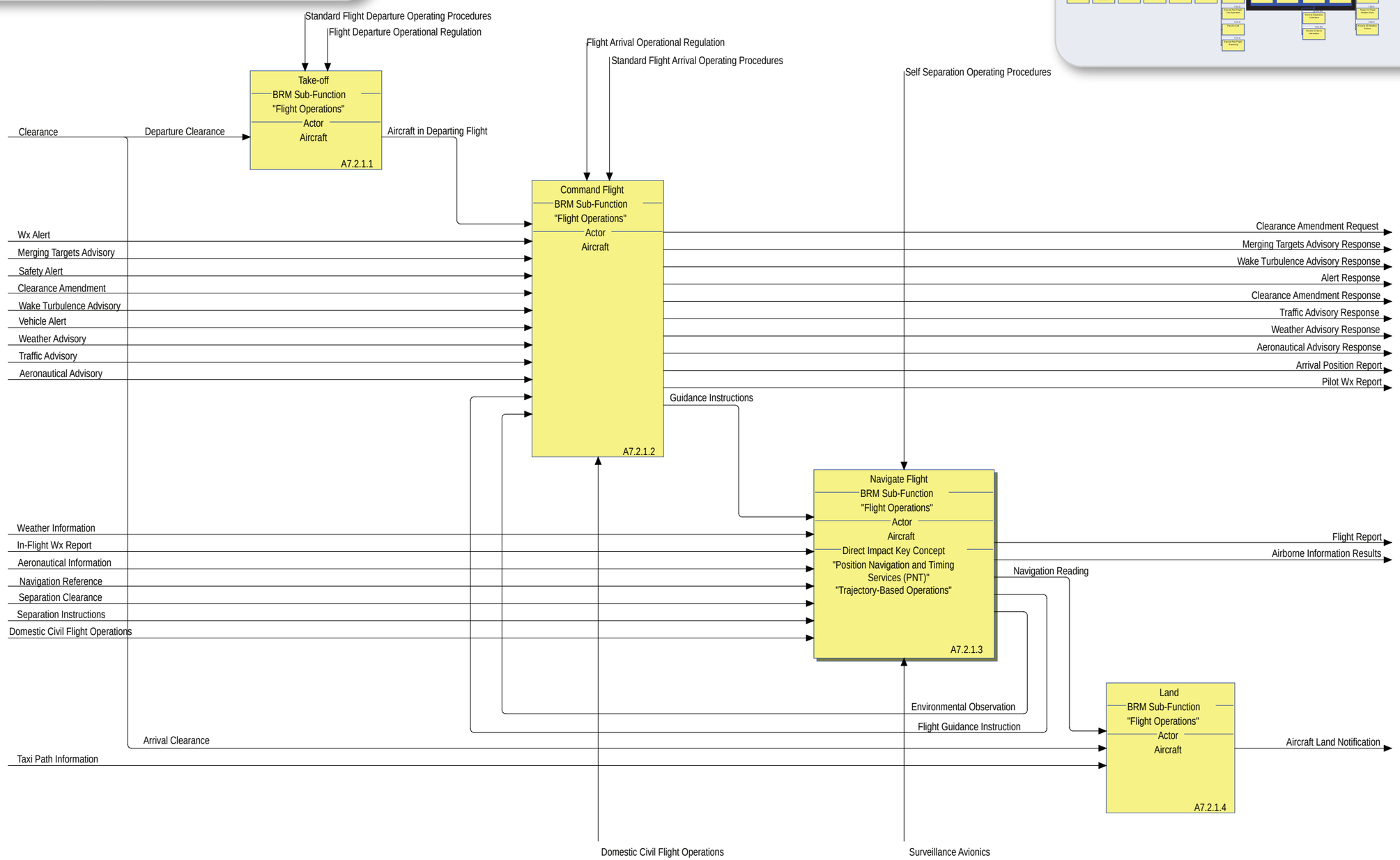


Figure 85 - 7.2.1 Conduct Aircraft Operations Activity Model Diagram

3.7.6.22 Take-off (7.2.1.1)

3.7.6.22.1 Description

This activity is the aircraft taking off

3.7.6.22.2 JPDO Support Alignment

3.7.6.22.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
Key Concept	Equivalent Visual Operations (EVO)	Improved information availability allows aircraft to conduct operations without regard for visibility or direct visual observation. For aircraft, this capability, in combination with PNT, enables increased accessibility, both on the airport surface and during arrival and departure operations. This capability also enables those providing services at airports (such as ATM or other ramp services) to provide services in all visibility conditions, leading to more predictable and efficient operations.
BRM Sub-Function	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.

3.7.6.22.4 NextGen Future Solutions

3.7.6.23 Command Flight (7.2.1.2)

3.7.6.23.1 Description

The activity of managing the flight crew and systems aboard an aircraft, as well as responding to communications and commands from air traffic control.

3.7.6.23.2 JPDO Support Alignment

3.7.6.23.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
CONOPS	2.6 TRANSFORMED FLIGHT OPERATIONS	
BRM Sub-Function	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.

3.7.6.23.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Command Flight	The activity of managing the crew and flight systems aboard an aircraft, as well as responding to communications and commands from air traffic control.

3.7.6.24 Navigate Flight (7.2.1.3)

3.7.6.24.1 Description

This activity is the collaboration of separation clearance and monitoring of airborne information to enable the flight operator to execute the flight.

3.7.6.24.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Increased IMC access-1	Performance-based navigation operations are used to provide greater IMC access to terrain-challenged airports and airports without expensive ground infrastructure. This OI also opens more options for airport access in various meteorological conditions. Waterfall deployment: a) to/from some runways at OEP airports (2009), b) to/from all runway ends at all OEP airports (2011), c) to/from all runways at the top 100 airports (Segment 5), d) to/from all runways serving commercial traffic (Segment 6).
NextGen Operational Improvements	Integrated Arrival/ Departure and Surface Traffic Management	Arrival and departure flows and surface operations are more effectively planned and managed through integrated advanced ANSP automation. This OI develops an Integrated Arrival/Departure and Surface Traffic Flow Manager for improved decision making and flow management. These decision support tools enable ANSP flow managers to work collaboratively with flight operators and with ANSP flow contingency managers to effectively manage high-capacity arrival and departure flows in the presence of various weather conditions. Real-time information distribution enhances operational efficiencies, such as distribution of runway braking action reports. Improved surveillance, automation, and information sharing enhance efficiency of terminal area operations. The ANSP can safely make more efficient use of runways through real-time depiction in the tower of the location and intent of arriving and departing aircraft, as well as any aircraft intending to cross an active runway.
NextGen Operational Improvements	Reduced weather-related incidents	Weather-related incidents are reduced through equipage of aircraft with cockpit weather system technologies for enhanced situational awareness and decision making. Aircraft are equipped with icing detection and avoidance technologies, icing tolerant technologies, icing computational tools, airborne weather reporting sensor technologies, weather information data link systems technologies for ground-to-air dissemination, airborne weather reporting data link systems for air-to-ground and air-to-air dissemination, and turbulence detection, warning and alerting technologies. Improvements are needed in icing experimental methods, icing experimental databases, icing atmospheric characterization technologies, and icing education and training tools.
NextGen Operational Improvements	Trajectory-Based Traffic Management - Level 1	All in-flight aircraft operating in Trajectory-Based Airspace are managed by 4D trajectory in en route climb, cruise, and descent. This may be considered a staging of the 4D trajectory-based capability. This would require the ability to calculate, negotiate, and perform conformance monitoring by ANSPs, including the integration of separation assurance and traffic management (time constraints, e.g., RTAs). This will be enabled by the trajectory exchange through electronic data communications. In high-density or high-complexity airspace, precise 4DTs will be used, dramatically reducing the uncertainty of an aircraft's future flight path, in terms of predicted spatial position (latitude, longitude, and altitude) and times along points in its path. This enhances the capacity and throughput of the airspace to accommodate high levels of demand.

Type	Name	Description
NextGen Operational Improvements	Wake-based arrival/departure spacing management Level 1 - Static	Longitudinal departure spacing requirements are reduced (based on wake vortex drift) for dual-use and closely spaced parallel runways based on ground-based wake vortex drift prediction and detection. This is static reduction, i.e., reduction for periods of perhaps 4 or more hours when persistently favorable conditions are forecast. Ground-based departure controllers use wake vortex avoidance systems (based on wake drift) to achieve the regulatory minimum spacing for aircraft departing on closely spaced parallel runways.
NAS Operational Improvements	Expand Use of Cat II-III Precision Approaches Using GBAS	At specified airports, ground based augmentation systems (GBAS) support precision approaches to Category I, Category II, and Category III minimums for properly equipped runways and aircraft. GBAS supports approach minimums at airports where precision-landing systems cannot meet performance requirements due to terrain, obstacle or other restrictions.
NAS Operational Improvements	Expanded Conflict Resolution via Data Communication	In trajectory-based airspace, decision support tools support the air navigation service provider (ANSP) by identifying conflicts/complexity/density conditions and providing alternatives to resolve the conditions. These alternatives include proposed trajectories that are exchanged with the operator via data communications. This allows multi-step solutions that are not subject to constraints imposed by voice.
NAS Operational Improvements	Improved Management of Airspace for Special Use	Airspace for special use assignments, schedules, coordination, and status changes are conducted automation-to-automation. Changes to status of airspace for special use are readily available for operators and air navigation service providers (ANSP). Status changes are transmitted to the flight deck via voice or data communications. Flight trajectory planning is managed dynamically based on real-time use of airspace.
NAS Operational Improvements	Manage Airspace as Trajectories	The air navigation service provider (ANSP) collaborates with users and develops airspace assignments and flows to accommodate user-requested trajectories based on 4DT. Static airspace assignments are used for limited applications.
NAS Operational Improvements	Use Data Messaging to Provide Flow and Taxi Assignments	Surface traffic management incorporates flow and taxi instructions into data messages and delivers them to the flight deck. At high-density airports clearances and amendments, requests, NAS status, airport flows, weather information, and surface movement instructions are issued via data communications.

3.7.6.24.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
ICAO ATMCP Requirement	R 120	The pre-determined separator shall be the airspace user, unless safety or ATM system design requires a separation provision service
ICAO ATMCP Requirement	R 122	ATM service delivery management shall manage the distribution of the responsibilities for the various services and their seamless performance, including the designation of pre-determined separator for separation provision
CONOPS	2.6 TRANSFORMED FLIGHT OPERATIONS	
Key Concept	Positioning, Navigation, and Timing (PNT) Services	PNT services are provided where and when needed, in accordance with demand and safety considerations, to enable reliable aircraft operations in nearly all conditions. Instead of being driven by the geographic location of a ground-based navigational aid (NAVAID), PNT services allow operators to define the desired flight path based on their own objectives.
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.

3.7.6.24.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Navigate Flight	The activity of the flight crew to operate the aircraft.

3.7.6.25 Land (7.2.1.4)

3.7.6.25.1 Description

This activity is the aircraft landing.

3.7.6.25.2 JPDO Support Alignment

3.7.6.25.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
BRM Sub-Function	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.

3.7.6.25.4 NextGen Future Solutions

3.7.6.26 Navigate Flight (7.2.1.3)

3.7.6.26.1 Description

This activity is the collaboration of separation clearance and monitoring of airborne information to enable the flight operator to execute the flight.

Flight Operations A7

Airborne Operations A7.2

Conduct Aircraft Operations A7.2.1

Navigate Flight A7.2.1.3

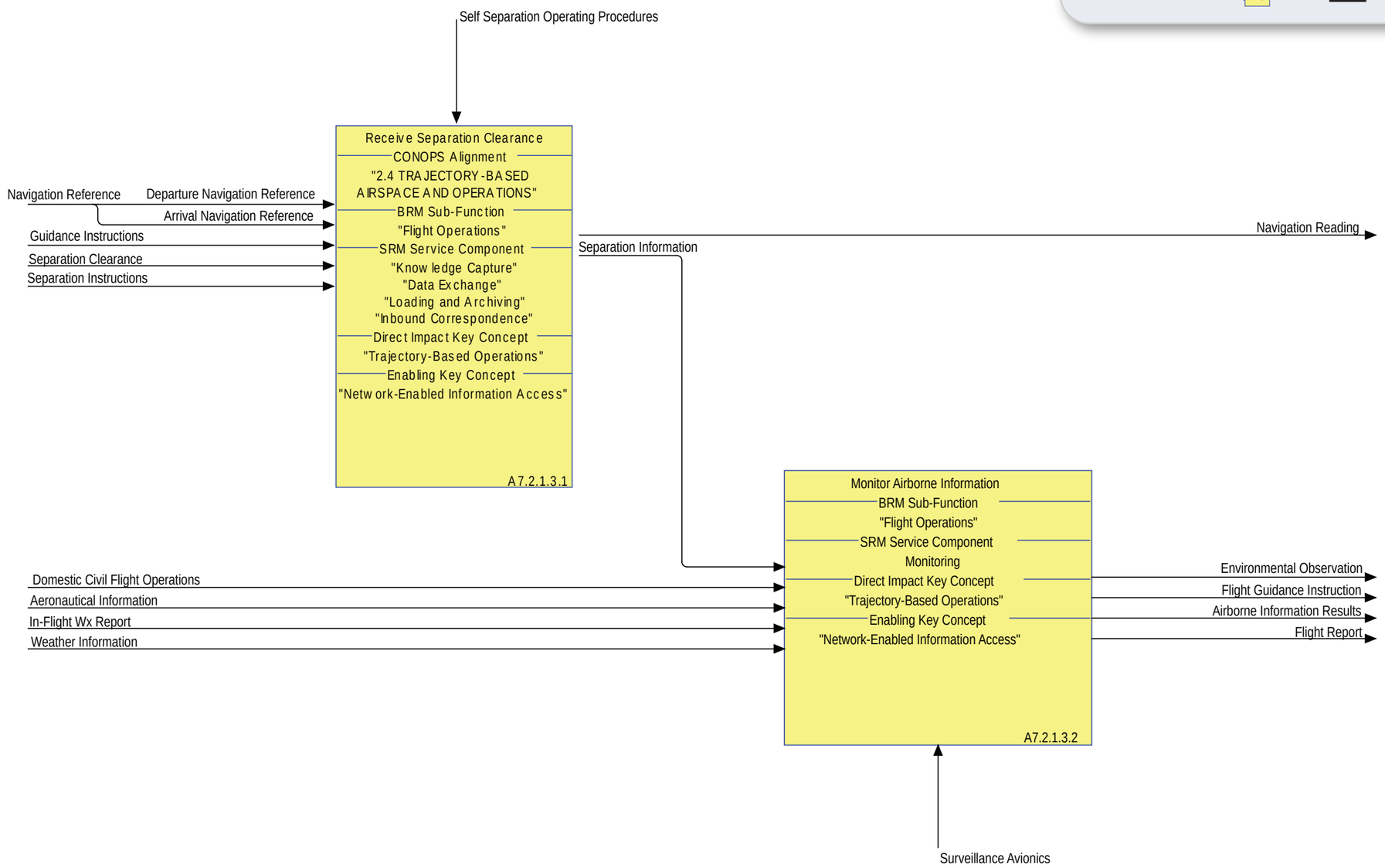


Figure 86 - 7.2.1.3 Navigate Flight Activity Model Diagram

3.7.6.27 Receive Separation Clearance (7.2.1.3.1)

3.7.6.27.1 Description

This activity will receive separation clearances as a result of the delegation of separation, which will allow the aircraft to perform self-separation.

3.7.6.27.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Delegated self-separation - Pair wise	In ANSP-managed airspace, the ANSP delegates pair wise separation tasks to capable aircraft to improve operator routing, enhance operational efficiency, or increase ANSP productivity. The ANSP delegates responsibility to capable aircraft to perform specific separation operations. This includes passing, crossing, turn-behind, and other simple separation tasks that require onboard display of traffic information. This does not include complex separation situations that would require onboard conflict alerting. The ANSP is responsible for separation from all other traffic while the designated aircraft performs the specified maneuver.
NextGen Operational Improvements	Automated Clearance Delivery and Frequency Changes	Controller productivity enhanced through en route data link communication of ATC clearances and frequency handoffs to pilot.
NextGen Operational Improvements	Improved Collaborative Oceanic Routing	Oceanic route efficiency is improved through collaborative negotiation of entry times and track loading and oceanic traffic handling is improved through comparison of current routes against desired profiles to identify beneficial control actions. Aircraft dispatchers and traffic flow managers negotiate oceanic entry times prior to departure. The negotiation includes looking ahead to plan near-term climbs when loading tracks. Oceanic 4D profiles of active flights are continually examined to determine control actions that enhance oceanic capacity while providing improved efficiency within traffic flows. This is an extension of "tailored arrivals," where either a) aircraft send desired profiles (pre-departure and real-time), or b) ground automation predicts desired profiles.
NextGen Operational Improvements	Wake-based arrival/departure spacing management Level 1 - Static	Longitudinal departure spacing requirements are reduced (based on wake vortex drift) for dual-use and closely spaced parallel runways based on ground-based wake vortex drift prediction and detection. This is static reduction, i.e., reduction for periods of perhaps 4 or more hours when persistently favorable conditions are forecast. Ground-based departure controllers use wake vortex avoidance systems (based on wake drift) to achieve the regulatory minimum spacing for aircraft departing on closely spaced parallel runways.

3.7.6.27.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
CONOPS	2.4 TRAJECTORY-BASED AIRSPACE AND OPERATIONS	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Inbound Correspondence	

3.7.6.27.4 NextGen Future Solutions

3.7.6.28 Monitor Airborne Information (7.2.1.3.2)

3.7.6.28.1 Description

This activity will review airspace events, which includes information of potential capacity or flow issues, or changes such as airport status (open, shutdown.)

3.7.6.28.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Electronic VFR Operations for dependent parallel or converging runways	This OI allows additional reduction of arrival lateral spacing for very closely spaced parallel runways at OEP airports. This includes approaches with altitude offsets at suitable airports, and co-altitude approaches where necessary. This OI may result in more capacity than is achieved today, i.e., VMC rates may increase. This OI applies to runways that are closer than 2500 ft centerline to centerline and converging runways. This enables new runways to be built much closer to existing runways, potentially reducing the cost for new runway construction. Avoidance of wake vortices is an important consideration. Waterfall deployment: a) At selected locations b) All applicable OEP airports (2018+)

Type	Name	Description
NextGen Operational Improvements	Electronic VFR Operations for independent parallel or converging runways	This OI allows maintaining VMC arrival and departure rates in IMC through use of onboard displays and alerting for independent parallel or converging runways. Using precision navigation, cooperative surveillance, and onboard algorithms and displays allows the reduction of lateral separation requirements for converging and parallel runway operations in IMC. Includes independent approaches to converging and parallel runways that are 4300 - 2500 ft centerline distances. The timing of implementation of this OI is strongly dependent on when an airline decides this is important and steps forward to advocate for it. Waterfall deployment: a) At selected locations b) All applicable OEP airports (2018+)
NextGen Operational Improvements	Reduced weather-related incidents	Weather-related incidents are reduced through equipage of aircraft with cockpit weather system technologies for enhanced situational awareness and decision making. Aircraft are equipped with icing detection and avoidance technologies, icing tolerant technologies, icing computational tools, airborne weather reporting sensor technologies, weather information data link systems technologies for ground-to-air dissemination, airborne weather reporting data link systems for air-to-ground and air-to-air dissemination, and turbulence detection, warning and alerting technologies. Improvements are needed in icing experimental methods, icing experimental databases, icing atmospheric characterization technologies, and icing education and training tools.

3.7.6.28.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
CONOPS	5.8 AERONAUTICAL INFORMATION SERVICES	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Aircraft Trajectory-Based Operations (TBO)	The basis for TBO is each aircraft's expected flight profile and time information (such as departure and arrival times). The specificity of four-dimensional trajectories (4DTs) matches the mode of operations and the requirements of the airspace in which an aircraft operates. A major benefit of 4DT is that it enables service providers and operators to assess the effects of proposed trajectories and resource allocation plans, allowing both service providers and operators to understand the implications of demand and identify where constraints need further mitigation.
BRM Sub-Function	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.
SRM Service Component	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.

3.7.6.28.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Surveillance Avionics	none

3.7.6.29 Monitor Weather Information (7.2.2)

3.7.6.29.1 Description

This activity provide access to weather information sources, which are used to populate the official weather information system, and are certified to be valid, current information. The weather information is monitored with a set of tolls and processes to allow for continuous forecasts.

Flight Operations A7

Airborne Operations A7.2

Monitor Weather Information A7.2.2

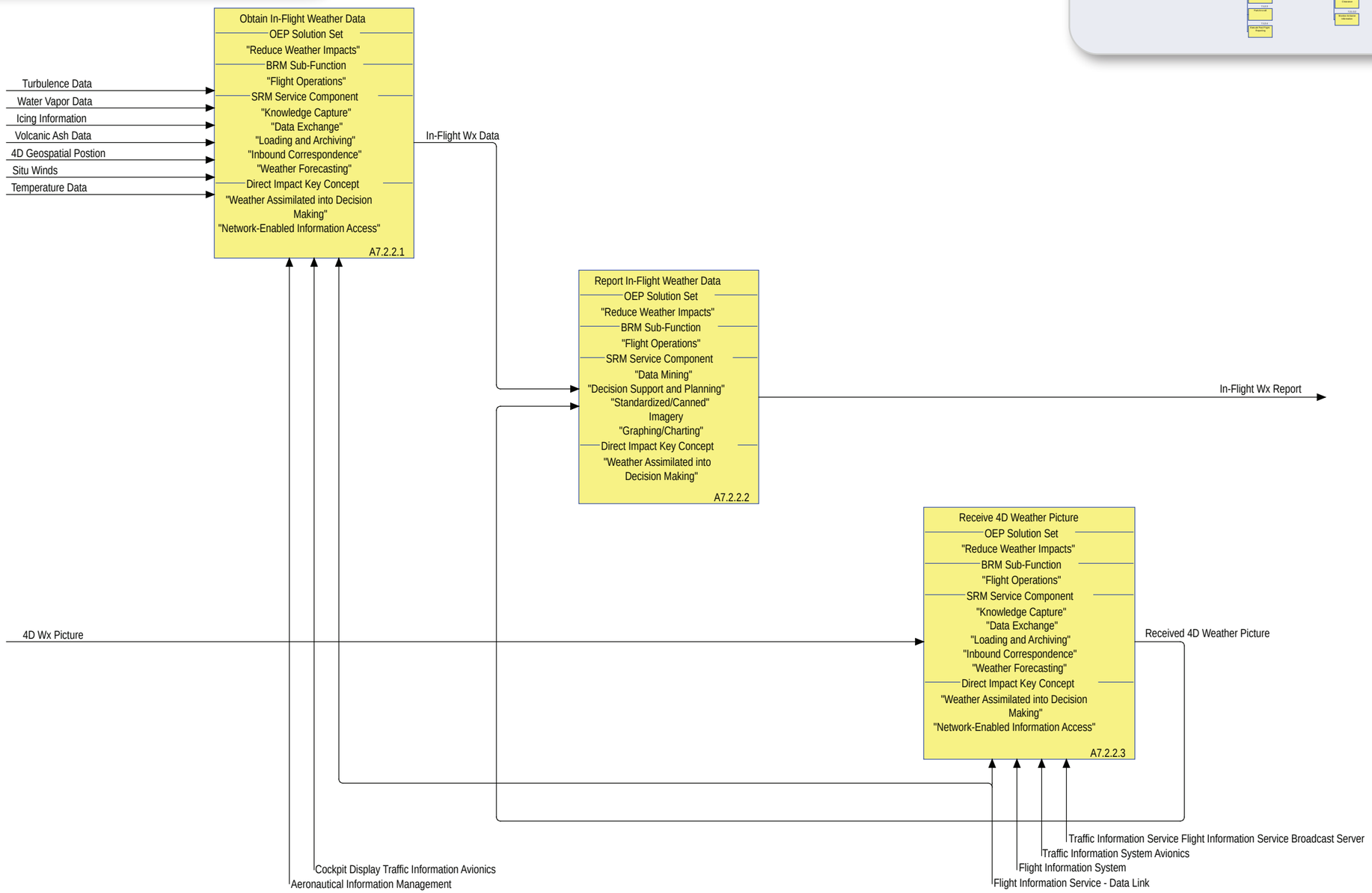


Figure 87 - 7.2.2 Monitor Weather Information Activity Model Diagram

3.7.6.30 Obtain In-Flight Weather Data (7.2.2.1)

3.7.6.30.1 Description

This activity will retrieve and review weather data in order to operate a safe flight. The information will assist in determining weather favorable airspace

3.7.6.30.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Reduce Weather Impacts	Reduced weather impact is a closely kin to the other capabilities. The focus here is in specific actions to improve the forecast or the use of forecast. Development if the weather product and ascertaining impact on individual flights and flows is a reduced weather impact issue. Note: The actual allocation in the response to individual flights etc. is C-ATM. The detection of the wake for purposes of changing pair-wise separation is reduce weather impact, inclusion of that data into traffic management tools for arrivals and departures would be high-density arr/departure terminals and airports.
NextGen Operational Improvements	Electronic VFR Operations for dependent parallel or converging runways	This OI allows additional reduction of arrival lateral spacing for very closely spaced parallel runways at OEP airports. This includes approaches with altitude offsets at suitable airports, and co-altitude approaches where necessary. This OI may result in more capacity than is achieved today, i.e., VMC rates may increase. This OI applies to runways that are closer than 2500 ft centerline to centerline and converging runways. This enables new runways to be built much closer to existing runways, potentially reducing the cost for new runway construction. Avoidance of wake vortices is an important consideration. Waterfall deployment: a) At selected locations b) All applicable OEP airports (2018+)
NextGen Operational Improvements	Electronic VFR Operations for independent parallel or converging runways	This OI allows maintaining VMC arrival and departure rates in IMC through use of onboard displays and alerting for independent parallel or converging runways. Using precision navigation, cooperative surveillance, and onboard algorithms and displays allows the reduction of lateral separation requirements for converging and parallel runway operations in IMC. Includes independent approaches to converging and parallel runways that are 4300 - 2500 ft centerline distances. The timing of implementation of this OI is strongly dependent on when an airline decides this is important and steps forward to advocate for it. Waterfall deployment: a) At selected locations b) All applicable OEP airports (2018+)
NextGen Operational Improvements	All weather airport access	All-weather airport access is available where needed through a combination of complementary airborne and ground functionality to aid the pilot in approach guidance and acquisition of the runway environment for safe operations. All weather (Cat IIIc) approaches are available for all users where needed through a combination of complementary airborne and ground equipage. Implementation may involve on-board synthetic and enhanced vision systems, and ground-based augmentation systems (GBAS), and low-cost runway/taxiway lighting.
NextGen Operational Improvements	Reduced human errors in operation of automated systems	Human errors are reduced through equipage of aircraft and ground systems with human-centered automation interfaces and skill training for automation. Interfaces are developed that increase usefulness and understandability of information, maintain appropriate human engagement, increase situation comprehension, increase situation comprehension, increase awareness of systems health, ensure the availability and the accessibility of needed information, and improve collaborative decision making. This OI includes development of improved training methods for flight crews and ground employees that focus on the increased use of, and integration of, automation, and the development of training modules and simulators targeted at improving and maintaining skills in areas especially vulnerable to error.
NextGen Operational Improvements	Reduced weather-related incidents	Weather-related incidents are reduced through equipage of aircraft with cockpit weather system technologies for enhanced situational awareness and decision making. Aircraft are equipped with icing detection and avoidance technologies, icing tolerant technologies, icing computational tools, airborne weather reporting sensor technologies, weather information data link systems technologies for ground-to-air dissemination, airborne weather reporting data link systems for air-to-ground and air-to-air dissemination, and turbulence detection, warning and alerting technologies. Improvements are needed in icing experimental methods, icing experimental databases, icing atmospheric characterization technologies, and icing education and training tools.

3.7.6.30.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
CONOPS	5.3.2 Weather Information Operations	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Weather Assimilated into Decisionmaking	By assimilating weather into decisionmaking, weather information becomes an enabler for optimizing NextGen operations. Directly applying probabilistic weather information to ATM decision tools increases the effective use of weather information and minimizes the adverse effects of weather on operations.
BRM Sub-Function	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Weather Forecasting	Defines the set of capabilities that provide stakeholders with a common picture of current (i.e. real-time) and forecasted weather information, including weather attributes organized by horizontal, vertical, altitude, time, and probability components.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Inbound Correspondence	

3.7.6.30.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Aeronautical Information Management	The Aeronautical Information Management (AIM) system represents the evolution of the acquisition, storage, processing, and dissemination of aeronautical information in the National Airspace System (NAS). Aeronautical information is defined as any information concerning the establishment, condition, or change in any component (facility, service, or procedure, or hazard) of the NAS. Aeronautical information comes in two types with one being a somewhat static type, and the other being a more dynamic type. The static portion represents the aeronautical information baseline as of a particular date, while the dynamic portion updates particular aspects of the static portion due to system impacts or events. The static portion represents data that NAS automation systems and other users use to adapt their software to properly operate. The dynamic portion represents information typically contained in Notices to Airmen (NOTAMs) that indicate short-term changes to the static data. Many NAS systems support the acquisition, generation, and dissemination of the static aeronautical information. Information of this type includes airspace structures, airways, locations of NAS facilities, inter-facility letters of agreement, and memorandums of understanding, obstructions, standard procedures, airspace charts, etc. Several NAS systems also support the acquisition, generation, processing, and dissemination of the dynamic aeronautical information. Information of this type includes, facility outages, runway closures, temporary flight restrictions (TFR), airspace constraints, Significant Meteorological Advisory (SIGMETs), etc. This information must be disseminated to users and providers of air traffic services in a timely and efficient manner. The AIM system will provide the central point for the dissemination of high quality, configuration controlled, information to NAS systems, service providers, and users of the NAS. The AIM system will soon disseminate data based on the Aeronautical Information Exchange Model (AIXM) protocols.
FAA Systems	Cockpit Display Traffic Information Avionics	The Cockpit Display of Traffic Information Avionics (CDTI Avionics) is a generic name for a display that provides the flight crew with surveillance information about other suitably equipped proximate aircraft, including their position.
FAA Systems	Flight Information Service - Data Link	The Flight Information Service - Data Link (FISDL) provides pilots weather, Notices to Airmen (NOTAMs), airfield information and other selected data through a commercial communications service provider (CCSP) operating on very high frequency (VHF) frequencies that the FAA obtained from the Federal Communications Commission (FCC). The FISDL service is being facilitated through a Government-Industry Project Performance Agreement (G-IPPA) allowing a commercial weather service provider (CWSP) to offer graphical and textual FIS/weather products to the cockpit of properly equipped aircraft. This commercially-operated service is being provided as a near-term capability consistent with the FAA FIS Policy Statement of 1998. This CCSP process will be phased out when the FAA is able to offer similar FISDL services through FAA operated data link resources (e.g., via the universal access transceiver (UAT) link using the Broadcast Services Ground Station (BSGS) and Traffic Information Service (TIS)-FIS Broadcast Server mechanism).

3.7.6.31 Report In-Flight Weather Data (7.2.2.2)

3.7.6.31.1 Description

This activity allows equipped UAS to collect and report in-flight weather data. The information will assist in determining weather favorable airspace

3.7.6.31.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Reduce Weather Impacts	Reduced weather impact is a closely kin to the other capabilities. The focus here is in specific actions to improve the forecast or the use of forecast. Development if the weather product and ascertaining impact on individual flights and flows is a reduced weather impact issue. Note: The actual allocation in the response to individual flights etc. is C-ATM. The detection of the wake for purposes of changing pair-wise separation is reduce weather impact, inclusion of that data into traffic management tools for arrivals and departures would be high-density arr/departure terminals and airports.
NextGen Operational Improvements	All weather airport access	All-weather airport access is available where needed through a combination of complementary airborne and ground functionality to aid the pilot in approach guidance and acquisition of the runway environment for safe operations. All weather (Cat IIIc) approaches are available for all users where needed through a combination of complementary airborne and ground equipage. Implementation may involve on-board synthetic and enhanced vision systems, and ground-based augmentation systems (GBAS), and low-cost runway/taxiway lighting.

3.7.6.31.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
ICAO ATMCP Requirement	R164	The ATM system shall provide timely access to all relevant weather information
CONOPS	5.3.2 Weather Information Operations	
Key Concept	Weather Assimilated into Decisionmaking	By assimilating weather into decisionmaking, weather information becomes an enabler for optimizing NextGen operations. Directly applying probabilistic weather information to ATM decision tools increases the effective use of weather information and minimizes the adverse effects of weather on operations.
BRM Sub-Function	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.
SRM Service Component	Graphing/ Charting	Defines the set of capabilities that support the presentation of information in the form of diagrams or tables.
SRM Service Component	Imagery	Defines the set of capabilities that support the creation of film or electronic images from pictures or paper forms.
SRM Service Component	Data Mining	Defines the set of capabilities that provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.
SRM Service Component	Standardized/ Canned	Defines the set of capabilities that support the use of preconceived or pre-written reports.
SRM Service Component	Decision Support and Planning	Defines the set of capabilities that support the analysis of information and predict the impact of decisions before they are made.

3.7.6.31.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Traffic Information System Broadcast Server	TIS/FIS Broadcast Servers are located at 20 ARTCCs & 12 consoidated TRACONs/ICCs. TIS-B is needed unless full ADS-B equipage is achieved. Servers will receive surveillance data (i.e., based on SSR, etc.) for each target aircraft and create TIS-B reports. Servers will receive FIS data from weather processors. The TIS and FIS data will be geographically filtered for the defined service volume of each GBT and TIS data also filtered for only non-ADS-B equipped targets.
FAA Systems	Flight Information System	The Flight Information System (FIS) will provide the automated means for collecting and distributing weather (Service A messages), flight plan data, Pilot Report messages, and other operational information (Service B messages). The Flight Information System (rehosted) will provide a web-enabled means for collecting and distributing the above information to all air traffic facilities.
FAA Systems	Flight Information Service - Data Link	The Flight Information Service - Data Link (FISDL) provides pilots weather, Notices to Airmen (NOTAMs), airfield information and other selected data through a commercial communications service provider (CCSP) operating on very high frequency (VHF) frequencies that the FAA obtained from the Federal Communications Commission (FCC). The FISDL service is being facilitated through a Government-Industry Project Performance Agreement (G-IPPA) allowing a commercial weather service provider (CWSP) to offer graphical and textual FIS/weather products to the cockpit of properly equipped aircraft. This commercially-operated service is being provided as a near-term capability consistent with the FAA FIS Policy Statement of 1998. This CCSP process will be phased out when the FAA is able to offer similar FISDL services through FAA operated data link resources (e.g., via the universal access transceiver (UAT) link using the Broadcast Services Ground Station (BSGS) and Traffic Information Service (TIS)-FIS Broadcast Server mechanism).

3.7.6.32 Receive 4D Weather Picture (7.2.2.3)

3.7.6.32.1 Description

This activity will receive weather data (observations, forecast, model/algorithm data, and climatology) into 4-D Weather (the NextGen common weather picture which covers the NAS from surface to low Earth orbit).

3.7.6.32.2 JPDO Support Alignment

Type	Name	Description
OEP Solution Set	Reduce Weather Impacts	Reduced weather impact is a closely kin to the other capabilities. The focus here is in specific actions to improve the forecast or the use of forecast. Development if the weather product and ascertaining impact on individual flights and flows is a reduced weather impact issue. Note: The actual allocation in the response to individual flights etc. is C-ATM. The detection of the wake for purposes of changing pair-wise separation is reduce weather impact, inclusion of that data into traffic management tools for arrivals and departures would be high-density arr/departure terminals and airports.
NextGen Operational Improvements	All weather airport access	All-weather airport access is available where needed through a combination of complementary airborne and ground functionality to aid the pilot in approach guidance and acquisition of the runway environment for safe operations. All weather (Cat IIIc) approaches are available for all users where needed through a combination of complementary airborne and ground equipage. Implementation may involve on-board synthetic and enhanced vision systems, and ground-based augmentation systems (GBAS), and low-cost runway/taxiway lighting.
NextGen Operational Improvements	Near-all weather airport access	This provides affordable near-all-weather access to currently under-utilized regional, smaller commercial, and general aviation airports to support expanded commercial air service and viable air taxi service. Near all-weather airport access is available where needed through a combination of complementary airborne and ground functionality to aid the pilot in approach guidance and acquisition of the runway environment for safe operations. This improvement may not require synthetic vision and enhanced vision. This OI supports near-CAT 1, CAT 1, CAT 2 and CAT 3A, CAT 3B operations. Also included in this OI are improved Instrument Approach procedures and approach/runway lighting systems.
NextGen Operational Improvements	Reduced human errors in detection and management of malfunctions and off-nominal	Human errors are reduced in detecting and managing malfunctions through off-nominal condition detection and alerting systems. System health monitoring, management, and interface technologies are incorporated in airborne and ground-based systems.
NextGen Operational Improvements	Reduced weather-related incidents	Weather-related incidents are reduced through equipage of aircraft with cockpit weather system technologies for enhanced situational awareness and decision making. Aircraft are equipped with icing detection and avoidance technologies, icing tolerant technologies, icing computational tools, airborne weather reporting sensor technologies, weather information data link systems technologies for ground-to-air dissemination, airborne weather reporting data link systems for air-to-ground and air-to-air dissemination, and turbulence detection, warning and alerting technologies. Improvements are needed in icing experimental methods, icing experimental databases, icing atmospheric characterization technologies, and icing education and training tools.

3.7.6.32.3 NextGen Drivers

Type	Name	Description
Actor	Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
Actor	Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew and may reside with one individual or be delegated to separate individuals.
CONOPS	5.3.3 Weather Information Enterprise Services	
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
Key Concept	Weather Assimilated into Decisionmaking	By assimilating weather into decisionmaking, weather information becomes an enabler for optimizing NextGen operations. Directly applying probabilistic weather information to ATM decision tools increases the effective use of weather information and minimizes the adverse effects of weather on operations.
BRM Sub-Function	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.

Type	Name	Description
SRM Service Component	Weather Forecasting	Defines the set of capabilities that provide stakeholders with a common picture of current (i.e. real-time) and forecasted weather information, including weather attributes organized by horizontal, vertical, altitude, time, and probability components.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Inbound Correspondence	

3.7.6.32.4 NextGen Future Solutions

Type	Name	Description
FAA Systems	Traffic Information Service Flight Information Service Broadcast Server	Traffic Information Service-Flight Information Service (TIS-FIS) Broadcast Servers will be located at 21 Air Route Traffic Control Centers and 8 consolidated Terminal Radar Approach Controls/Integrated Control Complex (ICC). TIS-Broadcast (TIS-B) will be needed if full Automatic Dependent Surveillance-Broadcast equipage is not achieved. Servers will receive surveillance data (i.e., based on Secondary Surveillance Radar, etc.) in the form of Surveillance Data Objects for each target aircraft and will create TIS-B reports. Servers will also receive FIS data from weather processors and create FIS-B reports. TIS-B and FIS-B reports are then routed to the BSGS for broadcasting in support of TIS-B and FIS-B functionalities. The TIS-B and FIS-B reports will be geographically filtered for the defined service volume of each Broadcast Services Ground Station (BSGS), and TIS-B reports will also be filtered for only non-ADS-B-equipped targets.
FAA Systems	Traffic Information System Avionics	Traffic Information System Avionics (TIS Avionics) receive signals from Mode Select (Mode S) ground-based beacon interrogators that contain position information on all aircraft responding to its interrogations and provides relative position of aircraft in the immediate vicinity to the flight crew displays.
FAA Systems	Flight Information System	The Flight Information System (FIS) will provide the automated means for collecting and distributing weather (Service A messages), flight plan data, Pilot Report messages, and other operational information (Service B messages). The Flight Information System (rehosted) will provide a web-enabled means for collecting and distributing the above information to all air traffic facilities.
FAA Systems	Flight Information Service - Data Link	The Flight Information Service - Data Link (FISDL) provides pilots weather, Notices to Airmen (NOTAMs), airfield information and other selected data through a commercial communications service provider (CCSP) operating on very high frequency (VHF) frequencies that the FAA obtained from the Federal Communications Commission (FCC). The FISDL service is being facilitated through a Government-Industry Project Performance Agreement (G-IPPA) allowing a commercial weather service provider (CWSP) to offer graphical and textual FIS/weather products to the cockpit of properly equipped aircraft. This commercially-operated service is being provided as a near-term capability consistent with the FAA FIS Policy Statement of 1998. This CCSP process will be phased out when the FAA is able to offer similar FISDL services through FAA operated data link resources (e.g., via the universal access transceiver (UAT) link using the Broadcast Services Ground Station (BSGS) and Traffic Information Service (TIS)-FIS Broadcast Server mechanism).

3.8 Core Business Services (8)

3.8.1 Description

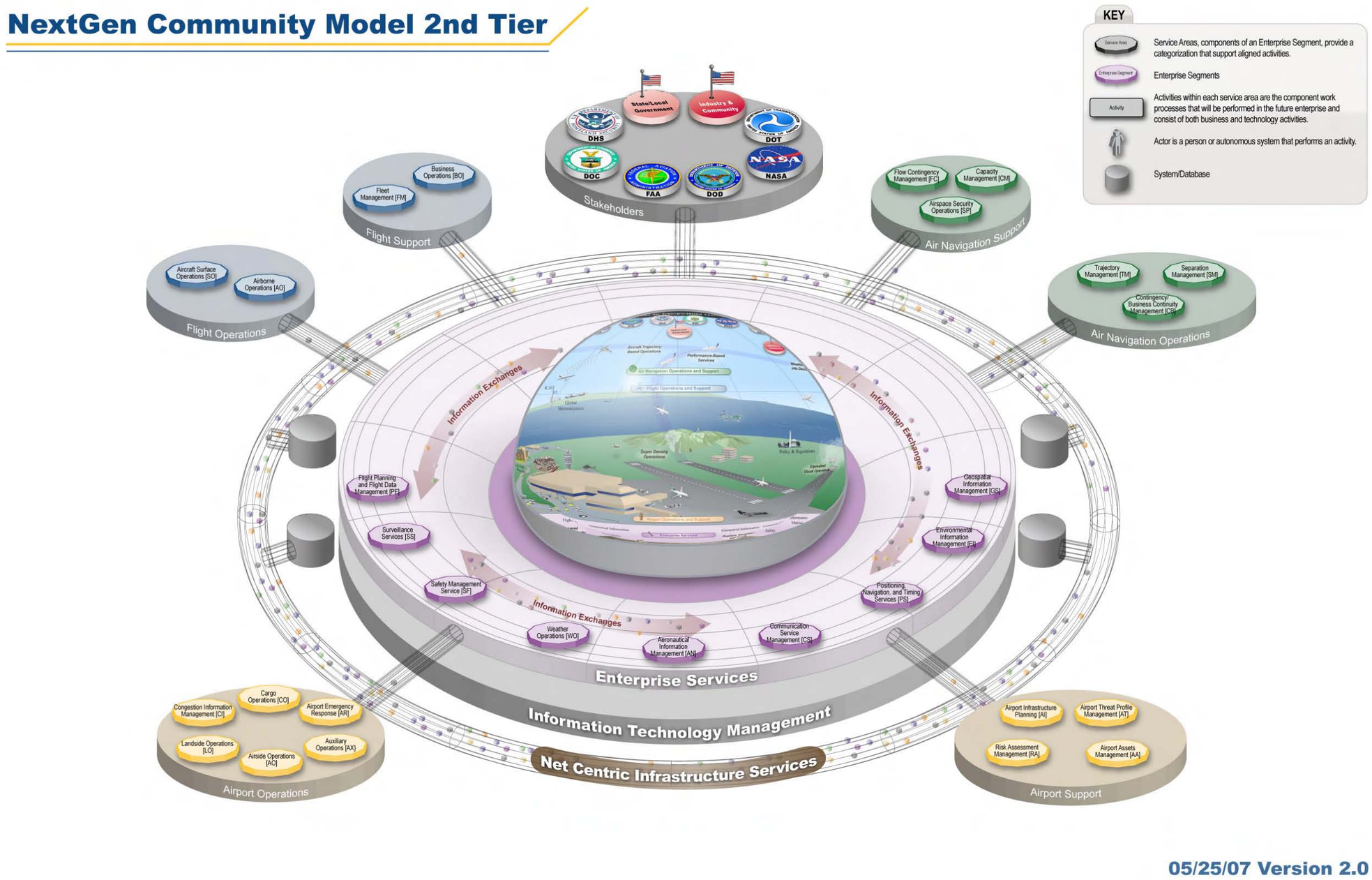
Core Business Services Enterprise Segment provides the operational context for the capabilities that support the day to day business operations. Core Business Services include, financial management and resources (facilities, equipment/ systems, information technology, personnel) are acquired and assigned based on known and forecasted demand. Additionally, the Core Business Service Enterprise Segment maintains information on certification of facilities and equipment and the federal and state governance necessary for stakeholders to meet their business operations.

3.8.2 Purpose

The purpose of Core Business Services is to provide the capabilities that support the day to day business operations that enable NextGen to operate effectively. Core Business Services include Human Resource Management, Financial Management, Supply Chain Management, Governance Management, Certification Services Management, and Information and Technology Management. These functions ensure that forecasted demand is supported through the appropriate recruitment and management of personnel; the purchasing, tracking and management of goods and services; and the availability of supporting information and technology resources and systems. The Core Business Services also ensure that the facilities and equipment are certified for safe operations and applicable regulations, policies, standards and guidance are disseminated to stakeholders in support of their business operations.

3.8.3 3nd Tier Community Model

Figure 88: Core Business Services 3rd tier Community Model



3.8.4 Enterprise Segment Activity Inventory - Core Business Services

Figure 89: Core Business Services ESAI

Core Business Services

Human Resource Management [AQ]	Supply Chain Management [SC]	Governance Management [GM]	Governance Management [GM]	Information and Technology Management [IM]	Information and Technology Management [IM]	Financial Management [FP]	Certification Services Management [CD]
[AQ-CKHRS] Manage Employee Development and Performance Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[SC-SERVA] Acquire Services** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[GM-REGCE] Oversee Regulatory Compliance and Enforcement** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[GM-PRGMN] Monitor Programs** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[IM-SYSNP] Monitor Systems and Network Performance** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[IM-SYSMN] Maintain Systems** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[FP-ASTLM] Manage Assets and Liabilities** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[CD-CERFA] Certify Equipment** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM
[AQ-AQSTF] Acquire Staff Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[SC-GDSAQ] Acquire Goods** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[GM-CTROV] Monitor Compliance** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[GM-PBCCT] Track Public Comment** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[IM-INFMG] Conduct Information Management** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[IM-LFYCM] Manage Change** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[FP-BUDFN] Manage Budget** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[CD-CERFC] Certify Facilities** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM
[AQ-CERPE] Certify Personnel Actors: AN Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[SC-INVCL] Manage Inventory** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[GM-PGMEV] Evaluate Programs** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[GM-REGCR] Create Regulations** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[IM-ITSEC] Provide Information Assurance** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[IM-ITIFM] Maintain IT Infrastructure** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[FP-RPINF] Report Financials** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	
[AQ-ORGPM] Administer Organization and Position Management Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM		**[GM-REGDV] Develop Regulations** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM	**[GM-PLCGD] Develop Policy and Guidance** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 3 BRM SRM TRM PRM DRM				
[AQ-HRSTG] Develop HR Strategy Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM			**[GM-INSAU] Audit Regulated Activities** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM				
[AQ-LABRL] Manage Labor Relations Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM			**[GM-SSRGD] Develop Standards and Reporting Guidance** Actors: None Priority: Low Criticality: Low Systems: 0 ICAO: 0 BRM SRM TRM PRM DRM				

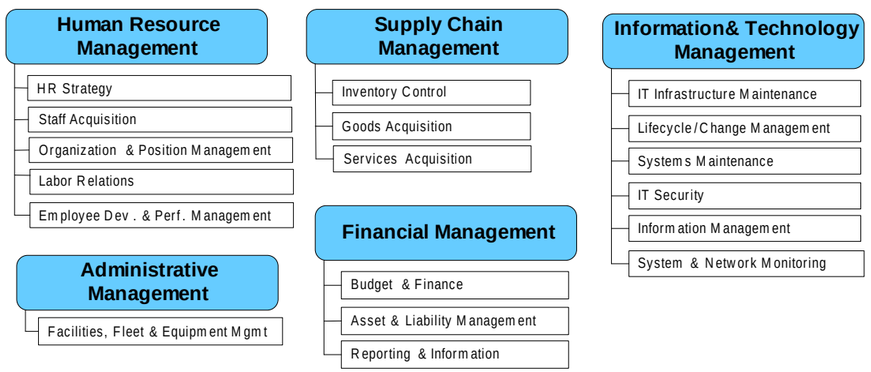
3.8.4.1 Core Business Services ESAI Actor Table

Actor Code	Actor Name	Actor Description
AN	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation

3.8.5 Core Business Services FEA RM

The Core Business Services Segment provides a functional view of the back-office activities that enable the effective operation of NextGen capabilities. As depicted in figure 25, this segment spans multiple functional Lines of Business describing the management of Government resources, such as human resources (HR), information technology (IT), the acquisition of goods and services, budgets, and the administrative functions that support NextGen. The following table further describes the Core Business Services Segment and identifies how the supporting activities align to the other architectural layers of the NextGen EA Reference Architecture.

Figure 90: Core Business Services FEA RM



3.8.6 Core Business Services DoDAF products

List of Activity Models

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Notes

GEORGETO
323 GTN
GEORGETO
DCA
WASHINGTON
0 DCA
Chan 47
NOTE: Prob
of D
LOM
OXONN
332 DC
I-DCA 5.6
DCA
R-186
PISCA INT
I-DCA 10.7
DCA
R-185
2500 to Pisca Int
321° (3.1) and
LOC (3)
LATAS
OTT 12.2
10 NM
500
2000
DCA R-325
111.0
GTN
323
OXONN
LOM/INT
I-DCA 5.6
I-DCA
1
MM
0.5
4.1 NM
CATEGORY
A
B
S-ILS 1
215/18
S-LOC 1
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465 (500-½)
620-1
660-1
TDZE
15
150
180

NextGen EA
Core Business Services A8

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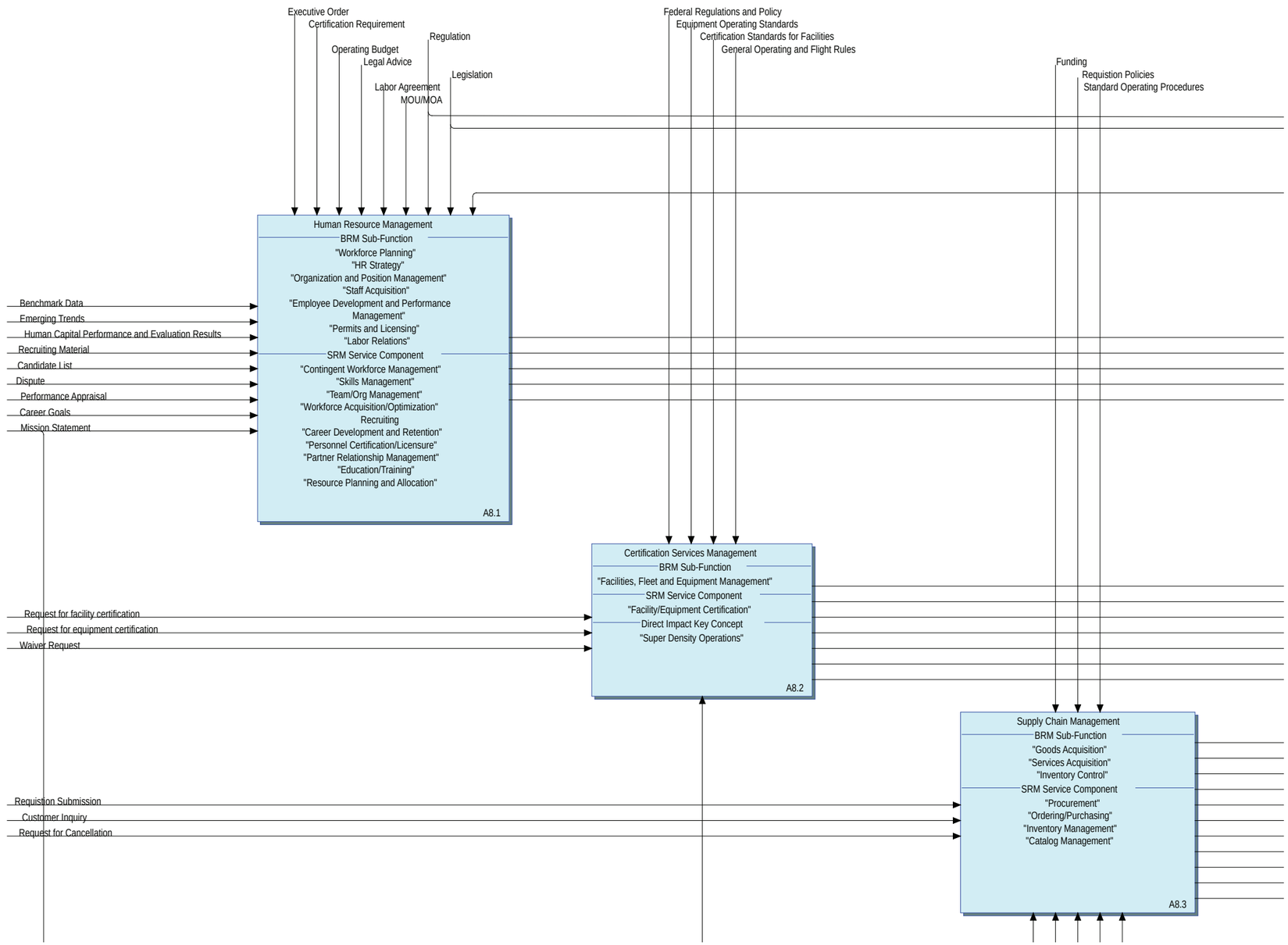

Figure 91 - 8 Core Business Services Activity Model Diagram

NextGen EA
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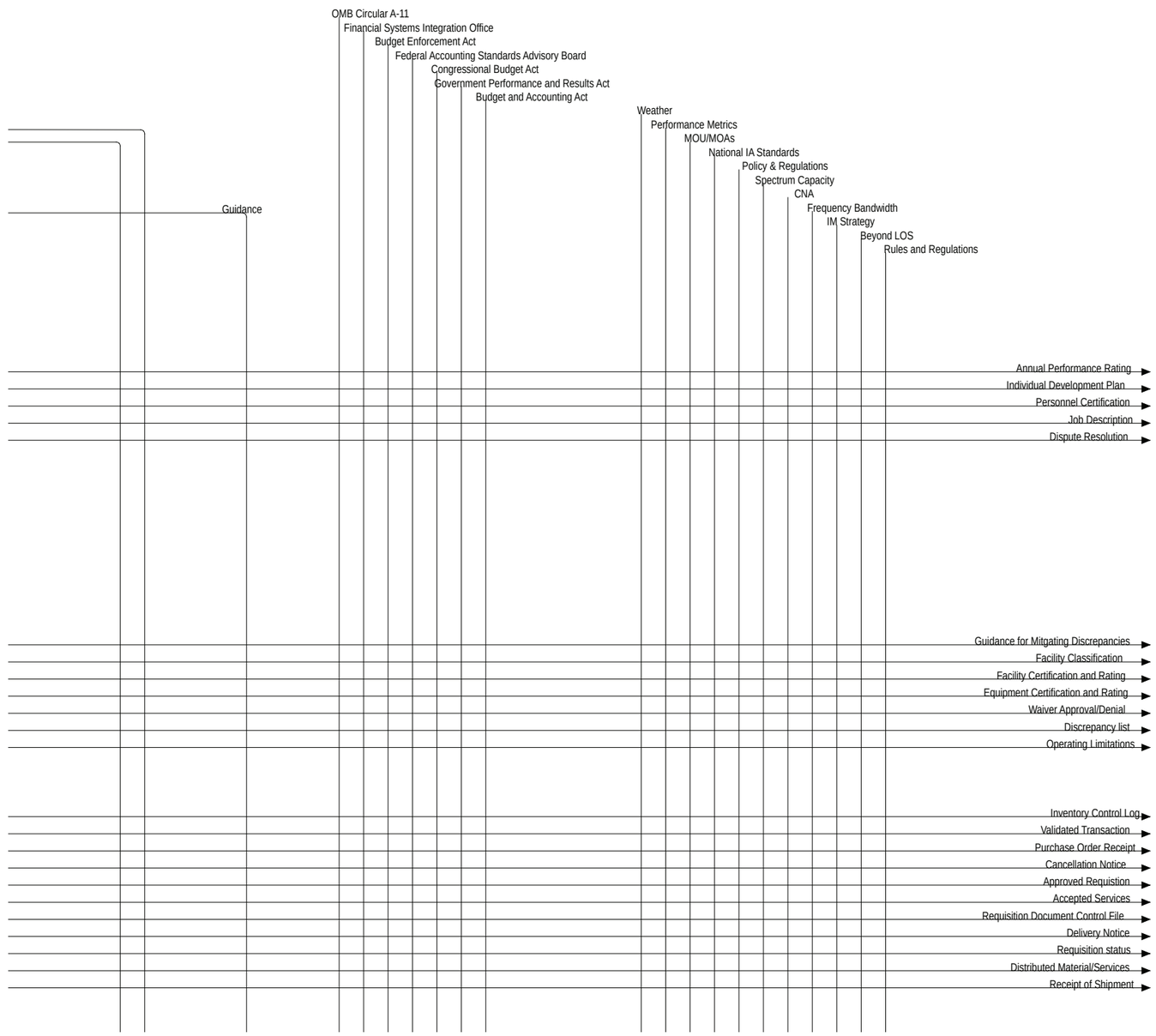

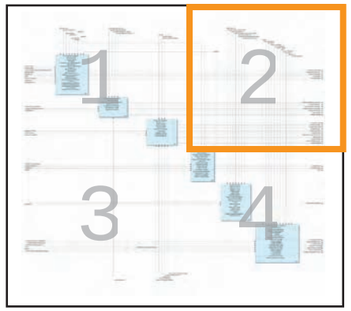

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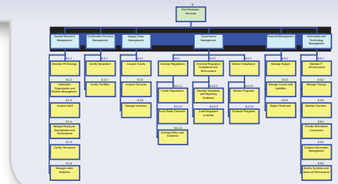

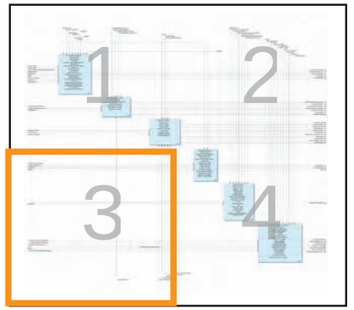

Program Operations/Activities
Operation/Activitiy Output
Public Comment
Research
Strategic Plan
Aircraft Data Comms Link Peformance
Information Mangement Strategy Plan
Air Ground Network Performance
O1_I8
Raw Data
ANSP Facilities & Infrastructure Performance
Aircraft Performance Information Broadcast
Procurement and Logistics Programs
Supply & Maintenance Office
Aquistion Office
Aquistion Tracking Tools
Storage and Shipping installations
Authorizated Inspector

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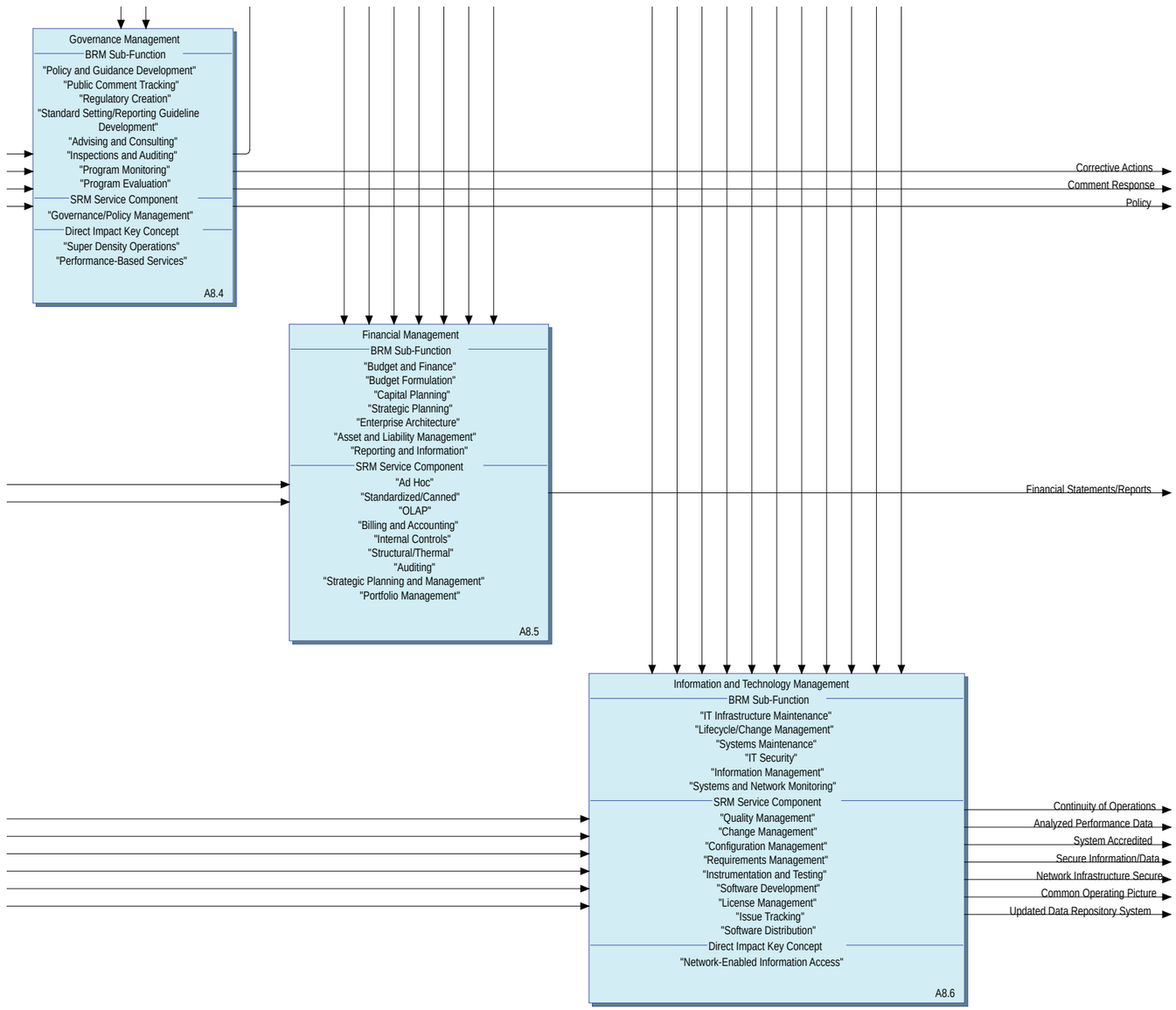

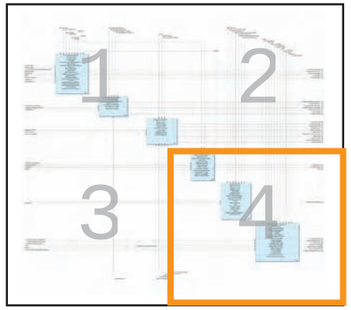

3.8.6.1 Human Resource Management (8.1)

3.8.6.1.1 Description

This activity involves all activities associated with the recruitment and management of personnel.

3.8.6.1.2 Purpose

The purpose of Human Resource Management is manage the recruitment of personnel and the management of the personnel.

3.8.6.1.3 JPDO Support Alignment

3.8.6.1.4 NextGen Drivers

Type	Name	Description
BRM Sub-Function	HR Strategy	HR Strategy develops effective human capital management strategies to ensure federal organizations are able to recruit, select, develop, train, and manage a high-quality, productive workforce in accordance with merit system principles. This sub-function includes: conducting both internal and external environmental scans; developing human resources and human capital strategies and plans; establishing human resources policy and practices; managing current and future workforce competencies; developing workforce plans; developing succession plans; managing the human resources budget; providing human resources and human capital consultative support; and measuring and improving human resources performance.
BRM Sub-Function	Staff Acquisition	Staff Acquisition establishes procedures for recruiting and selecting high-quality, productive employees with the right skills and competencies, in accordance with merit system principles. This sub-function includes: developing a staffing strategy and plan; establishing an applicant evaluation approach; announcing the vacancy, sourcing and evaluating candidates against the competency requirements for the position; initiating pre-employment activities; and hiring employees.
BRM Sub-Function	Organization and Position Management	Organization and Position Management designs, develops, and implements organizational and position structures that create a high-performance, competency-driven framework that both advances the agency mission and serves agency human capital needs.
BRM Sub-Function	Labor Relations	Labor Relations manages the relationship between the agency and its unions and bargaining units. This includes negotiating and administering labor contracts and collective bargaining agreements; managing negotiated grievances; and participating in negotiated third party proceedings.
BRM Sub-Function	Workforce Planning	Workforce Planning involves the processes for identifying the workforce competencies required to meet the agency's strategic goals and for developing the strategies to meet these requirements.
BRM Sub-Function	Permits and Licensing	Permits and Licensing involves activities associated with granting, revoking, and the overall management of the documented authority necessary to perform a regulated task or function.
BRM Sub-Function	Employee Development and Performance Management	
SRM Service Component	Partner Relationship Management	Defines the set of capabilities that provide a framework to promote the effective collaboration between an organization and its business partners, particularly members of the distribution chain (e.g. Channel and alliance partners, resellers, agents, brokers, and dealers) and other third parties that support operations and service delivery to an organization's customers; includes performance evalaution of partners, if necessary.
SRM Service Component	Education/Training	Defines the set of capabilities that support the active building of employee capacities.
SRM Service Component	Recruiting	Defines the set of capabilities that support the identification and hiring of employees for an organization.
SRM Service Component	Contingent Workforce Management	Defines the set of capabilities that support the continuity of operations for an organization's business through the identification of alternative organization personnel.
SRM Service Component	Skills Management	Defines the set of capabilities that support the proficiency of employees in the delivery of an organization's products or services.
SRM Service Component	Team/Org Management	Defines the set of capabilities that support the hierarchy structure and identification of employees within the various sub-groups of an organization.
SRM Service Component	Workforce Acquisition/ Optimization	Defines the set of capabilities that support the hiring and re-structuring of employees and their roles within an organization.
SRM Service Component	Resource Planning and Allocation	Defines the set of capabilities that support the determination of strategic direction, the identification and establishment of programs and processes, and the allocation of resources (capital and labor) among those programs and processes.
SRM Service Component	Career Development and Retention	Defines the set of capabilities that support the monitoring of performance as well as the professional growth, advancement, and retention of an organization's employees.
SRM Service Component	Personnel Certification/ Licensure	Defines the set of capabilities that support the certification/licensing of personnel (e.g., profession certification, trade certification, professional designation, etc.) to qualify the individuals knowledge, skills, or abilities.

3.8.6.1.5 NextGen Future Solutions

3.8.6.2 Certification Services Management (8.2)

3.8.6.2.1 Description

This activity enables the certification process for facilities (including airports) and equipment

3.8.6.2.2 Purpose

The purpose of Certification Services is to provide the certification necessary for operating safely in the air transportation system. Certifications for people to operate in the airspace (i.e., flight operators), ANSP certification, systems/equipment certification, etc.

3.8.6.2.3 JPDO Support Alignment

3.8.6.2.4 NextGen Drivers

Type	Name	Description
Key Concept	Super-Density Arrival/Departure Operations	With increasing demand, an even greater need exists to achieve peak throughput performance at the busiest airports and in the busiest airspace. New procedures to improve airport surface movements, reduce spacing and separation requirements in place today, and better manage overall flows in and out of busy metropolitan airspace provide maximum use of the highest-demand airports. Airport terminals also maximize efficiency of egress and ingress, matching passenger and cargo flow to airside throughput while maintaining safety and security levels.
BRM Sub-Function	Facilities, Fleet and Equipment Management	Facilities, Fleet, and Equipment Management involves the maintenance, administration, certification, and operation of office buildings, fleets, machinery, and other capital assets that are possessions of the federal government.
SRM Service Component	Facility/Equipment Certification	Defines the set of capabilities that support the certification of facilities, equipment and products to ascertain the suitability, quality, performance, and compliance with a set of codes, regulations, standards, etc.

3.8.6.2.5 NextGen Future Solutions

3.8.6.3 Supply Chain Management (8.3)

3.8.6.3.1 Description
This activity involves the purchasing, tracking, and overall management of goods and services.

3.8.6.3.2 Purpose
The purpose of Supply Chain Management is to provide the tracking, purchasing, and overall management of the goods and services of NextGen.

3.8.6.3.3 JPDO Support Alignment

3.8.6.3.4 NextGen Drivers

Type	Name	Description
BRM Sub-Function	Goods Acquisition	Goods Acquisition involves the procurement of physical goods, products, and capital assets to be used by the federal government.
BRM Sub-Function	Inventory Control	Inventory Control refers to the tracking of information related to procured assets and resources with regard to quantity, quality, and location.
BRM Sub-Function	Services Acquisition	Services Acquisition involves the oversight and/or management of contractors and service providers from the private sector.
SRM Service Component	Catalog Management	Defines the set of capabilities that support the listing of available products or services that an organization offers.
SRM Service Component	Inventory Management	Defines the set of capabilities that provide for the balancing of customer service levels with inventory investment.
SRM Service Component	Ordering/ Purchasing	Defines the set of capabilities that allow the placement of request for a product.
SRM Service Component	Procurement	Defines the set of capabilities that support the ordering and purchasing of products and services.

3.8.6.3.5 NextGen Future Solutions

3.8.6.4 Governance Management (8.4)

3.8.6.4.1 Description
This activity provides the federal and state policy, standards, and regulations to conduct airport and airspace operations. This includes policy/standard/regulations on environment, safety, aviation, and security.

3.8.6.4.2 Purpose
The purpose of Governance Management is to provide the NextGen all the policy's, standards, regulations, and requirements to be able to operate safely in the air transportation system. Safety policy's, environmental standards, international standards, etc will be involved in making NextGen successful.

3.8.6.4.3 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Common and synchronized airport emergency and disaster response	Acceptance of a standard approach to responding to catastrophic emergency/disaster for airports to enable seamless integration of regional and national response resources when needed (Policy).
NextGen Operational Improvements	Environmental performance-based air traffic operations	Environmental performance criteria are integrated into the ATM system design and specific operations such as access to airspace, RNP route selection.
NextGen Operational Improvements	Proactively address emergent environmental issues	This OI will address environmental issues such as maintaining water quality, lowering energy intensity, and minimizing aviation's impact on global climate change.
NextGen Operational Improvements	Reduced terminal and enroute significant noise impact	Noise- and emissions-favorable RNP routes are used en route. This OI also includes reduction of noise over national parks.
NextGen Operational Improvements	Reduced unit level of aircraft emissions	Overall aircraft emissions can be reduced by improvements in aircraft engine and airframe technologies that reduce the unit generation of emissions by the aircraft and used by the fleet.
NextGen Operational Improvements	Reduced unit level of aircraft noise generation	Overall aircraft noise will be reduced by improvements in aircraft engine and airframe technologies that reduce the unit generation of noise by the aircraft and used by the fleet.
NextGen Operational Improvements	Reduced unit level of GSE emissions	Overall GSE emissions will be reduced by improvements in GSE engine and vehicle technologies that reduce the unit generation of emissions by the GSE and used at the airport.
NextGen Operational Improvements	Use of environmental management processes integrated across aviation community	This OI involves the use of the EMS framework to address, plan and mitigate environmental issues (see OI 6013)

3.8.6.4.4 NextGen Drivers

Type	Name	Description
ICAO ATMCP Requirement	R153	Deviations from the 'first come first served' principle shall be employed in the interest of ATM system effectiveness.
ICAO ATMCP Requirement	R156	The validation of future procedures and technologies against quantified system performance objectives (operational, technical and economic) shall be completed in timely manner using R&D
ICAO ATMCP Requirement	R158	Quality of service requirements shall be established to support the provision of services within the ATM system. These shall include performance requirements related to availability, continuity, reliability and integrity.

Type	Name	Description
ICAO ATMCP Requirement	R 02	Agreements shall ensure sovereignty of airspace is respected without imposing inefficiencies on ATM airspace management.
ICAO ATMCP Requirement	R 50	The ATM system shall be based upon common global standards.
ICAO ATMCP Requirement	R 51	The ATM system shall be based on components that ensure global interoperability.
ICAO ATMCP Requirement	R 67	The ATM system shall optimize system level performance as its highest priority with individual component performance subject to that prioritization.
ICAO ATMCP Requirement	R 74	The ATM system shall provide to the ATM community accredited, quality assured and timely information meeting the identified standards of performance, including quality of services
ICAO ATMCP Requirement	R 102	All safety practices and processes shall be explicit, and shall comply with the safety requirements and standards of ICAO, State regulatory authorities and other appropriate parties
CONOPS	7.4.1 Policy	
CONOPS	8 SAFETY MANAGEMENT SERVICES	
CONOPS	8.4.1 Aviation Safety Strategic Plan Service	
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
Key Concept	Super-Density Arrival/ Departure Operations	With increasing demand, an even greater need exists to achieve peak throughput performance at the busiest airports and in the busiest airspace. New procedures to improve airport surface movements, reduce spacing and separation requirements in place today, and better manage overall flows in and out of busy metropolitan airspace provide maximum use of the highest-demand airports. Airport terminals also maximize efficiency of egress and ingress, matching passenger and cargo flow to airside throughput while maintaining safety and security levels.
BRM Sub-Function	Program Evaluation	Program Evaluation involves the analysis of internal and external program effectiveness and the determination of corrective actions as appropriate.
BRM Sub-Function	Program Monitoring	Program Monitoring involves the data gathering activities required to determine the effectiveness of internal and external programs and the extent to which they comply with related laws, regulations, and policies.
BRM Sub-Function	Policy and Guidance Development	Policy and Guidance Development – involves the creation and dissemination of guidelines to assist in the interpretation and implementation of regulations.
BRM Sub-Function	Public Comment Tracking	Public Comment Tracking involves the activities of soliciting, maintaining, and responding to public comments regarding proposed regulations.

Type	Name	Description
BRM Sub-Function	Regulatory Creation	Regulatory Creation involves the activities of researching and drafting proposed and final regulations.
BRM Sub-Function	Advising and Consulting	Advising and Consulting involves the guidance and consultative services provided by the federal government to support the implementation of a specific Service for Citizen.
BRM Sub-Function	Inspections and Auditing	Inspections & Auditing involves the methodical examination and review of regulated activities to ensure compliance with standards for regulated activity.
BRM Sub-Function	Standard Setting/ Reporting Guideline Development	Standard Setting / Reporting Guideline Development involves the establishment of allowable limits associated with a regulated activity and the development of reporting requirements necessary to monitor and control compliance with allowable limits. This includes the development of requirements for product sampling and testing, emissions monitoring and control, incident reporting, financial filings, etc.
SRM Service Component	Governance/ Policy Management	Defines the set of capabilities that influence and determine decisions, sections, business rules and other matters within an organization.

3.8.6.4.5 NextGen Future Solutions

3.8.6.5 Financial Management (8.5)

3.8.6.5.1 Description

This activity uses financial information to measure, operate and predict the effectiveness and efficiency of NextGen activities in relation to its objectives. The ability to obtain and use such information is usually characterized by having in place policies, practices, standards, and a system of controls that reliably capture and report activity in a consistent manner.
This is distinctive from standard financial management due to the unique funding of airport as well as the jurisdictional nature of the spending of revenue dollars on airport improvements.

3.8.6.5.2 Purpose

The purpose of Financial Management is to provide the information used to measure, operate, and predict the effectiveness and efficiency of NextGen activities in relation to its objectives.

3.8.6.5.3 JPDO Support Alignment

3.8.6.5.4 NextGen Drivers

Type	Name	Description
CONOPS	2.3.3 Collaboration on Airport Operations and Planning	
CONOPS	3.5.2 Airport Mission, Management, and Finance	
BRM Sub-Function	Asset and Liability Management	Asset and Liability Management provides accounting support for the management of assets and liabilities of the Federal government.
BRM Sub-Function	Reporting and Information	Reporting and Information includes providing financial information, reporting and analysis of financial transactions.

Type	Name	Description
BRM Sub-Function	Budget Formulation	Budget Formulation involves all activities undertaken to determine priorities for future spending and to develop an itemized forecast of future funding and expenditures during a targeted period of time. This includes the collection and use of performance information to assess the effectiveness of programs and develop budget priorities.
BRM Sub-Function	Capital Planning	Capital Planning involves the processes for ensuring that appropriate investments are selected for capital expenditures.
BRM Sub-Function	Enterprise Architecture	Enterprise Architecture is an established process for describing the current state and defining the target state and transition strategy for an organization's people, processes, and technology.
BRM Sub-Function	Strategic Planning	Strategic Planning entails the determination of annual and long-term goals and the identification of the best approach for achieving those goals.
BRM Sub-Function	Budget and Finance	
SRM Service Component	Portfolio Management	Defines the set of capabilities that support the administration of a group of investments held by an organization.
SRM Service Component	Structural/Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.
SRM Service Component	Ad Hoc	Defines the set of capabilities that support the use of dynamic reports on an as needed basis.
SRM Service Component	OLAP	Defines the set of capabilities that support the analysis of information that has been summarized into multidimensional views and hierarchies.
SRM Service Component	Standardized/ Canned	Defines the set of capabilities that support the use of preconceived or pre-written reports.
SRM Service Component	Auditing	Defines the set of capabilities that support the examination and verification of records for accuracy.
SRM Service Component	Internal Controls	Defines the set of capabilities that support the methods and procedures used by the organization to safeguard its assets, produce accurate accounting data and reports, contribute to efficient operations, and encourage staff to adhere to management policies and mission requirements.
SRM Service Component	Billing and Accounting	Defines the set of capabilities that support the charging, collection and reporting of an organization's accounts.
SRM Service Component	Strategic Planning and Management	Defines the set of capabilities that support the determination of long-term goals and the identification of the best approach for achieving those goals.

3.8.6.5.5 NextGen Future Solutions

3.8.6.6 Information and Technology Management (8.6)

3.8.6.6.1 Description

This activity involves the coordination of information and technology resources and systems required to support or provide a service.

3.8.6.6.2 Purpose

The purpose of Information and Technology Management is at the heart of the NextGen concept. Its features allow the NextGen to adapt to growth in operations as well as shifts in demand, making NextGen a scalable system.

3.8.6.6.3 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Automated Clearance Delivery and Frequency Changes	Controller productivity enhanced through en route data link communication of ATC clearances and frequency handoffs to pilot.
NextGen Operational Improvements	Integrated high-risk flight management and risk mitigation	Flights are continually monitored and assessed risks. High risk flights are identified using an integrated risk assessment capability. Notifications are provided to the ANSP and the defense/security service providers to coordinate integrated response for risk mitigation facilitate by improved communications and information sharing.
NextGen Operational Improvements	Net-centric security situational awareness and management of airport.	Information fusion of all data inputs at airport to a central airport operations center, connecting data, intelligence, predictive systems, imagery and risk analysis to national and regional systems. This OI builds off of NEO backbone to support routine and emergency decision-making.
NextGen Operational Improvements	Trajectory Negotiation - Level 1	ANSP productivity is increased through digital exchange of route and trajectory changes with aircraft in high-altitude airspace. Trajectories are negotiated between flight deck and ground via data link.

3.8.6.6.4 NextGen Drivers

Type	Name	Description
ICAO ATMCP Requirement	R 123	Information management shall assemble the best possible integrated picture of the historical, real-time and planned or foreseen future state of the ATM situation, and relevant quality-assured and accredited information shall be made available to the ATM system
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Lifecycle/Change Management	Lifecycle/Change Management involves the processes that facilitate a smooth evolution, composition, and workforce transition of the design and implementation of changes to agency resources such as assets, methodologies, systems, or procedures.
BRM Sub-Function	IT Infrastructure Maintenance	IT Infrastructure Maintenance involves the planning, design, and maintenance of an IT Infrastructure to effectively support automated needs (i.e. platforms, networks, servers, printers, etc.).
BRM Sub-Function	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.
BRM Sub-Function	IT Security	
BRM Sub-Function	Systems Maintenance	

Type	Name	Description
BRM Sub-Function	Systems and Network Monitoring	Systems and Network Monitoring supports activities related to the real-time monitoring of systems and networks for optimal performance.
SRM Service Component	Change Management	Defines the set of capabilities that control the process for updates or modifications to the existing documents, software or business processes of an organization.
SRM Service Component	Configuration Management	Defines the set of capabilities that control the hardware and software environments, as well as documents of an organization.
SRM Service Component	Quality Management	Defines the set of capabilities that help determine the level of assurance that a product or service will satisfy certain requirements.
SRM Service Component	Requirements Management	Defines the set of capabilities that gather, analyze and fulfill the needs and prerequisites of an organization's efforts.
SRM Service Component	Software Development	Defines the set of capabilities that support the creation of both graphical and process application or system software.
SRM Service Component	Issue Tracking	Defines the set of capabilities that receive and track user-reported issues and problems in using IT systems, including help desk calls.
SRM Service Component	License Management	Defines the set of capabilities that support the purchase, upgrade and tracking of legal usage contracts for system software and applications.
SRM Service Component	Software Distribution	Defines the set of capabilities that support the propagation, installation and upgrade of written computer programs, applications and components.
SRM Service Component	Instrumentation and Testing	Defines the set of capabilities that support the validation of application or system capabilities and requirements.

3.8.6.6.5 NextGen Future Solutions

Type	Name	Description
NAS Activity	Manage System	The supervision of the necessary activities involved in regulating the

3.8.6.7 Human Resource Management (8.1)

3.8.6.7.1 Description

This activity involves all activities associated with the recruitment and management of personnel.

3.8.6.7.2 Purpose

The purpose of Human Resource Management is manage the recruitment of personnel and the management of the personnel.

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Human Resource Management A8.1

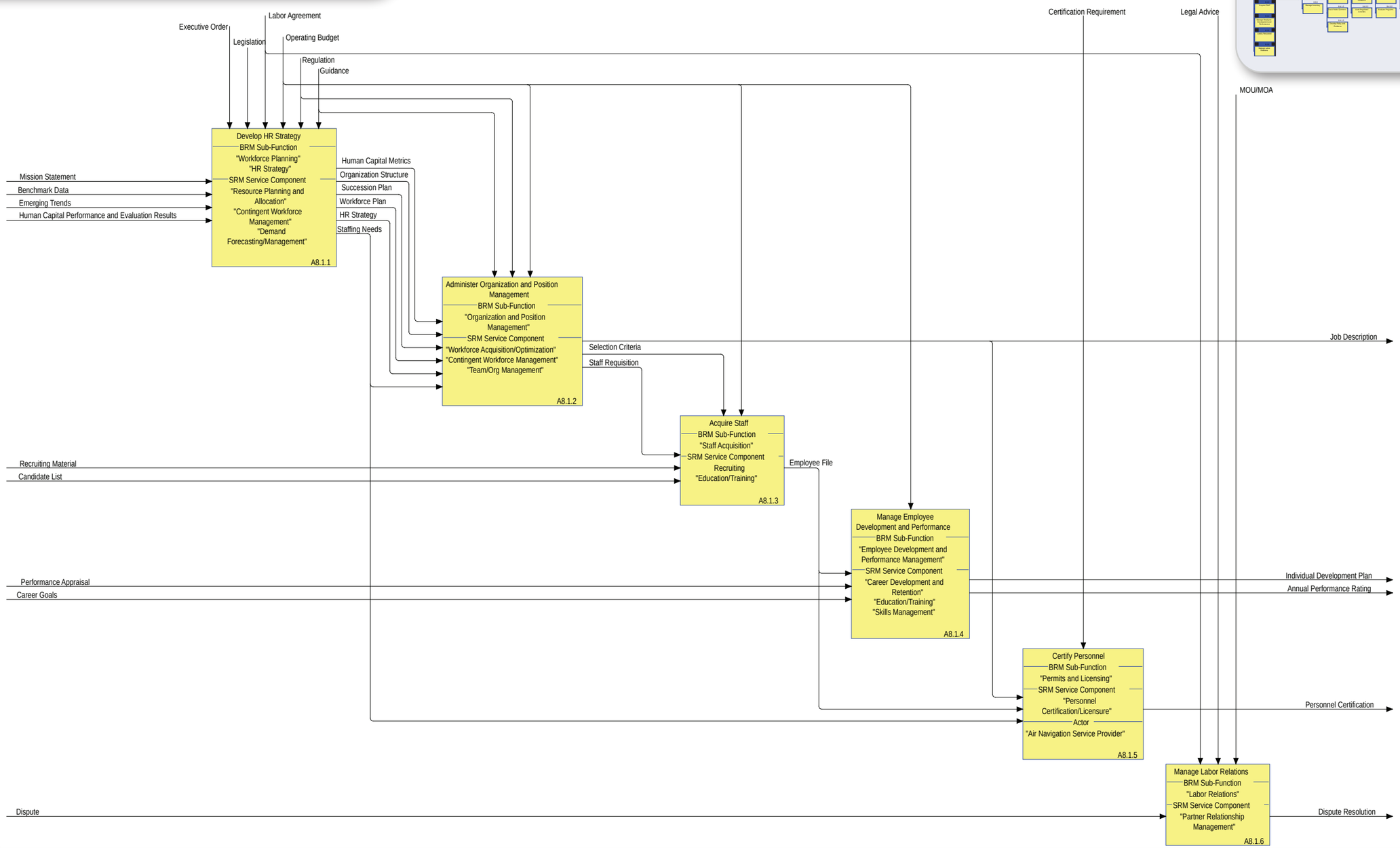

Figure 92 - 8.1 Human Resource Management Activity Model Diagram

3.8.6.8 Develop HR Strategy (8.1.1)

3.8.6.8.1 Description

This activity develops effective human capital management strategies to ensure federal organizations are able to recruit, select, develop, train, and manage a high-quality, productive workforce in accordance with merit system principles. This sub-function includes: conducting both internal and external environmental scans; developing human resources and human capital strategies and plans; establishing human resources policy and practices; managing current and future workforce competencies; developing workforce plans; developing succession plans; managing the human resources budget; providing human resources and human capital consultative support; and measuring and improving human resources performance.

3.8.6.8.2 JPDO Support Alignment

3.8.6.8.3 NextGen Drivers

Type	Name	Description
BRM Sub-Function	HR Strategy	HR Strategy develops effective human capital management strategies to ensure federal organizations are able to recruit, select, develop, train, and manage a high-quality, productive workforce in accordance with merit system principles. This sub-function includes: conducting both internal and external environmental scans; developing human resources and human capital strategies and plans; establishing human resources policy and practices; managing current and future workforce competencies; developing workforce plans; developing succession plans; managing the human resources budget; providing human resources and human capital consultative support; and measuring and improving human resources performance.
BRM Sub-Function	Workforce Planning	Workforce Planning involves the processes for identifying the workforce competencies required to meet the agency's strategic goals and for developing the strategies to meet these requirements.
SRM Service Component	Contingent Workforce Management	Defines the set of capabilities that support the continuity of operations for an organization's business through the identification of alternative organization personnel.
SRM Service Component	Resource Planning and Allocation	Defines the set of capabilities that support the determination of strategic direction, the identification and establishment of programs and processes, and the allocation of resources (capital and labor) among those programs and processes.
SRM Service Component	Demand Forecasting/ Management	Defines the set of capabilities that facilitate the prediction of sufficient production to meet an organization's sales of a product or service.

3.8.6.8.4 NextGen Future Solutions

3.8.6.9 Administer Organization and Position Management (8.1.2)

3.8.6.9.1 Description

This activity designs, develops, and implements organizational and position structures that create a high-performance, competency-driven framework that both advances the agency mission and serves agency human capital needs.

3.8.6.9.2 JPDO Support Alignment

3.8.6.9.3 NextGen Drivers

Type	Name	Description
BRM Sub-Function	Organization and Position Management	Organization and Position Management designs, develops, and implements organizational and position structures that create a high-performance, competency-driven framework that both advances the agency mission and serves agency human capital needs.
SRM Service Component	Contingent Workforce Management	Defines the set of capabilities that support the continuity of operations for an organization's business through the identification of alternative organization personnel.
SRM Service Component	Team/Org Management	Defines the set of capabilities that support the hierarchy structure and identification of employees within the various sub-groups of an organization.
SRM Service Component	Workforce Acquisition/ Optimization	Defines the set of capabilities that support the hiring and re-structuring of employees and their roles within an organization.

3.8.6.9.4 NextGen Future Solutions

3.8.6.10 Acquire Staff (8.1.3)

3.8.6.10.1 Description

This activity is the means that identifies the need, develops the requisition to fill that need, and the finding to fill that need to ensure continuous operations.

3.8.6.10.2 JPDO Support Alignment

3.8.6.10.3 NextGen Drivers

Type	Name	Description
BRM Sub-Function	Staff Acquisition	Staff Acquisition establishes procedures for recruiting and selecting high-quality, productive employees with the right skills and competencies, in accordance with merit system principles. This sub-function includes: developing a staffing strategy and plan; establishing an applicant evaluation approach; announcing the vacancy, sourcing and evaluating candidates against the competency requirements for the position; initiating pre-employment activities; and hiring employees.
SRM Service Component	Education/Training	Defines the set of capabilities that support the active building of employee capacities.
SRM Service Component	Recruiting	Defines the set of capabilities that support the identification and hiring of employees for an organization.

3.8.6.10.4 NextGen Future Solutions

3.8.6.11 Manage Employee Development and Performance (8.1.4)

3.8.6.11.1 Description

This activity designs, develops, and implements a comprehensive employee development approach to ensure that agency employees have the right competencies and skills for current and future work assignments. This sub-function includes conducting employee development needs assessments; designing employee development programs; administering and delivering employee development programs; and evaluating the overall effectiveness of the agency's employee development approach.

3.8.6.11.2 JPDO Support Alignment

3.8.6.11.3 NextGen Drivers

Type	Name	Description
BRM Sub-Function	Employee Development and Performance Management	
SRM Service Component	Education/Training	Defines the set of capabilities that support the active building of employee capacities.
SRM Service Component	Skills Management	Defines the set of capabilities that support the proficiency of employees in the delivery of an organization's products or services.
SRM Service Component	Career Development and Retention	Defines the set of capabilities that support the monitoring of performance as well as the professional growth, advancement, and retention of an organization's employees.

3.8.6.11.4 NextGen Future Solutions

3.8.6.12 Certify Personnel (8.1.5)

3.8.6.12.1 Description

This activity is the certification of personnel (ANSP certification for monitoring and regulating airspace, flight crew certification for operating aircraft, and airport personnel.

3.8.6.12.2 JPDO Support Alignment

3.8.6.12.3 NextGen Drivers

Type	Name	Description
Actor	Air Navigation Service Provider	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
CONOPS	2.4.3 Use of 4DTs for Integrated Trajectory-Based Operations	
CONOPS	2.7.4 ANSP Personnel Management to Support NextGen	
BRM Sub-Function	Permits and Licensing	Permits and Licensing involves activities associated with granting, revoking, and the overall management of the documented authority necessary to perform a regulated task or function.
SRM Service Component	Personnel Certification/ Licensure	Defines the set of capabilities that support the certification/licensing of personnel (e.g., profession certification, trade certification, professional designation, etc.) to qualify the individuals knowledge, skills, or abilities.

3.8.6.12.4 NextGen Future Solutions

3.8.6.13 Manage Labor Relations (8.1.6)

3.8.6.13.1 Description

This activity manages the relationship between the agency and its unions and bargaining units. This includes negotiating and administering labor contracts and collective bargaining agreements; managing negotiated grievances; and participating in negotiated third party proceedings.

3.8.6.13.2 JPDO Support Alignment

3.8.6.13.3 NextGen Drivers

Type	Name	Description
BRM Sub-Function	Labor Relations	Labor Relations manages the relationship between the agency and its unions and bargaining units. This includes negotiating and administering labor contracts and collective bargaining agreements; managing negotiated grievances; and participating in negotiated third party proceedings.
SRM Service Component	Partner Relationship Management	Defines the set of capabilities that provide a framework to promote the effective collaboration between an organization and its business partners, particularly members of the distribution chain (e.g. Channel and alliance partners, resellers, agents, brokers, and dealers) and other third parties that support operations and service delivery to an organization's customers; includes performance evalaution of partners, if necessary.

3.8.6.13.4 NextGen Future Solutions

3.8.6.14 Certification Services Management (8.2)

3.8.6.14.1 Description

This activity enables the certification process for facilities (including airports) and equipment

3.8.6.14.2 Purpose

The purpose of Certification Services is to provide the certification necessary for operating safely in the air transportation system. Certifications for people to operate in the airspace (i.e., flight operators), ANSP certification, systems/equipment certification, etc.

Core Business Services A8

Certification Services Management A8.2

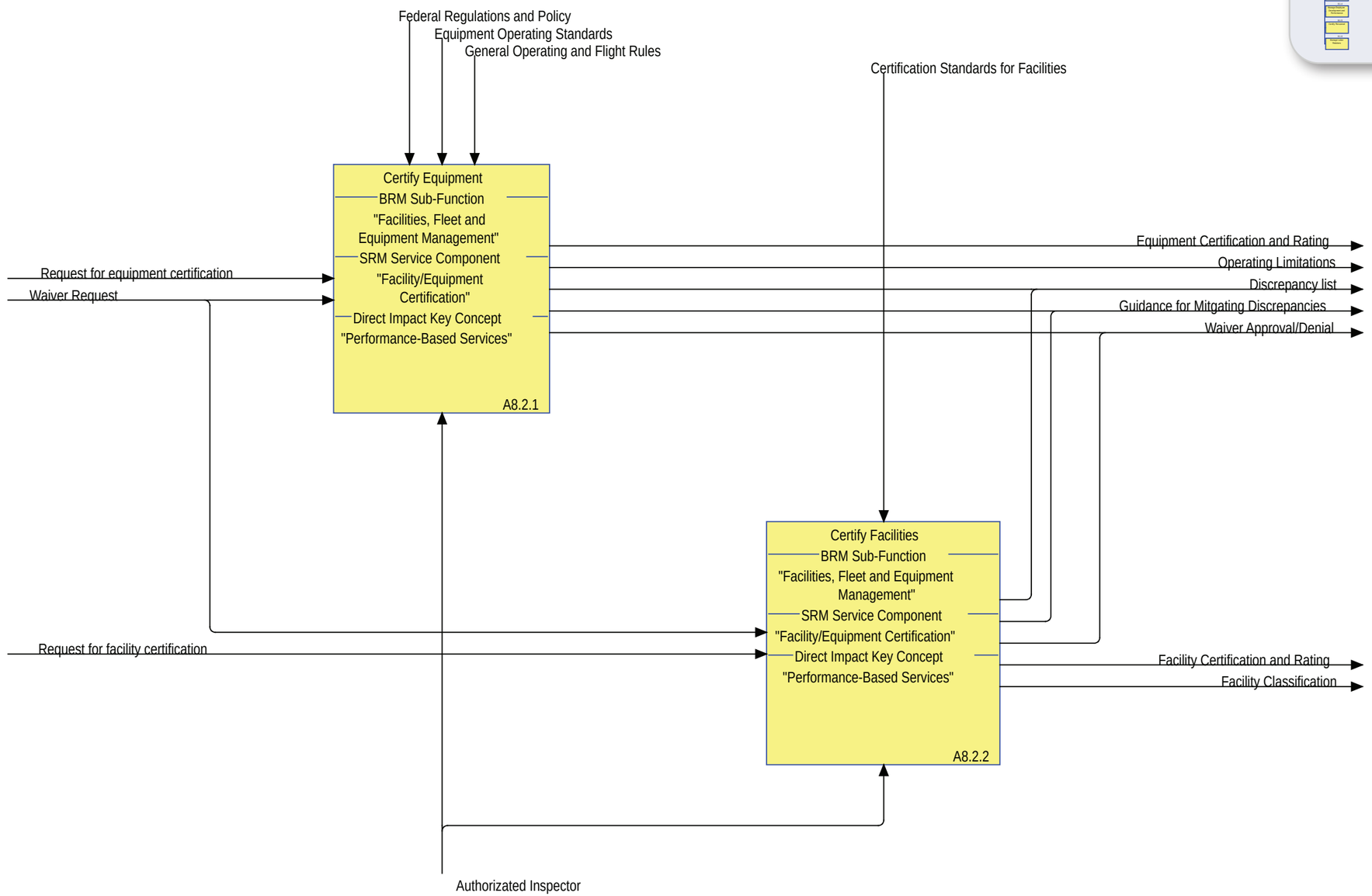

Figure 93 - 8.2 Certification Services Management Activity Model Diagram

3.8.6.15 Certify Equipment (8.2.1)

3.8.6.15.1 Description

This activity will certify facilities (i.e., airports, FAA facilities) and equipment in order to meet the standard requirements to conduct safe operations.

3.8.6.15.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Reduced unit level of aircraft emissions	Overall aircraft emissions can be reduced by improvements in aircraft engine and airframe technologies that reduce the unit generation of emissions by the aircraft and used by the fleet.
NextGen Operational Improvements	Reduced unit level of aircraft noise generation	Overall aircraft noise will be reduced by improvements in aircraft engine and airframe technologies that reduce the unit generation of noise by the aircraft and used by the fleet.

3.8.6.15.3 NextGen Drivers

Type	Name	Description
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Facilities, Fleet and Equipment Management	Facilities, Fleet, and Equipment Management involves the maintenance, administration, certification, and operation of office buildings, fleets, machinery, and other capital assets that are possessions of the federal government.
SRM Service Component	Facility/ Equipment Certification	Defines the set of capabilities that support the certification of facilities, equipment and products to ascertain the suitability, quality, performance, and compliance with a set of codes, regulations, standards, etc.

3.8.6.15.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Manage Facility	The supervision of the necessary activities involved in regulating the operation and maintenance of the physical plant at a location. This includes the land, buildings, utilities, and other support equipment.

3.8.6.16 Certify Facilities (8.2.2)

3.8.6.16.1 Description

This activity includes the evaluation and certification of all facilities within the Air Transportation System

3.8.6.16.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Reduced at-airport significant noise impact	Significant aircraft noise is contained within the airport boundary and/or neighboring compatible land uses.

3.8.6.16.3 NextGen Drivers

Type	Name	Description
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Facilities, Fleet and Equipment Management	Facilities, Fleet, and Equipment Management involves the maintenance, administration, certification, and operation of office buildings, fleets, machinery, and other capital assets that are possessions of the federal government.
SRM Service Component	Facility/ Equipment Certification	Defines the set of capabilities that support the certification of facilities, equipment and products to ascertain the suitability, quality, performance, and compliance with a set of codes, regulations, standards, etc.

3.8.6.16.4 NextGen Future Solutions

3.8.6.17 Supply Chain Management (8.3)

3.8.6.17.1 Description

This activity involves the purchasing, tracking, and overall management of goods and services.

3.8.6.17.2 Purpose

The purpose of Supply Chain Management is to provide the tracking, purchasing, and overall management of the goods and services of NextGen.

Core Business Services A8

Supply Chain Management A8.3

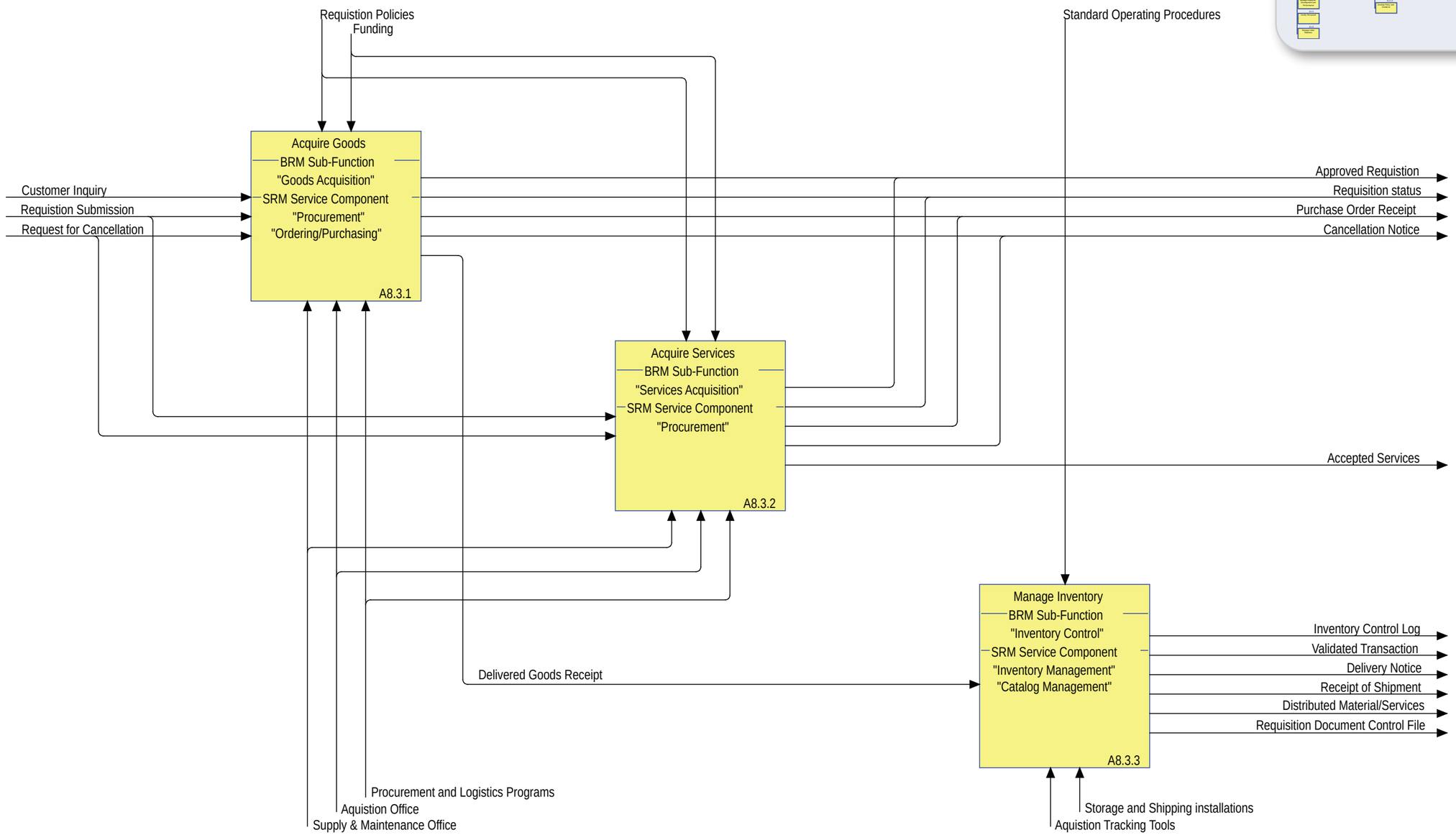

Figure 94 - 8.3 Supply Chain Management Activity Model Diagram

3.8.6.18 Acquire Goods (8.3.1)

3.8.6.18.1 Description
This activity enables the acquisition of goods and entails the procurement of physical goods, products, and capital assets to be used by the federal government.

3.8.6.18.2 JPDO Support Alignment

3.8.6.18.3 NextGen Drivers

Type	Name	Description
BRM Sub-Function	Goods Acquisition	Goods Acquisition involves the procurement of physical goods, products, and capital assets to be used by the federal government.
SRM Service Component	Ordering/ Purchasing	Defines the set of capabilities that allow the placement of request for a product.
SRM Service Component	Procurement	Defines the set of capabilities that support the ordering and purchasing of products and services.

3.8.6.18.4 NextGen Future Solutions

3.8.6.19 Acquire Services (8.3.2)

3.8.6.19.1 Description
This activity involves the oversight and/or management of contractors and service providers from the private sector.

3.8.6.19.2 JPDO Support Alignment

3.8.6.19.3 NextGen Drivers

Type	Name	Description
BRM Sub-Function	Services Acquisition	Services Acquisition involves the oversight and/or management of contractors and service providers from the private sector.
SRM Service Component	Procurement	Defines the set of capabilities that support the ordering and purchasing of products and services.

3.8.6.19.4 NextGen Future Solutions

3.8.6.20 Manage Inventory (8.3.3)

3.8.6.20.1 Description
This activity refers to the tracking of information related to procured assets and resources with regards to quantity, quality, and location.

3.8.6.20.2 JPDO Support Alignment

3.8.6.20.3 NextGen Drivers

Type	Name	Description
BRM Sub-Function	Inventory Control	Inventory Control refers to the tracking of information related to procured assets and resources with regard to quantity, quality, and location.
SRM Service Component	Catalog Management	Defines the set of capabilities that support the listing of available products or services that an organization offers.
SRM Service Component	Inventory Management	Defines the set of capabilities that provide for the balancing of customer service levels with inventory investment.

3.8.6.20.4 NextGen Future Solutions

3.8.6.21 Governance Management (8.4)

3.8.6.21.1 Description
This activity provides the federal and state policy, standards, and regulations to conduct airport and airspace operations. This includes policy/standard/regulations on environment, safety, aviation, and security.

3.8.6.21.2 Purpose
The purpose of Governance Management is to provide the NextGen all the policy's, standards, regulations, and requirements to be able to operate safely in the air transportation system. Safety policy's, environmental standards, international standards, etc will be involved in making NextGen successful.

Core Business Services A8

Governance Management A8.4

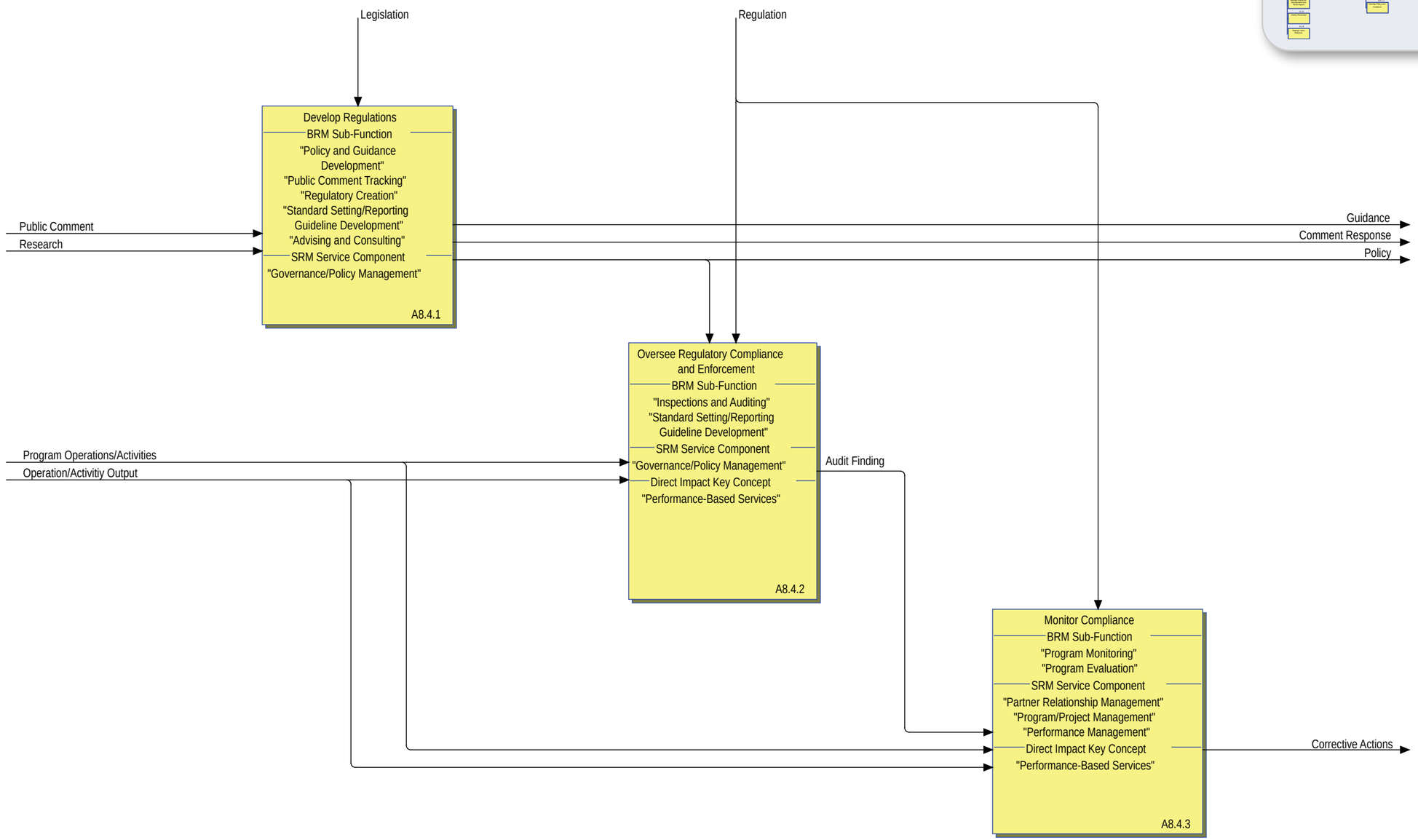

Figure 95 - 8.4 Governance Management Activity Model Diagram

3.8.6.22 Develop Regulations (8.4.1)

3.8.6.22.1 Description

This activity manages the activities associated developing regulations, policies, and guidance to implement laws.

3.8.6.22.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Environmental performance-based air traffic operations	Environmental performance criteria are integrated into the ATM system design and specific operations such as access to airspace, RNP route selection.
NextGen Operational Improvements	Use of environmental management processes integrated across aviation community	This OI involves the use of the EMS framework to address, plan and mitigate environmental issues (see OI 6013)

3.8.6.22.3 NextGen Drivers

Type	Name	Description
BRM Sub-Function	Policy and Guidance Development	Policy and Guidance Development – involves the creation and dissemination of guidelines to assist in the interpretation and implementation of regulations.
BRM Sub-Function	Public Comment Tracking	Public Comment Tracking involves the activities of soliciting, maintaining, and responding to public comments regarding proposed regulations.
BRM Sub-Function	Regulatory Creation	Regulatory Creation involves the activities of researching and drafting proposed and final regulations.
BRM Sub-Function	Advising and Consulting	Advising and Consulting involves the guidance and consultative services provided by the federal government to support the implementation of a specific Service for Citizen.
BRM Sub-Function	Standard Setting/ Reporting Guideline Development	Standard Setting / Reporting Guideline Development involves the establishment of allowable limits associated with a regulated activity and the development of reporting requirements necessary to monitor and control compliance with allowable limits. This includes the development of requirements for product sampling and testing, emissions monitoring and control, incident reporting, financial filings, etc.
SRM Service Component	Governance/ Policy Management	Defines the set of capabilities that influence and determine decisions, sections, business rules and other matters within an organization.

3.8.6.22.4 NextGen Future Solutions

3.8.6.23 Oversee Regulatory Compliance and Enforcement (8.4.2)

3.8.6.23.1 Description

This activity is the direct monitoring and oversight of a specific individual, group, industry, or community participating in a regulated activity via market mechanisms, command and control features, or other means to control or govern conduct or behavior. This activity includes the development of standard setting and reporting guidelines development.

3.8.6.23.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Environmental performance-based air traffic operations	Environmental performance criteria are integrated into the ATM system design and specific operations such as access to airspace, RNP route selection.
NextGen Operational Improvements	Proactively address emergent environmental issues	This OI will address environmental issues such as maintaining water quality, lowering energy intensity, and minimizing aviation's impact on global climate change.
NextGen Operational Improvements	Reduced separations through wake-diminishing airframes	Improved airframe designs diminish wake strength allowing reduced separation independent of wake detecting and/or predicting technologies and accompanying procedures. Reduced spacing may require additional procedures to achieve maximum benefit, especially with mixed airframe capability. This OI may also require improved wake detection technologies to achieve maximum benefit due to reduced vortex detection signal strength.
NextGen Operational Improvements	Reduced terminal and enroute significant noise impact	Noise- and emissions-favorable RNP routes are used en route. This OI also includes reduction of noise over national parks.
NextGen Operational Improvements	Reduced unit level of aircraft emissions	Overall aircraft emissions can be reduced by improvements in aircraft engine and airframe technologies that reduce the unit generation of emissions by the aircraft and used by the fleet.
NextGen Operational Improvements	Reduced unit level of aircraft noise generation	Overall aircraft noise will be reduced by improvements in aircraft engine and airframe technologies that reduce the unit generation of noise by the aircraft and used by the fleet.
NextGen Operational Improvements	Reduced unit level of GSE emissions	Overall GSE emissions will be reduced by improvements in GSE engine and vehicle technologies that reduce the unit generation of emissions by the GSE and used at the airport.

3.8.6.23.3 NextGen Drivers

Type	Name	Description
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Inspections and Auditing	Inspections & Auditing involves the methodical examination and review of regulated activities to ensure compliance with standards for regulated activity.
BRM Sub-Function	Standard Setting/ Reporting Guideline Development	Standard Setting / Reporting Guideline Development involves the establishment of allowable limits associated with a regulated activity and the development of reporting requirements necessary to monitor and control compliance with allowable limits. This includes the development of requirements for product sampling and testing, emissions monitoring and control, incident reporting, financial filings, etc.

Type	Name	Description
SRM Service Component	Governance/ Policy Management	Defines the set of capabilities that influence and determine decisions, sections, business rules and other matters within an organization.

3.8.6.23.4 NextGen Future Solutions

3.8.6.24 Monitor Compliance (8.4.3)

3.8.6.24.1 Description

This activity ensures that the operations and programs of the Federal government and its external business partners comply with applicable laws and regulations and prevent waste, fraud, and abuse. Includes Program Monitoring and Program Evaluation.

3.8.6.24.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Use of environmental management processes integrated across aviation community	This OI involves the use of the EMS framework to address, plan and mitigate environmental issues (see OI 6013)

3.8.6.24.3 NextGen Drivers

Type	Name	Description
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Program Evaluation	Program Evaluation involves the analysis of internal and external program effectiveness and the determination of corrective actions as appropriate.
BRM Sub-Function	Program Monitoring	Program Monitoring involves the data gathering activities required to determine the effectiveness of internal and external programs and the extent to which they comply with related laws, regulations, and policies.
SRM Service Component	Partner Relationship Management	Defines the set of capabilities that provide a framework to promote the effective collaboration between an organization and its business partners, particularly members of the distribution chain (e.g. Channel and alliance partners, resellers, agents, brokers, and dealers) and other third parties that support operations and service delivery to an organization's customers; includes performance evalaution of partners, if necessary.
SRM Service Component	Program/Project Management	Defines the set of capabilities that manage and control of a particular effort of an organization.
SRM Service Component	Performance Management	Defines the set of capabilities that measure the effectiveness of an organization's financial assets and capital.

3.8.6.24.4 NextGen Future Solutions

3.8.6.25 Develop Regulations (8.4.1)

3.8.6.25.1 Description

This activity manages the activities associated developing regulations, policies, and guidance to implement laws.

Core Business Services A8

Governance Management A8.4

Develop Regulations A8.4.1

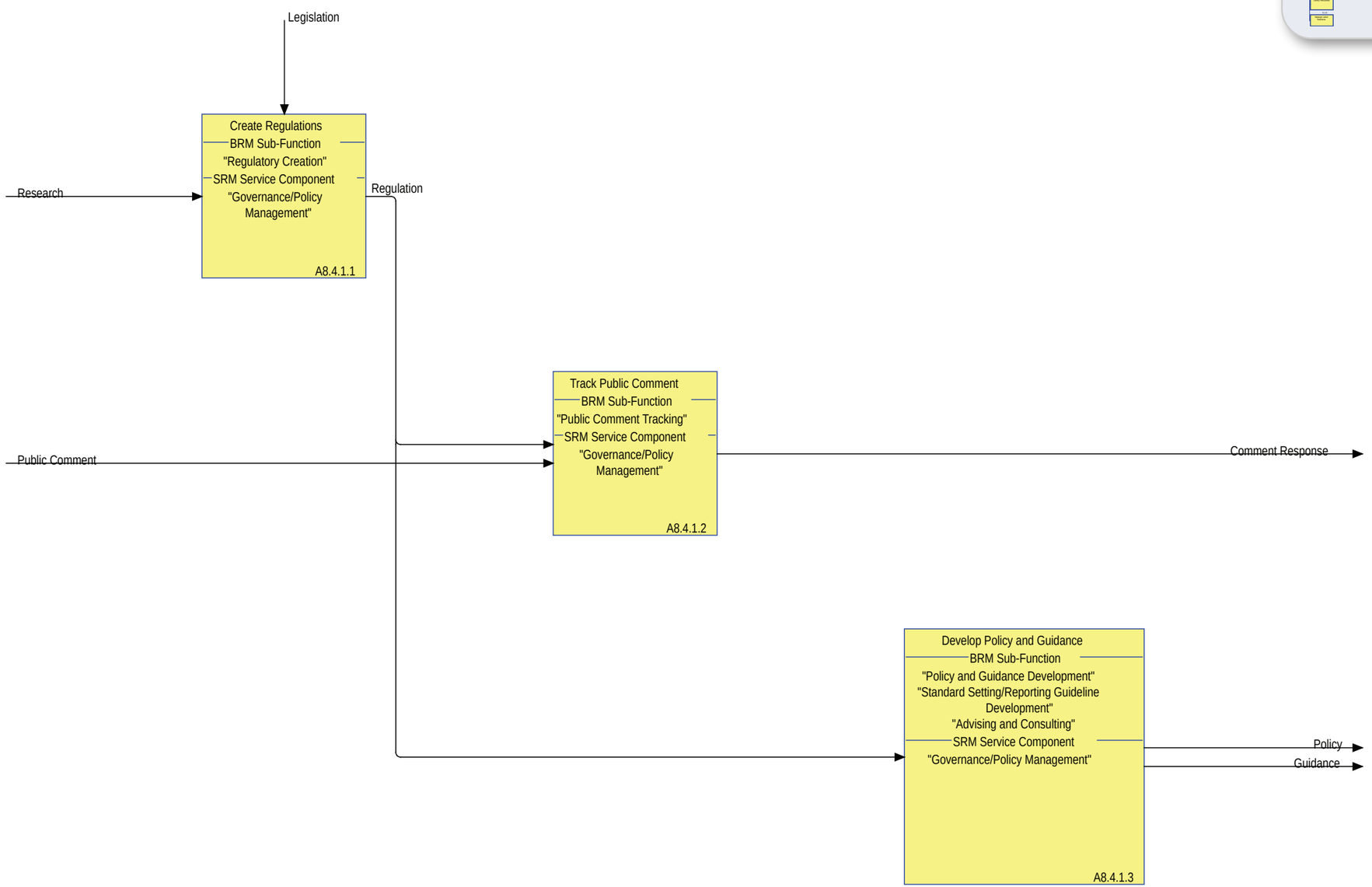

Figure 96 - 8.4.1 Develop Regulations Activity Model Diagram

3.8.6.26 Create Regulations (8.4.1.1)

3.8.6.26.1 Description

This activity processes the activities of researching and drafting proposed and final regulations.

3.8.6.26.2 JPDO Support Alignment

3.8.6.26.3 NextGen Drivers

Type	Name	Description
BRM Sub-Function	Regulatory Creation	Regulatory Creation involves the activities of researching and drafting proposed and final regulations.
SRM Service Component	Governance/ Policy Management	Defines the set of capabilities that influence and determine decisions, sections, business rules and other matters within an organization.

3.8.6.26.4 NextGen Future Solutions

3.8.6.27 Track Public Comment (8.4.1.2)

3.8.6.27.1 Description

This activity involves the activities of soliciting, maintaining, and responding to public comments regarding proposed regulations.

3.8.6.27.2 JPDO Support Alignment

3.8.6.27.3 NextGen Drivers

Type	Name	Description
BRM Sub-Function	Public Comment Tracking	Public Comment Tracking involves the activities of soliciting, maintaining, and responding to public comments regarding proposed regulations.
SRM Service Component	Governance/ Policy Management	Defines the set of capabilities that influence and determine decisions, sections, business rules and other matters within an organization.

3.8.6.27.4 NextGen Future Solutions

3.8.6.28 Develop Policy and Guidance (8.4.1.3)

3.8.6.28.1 Description

This activity manages the creation and dissemination of guidelines to assist in the interpretation and implementation of regulations.

3.8.6.28.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Common and synchronized airport emergency and disaster response	Acceptance of a standard approach to responding to catastrophic emergency/disaster for airports to enable seamless integration of regional and national response resources when needed (Policy).

3.8.6.28.3 NextGen Drivers

Type	Name	Description
ICAO ATMCP Requirement	R 12	Information exchange protocols and procedures shall be established to ensure that appropriate performance can be achieved within the agreed rules
ICAO ATMCP Requirement	R 101	ATM system design, development, implementation and operation shall be determined by collaborative decision-making, system safety, and system wide business cases
ICAO ATMCP Requirement	R126	Where a State or Region intends to change or withdraw existing infrastructure and/or services, a minimum notice period shall be collaboratively agreed.
BRM Sub-Function	Policy and Guidance Development	Policy and Guidance Development – involves the creation and dissemination of guidelines to assist in the interpretation and implementation of regulations.
BRM Sub-Function	Advising and Consulting	Advising and Consulting involves the guidance and consultative services provided by the federal government to support the implementation of a specific Service for Citizen.
BRM Sub-Function	Standard Setting/Reporting Guideline Development	Standard Setting / Reporting Guideline Development involves the establishment of allowable limits associated with a regulated activity and the development of reporting requirements necessary to monitor and control compliance with allowable limits. This includes the development of requirements for product sampling and testing, emissions monitoring and control, incident reporting, financial filings, etc.
SRM Service Component	Governance/Policy Management	Defines the set of capabilities that influence and determine decisions, sections, business rules and other matters within an organization.

3.8.6.28.4 NextGen Future Solutions

3.8.6.29 Oversee Regulatory Compliance and Enforcement (8.4.2)

3.8.6.29.1 Description

This activity is the direct monitoring and oversight of a specific individual, group, industry, or community participating in a regulated activity via market mechanisms, command and control features, or other means to control or govern conduct or behavior. This activity includes the development of standard setting and reporting guidelines development.

Core Business Services A8

Governance Management A8.4

Oversee Regulatory Compliance and Enforcement A8.4.2

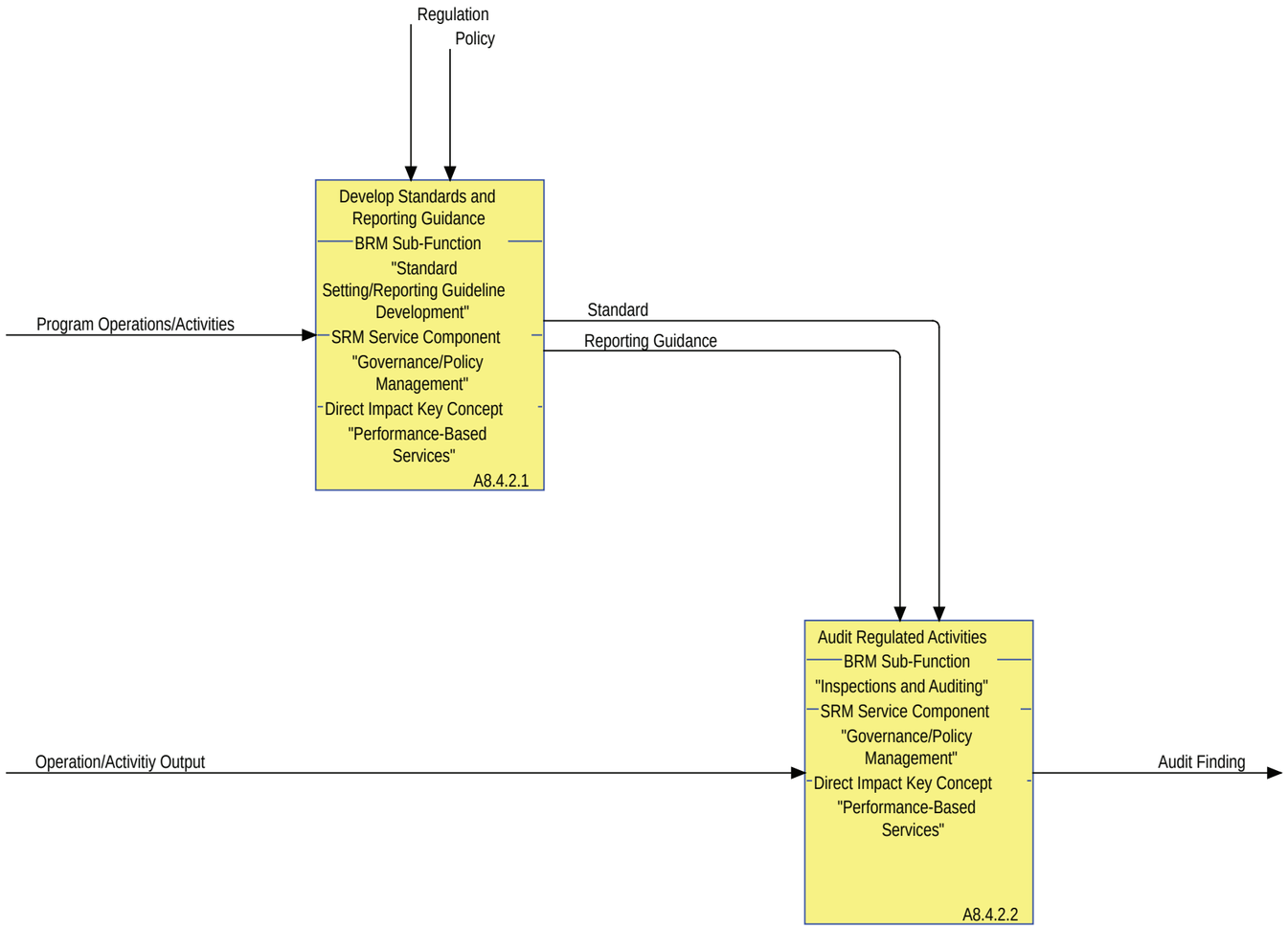

Figure 97 - 8.4.2 Oversee Regulatory Compliance and Enforcement Activity Model Diagram

3.8.6.30 Develop Standards and Reporting Guidance (8.4.2.1)

3.8.6.30.1 Description

This activity establishes of allowable limits associated with a regulated activity and the development of reporting requirements necessary to monitor and control compliance with allowable limits. This includes the development of requirements for product sampling and testing, emissions monitoring and control, incident reporting, financial filings, etc.

3.8.6.30.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Environmental performance-based air traffic operations	Environmental performance criteria are integrated into the ATM system design and specific operations such as access to airspace, RNP route selection.
NextGen Operational Improvements	Improved aircraft upset prevention and recovery	Upset prevention and recovery is improved through equipage of aircraft with guidance and control countermeasures. Flight control systems are introduced to implement guidance and control measures for recovery from failure/loss-of-control conditions.
NextGen Operational Improvements	Increased crash survivability - energy absorbing structures	Survivability is improved in survivable accidents by minimizing loads and maintaining habitable volumes through introduction of improved energy absorbing seats, restraints, and energy absorbing aircraft and ground structures.
NextGen Operational Improvements	Proactively address emergent environmental issues	This OI will address environmental issues such as maintaining water quality, lowering energy intensity, and minimizing aviation's impact on global climate change.
NextGen Operational Improvements	Reduced separations through wake-diminishing airframes	Improved airframe designs diminish wake strength allowing reduced separation independent of wake detecting and/or predicting technologies and accompanying procedures. Reduced spacing may require additional procedures to achieve maximum benefit, especially with mixed airframe capability. This OI may also require improved wake detection technologies to achieve maximum benefit due to reduced vortex detection signal strength.
NextGen Operational Improvements	Reduced terminal and enroute significant noise impact	Noise- and emissions-favorable RNP routes are used en route. This OI also includes reduction of noise over national parks.
NextGen Operational Improvements	Reduced unit level of aircraft emissions	Overall aircraft emissions can be reduced by improvements in aircraft engine and airframe technologies that reduce the unit generation of emissions by the aircraft and used by the fleet.
NextGen Operational Improvements	Reduced unit level of aircraft noise generation	Overall aircraft noise will be reduced by improvements in aircraft engine and airframe technologies that reduce the unit generation of noise by the aircraft and used by the fleet.
NextGen Operational Improvements	Reduced unit level of GSE emissions	Overall GSE emissions will be reduced by improvements in GSE engine and vehicle technologies that reduce the unit generation of emissions by the GSE and used at the airport.

3.8.6.30.3 NextGen Drivers

Type	Name	Description
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Standard Setting/Reporting Guideline Development	Standard Setting / Reporting Guideline Development involves the establishment of allowable limits associated with a regulated activity and the development of reporting requirements necessary to monitor and control compliance with allowable limits. This includes the development of requirements for product sampling and testing, emissions monitoring and control, incident reporting, financial filings, etc.
SRM Service Component	Governance/ Policy Management	Defines the set of capabilities that influence and determine decisions, sections, business rules and other matters within an organization.

3.8.6.30.4 NextGen Future Solutions

3.8.6.31 Audit Regulated Activities (8.4.2.2)

3.8.6.31.1 Description

This activity involves the methodical examination and review of regulated activities to ensure compliance with standards for regulated activity.

3.8.6.31.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Common and synchronized airport emergency and disaster response	Acceptance of a standard approach to responding to catastrophic emergency/disaster for airports to enable seamless integration of regional and national response resources when needed (Policy).
NextGen Operational Improvements	Environmental performance-based air traffic operations	Environmental performance criteria are integrated into the ATM system design and specific operations such as access to airspace, RNP route selection.
NextGen Operational Improvements	Proactively address emergent environmental issues	This OI will address environmental issues such as maintaining water quality, lowering energy intensity, and minimizing aviation's impact on global climate change.
NextGen Operational Improvements	Use of environmental management processes integrated across aviation community	This OI involves the use of the EMS framework to address, plan and mitigate environmental issues (see OI 6013)

3.8.6.31.3 NextGen Drivers

3.8.6.31.4 NextGen Future Solutions

3.8.6.32 Monitor Compliance (8.4.3)

3.8.6.32.1 Description

This activity ensures that the operations and programs of the Federal government and its external business partners comply with applicable laws and regulations and prevent waste, fraud, and abuse. Includes Program Monitoring and Program Evaluation.

Core Business Services A8

Governance Management A8.4

Monitor Compliance A8.4.3

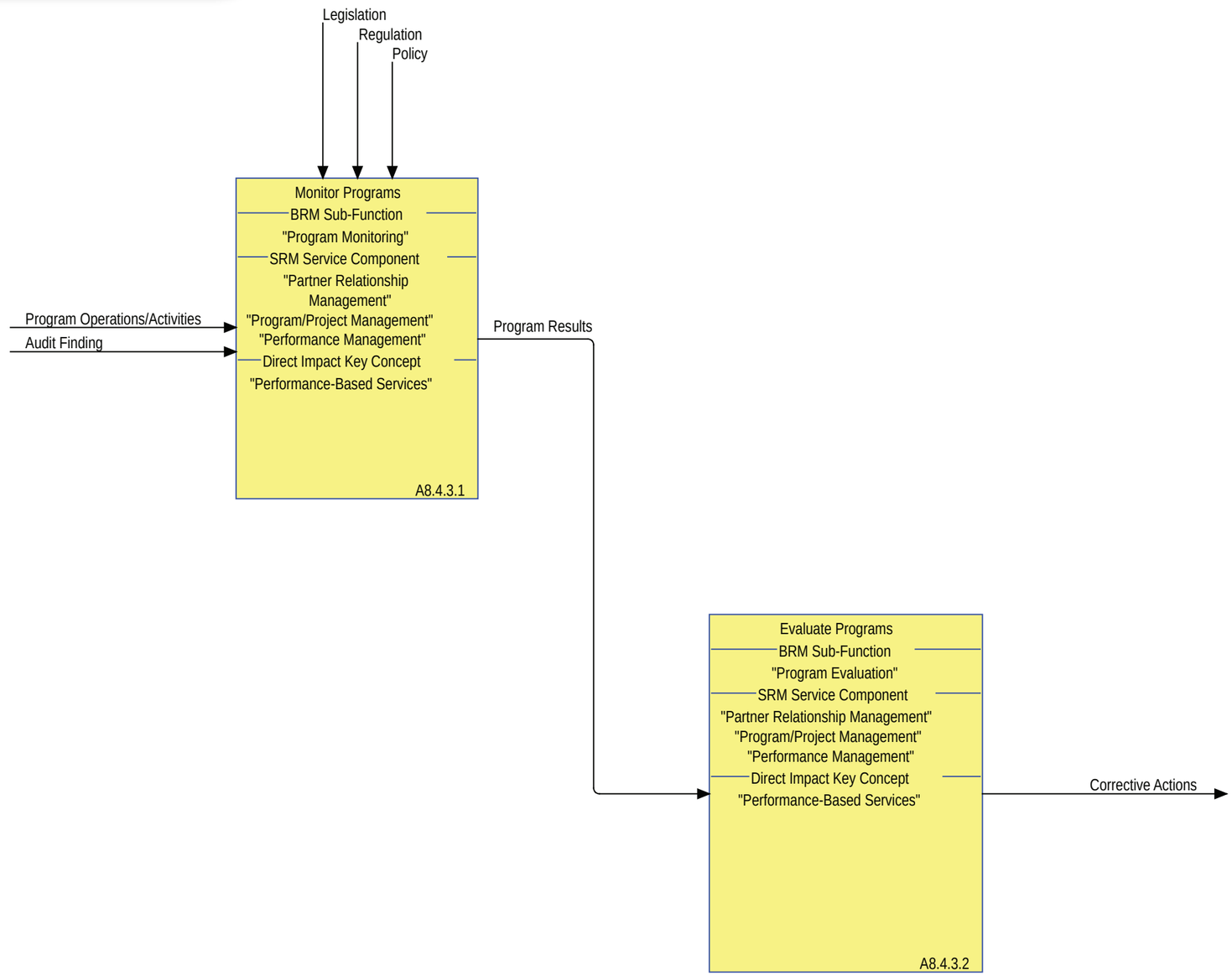

Figure 98 - 8.4.3 Monitor Compliance Activity Model Diagram

3.8.6.33 Monitor Programs (8.4.3.1)

3.8.6.33.1 Description

This activity involves the data-gathering activities required to determine the effectiveness of internal and external programs and the extent to which they comply with related laws, regulations, and policies.

3.8.6.33.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Increased crash survivability - energy absorbing structures	Survivability is improved in survivable accidents by minimizing loads and maintaining habitable volumes through introduction of improved energy absorbing seats, restraints, and energy absorbing aircraft and ground structures.
NextGen Operational Improvements	Use of environmental management processes integrated across aviation community	This OI involves the use of the EMS framework to address, plan and mitigate environmental issues (see OI 6013)

3.8.6.33.3 NextGen Drivers

Type	Name	Description
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Program Monitoring	Program Monitoring involves the data gathering activities required to determine the effectiveness of internal and external programs and the extent to which they comply with related laws, regulations, and policies.
SRM Service Component	Partner Relationship Management	Defines the set of capabilities that provide a framework to promote the effective collaboration between an organization and its business partners, particularly members of the distribution chain (e.g. Channel and alliance partners, resellers, agents, brokers, and dealers) and other third parties that support operations and service delivery to an organization's customers; includes performance evalaution of partners, if necessary.
SRM Service Component	Program/Project Management	Defines the set of capabilities that manage and control of a particular effort of an organization.
SRM Service Component	Performance Management	Defines the set of capabilities that measure the effectiveness of an organization's financial assets and capital.

3.8.6.33.4 NextGen Future Solutions

3.8.6.34 Evaluate Programs (8.4.3.2)

3.8.6.34.1 Description

This activity involves the analysis of internal and external program effectiveness and the determination of corrective actions as appropriate.

3.8.6.34.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Increased crash survivability - energy absorbing structures	Survivability is improved in survivable accidents by minimizing loads and maintaining habitable volumes through introduction of improved energy absorbing seats, restraints, and energy absorbing aircraft and ground structures.

3.8.6.34.3 NextGen Drivers

Type	Name	Description
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Program Evaluation	Program Evaluation involves the analysis of internal and external program effectiveness and the determination of corrective actions as appropriate.
SRM Service Component	Partner Relationship Management	Defines the set of capabilities that provide a framework to promote the effective collaboration between an organization and its business partners, particularly members of the distribution chain (e.g. Channel and alliance partners, resellers, agents, brokers, and dealers) and other third parties that support operations and service delivery to an organization's customers; includes performance evalaution of partners, if necessary.
SRM Service Component	Program/Project Management	Defines the set of capabilities that manage and control of a particular effort of an organization.
SRM Service Component	Performance Management	Defines the set of capabilities that measure the effectiveness of an organization's financial assets and capital.

3.8.6.34.4 NextGen Future Solutions

3.8.6.35 Financial Management (8.5)

3.8.6.35.1 Description

This activity uses financial information to measure, operate and predict the effectiveness and efficiency of NextGen activities in relation to its objectives. The ability to obtain and use such information is usually characterized by having in place policies, practices, standards, and a system of controls that reliably capture and report activity in a consistent manner.
This is distinctive from standard financial management due to the unique funding of airport as well as the jurisdictional nature of the spending of revenue dollars on airport improvements.

3.8.6.35.2 Purpose

The purpose of Financial Management is to provide the information used to measure, operate, and predict the effectiveness and efficiency of NextGen activities in relation to its objectives.

Core Business Services A8

Financial Management A8.5

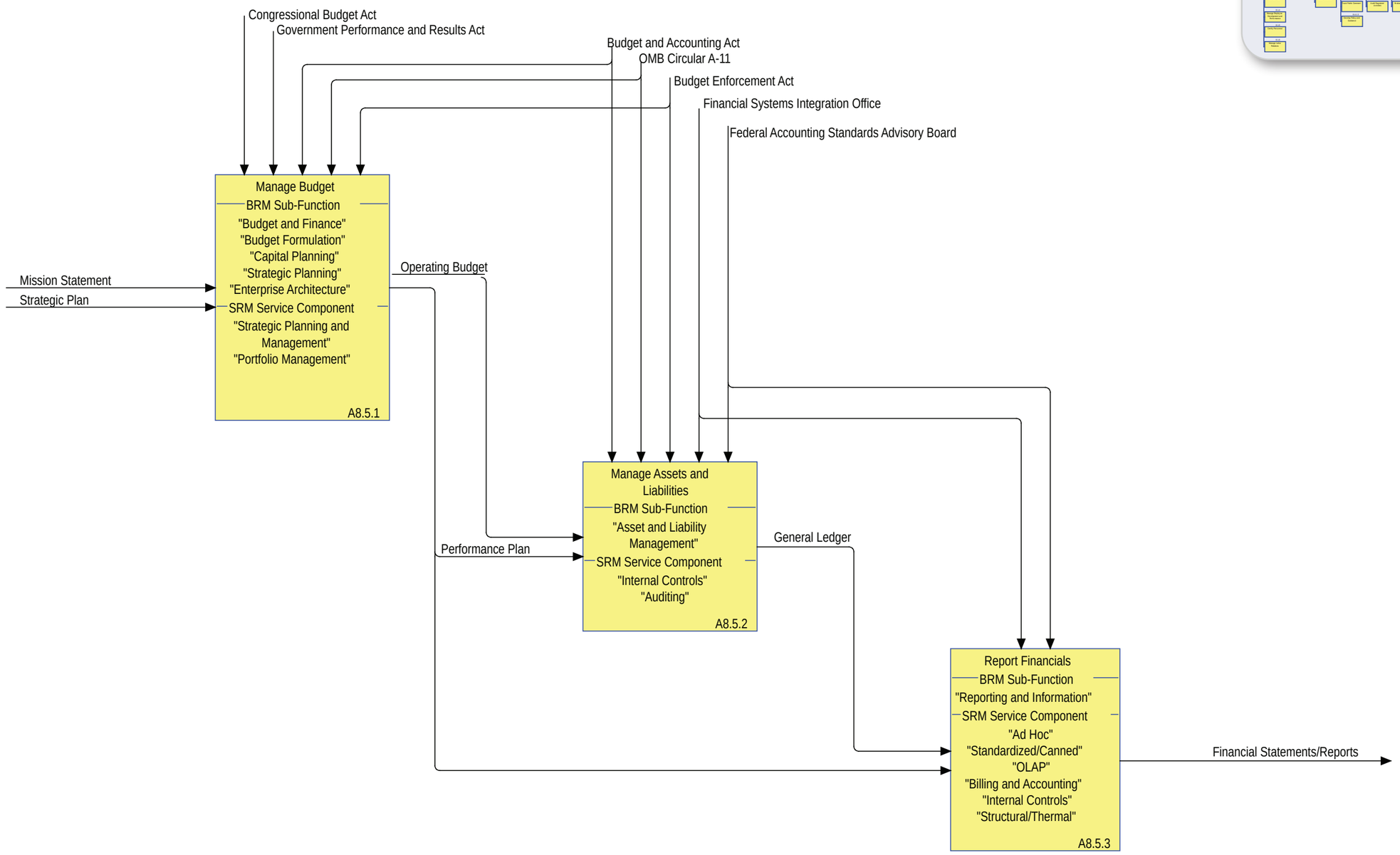

Figure 99 - 8.5 Financial Management Activity Model Diagram

3.8.6.36 Manage Budget (8.5.1)

3.8.6.36.1 Description

This activity includes the management of the Federal budget process including the development of plans and programs, budgets, and performance outputs and outcomes as well as financing Federal programs and operations through appropriation and apportionment of direct and reimbursable spending authority, fund transfers, investments and other financing mechanisms.

3.8.6.36.2 JPDO Support Alignment

3.8.6.36.3 NextGen Drivers

Type	Name	Description
BRM Sub-Function	Budget Formulation	Budget Formulation involves all activities undertaken to determine priorities for future spending and to develop an itemized forecast of future funding and expenditures during a targeted period of time. This includes the collection and use of performance information to assess the effectiveness of programs and develop budget priorities.
BRM Sub-Function	Capital Planning	Capital Planning involves the processes for ensuring that appropriate investments are selected for capital expenditures.
BRM Sub-Function	Enterprise Architecture	Enterprise Architecture is an established process for describing the current state and defining the target state and transition strategy for an organization's people, processes, and technology.
BRM Sub-Function	Strategic Planning	Strategic Planning entails the determination of annual and long-term goals and the identification of the best approach for achieving those goals.
BRM Sub-Function	Budget and Finance	
SRM Service Component	Portfolio Management	Defines the set of capabilities that support the administration of a group of investments held by an organization.
SRM Service Component	Strategic Planning and Management	Defines the set of capabilities that support the determination of long-term goals and the identification of the best approach for achieving those goals.

3.8.6.36.4 NextGen Future Solutions

3.8.6.37 Manage Assets and Liabilities (8.5.2)

3.8.6.37.1 Description

This activity provides accounting support for the management of assets and liabilities of the Federal government.

3.8.6.37.2 JPDO Support Alignment

3.8.6.37.3 NextGen Drivers

Type	Name	Description
BRM Sub-Function	Asset and Liability Management	Asset and Liability Management provides accounting support for the management of assets and liabilities of the Federal government.
SRM Service Component	Auditing	Defines the set of capabilities that support the examination and verification of records for accuracy.
SRM Service Component	Internal Controls	Defines the set of capabilities that support the methods and procedures used by the organization to safeguard its assets, produce accurate accounting data and reports, contribute to efficient operations, and encourage staff to adhere to management policies and mission requirements.

3.8.6.37.4 NextGen Future Solutions

3.8.6.38 Report Financials (8.5.3)

3.8.6.38.1 Description

This activity reports the financial information, reporting and analysis of financial transactions.

3.8.6.38.2 JPDO Support Alignment

3.8.6.38.3 NextGen Drivers

Type	Name	Description
BRM Sub-Function	Reporting and Information	Reporting and Information includes providing financial information, reporting and analysis of financial transactions.
SRM Service Component	Structural/Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.
SRM Service Component	Ad Hoc	Defines the set of capabilities that support the use of dynamic reports on an as needed basis.
SRM Service Component	OLAP	Defines the set of capabilities that support the analysis of information that has been summarized into multidimensional views and hierarchies.
SRM Service Component	Standardized/ Canned	Defines the set of capabilities that support the use of preconceived or pre-written reports.
SRM Service Component	Internal Controls	Defines the set of capabilities that support the methods and procedures used by the organization to safeguard its assets, produce accurate accounting data and reports, contribute to efficient operations, and encourage staff to adhere to management policies and mission requirements.
SRM Service Component	Billing and Accounting	Defines the set of capabilities that support the charging, collection and reporting of an organization's accounts.

3.8.6.38.4 NextGen Future Solutions

3.8.6.39 Information and Technology Management (8.6)

3.8.6.39.1 Description

This activity involves the coordination of information and technology resources and systems required to support or provide a service.

3.8.6.39.2 Purpose

The purpose of Information and Technology Management is at the heart of the NextGen concept. Its features allow the NextGen to adapt to growth in operations as well as shifts in demand, making NextGen a scalable system.

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Information and Technology Management A8.6

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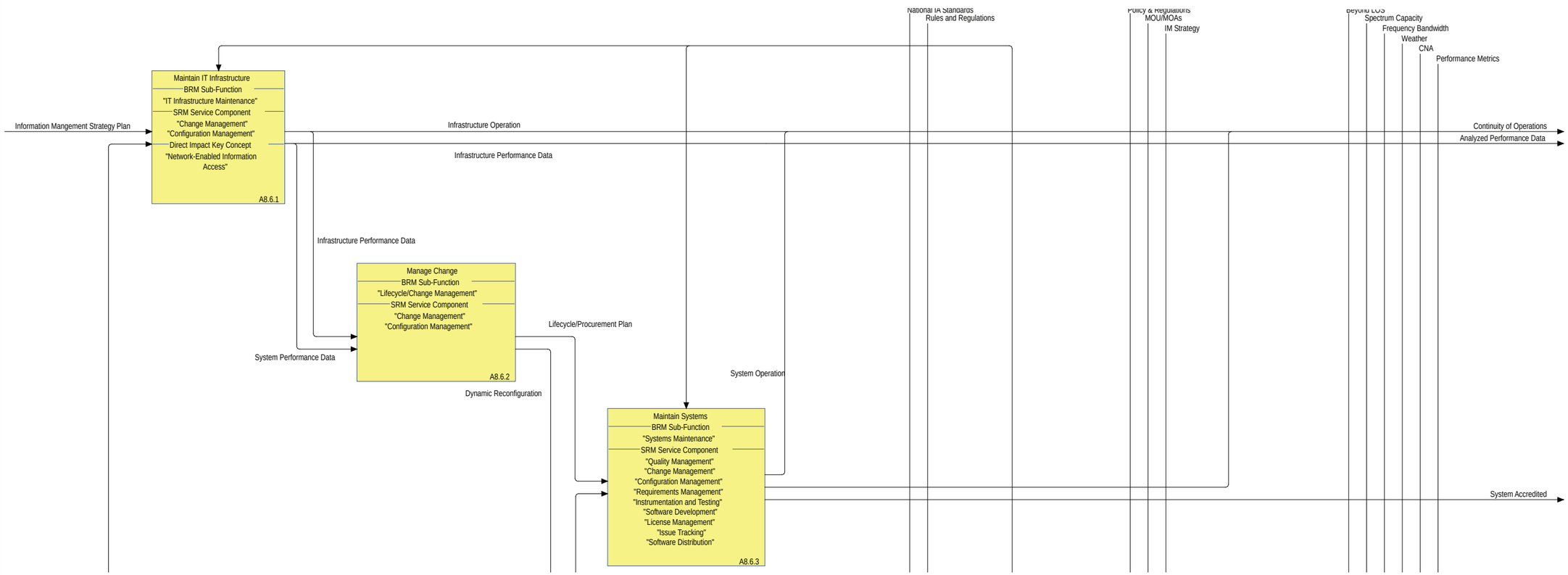
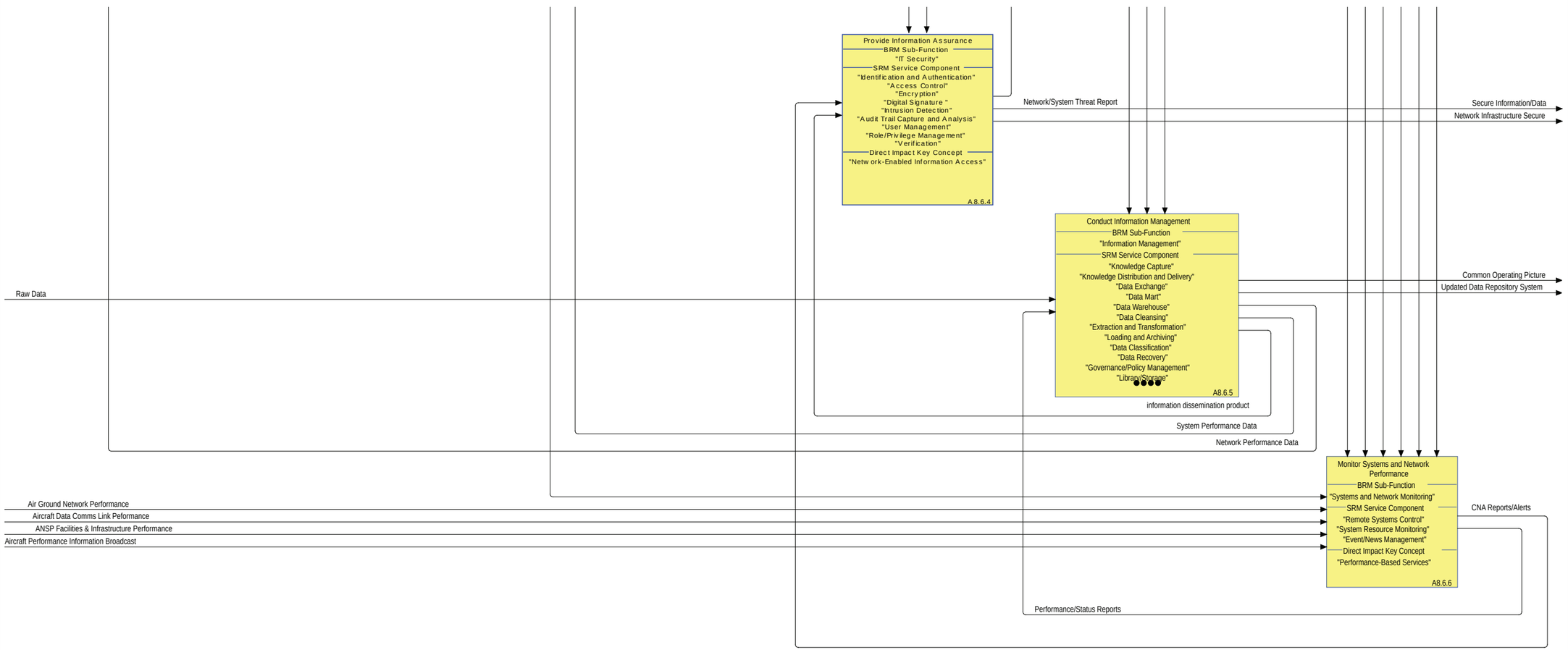


Figure 100 - 8.6 Information and Technology Management Activity Model Diagram

Core Business Services A8

Information and Technology Management A8.6

2 of 2



.8.6.40 Maintain IT Infrastructure (8.6.1)

3.8.6.40.1 Description

This activity involves the planning, design, and maintenance of an IT Infrastructure to effectively support automated needs (i.e. platforms, networks, servers, printers, etc.).

3.8.6.40.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Automated Clearance Delivery and Frequency Changes	Controller productivity enhanced through en route data link communication of ATC clearances and frequency handoffs to pilot.
NextGen Operational Improvements	Net-centric security situational awareness and management of airport.	Information fusion of all data inputs at airport to a central airport operations center, connecting data, intelligence, predictive systems, imagery and risk analysis to national and regional systems. This OI builds off of NEO backbone to support routine and emergency decision-making.
NextGen Operational Improvements	Trajectory Negotiation - Level 1	ANSP productivity is increased through digital exchange of route and trajectory changes with aircraft in high-altitude airspace. Trajectories are negotiated between flight deck and ground via data link.

3.8.6.40.3 NextGen Drivers

Type	Name	Description
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	IT Infrastructure Maintenance	IT Infrastructure Maintenance involves the planning, design, and maintenance of an IT Infrastructure to effectively support automated needs (i.e. platforms, networks, servers, printers, etc.).
SRM Service Component	Change Management	Defines the set of capabilities that control the process for updates or modifications to the existing documents, software or business processes of an organization.
SRM Service Component	Configuration Management	Defines the set of capabilities that control the hardware and software environments, as well as documents of an organization.

3.8.6.40.4 NextGen Future Solutions

3.8.6.41 Manage Change (8.6.2)

3.8.6.41.1 Description

This activity involves the processes that facilitate a smooth evolution, composition, and workforce transition of the design and implementation of changes to agency resources such as assets, methodologies, systems, or procedures.

3.8.6.41.2 JPDO Support Alignment

3.8.6.41.3 NextGen Drivers

Type	Name	Description
BRM Sub-Function	Lifecycle/Change Management	Lifecycle/Change Management involves the processes that facilitate a smooth evolution, composition, and workforce transition of the design and implementation of changes to agency resources such as assets, methodologies, systems, or procedures.
SRM Service Component	Change Management	Defines the set of capabilities that control the process for updates or modifications to the existing documents, software or business processes of an organization.
SRM Service Component	Configuration Management	Defines the set of capabilities that control the hardware and software environments, as well as documents of an organization.

3.8.6.41.4 NextGen Future Solutions

3.8.6.42 Maintain Systems (8.6.3)

3.8.6.42.1 Description

This activity supports all activities associated with the maintenance of in-house designed software applications.

3.8.6.42.2 JPDO Support Alignment

3.8.6.42.3 NextGen Drivers

Type	Name	Description
BRM Sub-Function	Systems Maintenance	
SRM Service Component	Change Management	Defines the set of capabilities that control the process for updates or modifications to the existing documents, software or business processes of an organization.
SRM Service Component	Configuration Management	Defines the set of capabilities that control the hardware and software environments, as well as documents of an organization.
SRM Service Component	Quality Management	Defines the set of capabilities that help determine the level of assurance that a product or service will satisfy certain requirements.
SRM Service Component	Requirements Management	Defines the set of capabilities that gather, analyze and fulfill the needs and prerequisites of an organization's efforts.
SRM Service Component	Software Development	Defines the set of capabilities that support the creation of both graphical and process application or system software.
SRM Service Component	Issue Tracking	Defines the set of capabilities that receive and track user-reported issues and problems in using IT systems, including help desk calls.
SRM Service Component	License Management	Defines the set of capabilities that support the purchase, upgrade and tracking of legal usage contracts for system software and applications.
SRM Service Component	Software Distribution	Defines the set of capabilities that support the propagation, installation and upgrade of written computer programs, applications and components.
SRM Service Component	Instrumentation and Testing	Defines the set of capabilities that support the validation of application or system capabilities and requirements.

3.8.6.42.4 NextGen Future Solutions

3.8.6.43 Provide Information Assurance (8.6.4)

3.8.6.43.1 Description

This activity involves all functions pertaining to the securing of Federal data and systems through the creation and definition of security policies, procedures and controls covering such services as identification, authentication, and non-repudiation.

3.8.6.43.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Net-centric security situational awareness and management of airport.	Information fusion of all data inputs at airport to a central airport operations center, connecting data, intelligence, predictive systems, imagery and risk analysis to national and regional systems. This OI builds off of NEO backbone to support routine and emergency decision-making.

3.8.6.43.3 NextGen Drivers

Type	Name	Description
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	IT Security	
SRM Service Component	Access Control	Defines the set of capabilities that support the management of permissions for logging onto a computer, application, service, or network; includes user management and role/privilege management.
SRM Service Component	Intrusion Detection	Defines the set of capabilities that support the detection of unauthroized access to a government infomration system.
SRM Service Component	Identification and Authentication	Defines the set of capabilities that support obtaining information about those parties attempting to log on to a system or application for security purposes and the validation of those users.
SRM Service Component	Audit Trail Capture and Analysis	Defines the set of capabilities that support the identification and monitoring of activities within an application, system, or network.
SRM Service Component	User Management	
SRM Service Component	Role/Privilege Management	
SRM Service Component	Verification	
SRM Service Component	Encryption	
SRM Service Component	Digital Signature	Defines the set of capabilities that use and manage electronic signatures to support authentication and data integrity; includes public key infrastructure.

3.8.6.43.4 NextGen Future Solutions

3.8.6.44 Conduct Information Management (8.6.5)

3.8.6.44.1 Description

This activity manages the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.

3.8.6.44.2 JPDO Support Alignment

Type	Name	Description
NextGen Operational Improvements	Integrated high-risk flight management and risk mitigation	Flights are continually monitored and assessed risks. High risk flights are identified using an integrated risk assessment capability. Notifications are provided to the ANSP and the defense/security service providers to coordinate integrated response for risk mitigation facilitate by improved communications and information sharing.
NextGen Operational Improvements	Net-centric security situational awareness and management of airport.	Information fusion of all data inputs at airport to a central airport operations center, connecting data, intelligence, predictive systems, imagery and risk analysis to national and regional systems. This OI builds off of NEO backbone to support routine and emergency decision-making.

3.8.6.44.3 NextGen Drivers

Type	Name	Description
Key Concept	Network-Enabled Information Access	Through network-enabled information access, information is available, securable, and usable in real time for different communities of interest (COIs) and air transportation domains. This greater accessibility enables greater distribution of decisionmaking and improves the speed, efficiency, and quality of decisions and decisionmaking. Information can be automatically provided to users with a known need and be available to users not previously identified as new needs arise. Information access improves operational decisions, enabling system operators and users to make use of risk management practices to enhance safety. Cooperative surveillance for civil aircraft operations, where aircraft constantly transmit their position, is used with a separate sensor-based noncooperative surveillance system as part of an integrated federal surveillance approach.
BRM Sub-Function	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.
SRM Service Component	Governance/ Policy Management	Defines the set of capabilities that influence and determine decisions, sections, business rules and other matters within an organization.
SRM Service Component	Library/Storage	Defines the set of capabilities that support document and data warehousing and archiving.
SRM Service Component	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.
SRM Service Component	Data Classification	Defines the set of capabilities that allow the classification of data.
SRM Service Component	Data Cleansing	Defines the set of capabilities that support the removal of incorrect or unnecessary characters and data from a data source.
SRM Service Component	Data Exchange	Defines the set of capabilities that support the interchange of information between multiple systems or applications; includes verification that trnasmitted data was received unaltered.
SRM Service Component	Data Mart	Defines the set of capabilities that support a subset of a data warehouse for a single department or function within an organization.
SRM Service Component	Data Recovery	Defines the set of capabilities that support the restoration and stabilization of data sets to a consistent, desired state.
SRM Service Component	Data Warehouse	Defines the set of capabilities that support the archiving and storage of large volumes of data.

Type	Name	Description
SRM Service Component	Knowledge Distribution and Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.
SRM Service Component	Loading and Archiving	Defines the set of capabilities that support the population of a data source with external data.
SRM Service Component	Extraction and Transformation	Defines the set of capabilities that support the manipulation and change of data.

3.8.6.44.4 NextGen Future Solutions

3.8.6.45 Monitor Systems and Network Performance (8.6.6)

3.8.6.45.1 Description

This activity will monitor the systems and networks to ensure everything is working optimally. The resulting performance metrics are collected and reported to stakeholders.

3.8.6.45.2 JPDO Support Alignment

3.8.6.45.3 NextGen Drivers

Type	Name	Description
Key Concept	Performance-Based Operations and Services	Performance-based operations provide a foundational transformation of NextGen. Regulations and procedural requirements are described in performance terms rather than in terms of specific technology or equipment. The performance-based definition and delivery of services and levels of service will encourage private sector innovation and enable efficiencies throughout NextGen. Minimum performance levels are expected to be required to maximize capacity in congested airspace during specific periods of time. Service providers can use service tiers to create guarantees for different performance levels so that users can make the appropriate tradeoffs between investments and level of service desired to best meet their needs. A benefit of performance-based operations and services is that service providers can define capability improvements in terms of users' existing equipage, thus potentially maximizing the value of the service providers' and users' investments.
BRM Sub-Function	Systems and Network Monitoring	Systems and Network Monitoring supports activities related to the real-time monitoring of systems and networks for optimal performance.
SRM Service Component	Event/News Management	Defines the set of capabilities that monitor servers, workstations and network devices for routine and non-routine events.
SRM Service Component	Remote Systems Control	Defines the set of capabilities that support the monitoring, administration and usage of applications and enterprise systems from locations outside of the immediate environment.
SRM Service Component	System Resource Monitoring	Defines the set of capabilities that support the balance and allocation of memory, usage, disk space and performance on computers and their applications.

3.8.6.45.4 NextGen Future Solutions

Type	Name	Description
NAS Activity	Monitor System Performance	A means for checking or viewing a group of interacting, interelated, or independent elements froming a complex whole, the execution of same

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4. Appendices

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Appendix E - OV-3

Appendix F - OV-5

Appendix G - OV-6c

Appendix H - SV-5H

Appendix I - NextGen Reference Architecture

Appendix J - Federal Transition Framework

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4.1 Appendix A: References

4.1 Appendix A: References

Description

The following sources were used in the development of the NextGen EA.

Reference Documents

Public Law 108-176, *Vision 100 - Century of Aviation Reauthorization Act* (2003)

JPDO, *Next Generation Air Transportation System Integrated Plan*, December 2004.

JPDO, *Concept of Operations (CONOPS) for the Next Generation Air Transportation System Version 2.0*, June 14, 2007

JPDO, *EAED Program Management Plan Version 1.0*, June 22, 2007

Reference Frameworks

DoDAF Architecture Framework Version 1.0 Volume I: Definitions and Guidelines, August 15, 2003

DoDAF Architecture Framework Version 1.0 Volume II: Product Descriptions, August 15, 2003

FEA Consolidated Reference Model (CRM) Version 2.1, December 2006

Federal Transition Framework Catalog of Cross Agency Initiatives Version 1.0, December 2006

Reference Websites

http://www.nas-architecture.faa.gov/nas/home.cfm

http://www.icao.int/index.html

http://www.faa.gov/programs/oep/partnership/Index.htm

http://www.eurocontrol.int/index2.html

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4.2 Appendix B: AV-1

4.2 Appendix B: AV-1

The AV-1, Overview and Summary Information, is a formal textual statement of the intended use of the architecture description, the approach to creating it, and, eventually, a summary of the findings.

- **Audience**
  The AV-1, like the cover of a book, is intended to provide anyone a very high level description of the architecture and its findings. It should be the first document read by any stakeholder or other party interested in understanding the NextGen EA.
- **Utility**
  The AV-1 gives the reader a condensed overview of the content of the architecture, including information about the reason for developing the architecture, the architectural products that will be developed to support that purpose, the kinds of analyses to be conducted on the products, who will conduct them, and how the results will be used. The AV-1 provides a summary of the vision, mission, architecture products, assumptions and constraints, and tools used in the process of developing the architecture.
- **Maturity**
  The NextGen EA Version 2.0 AV-1 is mature with regard to defining the purpose of the architecture and the products, methods, and organizations that will be used to achieve that purpose. As the NextGen architecture evolves, the AV-1 will be updated to include findings and changes that may be required by external or internal influences.

Joint Planning Devleopment Office (JPDO)
Enterprise Architecture & Engineering Division (EAED)

NextGen EA v2.0
Overview and Summary Information (AV-1)

June 7, 2007

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1. Architecture Project Identification

This section of the AV-1 identifies the Architecture Project and provides and high level project information.

1.1. Architecture Project Name

NextGen Enterprise Architecture (NextGen EA)

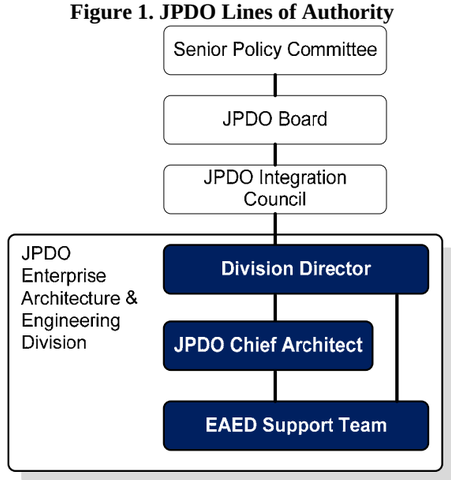
1.2. Architect

The JPDO Chief Architect is Mr. Jay Merkel.

1.3. Organization Developing the Architecture

The NextGen Enterprise Architecture is developed and maintained by the Enterprise Architecture and Engineering Division (EAED) of the Joint Planning Development Office (JPDO), an Executive Office created to support and coordinate the efforts of Government and Private organizations in the development of the Next Generation Air Transportation System as envisioned by the President's "Vision 100" operational concept.

Figure 1. JPDO Lines of Authority



1.4. Assumptions and Constraints

The following list describes the overarching assumptions and constraints driving the JPDO's development and evolution of the target NextGen EA:

- The NextGen EA is based on the CONOPS and VISION 100 strategies, goals, and objectives
- The NextGen EA products are developed using a combination of the Department of Defense Architecture Framework (DoDAF), Version 1.0, 15 August 2003 and the Federal Enterprise Architecture (FEA) Framework Consolidated Reference Model, Version 2.1, December 2006.
- The OV-5 artifact is decomposed and the ICOMs are articulated using Integrations Definition for Function Modeling (IDEF0) [FIPS 183, 1993]
- The NextGen EA will be validated by the stakeholder community
- The NextGen EA will provide a construct for partner agencies to align their respective enterprise architectures with the NextGen EA
- Partner agencies will be responsible for developing and implementing the solutions in support of NextGen
- The NextGen EA artifacts (i.e., OV-1, OV-2, OV-5, and SV-5) have been modified from the standard DoDAF products to satisfy the JPDO's unique architectural requirements

1.5. Approval Authority

The Joint Planning and Development Office Senior Policy Committee is the approval authority for the NextGen EA.

1.6. Schedule

The NextGen EA will continue to evolve as a planning and support tool until the "Vision 100" goals and objectives are realized. As the architecture matures, JPDO plans to publish annual releases followed by semi-annual updates.

The schedule for release of near-term work products is as follows:

June 14, 2007: NextGen CONOPS v2.0 Release

June 22, 2007: NextGen EA 2.0 and JPDO, EAED Program Management Plan Version 1.0 aligned with the NextGen CONOPS 2.0. This release will focus on the development and refinement of the NextGen Enterprise Service Activities outlined in the OV-5 work product and will incorporate and align to the FEA Performance, Business, and Service Component Reference Models. Work products will include updates to NextGen EA 1.2 products, SV-5H, FEA PRM, BRM, SRM, and EAED PMP.

June 29, 2007: NextGen EA OMB Self-Assessment Submission using the v2.1 FEA assessment tool.

July 22, 2007: NextGen EA 2.0 Executive Summary external release

The EAED is currently working toward the following Target Milestones

- **July 2007:** Integrated Work Plan Release
- **September 2007:** OMB FTF Catalog (to include NextGen Air Transportation System as a cross-agency initiative) and OMB EA Assessment Framework Publication
- **October 2007:** NextGen CONOPS v2.X Release
- **October 2007:** NextGen EA v2.X Release
- **February 2008:** NextGen EA Annual OMB Self-Assessment Submission

2. NextGen EA Scope

This section of the AV-1 describes the rationale for developing specific views and products, the time frame addressed by the NextGen EA, and the organizations that fall within the scope or the architecture.

2.1. Views and Products Developed

The JPDO is developing and refining the NextGen EA using a combination of the Department of Defense Architecture Framework (DoDAF) and the Federal Enterprise Architecture (FEA) Framework to represent the Air Transportation System of 2025 as described in the NGATS Integrated Plan and NextGen CONOPS. The DoDAF and FEA are used

as foundational structures for NextGen EA work products. The integration of these two architecture frameworks represents the JPDO's need to address the broad composition of the JPDO civilian, defense, and commercial stakeholder community. Because the NextGen EA will be used not only as a collaboration tool across multiple government agencies and with the private sector but also to coordinate mission objectives and funding priorities, it is necessary that the architecture be described in the broadest terms and using frameworks and products that support the objectives of all partners and stakeholders.

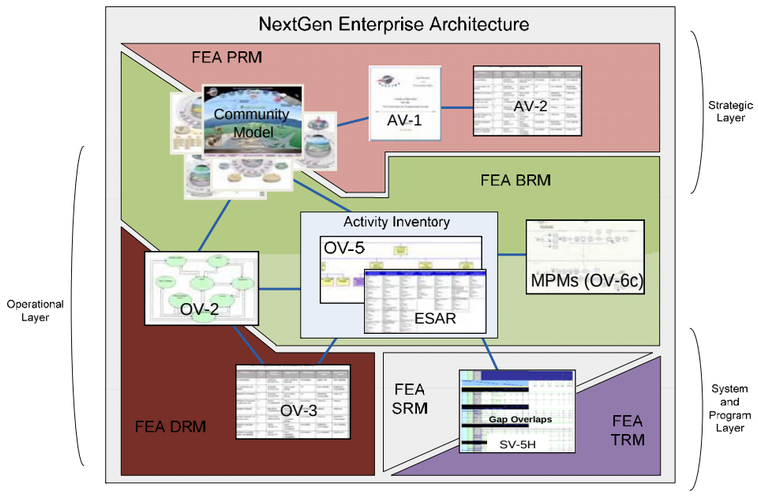
It is not intended for the NextGen EA to consume an agency's architecture, but rather for agencies to utilize relevant portions of the NextGen EA and incorporate them into their target architectures and transition strategies. Ultimately, each agency is responsible for designing and implementing their respective segments of the NextGen in the manner agreed through the JPDO process best suited to achieve the Vision 100 objectives.

Therefore, the NextGen EA will employ the FEA to support alignment with the funding and planning efforts of the government agencies and employ the DoDAF to describe the operational aspects of the NextGen and support analyses of the impact of funding and planning decisions on the capabilities that will provide the performance improvements that are the vision of NextGen. An additional product, the Enterprise Segment Activity Roadmap (ESAR) obtained from the Mission Engineering discipline, provides a detailed cross reference between the FEA and DoDAF framework products, facilitating the task of classifying the operational activities according to the various FEA models.

2.1.1. NextGen EA Framework

Figure 1, NextGen EA Framework shows how the FEA Reference Models provide a context in which the DoDAF products describe the operational and system level details of the NextGen Enterprise. The combined FEA and DoDAF framework (hereinafter referred to as the "NextGen EA Framework") establishes a common lexicon and defines a structure for organizing information describing the scope of the architecture (i.e., what the JPDO will capture) and how the architectural layers are related to each other.
, Summary of NextGen EA Framework, provides details of the three architectural layers, Strategic, Operational, and System and Program, which compose the NextGen EA Framework.

Figure 2 NextGen EA Framework



Architectural Layer	Description
Strategic	♦ Provides EA guidance and governance ♦ Extends the FEA reference models and aligns business functions/processes to goals and objectives ♦ Provides standard lexicon ♦ Facilitates "cross-agency" budget and performance integration through the FEA Performance Reference Models
Operational	♦ Establishes a business-driven framework to facilitate cross-agency analysis and the identification of duplicative investments, gaps, and opportunities for collaboration ♦ Provides DoDAF operational views ♦ Defines high-level segment activities, tasks, and operational nodes performing tasks ♦ Identifies information exchanges between nodes required to achieve the mission ♦ Aligns partner agency's through respective segments "drill down"
System and Program	♦ Captures capability and functions required to meet goals ♦ Provides system and technical views ♦ Facilitates partner alignment to current and planned system views and technical views to OV-5 and capabilities

2.1.2. FEA Products

To assist government agencies in aligning their FEA architectures with the JPDO, the NextGen EA will incorporate all FEA Reference Models: PRM, BRM, SRM, TRM, and DRM and the JPDO will provide a Federal Transition Framework to OMB.

2.1.3. DoDAF Products

Table 2, NextGen EA DoDAF Products describes the rationale for including specific DoDAF products in the NextGen EA.

Table 2. NextGen EA DoDAF Products

DoDAF Product	Purpose
Overview and Summary (AV-1)	The AV-1 gives the reader a condensed overview of the content of the architecture, including information about the reason for developing the architecture, the architectural products that will be developed to support that purpose, the kinds of analyses to be conducted on the products, who will conduct them, and how the results will be used. The AV-1 provides a summary of the vision, mission, architecture products, assumptions and constraints, and tools used in the process of developing the architecture.
Integrated Dictionary (AV-2)	The AV-2 is the NextGen EA's common consistent language, reducing confusion and increasing understanding for partner agencies and stakeholders. It enables the JPDO to collaborate and socialize the NextGen EA with a consistent lexicon formatted in such a way that stakeholders can compare the elements of the NextGen EA to their respective integrated dictionaries and architectures and propose changes if necessary to ensure the community is using terms consistently and as intended.
Community Model (OV-1)	The Community Model (OV-1) is used to provide a high level pictorial description of the major organizational and operational elements of the Next Generation Air Transportation System and how those elements interact with each other and with their environment.
Operational Node Connectivity Description (OV-2)	The operational nodes shown in the NextGen EA represent idealized places or organizations where activities are performed that require and/or produce information. The OV-2 is provided not only to represent the various organizations and places where activities are performed but also to provide a framework for organizing the information exchanges that will be described in detail in the Operational Information Exchange Matrix, OV-3.
Operational Information Exchange Matrix (OV-3)	The OV-3 is the most comprehensive description of operational information flow. It further decomposes the information flows (needlines) identified in the OV-2 into one or more (usually many) specific Information Exchanges and collects the detailed information about each exchange.
Activity Model – Hierarchy Node Tree (OV-5)	The OV-5 Operational Activity Hierarchy provides a comprehensive structured list of all the operational activities of interest to the architectural description. That is, it shows all the activities that need to be considered to achieve the desired outcomes of the architectural analysis and how high level activities are composed of lower level activities. The NextGen EA OV-5 Hierarchy also shows how the operational activities align within the eight Enterprise Segments and the relevant Activity Services in the Community Model.
Activity Model—IDEF0 (Activity Flow Diagrams) (OV-5)	The OV-5 Activity Flow diagram provides information useful in streamlining, combing, or eliminating activities, and it is helpful for eliminating redundancy. Of the greatest importance is that the OV-5 Activity Flow diagram provides the foundation for the OV-3 and OV-6c diagrams that are necessary to understand issues of information distribution and timing – critical issues for developing a NextGen EA that will provide the performance improvements required by the NextGen Vision.
Operational Event/Trace Description (OV-6c)	The Operational Event/Trace Description provide a time ordered sequence of information exchanges among the operational activities. Because the JPDO will use the architecture as a basis for advising stakeholders on the value and criticality of improving their systems and processes to achieve the goals of NextGen, an understanding of the sequencing of operational activities could provide key insights in support of that guidance.
Operational Activity to Stakeholder Investment Traceability Matrix (SV-5Hybrid)	To assist Stakeholder Communities of Interest in aligning the NextGen EA activities to their respective architectures and Capital Investment Plans, JPDO has deviated from the standard SV-5, Operational Activity to System Function format prescribed by DoDAF. The NextGen SV-5Hybrid relates Operational Activities to the Stakeholder Investments. By relating NextGen EA Operational Activities to Stakeholder Investments, the SV-5Hybrid describes the key relationships between Stakeholder Capital Investment and NextGen Capabilities.

2.1.4. FEA/DoDAF Cross Reference Chart

The Enterprise Segment Activity Roadmap (ESAR) is used to assist JPDO and Stakeholder architects in the detailed process of assigning operational activities to FEA reference models and to serve as a guide for analysts to identify activities with common attributes across the breadth of the architecture.

2.2. Time Frame Addressed

The Joint Planning and Development Office (JPDO) Next Generation (NextGen) Enterprise Architecture (EA) is a tool for planning, negotiating, and understanding the dynamic, interrelated business processes and technology solutions representing the modernized Air Transportation System (ATS) that will operate in the 2025 timeframe and beyond. The NextGen EA provides the organizing logic for stakeholders, including government agencies, private industry, and the traveling public to align their business and technology processes in a standardized and consistent manner toward the future state defined by the "Vision 100" operational concept. The NextGen EA, Version 2.0, includes business and operational descriptions and technical details for supporting JPDO stakeholders as they coordinate their respective agency enterprise and systems architecture, material and nonmaterial investment, and implementation plans that will advance each toward the JPDO view of the NextGen Vision.

2.3. Organizations Involved

The NextGen EA is developed by the JPDO with the active participation of its Partners and Stakeholders. Booz Allen Hamilton provides JPDO the consulting and technical support required to collect, record, and publish the information and considered advice provided by the participants in the collaborative meetings and communications through which the architecture is developed.

JPDO partners are defined as organizations responsible for making investment decisions related to the development and implementation of the NextGen. Partners are as follows:

- Federal Aviation Administration
- Department of Transportation
- National Aeronautics and Space Administration
- Department of Commerce
- Department of Homeland Security
- Department of Defense (DoD)
- White House Office of Science and Technology Policy

A JPDO stakeholder is defined as any person or organization with a vested interest in the activities performed or work products created by the EAED. Stakeholders are as follows:

- **Government and Regulatory Authorities**—Congress, Office of Management and Budget (OMB), Government Accountability Office (GAO), other federal agencies, state and local governments, airports and airport authorities
- **JPDO Staff**—Senior Policy Committee, JPDO Board, integrated product teams (IPT), advisory committees, Next Generation Air Traffic System (NGATS) Institute
- **Industry**—air transport industries, equipment manufacturers, air carriers, leasing and finance companies, and Airline Reporting Corporation

- **Labor**—government and private sector aviation industry employee organizations
- **Academia**
- **The Public**—public and mass media, U.S. Chamber of Commerce, U.S. travel and tourism industries, general aviation, aircraft operator/user community, civil defense industry
- **International**—non-U.S. commercial airlines, foreign travel and tourism industries, and non-U.S. air transportation industries

3. Purpose and Viewpoint

The purpose of the NextGen EA is to effectively plan a course for achieving the NextGen vision and operating outcomes. The NextGen operating outcomes are defined using specific goals, objectives, concepts, and responsibilities that the JPDO prescribed with close collaboration with its partner agencies: Federal Aviation Agency (FAA), Department of Transportation (DOT), Department of Commerce (DOC), Department of Defense (DoD), Department of Homeland Security (DHS), National Aeronautics and Space Administration (NASA), and Office of Science and technology Policy (OSTP) in the White House. The NextGen EA is one element in a broader set of inter-related planning activities that will collectively influence the JPDO's partners' and stakeholders' ability to further refine the vision, develop strategies and plans for achieving the vision, make resource decisions, implement strategies, and evaluate performance. By defining the desired end-state of the NextGen vision from several distinct perspectives (e.g., community, business, operational, system and technical views), the NextGen EA provides partners and stakeholders with a line of site into the complex relationships existing among these different perspectives.

The NextGen EA V2.0, along with the NextGen Concept of Operations (CONOPS) V2.0 and Integrated Work Plan (IWP), represents the current state of the JPDO's key transformational documents, which together form the foundation of NextGen planning. To fully succeed with its transformational effort, the JPDO uses the Federal Enterprise Architecture (FEA) framework to support alignment with the funding and planning efforts of government agencies and employs the Department of Defense Architecture Framework (DoDAF) to describe the operational aspects of the NextGen and support analyses of the capabilities, tasks, and solutions that will provide the performance improvements for NextGen.

The NextGen EA will lend itself to provide the means to which JPDO partners integrate their respective programmatic requirements and portfolio planning activities through a common data, structures, and tools. This effort will enable the partners to identify, describe, and facilitate the analysis of existing material and nonmaterial investments. NextGen EA also will provide the analytical support for the partner's solution integration and/or development considerations toward NextGen business and technology requirements. In addition, providing stakeholders with access to NextGen EA information helps not only influence and create more informed decisions about their respective investments and solutions but also improve the effectiveness and efficiency of their investment decisions to contribute to and demonstrate alignment with future NextGen EA releases.

Moving forward, the JPDO will rely on information and analysis from the NextGen EA to develop and release the NextGen IWP. The IWP describes major activities, dependencies, and resources needed for achieving NextGen through the identification of the key concepts, operational improvements, enablers, and tasks. In addition, the JPDO will be strengthening the programmatic management of the NextGen EA through stronger governance mechanisms to share the NextGen architecture work products with JPDO partners and stakeholders, communications and training to facilitate greater input and participation with future iterations of the NextGen EA via the JPDO Integration Council and JPDO working groups, and change control procedures to validate and refine the NextGen EA work products through subject matter expert and peer reviews and facilitated collaboration meetings. Collectively, this next set of activities will drive the identification and clarification and the ongoing iteration of NextGen capability requirements.

4. Context

The JPDO was established as a joint initiative that includes the FAA, Department of Transportation (DOT) , the Department of Defense (DOD), the Department of Commerce (DOC), the Department of Homeland Security (DHS), the National Aeronautics and Space Administration (NASA), and the Office of Science and Technology Policy (OSTP) in the White House. The NGATS institute represent the private and private industry.

Oversight of the JPDO is provided by a Senior Policy Committee that is chaired by the Secretary of Transportation with senior leadership designees from the other participating departments and agencies.

To ensure the continued success of achieving the NextGen vision, goals, and objectives, the JPDO is establishing a governance structure that will handle the configuration management, collaboration, coordination, and validation of the NextGen EA. " VOLUME II: Program Management Plan" contains further and complete details on the governance of the NextGen EA.

The JPDO development of the NextGen EA supports compliance with public laws, policies, Federal Government directives, technical standards, and technology requirements as well as other applicable Federal Information Technology (IT) and business management requirements. These documents include, but are not limited to:

- US Code, Title 49, SUBTITLE VII – AVIATION PROGRAMS
- OMB Circular No. A-11, Part 7, Section 300 — Planning, Budgeting, Acquisition and Management of Capital Assets, 16 July 2004,
- OMB Circular A-130, Transmittal Memorandum #4, Management of Federal Information Resources (11/28/2000); Appendix III to OMB Circular No. A-130, Security of Federal Automated Information Resources
- OMB Circular A-131, Value Engineering (05/21/1993)

5. Tools and File Formats Used

The following tools are used to create, and distribute the NextGen EA:

Microsoft Office® products, various versions
Microsoft® Visio®, various versions
Telelogic® System Architect®, v10.4
Troux Technologies, Metis, v6

6. Findings

As the NextGen EA matures to the point that the majority of partners and stakeholders have reviewed and concurred with the details of various products, it will become possible to perform meaningful analyses to determine gaps and redundancies in planned capabilities and to prioritize investments in terms of their impact on achieving the NextGen vision. As these analyses are preformed, the findings will be documented in future revisions of this document.

4.3 Appendix C: AV-2

The AV-2, Integrated Dictionary, is a table that provides a formal definition for all terms used in the architecture description.

- **Audience**
  All partner agencies' and stakeholders' enterprise architects that will be responsible for aligning to and developing their respective extensions of the NextGen EA.
- **Utility**
  The AV-2 is the NextGen EA's common consistent language, reducing confusion and increasing understanding for partner agencies and stakeholders. It enables the JPDO to collaborate and socialize the NextGen EA with a consistent lexicon formatted in such a way that stakeholders can compare the elements of the NextGen EA to their respective integrated dictionaries and architectures and propose changes if necessary to ensure the community is using terms consistently and as intended.
- **Maturity**
  Like the AV-1 the AV-2 is a living repository. It is updated at each release of the NextGen EA.

Notes

GEORGETO
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WASHINGTON
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NOTE: Prob
of D
LOM
OXONN
332 DC
I-DCA 5.6
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R-186
R-295
PISCA INT
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2500 to Pisca Int
321° (3.1) and
LOC (3)
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OTT 12.2
10 NM
500
2000
DCA R-325
111.0
GTN
323
OXONN
LOM/INT
I-DCA 5.6
1551
I-DCA
1
MM
007°
0.5
4.1 NM
TDZE
15
CATEGORY
A
B
S-ILS 1
215/18
S-LOC 1
480/24
465 (500-½)
620-1
660-1
150
180

Glossary

ARCHITECTURE LEVEL ASSIGNMENT	ARCHITECTURE PRODUCT ID	ARCHITECTURE PRODUCT VERSION	ARCHITECTURE ELEMENT	FEA REFERENCE MODEL ID	ARCHITECTURE ENITITY ID	ARCHITECTURE ENTITY NAME	ARCHITECTURE ENTITY ACRONYM	ARCHITECTURE ENTITY DEFINITION
	OV-2		Op Node		577	Aircraft		The Aircraft Operational Node includes all activities associated with physically transporting passengers and/or cargo from an origin to a destination. These activities include everything necessary onboard an aircraft to move and control the aircraft from loading gate to arrival gate.
	OV-2		Op Node		4010	NextGen Partners		The NextGen Partners operational node includes all activities of the NextGen Partners who provide equipment and/or services to the Air Transportation System. These partners include, but are not limited to, Aircraft Manufacturers, Airport Equipment Providers, Commercial Weather Services, Communications Services Providers, the International Civil Aviation Organization, and others.
	OV-2		Op Node		4478	National Defense Mission		This operational node includes all activities relevant to the Air Transportation System performed by Government organizations to safeguard the national security of the United States.
	OV-2		Op Node		10533	Air Navigation Service Provider	ANSP	Organizations and people engaged in the provision of ATM and air traffic control (ATC)services for flight operators for the purpose of safe and efficient flight operations; ATM responsibilities include communications, navigation and surveillance (CNS) and ATM facility planning, investment and implementation, procedure development, training, and ongoing system operation and maintenance of seamless CNS/ATM services; includes ANSP personnel and ANSP automation
	OV-2		Op Node		10543	Flight Operator	FO	The Flight Operator node represents the commercial entities responsible for providing, scheduling, provisioning, and staffing aircraft. The node also includes the ground side activities required to board and deboard passengers, baggage, and cargo, and the business operations necessary to keep the commercial enterprise viable.
	OV-2		Op Node		10561	Weather Service Provider	WS	This operational node includes all the activities performed by Government organizations to provide aviation weather information products.
	OV-2		Op Node		12937	Airports		The Airports operational node comprises all the activities required to plan, build, maintain and operate the physical infrastructure supporting the movement of passengers and cargo into and out of physical airports on the ground-side and the air-side. It also includes activities associated with providing storage and maintenance of aircraft on the ground and the transfer of passengers and cargo from the ground-side onto other transportation modes.
	OV-2		Op Node		12940	Security		This operational node includes all activities by Government organizations to protect people, airports, checked baggage, cargo, airspace, aircraft, and information from intentional harm or unauthorized use.
	OV-2		Op Node		27991	Air Transport Services		This operational node includes all activities necessary for moving passengers, baggage, and/or cargo from origin to destination.
	OV-2		Op Node		27992	Government Support Services		The Government Support Services operational node includes all activities provided by Government organizations in support of the Air Transportation System.
	OV-2		Op Node		27994	Surveillance		This operational node includes all the activities performed by Government organizations to identify and determine the position and velocity of aircraft, either cooperatively or non-cooperatively.
	OV-2		Op Node		28035	Positioning and Navigation Services		This operational node includes the activities provided by Government organizations to support aircraft position location (e.g., GPS), provide navigation guidance (e.g., LORAN) and provide location coordinates of air transport related facilities.
	OV-2		Op Node		28036	Air Transportation Communications Management		This operational node includes all the activities performed by Government organizations to manage communications for the Air Transportation System.
	OV-2		Op Node		28037	Performance Monitoring		This operational node includes all activities by Government organizations to monitor and report on the performance of the Air Transportation System.
	OV-2		Op Node		28038	Safety		This operational node includes all activities by Government organizations related to assuring safety within the Air Transportation System.
	OV-2		Op Node		28039	Governance		This operational node includes all activities by Government organizations to create and enforce regulations supporting the Air Transport System.
	OV-2		Op Node		28049	Government Business Services		This operational node includes all activities by government organizations to manage their basic business operations
	OV-2		Needlines		28141	NL GSS to ATS		This need line includes all information from the Government Support Services node that is needed by Air Transport Services activities.
	OV-2		Needlines		28142	NL ATS to GSS		This need line includes all information provided by Air Transportation Services activities that is needed by Government Support Services activities.

ARCHITECTURE LEVEL ASSIGNMENT	ARCHITECTURE PRODUCT ID	ARCHITECTURE PRODUCT VERSION	ARCHITECTURE ELEMENT	FEA REFERENCE MODEL ID	ARCHITECTURE ENITITY ID	ARCHITECTURE ENTITY NAME	ARCHITECTURE ENTITY ACRONYM	ARCHITECTURE ENTITY DEFINITION
	OV-2		Needlines		28143	NL ATS to NGP		This need line includes all infomration provided by Air Transport Services activities that is needed by NextGen Partner activities.
	OV-2		Needlines		28144	NL NGP to ATS		This need line includes all information provided by NextGen Partners activities that is needed by Air Transport Services activities.
	OV-2		Needlines		28145	NL NGP to GSS		This need line includes all information provided by NextGen Partners activities that is needed by Government Support Services activities.
	OV-2		Needlines		28153	NL GSS to NGP		This need line includes all information provided by Government Support Services activities that is needed by NextGen Partners activities.
	OV-5		Op Activity		1178	Provide NextGen Enterprise		This context-level operational activity encompasses all those operational activities that collectively describe the fundamental operational capabilities of the enterprise known as the Next Generation Air Transportation System (NGATS).
	OV-5		Op Activity		1183	Air Navigation Operations		This activity and collectively all activities performed by the ANSP within the terminal and cruise to assure safe, secure, and efficient access to national airspace by all users. This activities include but not limited to providing pilot briefings, en route communications and VFR search and rescue services, assist lost aircraft and aircraft in emergency situations, relay ATC clearances, originate NOTAMS, broadcast aviation weather and NAS information, receive and process IFR flight plans, and monitor NAVAIDS. In addition provides en route advisory service, takes weather observations, issues airport advisories, and advises Customs and Immigration of transborder flights. (NAS_EA_v00.21) (Modified)
	OV-5		Op Activity		1184	Air Navigation Support		This activity provides the short and long term planning aspect needed to assure a safe, secure, and efficient access to national airspace by all users within terminal and cruise. This activity established the criteria for designing structures in the airspace to support safety of flight and efficient flow of traffic. Design criteria including the guidelines for establishing classes of airspace, designation of volumes of airspace for the provision of separation (sectors, special use, etc.), waypoints, published routes etc. The criteria include identification of those structures, which require rulemaking, publication, environmental evaluations, etc. The guidelines also include criteria to support the design process - objectives in the design to meet demand, performance criteria for evaluating the efficiency of the design, infrastructure coverage criteria and constraints, etc.
	OV-5		Op Activity		1185	Airport Operations		This activity provides the airside, terminal operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, resource limitations and local environmental issues.
	OV-5		Op Activity		1186	Airport Support		Airport Support provides assurance that the airport is acquiring assets when needed, supporting the infrastructure planning of the airport, and taking preventive security measures to mitigate security risk (i.e., threat profiling and risk assessment)
	OV-5		Op Activity		1207	Manage Manifest		This activity will create, modify, and track passenger manifests.
	OV-5		Op Activity		1208	Check In Baggage		This activity will check-in baggage in preparation for the security screening process and loading onto the aircraft. Baggage is checked-in offsite (i.e., a location other than the departure airport) or at the airport.
	OV-5		Op Activity		1228	Financial Management		This activity uses financial information to measure, operate and predict the effectiveness and efficiency of NextGen activities in relation to its objectives. The ability to obtain and use such information is usually characterized by having in place policies, practices, standards, and a system of controls that reliably capture and report activity in a consistent manner. This is distinctive from standard financial management due to the unique funding of airport as well as the jurisdictional nature of the spending of revenue dollars on airport improvements.
	OV-5		Op Activity		1231	Certification Services Management		This activity enables the certification process for facilities (including airports) and equipment
	OV-5		Op Activity		1232	Airport Assets Management		Airport Assets Management manages the assets of the airport, such as personnel, equipment, and facilities. The management of these activities include determining if additional resources, systems, or facilities are needed to meet the current and future demand.
	OV-5		Op Activity		1250	Manage Flow Corridors		This activity is the management of flow corridor operations in en route airspace with traffic in trajectory en route airspace.

ARCHITECTURE LEVEL ASSIGNMENT	ARCHITECTURE PRODUCT ID	ARCHITECTURE PRODUCT VERSION	ARCHITECTURE ELEMENT	FEA REFERENCE MODEL ID	ARCHITECTURE ENITITY ID	ARCHITECTURE ENTITY NAME	ARCHITECTURE ENTITY ACRONYM	ARCHITECTURE ENTITY DEFINITION
	OV-5		Op Activity		1252	Manage Arrival/Departure		This activity provides the arriving and departing aircrafts the assignments (i.e., taxi instructions, streams, sequencing) and procedures for operating on the surface and terminal airspace. This includes the monitoring of surface surveillance to ensure safe operations.
	OV-5		Op Activity		1261	Issue Clearance		This activity will assign or renegotiate the surface movement instructions/clearance to an aircraft for departure and arrivals. Arrival and departures clearance is issue to clear the aircraft to the taxiway and runway.
	OV-5		Op Activity		1277	Flow Contingency Management		This activity identifies potential flow problems, such as large demand capacity imbalances, congestion, high degrees of complexity, blocked or constrained airspace (airspace for special use, weather), or other off-nominal conditions. This collaborative process among flow contingency managers, flight operators, and airport operators facilitates the efficient management of air traffic flow via information on system-wide air traffic flows, weather, airport capacity, and other assets. FCM also involves managing the conflicting objectives of multiple stakeholders regarding the operational use of an airspace volume and airports while taking advantage of available capacity to address demand.
	OV-5		Op Activity		1280	Capacity Management		This activity provides the process that could begin years before a flight is in operation, up to and including the day of operation. It includes both the long-term and short-term management and assignment of NAS airspace and trajectories to meet expected demand. Significant structural changes to airspace (e.g., to accommodate a planned runway or analyze the effect of a proposed runway) are planned years in advance. Airspace is structured at the beginning of each day to meet preplanned demand and forecasted conditions. It is dynamically reconfigured during the day to meet flow requirements, reduce delays, increase resource efficiency, and accommodates disruptions (such as pop-up convection) and outages.
	OV-5		Op Activity		1284	Reallocate Arrival/Departures Access		This activity will re-allocate the arrival/departure access to the airspace and airports. This occurs when airspace or airports becomes capacity limited. One method for alleviating the constraints is to limit access to the arrival and departure streams. This includes the ability for operators with multiple aircraft involved in an initiative have the flexibility to adjust individual aircraft schedules and trajectories within those allocations to accommodate their own internal concerns (e.g., business, military).
	OV-5		Op Activity		1287	Restructure Capacity Limited Airspace		This activity will restructure capacity limited airspace when the airspace is unable to meet the projected demands as determined by the capacity manager. Options to mitigate the capacity include the options to alter the existing airspace design to allow greater capacity. This may include changing the local boundaries of adding performance constraints on operations within the airspace. (e.g., delegate self-separation)
	OV-5		Op Activity		1978	Flight Operations		This activity provides the flight execution on the ground and airborne, including ground/airborne 4DT Navigation, and performing self-separation.
	OV-5		Op Activity		3942	Flight Planning and Flight Data Management		Flight Plan Filing and Flight Data Management Services provide support to flight operators for flight planning activities. These services also manage data related to a flight from the initial filing of a proposed flight to the closing of the flight plan and the archiving of the data to support performance management analysis.
	OV-5		Op Activity		3943	Surveillance Services		This activity provides non-cooperative and cooperative surveillance of ground and airborne objects. Non-cooperative and cooperative surveillance systems will be designed and integrated to provide mutually supporting surveillance services information. The sharing of surveillance data allows each user to create a tailored view yet ensures that all users have a consistent “picture” of what is going on in their areas of interest. This consistent view is essential to supporting multiple agency missions and providing stakeholders and users with key information necessary to their operations. Numerous entities, government and private benefit from this shared surveillance data intrinsic to NextGen.
	OV-5		Op Activity		3944	Risk Assessment Management		Risk Assessment Management provides the collection, analysis, management, and reporting on the airport risk. The assessment of risk provides a prioritized list of vulnerabilities and potential mitigation strategies. Risks are measures of potential harm that encompasses threat, vulnerability, and consequences.
	OV-5		Op Activity		4606	Cargo Management		This acitivity is the operations of processing, screening, and risk management of cargo management.
	OV-5		Op Activity		4608	Manage Auxiliary Operations		This activity is the operations of the fuel and waste operations at the airport. Auxiliary operations also includes the utilities at the airport.

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	OV-5		Op Activity		4609	Provide Intermodal Transportation Service		This activity provides transportation service for passenger and personnel. The transportation may include facility for personal transportation, rail, bus connections. However, a major goal of modern intermodal passenger transport is to reduce dependence on the automobile as the major mode of ground transportation and increase use of public transportation.
	OV-5		Op Activity		4610	Congestion Management		This activity provides airport ground operations, ensuring safe and efficient operations.
	OV-5		Op Activity		4611	Perform Impact Analysis		This activity will take the gathered data and analyze the predicted impact of local congestion on the NAS.
	OV-5		Op Activity		4676	Check In Passenger		This activity will allow for passenger's to submit information in preparation for security screening and aircraft boarding. The activity enables ticket purchase, reservation confirmation, boarding pass confirmation/dissemination, and aircraft gate directions.
	OV-5		Op Activity		4700	Landside Operations		Landside operations is the overall operations inside the terminal and the ground transportation system. Terminal operations includes the passenger/baggage management and the security process for screening the passenger/baggage, and the operations of the gate.
	OV-5		Op Activity		4773	Flight Support		This activity provides the business objectives and management of the fleet.
	OV-5		Op Activity		4803	Aircraft Surface Operations		This activity provides the preparation and execution of the aircraft surface operations.
	OV-5		Op Activity		4804	Airborne Operations		This activity provides the aircraft airborne operations with and without 4DT Navigation. Aircraft may perform autonomous operations, monitor weather and other airspace events to negotiate the best flight path.
	OV-5		Op Activity		4928	Sort Baggage		This activity receives the baggage after it is checked-in, sort the baggage into destination and connecting categories, and deliver the baggage to the aircraft.
	OV-5		Op Activity		5109	Business Operations		This activity will review the Execution Plan and proposed airspace design, in order to determine how if it will affect business objectives (cost, planning, etc.)
	OV-5		Op Activity		6215	Fleet Management		This activity will plan and monitor fleet operations, ensuring business objectives are met. The information includes the review of scheduled routes, aircraft capabilities, and the execution plan.
	OV-5		Op Activity		6474	Analyze demand and projected capacity		This activity will analyze historical and current demand data, and identifying future project capacity needs.
	OV-5		Op Activity		6478	Select Capacity Management Strategy		The ANSP will select the strategy that it will implement to meet the needs based on the demand, current capacity, regulation, etc. There are three options: 1. Regulatory Actions - This may have a close link to a New technology or may not. Airspace Performance Rule, establishes criteria and constraints for assigning airspace to performance category. Changes from specific airspace rule to an airspace characteristics rule. Execution of the rule to a specific airspace is handled via the redesign (change within existing rules beyond ANSP). 2. Change within existing rules (requires design & development) (redesign) (impact beyond ANSP) - This activity could take weeks to years to implement. (e.g., new master airspace design, new RNP routes into an airport, opening a new runway) No change in regulation, but require major design work. 3. Change within existing rules (of the ANSP) (refine a predefined play book) (reconfigure) - Requires coordination within the ANSP. Executed more quickly, but the scope is more li
	OV-5		Op Activity		7527	Provide Weather Subscription Services		This activity allows automation systems and stakeholders to subscribe to published fused real-time weather data (pre-flight and in-flight).
	OV-5		Op Activity		7529	Establish Flow Corridors		This activity establishes flow corridors in a high demand airspace. These corridors are for aircrafts that capable of conducting delegated separation, merging and spacing procedures within the corridor, and 4DT procedures.
	OV-5		Op Activity		7537	Manage Waste/HAZMAT		This activity manages the waste and hazmat incidents at the airport. Waste includes trash, aircraft waste, storm water.
	OV-5		Op Activity		7540	Authenticate Passenger to Credential		This activity validates the passenger's identification which can be in various forms such as biometrics to the person.
	OV-5		Op Activity		7544	Monitor Airspace Condition		This activity will monitor the current conditions of the airspace (weather, traffic)
	OV-5		Op Activity		7546	Manage Cargo Risk Assessment		This activity provides the assessment of risks throughout the shipping chain from source to exit. The shipping chain includes cargo source, containerization, freight consolidation/forwarding, cargo/mail screening locations and airport transport to destination.

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	OV-5		Op Activity		7548	Disseminate Traffic Management Initiative		This activity will disseminate the traffic management initiative once the TMI is selected. The plan many include airspace changes, new trajectories for use by the ANSP or new arrival or departure goals.
	OV-5		Op Activity		7560	Provide Non-Cooperative Surface Surveillance		This activity provides ground based surveillance systems to detect and monitor ground objects, even if the objects do not have functional avionics equipment. Non-cooperative surveillance can be used when airborne or ground cooperative surveillance systems malfunction.
	OV-5		Op Activity		7561	Monitor Surface Condition		This activity will monitor aircraft and ground support equipment on the surface of the airport, including runways, taxiways, and apron/ramp. Includes functionality to prevent runway incursions, loss of separation, ensure security, support environmental management, and define approved operating areas.
	OV-5		Op Activity		7570	Establish Aircraft Capabilities		This activity will establish the minimum aircraft capabilities in order to achieve the desired level of service for airport and airspace use. This will be coordinated with the ANSP and disseminate to stakeholders.
	OV-5		Op Activity		7573	Negotiate Flight Plan		The activity provides automated feedback on flight plans if filed flight plans constrain the system (such as the presence of congestion or reserved airspace.), significant weather, or performance-based airspace capability requirements for the planned route.
	OV-5		Op Activity		7576	Flight Level Security Screening		This activity is the screening of flight threats based on the airport security alerts and flight threat level analysis to ensure the security of the flight.
	OV-5		Op Activity		7577	Process CBP		This activity will collect and assess passenger information for entry into the country. Processing may occur prior to departure. CBT - Custom Board Protection
	OV-5		Op Activity		7578	Designate Entry and Exit Location and Time		This activity will designate the entry and exit points and times for the aircraft to enter/exit a flow corridor for smooth transition. This activity is defined by the tactical trajectory management (TTM) tool. This activity can be renegotiated with the TTM and aircraft.
	OV-5		Op Activity		7579	Implement Flow Corridors		This activity will implement the flow corridors that have been established. Flow corridors will provide the safe and smooth implementation of flow corridors when demand and volume is above normal conditions. Entry and exit location and times will be designated to aircrafts.
	OV-5		Op Activity		7583	Disseminate Proposed Airspace Design		This activity will disseminate the proposed airspace design to the Community of Interest (COI) to assist in planning of flight schedule(s). This proposed design is the outcome of the assessment of future demand, capacity, historic weather, etc.
	OV-5		Op Activity		7586	Gather Congestion Data		This activity is gathering information to assess if the airport is providing a reasonable level of service to the aircraft operators (i.e. airport access) and to accurately predict the impact of the local congestion on the NAS.
	OV-5		Op Activity		7677	Metrics Management		Metrics Management collects information to improve performance. Metrics on overall ATM performance include collecting metrics on all levels in the air transportation system (i.e., airports, national airspace, environments, etc).
	OV-5		Op Activity		7679	Receive Separation Clearance		This activity will receive separation clearances as a result of the delegation of separation, which will allow the aircraft to perform self-separation.
	OV-5		Op Activity		7693	Monitor Environmental Impacts		This activity monitors the impact of the environment. The monitoring of noise, air emission, water pollution, fuel, climate changes, etc.
	OV-5		Op Activity		13502	Trajectory Management		This activity is the process by which individual aircraft trajectories are managed just before and during the flight to ensure efficient individual trajectories within a flow. Trajectory management corrects imbalances within an established flow to ensure that congestion is managable.
	OV-5		Op Activity		13503	Manage Trajectories within Flows		This activity manages the trajectories within the flow. This involves assigning trajectories and negotiating trajectories.
	OV-5		Op Activity		13504	Assign Trajectory		This activity is the assignment of a trajectory for aircraft transitioning between self-separation and ANSP managed airspace, and for aircraft entering and leaving flow corridors.
	OV-5		Op Activity		13505	Negotiate Trajectory		This activity negotiates the trajectory of the flight between the flight operator and air navigation operator.
	OV-5		Op Activity		13506	Assign Spacing and Sequencing		This activities assigns each arrival aircraft to an appropriate runway, arrival stream, and place in sequence.

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	OV-5		Op Activity		8717	Verify Credential to Reservation Data		This activity is the matching of the passenger's credential to the flight reservation.
	OV-5		Op Activity		8718	Create Passenger Info		This activity establishes and integrates all the associated information needed to check in the passenger.
	OV-5		Op Activity		8721	Disseminate Execution Plan		This activity will disseminate the execution plan that assigns individual responsibility for implementing the plan, and identifies training needs, identified policy issues, new technologies needs, new rules, new minimum performance requirements, and publishing the schedule for the new service delivery.
	OV-5		Op Activity		8746	Select Traffic Management Initiative		This activity will allow the option to select the appropriate traffic management initiative to implement to minimize pair wise contention and ensure efficient individual trajectories within a flow.
	OV-5		Op Activity		8757	Post-event analysis of selected TMI		This activity will analyze the implementation of a selected TMI to determine if there was an imbalance in the plan. This process will allow future refinements of TMI's.
	OV-5		Op Activity		8786	Assign Cruise (En-Route) Flight Path		This activity provides the aircraft with an en route flight path.
	OV-5		Op Activity		8814	Publish Weather Picture		This activity will push weather information to subscribed and unsubscribed users.
	OV-5		Op Activity		8815	Report In-Flight Weather Data		This activity allows equipped UAS to collect and report in-flight weather data. The information will assist in determining weather favorable airspace
	OV-5		Op Activity		8817	File Flight Plan		This activity provides the capability to submit a user-preferred departure-to-destination flight plan. The flight plan (including the planned trajectory) is managed as part of the Flight Object and this provides the aircraft capabilities.
	OV-5		Op Activity		8819	Manage Airport Risk Assessment		This activity is the continuous review of threat vectors, objects, and materials coupled with intelligence on current National threat levels, civil aviation passengers assure that security stakeholders are prepared with timely and appropriate threat info. A prioritized list of vulnerabilities and potential mitigation strategies are assessed and selected for deployment. This is also managing the contingency plan.
	OV-5		Op Activity		8820	Airport Threat Profile Management		Airport Threat Profile Management provides the assurance that each airport undergoes a threat and vulnerability analysis which is updated periodically. The threat profile could include the entire physical footprint of the airport, out to the fence line, and would include the MANPADS threat. The information is disseminated to airports for planning and construct all airport procedures would react to the threat profile, passenger screened, checkpoints. This is different from the standard day to day risk assessment process that the airport does as part of normal operations and looks at longer terms risk threat issues.
	OV-5		Op Activity		8821	Manage Gate Operations		This activity provides the assessment of risks throughout the shipping chain from source to exit. The shipping chain includes cargo source, containerization, freight consolidation/forwarding, cargo/mail screening locations and airport transport to destination.
	OV-5		Op Activity		8822	Monitor Weather Information		This activity provide access to weather information sources, which are used to populate the official weather information system, and are certified to be valid, current information. The weather information is monitored with a set of tolls and processes to allow for continuous forecasts.
	OV-5		Op Activity		8827	Provide Cooperative Surveillance		This activity provides cooperation surveillance from all aircraft in the national airspace and is one of the key elements of trajectory based operations.
	OV-5		Op Activity		8828	Provide Non-Cooperative Surveillance		This activity provides non-cooperative surveillance, enabling an airborne object to be detected by ground, airborne, or space-based surveillance systems even if it does not have functional avionics equipment. Non- cooperative surveillance can be used when airborne or ground cooperative surveillance systems malfunction.
	OV-5		Op Activity		8830	Monitor Separation		This activity will monitor separation assurance to ensure safe separation among all aircraft.
	OV-5		Op Activity		8831	Provide Separation Clearance		This activity provides separation clearances to aircraft based on the established (based on aircraft capabilities and airspace) minimum separation standards (longitudinal, lateral, and vertical separation standards) for all aircraft operating in trajectory based operations. This activity will authorize and delegate self-separation to aircraft (based on their respective capabilities). Self-separation is continuously monitored to ensure safe operations, maximize capacity and meet demand.
	OV-5		Op Activity		8891	Conduct Pre-flight Checklist		This activity is the review to assurance that the checklist items have be checked prior to aircraft movement.

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	OV-5		Op Activity		8951	Manage Surface Operations		This activity provides the aircraft with up to date assignments (taxi path and parking position) and enables efficient use of the airport. This activity is the ground control and clearance delivery. This is the supervision of the activities necessary for formulating taxi sequencing and communicating instructions to pilots and vehicle operators for the safe and efficient flow of traffic on the airport surface through tower operations.
	OV-5		Op Activity		8955	Monitor Airborne Information		This activity will review airspace events, which includes information of potential capacity or flow issues, or changes such as airport status (open, shutdown.)
	OV-5		Op Activity		9113	Design Airside Facilities		This activity provides the capability to establish airfield design standards that maximize runway capacity while ensuring ground separation and safety.
	OV-5		Op Activity		9114	Design Landside Facilities		This activity creates the terminal design standards for optimization , enabling airport operations, including advances in passenger processing and security screening.
	OV-5		Op Activity		9115	Airside Operations		This activity is the operations of monitoring, managing , inspecting and reporting of airport operations.
	OV-5		Op Activity		9116	Manage Regional Planning Ops		This activity provides the capability to integrate regional planning considerations for multi-modal transportation, land use, and regional development into the airport planning process.
	OV-5		Op Activity		9117	Contingency/Business Continuity Management		This activity provides the capability to monitor and notify the local, state, and authorities. To mitigate aircraft incidents/accidents on or near the airport, as well as security incidents (e.g. Natural Hazards and Human & Technology). Overall, the NGATS is more resilient in responding to failures and disruptions and includes contingency measures to provide maximum continuity of service, including business continuity, in the face of major outages, natural disasters, security threats, or other unusual circumstances. Moreover, the increased reliance on automation is coupled with fail-safe modes that do not require full reliance on human cognition as a backup for automation failures. Because individual systems and system components can fail, the NGATS maintains a balance of reliability, redundancy, and procedural backups. It provides a system that not only has high availability but also requires minimal time to restore failed functionality.
	OV-5		Op Activity		9143	Human Resource Management		This activity involves all activities associated with the recruitment and management of personnel.
	OV-5		Op Activity		9145	Governance Management		This activity provides the federal and state policy, standards, and regulations to conduct airport and airspace operations. This includes policy/standard/regulations on environment, safety, aviation, and security.
	OV-5		Op Activity		9151	Manage Cargo Operations		This activity provides the handling of in-bound and out-bound cargo. This activity includes cargo categorization before boarding/loading on aircraft, and managing the cargo manifests prior to departure.
	OV-5		Op Activity		9153	Manage Fuel Supply		This activity manages the fuel supply at the airport. The fuel supply at the airport has to monitor the amount of fuel to determine if there will be a shortage. The fuel supply can also be an alternative type of fuel to align with the environmental constraints for the future.
	OV-5		Op Activity		9159	Manage Baggage		This activity provides the capability to checking in baggage remotely or at the airport, and categorizing baggage for loading onto an aircraft.
	OV-5		Op Activity		9160	Manage Passengers		This activity provides passenger check-in in preparation for aircraft boarding and security screening. Arriving passengers are taken through the INS process prior to entry into the country. The passenger manifest is maintained for security and planning purposes.
	OV-5		Op Activity		9213	Core Business Services		This activity provides the capabilities that support the day to day business operations. Core Business Services include, resources (facilities, equipment/systems, personnel) are acquired and assigned based on known and forecasted demand. Facilities and equipment are certified for safe operations. Governance at the federal and state level are disseminated to stakeholders in support of their business operations.
	OV-5		Op Activity		9220	Collect/Analyze Weather Observation		This activity configures the weather sensors, gather weather data via ground sensors, satellite sensors, and aircraft sensors (i.e., UAS, GA), and it performs the analysis of the collected weather data.

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	OV-5		Op Activity		9233	Assess Airport Risk Condition		This activity will assess risks and determine the overall threat assessment condition for overall system distribution using prognostic tools, models, and simulations at the strategic, operational, and tactical level to support all stakeholder decision makers and managers in the grafting of cost effective best practices into the design, acquisition, deployment, and operation of aviation security system assets and infrastructures. Knowledge bases concerning threats, vulnerabilities, and practices are tailored to user profiles that proactively determine need/authorization to know.
	OV-5		Op Activity		9238	Provide Non-Cooperative Air Surveillance		This activity provides airborne, or space-based surveillance systems to detect and monitor airborne objects, even if the objects do not have functional avionics equipment. Non-cooperative surveillance can be used when airborne or ground cooperative surveillance systems malfunction.
	OV-5		Op Activity		9240	Provide Cooperative Air Surveillance		This activity provides cooperative airborne surveillance, enabling detection of airborne based objects. Cooperative surveillance requires flight objects to be equipped with surveillance sensors.
	OV-5		Op Activity		9241	Environmental Information Management		Environmental Information Management (EIM) manages and monitors the environmental impacts and reports them to the various stakeholders. The NextGen is dependent on the effectiveness of EIM to manage and mitigate the environmental constraints to the capacity and the impacts due to aircraft operations.
	OV-5		Op Activity		9242	Report Environmental Conditions		This activity reports in real time the environmental impacts including air emissions, noise, water pollutions, land use and fuel emissions.
	OV-5		Op Activity		9249	Collect Airport Risk Assessment Data		This activity covers the collection of the different airport safety and risk data for use by the risk assessment process.
	OV-5		Op Activity		9250	Report Airport Risk Assessment		This activity reports the results of the airport risk assessment process for use by the community of interest.
	OV-5		Op Activity		9251	Airport Infrastructure Planning		Airport Infrastructure Planning plans the design, development, and manages the regional system plan of the airport infrastructure. This includes developing new runways, maximizing use of existing infrastructure, and incorporating use of enhanced runway markings, dynamic lighting, and multiple thresholds/touchdown points.
	OV-5		Op Activity		9480	Obtain In-Flight Weather Data		This activity will retrieve and review weather data in order to operate a safe flight. The information will assist in determining weather favorable airspace
	OV-5		Op Activity		9481	Receive 4D Weather Picture		This activity will receive weather data (observations, forecast, model/algorithm data, and climatology) into 4-D Weather (the NGATS common weather picture which covers the NAS from surface to low Earth orbit).
	OV-5		Op Activity		9484	Conduct Aircraft Operations		This activity conducts the aircraft operation, including receiving separation instructions and performing in near-space operations.
	OV-5		Op Activity		9510	Aeronautical Information Management		This activity provides the capability for aeronautical information to be uploaded, received, and exchanged with more accuracy and in a timely manner. Aeronautical information includes : Current performance requirements for airspace access and operation, special use airspace status and activity, airspace affected by temporary flight restrictions, route information and performance metrics, system outages affecting Global Positioning System (GPS), Wide Area Augmentation System (WAAS), Local Area Augmentation System (LAAS), and other NAVAIDS, including lighting, weather status, such as convective activity, winds aloft, icing, etc. airport status information, including runway availability and planned long- and short-term activities affecting the airport such as construction, snow removal, etc. and definitional data for airspace boundaries, fixes, terminal procedures, runways, and other supporting information.
	OV-5		Op Activity		9511	Geospatial Information Management		Geospatial Information Management (GIM) provides the capability to access and update information about the physical locations of fixed and mobile assets. Stakeholders are provided the capability to employ a common indexing structure to support the asset information development, exchange of information, as well as to query overall asset inventories. GIM manages current information, as well as maintaining historical information.
	OV-5		Op Activity		9512	Provide Flight Data Management		This activity ensures that ownership and integrity of the flight object and data are maintained throughout the flight, and to ensure storage of a flight data upon completion of a flight.

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	OV-5		Op Activity		9518	Enterprise Services		Enterprise Service provides delegated data services to the enterprise. Information delegation is accomplished by the processes and applications that constitute the Enterprise Service function. Another way to envision Enterprise Services is to consider where authorized subscribers can access the information desired. This access can be accomplished in an automated and virtual fashion where a standing request for information by subscribers is produced, using established protocols and standards. This access concept is what facilitates the NextGen vision of the future - delegated data for decision-making.
	OV-5		Op Activity		9527	Weather Operations		Weather Services enables the collection, analysis, and distribution of real-time and forecast weather to stakeholders. Weather information is tailored to the operational needs of those interested parties, maintaining a consistent view of weather information. Pre-flight and in-flight decisions are aided by weather services that assist the user in making tailored inquiries into the common weather picture. Other weather information such as alerts, advisories and warnings regarding significant weather changes are proactively published to stakeholders via digital communications.
	OV-5		Op Activity		10133	Provide Flight Data		This activity provides the distribution of flight information (stored in the flight object) based on a variety of requests (e.g. specific flights or temporal and spatial boundaries). The Flight Object provides access to all relevant information about a particular flight. Different stakeholders will have varying access to elements of the flight object (e.g. for privacy or security concerns).
	OV-5		Op Activity		10134	Archive Flight Data		This activity will store all flight data information upon completion of a flight. This will enable post-analysis of flight data.
	OV-5		Op Activity		10185	Manage Passenger Baggage Processing		This activity provides tracking of passenger, and baggage information, synchronization, itinerary/handling information, remote check-in, and security assurance. Information of the planned intent and current locations of passengers and their baggage is provided. It also provides auto ship of passenger baggage.
	OV-5		Op Activity		10189	Separation Management		This activity provides the function of ensuring aircraft or vehicles maintain safe separation minima from other aircraft or vehicles, protected airspace, terrain, weather, or other hazards. The function may be performed by ANSP personnel, the flight operator, and/or automation. This activity can delegate the separation operations based on trajectories or maneuver and provide the standards for self-separation.
	OV-5		Op Activity		10274	Certify Personnel		This activity is the certification of personnel (ANSP certification for monitoring and regulating airspace, flight crew certification for operating aircraft, and airport personnel.
	OV-5		Op Activity		10278	Certify Equipment		This activity will certify facilities (i.e., airports, FAA facilities) and equipment in order to meet the standard requirements to conduct safe operations.
	OV-5		Op Activity		10288	Monitor Systems and Network Performance		This activity will monitor the systems and networks to ensure everything is working optimally. The resulting performance metrics are collected and reported to stakeholders.
	OV-5		Op Activity		10293	Delegate Separation Operation		This activity will delegate separation operations including both a single aircraft having separation authority for a specific maneuver (e.g., for crossing or passing another aircraft), or more general separation responsibility, such as for flow corridors. ANSP and aircraft automation track the delegation of responsibility and its limits, and ensure that the delegation is always unambiguous and clearly communicated.
	OV-5		Op Activity		12197	Publish Aeronautical Information		This activity pushes Aeronautical information to subscribed and un-subscribe users.
	OV-5		Op Activity		12198	Provide Aeronautical Information Subscription Services		This activity is the subscription service for stakeholders to automation systems to receive published Aeronautical data.
	OV-5		Op Activity		12199	Provide Cooperative Surface Surveillance		This activity provides cooperative ground surveillance, enabling detection of ground based objects. Cooperative surveillance requires flight objects to be equipped with surveillance sensors.

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	OV-5		Op Activity		12200	Conduct Flight Planning Management		This activity begins when either the ANSP or the flight operator initialize or requires a change in a new or existing flight plan. Fight operators and the ANSP have a range of flight planning capabilities that optimize flights based on individual mission objectives, available aircraft, security and airspace constraints, and forecasted weather (see Chapter 3). Operators also have access to an authoritative source of weather information that provides forecasts and current conditions. Flight planning automation uses both weather data and system constraint data provided from the ANSP in planning individual flights or groups of flights. Additionally, flight planning makes use of known separation standards as well as the RNP level of the equipment being used. The process ends when both the ANSP and the flight operator agree on the results. Common flight data is available for updates as the flight plan is refined or updated.
	OV-5		Op Activity		12201	Disseminate Weather Picture		This activity will provide the fused 4D weather picture in consumable format for automation systems and stakeholders, this activity will also provide the weather heuristic out to stakeholders. .
	OV-5		Op Activity		12202	Disseminate Aeronautical Information		This activity disseminate aeronautical information to Community of Interest (COI) to ensure shared situational awareness.
	OV-5		Op Activity		12203	Collect Geospatial Information		This activity receives geospatial information such as: The physical locations of fixed and mobile assets that follow a common indexing structure to support the asset information development, and exchange of information.
	OV-5		Op Activity		12204	Collect Aeronautical Data		This activity receives aeronautical information such as: Current performance requirements for airspace access and operation, special use airspace status and activity, airspace affected by temporary flight restrictions, route information and performance metrics, system outages affecting Global Positioning System (GPS), Wide Area Augmentation System (WAAS), Local Area Augmentation System (LAAS), and other NAVAIDS, including lighting, weather status, such as convective activity, winds aloft, icing, etc. airport status information, including runway availability and planned long- and short-term activities affecting the airport such as construction, snow removal, etc. and definitional data for airspace boundaries, fixes, terminal procedures, runways, and other supporting information.
	OV-5		Op Activity		12206	Disseminate Geospatial Information		This activity disseminate geospatial information based on customized queries by stakeholders to ensure shared situational awareness. Information includes assets such as physical facilities, airspace boundaries, airport survey information, the location of CNS infrastructure elements.
	OV-5		Op Activity		12208	Determine NAS Weather Integration Algorithm		This activity determines the weather heuristic to provide out to stakeholders.
	OV-5		Op Activity		12210	Provide Weather Diagnostic Forecast		This activity provides the weather diagnostic forecast by performing ensemble forecast modeling.
	OV-5		Op Activity		12212	Manage Employee Development and Performance		This activity designs, develops, and implements a comprehensive employee development approach to ensure that agency employees have the right competencies and skills for current and future work assignments. This sub-function includes conducting employee development needs assessments; designing employee development programs; administering and delivering employee development programs; and evaluating the overall effectiveness of the agency's employee development approach.
	OV-5		Op Activity		12213	Authorize Flight Plan		This activity provides the finalized flight plan before the execution of the flight. The flight plan will be finalized within 1-2 hours before flight.
	OV-5		Op Activity		12837	Collect Performance Metrics Data		This activity is the collection of performance data that include: the number of operations, delays, cancellations, diversions, filed versus flown miles/altitude, and airport and system efficiency and predictability.
	OV-5		Op Activity		12838	Analyze Performance Metrics Data		This activity is the post analysis of performance data collected from airports, environments and including system environments.
	OV-5		Op Activity		12839	Disseminate Performance Metrics Reports		This activity will provide performance reports to various stakeholders that will provides operational trends that assess the environmental impacts, such as noise, air emissions, water pollution (e.g. deicing), land use, and fuel burn. As a result of the performance reports the NGATS environmental policy will be modified to align with NGATS goals and objectives and to disseminate to stakeholders.
	OV-5		Op Activity		12844	Perform Personnel Management		This activity is the process for managing personnel including determining if additional resources is required and allocating resources to meet demand.
	OV-5		Op Activity		12845	Conduct Facilities Management		This activity is the acquisition, maintenance, administration, and operation of airport facilities.

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	OV-5		Op Activity		12850	Conduct Equipment Management		This activity is the acquisition, maintenance, administration and operation of airport equipment.
	OV-5		Op Activity		12852	Collect Airport Threat Data		This activity is the collection of threat and vulnerability data which is updated periodically, which include the entire physical footprint of the airport, out to the fence line, and would include the MANPADS threat.
	OV-5		Op Activity		12853	Analyze Airport Threat Data		This activity is the analysis of threat and vulnerability data of the entire physical footprint of the airport, out to the fence line, and would include the MANPADS threat.
	OV-5		Op Activity		12854	Create Airport Threat Profile		This activity is the generation of threat profile that include the entire physical footprint of the airport, out to the fence line, and would include the MANPADS threat.
	OV-5		Op Activity		12855	Monitor Airport Threat		This activity is the monitoring of the threat profiles to ensure continuity of operations.
	OV-5		Op Activity		12856	Submit Threat Profile		This activity is the disseminating of threat profile to airports for planning and construct all airport procedures would react to the threat profile, passenger screened, checkpoints. This is different from the standard day to day risk assessment process that the airport does as part of normal operations and looks at longer terms risk threat issues.
	OV-5		Op Activity		12888	Screen Baggage		This activity is the screening of baggage for CBRNE and Weapons through multiple security levels in order to determine pass/fail; failed alert will be auto generated to notify Law Enforcement Officer (LEO) for additional security actions.
	OV-5		Op Activity		12890	Screen Cargo		This activity is the screening of cargo for CBRNE and Weapons through multiple security levels in order to determine pass/fail; failed alert will be auto generated to notify Law Enforcement Officer (LEO) for additional security actions.
	OV-5		Op Activity		12893	Report Airfield Condition		This activity provides a detailed airfield condition report.
	OV-5		Op Activity		12894	Manage Ramp Support		This activity will manage all the activities associated with push-back of flights that are ready for departure and transition of these departure flights to the movement area, and acceptance of arrival flights from the movement area and the assignment of the parking positions.
	OV-5		Op Activity		12896	Conduct Airfield Inspections		This activity consists of inspecting the airfield to identify aberrant conditions, determine the severity of the conditions, request maintenance if necessary, and report an “airfield clear” when conditions warrant.
	OV-5		Op Activity		12901	Emergency Operation Procedure		This activity is triggered by an emergency event for or from an aircraft, which causes initialization of emergency reaction plan and notification of first responder, .
	OV-5		Op Activity		12902	Notify Emergency Responder		This activity notifies the emergency responder that an emergency has occurred (i.e. local, state and federal).
	OV-5		Op Activity		12903	Monitor Emergency Data		This activity monitor for the different emergency profiles.
	OV-5		Op Activity		12904	Conduct Post Analysis of Contingency/Emergency Operation Procedure		This activity analyzes the effectiveness of the Contingency/Emergency Operation Procedures processes.
	OV-5		Op Activity		12905	Conduct Recovery Operation		This activity is describes the methods and procedures to be used by the airport in order to safeguard and restore original operational state, in the event of an emergency disaster.
	OV-5		Op Activity		12919	Monitor Flight Data		This activity monitors the flight data to track any changes made to the flight.
	OV-5		Op Activity		12921	Screen Passengers		This activity will screen passengers for security.
	OV-5		Op Activity		12923	Develop Contignecy Plan		This is the activity to develop a contingency plan in the event that there is an emergency, such as a major outage, natural disaster, security threat, or other unusual circumstance. This plan will determine how to respond to the emergency.
	OV-5		Op Activity		12941	Post-analysis of Execution Plan		This activity will analyze the execution plan to determine how well the plan performed against the performance targets, and to provide that information back into the forecasting process
	OV-5		Op Activity		13282	Monitor Airport Condition		This activity monitors the condition at the airport for delays on the ground. This is the ground delay program.
	OV-5		Op Activity		13283	Manage Airspace		This activity is the management of the airspace. Managing SUA’s, TFR’s, NOTAMS. The supervision of the necessary activities involved in regulating the Earth’s layer of surrounding air, from the surface to at least 70,000 feet

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	OV-5		Op Activity		13284	Design Airspace		This activity will design the airspace. It will use the LOAs and SOPs. Airspace design creates the boundaries both vertically and horizontally for a volume of airspace to include procedures, airways, NAVAIDS, fixes, intersections, waypoints, etc.
	OV-5		Op Activity		13288	Manage Surface Movement		This activity manages the movement on the surface for aircrafts on the taxiways and the runways.
	OV-5		Op Activity		13307	Manage Alert Information		This activity involves obtaining information on an aircraft in an emergency state, interpreting that information, and disseminating that information to facilities whose assistance may be required.
	OV-5		Op Activity		13308	Manage Emergency Information		This activity is the supervision of the necessary activities that provide the information to ensure appropriate assistance is provided to aircraft in an emergency state, and coordination of efforts are managed between all necessary facilities.
	OV-5		Op Activity		13311	Schedule Flight		The activity required to determine the destination and the departure and arrival times for a flight
	OV-5		Op Activity		13312	Plan Flight		This activity is the flight preparation such as determining the route of flight, fuel requirements, checking the weather, etc.
	OV-5		Op Activity		13313	Determine Flight Support Need		This activity decides what aeronautical information is needed and types of NAVAIDS will be required for a specific flight.
	OV-5		Op Activity		13317	Receive Arrival/Departure Information		This activity receives arrival and departure information in advance to the aircraft.
	OV-5		Op Activity		13318	Request Preflight Taxi Clearance		This activity is the request approval for taxiing an aircraft onto the movement area during the hours of Airport Traffic Control Tower Operations.
	OV-5		Op Activity		13319	Execute Taxi Preflight Operations		This activity in which the aircraft/flight operator follows taxiing instructions.
	OV-5		Op Activity		13320	Report Flight Readiness		This activity reports to the contacting tower at the runway hold-short line indicating the aircrafts readiness to depart
	OV-5		Op Activity		13326	Conduct Post Arrival Operations		This activity performs the operations necessary by the flight operator/flight crew after landing and when clear of the runway.
	OV-5		Op Activity		13327	Conduct Preflight Operations		This activity performs the operations necessary prior to takeoff and departure.
	OV-5		Op Activity		13328	Request Post Flight Taxi Clearance		This activity is the request for approval for taxiing a post-flight aircraft onto the movement area during the hours an Airport Control Tower is in operation.
	OV-5		Op Activity		13329	Execute Post Flight Taxi Operation		This activity follows the post flight taxiing instructions issued
	OV-5		Op Activity		13330	Execute Post Flight Reporting		This activity is in case some VFR aircraft, flight operators must cancel their VFR clearance with either the Tower or the local FSS after their flight is complete.
	OV-5		Op Activity		13339	Command Flight		The activity of managing the flight crew and systems aboard an aircraft, as well as responding to communications and commands from air traffic control.
	OV-5		Op Activity		13340	Navigate Flight		This activity is the collaboration of separation clearance and monitoring of airborne information to enable the flight operator to execute the flight.
	OV-5		Op Activity		13434	Receive Airspace Design		This activity will receive the proposed airspace design from the capacity management. The airlines, flight operator, schedulers will review and analyze in order to meet their business objectives.
	OV-5		Op Activity		13435	Analyze Business Case		This activity analyzes the business case of the airlines. Determines schedules and flights to meet demand.
	OV-5		Op Activity		13462	Positioning, Navigation, and Timing Services		Position, Navigation, and Timing (PNT) Services provides the ability to accurately and precisely determine ones current location and orientation; desired path and position, apply corrections to course, orientation, and speed to attain the desired position; and to obtain accurate and precise time anywhere on the globe, within user defined timeliness parameters, which are enabled through PNT.
	OV-5		Op Activity		13463	Provide Positioning Service		This activity provides highly accurate and reliable positioning source, which will enable improved surveillance capabilities and reduced separation standards.
	OV-5		Op Activity		13464	Provide Navigation Service		This activity enables area navigation (RNAV) as the standard method of navigation in the NAS. The navigation service provides the foundation for performance based navigation operations including those that have specified RNP.
	OV-5		Op Activity		13465	Provide Timing Service		This activity enables the precise synchronization of operations and the reduction of uncertainties associated with disparate timing source.

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	OV-5		Op Activity		13470	Safety Management Service		Safety Management Service (SMS) is the principle enabler of a safe and efficient higher capacity air transportation system. SMS is the process that provides a systematic method for managing safety. The four components of an SMS are policy, architecture, assurance, and safety promotion.
	OV-5		Op Activity		13472	Provide Aviation Safety Service		This activity provides the aviation safety policy service which coordinates and maintains a national safety policy, coordinates cooperation in aviation safety management research, promotes and maintains an effective safety culture, including addressing legal and liability issues, and identifying training, holds organizations' top management responsible for safety performance as they are now for finances, and coordinates with foreign and international organizations and air transportation stakeholders.
	OV-5		Op Activity		13473	Provide Safety Risk Management		This activity provides a set of process and practices by which a concept and its operation are designed and made to be safe. It is a structured approach for identifying potential breakdowns in the system's operation, understanding the impact they may have on safety, identifying alternative mitigation strategies and evaluating and monitoring their effectiveness.
	OV-5		Op Activity		13474	Provide Safety Assurance		This activity provides the independent oversight function which tests, evaluates, and certifies, as necessary, products to assure these are safe for the public and stakeholders.
	OV-5		Op Activity		13478	Communication Service Management		Communication Service (CS) provides the service to exercise executive, administrative, and supervisory direction of the service that enables voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.
	OV-5		Op Activity		13480	Manage Communication		This activity manages the supervision of the necessary activities involved in regulating the process by which information is exchanged between individuals through a common system of symbols, signs, behavior or technology. This could include: Ground Network Services, Air-Ground Network, Aircraft Data Comm, etc.
	OV-5		Op Activity		13481	Manage Spectrum		This activity manages the supervision of the necessary activities involved in regulating the use of electromagnetic spectrum as to which range of frequencies can be used for a specific purpose.
	OV-5		Op Activity		13482	Manage Frequency Allocation		This activity governs or controls the distribution of ATC radio frequencies assignments
	OV-5		Op Activity		13483	Assign Radio Frequency		This activity assigns the ATC radio frequencies.
	OV-5		Op Activity		13488	Manage Communication Connection		This activity governs or controls the contract between individuals.
	OV-5		Op Activity		13489	Restore Communication Service		This activity restores the original state of the communication service.
	OV-5		Op Activity		13490	Balance Communication Service		This activity brings in equilibrium the contact between individuals products that enable and enhance the operations of the aerospace community.
	OV-5		Op Activity		13491	Collect Utilization Data		This activity is the collection of communication utilization information from airborne and ground locations.
	OV-5		Op Activity		13492	Report Communication Service Status		This activity is the detailed account of the communication status.
	OV-5		Op Activity		13493	Monitor Communication Status		This activity monitors the status of the communication.
	OV-5		Op Activity		14664	Airspace Security Operations		This activity for secure airspace is to prevent or counter external attacks on aircraft and other airborne vehicles anywhere in the NAS or to use an aircraft as a weapon to attack assets and events on the ground. To reduce the security risk within the Air Domain, NextGen Secure Airspace systems and procedures detect and prevent or mitigate: a) anomalies in aircraft operation that indicate unauthorized use or attempted unauthorized use, b) aircraft not providing the appropriate cooperative data concerning identity and intentions, c) external attacks on aircraft, d) aircraft that can pose a threat from operating in the NAS. These risk management requirements include defining (usually dynamically) the boundaries of security-restricted airspace (SRA) and temporary flight restrictions (TFR), the cooperative division of responsibilities between the DSP and the SSP in the event of security events in flight or by airborne threat aircraft, security personnel on flights, and modifications and equipage to the aircraft.

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	OV-5		Op Activity		14666	Monitor Airspace Alerts		This activity monitors the airspace for security. The total flight monitoring capability in secure aircraft calculates a security factor that is continuously being updated. In real time, the secure airspace capability receives data updating each flight's security factor. The separation management (SM) capability detects potential violations of SRAs from cooperative and non-cooperative flights within a look-ahead time. The detected airspace violation alert notifications are sent to operational personnel who have positive control responsibilities for the aircraft, including the flight operator and ANSP. Depending on aircraft type, the cockpit may also be equipped with airspace violation detection capabilities that could alert the flight operator directly.
	OV-5		Op Activity		14667	Manage Airspace Alerts		This activity manages the airspace security alerts. The TSM automation proposes resolutions (e.g., reroute) to deconflict the airspace violations and the flight operator execute the resolution. Airspace violations are continuously monitored to ensure deconflict maneuvers are implemented. Alert status is escalated when the aircraft does not respond timely or take directed action to achieve authorized trajectories. If an airspace violation alert is not resolved in a timely manner, the NextGen SSP and DSP are notified. In addition to airspace violations, alerts concerning flight anomalies or behavior on board could be detected by the Federal Air Marshals Service (FAM), crew, or other LEOs and could potentially be reported through the following paths: FAMs/SSP and flight operator/ANSP. Such alerts are shared through the NextGen NEO with the DSP and other stakeholders. The alert situation is continuously monitored by automation and by the ANSP and SSP personnel to determine when/whether the alert status has to b
	OV-5		Op Activity		14668	Restrict Airspace		This activity of security restricted airspace is put in place to protect key assets and activities that are of national security significance. Their geometry, volume, and activation schedules are efficiently structured and implemented to balance security and air traffic demand. The use of SRAs for security purposes is kept to the minimum required to maintain security standards and maintains as much flexibility as possible to avoid impeding the flow of commerce. In the NextGen, it is envisioned that the temporally defined SRAs have the following general types: Total restriction SRA (few locations): - Airspace access is limited to only security and defense operations. - No exemptions. Continuous restriction SRA: - Airspace that has some security performance requirements to gain access. - Access exemptions are risk based Intermittent restriction SRA: - Airspace that has high-security performance requirements for certain time periods; the remainder of the time, no restrictions. - Access exemptions are risk based
	OV-5		Op Activity		14672	Secure Aircraft		This activity of securing aircraft increases the safety and security of the NextGen aircraft in flight through various hardware, software, personnel, and procedural methods. The threats that require mitigation are hijacking and unauthorized diversion, internal explosive destruction, external attack, onboard CBRN or other attack of crew, passengers, or aircraft systems, aircraft use as a transport for CBNRE, and aircraft use as a WMD. Secure aircraft applies to civilian passenger aircraft and civilian cargo aircraft. UAS aircraft (surveillance or cargo) also is included for threats related to unauthorized diversion, internal explosive destruction, and as a transport for CBRNE.
	OV-5		Op Activity		14763	Manage Navigation Infrastructure		This activity manages the navigational aids on the airport surface, such as lights, signage, sensors, transmitters, etc.
	OV-5		Op Activity		14780	Initiate Contingency Plan		This activity initiates the contingency plan for the facilities.
	OV-5		Op Activity		14782	Disseminate Flight Data		This activity is the dissemination of the flight object data.
	OV-5		Op Activity		14783	Provide Flight Data Subscription Services		This activity is the subscription service for stakeholders to automation systems to receive flight object data.
	OV-5		Op Activity		14784	Publish Flight Data		This activity broadcast the flight data/object information to users.
	OV-5		Op Activity		14788	Provide Geospatial Information Subscription Service		This activity is the subscription service for stakeholders to automation systems to receive geospatial information to include assets such as physical facilities, airspace boundaries, airport survey information, the location of CNS infrastructure elements.

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	OV-5		Op Activity		14789	Publish Geospatial Information		This activity broadcast geospatial information to the users. Information includes assets such as physical facilities, airspace boundaries, airport survey information, the location of CNS infrastructure elements.
	OV-5		Op Activity		14803	Manage Labor Relations		This activity manages the relationship between the agency and its unions and bargaining units. This includes negotiating and administering labor contracts and collective bargaining agreements; managing negotiated grievances; and participating in negotiated third party proceedings.
	OV-5		Op Activity		14804	Develop HR Strategy		This activity develops effective human capital management strategies to ensure federal organizations are able to recruit, select, develop, train, and manage a high-quality, productive workforce in accordance with merit system principles. This sub-function includes: conducting both internal and external environmental scans; developing human resources and human capital strategies and plans; establishing human resources policy and practices; managing current and future workforce competencies; developing workforce plans; developing succession plans; managing the human resources budget; providing human resources and human capital consultative support; and measuring and improving human resources performance.
	OV-5		Op Activity		14805	Administer Organization and Position Management		This activity designs, develops, and implements organizational and position structures that create a high-performance, competency-driven framework that both advances the agency mission and serves agency human capital needs.
	OV-5		Op Activity		14811	Report Financials		This activity reports the financial information, reporting and analysis of financial transactions.
	OV-5		Op Activity		14812	Manage Budget		This activity includes the management of the Federal budget process including the development of plans and programs, budgets, and performance outputs and outcomes as well as financing Federal programs and operations through appropriation and apportionment of direct and reimbursable spending authority, fund transfers, investments and other financing mechanisms.
	OV-5		Op Activity		14813	Manage Assets and Liabilities		This activity provides accounting support for the management of assets and liabilities of the Federal government.
	OV-5		Op Activity		14814	Supply Chain Management		This activity involves the purchasing, tracking, and overall management of goods and services.
	OV-5		Op Activity		14815	Manage Inventory		This activity refers to the tracking of information related to procured assets and resources with regards to quantity, quality, and location.
	OV-5		Op Activity		14816	Acquire Goods		This activity enables the acquisition of goods and entails the procurement of physical goods, products, and capital assets to be used by the federal government.
	OV-5		Op Activity		14817	Acquire Services		This activity involves the oversight and/or management of contractors and service providers from the private sector.
	OV-5		Op Activity		14818	Information and Technology Management		This activity involves the coordination of information and technology resources and systems required to support or provide a service.
	OV-5		Op Activity		14819	Maintain IT Infrastructure		This activity involves the planning, design, and maintenance of an IT Infrastructure to effectively support automated needs (i.e. platforms, networks, servers, printers, etc.).
	OV-5		Op Activity		14820	Manage Change		This activity involves the processes that facilitate a smooth evolution, composition, and workforce transition of the design and implementation of changes to agency resources such as assets, methodologies, systems, or procedures.
	OV-5		Op Activity		14821	Maintain Systems		This activity supports all activities associated with the maintenance of in-house designed software applications.
	OV-5		Op Activity		14822	Provide Information Assurance		This activity involves all functions pertaining to the securing of Federal data and systems through the creation and definition of security policies, procedures and controls covering such services as identification, authentication, and non-repudiation.
	OV-5		Op Activity		14823	Conduct Information Management		This activity manages the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.
	OV-5		Op Activity		14824	Develop Regulations		This activity manages the activities associated developing regulations, policies, and guidance to implement laws.
	OV-5		Op Activity		14825	Monitor Compliance		This activity ensures that the operations and programs of the Federal government and its external business partners comply with applicable laws and regulations and prevent waste, fraud, and abuse. Includes Program Monitoring and Program Evaluation.

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	OV-5		Op Activity		14826	Oversee Regulatory Compliance and Enforcement		This activity is the direct monitoring and oversight of a specific individual, group, industry, or community participating in a regulated activity via market mechanisms, command and control features, or other means to control or govern conduct or behavior. This activity includes the development of standard setting and reporting guidelines development.
	OV-5		Op Activity		14827	Audit Regulated Activities		This activity involves the methodical examination and review of regulated activities to ensure compliance with standards for regulated activity.
	OV-5		Op Activity		14828	Develop Standards and Reporting Guidance		This activity establishes of allowable limits associated with a regulated activity and the development of reporting requirements necessary to monitor and control compliance with allowable limits. This includes the development of requirements for product sampling and testing, emissions monitoring and control, incident reporting, financial filings, etc.
	OV-5		Op Activity		14829	Develop Policy and Guidance		This activity manages the creation and dissemination of guidelines to assist in the interpretation and implementation of regulations.
	OV-5		Op Activity		14830	Track Public Comment		This activity involves the activities of soliciting, maintaining, and responding to public comments regarding proposed regulations.
	OV-5		Op Activity		14831	Create Regulations		This activity processes the activities of researching and drafting proposed and final regulations.
	OV-5		Op Activity		14832	Monitor Programs		This activity involves the data-gathering activities required to determine the effectiveness of internal and external programs and the extent to which they comply with related laws, regulations, and policies.
	OV-5		Op Activity		14833	Evaluate Programs		This activity involves the analysis of internal and external program effectiveness and the determination of corrective actions as appropriate.
	OV-5		Op Activity		14868	Certify Facilities		This activity includes the evaluation and certification of all facilities within the Air Transportation System
	OV-5		Op Activity		14878	Airport Emergency Response		Airport Emergency Response is the continuous monitoring and management of routine and emergency airport operations. Issues include: fire, incursion, accident, or other incident.
	OV-5		Op Activity		14879	Monitor Emergency Operations		This activity is the continuous monitoring of routine and emergency airport operations.
	OV-5		Op Activity		14880	Manage Emergency Operations		This activity is the management of routine and emergency airport operations.
	OV-5		Op Activity		14888	Pushback		This activity is the aircraft pushing back from the parking spot.
	OV-5		Op Activity		14889	Park Aircraft		This activity is the parking of the aircraft in the assigned parking spot
	OV-5		Op Activity		14892	Take-off		This activity is the aircraft taking off
	OV-5		Op Activity		15938	Land		This activity is the aircraft landing.
	OV-5		Op Activity		16824	Assign Parking Position		This activity will assign the arriving aircraft a parking position at the airport.
	OV-5		Op Activity		16825	Manage DeIcing/AntiIcing		This activity manages the de and anti icing operations on the aircraft and at the airport.
	OV-5		Op Activity		16846	Institute Congestion Procedure		This activity institutes the congestion procedure at the airport. Not all airports have a congestion procedure to initiate.
	OV-5		Op Activity		16847	Monitor Congestion		This activity is the continuous monitoring airport congestion in order to access impact to the NAS and implement procedures for short-term congestion situations.
	OV-5		Op Activity		16859	Process Cargo		This activity will the unload the cargo and deliver the cargo to another flight or distribution point at the airport for inbound cargo and includes receiving packages, sorting the packages, assembling of cargo containers, and loading of cargo onto aircraft for outbound cargo.
	OV-5		Op Activity		16860	Process Cargo Manifest		This activity is the review, verification, and modification of the Cargo Manifest.
	OV-5		Op Activity		16864	Monitor Surface Support Equipment		This activity provides the monitoring the real-time surface surveillance of aircraft and ground support equipment on the ground. This information is made available to stakeholders with a need to know.
	OV-5		Op Activity		16865	Manage Vehicles		This activity is the acquisition, maintenance , operation, and monitoring of airport vehicles.
	OV-5		Op Activity		16880	Flight Level Security Analysis		This activity analyzes the collective threat of all passengers to create a threat profile for the flight.
	OV-5		Op Activity		16882	Manage Airport Security Alerts		This activity provides the process controls the use and distribution of the threat assessment data collected by the assess threat condition activity. This is the management of security alerts in the airport, for passenger, baggage, cargo, threat conditions, attacks, etc.

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	OV-5		Op Activity		16936	Acquire Staff		This activity is the means that identifies the need, develops the requisition to fill that need, and the finding to fill that need to ensure continuous operations.
	OV-5		Op Activity		28187	Issue Modification Information/ Clearance		This activity is the modification of information/clearances, due to request or NAS Status information. The modification information to the arrival clearance and departure information is sent to the aircraft
	OV-5		Op Activity		28259	Manage Environmental Impacts		This activity manages the impacts on the environment.
	OV-5		Op Activity		31559	Positioning,Navigation,and Timing Services		

Metadata

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0				AV-2 GLOSSARY		ARCHITECTURE LEVEL ASSIGNMENT		A numeric value (Range - 0 to 11) for use in: 1. Sorting information into a particular hierarchical view. 2. Selection of specific sets of hierarchical data.
0				AV-2 GLOSSARY		ARCHITECTURE PRODUCT VERSION		A version of the architecture will be based on the version of the CONOPS (1.1a, 1.2, 2.0)
0				AV-2 GLOSSARY		ARCHITECTURE ELEMENT		A short-hand verbal identifier of the named entity source. EXAMPLE The named entity of this ENTITY DEFINITION is “ARCHITECTURE ELEMENT” which came from the AV-2 GLOSSARY.
0				AV-2 GLOSSARY		ARCHITECTURE ENTITY ID		A unique alphabetic and numeric character combination identifying the named entity and its relationship to its hierarchial parents and children.
0				AV-2 GLOSSARY		ARCHITECTURE ENTITY NAME		An English language set of words or phrases that uniquely name an architecture entity.
0				AV-2 GLOSSARY		ARCHITECTURE ENTITY ACRONYM		A unique alphabetic or alpha-numeric character combination used in substitution ot the ARCHITECTURE ENTITY NAME in documentation. Presentation, and conversation..
0				AV-2 GLOSSARY		ARCHITECTURE ENTITY DEFINITION		The set of information about and formally describing logical boundaries of the ARCHITECTURE ENTITY NAME.
0		AV-1	v1.0	DoDAF View		Overview and Summary Information	AV-1	The Overview and Summary Information (AV-1) provides executive-level summary information in a consistent form that allows quick reference and comparison among architectures. AV-1 includes assumptions, constraints, and limitations that may affect high-level decision processes involving the architecture.
0		AV-2	v1.0	DoDAF View		Integrated Dictionary	AV-2	The Integrated Dictionary (AV-2) provides a central repository for a given architecture’s data and metadata. AV-2 enables the set of architecture products to stand alone, allowing them to be read and understood with minimal reference to outside resources. AV-2 is an accompanying reference to other products, and its value lies in unambiguous definitions.
0		OV-1	v1.0	DoDAF View		High-Level Operational Concept Graphic	OV-1	The High- Level Operational Concept Graphic describes a mission and highlights main operational nodes (see OV-2 definition) and interesting or unique aspects of operations. It provides a description of the interactions between the subject architecture and its environment, and between the architecture and external systems. A textual description accompanying the graphic is crucial. Graphics alone are not sufficient for capturing the necessary architecture data.

ARCHITECTURE LEVEL ASSIGNMENT	ARCHITECTURE PRODUCT ID	ARCHITECTURE PRODUCT VERSION	ARCHITECTURE ELEMENT	FEA REFERENCE MODEL ID	ARCHITECTURE ENITITY ID	ARCHITECTURE ENTITY NAME	ARCHITECTURE ENTITY ACRONYM	ARCHITECTURE ENTITY DEFINITION
0		OV-2	v1.0	DoDAF View		Operational Node Connectivity Description	OV-2	The Operational Node Connectivity Description graphically depicts the operational nodes with needlines between those nodes. An operational node is an element of the operational architecture that produces, consumes, or processes information. A needline documents the requirement to exchange information between nodes. The needline does not indicate how the information transfer is implemented.
0		OV-3	v1.0	DoDAF View		Operational Information Exchange Matrix	OV-3	The Operational Information Exchange Matrix details information exchanges and identifies "who exchanges what information, with whom, why the information is necessary, and how the information exchange must occur." There is not a one-to-one mapping of OV-3 information exchanges to OV-2 needlines; rather, many individual information exchanges may be associated with one needline.
0		OV-5	v1.0	DoDAF View		Operational Activity Model	OV-5	The Operational Activity Model (OV-5) describes the operations that are normally conducted in the course of achieving a mission or a business goal. It describes capabilities, operational activities (or tasks), and input and output (I/O) flows between activities that are both within and outside the scope of the architecture. High-level operational activities should trace to (are decompositions of) a Business Area (or Internal Line of Business) as published in OMB's Business Reference Model.
0		OV-6c	v1.0	DoDAF View		Operational Event-Trace Description	OV-6c	The OV-6c provides a time-ordered examination of the information exchanges between participating operational nodes as a result of a particular scenario. Each event-trace diagram should have an accompanying description that defines the particular scenario or situation.
0		SV-4	v1.0	DoDAF View		Systems Functionality Description	SV-4	The Systems Functionality Description (SV-4) documents system functional hierarchies and system functions, and the system data flows (as shown on the Systems Data Exchange Matrix (SV-6) between them. There is a correlation between Operational Activity Model (OV-5) (or business-process hierarchies) and the System Functional Hierarchy of SV-4, but it need not be a one-to-one mapping. The Operational Activity to System Function Traceability Matrix (SV-5) provides that mapping.
0		SV-5	v1.0	DoDAF View		Operational Activity to Systems Function Traceability Matrix	SV-5	Operational Activity to Systems Function Traceability Matrix is a specification of the relationships between the set of operational activities applicable to an architecture and the set of system functions applicable to that architecture.

FEA

Name	Definition	Source
Activity Measures	These measures typically track the actions or behaviors an organization performs using its inputs of staff time and financial resources.	[Niven], Balanced Scorecard Step-By-Step for Government and Nonprofit Agencies, Niven, Paul R. 2003
BMR Sub-Functions	Sub-Functions represent the lowest level of granularity in the government	
BRM Lines of Business	Lines of Business describe the purpose of government in functional terms and describe the support functions the government must conduct in order to effectively deliver services for citizens; outlined in the BRM	
Business case	A structured proposal for business improvement that functions as a decision package for organizational decision-makers. A business case includes an analysis of business process performance and associated needs or problems, proposed alternative solutions, assumptions, constraints, and a risk-adjusted cost-benefit analysis.	[GAO], General Accounting Office; www.gao.gov

Name	Definition	Source
Business Enterprise Architecture (BEA)	The Business Enterprise Architecture (BEA) is a blueprint to guide and constrain investments in DoD organizations, operations, and systems as they relate to or impact business operations. It will provide the basis for the planning, development, and implementation of business management systems that comply with Federal mandates and requirements, and will produce accurate, timely and compliant information for DoD staff. PSAs will define the level of specificity for their Core Business Mission areas. In some cases, the BEA will include separately maintained CBM-specific architecture and requirements.	[OSD USD (AT&L)], Investment Review Board Process Overview and Concept of Operations for Investment Review Boards, 2 Jun 05 [USD(AT&L)]
Business Mission Area	A defined area of responsibility with function and processes that contribute to mission accomplishment. [USD(AT&L)]	[OSD USD (AT&L)], Investment Review Board Process Overview and Concept of Operations for Investment Review Boards, 2 Jun 05
Business Process	A true business process starts with the first event that initiates a course of action. The process isn't complete until the last aspect of the final outcome is satisfied from the point of view of the stakeholder of the first event that triggered it	

Name	Definition	Source
Business Process Improvement	A methodology for focused change in a business process achieved by analyzing the AS-IS process using process models, IDEF, and other tools, then developing a streamlined TO-BE process in which automation may be added to result in a process that is better, faster, and cheaper. BPI aims at cost reductions of 10-40%, with moderate risk. [BSI]	[BSI], The Balanced Scorecard Institute; www.balancedscorecard.org
Business Reference Model	The BRM is a function-driven framework to describe the Lines of Business and Sub-functions performed by the federal government independent of the agencies that perform them.	
Business Reference Model (BRM)	function-driven framework for describing the business operations of the Federal Government independent of the agencies that performs them. The Business Reference Model is one of the Federal Enterprise Architecture reference models. [FEA-PMO]	The Federal Enterprise Architecture Program Management Office, www.feapmo.gov
Change Management (Technical)	Process of controlling changes to the infrastructure or any aspect of services, in a controlled manner, enabling approved changes with minimum disruption (ITIL)	
Cost-benefit analysis	A technique used to compare the various costs associated with an investment with the benefits that it proposes to return. Both tangible and intangible factors should be addressed and accounted for. [GAO]	[GAO], General Accounting Office; www.gao.gov
Customer Perspective	The Customer perspective is one of the four Balanced Scorecard perspectives, determining whom it aims to serve and how their requirements can best be met. This perspective answers the question, "How do we create value for our customer?" [BSI]	[BSI], The Balanced Scorecard Institute; www.balancedscorecard.org
Customer Results Measurement Area	captures how well an agency or specific process within an agency is serving its customers—and ultimately citizens. Comprised of the following Measurement Categories: • **Customer Benefit** - Customer satisfaction levels and tangible impacts to customers as a result of the products or services provided • **Service Coverage** - The extent to which the desired customer population is being served and customers are using products and services • **Timeliness & Responsiveness** - Time to respond to customer inquiries and requests and time to deliver products or services • **Service Quality** - Quality from the customer's perspective and accuracy of responses to customer inquiries • **Service Accessibility** - Availability of products and services to customers and the extent of self-service options and automation	
Customers	In the private sector, customers are defined as those who pay for products or services. In the government, customers consist of (a) the taxpayers; (b) taxpayer representatives in Congress; (c) the sponsors of the agency; (d) the managers of an agency program; (e) the recipients of the agency's products and services. There may be several more categories of 'customers'; they should be carefully identified for maximum strategic benefit. [BSI]	[BSI], The Balanced Scorecard Institute; www.balancedscorecard.org
Data Reference Model (DRM)	The Data Reference Model (DRM) describes, at an aggregate level, the data and information that support government program and business line operations. This model enables agencies to describe the types of interaction and exchanges that occur between the Federal Government and citizens. [FEA-PMO]	The Federal Enterprise Architecture Program Management Office, www.feapmo.gov

Name	Definition	Source
DRM Data Element	The data element represents information about a particular thing, and can be presented in many formats. The data element is aligned with the business context, so that users of an agency's data understand the data's purpose and context; the data element is adapted from the ISO/IEC 11179 standard	
DRM Data Object	The Data Object is the set of ideas, abstractions, or things that can be identified with explicit business meaning and whose properties and behavior follow the same business rules. To further define the data object, the DRM's approach uses a Data Property and a Data Representation.	
DRM Exchange of Data	Exchange of Data: The exchange of data is enabled by the DRM's standard message structure, called the Information Exchange Package. The ***information exchange package*** represents an actual set of data that is requested or produced from one unit of work to another. The information exchange package makes use of the DRM's ability to both categorize and structure data.	
DRM Structure of Data	Structure of Data: To provide a logical approach to the structure of data, the DRM uses a concept called the Data Element.	
Effectiveness Measures	The degree to which an activity or initiative is successful in achieving a specified goal and/or the degree to which activities of a unit achieve the unit's mission or goal. [BSI]	[BSI], The Balanced Scorecard Institute; www.balancedscorecard.org
Efficiency Measures	These measures evaluate the cost of each unit of service delivered. [Niven] The degree of capability or productivity of a process, such as the number of cases closed per year; (b) tasks accomplished per unit cost. [BSI]	[BSI], The Balanced Scorecard Institute; www.balancedscorecard.org
Enterprise Architecture	Enterprise Architecture (EA), is the discipline of creating a blueprint of an agency's business, data, applications, and technology . [FEA-PMO]	The Federal Enterprise Architecture Program Management Office, www.feapmo.gov
Enterprise Integration	Enterprise Integration is vertical and horizontal alignment of plans, business processes, and information systems across organizations and functional boundaries to provide competitive advantage. [SecArmy]	[SecArmy], Secretary of the Army; Establishment of the Army Enterprise Integration Oversight Office (AEIOO), 16 April 2003
Enterprise Services	Enterprise Services are groupings of integrated and interrelated functions across business mission capabilities that provide mission-critical capabilities to the NextGen	
Federal Enterprise Architecture (FEA)	The Federal Enterprise Architecture (FEA) is a set of inter-related reference models designed to facilitate cross-agency analysis and collaboration. [FEA-PMO]	The Federal Enterprise Architecture Program Management Office, www.feapmo.gov
Federal Transition Framework (FTF)		

Name	Definition	Source
Federated Architecture	An approach for enterprise architecture development that is composed of a set of coherent but distinct entity architectures; the architectures of separate members of the The members of the federation participate to produce an interoperable, effectively integrated enterprise architecture. The federation sets the overarching rules of the federated architecture, defining the policies, practices, and legislation to be followed, as well as the inter-federate procedures and processes, data interchanges, and interface standards, to be observed by all members of the federation. Each federation member conforms to the enterprise view and overarching rules of the federation in developing its architecture. Internal to themselves, each focuses on their separate mission and the architecture that supports that mission. [USD(AT&L)]	[OSD USD (AT&L)], Investment Review Board Process Overview and Concept of Operations for Investment Review Boards, 2 Jun 05
Governance	The process through which organizations make strategic decisions, determine whom they involve and demonstrate accountability for the results of their actions. The process of governance relies on a system or framework - to include Federal statutes; Directives, policies or guidelines; steering committees or groups; and performance measures - to define how the process is supposed to function in a particular setting. Cultural traditions, accepted practices, and codes of conduct are also instrumental in influencing the governance process. Ideally, the governance process acheives agreement between differing interests to reach a broad consensus on what is in the best interest of the enterprise.	
Government Performance and Results Act (GPRA)	Signed into law in 1993, the GPRA requires federally funded agencies to develop and implement an accountability system based on performance measurement, including the establishment of strategic plans, performance plans and performance reports. The law emphasizes what is being accomplished, as opposed to what is being spent. [Niven]	[Niven], Balanced Scorecard Step-By-Step for Government and Nonprofit Agencies, Niven, Paul R. 2003
IDEF	A method designed to model the decisions, actions, and activities of an organization or system. [WD]	
Initiatives	The specific programs, activities, projects, or actions an organization will undertake in an effort to meet performance targets. [Niven]	[Niven], Balanced Scorecard Step-By-Step for Government and Nonprofit Agencies, Niven, Paul R. 2003
Interim System	An existing system, or system in development, that supports NextGen for a given capability during a limited period of time. An interim system may have the potential to be part of the core solution.	**[OSD USD (AT&L)]**, Investment Review Board Process Overview and Concept of Operations for Investment Review Boards, 2 Jun 05
Internal/ Business Process Perspective	The Internal/Business Process perspective is one of the four balanced scorecard perspectives. This perspective refers to internal business processes. Metrics based on this perspective allows the managers to know how well their business is running and whether its products and services conform to customer requirements. In addition to the strategic management process, two kinds of business processes may be identified: a) mission-oriented processes; and b) support processes. Mission-oriented processes are the special functions of government offices and the support processes are more repetitive in nature. [BSI]	**[BSI], The Balanced Scorecard Institute; www. balancedscorecard.org**
Key Performance Indicators	A short list of metrics that a company's managers have identified as the most important variables reflecting mission success or organizational performance. [BSI]	[BSI], The Balanced Scorecard Institute; www. balancedscorecard.org

Name	Definition	Source
Legacy System	An existing system that is designated for closure when the capability is absorbed by an interim or core system, or if the capability is no longer required. [USD (AT&L)]	[OSD USD (AT&L)], Investment Review Board Process Overview and Concept of Operations for Investment Review Boards, 2 Jun 05
Line of Sight (LoS)	The indirect or direct cause and effect relationship from a specific IT investment to the processes it supports, and by extension the customers it serves and the mission-related outcomes it contributes to. [FEA-PMO]	The Federal Enterprise Architecture Program Management Office, www. feapmo.gov
Metric	Often used interchangeably with measurements. However, it is helpful to separate these definitions. Metrics are the various parameters or ways of looking at a process that is to be measured. Metrics define what is to be measured. Some metrics are specialized, so they can't be directly benchmarked or interpreted outside a mission-specific business unit. Other measures will be generic, and they can be aggregated across business units, e.g. cycle time, customer satisfaction, and financial results . [BSI]	[BSI], The Balanced Scorecard Institute; www. balancedscorecard.org
Objective	A concise statement describing the specific things the organization must do well in order to execute its strategy. [Niven]	[Niven], Balanced Scorecard Step-By-Step for Government and Nonprofit Agencies, Niven, Paul R. 2003
Output Measure	A description of the level of activity or effort that will be produced or provided over a period of time or by a specified date, including a description of the characteristics and attributes (e.g., timeliness) established as standards in the course of conducting the activity or effort. A tactical or short-term quality or efficiency indicator for a business process. [BSI]	[BSI], The Balanced Scorecard Institute; www. balancedscorecard.org
Performance Indicator	A particular value or characteristic used to measure output or outcome. [GPRA] This is a comparative performance metric used to answer the question, "How are we doing?" for a specific issue. The average number of requisitions processed per day is an example of a performance indicator . [Harbour]	[Harbour], The Basics of Performance Measurement, Harbour, Jerry, Ph.D. 1997
Performance Measure	A standard used to evaluate and communicate performance against expected results. Performance measures are designed to gauge progress toward effective implementation of the organization's strategy and track achievement of organizational objectives, which are aligned with the strategy. [BSI]	[BSI], The Balanced Scorecard Institute; www. balancedscorecard.org
Performance Measurement Process	A performance measurement process involves the collection, synthesis, analysis and reporting of the accomplishments or outputs, as well as performance indicators that affect work output and accomplishments. [Harbour]	[Harbour], The Basics of Performance Measurement, Harbour, Jerry, Ph.D. 1997
Performance Reference Model (PRM)	The Performance Reference Model (PRM) is a standardized framework to measure the performance of major IT investments and their contribution to program performance. The PRM is intended to help produce enhanced information to improve daily and strategic decision-making, improve alignment and articulate contributions and facilitate the identification of improvement opportunities. [FEA-PMO]	The Federal Enterprise Architecture Program Management Office, www. feapmo.gov
Portfolio Management	The management of selected groupings of IT investments using integrated strategic planning, integrated architectures, measures of performance, risk management techniques, transition plans, and portfolio investment strategies. The core activities associated with portfolio management are analysis, selection, control, and evaluation. [USD(AT&L)]	[OSD USD (AT&L)], Investment Review Board Process Overview and Concept of Operations for Investment Review Boards, 2 Jun 05

Name	Definition	Source
PRM Measurement Area	Measurement Areas – The high-level organizing framework of the PRM that captures aspects of performance at the input, output, and outcome levels	
PRM Meaurement Catagories	Measurement Categories – Groupings within each Measurement Area that describe the attribute or characteristic to be measured. For example, the Mission and Business.	
Process Modeling	Automated simulation of the processes that capture, manipulate, store, and distribute data between a system and its environment and among components within a system. [WB]	
Processes and Activities Measurement Area	Area captures the outputs directly resulting from the process an IT initiative supports. This Measurement Area also captures key aspects of processes or activities required to be monitored and/or improved. ***Financial*** - Achieving financial measures, direct and indirect total and per unit costs of producing products and services, and costs saved or avoided • ***Productivity & Efficiency*** – The amount of work accomplished per relevant units of time and resources applied • ***Cycle Time & Timeliness*** - The time required to produce products or services • ***Quality -*** Error rates and complaints related to products or services • ***Security & Privac***y - The extent to which security is improved and privacy addressed • ***Management & Innovation*** - Management policies and procedures, compliance with applicable requirements, capabilities in risk mitigation, knowledge management, and continuous improvement	
Service Reference Model (SRM)	The Service Component Reference Model (SRM) is a business and performance-driven, functional framework that classifies Service Components with respect to how they support business and/or performance objectives. [FEA-PMO]	The Federal Enterprise Architecture Program Management Office, www.feapmo.gov
Specification	a formal layout/blueprint/design of an application development model for developing distributed component-based architectures.	
SRM Service Area	is a technical tier that supports the secure construction, exchange, and delivery of business or service components. Each Service Area groups the requirements of component-based architectures within the Federal Government into functional areas.	The Federal Enterprise Architecture Program Management Office, www.feapmo.gov
SRM Service Category	is a sub-tier of the Service Area to classify lower levels of technologies, standards, and specifications in respect to the business or technology function they serve.	
SRM Service Component	A Component is defined as "a self contained business process or service with predetermined functionality that may be exposed through a business or technology interface."	The Federal Enterprise Architecture Program Management Office, www.feapmo.gov
SRM Service Domain	**Service Domains** provide a top-level categorization of the service capabilities and categories from a business perspective.	
Standard	hardware, software, or specifications that are widely used and accepted (de facto), or are sanctioned by a standards organization (de jure).	
Strategy	Represents the broad priorities adopted by an organization in recognition of its operating environment and in pursuit of its mission. All performance measures should align with the organization's strategy. [Niven]	[Niven], Balanced Scorecard Step-By-Step for Government and Nonprofit Agencies, Niven, Paul R. 2003

Name	Definition	Source
Technical Reference Model (TRM)	The Technical Reference Model (TRM) is a component-driven, technical framework used to identify the standards, specifications, and technologies that support the construction, delivery, and exchange of business an application components (Service Components) that may be used and leveraged in a Component-Based or Service-Orientated Architecture. [FEA-PMO]	The Federal Enterprise Architecture Program Management Office, www.feapmo.gov
Technology Measurement Area	captures key elements of performance directly relating to the IT initiative. An IT initiative can include applications, infrastructure, or services provided in support of a process or program. • ***Financial -*** Technology-related costs and costs avoided through reducing or eliminating IT redundancies • ***Quality –*** The extent to which technology satisfies functionality or capability requirements or best practices, and complies with standards • ***Efficiency -*** System or application performance in terms of response time, interoperability, user accessibility, and improvement in technical capabilities or characteristics • ***Information & Data*** - Data or information sharing, standardization, reliability and quality, and storage capacity • ***Reliability & Availability*** - System or application capacity, availability to users, and system or application failures • ***Effectiveness*** – Extent to which users are satisfied with the relevant application or system, whether it meets user requirements, and its impact on the performance of the pr	

Terms

Classifications

Atomic: Generally-accepted (i.e., dictionary-defined)

Specific: Narrowly defined within aviation context

TERM	DEFINITION
Administrative	Of or relating to or responsible for administration
Advisory	Advice and information provided to assist pilots in the safe conduct of flight and aircraft movement.
Aero	Of or relating to aeronautics
Aerodrome	A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure, and movement of aircraft.
Aeronautical	Of or relating to the science and the art of flight.
Aeronautical Information Service (AIS)	The near-real-time transmission of accurate aeronautical information, including updates on airspace restrictions; performance requirements for airspace access and operations; system outages; airport status information; static information, such as approach plates, and certain fixed airspace definitional data, such as fixed special activity airspace and airport information.
Air Carrier	An aircraft certified by the FAA for the purpose of carrying persons or goods for hire
Air Commerce	Using aircraft to transport commodities, for exchange, buying and selling, within the National Airspace System.
Air Conditioning	An apparatus for controlling, especially lowering, the termperature and humidity of an enclosed space.
Air Domain	The global airspace, including domestic, international, and foreign airspace, as well as all manned and unmanned aircraft operating, and people and cargo present in that airspace, and all aviation-related infrastructures.
Air Navigation	The safe and efficient guidance of aircraft from place to place.
Air Navigation Service Provider (ANSP)	Used generically, the ANSP refers to the organization, personnel, and automation that provide Air Traffic Management (ATM); Communications, Navigation, and Surveillance (CNS) services; meteorological services for air navigation; aeronautical information; infrastructure management; aviation information; landing; airspace management; or aviation assistance services to airspace users.
Air Route	A defined path, consisting of one or more courses, in a horizontal and vertical plane, which aircraft traverse over the surface of the earth.
Air Taxi	An on demand air carrier (non scheduled) that provides for the trasportation of passengers or cargo, operated under FAR Part 135.
Air Traffic	Aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas.
Air Traffic Control	A service operated by appropriate authority to promote the safe, orderly and expeditious flow of air traffic.
Air Traffic Controller	A person authorized to provide air traffic control service.
Air Traffic Management (ATM)	The dynamic, integrated management of air traffic and airspace—safely, economically, and efficiently—through the provision of facilities and seamless services in collaboration with all parties.
Air Transport	Any aircraft that is being used for the purpose of transporting persons or cargo.
Air Transportation	Foreign or domestic transportation by aircraft.
Air/Ground	A term used to describe systems, activities, or functions that can be utilized or carried out between airborne and ground based entities.
Airborne	A state in which an aircraft is above the surface of the earth.

TERM	DEFINITION
Airborne Self-Separation	Refers to all aircraft within the airspace or airport movement area maintaining separation from all other aircraft within the airspace or airport movement area according to defined rules and separation criteria. The ANSP is not responsible for separation between aircraft. When authorized by the ANSP, equipped aircraft in this airspace maintain separation from all other aircraft, including those managed by the ANSP.
Airborne Separation	Refers to separation delegated to an individual aircraft to maintain separation from a designated aircraft, either in flight or on the airport movement area, such as for a crossing or passing maneuver. Separation of this aircraft from all other aircraft, including all aircraft to which separation has not been delegated, remains the responsibility of the ANSP. Pairwise separation and closely spaced parallel approaches are also in this category.
Airborne Separation Assurance	Refers to a capability of the aircraft to maintain awareness of and separation from other aircraft, airspace, terrain, or obstacles. There are four different levels of airborne separation assurance (based on the RTCA definition)— airborne traffic situational awareness, airborne spacing, airborne separation, and airborne self-separation.
Airborne Spacing	Refers to a capability of the aircraft to maintain awareness of and separation from other aircraft, airspace, terrain, or obstacles. There are four different levels of airborne separation assurance (based on the RTCA definition)— airborne traffic situational awareness, airborne spacing, airborne separation, and airborne self-separation.
Airborne Traffic Situtional Awareness	Refers to flight crew knowledge of nearby traffic depicted on a cockpit traffic display without any change of separation tasks or responsibility.
Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft can include a fixed-wing structure, rotorcraft, lighter-than-air vehicle, or a vehicle capable of leaving the atmosphere for space flight.
Airport	A defined area on land or water (including any buildings, installations, and equipment) intended to be used either wholly or in part for the arrival, departure, and surface movement of aircraft.
Airspace	The Earth's layer of surrounding air, from the surface to at least 70,000 feet.
Airspace Capacity	The number of aircraft an airspace is capable of handling in a given unit of time.
Airspace Classification	Airspace with a common air traffic management interest and use, based on similar characteristics of traffic density, complexity, air navigation system infrastructure requirements, aircraft capabilities, or other specified considerations wherein a common detailed plan will foster the implementation of interoperable CNS/ATM systems.
Airspace Design	The process of transforming routes, fixes, sectors, and other structural/operational elements of the NAS to ensure a safe, secure, and efficient aviation system.
Air Navigation Service Provider (ANSP) Flow Airspace	High-density, moderate complexity airspace where the flight operator executes a 4DT agreement. Trajectory Management (TM) ensures the overall flows are well behaved so that potential conflicts are kept to a minimum. Separation Management (SM) is performed automatically by ground automation. If conflicts are detected, the ground automation issues revised 4DTs to the flight operator.
Airspace Management	The NAS service that ensures the safe and efficient organization and use of the national airspace resource.
Airspace Study	An examination of the quality of performance by airspace to handle given work loads and possible means for improving that quality.
Alert	A notification to a position or aircraft to the fact that a critical situation may be approaching or impacting the receiver, such as an aircraft-to-aircraft or aircraft-to-airspace conflict.
Alternate	Constituting an alternative, or different from the original.
Altitude	The height of a level, point, or object measured in feet Above Ground Level (AGL) or from Mean Sea Level (MSL).
Analyze	Examine methodically so as to determine the nature and components of a matter via categorization, calculation, itemization, comparison, or tabulation.

TERM	DEFINITION
Ancillary	Secondary, auxillary.
Apply	To put into action
Approach	Refers to procedures or facilities that control traffic at an altitude below 10 AGL.
Archive	A place in which public records or historical documents are preserved.
Area	A particular extent of space or surface or one serving a special function.
Area Navigation (RNAV)	A method of navigation that permits aircraft operation on any desired flight path within the coverage of station-referenced navigation aids, the limits of the capability of self-contained aids, or a combination of these.
Area Navigation (RNAV) Operations	Aircraft operations using an RNAV system. RNAV Operations remove the requirement for a direct link between aircraft navigation and a NAVAID, thereby allowing aircraft better access and permitting flexibility of point-topoint operations. RNAV Operations include RNAV and RNP applications.
Area Navigation (RNAV) Route	An ATS route established for the use of aircraft capable of employing area navigation.
Arrival/Departure	Air traffic control service for arriving and departing IFR aircraft, and under certain conditions, VFR aircraft.
Assign	To appoint to a post, duty or task.
Automated	To operate by automation, to convert to largely automatic operation
Automated Virtual Tower (AVT)	A facility where sequencing services and basic airport information is provided without the use of ANSP personnel, at a service level that is enhanced compared with typical non-towered airports in 2006.
Auto-Negotiation	The interaction among two or more systems to identify a specific operational response acceptable to the parties (e.g., flight operator and ANSP) served by the automated system. The automated systems would use the known operating constraints or user preferences to identify the preferred response.
Automatic	Having a self-acting or self-regulating mechanism.
Automation	The technique of making an apparatus, a process, or a system operate automatically.
Aviation	The operation of heavier-than-air aircraft.
Aviation Industry	The commercial vendors that provide airframes, power plants, avionics, etc.
Avionics	Electronics designed for use in aerospace vehicles.
Awareness	Having or showing realization, perception, or knowledge.
Backup Power	One that serves as a substitute or support. An alternate source or means of supplying energy.
Balance	To bring to or hold in equilibrium; poise.
Beacon	A ground navigation light, radio or radar transmitter used to provide aircraft in flight with a signal to serve as a reference for determination of accurate bearings or position. Secondary radar.
BI-Static Surveillance	A radar system in which its elements, either the transmitter and/or receivers, are 1) stationary, and 2) in different locations.
Broadcast	Transmission of information for which an acknowledgement is not expected.
Buffer	Something that serves as a protective barrier from other controlled airspace.
Business	A usually commercial or mercantile activity engaged in as a means of livelihood.
Calculate	To determine by mathematical processes: to reckon by exercise of practical judgment.
Calibrate	To adjust precisely for a particular function.
Camera	A devise for which the image of an object is projected onto a surface for recording or for translation into electrical impulses.
Capacity	The maximum number of aircraft that can be accommodated in a given time period by the system or one of its components (throughput).

TERM	DEFINITION
Capacity Management (CM)	The long-term and short-term management and assignment of NAS airspace and routes to meet expected demand. This includes assigning related NAS assets as well as coordinating longer term staffing plans for airspace assignments. It includes the allocation of airspace to airspace classifications based on demand, as well as the allocation of airspace and routes to ANSP personnel to manage workload.
Central Command	An air traffic service facility established to conduct coordination, planning, and approval of special requirements, and who continously predicts, monitors, maintains command and control of the NAS en-route and terminal demand, capacity and delays.
Civil Airspace	The space lying above the earth or above a certain area of land or water; especially : the space lying above a nation and coming under its jurisdiction.
Classic Airspace	Low altitude airspace away from busiest terminal areas (those not engaged in super density operations) that accommodates mixed capability aircraft, including those under visual flight rules.
Clearance	Authorization for an aircraft to proceed under conditions specified by an air traffic control unit.
Cockpit	A compartment in a airplane from which it is piloted.
Collect	To get or gather together.
Collaborative Air Traffic Management	The collaborative process among the ANSP, flight operators, airport operators, and other stakeholders, to manage objectives for capacity management, flow contingency management, and trajectory management. Collaborative air traffic management (C-ATM) is the means by which flight operator objectives and constraints are balanced with overall NAS performance objectives.
Collision Avoidance	Avoidance manuvers to eliminate the potential of two aircraft from colliding. Preventing the potential collision hazard represented by other aircraft.
Combined	To unite into a single number, to become one.
Command	To overlook or dominate from or as if from a strategic position,
Command and Control	The exercise of authority and direction by a properly designated supervisor over assigned and attached specialists in the accomplishment of their mission.
Commercial Space	The launch, reentry or both, of objects into or from space by vehicles owned and operated by private companies or organizations.
Common Weather Picture	A virtual, consistent, reliable, comprehensive NextGen Government-provided weather information service available to all NAS stakeholders. CWP information consists of observed weather and forecast weather. CWP weather is available as girded service, that is to say it exists over different 3-D meteorological scales. The observed weather information includes but is not limited to the following: convection, turbulence, icing, rain, hail, snowfall, lighting, ceiling, visibility, space radiation, wind speed, wind direction, temperature, humidity, noise propagation potential, and airport plume concentration, atmospheric sensitivity to exhaust, volcanic ash, and wake vortex information. Forecast weather has the same information as observed weather with the additional parameters of probability of occurrence and a confidence level describing the occurrence probability.
Communication	A process by which information is exchanged between individuals through a common system of symbols, signs, behavior or technology.
Compare	To examine the character or qualities of especially in order to discover resemblances or differences.
Complexity	A description of how non-homogeneous the traffic demand is. Factors that cause complexity to be higher are large numbers of vertically transitioning aircraft, large numbers of crossing paths, large variation in speeds, etc.
Condition (noun)	A premise upon which the fulfillment of an agreement depends.
Condition (verb)	To adapt, modify, or mold so as to conform to an environing culture.
Conduct	To act as a medium for conveying or transmitting.

TERM	DEFINITION
Conflict	The recognition of a predicated loss of separation minima. Any situation involving an aircraft and a hazard in which the applicable separation minima may be compromised.
Conflict Resolution	The resolution of potential conflicts between aircraft that are radar identified and in communication with ATC by ensuring that radar targets do not touch. Pertinent traffic advisories shall be issued when this procedure is applied
Connection	The act of bringing two things into contact (especially for communication)
Constraint	Any limitation on the implementation of an operational improvement, or a limitation on reaching the desired level of service.
Controlled Time of Arrival (CTA)	The assignment and acceptance of an entry/use time for a specific NAS resource. Examples include point-in-space metering, time to be at a runway, or taxi waypoints.
Convey	To carry, bring; or take from one place to another; transport; bear.
Cooperative Surveillance	The determination of an aircraft's 3D position utilizing equipment on the airframe. In comparison, non-cooperative surveillance would be the determination of an aircraft's 3D position without the aircraft participating.
Coordinate	1) The act of exchanging information. 2) The intersection of lines of reference, usually expressed in degrees/minutes/seconds of latitude and longitude, used to determine position or location.
Coordination	The act of coordinating
Correlate	The relative association of two sets of data; e.g., positional agreement between radar and the computer predicted track position.
Customer	One that makes use of the National Airspace System services.
Data	1) Information. 2) A general term used to denote elements of information which can be processed or produced by a computer.
Demand	The number of aircraft requesting to use the ATM system in a given time period.
Dependent Surveillance	Surveillance of an aircraft based on position data obtained and reported automatically by the aircraft.
Design (verb)	To create, fashion, execute, or construct according to plan.
Detect	To discover or determine the existence, presence, or fact of
Determine	To settle or decide by choice of alternatives or possibilities; come to a decision.
Disseminate	To disperse throughout.
Distribute	To give out, deliver or convey information over or throughout an area.
Domain	The set of elements to which a mathematical or logical variable is limited
Domestic	Of, relating to, or originating within a country and especially one's own country
Electronic	Of, based on, operated by, or otherwise involving the controlled conduction of electrons or other charge carriers, especially in a vacuum or other semiconducting materials
Emergency Assistance	The help provided by an air traffic control facility to a pilot in an emergency situation that will enable the pilot to land the aircraft safely.
En Route	Air traffic control service provided aircraft on IFR flight plans, generally by centers, when these aircraft are operating between departure and destination terminal areas. When equipment, capabilities, and controller workload permit, certain advisory/assistance services may be provided to VFR aircraft.
Enable	To make operational; to activate or to supply with the means, knowledge or opportunity to make able.
Enablers	Initiatives, such as (new) technologies, systems, operational procedures, and operational or socio-economic developments, which facilitate the implementation of operational improvements or of other enablers.
End of Day Statistics	A collection of quantitative data compiled from daily operational activities
Enhanced	To provide improved, advanced or sophisticated features.

TERM	DEFINITION
Enterprise Services	Any or all of the key services which are provided to all COIs throughout NextGen, and can be characterized by the net-centric infrastructure services that provide connectivity and universal access to information; and by services that provide the collection, processing, and distribution of information. This includes Shared Situational Awareness, Security Management, Safety Management, Environmental Management, and Performance Management Services.
Environment	The circumstances or conditions that surround one; surroundings
Environmental	Relating to or being concerned with the ecological impact of altering the environment
Environmental Management System	An organizational business process which consists of four phases. In the first, "planning" phase of the NextGen EMS, the organization will identify environmental issues with the potential to constrain future capacity. These will be the focus of tactical, measurable objectives, for which improvement initiatives can be undertaken during the second "implementation" phase. During the third "assessment" phase the effectiveness of these initiatives is monitored and key performance metrics tracked. Monitoring data is then used to support planning at the organization itself in the fourth "review and adaptation" phase. In the NextGen EMS, monitoring data will also be reported at an enterprise level to support NextGen wide planning.
Equivalent Visual Operations	The capability to provide aircraft with the critical information needed to maintain safe distances from other aircraft during non-visual conditions, including a capability to operate at levels associated with VFR operations on the airport surface during low-visibility conditions. The ANSP personnel delegate separation responsibility to the flight operators. This capability builds on net-enabled information access, certain aspects of performancebased services, and some elements of PNT services and layered adaptive security.
Evaluate	To judge or determine the significance, worth, or quality of; assess.
Event	A phenomenon or occurrence located at a single point in space-time regarded as the fundamental observational entity in relativity theory
Exchange	To give something in return for something received; make an exchange.
Execute	To put into effect, carry out or perform.
External	Relating to, existing on, or connected with the outside or an outer part; exterior.
Facility	Any installation of equipment designed to aid in the navigation, communcation or control of air traffic
Federal Aviation Administration	The Federal Aviation Administration is the entity of the United States government which regulates and oversees all aspects of civil aviation in the U.S.
File (verb)	To place in a container or a system for keeping records and possible activation
Fixed-Wing	A term applied to heavier-than-air craft where movement of the wings in relation to the aircraft is not used to generate lift, a term used to refer to what are more commonly known as aeroplanes as opposed to rotary wing, helicopters.
Flight	A trip made by or in an airplane, rotorcraft, glider, balloon, or spacecraft, a scheduled airplane trip
Flight Crew	The individual or group of individuals responsible for the control of an individual aircraft while it is moving on the surface or while airborne.
Flight Object	The representation of the relevant information about a particular instance of a flight. The information in a flight object includes (1) aircraft capabilities, including the level of navigation, communications, and surveillance performance (e.g., FMS capabilities); (2) aircraft flight performance parameters; (3) flight crew capabilities, including level of training received to enable special procedures; (4) 4DT profile and intent, containing the "cleared" 4DT profile plus any desired or proposed 4DTs; and (5) aircraft position information and near-term intent. Standards for the definition of a flight object are in development.

TERM	DEFINITION
Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew, and may reside with one individual or relegated among separate individuals.
Flight Plan	Specified information relating to the intended flight of an aircraft that is filed orally or in writing with an FSS or an ATC facility.
Flight Planning	A series of activities preformed before flight that include reviewing airspace and navigation aid restrictions, developing the route, obtaining a weather briefing, completing a navigation log, filing a flight plan, and inspecting the aircraft.
Flight Plan Filing and Flight Data Management Service	The management of data related to a flight from the initial filing of a proposed flight to the closing of the flight plan and the archiving of the data to support performance management analyses.
Flight Service	Provide pilot briefing, en route communications and VFR search and rescue services, assist lost aircraft and aircraft in emergency situations, relay ATC clearances, originate Notices to Airmen, broadcast aviation weather and NAS information, receive and process IFR flight plans, and monitor NAVAIDs. In addition, at selected locations, provide En Route Flight Advisory Service (Flight Watch), issue airport advisories, and advise Customs and Immigration of transborder flights
Flight Service Station	Air traffic facilities which provide pilot briefing, en route communications and VFR search and rescue services, assist lost aircraft and aircraft in emergency situations, relay ATC clearances, originate Notices to Airmen, broadcast aviation weather and NAS information, receive and process IFR flight plans, and monitor NAVAIDs. In addition, at selected locations, FSSs provide En Route Flight Advisory Service (Flight Watch), take weather observations, issue airport advisories, and advise Customs and Immigration of transborder flights.
Flow	(noun) a smooth uninterrupted movement or progress
Flow Contingency Management	The process that identifies potential flow problems, such as large demand capacity imbalances, congestion, high degrees of complexity, blocked or constrained airspace, or other off-nominal conditions. It is a collaborative process between ANSP personnel and airspace users to develop flow strategies to resolve the flow problems. Examples of flow strategies include establishing routing to reduce complexity, restructuring airspace, and allocating access to airspace or runways.
Flow Corridor	A corridor is a long “tube” of airspace that encloses groups of flights flying along the same path in one direction. It is airspace procedurally separated from surrounding traffic and special use airspace, and is reserved for aircraft in that group. There is a minimum distance that traffic within the corridor must maintain from the edge of the corridor (i.e., “the corridor walls have some thickness”).
Flow Strategy and Trajectory Impact Analysis Service	This capability in the NextGen provides a common “what if” function to assess potential changes in planned flights, the allocation and configuration of assets, as well as other conditions (e.g., weather, security initiatives, etc) that may affect flight operations.
Foreign	related to or dealing with other nations
Format	1 : the shape, size, and general makeup (as of something printed) 2 : general plan of organization, arrangement, or choice of material
Formulate	To express in precise form; To state definitely or systematically.
Four-Dimensional Trajectory	A 4DT represents the “centerline” of a path plus the positioning uncertainty, including waypoint. Positioning uncertainty includes lateral, longitudinal, and vertical positioning uncertainty. Some waypoints within a 4DT may be defined with controlled times of arrival (CTAs), which constrains the uncertainty for planning purposes. The required level of specificity of the 4DT will depend on the operating environment in which the flight will be flown. Associated with a 4DT is the separation zone around an aircraft and the aircraft intent information, which provides near-term information on the expected flight path.

TERM	DEFINITION
General	applicable to or characteristic of the majority of individuals involved : PREVALENT b : concerned or dealing with universal rather than particular aspects, relating to, determined by, or concerned with main elements rather than limited details <bearing a general resemblance to the original>
General Aviation	The term used to describe any flight other than a military or scheduled airline flight, ranging from gliders and powered parachutes to large, non-scheduled cargo jet flights.
Generate	To bring into existence; to cause to be; produce.
Geospatial	TBD
Geospatial Correction	TBD
Geospatial Reference	TBD
Glideslope	Provides vertical guidance for aircraft during approach and landing. The glideslope/ glidepath is based on the following: (1) Electronic components emitting signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as ILS/MLS, or (2) Visual ground aids, such as VASI, which provide vertical guidance for a VFR approach or for the visual portion of an instrument approach and landing. (3) PAR. Used by ATC to inform an aircraft making a PAR approach of its vertical position (elevation) relative to the descent profile.
Government	the organization, machinery, or agency through which a political unit exercises authority and performs functions and which is usually classified according to the distribution of power within it b : the complex of political institutions, laws, and customs through which the function of governing is carried out, ADMINISTRATION the organization, machinery, or agency through which a political unit exercises authority and performs functions and which is usually classified according to the distribution of power within it
Governmental	the organization, machinery, or agency through which a political unit exercises authority and performs functions and which is usually classified according to the distribution of power within it b : the complex of political institutions, laws, and customs through which the function of governing is carried out, ADMINISTRATION
Ground Proximity	The state, quality, sense, or fact of being near or next to the ground ; closeness to the ground
Ground/Ground	Transmission sent from a location on the ground and received at a different location on the ground
Ground-Based	Infrastructure or system which is located on the ground
Group	a number of individuals assembled together or having some unifying relationship b : an assemblage of objects regarded as a unit, to assign to a group : CLASSIFY
Guidance	the process of controlling the course of a projectile by a built-in mechanism
Guide	direct in a way or course
Hazards	The objects or elements from which an aircraft can be separated. These include other aircraft, terrain, weather, wake turbulence, incompatible airspace activity, and, when the aircraft is on the ground, surface vehicles and other obstructions on the apron and maneuvering area.
Heating	Utility to warm a building
Human Centric	The ATM system is designed around the capabilities and limitations of humans. It assigns functions to humans that are best performed by them, and it provides automation assistance when it can improve decision-making or make the human’s tasks easier. It does not imply that humans are always in direct control.
Human Factors	The discipline concerned with the understanding of interactions among humans and other elements of a system. It is application of theory, principles, data, and other scientific methods to system design to optimize human wellbeing and overall system performance.
Identification	An act of identifying: the state of being identified: evidence of identity
Identify	Recognize as being; establish the identity of someone or something

TERM	DEFINITION
Implement	To put into effect according to or by means of a definite plan or procedure.
Information	The communication or reception of knowledge or intelligence
Information Service	A service which provides data and information to subscribers when and where needed in a common format. Ensures questions raised by data consumers are answered correctly and consistently.
Infrastructure	The underlying foundation or basic framework (as of a system or organization), the system of public works of a country, state, or region; also : the resources (as personnel, buildings, or equipment) required for an activity
Infrastructure Service	A service which provides communications connectivity to ensure information flows work reliably to support information communications and sharing functions.
Initiate	To cause or facilitate the beginning of : set going
Inspection	The act of inspecting, a checking or testing of an individual against established standards
Integrated Risk Management (IRM)	A process that includes prognostic tools, models, and simulations at the strategic, operational, and tactical level to support all stakeholder decision makers and managers in the grafting of cost effective “best practices” into the design, acquisition, deployment, and operation of aviation security system assets and infrastructures. Knowledge bases concerning threats, vulnerabilities, and practices are tailored to user profiles that proactively determine need/authorization to know.
Intelliegent Agents	Within the context of this operational concept, refers to a computational system that includes the following characteristics: is aware of constraints, has goals, and operates autonomously within its construct to identify information or opportunities for human action. It is customized for an area or task, is adaptive, knows the user’s preferences/interests, and can operate on their behalf (e.g., by narrowing the choices available through auto-negotiation). As such, this concept’s definition is consistent with commonly accepted industry standards.
Interface	The place at which independent and often unrelated systems meet and act on or communicate with each other <the man-machine interface> b : the means by which interaction or communication is achieved at an interface.
Intent	Information on planned future aircraft behavior, which can be obtained from the aircraft systems (avionics). It is associated with the commanded trajectory and takes into account aircraft performance, weather, terrain and ATM service constraints. The aircraft intent data correspond either to aircraft trajectory data that directly relate to the future aircraft trajectory as programmed inside the avionics or the aircraft control parameters as managed by the automatic flight control system. These aircraft control parameters could either be entered by the flight operator or automatically derived by the flight management system.
International Airspace	The airspace that exists beyond or between national airspace boundaries
Interpret	To explain or tell the meaning of : present in understandable terms
Interrogation	Transmission of a signal intended to trigger a transponder.
Issue	To distribute or issue communication. Typically involving a pilot or an aircraft, as in issuing clearances or advisories.
Kite	A framework covered with paper, cloth, metal, or other material intended to be flown at the end of a rope or cable, and having as its only support, the force of the wind moving past its surfaces.

TERM	DEFINITION
Layered Adaptive Security	The security system will be constructed in “layers of defense” to detect threats early and prevent them from meeting their objective while minimally affecting efficient operations. Airports and aircraft will be designed to be more resilient to attacks or incidents. Building on the “net-enabled information access” and “performance-based services” capabilities, risk assessments will begin well before each flight so that people and goods will be appropriately screened as they move from the “airport” curb to the aircraft, or as they support aerodrome/aircraft operations. As technology matures, screening will be unobtrusive and more transparent to the individual. All people and cargo that “touch” or are carried by an aircraft will be positively identified. Responses to anomalies and incidents will be proportional to the assessed risk of the involved individuals or cargo.
Lighting	Various lighting aids that may be installed on an airport.
Link	An identifier attached to an element (as an index term) in a system in order to indicate or permit connection with other similarly identified elements.
Local	Limited to a particular place
Long-Range Surveillance	Air route traffic control center (ARTCC) radar used primarily to detect and display an aircraft’s position while en route between terminal areas.
Maintain	(1) Remain at a specified altitude or flight level. (2) Control, resonsibility and accountability for a system of records.
Maintenance	Any service activity such as repairing, monitoring, testing, trouble shooting, or modifying any module in the system.
Manage	To handle, direct, govern, or control in action or use.
Management	The act or art of managing : the conducting or supervising of something (as a business).
Mechanical	Produced or operated by a machine or tool.
Metroplex	A group of two or more adjacent airports whose arrival and departure operations are highly interdependent.
Microwave	Electromagnetic radiation ranging in frequency from 300MHz to 300 GHz with corresponding wave lengths ranging from 1.0 meter to 0.1 centimeter.
Military Airspace	The space lying above the earth or above a certain area of land or water under the jurisdiction of a military ATC facility or military unit.
Mission Support	Tasks that support a flight operation of an aircraft or spacecraft in the performance of a mission.
Monitor	(1) (When used with communication transfer) listen on a specific frequency and stand by for instructions. Under normal circumstances do not establish communications. (2) To check periodically, keep track of, or scrutinize the status of an item of equipment. (3) A periperal device used to display information.
Monitoring	The flight following of an aircraft, whose primary navigation is being performed by a pilot, to note deviations from its authorized flight path.
Mono-Static Surveillance	Surveillance conducted by a system (radar) in which the transmitter and receiver are stationary and located at the same position.
Moored Balloon	A moored balloon is a balloon that is secured to the earth by several mooring lines and does not carry a person.
Multimode	Having many or multiple modes.
National	Belonging to or maintained by the federal government.
Navigate	To operate or control the course of (as an airplane).
Navigation	The service which enables a properly equipped platform to calculate its position through the interpretation of signals received from or exchanged with a source(s) external to the platform.
Navigation Aid	Any visual or electronic device airborne or on the surface which provides point-to-point guidance information or position data to aircraft in flight.

TERM	DEFINITION
Near-Space Airspace	Low-density, low-complexity airspace at very high altitudes that accommodates a wide range of special operations (e.g., high-speed reconnaissance aircraft, aerostats, long-endurance orbiting unmanned aircraft systems).
Need	To require: anything that is necessary but lacking
Net-Centricity	For aviation transportation efforts, defines a robust, globally interconnected network environment in which information is shared in a timely and consistent manner among users, applications, and platforms.
Net-Enabled Information (NEI)	An information network that makes information available, securable, and usable in real time to distribute decision-making. Information may be pushed to known users and is available to be pulled by other users, including users perhaps not previously identified as having a need for the information.
Network	Two or more nodes joined for a specific purpose.
Network Enabled Operations (NEO)	The decision support and other applications using NEI for information transfer and retrieval.
NextGen Decision Oriented Tool (NDOT)	A tool which incorporates observations, forecasts, model/algorithm data, and climatology including surface observations and weather aloft to allow full integration of weather into traffic flow decision making
NextGen Network Enabled Weather (NNEW)	The network that publishes current and forecast weather information (using
Node	observations, forecasts, model/algorithm data, and climatology) to nontowered
Non-Aerodome	and virtual towered airports at the required spatial and temporal
Non-Cooperative Surveillance	resolution.
Non-Defense	Not belonging to, or under the jurisdiction of the United States Department of Defense.
Non-Managed Airspace	Uncontrolled, low-altitude airspace where no ANSP services are provided, except as required to coordinate entry to a different class of airspace.
Non-Selective Transponder	A non-selectable mode radio or radar set that upon receiving a designated signal emits a radio signal of its own and that is used especially for the detection, identification, and location of objects.
Non-United States	Not belonging to, or under the jurisdiction of the United States.
Notice to Airmen	A notice containing information (not known sufficiently in advance to publicize by other means) concerning the establishment, condition, or change in any component (facility, service, or procedure of, or hazard in the National Airspace System) the timely knowledge of which is essential to personnel concerned with flight operations.
Object	A physical entity that traverses the NAS (e.g., aircraft, UAV, UFO,etc.)
Object Identification Code	A discreet set of alpha numerics associated with a specific object.
Object Position	The point or area occupied by a physical object.
Obtain	To come into possession of
Oceanic	Airspace over the oceans of the world, considered international airspace, where oceanic separation and procedures per the International Civil Aviation Organization are applied. Responsibility for the provisions of airtraffic control servicein this airspace is delegated to various countries, based generally upon geographic proximity and the availability of the required resources.
Oceanic Airspace	That airspace over the oceans of the world, considered international airspace, where oceanic separation and procedures per ICAO are applied. Responsibility for the provisions of ATC service in this airspace is delegated to various countries, based generally upon geographic proximity and the availability of the required resources.
Offshore	That portion of airspace between the U.S. 12 NM limit and the oceanic CTA/FIR boundary within which air traffic control is exercised. These areas are established to provide air traffic control services. Offshore/Control Airspace Areas may be classified as either Class A airspace or Class E airspace.
Operate	To perform a function

TERM	DEFINITION
Operating	To cause to function
Operation	Performance of a pratical work or something involving the practical application of principles or processes.
Organization	An administrative and functional structure: the personnel of such structure.
Outbound	Moving away from rather than towards a point.
Overdue	Delayed beyond an appointed time.
Parachute	A device used or intended to be used to retard the fall of a body or object through the air.
Performance	The execution of an action.
Performance Based Navigation	Performance-based navigation specifies RNAV system performance requirements for aircraft operating along an ATS route, on an instrument approach procedure, or in airspace. Performance requirements are defined in terms of accuracy, integrity, continuity, availability, and functionality needed for the proposed operation in the context of a particular airspace concept. Performance requirements are identified in navigation specifications that also identify the navigation sensors and equipment that may be used to meet the performance requirement.
Performance Based Operations	Use of performance capability definition versus an “equipment” basis to define the regulatory/procedural requirements to perform a given operation in a given airspace.
Performance Based Services	There are multiple service levels aligned with specified user performance thresholds to provide choices to users depending on needs, required communication, navigation and surveillance performance, environmental performance criteria, security parameters, etc. Services will be flexible according to the situation and consolidated needs of the users. Services vary from area to area in terms of airspace and “airport” surfaces, and they vary with time as needs dictate. Preferences are established based on user capability, equipage, training, security, etc. The performance-based approach is used to analyze risks (safety, security, environment, etc.) instead of “equipment-based” approaches. The performance-based services capability will enable a definition of service tiers and allow the government to move from equipment-based regulations to performance-based regulations.
Plan (verb)	To devise or project the realization or achievement of.
Position	The point or area occupied by a physical object.
Position Correction	To cause navigation sensors, devices, or algorithms to reset position to value known to be more accurate due to inaccuracies and drift in the devices and algorithms
Position, Navigation and Timing (PNT) Services	A service which enables the ability to accurately and precisely determine ones current location and orientation; desired path and position, apply corrections to course, orientation, and speed to attain the desired position; and to obtain accurate and precise time any where on the globe, within user defined timeliness parameters
Post-Arrival	Activities preformed after landing at destination.
Post-Flight	Activities preformed after shutting down the aircraft.
Potentiate	To make effective or active.
Power Conditioning	The isolation of sensitive equipment from the effects of electrical noise and voltage fluctuations
Predeparture	Activities preformed prior to taxing onto the active runway.
Predeparture Clearance	An application with the Terminal Data Link System (TDLS) that provides clearance infromation to subscribers, through a service provider, in text to the cockpit or gate printer.
Predict	To declare in advance; esp; fortell on the basis of observation, experience, or scientific reason.
Pre-Flight	Preparing for or preliminary to flight.

TERM	DEFINITION
Present	Now existing or in progress.
Primary Power	The main source or means of supplying energy.
Procedure	A particular way of accomplishing something or of acting.
Process	A series of actions or operations conducting to end.
Program	A plan or system under which action may be taken toward a goal, to work out a sequence of operations to be performed by (a mechanism).
Project	To mentally extend the position and /or path of one or more objects in time and space.
Prompt	To give an incentive for action.
Provide	To supply something for sustenance or support.
Public	Accessible to or shared by all members of the community.
Publication	A published work.
Pulse	An electromagnetic wave or modulation thereof of brief duration.
Radar	A radio detection device which provides information on range, azimuth and/or elevation of objects.
Radio	The wireless transmission and reception of electric impulses or signals by means of electromagnetic waves.
Radio Frequency	Any frequency of electrical energy above the audio range that is capable of being radiated into space.
Radio Spectrum	Radio frequencies allocated exclusively for the aeronautical radionavigation service from 90kHz to 23.6 GHz
Receive	To come into possession of or to assimilate through the mind or senses
Receiver	A device for converting electric impulses or varying current into sound
Record	To deposit an authentic official copy of, to register permanently by mechanical means
Recorder	One who records; a device for recording on (e.g., sound, video, etc.)
Recording	The process of recording sound, data (as for a computer), or a television program by producing varying local magnetization of a moving tape or disc
Reference	The consultation of sources of information
Reference Media	Using, involving, or encompassing several media, a channel or system of communication, a means of effecting or conveying information
Reflection	The return of light or sound waves from a surface
Region	An administrative area, division, or district; broad geographic area
Relay	An electromagnetic device for remote or automatic control that is actuated by variation in conditions of an electric circuit and that operates in turn other devices (as switches) in the same or a different circuit
Remote	Acting, acted on, or controlled indirectly or from a distance
Repeater	A device for receiving electronic communication signals and delivering corresponding amplified ones
Report	A usually detailed account or statement of events
Reporting	To give an account of to describe as being in a specified state
Request	The condition or fact of being asked for
Required Navigation Performance	A statement of the navigation performance accuracy necessary for operation within a defined airspace. RNP Operations introduce the requirement for onboard navigational performance monitoring and alerting.
Required Navigation Performance Level or Type (RNP-X)	A value, in nautical miles (NM), from the intended horizontal position within which an aircraft would be at least 95-percent of the total flying time.
Reset	To set again or anew; to change the reading of, often to zero
Resolve	To deal with conclusively; settle; solve.
Resource Allocation	To apportion for a specific purpose or to particular persons or things
Restore	To bring back to or put back into a former or original state
Result	To proceed or arise as a consequence, effect, or conclusion

TERM	DEFINITION
Retrieve	To get and bring back; *especially* as to recover information from storage
Review	A retrospective view or survey
Revise	An act that incorporates changes
Rotorcraft	An aircraft (as a helicopter) whose lift is derived principally from rotating airfoils
Route	A 3D path through space with no time component. Unlike corridors, aircraft can cross routes as operational need requires, with proper separation provided to all aircraft.
Router	A device connected to at least two networks and decides which way to send each information packet based on its current understanding of the state of the networks it is connected to
Safety	The condition of being safe from undergoing or causing hurt, injury, or loss
Safety Assurance	A 3D path through space with no time component. Unlike corridors, aircraft can cross routes as operational need requires, with proper separation provided to all aircraft.
Safety Culture	The product of individual and group values, attitudes, competencies, and patterns of behaviors that determine the commitment to, and the style and proficiency of, an organization's health and safety programs.
Safety Management System (SMS)	The process that provides a systematic method for managing safety. The four components of an SMS are policy, architecture, assurance, and safety promotion.
Safety Risk Management (SRM)	The set of processes and practices by which a concept and its operation are designed and made to be safe.
Satellite	A manufactured object or vehicle intended to orbit the earth, the moon, or another celestial body
Schedule	A procedural plan that indicates the time and sequence of each operation
Security	Measures taken to guard against espionage or sabotage, crime, attack, or escape
Selective Transponder	Provides improvements over conventional Air Traffic Control Radar Beacon System (ATCRBS) transponders by providing over 16 million unique beacon codes, can be selectively interrogated to prevent overlapping or garbling of replies from proximate aircraft, and provides a high-capacity air-ground data link.
Self Separation Airspace	That airspace where aircraft self-separation enables maximum user flexibility in exchange for high capability equipage of the aircraft.
Sense	A reliable ability to judge and decide with soundness, prudence, and intelligence; to detect.
Sensor	A device that responds to a physical stimulus such as heat, light, sound, pressure, magnetism, or a particular motion and transmits a resulting impulse for measurement or operating a control
Separation Instruction	Authorization for an aircraft to proceed under conditions specified by an air traffic control unit
Separation Management	The function of ensuring aircraft or vehicles maintain safe separation minima from other aircraft or vehicles, protected airspace, terrain, weather, or other hazards. The function may be performed by ANSP personnel, the flight operator, and/or automation.
Separation Minima	The minimum displacements between an aircraft and a hazard that maintain the risk of collision at an acceptable level of safety.
Service	Actions or products provided by the FAA that enable and enhance the operations of the aero-space community. A service can be internal or exter+B269nal to the FAA

TERM	DEFINITION
Service Oriented Architecture (SOA)	A design for linking computational resources (principally, applications and data) on demand to achieve the desired results for service consumers (which can be end users or other services). OASIS (the Organization for the Advancement of Structured Information Standards) defines SOA as the following: A paradigm for organizing and utilizing distributed capabilities that may be under the control of different ownership domains. It provides a uniform means to offer, discover, interact with and use capabilities to produce desired effects consistent with measurable preconditions and expectations
Set (verb)	To place with care or deliberate purpose and with relative stability
Shared Situational Awareness (SSA)	The access to information among the processes and applications that constitute the information services function to the stakeholders in the system.
Short-Range Surveillance	The Airport Surveillance Radar - Model 9 (ASR-9) is a short range (60 nm) radar system for the airport terminal area. The ASR-9 processes the returns from aircraft targets, which includes demodulation, analog-to-digital conversion, range and azimuth gating, sensitivity timing control, and a moving target detection function
Signage	To represent or indicate by a sign
Signal	An object used to transmit or convey information beyond the range of human voice.
Simulate	Create a representation or model of
Situational Awareness	Refers to a service provider's or operator's ability to identify, process, and comprehend important information about what is happening with regard to the operation. Airborne traffic situational awareness is an aspect of overall situational awareness for the flight crew of an aircraft operating in proximity to other aircraft.
Space-Based	Reference to satellite navigation system, usually, that will include satellites in geosynchronous orbits approximately 22,000 miles above the earth's surface
Staffed Virtual Tower (SVT)	A facility where surface and tower services are provided by ANSP personnel, providing other-than-direct visual observation, who may or may not be located at the facility.
Stakeholders	Stakeholders represents all entities that are vested in assuring the safest and most efficient operation of the NextGen. Through performance metrics analysis and research, these entities see that the proper training is coordinated and provided to the appropriate COIs, and that other enterprise needs are met.
Standard	Something set up and established by authority as a rule for the measure of weight, extent, value or quality.
State	The condition of, as pertaining to structure, form, constitution, or phase.
Status	Position relative to that of others; standing
Store (verb)	To reserve or put away for future use.
Strategic Flow	Strategic planning is creating a vision of the future and managing toward that expectancy. It's operating under a mission statement umbrella that focuses the organization's effort. It's an effective process for aligning your short-term decisions with your long-term goals.
Structure	The interrelation or arrangement of parts in a complex entity
Super Density Flexible Airspace	The specific airspace configurations or routes chosen in near-real time to provide flexibility and maximize arrival and departure throughput. It is smaller than or lies within super-density protected airspace.
Super Density Protected Airspace	The charted airspace protecting super-density terminals that is somewhat larger than the actual airspace used operationally. Statically defined for lowcapability aircraft that do not have access to real-time updates of airspace definition.
Support	To provide for or maintain, To furnish corroborating evidence for
Surface	Terrestrial area of airdrome operations

TERM	DEFINITION
Surveillance	Surveillance systems are set up for the air traffic control (ATC) system to know where the aircraft is and where it is heading. In the current NAS, surveillance is achieved through the use of long-range and terminal radars; but information interpolated from the radars is not as good as the position information an aircraft has onboard through the use of satellite navigation
Surveillance Service	This service integrates cooperative and non-cooperative airport surface and airspace surveillance systems fostering real-time air and airport situational awareness and enhancing safety and security.
Switching	The controlling or routing of signals in circuits to execute logical or arithmetic operations or to transmit data between specific points in a network.
Synchronization	1.The surface is managed by formulating taxi sequences and communicating instructions to pilots and vehicle operators for the safe and efficient flow of traffic on the airport surface. Surface SYNCHRONIZATION involves processes intended to maximize surface efficiency, predictability, and capacity. It includes such activities as assigning runways, taxi sequences and providing movement instructions. 2.Airborne SYNCHRONIZATION or spacing and sequencing of air traffic safely maximize the efficiency and capacity of the NAS throughout the cruise, arrival, and departure phases of flight. Maximum efficiency, predictability and capacity are obtained through the application of processes, which reduce variability in achieving the defined separation standards. Traffic SYNCHRONIZATION is provided to aircraft during cruise, through metering at fixes/waypoints, and modifying traffic flow patterns to
System	A group of interacting, interrelated, or interdependent elements forming a complex whole.
Tactical Synchonization	Traffic SYNCHRONIZATION supports expeditious flight for the large number of aircraft using the NAS during any given period of time. NAS processes operate to maximize efficiency and capacity in response to weather, NAS infrastructure, runway availability or other conditions. Traffic SYNCHRONIZATION is the tactical portion of traffic management providing sequencing, spacing, and routing of aircraft.
Technical	Having special skill, practical knowledge, or quality especially in a mechanical or scientific field
Telecommunications	Any transmission, emission, or reception of signs, signals, writing, images and sounds or intelligence of any nature by wire, radio, optical or other electromagnetic systems. [NTIA] [RR] 2. Any transmission, emission, or reception of signs, signals, writings, images, sounds, or information of any nature by wire, radio, visual, or other electromagnetic systems
Temperature	A measure of the average kinetic energy of the particles in a sample of matter, expressed in terms of units or degrees designated on a standard scale.
Terminal	A general term used to describe airspace in which approach control service or airport traffic control service is provided.
Terrain	An area of land; ground: . b. A particular geographic area; a region:
Threat	One that is regarded as a possible danger; a menace.
Threshold	The beginning of that portion of the runway usable for landing.
Tower	A terminal facility that uses air/ground communications, visual signaling, and other devices to provide ATC services to aircraft operating in the vicinity of an airport or on the movement area. Authorizes aircraft to land at, or takeoff from, the airport
Track	The actual flight path of an aircraft over the surface of the earth.
Traffic Mangement	To balance air traffic demand with system capacity to ensure the maximum efficient utilization of the NAS.
Trajectory Management	The function of fine-tuning trajectories as required by the airspace plan or an active flow contingency management initiative to minimize pairwise contention and ensure efficient individual trajectories within a flow.
Trajectory Based Operations	The use of four-dimensional trajectories as the basis for planning and executing all flight operations supported by the air navigation service provider.
Transceiver	A device that performs, within one chassis, both transmitting and receiving functions

TERM	DEFINITION
Transform	To change in form, appearance, or structure; metamorphose.
Transit	To pass over or through; conveyance of persons or things from one place to another
Transition Corridors	Tubes of airspace that allow aircraft to transition through autonomous airspace and ANSP flow-managed airspace to near-space airspace. The trajectory manager provides the transition, coordinates, and reserves times for aircraft traveling to near-space airspace.
Translate	To convert from one form to another.
Transmit	To send or forward, as to a recipient or destination; dispatch; convey.
Transmitter	An electronic device that generates and amplifies a carrier wave, modulates it with a meaningful signal derived from speech or other sources, and radiates the resulting signal from an antenna
Transponder	The airborne radar beacon receiver/transmitter portion of the Air Traffic Control Radar Beacon System (ATCRBS) which automatically receives radio signals from interrogators on the ground, and selectively replies with a specific reply pulse or pulse group An automatic device that receives, amplifies, and retransmits a signal on a different frequency. (188) 2. An automatic device that transmits a predetermined message in response to a predefined received signal. (188) Note: An example of transponders is in identification-friend-or-foe systems and air-traffic-control secondary radar (beacon radar) systems. 3. A receiver-transmitter that will generate a reply signal upon proper interrogation. [JP1]
Transport	A vechicle, such as an aircraft, used to transport passengers, mail, or freight.
Transportation	The business of conveying people, goods, etc.
Ultralight Vehicle	An aeronautical vehicle operated for sport or recreational purposes which does not require FAA registration, an airworthiness certificate, nor pilot certification. They are primarily single occupant vehicles, although some two-place vehicles are authorized for training purposes. Operation of an ultralight vehicle in certain airspace requires authorization from ATC.
Unit	A single thing, person, or group that is a constituent of a whole.
United States	The 50 states, the District of Columbia, the Commonwealth of Puerto Rico, Guam, the Virgin Islands, American Samoa, and any other territory or possession of the United States.
Unmanned Aerial Vehicle	Remotely piloted or self-piloted aircraft that can carry cameras, sensors, communications equipment or other payloads.
Unmanned Aircraft Systems	A pilotless aircraft is flown without a pilot-in-command onboard and is either remotely or fully controlled from another place (ground, another aircraft, space) or programmed and full autonomous. The UAS includes the pilotless vehicle, control system, and operator
Unmanned Free Balloon	A nontethered, pilotless, nonporous bag of tough light material filled with heated air or gas lighter than air so as to rise and float in the atmosphere.
Unmanned Rocket	Unmanned Rocket – a craft that does not have a pilot and whose engine consists essentially of a combustion chamber and an exhaust nozzle, carries either liquid or solid propellants which provide the fuel and oxygen needed for combustion.
User	One that uses: a user of public transportation.
Utilization	To put to use, especially to find a profitable or practical use for
Ventilation	To admit fresh air into to replace stale or noxious air; to provide with a vent, as for airing.
Virtual Tower	A facility that provides surface and tower services without the requirement for ANSP personnel providing direct visual observation. Virtual towers may automated or staffed.
Visual	Seen or able to be seen by the eye.
Visual Reference	Function provided by lights, visual markers, et al., at an airport to the pilot to help guide along a safe path to touchdown and beyond.
Voice	Information conveyed through spoken or computer generated words.

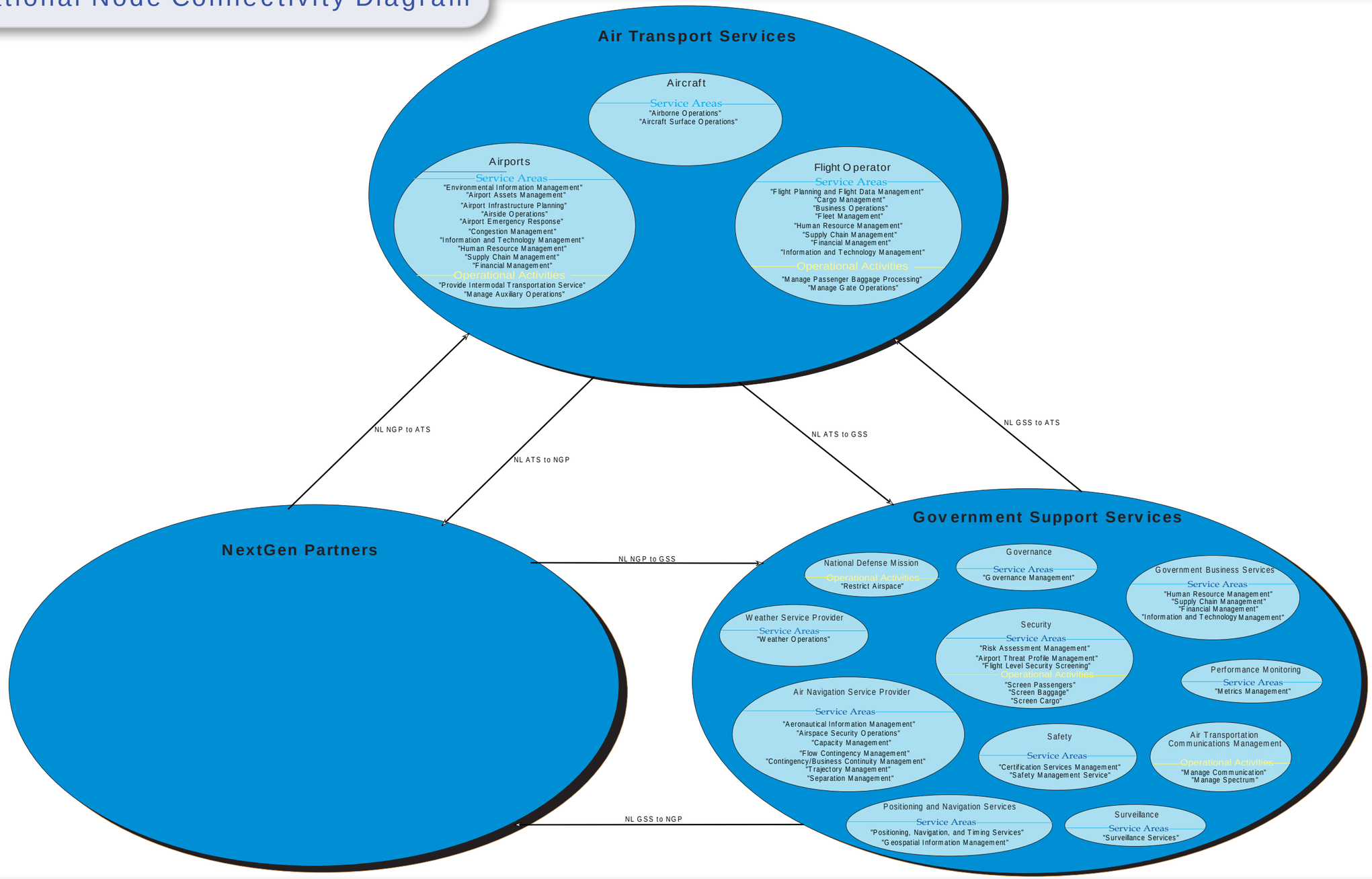
TERM	DEFINITION
Weather	The state of the atmosphere with respect to temperature, humidity, transmissivity, and condition.
Weather Condition	The state of the atmosphere at a given time and place, with respect to variables such as temperature, moisture, wind velocity, and barometric pressure.
Weather Information Service	NextGen Weather Information Service is a common service providing the following generic capabilities: sensor configuration, observation, forecast, and history.

4.4 Appendix D: OV-2 1

The OV-2, Operational Node Connectivity Description, is a model that illustrates the "operational nodes" (idealized places or organizations that produce or consume information) and "needlines" (highest level description of information flow) showing that information produced at one node is needed by another node. Note that the needlines do not indicate physical connectivity (that is depicted in the systems views); rather, they document only that a particular operational node needs information provided by another operational node.

- **Audience**
  The Operational Node Connectivity Description is intended for Architects and to provide high level decision makers a somewhat more detailed view of operational nodes and information flows than is shown in the OV-1.
- **Utility**
  The operational nodes shown in the NextGen EA represent idealized places or organizations where activities are performed that require and/or produce information. The OV-2 is provided not only to represent the various organizations and places where activities are performed but also to provide a framework for organizing the information exchanges that will be described in detail in the Operational Information Exchange Matrix, OV-3.
- **Maturity**
  The OV-2 is currently in an initial stage of development. Three major nodes have been defined - Air Transport Services, Government Support Services, and NextGen Partners - corresponding to major communities of interest within the Air Transportation System. Within these major nodes, lower level nodes have been identified to further refine the places and organizations where operational activities are performed. Operational activities, sometimes grouped as activity services, as defined by the OV-5, have now been assigned to the operational sub-nodes. Details of the information exchanges from Node to Node and Sub-node to Sub-node are at the very earliest stages of development. The NextGen EA Version 2 OV-2 currently shows needlines to and from the major nodes. Eventually, needlines will be described for all relevant sub-node to sub-node exchanges across the major nodes. At this point, only about twenty cross-node information exchanges have been identified. This number will grow significantly in future releases as the Working Groups further refine the activities and information flows among them.

Operational Node Connectivity Diagram



Notes

Notes

GEORGETO
323 GTN
GEORGETO
DCA 5
WASHINGTON
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NOTE: Prob
of D
LOM
OXONN
332 DC
I-DCA 5.6
DCA
R-186
R-295
PISCA INT
I-DCA 10.7
R-274
DCA
R-185
2500 to Pisca Int
321° (3.1) and
LOC (3)
LATAS
OTT 12.2
10 NM
500
2000
DCA R-325
111.0
GTN
323
OXONN
LOM/INT
I-DCA 5.6
1551
I-DCA
1
MM
007°
0.5
4.1 NM
TDZE
15
CATEGORY
A
B
S-ILS 1
215/18
S-LOC 1
480/24
465 (500-½)
620-1
660-1
150
180

4.5 Appendix E: OV-3

The OV-3 is the most comprehensive description of operational information flow. It further decomposes the information flows (needlines) identified in the OV-2 into one or more (usually many) specific Information Exchange Requirements (IERs) representing specific information flows from the OV-5 Activity Model. Additional architecturally significant attributes of each IER are also collected in the OV-3 matrix. Each IER represents a transfer of information and all the attributes of that transfer relevant to the purposes of the architectural description.

The current version of the OV-3 identifies 17 IERs and describes the following high-level attributes:

- Needline Identifier—associates each information exchange with its relevant needline
- Information Exchange Requirement Identifier—a unique ID for each information exchange
- Information Exchange Requirement Name —a unique name for each information exchange
- Information Element Description—describes the nature of the information being exchanged
- Producer—provides information about the activity that produces the information element, including—
  - Source Activity
  - Source Operational Node
  - Source Operational Sub-Node
  - Source Operational Activity—lowest level activity that produces the information element
- Consumer—provides information about the activity that uses the information element, including—
  - Destination Activity(ies)
  - Destination Operational Node
  - Destination Operational Sub-Node
  - Destination Operational Activity—lowest level activity that uses the information element.

Eventually, the OV-3 will include all relevant cross-operational node information exchanges and will collect all the details of the exchanges that are necessary to achieve the objectives of the architectural description. Additional attributes of the IERs could include such details as—

- Nature of Transaction—provides information relevant to the purpose of the architectural description, including—
  - Triggering event
  - Criticality
- Performance Attributes—provides performance characteristics of the information element, including—
  - Periodicity
  - Timeliness
- Information Assurance—provides information about the protection required for the information exchange, including—
  - Confidentiality (security level)
  - Availability
  - Integrity
  - Access Control
  - Dissemination Control.
- **Audience**
  The OV-3 is a technical document intended for use by architects, analysts, and engineers seeking to gain insight into the details of the requirements for information flows among operational nodes.
- **Utility**
  The OV-3 matrix facilitates "information-centric" analysis. It enables information to be traced to operational activities. It also enables decision makers to clarify who exchanges what information with whom, why the information is necessary, and in what manner the information is exchanged. By clearly seeing the intricacies of information dependency, decisions can be made confidently, knowing the full impact and scope of any needed changes.
- **Maturity**
  The development of the NextGen EA Version 2 focused on the Community (OV-1), Activity (OV-5), and Reference Models (FEA). This development required intense collaboration within JPDO, consuming significant resources and resulting in significant flux in the Operational Activities and Reference Models until they were baselined in May 2007. Therefore, the OV-3, a much more detailed product that depends and builds upon information contained in the OV-5, is currently at a preliminary stage of development. As the NextGen EA Version 2 is reviewed by stakeholders and working groups, details of the information exchanges will be developed, and the OV-3 will continue to grow in detail and maturity.

Needline ID	Information Exchange			Producer				Consumer			
	IER Identifier	IER Name	Information Exchange Description	Source Activity		Source Operational Node	Source Operational Sub-Node	Destination Operational Node	Destination Operational Sub-Node	Destination Activity	
NL (GSS,WSP)-(GSS,ANSP)	IER 00001	4D Wx Picture	A virtual, consistent, reliable, comprehensive NextGen Government-provided weather information service available to all NAS stakeholders. The weather picture information consists of observed weather and forecast weather. The weather picture weather is available as girded service; that is to say, it exists over different 3D meteorological scales. The observed weather information includes but is not limited to the following: convection, turbulence, icing, rain, hail, snowfall, lighting, ceiling, visibility, space radiation, wind speed, wind direction, temperature, humidity, noise propagation potential, and airport plume concentration, atmospheric sensitivity to exhaust, volcanic ash, and wake vortex information. Forecast weather has the same information as observed weather with the additional parameters of probability of occurrence and a confidence level describing the occurrence probability.	A.1.1.4.2	Publish Weather Picture	Government Support Services	Weather Service Provider	Government Support Services	Air Navigation Service Provider	A.5.2.1	Provide Separation Clearance
NL (GSS,WSP)-(ATS,ACFT)								Air Transport Services	Aircraft	A.7.2.2.3	Receive 4D Weather Picture
NL (ATS,FO)-(GSS,ANSP)	IER 00002	Flight Object Data	Data pertaining to a particular aircraft that contains the latest confirmed information about the flight, including trajectory (estimated and/or actual); specifically, the Flight Object Data includes: (1) aircraft capabilities, including the level of navigation, communications, and surveillance performance (e.g., FMS capabilities); (2) aircraft flight performance parameters; (3) flight crew capabilities, including level of training received to enable special procedures; (4) 4DT profile and intent, containing the "cleared" 4DT profile plus any desired or proposed 4DTs; and (5) aircraft position information and near-term intent.	A.1.4.2.2	Provide Flight Data	Air Transport Services	Flight Operator	Government Support Services	Air Navigation Service Provider	A.5.1.1.1.1	Monitor Surface Conditions
NL (ATS,FO)-(GSS,ANSP)										A.5.1.2.4.1	Assign Cruise (enroute) Flight Path
NL (GSS,ATCM)-(GSS,ANSP)	IER 00003	Frequency Assignment	A message that provides the authorization, allocation and distribution of ATC radio frequencies used to communicate position, clearances and instructions, weather and traffic advisories and make requests between all relevant parties.	A.1.9.2.2	Assign Radio Frequency	Government Support Services	Air Transportation Communications Management	Government Support Services	Air Navigation Service Provider	A.5.1.1.2	Issue Modification Information/Clearance
NL (GSS,ANSP)-(ATS,FO)	IER 00004	Aeronautical Information	A message in the form of a Notice to Airmen(NOTAM) or Airport/Facility Directory that contains information pertaining to the establishment of, condition of , or change in any NAS component (facility, service, or procedure, or hazard in the NAS). Specifically, this message will contain information on airports, communications, navigation aids, instrument landing systems, VOR receiver check points, preferred routes, Flight Service Station/Weather Service telephone numbers, Air Route Traffic Control Center (ARTCC) frequencies, part-time surface areas, and various other pertinent special notices essential to air navigation which are considered essential to the safety of flight.	A.1.5.2.2	Publish Aeronautical Information	Government Support Services	Air Navigation Service Provider	Air Transport Services	Flight Operator	A.6.2.3	Determine Flight Support Need
NL (GSS,ANSP)-(ATS,ACFT)									Aircraft	A.7.2.1.3.2	Monitor Airborne Information
NL (ATS,APT)-(ATS,FO)	IER 00005	Airport Lease Information	Legal contract or agreement for State-owned lands and facilities associated with international or rural airports and seaplane bases. Contains information for a contract for the whole or a part of an airport site, where the Commonwealth is the lesser. Will contain information elements such as Lease description, Business Purpose, Contract Terms, Rent, Indemnity, Taxes, Insurance.	A.2.3.2	Design Landside Facilities	Air Transport Services	Airports	Air Transport Services	Flight Operator	A.3.1.4	Manage Gate Operations
NL (ATS,APT)-(ATS,FO)	IER 00006	Standard Airport Operating Procedures	A document that outlines and defines the rules and regulations governing the operation of airport, to include job titles, responsibilities and procedures for operations of the field with maximum efficiency and safety.	A.2.3.1	Manage Regional Planning Ops	Air Transport Services	Airports	Air Transport Services	Flight Operator	A.3.1.4	Manage Gate Operations
NL (ATS,APT)-(ATS,ACFT)	IER 00008	Parking Position Assignment	The parking position assignment is a message provided via data or voice link that is provided to the flight operator either prior to departure, or as an update upon arrival, that details the specific parking position and directions that the flight operator (aircraft) will utilize upon landing and maneuvering the aircraft to the appropriate gate.	A.3.2.2	Manage Ramp Support	Air Transport Services	Airports	Air Transport Services	Aircraft	A.7.1.2	Conduct Post Arrival Operations
NL (GSS,ANSP)-(ATS,FO)	IER 00009	Airspace Design Proposal	Information pertaining to the creation or use and classification of the airspace to support safety of flight and efficient flow of traffic. It includes the navigation tolerances that are integral factors in airspace design, to determine such things as lateral separation points, instrument approach design and terrain/obstacle clearance calculations. This report gets distributed to the various stakeholders to address the business operations and planning of flights.	A.4.2.5	Disseminate Proposed Airspace Design	Government Support Services	Air Navigation Service Provider	Air Transport Services	Flight Operator	A.6.1.1	Receive Airspace Design
										A.6.2.1	Plan Flight
NL (GSS,ANSP)-(ATS,FO)	IER 00010	Execution Plan	The plan that has been generated from the long term planning and designing of the airspace to meet the requirements of the growing demand. The execution plan could include a regulatory action (i.e., new standards, rules), a change to an existing rule that will have an impact beyond the ANSP (i.e., flow optimization, no new performance standards implemented), and change within existing rules that will affect the ANSP (i.e., reconfigure the airspace will change the work load/balance).	A.4.2.6	Disseminate Execution Plan	Government Support Services	Air Navigation Service Provider	Air Transport Services	Flight Operator	A.6.1.2	Analyze Business Case

Needline ID	Information Exchange			Producer				Consumer			
	IER Identifier	IER Name	Information Exchange Description	Source Activity		Source Operational Node	Source Operational Sub-Node	Destination Operational Node	Destination Operational Sub-Node	Destination Activity	
NL (GSS,ANSP)-(ATS,ACFT)	IER 00011	Arrival/Departure Information	Information pertaining to the procedures, rules and instructions for flight objects arriving and departing; will also include information concerning clearances both arrival and departure as well as taxi instructions, any predeparture procedures and instructions as well as initial trajectories (routes).	A.5.1.1.1.2	Manage Surface Movement	Government Support Services	Air Navigation Service Provider	Air Transport Services	Aircraft	A.7.1.1	Conduct Preflight Operations
NL (GSS,ANSP)-(ATS,ACFT)	IER 00012	Separation Clearance	A message (data/voice) sent from a controller to the flight object (aircraft/flight operator) to perform self separation; the message provides separation directions for collision avoidance. The message gives the flight crew a clearance, indicating that they are henceforth responsible for the separation with that aircraft, and that they must begin a crossing maneuver within the given limits.	A.5.2.1	Provide Separation Clearance	Government Support Services	Air Navigation Service Provider	Air Transport Services	Aircraft	A.7.2.1.3.1	Receive Separation Clearance
NL (GSS,ANSP)-(ATS,ACFT)	IER 00013	Separation Instructions	A message that provides information to the flight object operator to use for the purpose of not breaching separation minima with restricted airspace, terrain and obstacles, or other vehicles.	A.5.2.2	Delegate Separation Operation	Government Support Services	Air Navigation Service Provider	Air Transport Services	Aircraft	A.7.2.1.3.1	Receive Separation Instructions
NL (GSS,ANSP)-(ATS,ACFT)	IER 00014	Surface Condition Report	Information provided to the flight object as reported by the airport management thru the Tower concerning the condition of the movement areas (runway and taxi-way), to ensure the flight object's safe operation in time for it to be useful to the flight operator. It includes the following: Construction work on or immediately adjacent to the movement areas; Rough portions of the movement area; Braking conditions caused by ice, snow, slush or water; Snowdrifts or piles of snow on or along the edges of the area and the extent of any plowed area; Parked aircraft on the movement area; Irregular operation of part or all of the airport lighting system; Volcanic ash on any airport surface area and whether the ash is wet or dry; Other pertinent airport conditions	A.5.1.1.1.1	Manage Surface Condition	Government Support Services	Air Navigation Service Provider	Air Transport Services	Aircraft	A.7.1.1.2	Receive Arrival/Departure Information
NL (GSS,ANSP)-(ATS,ACFT)	IER 00015	Taxi Clearance	A directive from ATC to ``taxi to'' the takeoff runway or gate assigned to the aircraft. This is not a clearance to cross that assigned takeoff runway, or to taxi on that runway at any point, but is a clearance to cross other runways that intersect the taxi route to that assigned takeoff runway or gate. A clearance to ``taxi to'' any point other than an assigned takeoff runway is clearance to cross all runways that intersect the taxi route to that point	A.5.1.1.1.3	Issue Clearance	Government Support Services	Air Navigation Service Provider	Air Transport Services	Aircraft	A.7.1.1.4	Pushback
NL (ATS,ACFT)-(GSS,ANSP)	IER 00016	Flight Readiness Report	Flight operator's initial report to tower at the runway hold-short line indicating the flight object's (aircraft's) readiness to depart.	A.7.1.1.6	Report Flight Readiness	Air Transport Services	Aircraft	Government Support Services	Air Navigation Service Provider	A.5.1.2	Issue Modification Information/Clearance
NL (ATS,ACFT)-(GSS,ANSP)	IER 00017	Taxi Clearance Request	Voice or data message from flight operator to gain approval to move the flight object to the assigned or from the(active) runway.	A.7.1.1.3	Request Preflight Taxi Clearance	Air Transport Services	Aircraft	Government Support Services	Air Navigation Service Provider	A.5.1.1.3	Issue Clearance

4.6 Appendix F: OV-5 1

The OV-5, Operational Activity Model, is a graphical and textual description of the activities (functions or processes) performed by or within an organization and the information associated with those activities. The OV-5 is viewed as the foundation for any architecture analysis or process improvement effort because it captures and aligns an organization's activities, relationships, associated information exchange requirements (IER), and supporting systems. The OV-5 is a foundational architecture product for the NextGen, containing data that is often used to create other essential architecture products that are essential in conveying various aspects of the community or business processes.

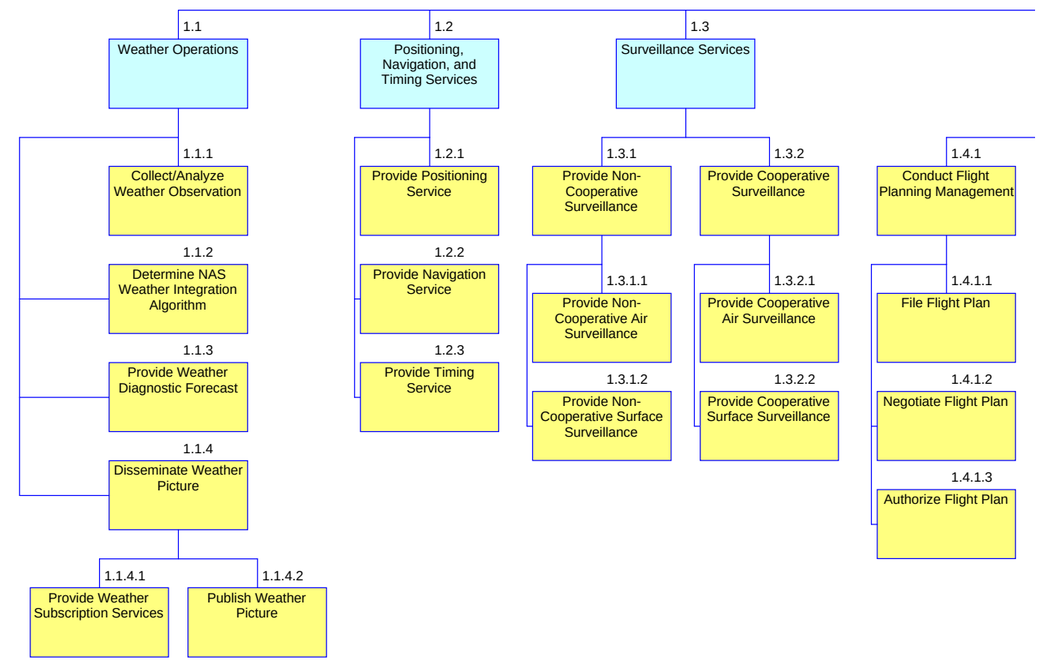
The OV-5 Activity Model is typically presented in two formats: (1) a hierarchical description of the activities showing how higher level activities comprise lower level activities and (2) activity flow diagrams (i.e., IDEF0 diagrams) showing information flow from one activity to another and how that information is transformed by each activity. The NextGen EA, Version 2, OV-5 Operational Activity Flow Diagram Models are presented in detail starting in section 3 of Volume 1. To help orient the reader, relevant sections of the Activity Hierarchy are also included in these sections. This appendix presents the complete NextGen EA, Version 2, OV-5 Operational Activity Model – Activity Hierarchy.

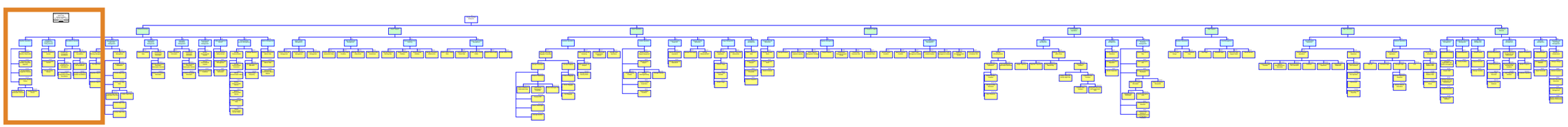
Description

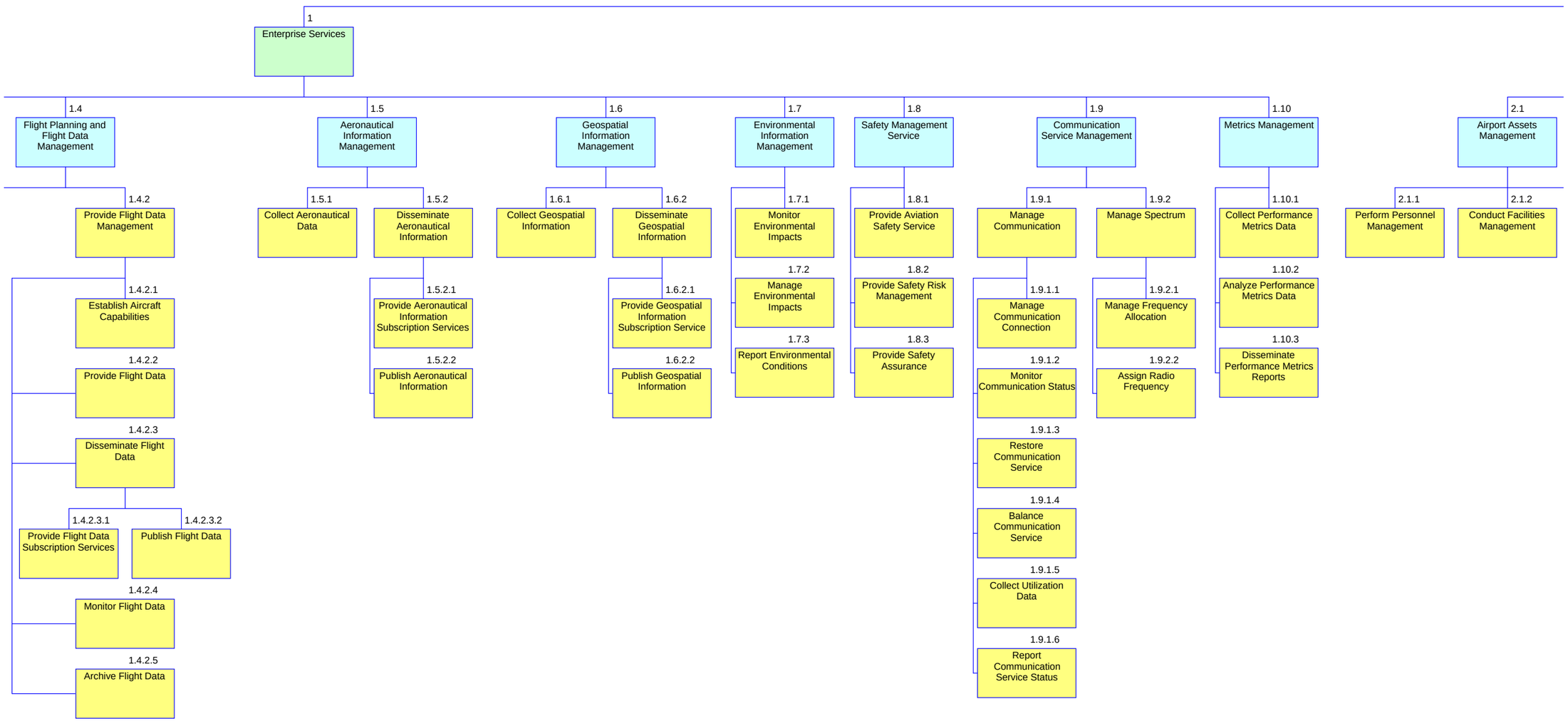
The OV-5 Activity Hierarchy begins with a set of activities that successively decompose to lower levels of detail that are captured in several diagrams. To assist Stakeholder Communities of Interest in aligning the NextGen EA activities to their respective architectures, JPDO has deviated from the standard OV-5 Activity Flow format by grouping specific Activity Hierarchies under their respective Enterprise Segments and Service Areas as defined in the Community Model, OV-1. The aggregation of these diagrams comprises the full activity model. To facilitate understanding by all stakeholders and to provide alignment with the OV-1 community model, JPDO's activity models organize the relevant operational activities into eight enterprise segments (Core Business Services, Enterprise Services, Airport Operations, Airport Support, Air Navigation Operations, Air Navigation Support, Flight Operations, and Flight Support). Further, each enterprise segment is composed of relevant service areas that provide another grouping level for the basic operational activities.

- **Audience**
  The OV-5 Operational Activity Hierarchy is intended for architects, analysts, systems engineers, systems developers.
- **Utility**
  The OV-5 Operational Activity Hierarchy provides a comprehensive structured list of all the operational activities of interest to the architectural description. That is, it shows all the activities that need to be considered to achieve the desired outcomes of the architectural analysis and how high level activities are composed of lower level activities. This structured list can often reveal similarities and redundancies. The NextGen EA OV-5 Hierarchy also shows how the operational activities align within the eight Enterprise Segments and the relevant Activity Services in the Community Model.
- **Maturity**
  The OV-5 Hierarchy included in NextGen EA version 2 represents the initial baseline of operational activities which will form a foundation for detailed analysis and revision as the NextGen EA is socialized among the stakeholders in working group sessions. While a significant number of activities have be identified, defined, and organized, it is likely that future refinements will result from the close scrutiny by subject matter experts and other interested parties.

NGATS Enterprise (OV-05 Node Tree)
System Architect
Sun Jun 10, 2007 12:29
Comment



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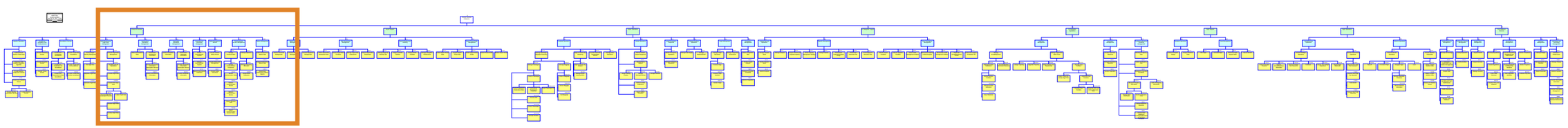
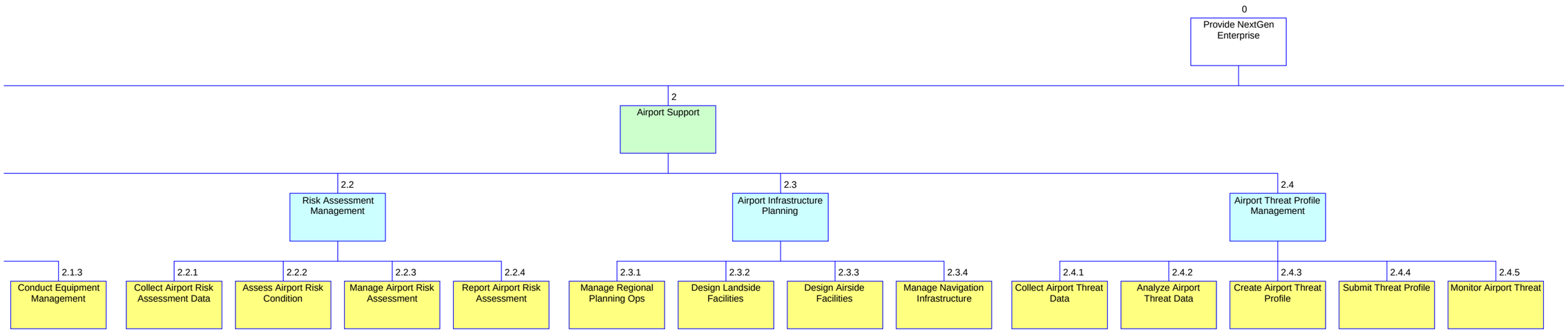
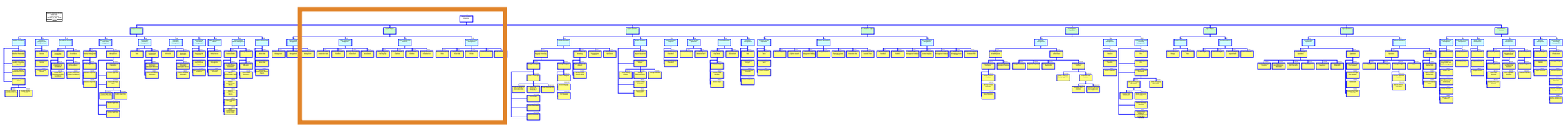
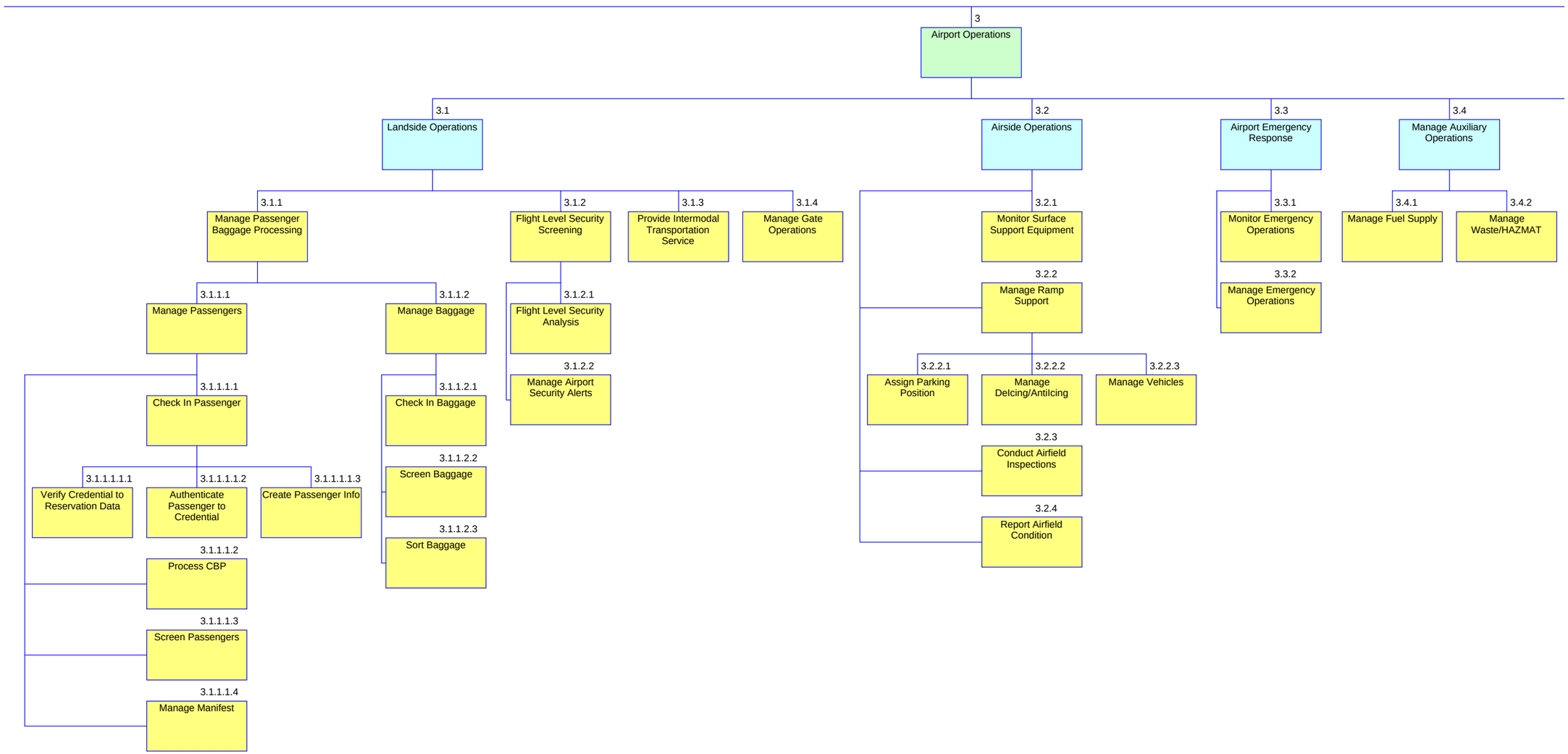
Enterprise Services
1.4
Flight Planning and Flight Data Management
1.5
Aeronautical Information Management
1.6
Geospatial Information Management
1.7
Environmental Information Management
1.8
Safety Management Service
1.9
Communication Service Management
1.10
Metrics Management
2.1
Airport Assets Management
1.4.2
Provide Flight Data Management
1.5.1
Collect Aeronautical Data
1.5.2
Disseminate Aeronautical Information
1.6.1
Collect Geospatial Information
1.6.2
Disseminate Geospatial Information
1.7.1
Monitor Environmental Impacts
1.8.1
Provide Aviation Safety Service
1.9.1
Manage Communication
1.9.2
Manage Spectrum
1.10.1
Collect Performance Metrics Data
2.1.1
Perform Personnel Management
2.1.2
Conduct Facilities Management
1.4.2.1
Establish Aircraft Capabilities
1.5.2.1
Provide Aeronautical Information Subscription Services
1.6.2.1
Provide Geospatial Information Subscription Service
1.7.2
Manage Environmental Impacts
1.8.2
Provide Safety Risk Management
1.9.1.1
Manage Communication Connection
1.9.2.1
Manage Frequency Allocation
1.10.2
Analyze Performance Metrics Data
1.4.2.2
Provide Flight Data
1.5.2.2
Publish Aeronautical Information
1.6.2.2
Publish Geospatial Information
1.7.3
Report Environmental Conditions
1.8.3
Provide Safety Assurance
1.9.1.2
Monitor Communication Status
1.9.2.2
Assign Radio Frequency
1.10.3
Disseminate Performance Metrics Reports
1.4.2.3
Disseminate Flight Data
1.9.1.3
Restore Communication Service
1.4.2.3.1
Provide Flight Data Subscription Services
1.4.2.3.2
Publish Flight Data
1.9.1.4
Balance Communication Service
1.4.2.4
Monitor Flight Data
1.9.1.5
Collect Utilization Data
1.4.2.5
Archive Flight Data
1.9.1.6
Report Communication Service Status




0
Provide NextGen Enterprise
2
Airport Support
2.2
Risk Assessment Management
2.3
Airport Infrastructure Planning
2.4
Airport Threat Profile Management
2.1.3
Conduct Equipment Management
2.2.1
Collect Airport Risk Assessment Data
2.2.2
Assess Airport Risk Condition
2.2.3
Manage Airport Risk Assessment
2.2.4
Report Airport Risk Assessment
2.3.1
Manage Regional Planning Ops
2.3.2
Design Landside Facilities
2.3.3
Design Airside Facilities
2.3.4
Manage Navigation Infrastructure
2.4.1
Collect Airport Threat Data
2.4.2
Analyze Airport Threat Data
2.4.3
Create Airport Threat Profile
2.4.4
Submit Threat Profile
2.4.5
Monitor Airport Threat

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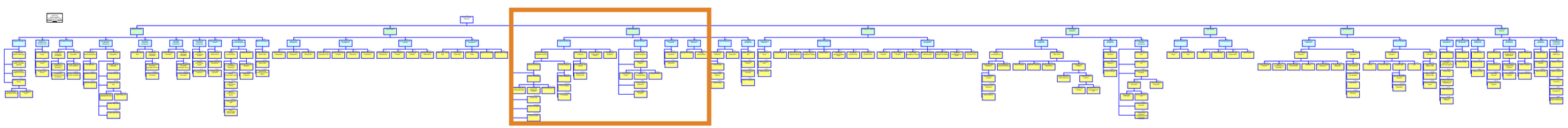
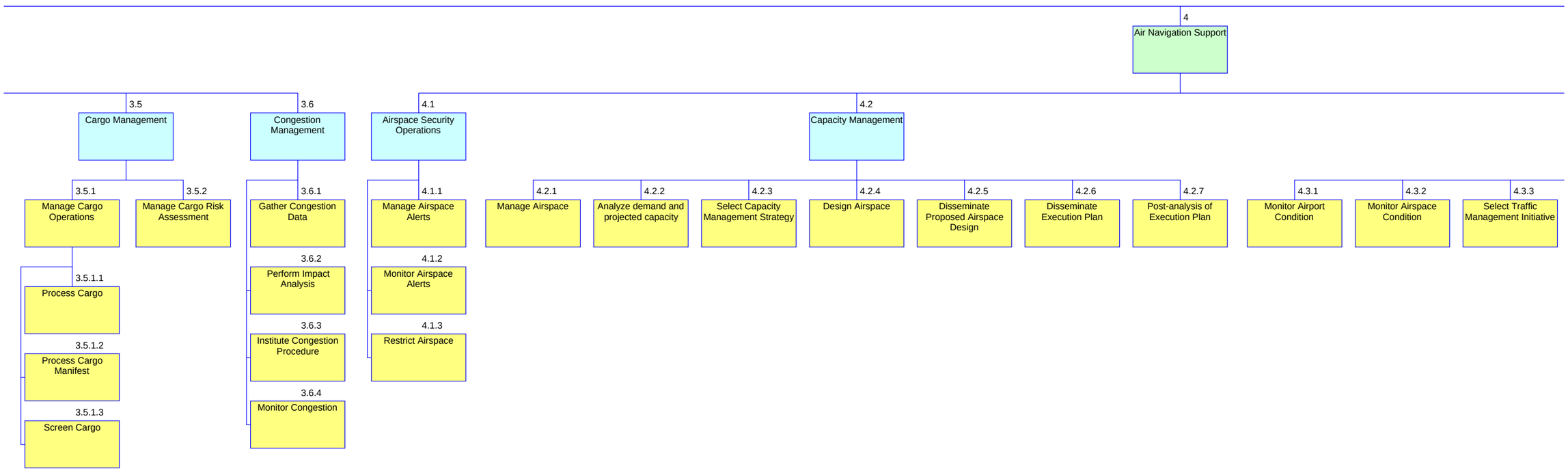
Airport Operations
3.1
Landside Operations
3.2
Airside Operations
3.3
Airport Emergency Response
3.4
Manage Auxiliary Operations
3.1.1
Manage Passenger Baggage Processing
3.1.2
Flight Level Security Screening
3.1.3
Provide Intermodal Transportation Service
3.1.4
Manage Gate Operations
3.2.1
Monitor Surface Support Equipment
3.3.1
Monitor Emergency Operations
3.4.1
Manage Fuel Supply
3.4.2
Manage Waste/HAZMAT
3.2.2
Manage Ramp Support
3.3.2
Manage Emergency Operations
3.1.1.1
Manage Passengers
3.1.1.2
Manage Baggage
3.1.2.1
Flight Level Security Analysis
3.1.2.2
Manage Airport Security Alerts
3.2.2.1
Assign Parking Position
3.2.2.2
Manage DeIcing/AntiIcing
3.2.2.3
Manage Vehicles
3.1.1.1.1
Check In Passenger
3.1.1.2.1
Check In Baggage
3.2.3
Conduct Airfield Inspections
3.1.1.1.1.1
Verify Credential to Reservation Data
3.1.1.1.1.2
Authenticate Passenger to Credential
3.1.1.1.1.3
Create Passenger Info
3.1.1.2.2
Screen Baggage
3.2.4
Report Airfield Condition
3.1.1.1.2
Process CBP
3.1.1.2.3
Sort Baggage
3.1.1.1.3
Screen Passengers
3.1.1.1.4
Manage Manifest

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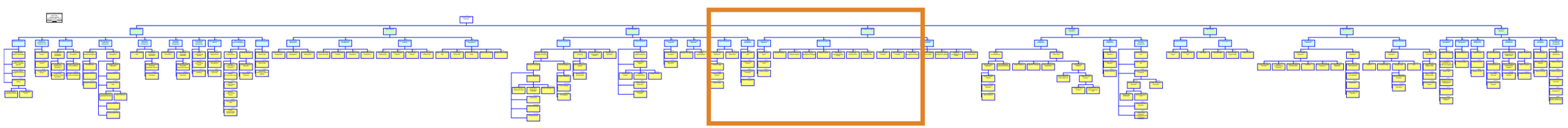
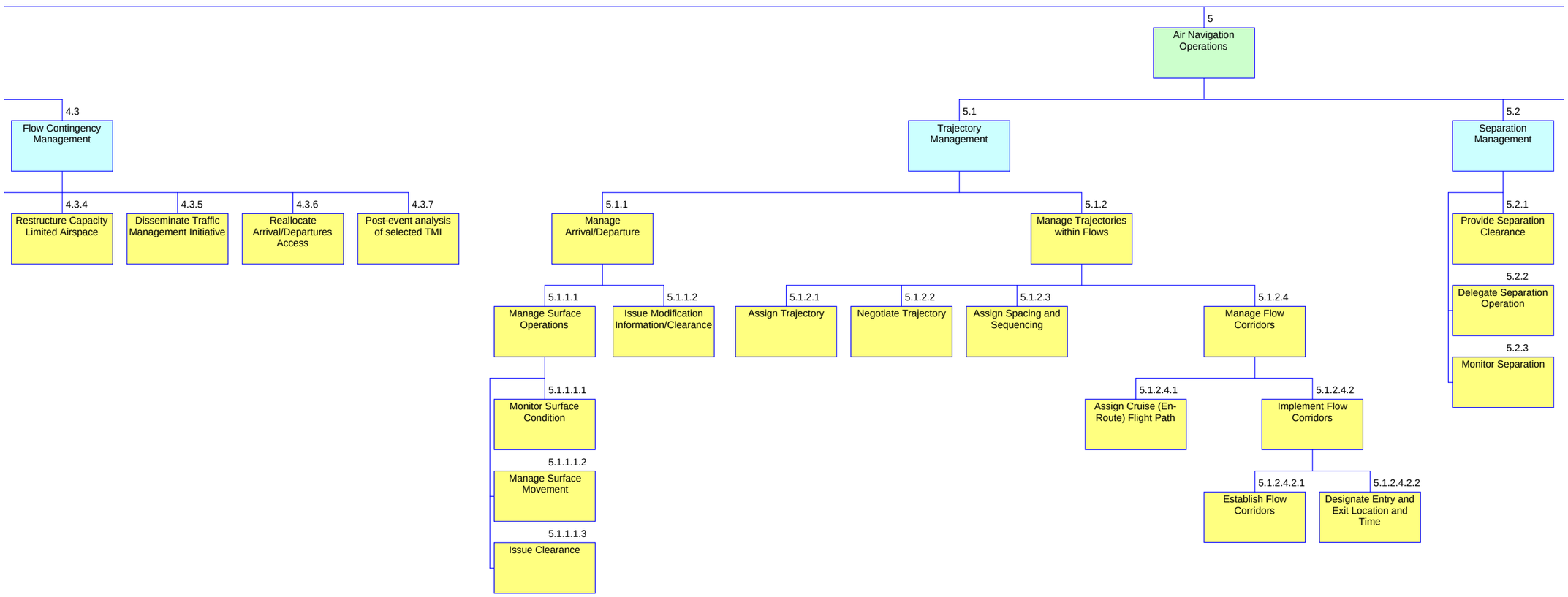
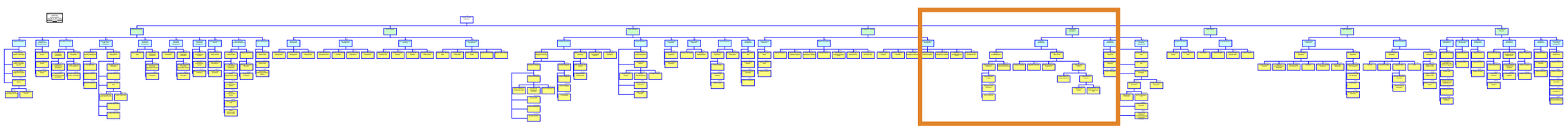
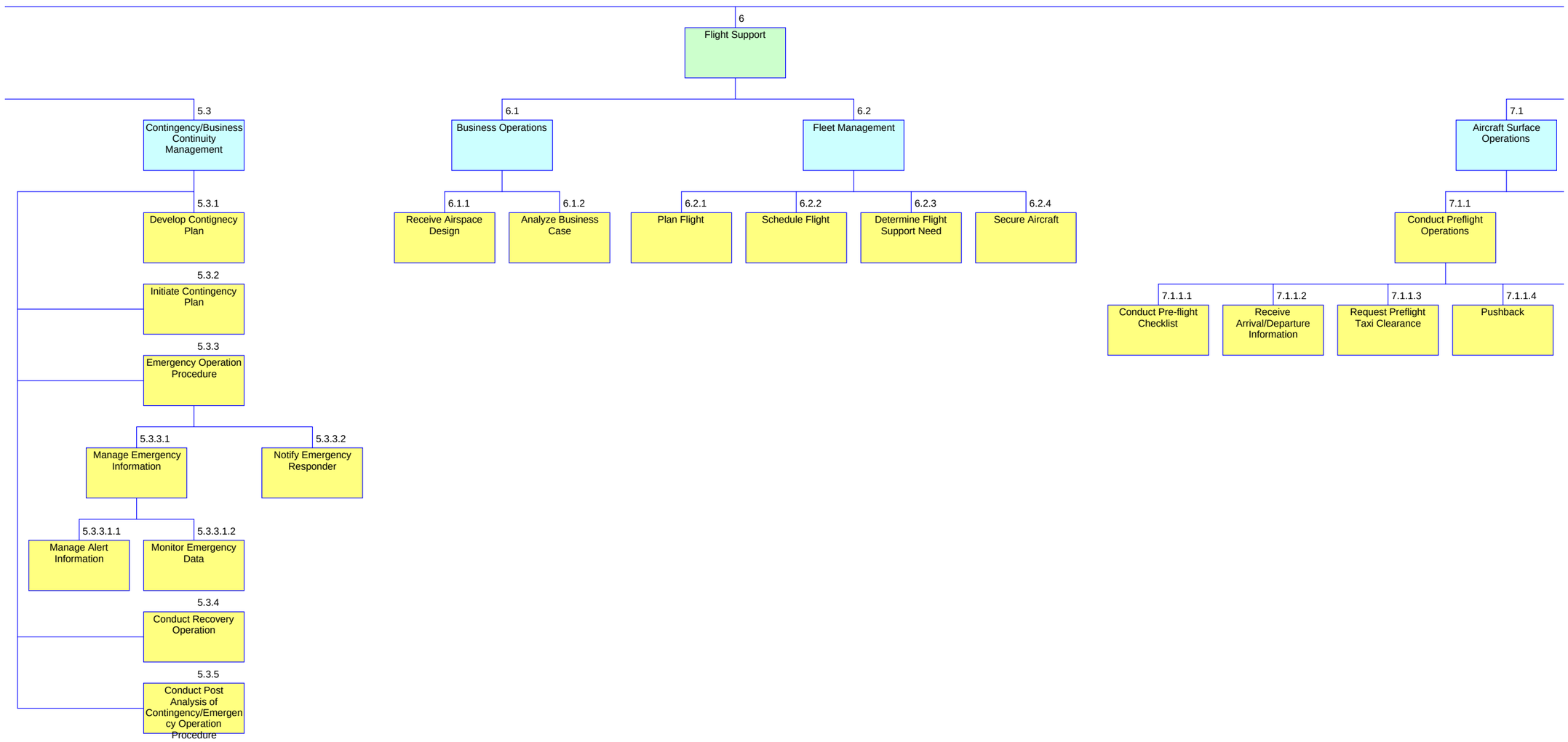
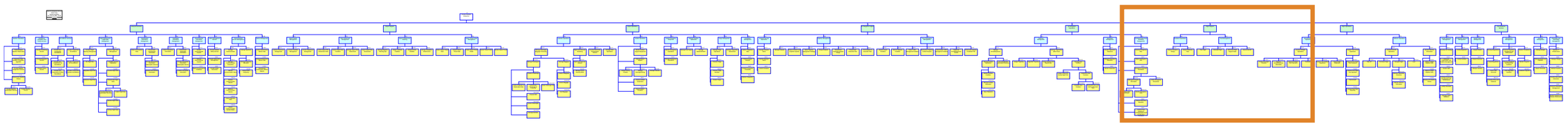
Air Navigation Support
3.5
Cargo Management
3.6
Congestion Management
4.1
Airspace Security Operations
4.2
Capacity Management
3.5.1
Manage Cargo Operations
3.5.2
Manage Cargo Risk Assessment
3.5.1.1
Process Cargo
3.5.1.2
Process Cargo Manifest
3.5.1.3
Screen Cargo
3.6.1
Gather Congestion Data
3.6.2
Perform Impact Analysis
3.6.3
Institute Congestion Procedure
3.6.4
Monitor Congestion
4.1.1
Manage Airspace Alerts
4.1.2
Monitor Airspace Alerts
4.1.3
Restrict Airspace
4.2.1
Manage Airspace
4.2.2
Analyze demand and projected capacity
4.2.3
Select Capacity Management Strategy
4.2.4
Design Airspace
4.2.5
Disseminate Proposed Airspace Design
4.2.6
Disseminate Execution Plan
4.2.7
Post-analysis of Execution Plan
4.3.1
Monitor Airport Condition
4.3.2
Monitor Airspace Condition
4.3.3
Select Traffic Management Initiative

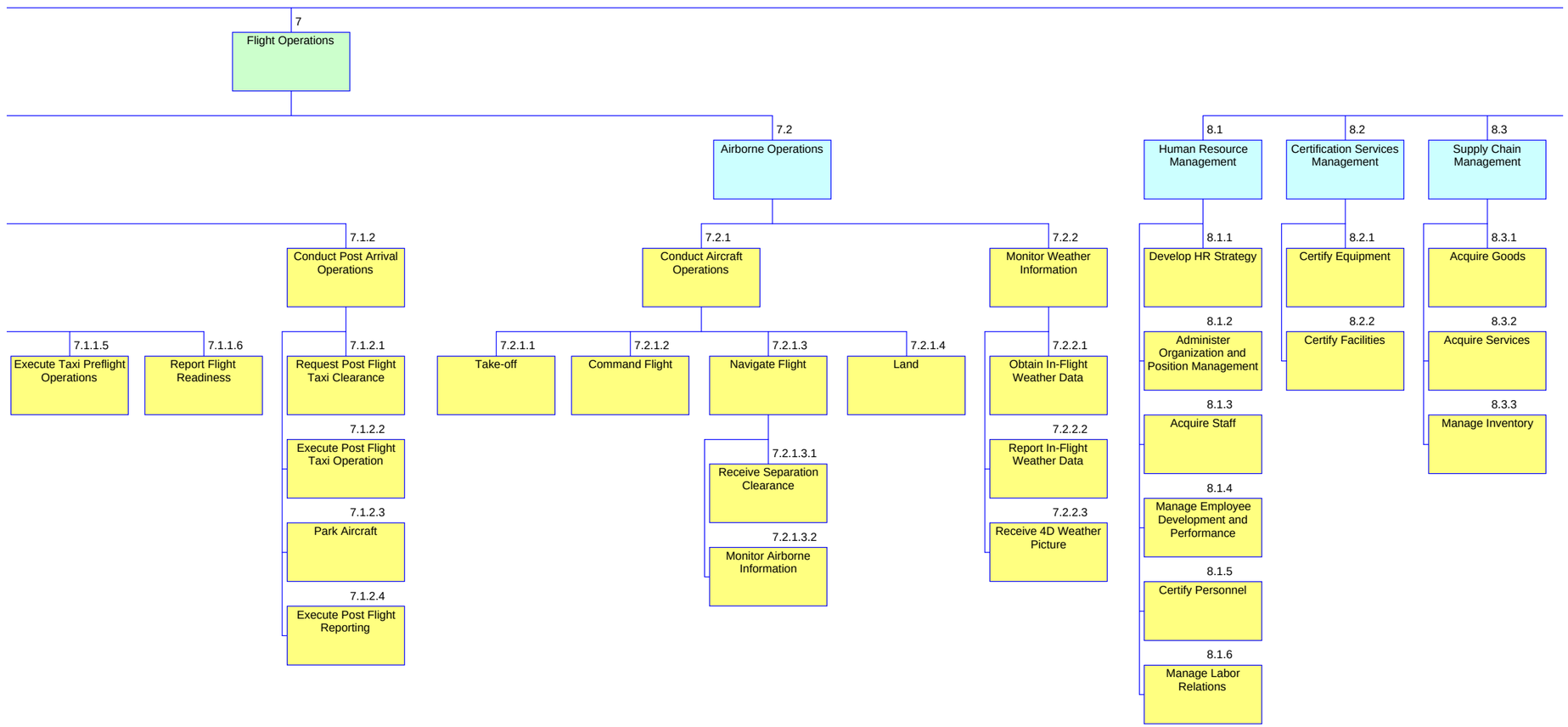


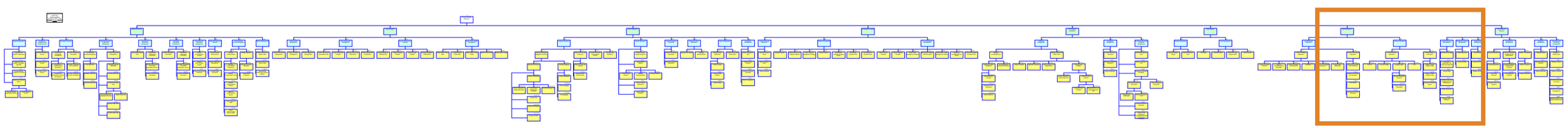

5
Air Navigation Operations
5.1
Trajectory Management
5.2
Separation Management
4.3
Flow Contingency Management
4.3.4
Restructure Capacity Limited Airspace
4.3.5
Disseminate Traffic Management Initiative
4.3.6
Reallocate Arrival/Departures Access
4.3.7
Post-event analysis of selected TMI
5.1.1
Manage Arrival/Departure
5.1.2
Manage Trajectories within Flows
5.1.1.1
Manage Surface Operations
5.1.1.2
Issue Modification Information/Clearance
5.1.2.1
Assign Trajectory
5.1.2.2
Negotiate Trajectory
5.1.2.3
Assign Spacing and Sequencing
5.1.2.4
Manage Flow Corridors
5.1.1.1.1
Monitor Surface Condition
5.1.1.1.2
Manage Surface Movement
5.1.1.1.3
Issue Clearance
5.1.2.4.1
Assign Cruise (En-Route) Flight Path
5.1.2.4.2
Implement Flow Corridors
5.1.2.4.2.1
Establish Flow Corridors
5.1.2.4.2.2
Designate Entry and Exit Location and Time
5.2.1
Provide Separation Clearance
5.2.2
Delegate Separation Operation
5.2.3
Monitor Separation

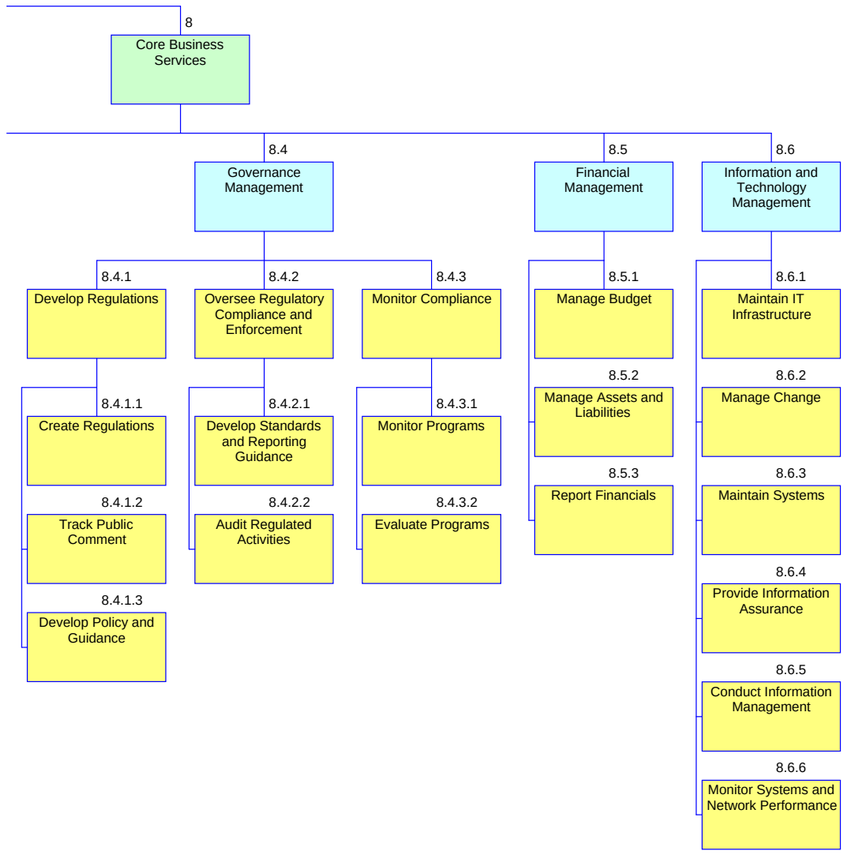


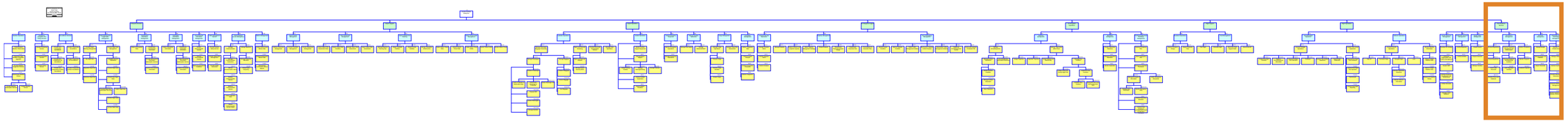

6
Flight Support
5.3
Contingency/Business Continuity Management
6.1
Business Operations
6.2
Fleet Management
7.1
Aircraft Surface Operations
5.3.1
Develop Contingency Plan
6.1.1
Receive Airspace Design
6.1.2
Analyze Business Case
6.2.1
Plan Flight
6.2.2
Schedule Flight
6.2.3
Determine Flight Support Need
6.2.4
Secure Aircraft
7.1.1
Conduct Preflight Operations
5.3.2
Initiate Contingency Plan
7.1.1.1
Conduct Pre-flight Checklist
7.1.1.2
Receive Arrival/Departure Information
7.1.1.3
Request Preflight Taxi Clearance
7.1.1.4
Pushback
5.3.3
Emergency Operation Procedure
5.3.3.1
Manage Emergency Information
5.3.3.2
Notify Emergency Responder
5.3.3.1.1
Manage Alert Information
5.3.3.1.2
Monitor Emergency Data
5.3.4
Conduct Recovery Operation
5.3.5
Conduct Post Analysis of Contingency/Emergency Operation Procedure




7
Flight Operations
7.2
Airborne Operations
8.1
Human Resource Management
8.2
Certification Services Management
8.3
Supply Chain Management
7.1.2
Conduct Post Arrival Operations
7.2.1
Conduct Aircraft Operations
7.2.2
Monitor Weather Information
8.1.1
Develop HR Strategy
8.2.1
Certify Equipment
8.3.1
Acquire Goods
7.1.1.5
Execute Taxi Preflight Operations
7.1.1.6
Report Flight Readiness
7.1.2.1
Request Post Flight Taxi Clearance
7.2.1.1
Take-off
7.2.1.2
Command Flight
7.2.1.3
Navigate Flight
7.2.1.4
Land
7.2.2.1
Obtain In-Flight Weather Data
8.1.2
Administer Organization and Position Management
8.2.2
Certify Facilities
8.3.2
Acquire Services
7.1.2.2
Execute Post Flight Taxi Operation
7.2.1.3.1
Receive Separation Clearance
7.2.2.2
Report In-Flight Weather Data
8.1.3
Acquire Staff
8.3.3
Manage Inventory
7.1.2.3
Park Aircraft
7.2.1.3.2
Monitor Airborne Information
7.2.2.3
Receive 4D Weather Picture
8.1.4
Manage Employee Development and Performance
7.1.2.4
Execute Post Flight Reporting
8.1.5
Certify Personnel
8.1.6
Manage Labor Relations




8
Core Business Services
8.4
Governance Management
8.5
Financial Management
8.6
Information and Technology Management
8.4.1
Develop Regulations
8.4.2
Oversee Regulatory Compliance and Enforcement
8.4.3
Monitor Compliance
8.5.1
Manage Budget
8.6.1
Maintain IT Infrastructure
8.4.1.1
Create Regulations
8.4.2.1
Develop Standards and Reporting Guidance
8.4.3.1
Monitor Programs
8.5.2
Manage Assets and Liabilities
8.6.2
Manage Change
8.4.1.2
Track Public Comment
8.4.2.2
Audit Regulated Activities
8.4.3.2
Evaluate Programs
8.5.3
Report Financials
8.6.3
Maintain Systems
8.4.1.3
Develop Policy and Guidance
8.6.4
Provide Information Assurance
8.6.5
Conduct Information Management
8.6.6
Monitor Systems and Network Performance



Notes

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S-LOC 1
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660-1
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180

4.7 Appendix G: OV-6c

Description

The OV-6c or Scenario(s) is one of three operational activity sequence and timing description products that DoDAF prescribes for use separately or together. The sequence and timing of operational events are often crucial to the understanding of a mission operation or system and often necessary to achieve the results needed from analysis of the architectural description. Because the JPDO will use the architecture as a basis for advising stakeholders on the value and criticality of improving their systems and processes to achieve the goals of NextGen, an understanding of the sequencing of operational activities could provide key insights in support of that guidance. The OV-6c, Operational Event/Trace Description, was chosen for the NextGen architecture because it provides information specifically relevant to sequencing operational activities and is most appropriate for describing missions that span a wide range of operations and activities. The NextGen EA four Operational Event/Trace Description (OV-6c) scenarios are presented below.

Audience

The OV-6c Operational Event/Trace Description are intended for Architects, Analysts, Systems Engineers, and Systems Developers.

Utility

The Operational Event/Trace Description provide a time ordered sequence of information exchanges among the operational activities. This information will be useful for advising stakeholders on the value and criticality of specific material and non-material investments to the achievement of the NextGen Vision.

Maturity

There are four OV-6c diagrams representing nominal scenarios that have been developed for NextGen EA Version 2. Additional OV-6c diagrams associated with Off-Nominal scenarios will be developed for subsequent releases of the Architecture.

C2C Passenger departure/arrival

- Reservations
- Check in
- Checkpoint
- Board Aircraft
- Domestic Arrival

C2C Cargo departure/arrival

- Schedule Shipment
- Cargo Checkpoint
- Domestic Arrival
- International Arrival

Long Term

- Planning and Designing
- Strategy Elements
- Triggers

Short Term Airspace

- Surface Movement
- Flight
- Plan FCM

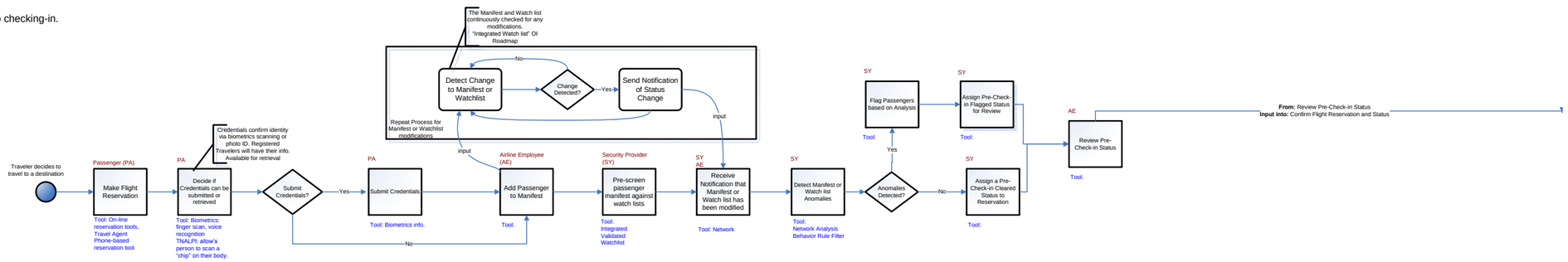
Purpose

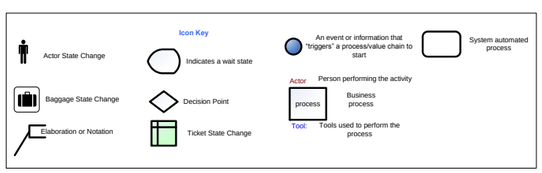
The purpose of Scenario's are the following:

- Identifies and documents the enterprise business value chain, including the actors, system/business process, and the tools involved.

Reservation

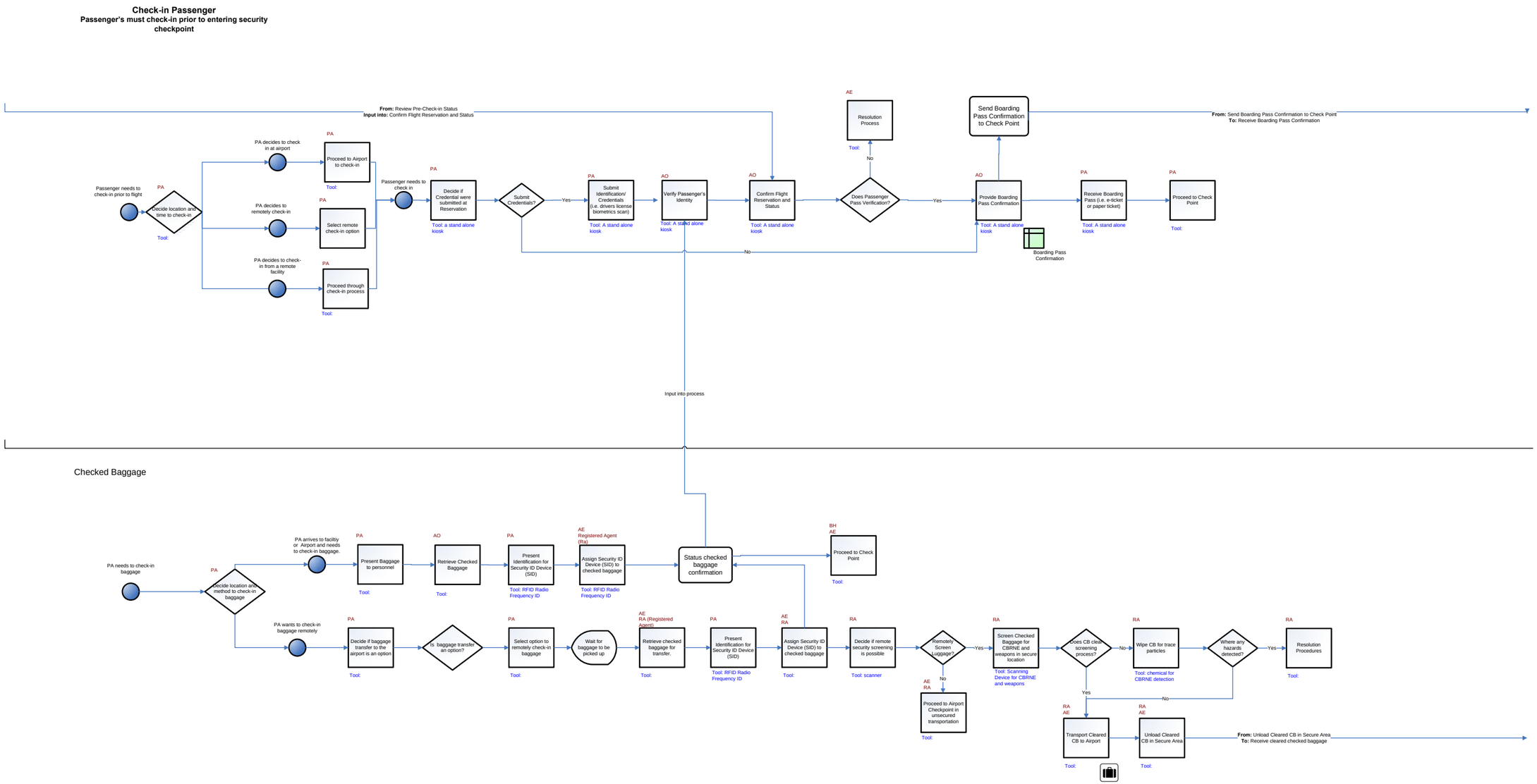
A user must make a reservation prior to checking-in.

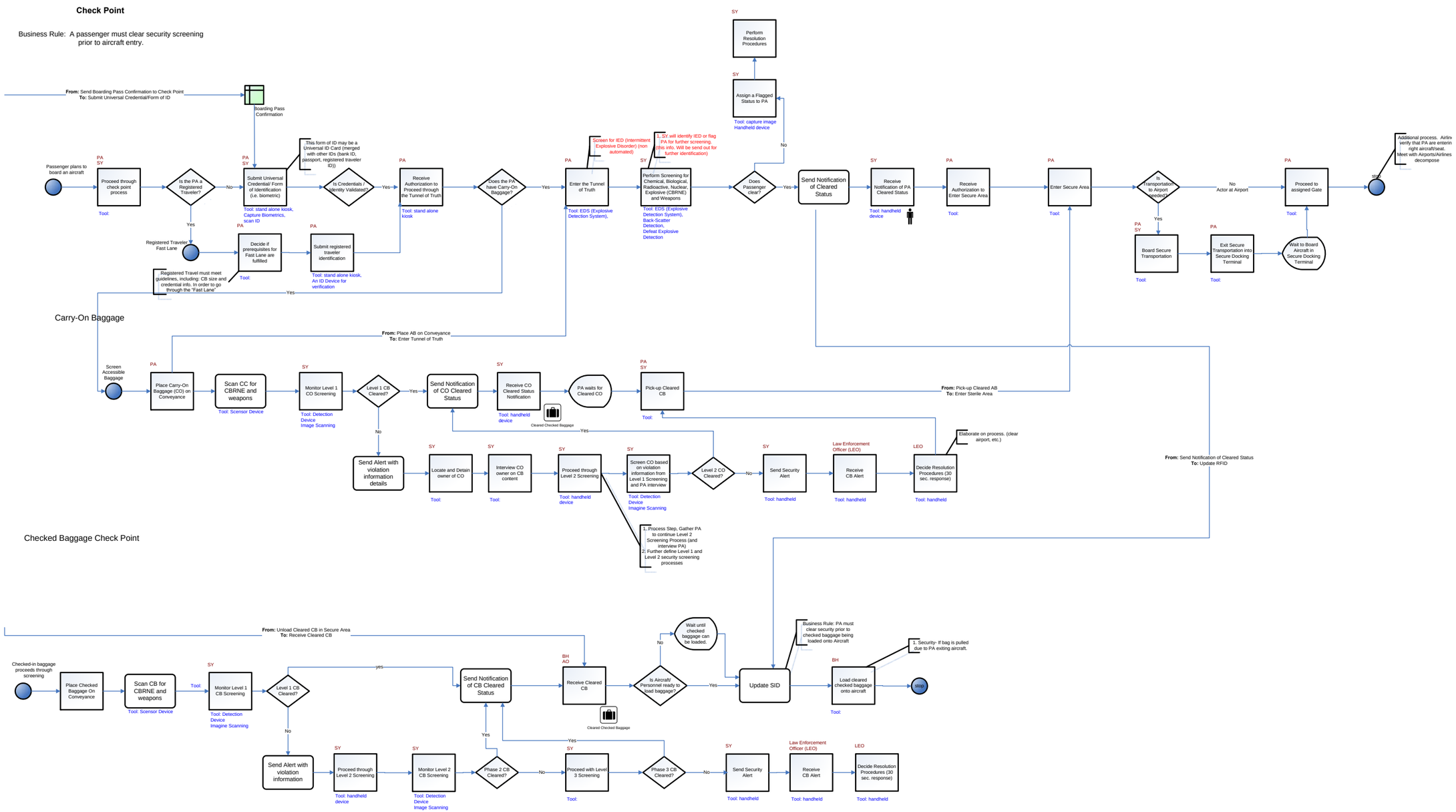


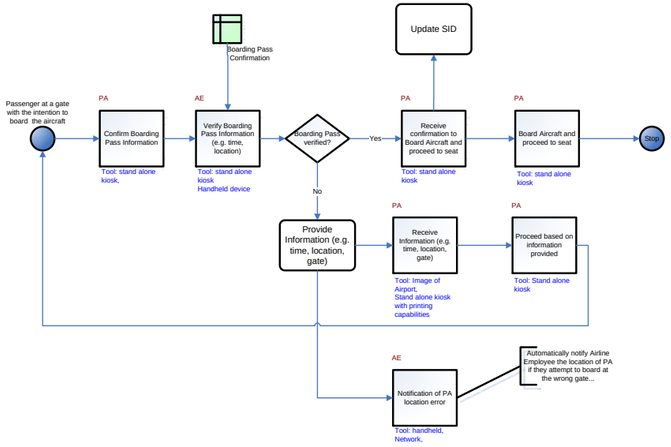


Actor List

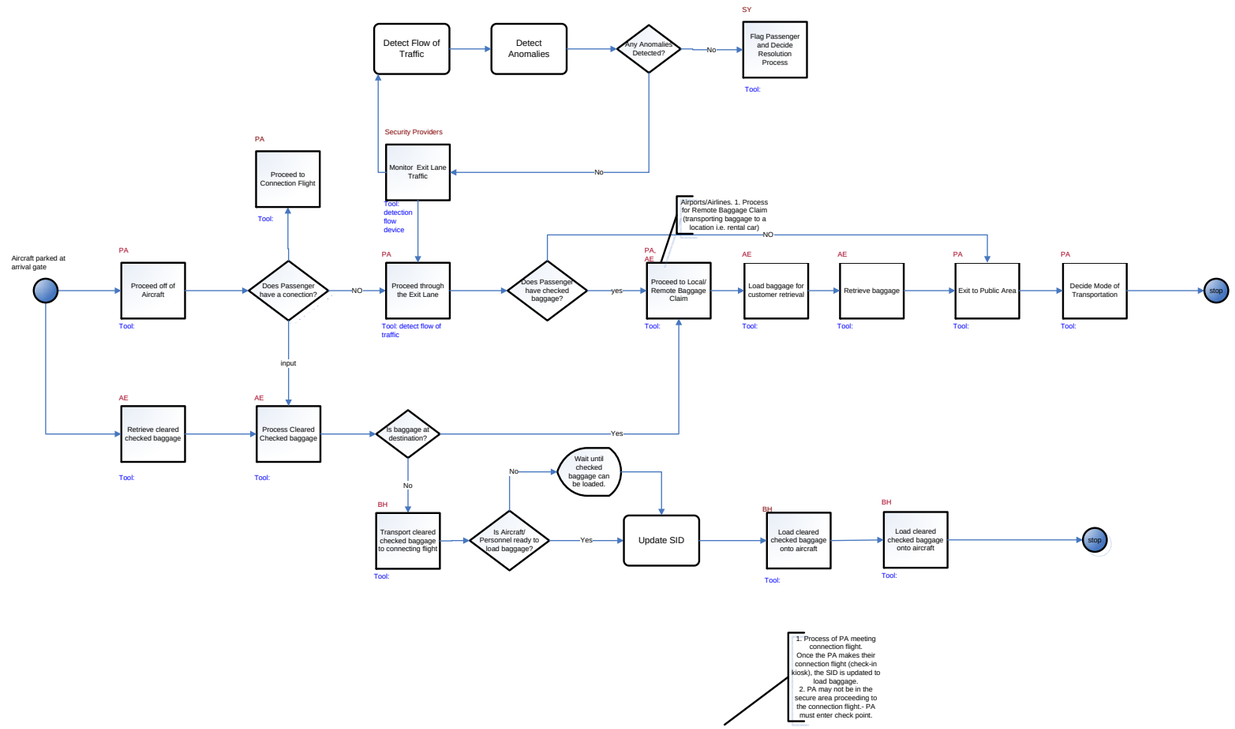
AE-Airline Employee
BM- Boarder Managment
BH- Baggage Handler
IPA-International Passenger
PA-Passenger
SY- Security Provider
TA-Trusted Agent

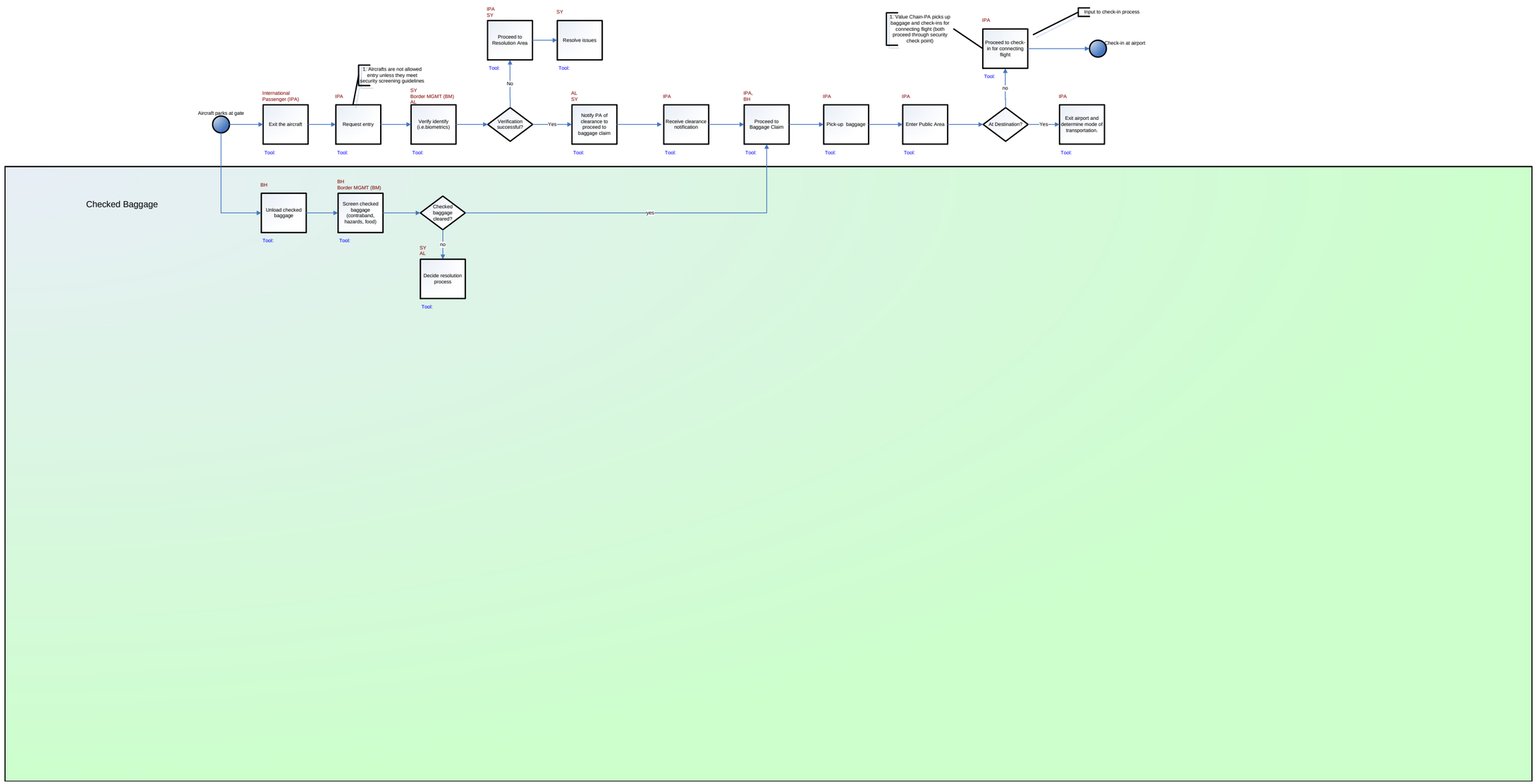

Check-in Passenger
Passenger's must check-in prior to entering security checkpoint
From: Review Pre-Check-in Status
Input into: Confirm Flight Reservation and Status
Passenger needs to check-in prior to flight
PA
Decide location and time to check-in
Tool:
PA decides to check in at airport
PA decides to remotely check-in
PA decides to check-in from a remote facility
PA
Proceed to Airport to check-in
Tool:
PA
Select remote check-in option
PA
Proceed through check-in process
Tool:
Passenger needs to check in
PA
Decide if Credential were submitted at Reservation
Tool: a stand alone kiosk
Submit Credentials?
Yes
No
PA
Submit Identification/ Credentials (i.e. drivers license biometrics scan)
Tool: A stand alone kiosk
AO
Verify Passenger's Identity
Tool: A stand alone kiosk
AO
Confirm Flight Reservation and Status
Tool: A stand alone kiosk
AE
Resolution Process
Tool:
No
Does Passenger Pass Verification?
Yes
AO
Provide Boarding Pass Confirmation
Tool: A stand alone kiosk
Boarding Pass Confirmation
Send Boarding Pass Confirmation to Check Point
PA
Receive Boarding Pass (i.e. e-ticket or paper ticket)
Tool: A stand alone kiosk
PA
Proceed to Check Point
Tool:
From: Send Boarding Pass Confirmation to Check Point
To: Receive Boarding Pass Confirmation
Input into process
Checked Baggage
PA needs to check-in baggage
PA
Decide location and method to check-in baggage
PA arrives to facility or Airport and needs to check-in baggage.
PA
Present Baggage to personnel
Tool:
AO
Retrieve Checked Baggage
Tool:
PA
Present Identification for Security ID Device (SID)
Tool: RFID Radio Frequency ID
AE
Registered Agent (Ra)
Assign Security ID Device (SID) to checked baggage
Tool: RFID Radio Frequency ID
Status checked baggage confirmation
BH
AE
Proceed to Check Point
Tool:
PA wants to check-in baggage remotely
PA
Decide if baggage transfer to the airport is an option
Tool:
Is baggage transfer an option?
PA
Select option to remotely check-in baggage
Tool:
Wait for baggage to be picked up
AE
RA (Registered Agent)
Retrieve checked baggage for transfer.
Tool:
PA
Present Identification for Security ID Device (SID)
Tool: RFID Radio Frequency ID
AE
RA
Assign Security ID Device (SID) to checked baggage
Tool:
RA
Decide if remote security screening is possible
Tool: scanner
Remotely Screen Luggage?
Yes
No
AE
RA
Proceed to Airport Checkpoint in unsecured transportation
Tool:
RA
Screen Checked Baggage for CBRNE and weapons in secure location
Tool: Scanning Device for CBRNE and weapons
Does CB clear screening process?
No
Yes
RA
Wipe CB for trace particles
Tool: chemical for CBRNE detection
Where any hazards detected?
Yes
No
RA
Resolution Procedures
Tool:
RA
AE
Transport Cleared CB to Airport
Tool:
RA
AE
Unload Cleared CB in Secure Area
Tool:
From: Unload Cleared CB in Secure Area
To: Receive cleared checked baggage


Check Point
Business Rule: A passenger must clear security screening prior to aircraft entry.
From: Send Boarding Pass Confirmation to Check Point
To: Submit Universal Credential/Form of ID
Boarding Pass Confirmation
Passenger plans to board an aircraft
Proceed through check point process
Is the PA a Registered Traveler?
Submit Universal Credential/ Form of Identification (i.e. biometric)
This form of ID may be a Universal ID Card (merged with other IDs (bank ID, passport, registered traveler ID))
Is Credentials / Identity Validated?
Receive Authorization to Proceed through the Tunnel of Truth
Does the PA have Carry-On Baggage?
Enter the Tunnel of Truth
Screen for IED (Intermittent Explosive Disorder) (non automated)
Perform Screening for Chemical, Biological, Radioactive, Nuclear, Explosive (CBRNE) and Weapons
1. SY will identify IED or flag PA for further screening. (this info. Will be send out for further identification)
Does Passenger clear?
Perform Resolution Procedures
Assign a Flagged Status to PA
Send Notification of Cleared Status
Receive Notification of PA Cleared Status
Receive Authorization to Enter Secure Area
Enter Secure Area
Is Transportation to Airport needed?
No Actor at Airport
Proceed to assigned Gate
Board Secure Transportation
Exit Secure Transportation into Secure Docking Terminal
Wait to Board Aircraft in Secure Docking Terminal
Registered Traveler Fast Lane
Decide if prerequisites for Fast Lane are fulfilled
Submit registered traveler identification
Registered Travel must meet guidelines, including: CB size and credential info. In order to go through the "Fast Lane"
Carry-On Baggage
From: Place AB on Conveyance
To: Enter Tunnel of Truth
Screen Accessible Baggage
Place Carry-On Baggage (CO) on Conveyance
Scan CC for CBRNE and weapons
Monitor Level 1 CO Screening
Level 1 CB Cleared?
Send Notification of CO Cleared Status
Receive CO Cleared Status Notification
PA waits for Cleared CO
Pick-up Cleared CB
From: Pick-up Cleared AB
To: Enter Sterile Area
Send Alert with violation information details
Locate and Detain owner of CO
Interview CO owner on CB content
Proceed through Level 2 Screening
Screen CO based on violation information from Level 1 Screening and PA interview
Level 2 CO Cleared?
Send Security Alert
Receive CB Alert
Decide Resolution Procedures (30 sec. response)
Elaborate on process. (clear airport, etc.)
From: Send Notification of Cleared Status
To: Update RFID
1. Process Step, Gather PA to continue Level 2 Screening Process (and interview PA)
2. Further define Level 1 and Level 2 security screening processes
Checked Baggage Check Point
From: Unload Cleared CB in Secure Area
To: Receive Cleared CB
Checked-in baggage proceeds through screening
Place Checked Baggage On Conveyance
Scan CB for CBRNE and weapons
Monitor Level 1 CB Screening
Level 1 CB Cleared?
Send Notification of CB Cleared Status
Receive Cleared CB
Is Aircraft/ Personnel ready to load baggage?
Wait until checked baggage can be loaded.
Update SID
Business Rule: PA must clear security prior to checked baggage being loaded onto Aircraft
Load cleared checked baggage onto aircraft
1. Security- If bag is pulled due to PA exiting aircraft.
Send Alert with violation information
Proceed through Level 2 Screening
Monitor Level 2 CB Screening
Phase 2 CB Cleared?
Proceed with Level 3 Screening
Phase 3 CB Cleared?
Send Security Alert
Receive CB Alert
Decide Resolution Procedures (30 sec. response)


Boarding Pass Confirmation
Update SID
Passenger at a gate with the intention to board the aircraft
PA
Confirm Boarding Pass Information
Tool: stand alone kiosk,
AE
Verify Boarding Pass Information (e.g. time, location)
Tool: stand alone kiosk
Handheld device
Boarding Pass verified?
Yes
No
PA
Receive confirmation to Board Aircraft and proceed to seat
Tool: stand alone kiosk
PA
Board Aircraft and proceed to seat
Tool: stand alone kiosk
Stop
Provide Information (e.g. time, location, gate)
PA
Receive Information (e.g. time, location, gate)
Tool: Image of Airport,
Stand alone kiosk with printing capabilities
PA
Proceed based on information provided
Tool: Stand alone kiosk
AE
Notification of PA location error
Tool: handheld,
Network,
Automatically notify Airline Employee the location of PA if they attempt to board at the wrong gate...

Checked Baggage




Checked Baggage
Aircraft parks at gate
International Passenger (IPA)
Exit the aircraft
Tool:
IPA
Request entry
1: Aircrafts are not allowed entry unless they meet security screening guidelines
SY
Border MGMT (BM)
AL
Verify identify (i.e.biometrics)
Verification successful?
Yes
No
IPA
SY
Proceed to Resolution Area
SY
Resolve issues
AL
SY
Notify PA of clearance to proceed to baggage claim
IPA
Receive clearance notification
IPA,
BH
Proceed to Baggage Claim
IPA
Pick-up baggage
IPA
Enter Public Area
At Destination?
no
IPA
Proceed to check-in for connecting flight
1: Value Chain-PA picks up baggage and check-ins for connecting flight (both proceed through security check point)
Input to check-in process
Check-in at airport
IPA
Exit airport and determine mode of transportation.
BH
Unload checked baggage
BH
Border MGMT (BM)
Screen checked baggage (contraband, hazards, food)
Checked baggage cleared?
yes
no
SY
AL
Decide resolution process

Curb-to-Curb

Scenario Thread: Passenger/Baggage

The Curb-to-Curb Scenario Walk-through was documented visually as a process flow. This write up is in tandem to the Thread diagrams. The Threads represent the best-case scenario that is all encompassing. There will be variations on to-be process to accommodate the evolving security and check-in processes.

The Threads are curb-to-block processes, a Passenger/ Baggage Departure thread and a Passenger/Baggage Arrival thread.

Actions

- Will FAA/NextGen (the government) regulate Flight Operators flight operations?
- Assumption: No, free-market operations will continue to be driven by business and consumer choice. However, the federal government will continue to have a role in providing Essential Air Service (need definition of this: certain, select markets will remain regulated in terms of "must-serve" and subsidies will be provided to maintain a level of service.)
- Related to this question in the Strategic/Policy phase… would the system dictate to airline operators the parameters of what planes may operate based on demand?
- Is NextGen focused on the "utility" aspect of the travel experience, or do considerations need to be made for the business aspects – e.g. airports offering competitive services, multiple-levels of security either provided by the government, or via a security services provider.

Thread: People/Baggage from reservation to boarding an aircraft

Reservation

A passenger may make flight reservations months to the day of flight. The passenger , with the correct capabilities, may submit credential information (biometrics scanning). The Airlines will add the passenger to a manifest list , which is screened against a "no-fly list" and detected for any anomalies. Security Providers will screen each passenger against the manifest and "no-fly" list. The system will continuously monitor the manifest and no-fly list and alert security if any changes are detected. The Security Provider, based on their analysis, will assign a pre-check-in status to a reservation; the status will alert the airline operator if any anomalies were detected by security.

A "trusted-traveler" is a consistent traveler (i.e. business passenger) who's information is saved and retrieved when flights are scheduled; the trusted traveler's information is readily-available for quick screening.

1. 0-many Day(s) before

a. Make reservation: Passenger

i. Cancel reservation: Passenger

ii. Update reservation: Airline Operator, Passenger

iii. Submit Credentials (if applicable): Passenger

b. Add to manifest: Airline operator

i. Data passed to, or incorporated into "Integrated/ Validated Watch list" system

c. Flight operators allocate passengers to flights (maybe this is part of a different thread, the Flight Operator thread). Consider this in context with Super-density Operations.

d. Security Provider pre-screens passenger manifest against watch lists

i. Detect anomalies (network analysis, behavior rules (e.g one-way tickets with cash)

ii. System continuous checks for changes to manifest or watchlist

iii. Detect high-risk passengers/cargo

iv. Assign pre-check-in status to reservations

v. Quick-clear "Trusted/Registered Travelers" (perhaps the system is quick-clearing)

Action:

- How do we deal with the Unscheduled Air-Taxi concept? People showing up without a scheduled flight…

Check-In

Also refer to Concepts of Use "Super Density Operations-Landside"

The when, where, and how of checking-in for a flight will provide flexibility for travelers and thorough -put for airports (the amount of passengers checked-in versus time). A passenger may check-in and submit credential information (biometrics scanning) remotely from their home or hotel (perhaps a universal stand alone kiosk), and arrange for their baggage to be transported to the airport prior to their travel date and time. Passenger's may check-in from a Terminal Hub (a centralized check-in facility) or at the airport. Whether checking-in at the airport or at home, verification is on demand.

The verification process entails establishing a person's identify and their flight information. Verification is done via a form of valid ID. A passenger may present their identification (ID or finger-print) to a kiosk that scans and captures the information. The passenger is notified within several seconds if their identification was accepted and verified. Once the passenger receives a notification, they may proceed through security.

Airline's will need to accommodate checked baggage that arrives prior to passengers, as well as baggage checked in at the airport. Checked baggage and passenger's flight schedule is synched to avoid complications, and to make sure baggage is always linked to the passenger (i.e. RFID). Cleared Checked Baggage is loaded onto the Aircraft after a passenger is cleared through the check point.

Maneuvering through the airport will be highly dynamic and non-linear. The passenger will proceed through check-in prior to entering the Security Check Point.

1. Remote/Pre-arrival check-in (at a hotel, special check-in point, internet, phone)

a. Optional baggage transfer (services that pick your luggage up, or special drop-points)

b. Apply for Trusted Traveler Card

2. Day Of

a. Passenger arrives at airport/terminal hub

i. Personal/private vehicle

ii.. Airport operated vehicle (e.g. shuttle between airports)

iii. Public transit

iv. By Air

1. Domestic

2. International

b. Check-In – could be at home, terminal hub gate or at 'front door', or at curb

i. Present identification for verification: Passenger

ii. Present Credentials for verification: Passenger

ii. Verify passenger's identity "right to entry": Airline Operator

iii. Connect checked-baggage to passenger: Trusted Agent, Airline Operator

Action

- When will passenger's credentials be verified? At check-in or during the security screening?
- Passenger's credentials will be verified at the Check Point.
- Is their a baggage service that is independent from the Airlines? The services would pick-up and deliver your baggage several days to the day of your flight.

Check Point (Security Screening)

Refer to Concepts of Use "Secure People", ID 4.3, Concepts of Use "Secure Checked Baggage" ID 4.4, and "Surveillance Concept of Use"

During the check-in process, the system relays a passenger's boarding confirmation status to the checkpoint. Security monitors passengers prior to them entering the security Check Points for screening. Ad-hoc profiling along with persistent surveillance ensures secured passengers and airports. The passenger (perhaps at a stand alone kiosk), present's their credentials (i.e. finger print, retinal scan, face recognition, identification) at the security Check Point. Once the passenger's credentials are validated, any accessible baggage is placed on conveyance for security screening, the passenger proceeds through the "Tunnel of Truth". The screening process will involve ah-hoc profiling and anomaly detection (weapons, drugs, CBRNE).

1. Public Area Security Operations (Reservation and Check-in)

a. Ad-hoc profiling

b. Perform anomaly Detection (explosives, drugs)

c. Facial recognition (ad-hoc)

d. Analyze anomalies in manifests

e. Pre-stage security personnel in anticipation of event

f. Persistent surveillance

2. Security Check Point

a. Passenger presents Credentials

b. Passenger receives validation if Credentials were accepted

c. Passenger places accessible baggage (AB) for screening

i. AB is screened until it is cleared.

ii. If the AB is screened three times, and still fails, a Security Provider will remove the AB for further inspection.

iii. Passenger may pick-up cleared AB.

d. Passenger Enters the Tunnel of Truth

i. Passenger is screened for CBRNE and weapons

ii. Security is altered to any security violation

iii. Cleared Passenger retrieves AB and proceeds to board aircraft

Actions:

- Process and requirements for screening international arriving baggage.
- Currently TSA doesn't have the technology to screen baggage. Should they screen arriving baggage?
- What does the baggage screening check for? i.e. chemical/biological.
- Who runs security checkpoints? (gov't, security, airline)
- What is the anticipated response to the potential reaction of "over-security", perception of violations of civil liberties and privacy?
- Define requirements for keeping cleared checked baggage in a "cleared" atmosphere.
- Define Authorize, Validate, and Authenticate.
- Determine if/when International passengers are screened for international connections.
- Define Sterile and Secure areas for domestic and international flights.
- Should nonpassengers be allowed through the terminal to the gate?
- Determine verification process for international passengers.
- Airports & Security need to make a call and come up with a way to resolve on the "Who's allowed in the secure area" question. Are we letting them in or not?
- Only Passenger, Flight Crew, and Airport Operators will be allowed through the security check point.
- Airport Operators (to include vendors operating within the airport) want to have an increase in the number of people in the now "sterile" terminal/gate environment (where the shops are and people get on planes).
- If a passenger fails the "tunnel of truth" screening, what is the resolution procedures? Does it depend on the type of violation?
- Research Question: How do you capture travelers biometric information?

Who pays to collect that data? What if a i.e. retinal scan isn't applicable to the traveler?

- If the AB fails security screening, is the owner of the AB re-screened again?

Thread: People/Baggage from gate to exiting landside.

Global Harmonization would bring cleared passengers into the US from foreign countries. If an International Passenger comes from a country not participating in Global Harmonization, security screening and credential verification will be necessary. Non cleared arriving flights will be subjected to security screening and custom processes. Prior to arrival, the international passenger's (IPA) identify is relayed to the destination airport. After exiting the aircraft, the IPA proceeds through a security screening process. The checked baggage proceeds to be screened for artifacts (i.e. drugs, guns, and fruit). If the IPA and checked baggage clear screening, they will be reunited at the baggage claim.

1. Aircraft arrives at any gate (no need for distinction between domestic and international)

a. Passenger Identity has already been verified from the aircraft seat and relayed to arrival airport

2. Baggage goes through screening process (drugs, guns, fruit, contraband etc)

3. Passenger requests physical entry after deplaning (reconcile identity with person video/fingerprint/retinal whatever...)

a. IF access granted, THEN proceed to baggage claim

b. IF access declined THEN proceed to resolution area

4. Baggage & Passenger reunited

5. Passenger exits to public area

a. IF connecting, THEN re-check bag and proceed to new gate

b. IF airport is final destination THEN proceed to ground transportation center

Domestic passengers may proceed off the aircraft and through the exit lane to the public area. The exit lane separates cleared passengers from non-cleared passengers. This area is monitored and evolving technology will allow personnel to monitor the directional flow of traffic, to ensure uncleared persons (from the public area) do not enter. Security Providers are automatically altered to anomalies (perhaps on a handheld device). If the passenger doesn't have a connecting flight, they proceed to claim their checked baggage and exit the airport.

1. Domestic Passenger exits the aircraft.

a. Passenger proceeds through the exit lane.

b. Security Provider monitors traffic flow in exit lane.

i. System detects a security violation (uncleared passenger trying to reach sterile area).

ii. Security Provider acts upon detected security violations.

c. Passenger enters the public area.

Definitions

Baggage

- Checked Baggage- Checked separate from persons
- Accessible Baggage- Items the passenger carries with them onto the aircraft

CBRNE- Chemical Biological Radioactive Nuclear Explosive

Check-In – Airline and Passenger establish contract to fly.

Check Point- Location where Security Screening Process is conducted

Credentials- Form of identification (i.e. biometrics, passport) that establishes your identity, and trust. Credentials are verified at Security Check Points.

Radio Frequency Identification (RFID)- A key that identifies an owner and connects checked baggage to the owner.

Remote (remotely)- A location not on airport property.

Sterile Area- An area that clear passengers are authorized to enter following the screening process.

Terminal Hub- Centralized facility that passengers may check-in (including baggage) and go through security screening prior to secure transport to an Airport to board a flight.

Trusted Travel Card- A speed-pass card that allows regular passengers quick check-in. They have had biometric information and background check prior to reservation.

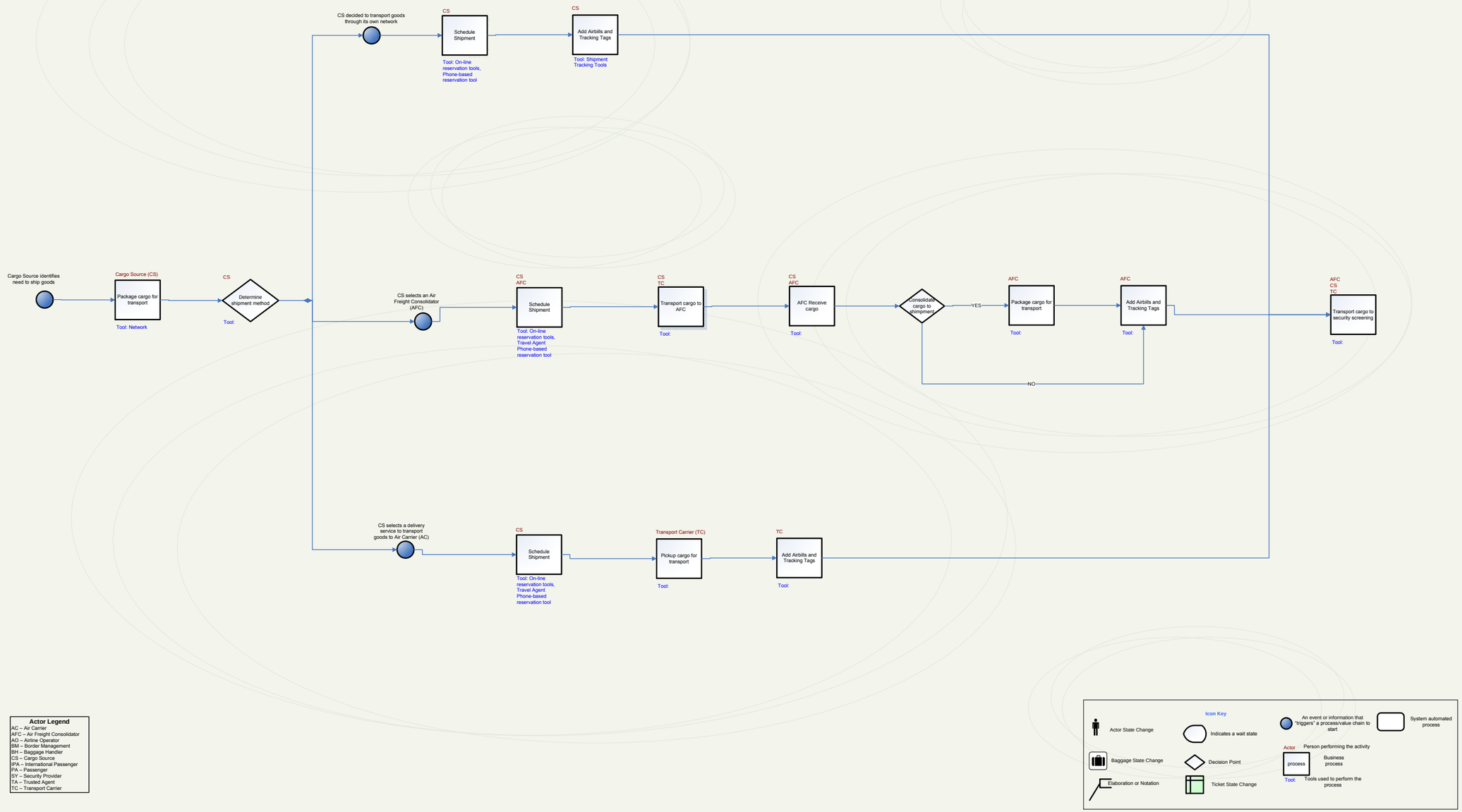
Tunnel of Truth- Security Screening system that detects CBRNE and explosives. The information is relayed to Security Providers in real time.

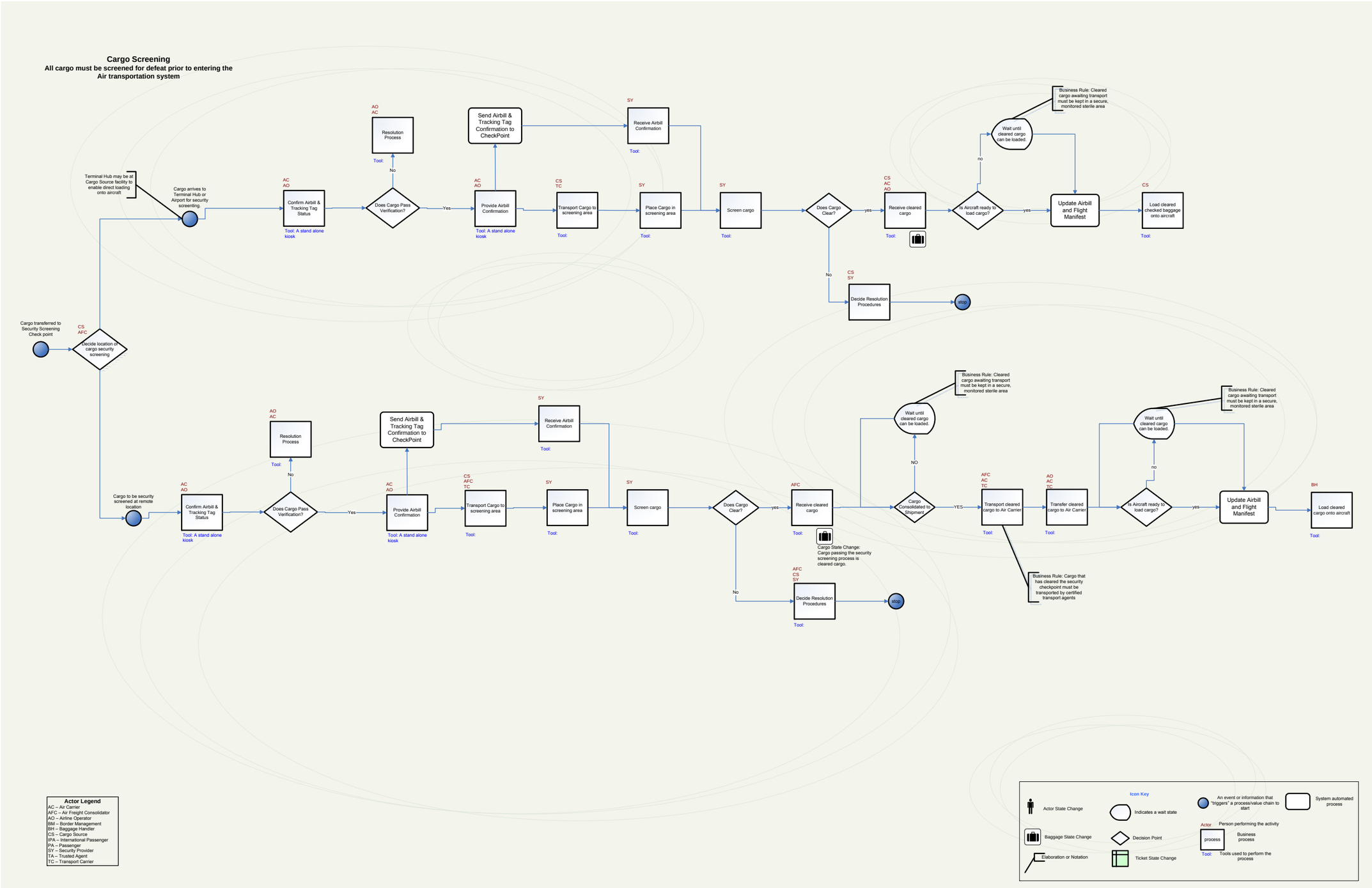
Verify – Establish that a passenger's identify, ensure they are not on a "no fly list", and determine if additional security processes is necessary. This establish their "rights to entry"

Does verify include checking to see if the passenger meet the requirements for a flight? Whether that's international or domestic?

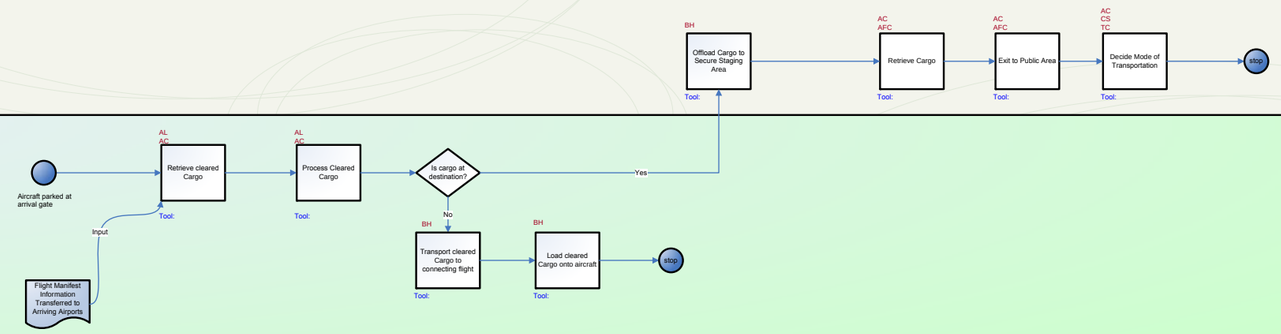
Schedule Shipment

A cargo source must schedule a shipment prior to cargo drop-off at security screening checkpoint.




Cargo Screening
All cargo must be screened for defeat prior to entering the Air transportation system
Terminal Hub may be at Cargo Source facility to enable direct loading onto aircraft
Cargo arrives to Terminal Hub or Airport for security screenting.
AC AO
Confirm Airbill & Tracking Tag Status
Tool: A stand alone kiosk
Does Cargo Pass Verification?
No
AO AC
Resolution Process
Tool:
Yes
AC AO
Provide Airbill Confirmation
Tool: A stand alone kiosk
Send Airbill & Tracking Tag Confirmation to CheckPoint
CS TC
Transport Cargo to screening area
Tool:
SY
Place Cargo in screening area
Tool:
SY
Receive Airbill Confirmation
Tool:
SY
Screen cargo
Tool:
Does Cargo Clear?
yes
CS AC AO
Receive cleared cargo
Tool:
Is Aircraft ready to load cargo?
no
Wait until cleared cargo can be loaded
Business Rule: Cleared cargo awaiting transport must be kept in a secure, monitored sterile area
yes
Update Airbill and Flight Manifest
CS
Load cleared checked baggage onto aircraft
Tool:
No
CS SY
Decide Resolution Procedures
stop
Cargo transferred to Security Screening Check point
CS AFC
Decide location of cargo security screening
Cargo to be security screened at remote location
AC AO
Confirm Airbill & Tracking Tag Status
Tool: A stand alone kiosk
Does Cargo Pass Verification?
No
AO AC
Resolution Process
Tool:
Yes
AC AO
Provide Airbill Confirmation
Tool: A stand alone kiosk
Send Airbill & Tracking Tag Confirmation to CheckPoint
CS AFC TC
Transport Cargo to screening area
Tool:
SY
Place Cargo in screening area
Tool:
SY
Receive Airbill Confirmation
Tool:
SY
Screen cargo
Tool:
Does Cargo Clear?
yes
AFC
Receive cleared cargo
Tool:
Cargo State Change: Cargo passing the security screening process is cleared cargo.
No
AFC CS SY
Decide Resolution Procedures
Tool:
stop
Cargo Consolidated to Shipment
NO
Wait until cleared cargo can be loaded
Business Rule: Cleared cargo awaiting transport must be kept in a secure, monitored sterile area
YES
AFC AC TC
Transport cleared cargo to Air Carrier
Tool:
Business Rule: Cargo that has cleared the security checkpoint must be transported by certified transport agents
AO AC TC
Transfer cleared cargo to Air Carrier
Tool:
Is Aircraft ready to load cargo?
no
Wait until cleared cargo can be loaded
Business Rule: Cleared cargo awaiting transport must be kept in a secure, monitored sterile area
yes
Update Airbill and Flight Manifest
BH
Load cleared cargo onto aircraft
Tool:
Actor Legend
AC – Air Carrier
AFC – Air Freight Consolidator
AO – Airline Operator
BM – Border Management
BH – Baggage Handler
CS – Cargo Source
IPA – International Passenger
PA – Passenger
SY – Security Provider
TA – Trusted Agent
TC – Transport Carrier
Icon Key
Actor State Change
Indicates a wait state
An event or information that "triggers" a process/value chain to start
System automated process
Baggage State Change
Decision Point
Actor
Person performing the activity
process
Business process
Tool:
Tools used to perform the process
Elaboration or Notation
Ticket State Change

Cargo Arrival – Domestic Airport



Actor Legend
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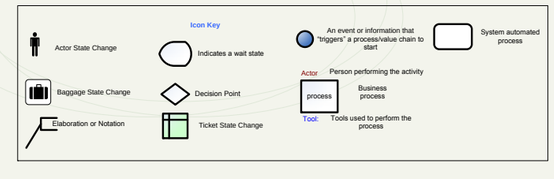

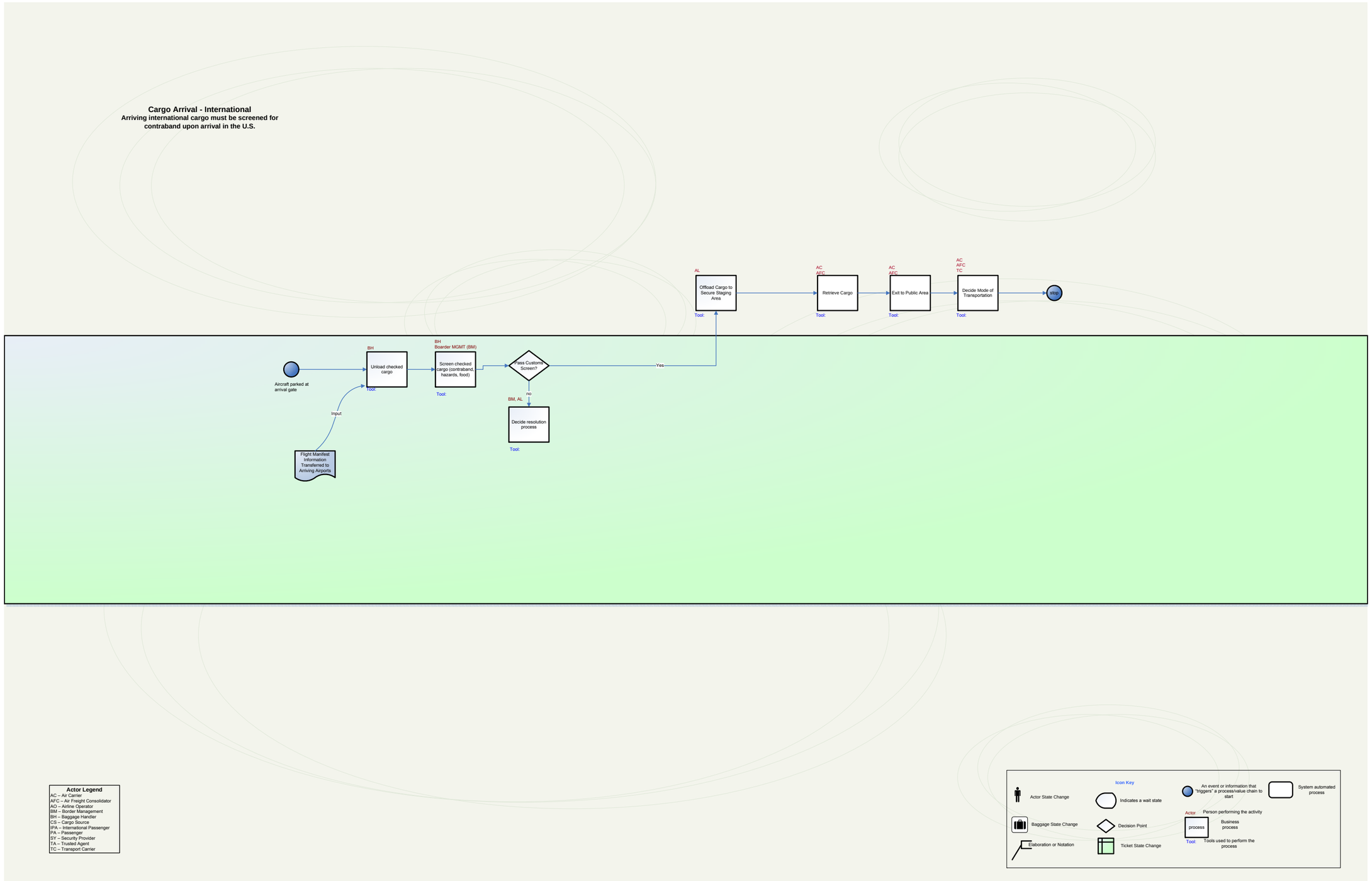
Cargo Arrival - International
Arriving international cargo must be screened for contraband upon arrival in the U.S.
Aircraft parked at arrival gate
BH
Unload checked cargo
Tool:
Input
Flight Manifest Information Transferred to Arriving Airports
BH
Boarder MGMT (BM)
Screen checked cargo (contraband, hazards, food)
Tool:
Pass Customs Screen?
Yes
no
BM, AL
Decide resolution process
Tool:
AL
Offload Cargo to Secure Staging Area
Tool:
AC
AFC
Retrieve Cargo
Tool:
AC
AFC
Exit to Public Area
Tool:
AC
AFC
TC
Decide Mode of Transportation
Tool:
stop
Actor Legend
AC – Air Carrier
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System automated process
Baggage State Change
Decision Point
Actor
Person performing the activity
process
Business process
Tool:
Tools used to perform the process
Elaboration or Notation
Ticket State Change

Curb-to-Curb

Scenario: Cargo Operations

The Thread represents the best-case scenario that is all encompassing. There will be variations on to-be process to accommodate the evolving security and check-in processes.

They are curb-to-block processes, a Cargo Departure thread and a Cargo Arrival Thread.

Thread: Cargo from scheduling shipment to loading an aircraft

Schedule Shipment

A cargo source may schedule shipments months in advance up to the day of flight. The cargo source will determine the method of shipment; a) transport cargo within a network wholly owned by the cargo source, b) transport cargo through an air freight consolidator, or c) select a delivery service to transport the cargo to an air carrier. All cargo must be transported to a security screening checkpoint. The security screening checkpoint may be at a remote location.

1. 0-many Days before

a. Determine Shipment Method

i. Cargo Source uses own network

ii. Select Air Freight Consolidator

iii. Select Delivery Service to Air Carrier

b. Schedule Shipment

i. Cancel Shipment: Cargo Source

ii. Update Shipment: Cargo Source, Air Freight Consolidator

c. Add Airbills and Tracking Tags

i. Data passed to or incorporated into Air Carrier, Airline Operator system

d. Transport Cargo to security screening checkpoint

Cargo Check Point

Also refer to Concepts of Use "Super Density Operations-Landside", "Secure Cargo/Mail" ID 4.4, and "Surveillance Concept of Use

Cargo may be security screened from a Terminal Hub centralized screening facility), at the airport, or at a remote location. All cargo must be screened for defeat of CBRNE devices.

The airbill verification process entails establishes a shipper's identity, the associated shipment airbill, and their flight information. Verification is done via a shipper ID. A shipper may present their credentials (ID) to a kiosk that scans and captures the information. Once the shipper receives a notification, the cargo may proceed through to security.

Airlines and Air Carriers will need to accommodate cargo that arrives prior to passengers, as well as cargo checked in at the airport. Cleared Cargo may be loaded onto the Aircraft from an offsite secure staging area.

Maneuvering through the airport will be highly dynamic and non-linear.

2. 0 to many days before

a. Cargo arrives at Security Screening checkpoint (Airport, Terminal Hub or Remote)

i. Present Airbill & Tracking Tag information

ii. Verify shipment identity "right to entry": Airline Operator, Air Carrier

iii. Send verified shipment right to entry to security checkpoint

b. Cargo scanned for screening. Cargo is screened until it is cleared.

i. If the Cargo is screened three times, and still fails, a Security Provider will remove the cargo for further inspection.

ii. Cargo is screened for CBRNE and weapons

iii. Security is altered to any security violation

c. Cargo may be staged in a secure monitored sterile area (Secure Staging Area).

i. Secure Staging Area may be at a remote location.

(1) Cleared cargo must be transported by certified transport agents

ii. Secure Staging Area Security Operations

(1) Perform anomaly Detection (explosives, drugs)

(2) Analyze anomalies in manifests

(3) Pre-stage security personnel in anticipation of event

(4) Persistent surveillance

3. Day Of Flight

a. Cargo transferred to air carrier

i. Update Airbill & Tracking Tags

ii. Update Flight Manifest

b. Load Cargo on Aircraft

Actions:

- Who runs security checkpoints? (government, security, airline)
- What is the anticipated response to the potential reaction of "over-security", perception of violations of civil liberties and privacy?
- Define requirements for keeping cleared checked cargo in a "cleared" atmosphere.
- Define Authorize, Validate, and Authenticate.
- Define Sterile and Secure areas for domestic and international flights.
- Determine verification process for international shippers.
- Airports & Security need to make a call and come up with a way to resolve on the "Who's allowed in the secure area" question. Are we letting them in or not?
- When will shipment credentials be verified/matched with shipper credentials? At check-in or during the security screening?

Thread: Cargo from gate to exiting landside.

Global Harmonization would bring cleared cargo into the US from foreign countries. If an International shipment comes from a country not participating in Global Harmonization, security screening and credential verification will be necessary. Non cleared arriving flights will be subjected to security screening and custom processes. Prior to arrival, the international cargo manifest was relayed to the destination airport. After exiting the aircraft, the international cargo proceeds through a security screening. The checked cargo proceeds to be screened for artifacts (i.e. drugs, guns fruit). If the checked cargo clears screening, they will be transferred to the receiving shipper or ground transporter.

1. Aircraft arrives at any gate (no need for distinction between domestic or international)

a. Shipment Manifest has already been verified from the aircraft and relayed to arrival airport

2. Cargo exits to the Aircraft:

a. Domestic:

i. IF connecting, THEN proceed to new gate

ii. IF airport is final destination THEN proceed to Secure Staging area

b. International

i. Cargo goes through screening process (drugs, guns, fruit, contraband etc)

ii. IF connecting, THEN proceed to new gate

iii. IF airport is final destination THEN proceed to Secure Staging area

3. Cargo transferred to receiving shipper or ground transporter

4. International Cargo

a. Perform manifest validation and customs screening:

b. Analyze anomalies in manifests

c. Pre-stage security personnel in anticipation of event

d. Persistent surveillance

Actions:

- Process and requirements for screening international arriving cargo.

o Currently TSA doesn't have the technology to screen arriving cargo. Should they screen arriving cargo?

o What does the cargo screening check for? i.e. chemical/biological.

- Determine if/when International cargo is screened for international connections.

Definitions

CBRNE- Chemical Biological Radioactive Nuclear Explosive

Check-In – Airline and Passenger establish contract to fly.

Check Point- Location where Security Screening Process is conducted

Credentials- Form of identification (i.e. biometrics, passport) that establishes your identity, and trust. Credentials are verified at Security Check Points.

Luggage

- Checked Baggage/Luggage – Checked separate from persons
- Accessible baggage/luggage: Items the passenger carries with them onto the aircraft

Radio Frequency Identification (RFID) - A key that identifies an owner and connects checked baggage to the owner.

Remote (remotely) - A location not on airport property.

Secure Staging Area – An area that cargo is authorized to enter following the screening process

Sterile Area- An area that clear passengers are authorized to enter following the screening process.

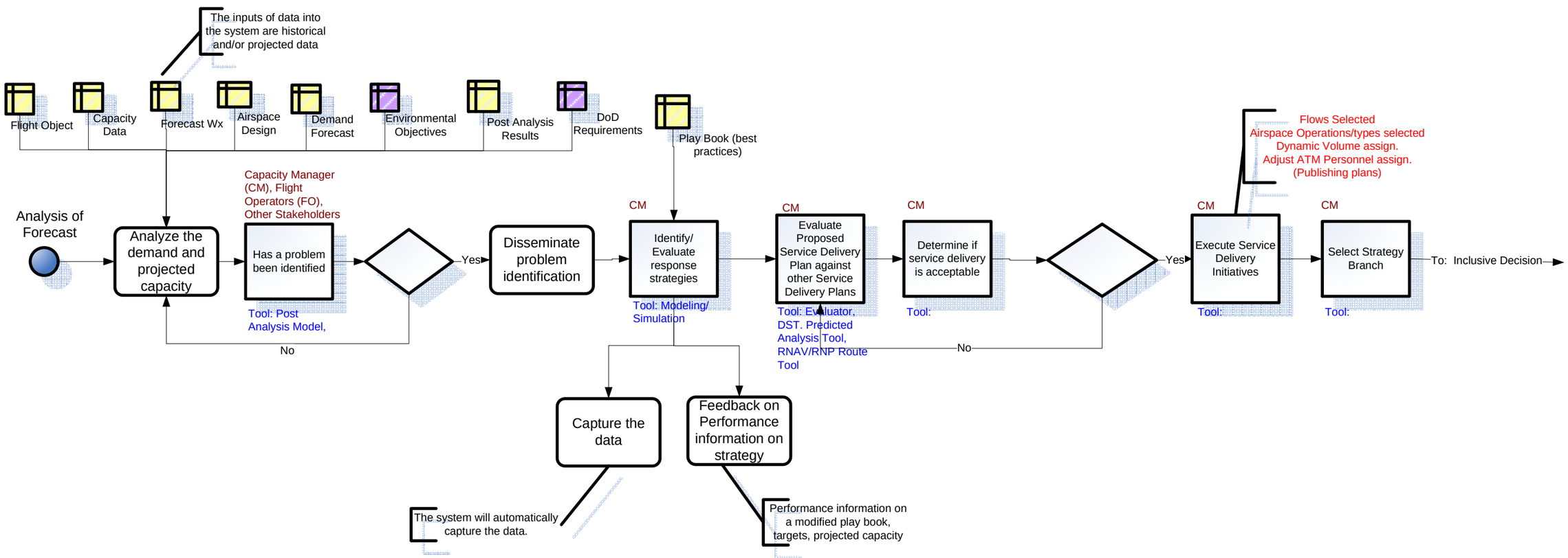
Terminal Hub- Centralized facility that passengers may check-in (including baggage) and go through security screening prior to secure transport to an Airport to board a flight.

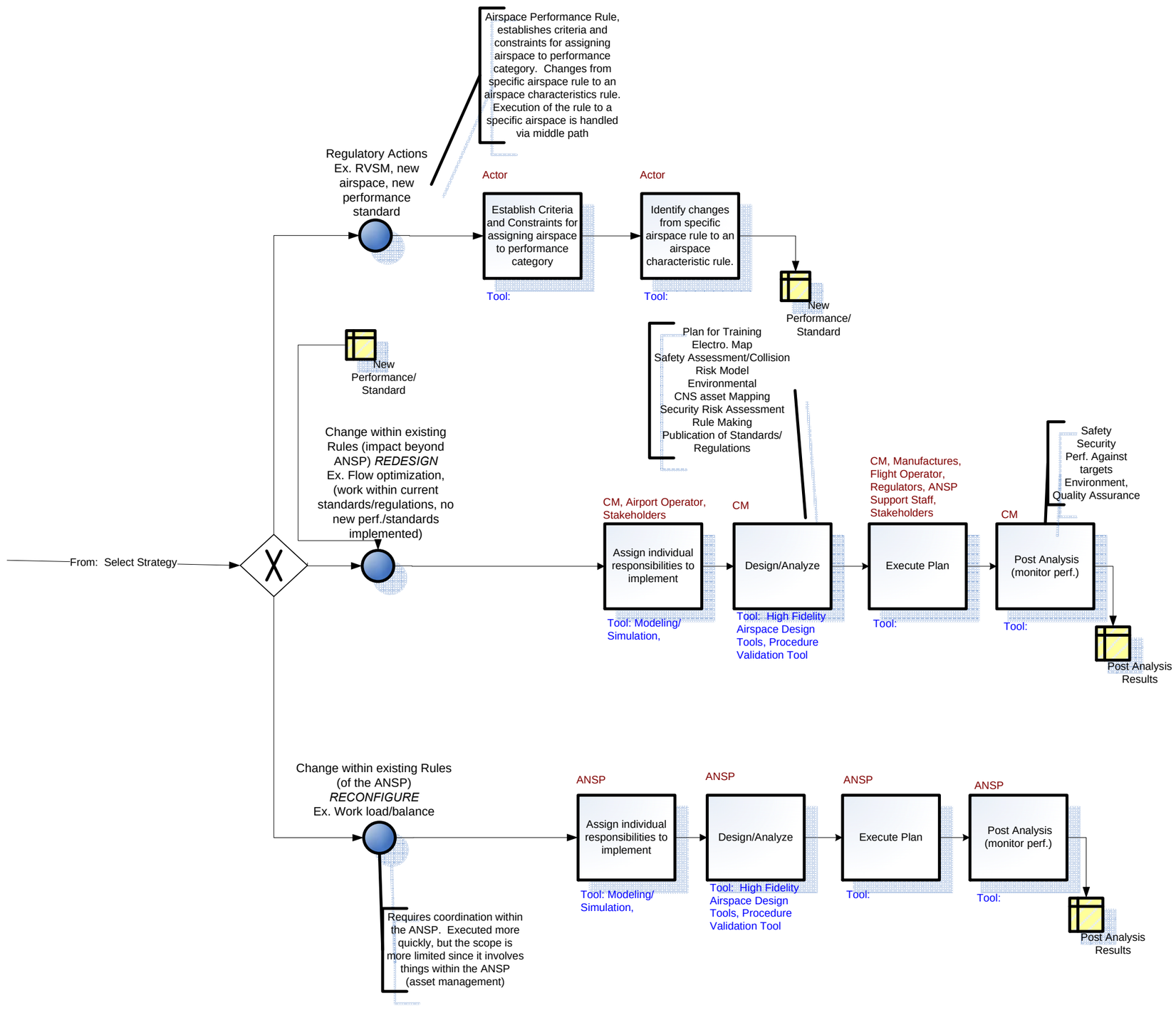
Trusted Travel Card- A speed-pass card that allows regular passengers quick check-in. They have had biometric information and background check prior to reservation.

Tunnel of Truth- Security Screening system that detects CBRNE and explosives. The information is relayed to Security Providers in real time.

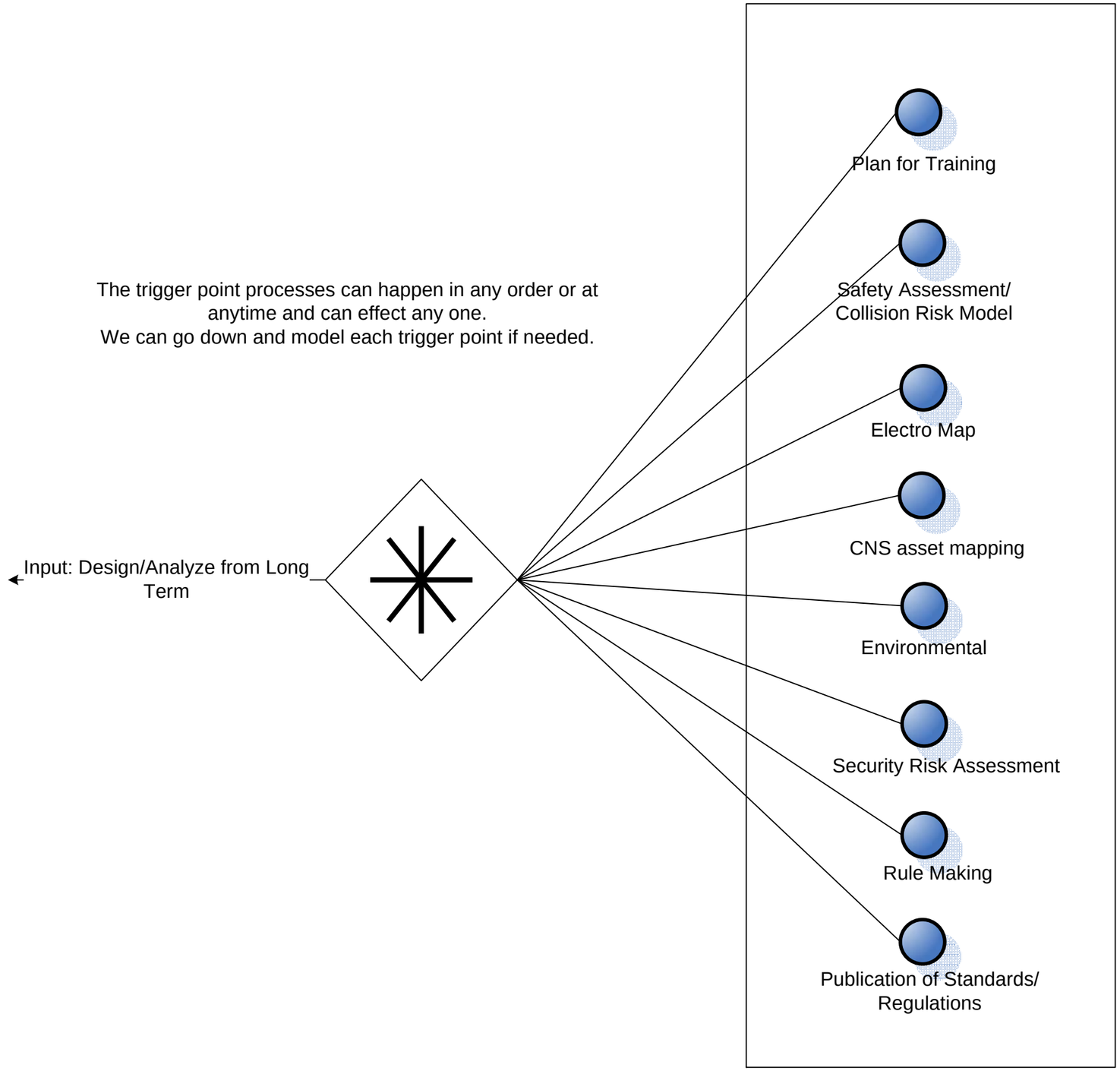
Scenario Name: Long Term
Scenario Thread Name: Long Term Planning and Designing
(Planning/Designing capacity (long-term generalized design for surface and airborne operations)

*Reflects the intent to change the constraints




Airspace Performance Rule, establishes criteria and constraints for assigning airspace to performance category. Changes from specific airspace rule to an airspace characteristics rule. Execution of the rule to a specific airspace is handled via middle path
Regulatory Actions Ex. RVSM, new airspace, new performance standard
Actor
Establish Criteria and Constraints for assigning airspace to performance category
Tool:
Actor
Identify changes from specific airspace rule to an airspace characteristic rule.
Tool:
New Performance/ Standard
Plan for Training
Electro. Map
Safety Assessment/Collision Risk Model
Environmental
CNS asset Mapping
Security Risk Assessment
Rule Making
Publication of Standards/ Regulations
New Performance/ Standard
Change within existing Rules (impact beyond ANSP) REDESIGN Ex. Flow optimization, (work within current standards/regulations, no new perf./standards implemented)
From: Select Strategy
CM, Airport Operator, Stakeholders
Assign individual responsibilities to implement
Tool: Modeling/ Simulation,
CM
Design/Analyze
Tool: High Fidelity Airspace Design Tools, Procedure Validation Tool
CM, Manufactures, Flight Operator, Regulators, ANSP Support Staff, Stakeholders
Execute Plan
Tool:
Safety
Security
Perf. Against targets
Environment,
Quality Assurance
CM
Post Analysis (monitor perf.)
Tool:
Post Analysis Results
Change within existing Rules (of the ANSP) RECONFIGURE Ex. Work load/balance
Requires coordination within the ANSP. Executed more quickly, but the scope is more limited since it involves things within the ANSP (asset management)
ANSP
Assign individual responsibilities to implement
Tool: Modeling/ Simulation,
ANSP
Design/Analyze
Tool: High Fidelity Airspace Design Tools, Procedure Validation Tool
ANSP
Execute Plan
Tool:
ANSP
Post Analysis (monitor perf.)
Tool:
Post Analysis Results

The trigger point processes can happen in any order or at anytime and can effect any one.
We can go down and model each trigger point if needed.



Long Term Planning and Designing

Thread Name: Long Term Planning and Designing

Policy/Research Issues:

1) How do you allocate a capacity forecast?

2) The allocation of access among all customers/users (flight operators – GA, airlines, DoD)?

(Pre-operational access and post operational access in the system)

2a) How do you manage new entrants into a saturated market?

3) How do you protocol allocation?

4) Do any policy's need to be changed to do long term planning to make it more effective? FAA Policies, Airline Policy's

5) Any decision of where information could tip the balance for flight operators need to be secure.

6) How to make and hold multi-party, short and long term commitments.

Reference Documents: JPDO Concept of Operations for the Next Generation Air Transportation System, version 0.2, July 2006

Scenario Authors:

Role:	Name:
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Narrative Author's	Wendy Humbertson
	Bill Nix
SME's	Debbie Kirkman
	Michele Merkle
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	Steve Foose
	John Sorensen
	Brian Bagstad

Scenario Summary:

Goal: Trying to match the capacity to meet demands in the longer term. Streamline the design, test, and the execution of the systems solutions.

Description: This scenario for Long Term Planning and Designing is based on a forecast analysis. In the current and mid term timeframes it is seen as the planning aspects could take months to years to execute. In the NextGen 2025 timeframe, the planning and executing would be minimized. More automation will be used along with more collaboration between the stakeholders to be able to execute the plans in a shorter timeline.

Actors:

Actor Name	Actor Description
Capacity Manager	Design and strategically allocate airspace. Dynamically adjust the assignment of airspace to tactical separation providers. Structure routings (air and ground) where required, and flexibly allocate airspace for other purposes including the operation of state (government) aircraft
Flight Operator	The flight crew, individual pilot or automata responsible for the control of an individual aircraft while it is moving on the surface or airborne.
Manufactures	Organizations and people that manufacture equipment for flight operators, ANSPs, security and defense providers, etc. This includes the manufacture of airframes, aircraft engines, avionics, and other aircraft systems and parts, as well as decision support systems and other systems used in the NextGen.
Regulators	Organizations and people responsible for certain aspects of the overall performance of the aviation industry, including aviation safety, environmental impact and international trade. Regulatory authorities include aviation safety regulators, certification authorities, standardization organizations, environmental regulators, and accident/incident authorities.
ANSP Support Staff	
Airport Operators	Organizations and people responsible for enabling passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, resource limitations, and local environmental issues.
Stakeholders	The stakeholders could include the following: Airport Communities, Airport Operators, Airport Tenants, ANSP, Customers, FO, Manufacturers, Regulatory, Security and Defense Providers, Weather Service Providers.

Tools/Capabilities:

Tool Name	Tool Description
Modeling and Simulation	
Post Analysis Model	
Decision Support Tools (DST)	Tools used to support a decision
RNAV/RNP Route Tool	
Predicted Analysis Tool	
Evaluator	
High Fidelity Airspace Design Tool	
Procedure Validation Tool	

Inputs/Constraints:

- Historical/Projected Capacity Data – The historical or projected capacity is the past maximum number of aircrafts that have been accommodated in a given time period by the system or one of its components.
- Historical/Projected Forecast Weather – Historical or projected weather forecast for particular sites (i.e., surface weather data) and airspace.
- Historical/Projected Airspace Design
- Historical/Projected Demand Forecast (future plans) – This includes all DoD and non-DoD aircrafts that used the ATM system in any given time period.
- Projected Flight Object Data – The Flight Object data includes DoD and non-DoD specific instances of a flight.
- Play Book (best practices)
- Standards/Regulation
- Post analysis results
- New Performance/Standard
- Constraint: Environmental Objectives
- Constraint: DoD Requirements – This could include SUA(s), restricted routes, etc.

Assumptions (Pre-Conditions):

- Trajectory Based Profiles
- Flight Operators will provide planning information to the system, further in advanced than today.
- More Flight Operators are enable to provide advanced information.
- In Far term there will be more automation and applications performing the process.
- In 2025 there will be agents negotiating.
- Ground based navigation will no longer exist.
- Being able to gather and perform analysis of the information (inputs) within minutes.
- The policy in how it would be applied is understood by all players.

Process Steps:

Trigger: Analysis for Forecast

- Analyze the demand and projected capacity: (automation) - Identify and bench mark the capacity on a continual basis.
- Has a Problem been identified?

- If Yes: Then go to disseminate/share problem
- If No: Then back to analyze the demand and projected capacity
- Disseminate/Share problem Identifications: (automation) The system will then output the problem to the Stakeholders or other system operators (i.e., Airports, ANSP). The system can identify new requirements.
- Identify/Evaluate response strategies: The Capacity Manager will evaluate all the strategies by using modeling and simulation type tools and working with the Stakeholders. The output will provide feedback for the Stakeholders on the performance of each strategy (e.g. projected capacity, proposed flow alternatives, set performance targets, identify the need for a transformational change (e.g., research)) The system will automatically capture the information.
- Alternatives: there are more than 1 plan that can be implemented – mutually supported family
- Evaluate Proposed Service Delivery Plan against other Service Delivery Plans: The Capacity Manager will use the system to compare/analyze the proposed service delivery plan against other service delivery plans.
- Determine if Service Delivery is acceptable
- Execute Service Delivery – Training for the new service delivery. Publish the date that the change would come into effect.
- Select Strategy Branch to Implement: Inclusive decision
- Regulatory Actions – This may have a close link to a New technology or may not. Airspace Performance Rule, establishes criteria and constraints for assigning airspace to performance category. Changes from specific airspace rule to an airspace characteristics rule. Execution of the rule to a specific airspace is handled via the redesign (change within existing rules beyond ANSP).
- Establish criteria and constraints for assigning airspace to performance category:
- Update specific airspace rule to an airspace characteristic rule:
  - Output: New Performance/Standard – the output will feed into the redesign process in order to be executed.

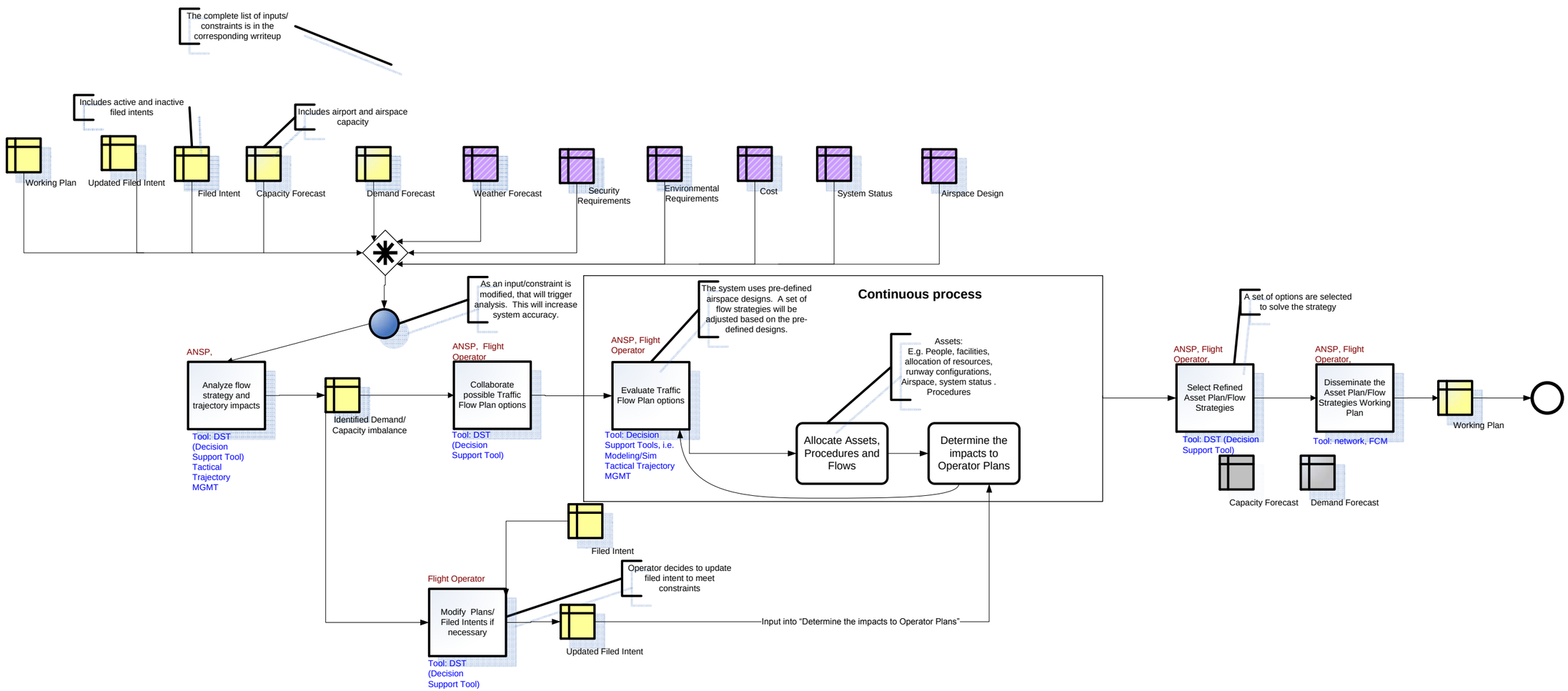
Special Note: Below is the process within the redesign (change within existing rules beyond ANSP). The idea was to be able to supply more detail about the process once it is in the execution phase so the detail does not get lost in the process.

- Allocate the implementation of the strategy elements – The Capacity Managers, Airport Operator, or Stakeholders could allocate new minim performance requirements, regulations/rules, policies, new technologies.
- Design/Analyze – The system and Capacity Manager performs an iterative process before the plan can be executed. The system could design/analyze new specification for avionics/ground systems , new master airspace design, new routes, new runway, different ways to disseminate/receive and use new navigational data (automation instead of paper), new procedures, new facility, new system, new technologies, on condition rules. The automation will determine whether it is static or dynamic and the triggers for implementing if it is dynamic, what is the condition.
- Execute Plan – The Stakeholders will execute the plan. Based on the following possible outputs: technologies, procedures, new training(familiarizatio n) requirements, change in communication structure, interaction with users, documentation (updates to operational orders, charts), international standards, flight standards.
- Post Analysis – The Capacity Manager will test against the targets set. The post analysis results will become inputs into the process.
- Change within existing rules (requires design & development) (redesign) (impact beyond ANSP) – This activity could take weeks to years to implement. (e.g., new master airspace design, new RNP routes into an airport, opening a new runway) No change in regulation, but require major design work.
- Allocate the implementation of the strategy elements – The Capacity Manager, Airport Operators, or Stakeholders could be involved in the implementation of the strategies.
- Design/Analyze – The system and Capacity Manager will perform an iterative process of design/ analyzing multiple solution for output such as a new master airspace design, new routes, new runway, different ways to disseminate/receive and use new navigational data (automation instead of paper), new procedures, new facility, new system, new technologies.
- Execute Plan - Training (in-house and out), interaction with users, documentation (updates to operational orders, charts. Some transformational items that could come out of the plan is documentation done with automation instead of paper, could move airspace to the people (across facilities), new technologies.
- Post Analysis - The Capacity Manager will test against the targets set. The post analysis results will become inputs into the process.
- Change within existing rules (of the ANSP) (refine a predefined play book) (reconfigure) - Requires coordination within the ANSP. Executed more quickly, but the scope is more limited since it involves things within the ANSP (asset management) (e.g., minor modification to staffing, airspace). Timeframe: 5 + days
- Allocate the implementation of the strategy elements – The ANSP could be involved in the implementation of the strategies. Modeling and simulation could be used to reconfigure the sector plan or schedules. Possible outputs of the modeling/simulation are airspace alternatives, schedules, TMI's, staffing changes
- Design/Analyze – The system and the ANSP will perform an iterative process before the plan can be executed
- Execute Plan - Communicate the decision, then implement
- Post Analysis - The ANSP will test against the targets set. The post analysis results will become inputs into the process.

Transformational Elements to highlight:

- Scaleable/flexible dynamic airspace that meets the needs of customers
  - The flow will be managed on a daily basis, match the provision of airspace based on forecasted flows. Airspace is generic so that it can be worked at anytime, anyplace. Can reconfigure airspace dynamically based on demand and you can optimize the delivery of needed airspace.
- Strategies:
  - Flow Corridors – don't have to be restricted flow corridors. Increase the number of non-interfering RNAV routes.
  - Controller assets from different facilities
  - System sets up communication (data and voice) and surveillance
- Solutions
- Inputs (constraints)/Outputs
- Time line to execute
- Enabling process are improving (regulatory process)
- Process more timely (regulatory process)
- Rule Making is not tied to specific airspace. Rule Making is tied to airspace conditions and establish the inputs and constraints.
- Annual proficiency training (familiarization) of airspace.
- If the procedure meets the certification then the procedure will be able to be used.
- The flight procedures is submitted into the system to be tested/analyzed against the standard criteria. If it meets the standard criteria then the procedure/ standard can be utilized. Timeframe: 2 day per procedure
- Being able to gather and perform analysis of the information (inputs) within minutes.
- Technologies
  - Different ways to disseminate/receive and use new navigational data (automation instead of paper)
  - New Systems
  - Change in communication structure
  - New tool to uplink RNAV routes with CTA
  - New tool to do merging sequencing and spacing to and from multiple airports

Scenario Name: Short-term Airspace
Scenario Thread Name: Capacity/Flow Contingency Management



Short-term Airspace

Scenario Thread Name: Capacity/Flow Contingency Management

Reference Documents: JPDO ConOps Ver 0.2, Air Navigation Service Operations

(2-1).

Transformational processes:

The system will disseminate broadcast alerts to the COI when contentions can not be resolved.

Policy/Research Issues:

- How often in the t-120 are we going to update the 4DT? Continually or daily?
- Determining the complex algorithms involved.
- The ANSP assigned to manage airspace will need to have appropriate training.

Scenario Authors:

Role:	Name:	Contact Info:
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Scenario Thread Summary:

Goal: The ANSP and Flight Operator collaborate to disseminate a working plan to the Community of Interest (COI) five days to the day of flight, and during flight execution .

Description: The system will continuously monitor for modifications or events that may impact established performance targets. The ANSP and the Flight Operators work in partnership to ensure that performance targets are met, although not all performance targets will be satisfied. The ANSP will forecast an issue, followed by through analysis to determine a solution to implement that answers the issue with the least amount of impact to the overall system; the goal to reach performance targets, although not all performance targets will be met. The enterprise always the ANSP and Flight Operators to have all information accessible for collaborative decision making.

If a modification impacts the system reaching performance targets, a capacity or demand imbalance is identified for further analysis and action. the ANSP must Plan/replan the traffic flow. Not all performance objectives will be met. The ANSP has information at hand to pull for airspace flow and asset allocations. The ANSP inputs the parameters (constraints and data) into the system. The process of allocating flows and assets is largely a system automated process, however, the ANSP and Flight Operators are continuously involved in the process. The system, based on the provided parameters, will allocate airspace and flows to maximize capacity operations. Assets, i.e. resources, facilities, or anything that is needed to manage the allocated airspace and flows, will be automatically assessed by the system and allocated based on the airspace/flow distribution/adjusts. Filed intents are taken into consideration prior to implementing any airspace allocations. If the proposed airspace/flows contend with the filed intent, the system will suggest an alternative airspace/flow plan. The Air Navigation Service Provider (ANSP) and the Flight Operator continuously collaborate in order to implement a working plan that will meet performance targets to maximize airspace use.

Actors:

Actor Name	Actor Description
ANSP	Air Navigation Service Provider
Flight Operator	Individual or org. that directly or indirectly operates an aircraft (including selecting flight trajectories and strategic objectives).

Tools/Capabilities:

Tool/Capability Name	Tool Description
Simulation and Modeling	Tools that support modeling and simulation
FCM	Flow Contingency Management
Decision Support Tools	
Tactical Trajectory Management	

Inputs/Constraints

- Performance Targets
- Equity Rules
- Policy Rules
- Surveillance Information
- ANSP System Status
- Airport systems status
- Security Risks (status info.)
- Demand Forecast
  - Aerodrome capacity
  - Historic data
  - Intended operations, military, weather, airport opening)
- Procedures
- CNS/ATM –Constraint and mechanism
- Set Targets (performance targets)
- Standards (RTSP)/Rulemaking
- Environmental Objectives
- Fleet Forecast/Characteristics
- Wx Long-term/short-term
- Equity and Access Rules
- ANSP "Management" Objectives
- Flight Operator Intentions (Filed Intent)
- Special Security Event information (9-11, security incident)
- Airport Capacity
- Airspace Design

Assumptions (Pre-Conditions):

- The ANSP's allocated resources have the necessary training for the airspace(s) that they will be assigned to.
- Airspace Design had been established

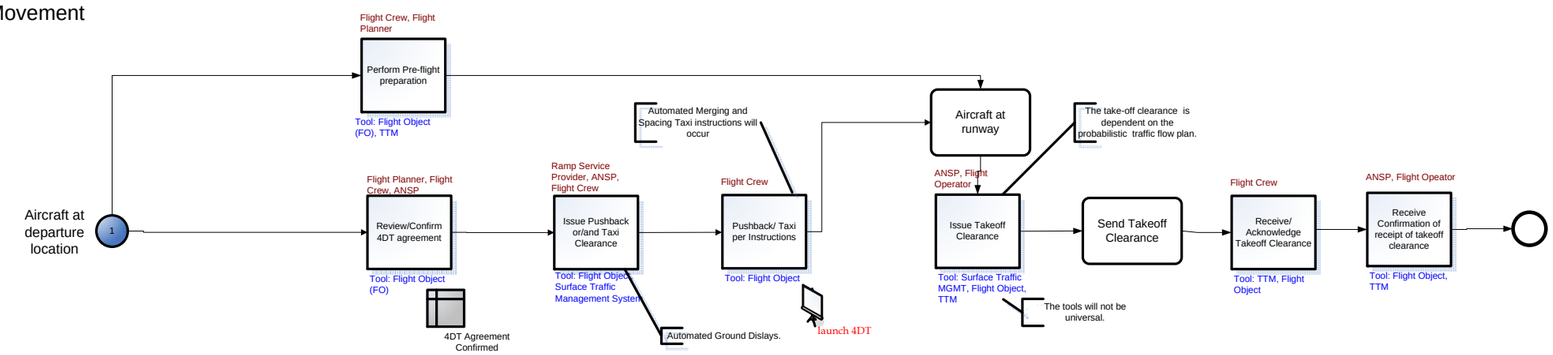
Process Steps:

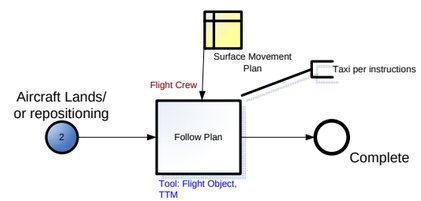
1. Trigger: As an input/constraint is modified, that will trigger analysis.

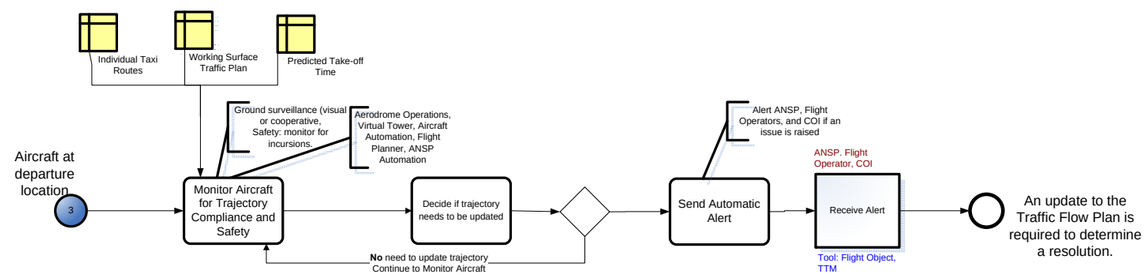
2. Analyze flow strategy and trajectory impacts- Based on the inputs, a forecasted problem is identified. ANSP has a "tool box" (a set of solutions) that could be applied to the forecasted problem. Through modeling/ simulation of scenarios, the ANSP will determine the overall system impact prior to implementing a solution. An output of the process is an Identified Demand/ Capacity Imbalance

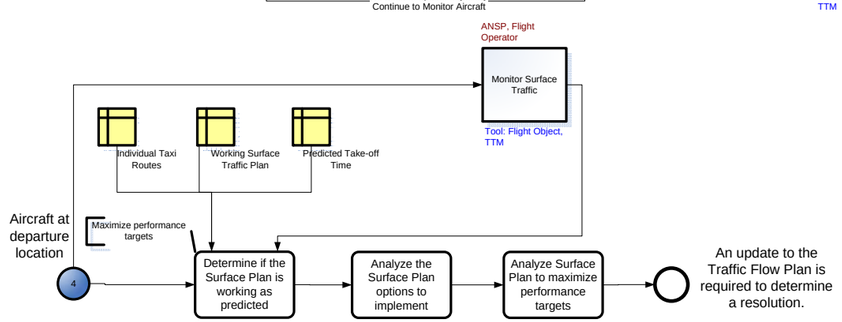
- Modify Plans/Filed Intents if necessary- The Flight Operator, with access to the appropriate information, will be able to foresee a possible impact that would require a filed intent modification. They will have the opportunity to take a pro-active approach and update the filed intent(s) to meet performance targets. The Flight Operator may not always be able to modify their trajectory. Any updated filed intents may be accessed by ANSP
- Collaborate possible Traffic Plan options-The ANSP and Flight Operators, with the aid of decision support tools, will discuss the possible Traffic Flow plans that could be implemented to reach performance targets
- Evaluate Traffic Flow Plan options: The ANSP, and Flight Operators with the aid of decision support tools, will analyze possible options to implement.
- Allocate Assets, Procedures and Flows- The system will allocate assests, procedures, and flows to optimize the Traffic Flow Plan options selected.
- Determine the impacts to Operator Plans- The system, based on the allocated assets (e.g. people, facilities, allocation of resources, runway configurations, airspace, system status), procedures, and flows, will determine what impacts, if any, are applicable to Flight Operator's Plans
- Select Refined Asset Plan/Flow Strategies- The ANSP and Flight Operator will select refined asset and flow strategy plan based the analysis done in evaluating the traffic flow plan options. The capacity forecast and demand forecast are both impacted by the set of options selected.
- Disseminate the Asset Plan/Flow Strategies Working Plan- The ANSP and Flight Operator will distribute the Working Plan to the Community of Interest with a need to know.

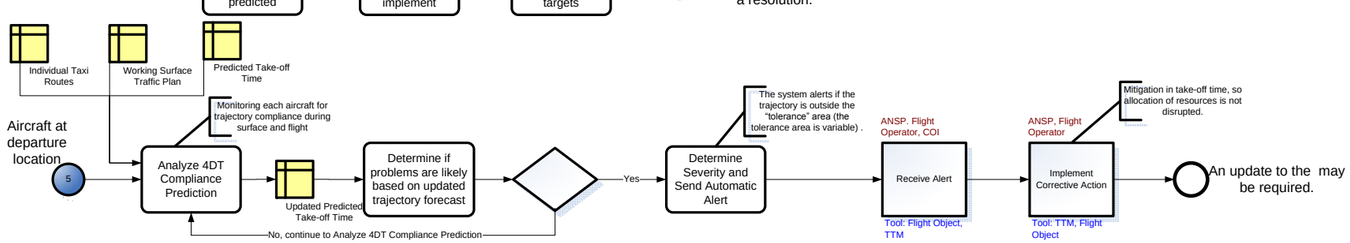
Surface Movement



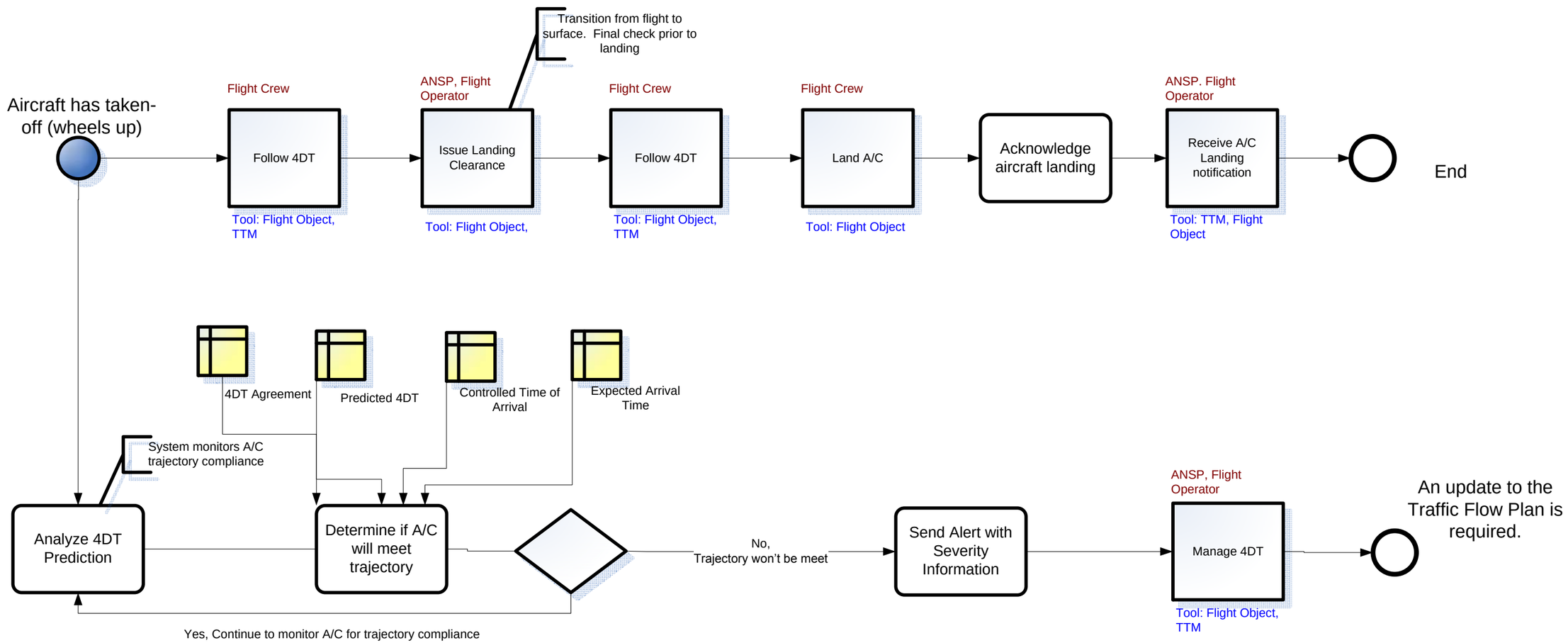








Flight Operations-
Trajectory based operations during flight



Short-term Airspace

Scenario Thread Name: Surface Movement

Policy/Research Issues:

Reference Documents: JPDO ConOps Ver 0.2, Air Navigation Service Operations

(2-1).

Transformational Processes:

Scenario Authors:

Role:	Name:	Contact Info:
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Scenario Summary:

Goal: The goal of this scenario is the safe and efficient movement of surface traffic in and around an aerodrome.

Description:

This scenario illustrates the temporal flow of information related to the departure of a highly capable aircraft from a large from a large aerodrome in 2025. Four Dimensional Trajectory (4DT) operations with minor dynamic re-planning is the normal operating flight procedure. Flight information that is germane to the flight (Flight Object) is automatically exchanged with operational nodes through an extensive information network, permitting selective access to multiple users based on security clearance and need-to-know. The Air Navigation Service Provider (ANSP) entity will have system-wide situational awareness and full trajectory management responsibility. The surface movement is monitored for efficient and safe operations. The ground traffic incorporates arriving and departing aircraft, in addition to the everyday surface traffic required for running an aerodrome. The aircraft will have the ability to operate without ground visibility.

The system will monitor for aircraft compliance and safety, efficient surface operations, and on 4DT compliance prediction. Monitoring aircraft for trajectory compliance and safety is a system automated process that accesses if an event will require a trajectory

The system will determine if the Surface Traffic Plan is working as predicted by continuously monitoring the surface traffic to meet performance targets. Not all performance targets will be met, but Depending on the issue , i.e. a tire dropping on the runway, the system will automatically accommodate an event without a detrimental system impact (i.e. a tire dropping on the runway and negotiating traffic around until it can be picked up.) If the aircraft is entering tightly constrained airspace, it may have to re-negotiate the trajectory prior to traversing that airspace, or taking-off.

Updates to the 4DT are collaborated between Flight Operator, ANSP, and the Flight Crew prior to implementation.

Actors:

Actor Name	Actor Description
Flight Crew	Responsible for the control of an individual aircraft while it is moving (either on the surface or while airborne). Under autonomous operations, responsible for separation. Visual Flight Rules flight crew is responsible for separation
Flight Operator	The organization or person responsible for scheduling, planning, and directly operating the aircraft. Roles within the flight operator include the flight scheduler, flight planner, and flight crew, and may reside with one individual or be relegated among separate individuals.
Air Navigation Service Provider (ANSP)	Used generically, ANSP refers to the organization, personnel, and automation that provide Air Traffic Management (ATM); Communications, Navigation, and Surveillance (CNS) services; meteorological services for air navigation; aeronautical information; infrastructure management; aviation information; landing; airspace management; or aviation assistance services to airspace users.

Tools:

Tool Name	Tool Description
Surface Management Tool	
Tactical Trajectory MGMT	
Flight Object	

Inputs/Constraints:

- Individual Taxi Routes
- Working Surface Traffic Plan
- Predicted Take-off Time
- Surface Movement Plan
- Surveillance
- Security Requirements
- Environmental Requirements
- Airport Configuration (which runways are active, etc.)

Assumptions (Pre-Conditions):

The conditions that must be in place prior to the execution of this scenario are:

- Aircraft is in compliance with its agreed 4DT.
- Traffic Management Initiatives (TMIs) and Aerodrome operational constraints are incorporated into the 4DT.
- The aircraft's security/safety value has been calculated and it is acceptable.
- RTSP level has been established for the aerodromes, applicable airspace, aircraft and crew.
- An adequate probabilistic weather analysis and forecast, along with an analysis of other factors which can affect the flight trajectory such as pollution and noise considerations, has been completed and has been distributed via the Information Collector/Disseminator (Network Automation).
- The Aircraft is equipped for Equivalent Visual Operations, and a sufficient percentage of other aircraft at the airport are also equipped for EVO.
- Aerodrome Operations (Aerodrome Operations Manager) ensures the operational readiness of the aerodrome and operates aerodrome maintenance, as required.
- ANSP (Capacity Manager) has determined the airspace and route structure for the flight.
- The ANSP (Air Traffic Manager) has identified the Aircraft.
- Aircraft has the capabilities to perform trajectory-based operations

Process Steps:

Trigger: A/C at departure location at the Aerodrome. This triggers simultaneous value chains:

1. First Value Chain

- Perform Pre-flight Preparation: ANSP, Flight Planner, and Flight Crew perform pre-flight checklists, i.e. weight/balance, passenger list, in preparation for aircraft departure. This is a continuous process until the Flight Crew has reached the runway and is issued their take-off clearance.
- Review/Confirm 4DT Agreement: Flight Planner, Flight Crew, ANSP- The Flight Crew reviews the 4DT Agreement and confirms the 4DT Agreement with ANSP. The 4DT Agreement is confirmed.
- Issue Pushback and Taxi Clearance: ANSP,Flight Crew, Ramp Service Provider- The Ramp Service Provider issues pushback (if necessary), and the ANSP establishes and transmits the taxi clearance. The pushback and taxi clearance information is transmitted to the Flight Crew. The 4DT is opened (activated) and the Assent portion for the 4DT agreement is performed.
- Pushback/Taxi per instructions: The Flight Crew will taxi via the 4DT/instructions. Automated merging and spacing taxi instructions will be implemented.
- Aircraft at Runway: once the aircraft reaches the runway, the system will automatically notify ANSP and Flight Operators.
- Issue Takeoff Clearance: the automatic notification that the aircraft has reached the runway, will trigger

the ANSP and the Flight Operator to issue a takeoff clearance.

- Send Takeoff Clearance- The system automatically sends the takeoff clearance to the Flight Crew.
- Receive Takeoff Clearance- The Flight Crew receives the takeoff clearance and acknowledges receipt. The Flight crew proceeds per the trajectory.
- Receive Confirmation of receipt of takeoff clearance- The ANSP and Flight Operator receive a confirmation message once the Flight Crew acknowledges receipt of the takeoff clearance.

2. Second Value Chain

Trigger: Aircraft Lands/or repositions

- Follow Plan- The Flight Crew will adhere to the Surface Movement Plan set forth by ANSP and Flight Operators for safely moving around the aerodrome.

3. Third Value Chain

Trigger: Aircraft at departure location

- Monitor Aircraft for Trajectory Compliance and Safety- The system will continuously monitor the A/C for compliance against their agreed trajectory, their assigned individual taxi route, predicted take-off time, and the working surface traffic plan.
- Decide if trajectory needs to be updated- The system will determine if performance targets cannot be meant.
- If trajectory needs to be updated then the system will Send an Automatic Alert- if an issue is raised that will affect trajectories, an alert is sent to ANSP, Flight Operators, and the COI.
- Receive Alert- The ANSP, Flight Operator receive the alert and further analyze the best action plan by refining the Traffic Flow Plan and trajectories.
- The completion of this value chain will be an input to the Flow Contingency MGMT and Tactical Trajectory MGMT thread

4. Fourth Value Chain

Trigger: Aircraft at departure location

- Analyze 4DT Compliance Prediction- The system will continuously monitor the aircraft ,on the surface and in the air, for adherence to the established trajectory and the probability of the aircraft meeting the trajectory. The Predicted Take-off Time is updated, and will have increased accuracy as the time to take-off decreases.
- Determine if problems are likely based on updated trajectory forecast-
- The system will determine if the trajectory forecast will affect the trajectory.
- Yes, if problems are likely, then the system will Determine the Severity and Send an Automatic Alert- The system will send an alert if the trajectory is predicted to be outside of the tolerance area; the tolerance area is variable.
- No, if problems are not likely, then the system will continue to Analyze 4DT Compliance Prediction.
- Receive Alert- The ANSP, Flight Operator, and the COI with a need to know, will receive the automatic system alert with the level of severity.
- Implement Corrective Action- The ANSP and the Flight Operator will review options and implement a corrective action that will not disrupt resource allocations.
- Based on the corrective action implemented, the completion of this value chain ,an update to the Flow Contingency MGMT and the Tactical Trajectory MGMT may be necessary.

Notes

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CATEGORY
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215/18
S-LOC 1
480/24
465 (500-½)
620-1
660-1
150
180

4.8 Appendix H - SV-5H

To assist Stakeholder Communities of Interest in aligning the NextGen EA activities to their respective architectures and Capital Investment Plans, JPDO has deviated from the standard SV-5, Operational Activity to System Function format prescribed by DoDAF. The NextGen SV-5Hybrid relates Operational Activities to the Stakeholder Investments. These investments include not just material investments in systems and functions, but also non-material investments such as policy, process, and technology. This format is consistent with the JPDO mission and the NextGen EA objective to provide guidance to stakeholders in making investments that will develop the capabilities required to achieve the NextGen Vision.

Audience

The SV-5Hybrid is intended for use by JPDO and Stakeholder Architects and Portfolio Management Analysts. Stakeholder Program Managers and Systems Engineers may also find the SV-5H useful in tracing their programs capabilities to the NextGen EA Operational Activities

Utility

By relating NextGen EA Operational Activities to Stakeholder Investments, the SV-5Hybrid describes the key relationships between Stakeholder Capital Investment and NextGen Capabilities.

Maturity

The NextGen EA, Version 2, Operational Activity to System Function Traceability Matrix reflects the current level of understanding of the Operational Activities and Stakeholder investment plans. As the NextGen EA, Version 2, is reviewed by working groups and socialized among stakeholders, it is likely that operational activities will undergo significant revision and the knowledge of stakeholder investments will be enhanced. Future releases of the NextGen EA will reflect that increasing level of understanding.

OEP Solution Set:
Improve Collaborative Air Traffic Management
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Increase Flexibility in the Terminal Environment
Initiate Trajectory-Based Operations
Reduce Weather Impacts
Transform Facilities

Operational Activities (leaf activities)

Agency Investments Current

Budget

FY	technology type	Roadmap Name	NASTechnology Name	(0) Not Allocated	(1) Current FY	(2) 5 years	(3) 10 years	(4) NexGen	0 Provide NextGen Enterprise	1 Enterprise Services	1.1 Weather Operations	1.1.1 Collect/Analyze Weather Observation	1.1.2 Determine NAS Weather Integration Algorithm
										Improve Collaborative Air Traffic Management	Reduce Weather Impacts	Reduce Weather Impacts	Reduce Weather Impacts
(0) Not Allocated			Automated Surface Observing System	X							X		
(0) Not Allocated			Environmental Management System	X									
(0) Not Allocated		Automation	Flight Object Management System	X									
(0) Not Allocated		Automation	Integrated Information Workstation	X									
(0) Not Allocated		Automation	Next Generation Traffic Flow Management	X									
(0) Not Allocated		Automation	Safety Management System	X									
(0) Not Allocated		Automation	System Wide Information Management/SMU	X						X			
(0) Not Allocated		Avionics	System Wide Information Management/SMU	X						X			
(0) Not Allocated		Communication	System Wide Information Management/SMU	X						X			
(0) Not Allocated		Surveillance	Surveillance Data Network/Node	X									
(0) Not Allocated		Surveillance	Surveillance Data Processor	X									
(0) Not Allocated		Weather	Meteorological Data Collection and Reporting System	X								X	
(0) Not Allocated		Weather	System Wide Information Management/SMU	X						X			
(1) Current FY			Air Route Surveillance Radar Model 1E		X								
(1) Current FY			Aviation Safety Analysis System		X								
(1) Current FY			Safety Management Tools			X							
(1) Current FY			Next Generation Messaging		X								
(1) Current FY			Data Communication		X								
(1) Current FY			Voice Communication		X								
(1) Current FY			Airport Movement Area Safety System		X								
(1) Current FY			Airport Movement Area Safety System-1		X								
(1) Current FY			High Frequency Aeronautical Telecommuniction Network Data Link				X						
(1) Current FY		Automation	Wide Area Augmentation System			X							
(1) Current FY		Automation	System Wide Information Management			X				X			
(1) Current FY		Avionics	Flight Management System		X								
(1) Current FY		Avionics	System Wide Information Management			X				X			
(1) Current FY		Communication	Voice Switching and Control System		X					X			
(1) Current FY		Communication	Global Comm, Nav, and Surveillance System – System Wide Information Management			X							
(1) Current FY		Communication	NextGen Data Communications				X						
(1) Current FY		Communication	NAS Voice Switch				X			X			
(1) Current FY		Communication	FAA Telecommunications Infrastructure Phase 2					X					
(1) Current FY		Communication	Communications Management System				X						
(1) Current FY		Communication	Next-Generation Air/Ground Communications System Cockpit Display Unit			X							
(1) Current FY		Communication	High Frequency Communications		X								
(1) Current FY		Communication	High Frequency Airborne Radios		X								
(1) Current FY		Communication	High Frequency Data Link		X								
(1) Current FY		Communication	Next-Generation Air/Ground Communications System Communication Management Unit			X				X			
(1) Current FY		Communication	System Wide Information Management			X				X			
(1) Current FY		Facilities	FAA Telecommunications Infrastructure Phase 2					X					
(1) Current FY		Navigation	Global Comm, Nav, and Surveillance System – System Wide Information Management			X							
(1) Current FY		Navigation	Wide Area Augmentation System			X							

		Improve Collaborative Air Traffic Management	Reduce Weather Impacts	Reduce Weather Impacts	Reduce Weather Impacts	Reduce Weather Impacts	Reduce Weather Impacts	Reduce Weather Impacts	Reduce Weather Impacts					Improve Safety Security and Environmental Performance							Improve Collaborative Air Traffic Management	Improve Collaborative Air Traffic Management	Improve Collaborative Air Traffic Management	Improve Collaborative Air Traffic Management	Improve Collaborative Air Traffic Management	Improve Collaborative Air Traffic Management		Improve Collaborative Air Traffic Management	Improve Collaborative Air Traffic Management			Improve Collaborative Air Traffic Management		Improve Safety Security and Environmental Performance			
	0 Provide NextGen Enterprise	1 Enterprise Services	1.1 Weather Operations	1.1.1 Collect/Analyze Weather Observation	1.1.2 Determine NAS Weather Integration Algorithm	1.1.3 Provide Weather Diagnostic Forecast	1.1.4 Disseminate Weather Picture	1.1.4.1 Provide Weather Subscription Services	1.1.4.2 Publish Weather Picture	1.2 Positioning, Navigation, and Timing Services	1.2.1 Provide Positioning Service	1.2.2 Provide Navigation Service	1.2.3 Provide Timing Service	1.3 Surveillance Services	1.3.1 Provide Non-Cooperative Surveillance	1.3.1.1 Provide Non-Cooperative Air Surveillance	1.3.1.2 Provide Non-Cooperative Surface Surveillance	1.3.2 Provide Cooperative Surveillance	1.3.2.1 Provide Cooperative Air Surveillance	1.3.2.2 Provide Cooperative Surface Surveillance	1.4 Flight Planning and Flight Data Management	1.4.1 Conduct Flight Planning Management	1.4.1.1 File Flight Plan	1.4.1.2 Negotiate Flight Plan	1.4.1.3 Authorize Flight Plan	1.4.2 Provide Flight Data Management	1.4.2.1 Establish Aircraft Capabilities	1.4.2.2 Provide Flight Data	1.4.2.3 Disseminate Flight Data	1.4.2.3.1 Provide Flight Data Subscription Servic	1.4.2.3.2 Publish Flight Data	1.4.2.4 Monitor Flight Data	1.4.2.5 Archive Flight Data	1.5 Aeronautical Information Management	1.5.1 Collect Aeronautical Data	1.5.2 Disseminate Aeronautical Information	1.5.2.1 Provide Aeronautical Information Subscriptio
(4) NexGen																																					
			x																																		
																					x				x		x	x			x	x				
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Reduce Weather Impacts
Transform Facilities

Operational Activities (leaf activities)

Agency Investments Current

Budget

FY	technology type	Roadmap Name	NASTechnology Name	(0) Not Allocated	(1) Current FY	(2) 5 years	(3) 10 years	(4) NexGen
(1) Current FY		Surveillance	Airport Surveillance Radar Model 11 Technical Refresh			X		
(1) Current FY		Surveillance	Global Comm, Nav, and Surveillance System – System Wide Information Management			X		
(1) Current FY		Surveillance	Airport Surveillance Radar Model 9 Mode Select ASTERIX Upgrade				X	
(1) Current FY		Surveillance	New En Route Surveillance System					X
(1) Current FY		Surveillance	New Terminal Surveillance System					X
(1) Current FY		Surveillance	Surveillance Data Network			X		
(1) Current FY		Surveillance	Air Traffic Control Beacon Interrogator-Model 6			X		
(1) Current FY		Weather	Airport Surveillance Radar Model 11 Technical Refresh			X		
(1) Current FY		Weather	Next Generation Weather Radar Open System			X		
(1) Current FY		Weather	Airport Surveillance Radar Model 9 Mode Select ASTERIX Upgrade				X	
(1) Current FY		Weather	General Weather Processor					X
(1) Current FY		Weather	CIWS WARP Integration				X	
(1) Current FY		Weather	Automated Weather Observing System		X			
(1) Current FY		Weather	Next Generation Weather Radar		X			
(1) Current FY		Weather	Integrated Terminal Weather System Technological Refresh (TR)				X	
(1) Current FY		Weather	System Wide Information Management			X		
(1) Current FY		Weather	Automated Weather Sensor System		X			
(4) NexGen			Integrated Terminal Weather System			X		
(4) NexGen			Air Route Surveillance Radar Model 4		X			
(4) NexGen			FAA Telecommunications Satellite		X			
(4) NexGen			Environmental Remote Monitoring Subsystem		X			
(4) NexGen			Safety Performance Analysis System		X			
(4) NexGen		Automation	Aeronautical Information System		X			
(4) NexGen		Automation	En Route Communications Gateway Technology Refresh			X		
(4) NexGen		Automation	Aeronautical Information Management			X		
(4) NexGen		Automation	Traffic Flow Management Syst Enhanced Traffic Management Syst Hardware Upgrade			X		
(4) NexGen		Avionics	Global Positioning System		X			

	Improve Collaborative Air Traffic Management	Reduce Weather Impacts	Reduce Weather Impacts	Reduce Weather Impacts	Reduce Weather Impacts	Reduce Weather Impacts	Reduce Weather Impacts	Reduce Weather Impacts					Improve Safety Security and Environmental Performance							Improve Collaborative Air Traffic Management	Improve Collaborative Air Traffic Management	Improve Collaborative Air Traffic Management	Improve Collaborative Air Traffic Management	Improve Collaborative Air Traffic Management	Improve Collaborative Air Traffic Management		Improve Collaborative Air Traffic Management	Improve Collaborative Air Traffic Management			Improve Collaborative Air Traffic Management		Improve Safety Security and Environmental Performance			
0 Provide NextGen Enterprise	1 Enterprise Services	1.1 Weather Operations	1.1.1 Collect/Analyze Weather Observation	1.1.2 Determine NAS Weather Integration Algorithm	1.1.3 Provide Weather Diagnostic Forecast	1.1.4 Disseminate Weather Picture	1.1.4.1 Provide Weather Subscription Services	1.1.4.2 Publish Weather Picture	1.2 Positioning, Navigation, and Timing Services	1.2.1 Provide Positioning Service	1.2.2 Provide Navigation Service	1.2.3 Provide Timing Service	1.3 Surveillance Services	1.3.1 Provide Non-Cooperative Surveillance	1.3.1.1 Provide Non-Cooperative Air Surveillance	1.3.1.2 Provide Non-Cooperative Surface Surveillance	1.3.2 Provide Cooperative Surveillance	1.3.2.1 Provide Cooperative Air Surveillance	1.3.2.2 Provide Cooperative Surface Surveillance	1.4 Flight Planning and Flight Data Management	1.4.1 Conduct Flight Planning Management	1.4.1.1 File Flight Plan	1.4.1.2 Negotiate Flight Plan	1.4.1.3 Authorize Flight Plan	1.4.2 Provide Flight Data Management	1.4.2.1 Establish Aircraft Capabilities	1.4.2.2 Provide Flight Data	1.4.2.3 Disseminate Flight Data	1.4.2.3.1 Provide Flight Data Subscription Servic	1.4.2.3.2 Publish Flight Data	1.4.2.4 Monitor Flight Data	1.4.2.5 Archive Flight Data	1.5 Aeronautical Information Management	1.5.1 Collect Aeronautical Data	1.5.2 Disseminate Aeronautical Information	1.5.2.1 Provide Aeronautical Information Subscriptio
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Transform Facilities

Operational Activities (leaf activities)

Agency Investments Current

Budget																															
FY	technology type	Roadmap Name	NASTechnology Name	(0) Not Allocated	(1) Current FY	(2) 5 Years	(3) 10 years	(4) NexGen																							
									Increase Security Safety and Environment Performance	Increase Security Safety and Environment Performance	Improve Safety Security and Environmental Performance	Improve Safety Security and Environmental Performance	Improve Safety Security and Environmental Performance	Improve Safety Security and Environmental Performance	Improve Collaborative Air Traffic Management			Improve Collaborative Air Traffic Management		Improve Collaborative Air Traffic Management	Improve Collaborative Air Traffic Management		Increase Security Safety and Environment Performance					Improve Collaborative Air Traffic Management	Increase Flexibility in the Terminal Environment	
									4 Air Navigation Support	4.1 Airspace Security Operations	4.1.1 Manage Airspace Alerts	4.1.2 Monitor Airspace Alerts	4.1.3 Restrict Airspace	4.2 Capacity Management	4.2.1 Manage Airspace	4.2.2 Analyze demand and projected capacity	4.2.3 Select Capacity Management Strategy	4.2.4 Design Airspace	4.2.5 Disseminate Proposed Airspace Design	4.2.6 Disseminate Execution Plan	4.2.7 Post-analysis of Execution Plan	4.3 Flow Contingency Management	4.3.1 Monitor Airport Condition	4.3.2 Monitor Airspace Condition	4.3.3 Select Traffic Management Initiative	4.3.4 Restructure Capacity Limited Airspace	4.3.5 Disseminate Traffic Management Initiative	4.3.6 Reallocate Arrival/Departures Access	4.3.7 Post-event analysis of selected TMI
(0) Not Allocated			Traffic Management Advisor-Single Center	X											X															
(0) Not Allocated		Automation	Flight Object Management System	X														X				X								
(1) Current FY			Airspace Simulation and Analysis for Terminal Procedures		X													X												
(1) Current FY			Sector Design Analysis Tool		X													X												
(1) Current FY			Terminal Area Route Generation Evaluation and Traffic Simulation		X													X												
(1) Current FY			Unified Decision Management System				X															X								
(1) Current FY		Automation	Common Automated Radar Terminal System - Model IIIE		X										X															
(1) Current FY		Automation	En Route Automation Modernization Technology Refresh					X							X															
(1) Current FY		Automation	Traffic Flow Management Syst Work Package 3					X							X															
(4) NexGen		Automation	Aeronautical Information Management			X										X						X								
(4) NexGen		Automation	Standard Terminal Automation Replacement System			X									X															
(4) NexGen		Automation	Traffic Flow Management Syst Enhanced Traffic Management Syst Hardware Upgrade			X												X												

OEP Solution Set:
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Reduce Weather Impacts
Transform Facilities

Operational Activities (leaf activities)

Agency Investments Current

				Budget					Increase Security Safety and Environment Performance	Increase Flexibility in the Terminal Environment		Increase Flexibility in the Terminal Environment	Increase Flexibility in the Terminal Environment	Increase Flexibility in the Terminal Environment	Increase Flexibility in the Terminal Environment	Increase Flexibility in the Terminal Environment	Trajectory-Based Operations	Trajectory-Based Operations	Trajectory-Based Operations	Trajectory-Based Operations	Trajectory-Based Operations	Trajectory-Based Operations	Trajectory-Based Operations			Increase Flexibility in the Terminal Environment	Trajectory-Based Operations	Trajectory-Based Operations	Trajectory-Based Operations	Increase Security Safety and Environment Performance									
									5 Air Navigation Operations	5.1 Trajectory Management		5.1.1 Manage Arrival/Departure	5.1.1.1 Manage Surface Operations	5.1.1.1.1 Monitor Surface Condition	5.1.1.2 Manage Surface Movement	5.1.1.3 Issue Clearance	5.1.1.2 Issue Modification Information/Clearance	5.1.2 Manage Trajectories within Flows	5.1.2.1 Assign Trajectory	5.1.2.2 Negotiate Trajectory	5.1.2.3 Assign Spacing and Sequencing	5.1.2.4 Manage Flow Corridors	5.1.2.4.1 Assign Cruise (En-Route) Flight Path	5.1.2.4.2 Implement Flow Corridors	5.1.2.4.2.1 Establish Flow Corridors	5.1.2.4.2.2 Designate Entry and Exit Location	5.2 Separation Management	5.2.1 Provide Separation Clearance	5.2.2 Delegate Separation Operation	5.2.3 Monitor Separation	5.3 Contingency/Business Continuity Management	5.3.1 Develop Contingency Plan	5.3.2 Initiate Contingency Plan	5.3.3 Emergency Operation Procedure	5.3.3.1 Manage Emergency Information	5.3.3.1.1 Manage Alert Information	5.3.3.1.2 Monitor Emergency Data	5.3.3.2 Notify Emergency Responder	5.3.4 Conduct Recovery Operation	5.3.5 Conduct Post Analysis of Contingency/Emergency Op
FY	technology type	Roadmap Name	NASTechnology Name	(0) Not Allocated	(1) Current FY	(2) 5 years	(3) 10 Years	(4) NexGen																																
(0) Not Allocated			Automated Surface Observing System	X							X																													
(0) Not Allocated			NAS Infrastructure Management System	X																											X									
(0) Not Allocated		Automation	Flight Object Management System	X													X																							
(0) Not Allocated		Facilities	Next Generation Virtual Tower	X							X																													
(0) Not Allocated		Navigation	Ground-based Augmentation Systems	X							X																													
(1) Current FY			Airport Movement Area Safety System		X						X																													
(1) Current FY		Automation	Tower Flight Data Manager Phase 3				X				X																													
(1) Current FY		Automation	En Route Automation Modernization			X											X																	X						
(1) Current FY		Automation	En Route Automation Modernization Technology Refresh					X																											X					
(1) Current FY		Communication	Communications Management System				X										X																							
(1) Current FY		Surveillance	Airport Surface Detection Equip Model 3 Airport Mvmnt Area Safety Syst Upgrade				X				X																													
(1) Current FY		Surveillance	Surveillance Data Network			X											X																							
(1) Current FY		Weather	Auto Surface Observing Syst		X						X																													
(4) NexGen			Broadcast Services Ground Station					X																										X	X					
(4) NexGen		Automation	Aeronautical Information Management			X											X																							
(4) NexGen		Avionics	Global Positioning System		X																													X	X					
(4) NexGen		Navigation	Global Positioning System		X																													X	X					
(4) NexGen		Weather	Auto Wx/Surface Observing Syst Data Acquisition Syst Upgrade			X					X																													

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Transform Facilities

Operational Activities (leaf activities)

Agency Investments Current

						Budget			Improve Collaborative Air Traffic Management	Improve Collaborative Air Traffic Management																					Reduce Weather Impacts		Reduce Weather Impacts	Reduce Weather Impacts	Reduce Weather Impacts
FY	technology type	Roadmap Name	NASTechnology Name	(0) Not Allocated	(1) Current FY	(2) 5 years	(3) 10 years	(4) NexGen	7 Flight Operations	7.1 Aircraft Surface Operations	7.1.1 Conduct Preflight Operations	7.1.1.1 Conduct Pre-flight Checklist	7.1.1.2 Receive Arrival/Departure Information	7.1.1.3 Request Preflight Taxi Clearance	7.1.1.4 Pushback	7.1.1.5 Execute Taxi Preflight Operations	7.1.1.6 Report Flight Readiness	7.1.2 Conduct Post Arrival Operations	7.1.2.1 Request Post Flight Taxi Clearance	7.1.2.2 Execute Post Flight Taxi Operation	7.1.2.3 Park Aircraft	7.1.2.4 Execute Post Flight Reporting	7.2 Airborne Operations	7.2.1 Conduct Aircraft Operations	7.2.1.1 Take-off	7.2.1.2 Command Flight	7.2.1.3 Navigate Flight	7.2.1.3.1 Receive Separation Clearance	7.2.1.3.2 Monitor Airborne Information	7.2.1.4 Land	7.2.2 Monitor Weather Information	7.2.2.1 Obtain In-Flight Weather Data	7.2.2.2 Report In-Flight Weather Data	7.2.2.3 Receive 4D Weather Picture
(0) Not Allocated		Surveillance	Traffic Information System Broadcast Server	X																											X		X	
(1) Current FY			Flight Information Service - Data Link		X																										X	X	X	X
(1) Current FY		Automation	Wide Area Augmentation System Avionics				X																X											
(1) Current FY		Avionics	Flight Management System		X																		X											
(1) Current FY		Avionics	Global Positioning System Avionics		X																		X											
(1) Current FY		Avionics	Traffic Information System Avionics		X																													X
(1) Current FY		Avionics	Surveillance Avionics		X																								X					
(1) Current FY		Avionics	Traffic Alert and Collision Avoidance System		X																		X											
(1) Current FY		Avionics	Cockpit Display Traffic Information Avionics			X																	X									X		
(1) Current FY		Avionics	Traffic Information Service Flight Information Service Broadcast Server				X																											X
(1) Current FY		Avionics	Flight Information System				X																								X		X	X
(1) Current FY		Communication	Next-Generation Air/Ground Communications System Cockpit Display Unit			X																	X											
(1) Current FY		Navigation	Global Positioning System Avionics		X																		X											
(1) Current FY		Navigation	Wide Area Augmentation System Avionics				X																X											
(1) Current FY		Surveillance	Traffic Information System Avionics		X																													X
(1) Current FY		Surveillance	Surveillance Avionics		X																								X					
(1) Current FY		Surveillance	Traffic Information Service Flight Information Service Broadcast Server				X																											X
(1) Current FY		Surveillance	Flight Information System				X																								X		X	X
(4) NexGen		Automation	Aeronautical Information Management			X																										X		
(4) NexGen		Surveillance	ADS-B National Implementation Phases 2-4			X																	X											

Notes

Notes

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323 GTN
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NOTE: Prob
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332 DC
I-DCA 5.6
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MM
007°
0.5
4.1 NM
TDZE
15
CATEGORY
A
B
S-ILS 1
215/18
S-LOC 1
480/24
465 (500-½)
620-1
660-1
150
180

4.9 Appendix I - NextGen Reference Architecture

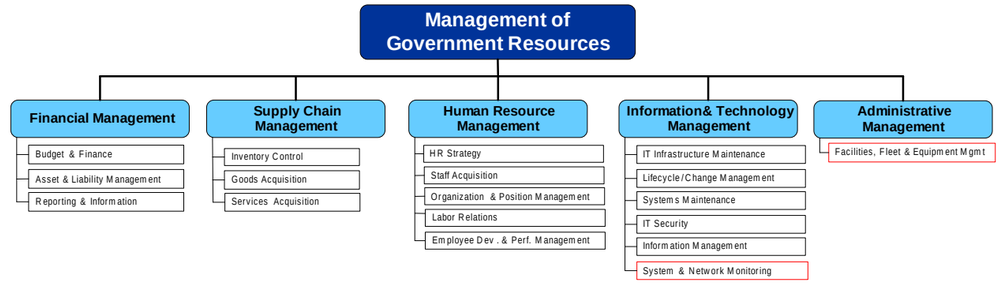
The NextGen EA Reference Architecture is a hierarchical taxonomy that classifies NextGen's target architectural elements. It creates a common vocabulary that facilitates Partner Agency analysis and the identification of duplicative investments, gaps, and opportunities for collaboration.

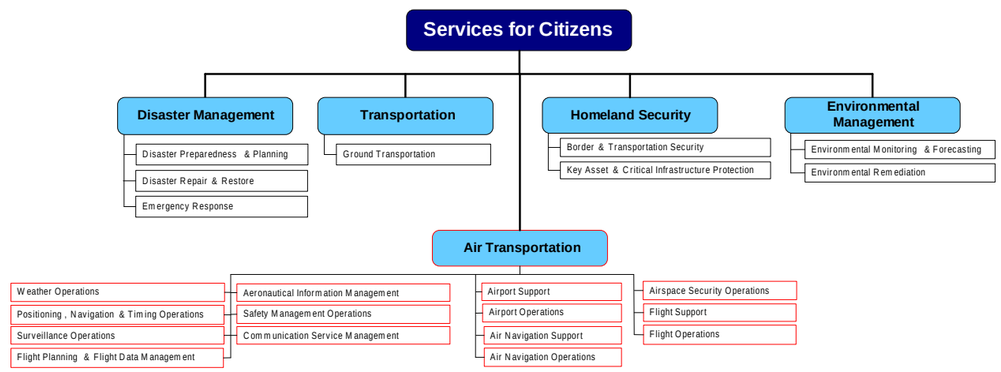
The NextGen EA Reference Architecture uses the Federal Enterprise Architecture (FEA) framework as the basis for defining the NextGen target environment. The FEA, as described in Section 2.1, is a collection of five interrelated reference models that describe architectural resources; a performance reference model (PRM), business reference model (BRM), service component reference model (SRM), technical reference model (TRM), and a data reference model (DRM).

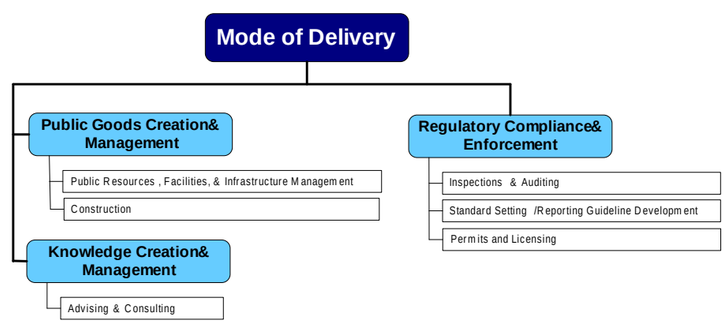
The following sections provide graphical representations of the NextGen EA Reference Architecture. The corresponding tables identify the alignment of the NextGen Activities and Services identified in the OV-5 work product to the NextGen EA Reference Architecture (i.e. Performance, Business, and Service Component). Since the NextGen EA Reference Architecture represents a categorization of the target NextGen solution; the alignment of OV-5 activities and services to the architectural layers is an essential step in the development of NextGen desired capabilities. The alignment provides the foundation for architectural analysis (e.g. line of sight between performance outcomes and the supporting business functions, services, data and technologies) and identifying duplicative investments, gaps, and opportunities for collaboration.

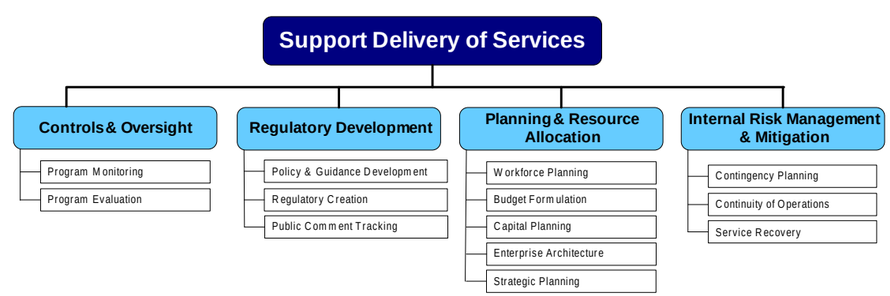
The "Sub-Functions", "Measurement Groupings", and "Service Components" outlined in red have either been proposed as an extension to the existing FEA reference model or a modification to the current definition.

NextGen EA Business Reference Architecture









Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Management of Government Resources	Financial Management	Budget & Finance	Budget and Finance includes the management of the Federal budget process including the development of plans and programs, budgets, and performance outputs and outcomes as well as financing Federal programs and operations through appropriation and apportionment of direct and reimbursable spending authority, fund transfers, investments and other financing mechanisms.	8.5 Financial Management
Management of Government Resources	Financial Management	Budget & Finance	Budget and Finance includes the management of the Federal budget process including the development of plans and programs, budgets, and performance outputs and outcomes as well as financing Federal programs and operations through appropriation and apportionment of direct and reimbursable spending authority, fund transfers, investments and other financing mechanisms.	8.5.1 Manage Budget
Management of Government Resources	Financial Management	Asset & Liability Management	Assets and Liability Management provide accounting support for the management of assets and liabilities of the Federal government.	8.5 Financial Management
Management of Government Resources	Financial Management	Asset & Liability Management	Assets and Liability Management provide accounting support for the management of assets and liabilities of the Federal government.	8.5.2 Manage Assets and Liabilities
Management of Government Resources	Financial Management	Reporting & Information	Reporting and Information includes providing financial information, reporting and analysis of financial transactions.	8.5 Financial Management
Management of Government Resources	Financial Management	Reporting & Information	Reporting and Information includes providing financial information, reporting and analysis of financial transactions.	8.5.3 Report Financials
Management of Government Resources	Supply Chain Management	Inventory Control	Inventory Control refers to the tracking of information related to procured assets and resources with regards to quantity, quality, and location.	8.3 Supply Chain Management
Management of Government Resources	Supply Chain Management	Inventory Control	Inventory Control refers to the tracking of information related to procured assets and resources with regards to quantity, quality, and location.	8.3.3 Manage Inventory
Management of Government Resources	Supply Chain Management	Goods Acquisition	Goods Acquisition involves the procurement of physical goods, products, and capital assets to be used by the federal government.	2.1 Airport Assets Management
Management of Government Resources	Supply Chain Management	Goods Acquisition	Goods Acquisition involves the procurement of physical goods, products, and capital assets to be used by the federal government.	2.1.3 Conduct Equipment Management
Management of Government Resources	Supply Chain Management	Goods Acquisition	Goods Acquisition involves the procurement of physical goods, products, and capital assets to be used by the federal government.	8.3 Supply Chain Management
Management of Government Resources	Supply Chain Management	Goods Acquisition	Goods Acquisition involves the procurement of physical goods, products, and capital assets to be used by the federal government.	8.3.1 Acquire Goods
Management of Government Resources	Supply Chain Management	Services Acquisition	Services Acquisition involves the oversight and/or management of contractors and service providers from the private sector.	8.3 Supply Chain Management
Management of Government Resources	Supply Chain Management	Services Acquisition	Services Acquisition involves the oversight and/or management of contractors and service providers from the private sector.	8.3.2 Acquire Services

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Management of Government Resources	Human Resources Management	Human Resource Strategy	Develops effective human capital management strategies to ensure federal organizations are able to recruit, select, develop, train, and manage a high-quality, productive workforce in accordance with merit system principles. This sub-function includes: conducting both internal and external environmental scans; developing human resources and human capital strategies and plans; establishing human resources policy and practices; managing current and future workforce competencies; developing workforce plans; developing succession plans; managing the human resources budget; providing human resources and human capital consultative support; and measuring and improving human resources performance.	2.1 Airport Assets Management
Management of Government Resources	Human Resources Management	Human Resource Strategy	Develops effective human capital management strategies to ensure federal organizations are able to recruit, select, develop, train, and manage a high-quality, productive workforce in accordance with merit system principles. This sub-function includes: conducting both internal and external environmental scans; developing human resources and human capital strategies and plans; establishing human resources policy and practices; managing current and future workforce competencies; developing workforce plans; developing succession plans; managing the human resources budget; providing human resources and human capital consultative support; and measuring and improving human resources performance.	2.1.1 Perform Personnel Management
Management of Government Resources	Human Resources Management	Human Resource Strategy	Develops effective human capital management strategies to ensure federal organizations are able to recruit, select, develop, train, and manage a high-quality, productive workforce in accordance with merit system principles. This sub-function includes: conducting both internal and external environmental scans; developing human resources and human capital strategies and plans; establishing human resources policy and practices; managing current and future workforce competencies; developing workforce plans; developing succession plans; managing the human resources budget; providing human resources and human capital consultative support; and measuring and improving human resources performance.	8.1 Human Resource Management
Management of Government Resources	Human Resources Management	Human Resource Strategy	Develops effective human capital management strategies to ensure federal organizations are able to recruit, select, develop, train, and manage a high-quality, productive workforce in accordance with merit system principles. This sub-function includes: conducting both internal and external environmental scans; developing human resources and human capital strategies and plans; establishing human resources policy and practices; managing current and future workforce competencies; developing workforce plans; developing succession plans; managing the human resources budget; providing human resources and human capital consultative support; and measuring and improving human resources performance.	8.1.1 Develop HR Strategy
Management of Government Resources	Human Resources Management	Staff Acquisition	Establishes procedures for recruiting and selecting high-quality, productive employees with the right skills and competencies, in accordance with merit system principles. This sub-function includes: developing a staffing strategy and plan; establishing an applicant evaluation approach; announcing the vacancy, sourcing and evaluating candidates against the competency requirements for the position; initiating pre-employment activities; and hiring employees.	2.1 Airport Assets Management

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Management of Government Resources	Human Resources Management	Staff Acquisition	Establishes procedures for recruiting and selecting high-quality, productive employees with the right skills and competencies, in accordance with merit system principles. This sub-function includes: developing a staffing strategy and plan; establishing an applicant evaluation approach; announcing the vacancy, sourcing and evaluating candidates against the competency requirements for the position; initiating pre-employment activities; and hiring employees.	2.1.1 Perform Personnel Management
Management of Government Resources	Human Resources Management	Staff Acquisition	Establishes procedures for recruiting and selecting high-quality, productive employees with the right skills and competencies, in accordance with merit system principles. This sub-function includes: developing a staffing strategy and plan; establishing an applicant evaluation approach; announcing the vacancy, sourcing and evaluating candidates against the competency requirements for the position; initiating pre-employment activities; and hiring employees.	8.1 Human Resource Management
Management of Government Resources	Human Resources Management	Staff Acquisition	Establishes procedures for recruiting and selecting high-quality, productive employees with the right skills and competencies, in accordance with merit system principles. This sub-function includes: developing a staffing strategy and plan; establishing an applicant evaluation approach; announcing the vacancy, sourcing and evaluating candidates against the competency requirements for the position; initiating pre-employment activities; and hiring employees.	8.1.3 Acquire Staff
Management of Government Resources	Human Resources Management	Organization & Position Management	Designs, develops, and implements organizational and position structures that create a high-performance, competency-driven framework that both advances the agency mission and serves agency human capital needs.	8.1 Human Resource Management
Management of Government Resources	Human Resources Management	Organization & Position Management	Designs, develops, and implements organizational and position structures that create a high-performance, competency-driven framework that both advances the agency mission and serves agency human capital needs.	8.1.2 Administer Organization and Position Management
Management of Government Resources	Human Resources Management	Labor Relations	Manages the relationship between the agency and its unions and bargaining units. This includes negotiating and administering labor contracts and collective bargaining agreements; managing negotiated grievances; and participating in negotiated third party proceedings.	8.1 Human Resource Management
Management of Government Resources	Human Resources Management	Labor Relations	Manages the relationship between the agency and its unions and bargaining units. This includes negotiating and administering labor contracts and collective bargaining agreements; managing negotiated grievances; and participating in negotiated third party proceedings.	8.1.6 Manage Labor Relations
Management of Government Resources	Human Resources Management	Employee Development & Performance Management	Designs, develops, and implements a comprehensive employee development approach to ensure that agency employees have the right competencies and skills for current and future work assignments. Designs, develops, and implements a comprehensive performance management strategy that enables managers to make distinctions in performance and links individual performance to agency goal and mission accomplishment. This sub-function also includes conducting employee development needs assessments; designing employee development (e.g., training) programs; administering and delivering employee development programs; managing employee performance; and evaluating the overall effectiveness of the agency's employee development approach.	8.1 Human Resource Management

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Management of Government Resources	Human Resources Management	Employee Development & Performance Management	Designs, develops, and implements a comprehensive employee development approach to ensure that agency employees have the right competencies and skills for current and future work assignments. Designs, develops, and implements a comprehensive performance management strategy that enables managers to make distinctions in performance and links individual performance to agency goal and mission accomplishment. This sub-function also includes conducting employee development needs assessments; designing employee development (e.g., training) programs; administering and delivering employee development programs; managing employee performance; and evaluating the overall effectiveness of the agency's employee development approach.	8.1.4 Manage Employee Development and Performance
Management of Government Resources	Information & Technology Management	IT Infrastructure Maintenance	IT Infrastructure Maintenance involves the planning, design, and maintenance of an IT Infrastructure to effectively support automated needs (i.e. platforms, networks, servers, printers, etc.).	8.6 Information and Technology Management
Management of Government Resources	Information & Technology Management	IT Infrastructure Maintenance	IT Infrastructure Maintenance involves the planning, design, and maintenance of an IT Infrastructure to effectively support automated needs (i.e. platforms, networks, servers, printers, etc.).	8.6.1 Maintain IT Infrastructure
Management of Government Resources	Information & Technology Management	Lifecycle/Change Management	Lifecycle/Change Management involves the processes that facilitate a smooth evolution, composition, and workforce transition of the design and implementation of changes to agency resources such as assets, methodologies, systems, or procedures.	8.6 Information and Technology Management
Management of Government Resources	Information & Technology Management	Lifecycle/Change Management	Lifecycle/Change Management involves the processes that facilitate a smooth evolution, composition, and workforce transition of the design and implementation of changes to agency resources such as assets, methodologies, systems, or procedures.	8.6.2 Manage Change
Management of Government Resources	Information & Technology Management	Systems Maintenances	System Maintenance supports all activities associated with the maintenance of in-house designed software applications.	8.6 Information and Technology Management
Management of Government Resources	Information & Technology Management	Systems Maintenances	System Maintenance supports all activities associated with the maintenance of in-house designed software applications.	8.6.3 Maintain Systems
Management of Government Resources	Information & Technology Management	IT Security	IT Security involves all functions pertaining to the securing of Federal data and systems through the creation and definition of security policies, procedures and controls covering such services as identification, authentication, and non-repudiation.	8.6 Information and Technology Management
Management of Government Resources	Information & Technology Management	IT Security	IT Security involves all functions pertaining to the securing of Federal data and systems through the creation and definition of security policies, procedures and controls covering such services as identification, authentication, and non-repudiation.	8.6.4 Provide Information Assurance
Management of Government Resources	Information & Technology Management	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.	1.10 Metrics Management
Management of Government Resources	Information & Technology Management	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.	1.10.1 Collect Performance Metrics Data
Management of Government Resources	Information & Technology Management	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.	1.10.2 Analyze Performance Metrics Data

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Management of Government Resources	Information & Technology Management	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.	1.10.3 Disseminate Performance Metrics Reports
Management of Government Resources	Information & Technology Management	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.	1.4 Flight Planning and Flight Data Management
Management of Government Resources	Information & Technology Management	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.	1.4.2 Provide Flight Data Management
Management of Government Resources	Information & Technology Management	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.	1.4.2.2 Provide Flight Data
Management of Government Resources	Information & Technology Management	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.	1.4.2.5 Archive Flight Data
Management of Government Resources	Information & Technology Management	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.	1.6 Geospatial Information Management
Management of Government Resources	Information & Technology Management	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.	1.6.1 Collect Geospatial Information
Management of Government Resources	Information & Technology Management	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.	1.6.2 Disseminate Geospatial Information
Management of Government Resources	Information & Technology Management	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.	1.6.2.1 Provide Geospatial Information Subscription Service
Management of Government Resources	Information & Technology Management	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.	1.6.2.2 Publish Geospatial Information
Management of Government Resources	Information & Technology Management	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.	3.6.1 Gather Congestion Data
Management of Government Resources	Information & Technology Management	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.	8.6 Information and Technology Management

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Management of Government Resources	Information & Technology Management	Information Management	Information Management involves the coordination of information collection, storage, and dissemination, and destruction as well as managing the policies, guidelines, and standards regarding information management.	8.6.5 Conduct Information Management
Management of Government Resources	Information & Technology Management	Systems & Network Monitoring	Systems and Network Monitoring supports activities related to the real-time monitoring of systems and networks for optimal performance.	8.6 Information and Technology Management
Management of Government Resources	Information & Technology Management	Systems & Network Monitoring	Systems and Network Monitoring supports activities related to the real-time monitoring of systems and networks for optimal performance.	8.6.6 Monitor Systems and Network Performance
Management of Government Resources	Administrative Management	Facilities, Fleet & Equipment Management	Facilities, Fleet, and Equipment Management involves the maintenance, administration, certification, and operation of office buildings, fleets, machinery, and other capital assets that are possessions of the Federal Government.	8.2 Certification Services Management
Management of Government Resources	Administrative Management	Facilities, Fleet & Equipment Management	Facilities, Fleet, and Equipment Management involves the maintenance, administration, certification, and operation of office buildings, fleets, machinery, and other capital assets that are possessions of the Federal Government.	8.2.1 Certify Equipment
Management of Government Resources	Administrative Management	Facilities, Fleet & Equipment Management	Facilities, Fleet, and Equipment Management involves the maintenance, administration, certification, and operation of office buildings, fleets, machinery, and other capital assets that are possessions of the Federal Government.	8.2.2 Certify Facilities
Management of Government Resources	Administrative Management	Facilities, Fleet & Equipment Management	Facilities, Fleet, and Equipment Management involves the maintenance, administration, certification, and operation of office buildings, fleets, machinery, and other capital assets that are possessions of the Federal Government.	2.1 Airport Assets Management
Management of Government Resources	Administrative Management	Facilities, Fleet & Equipment Management	Facilities, Fleet, and Equipment Management involves the maintenance, administration, certification, and operation of office buildings, fleets, machinery, and other capital assets that are possessions of the Federal Government.	2.1.2 Conduct Facilities Management
Management of Government Resources	Administrative Management	Facilities, Fleet & Equipment Management	Facilities, Fleet, and Equipment Management involves the maintenance, administration, certification, and operation of office buildings, fleets, machinery, and other capital assets that are possessions of the Federal Government.	2.1.3 Conduct Equipment Management
Services for Citizens	Disaster Management	Disaster Preparedness & Planning	Disaster Preparedness and Planning involves the development of response programs to be used in case of a disaster as well as pre-disaster mitigation efforts to minimize the potential for loss of life and property. This involves the development of emergency management programs and activities as well as staffing and equipping regional response centers, and mitigation-focused construction and preparation.	2.2 Risk Assessment Management
Services for Citizens	Disaster Management	Disaster Preparedness & Planning	Disaster Preparedness and Planning involves the development of response programs to be used in case of a disaster as well as pre-disaster mitigation efforts to minimize the potential for loss of life and property. This involves the development of emergency management programs and activities as well as staffing and equipping regional response centers, and mitigation-focused construction and preparation.	5.3 Contingency/ Business Continuity Management

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Disaster Management	Disaster Preparedness & Planning	Disaster Preparedness and Planning involves the development of response programs to be used in case of a disaster as well as pre-disaster mitigation efforts to minimize the potential for loss of life and property. This involves the development of emergency management programs and activities as well as staffing and equipping regional response centers, and mitigation-focused construction and preparation.	5.3.1 Develop Contingency Plan
Services for Citizens	Disaster Management	Disaster Repair & Restore	Disaster Repair and Restore involves the cleanup and restoration activities that take place after a disaster. This involves the cleanup and rebuilding of any homes, buildings, roads, environmental resources, or infrastructure that may be damaged due to a disaster.	5.3 Contingency/ Business Continuity Management
Services for Citizens	Disaster Management	Disaster Repair & Restore	Disaster Repair and Restore involves the cleanup and restoration activities that take place after a disaster. This involves the cleanup and rebuilding of any homes, buildings, roads, environmental resources, or infrastructure that may be damaged due to a disaster.	5.3.4 Conduct Recovery Operation
Services for Citizens	Disaster Management	Emergency Response	Emergency Response involves the immediate actions taken to respond to a disaster. These actions include, but are not limited to, providing mobile telecommunications, operational support, power generation, search and rescue, and medical life saving actions.	3.3 Airport Emergency Response
Services for Citizens	Disaster Management	Emergency Response	Emergency Response involves the immediate actions taken to respond to a disaster. These actions include, but are not limited to, providing mobile telecommunications, operational support, power generation, search and rescue, and medical life saving actions.	3.3.1 Monitor Emergency Operations
Services for Citizens	Disaster Management	Emergency Response	Emergency Response involves the immediate actions taken to respond to a disaster. These actions include, but are not limited to, providing mobile telecommunications, operational support, power generation, search and rescue, and medical life saving actions.	3.3.2 Manage Emergency Operations
Services for Citizens	Disaster Management	Emergency Response	Emergency Response involves the immediate actions taken to respond to a disaster. These actions include, but are not limited to, providing mobile telecommunications, operational support, power generation, search and rescue, and medical life saving actions.	5.3 Contingency/ Business Continuity Management
Services for Citizens	Disaster Management	Emergency Response	Emergency Response involves the immediate actions taken to respond to a disaster. These actions include, but are not limited to, providing mobile telecommunications, operational support, power generation, search and rescue, and medical life saving actions.	5.3.3 Emergency Operation Procedure
Services for Citizens	Disaster Management	Emergency Response	Emergency Response involves the immediate actions taken to respond to a disaster. These actions include, but are not limited to, providing mobile telecommunications, operational support, power generation, search and rescue, and medical life saving actions.	5.3.3.1 Manage Emergency Information
Services for Citizens	Disaster Management	Emergency Response	Emergency Response involves the immediate actions taken to respond to a disaster. These actions include, but are not limited to, providing mobile telecommunications, operational support, power generation, search and rescue, and medical life saving actions.	5.3.3.1.1 Manage Alert Information

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Disaster Management	Emergency Response	Emergency Response involves the immediate actions taken to respond to a disaster. These actions include, but are not limited to, providing mobile telecommunications, operational support, power generation, search and rescue, and medical life saving actions.	5.3.3.1.2 Monitor Emergency Data
Services for Citizens	Disaster Management	Emergency Response	Emergency Response involves the immediate actions taken to respond to a disaster. These actions include, but are not limited to, providing mobile telecommunications, operational support, power generation, search and rescue, and medical life saving actions.	5.3.3.2 Notify Emergency Responder
Services for Citizens	Disaster Management	Emergency Response	Emergency Response involves the immediate actions taken to respond to a disaster. These actions include, but are not limited to, providing mobile telecommunications, operational support, power generation, search and rescue, and medical life saving actions.	5.3.4 Conduct Recovery Operation
Services for Citizens	Disaster Management	Emergency Response	Emergency Response involves the immediate actions taken to respond to a disaster. These actions include, but are not limited to, providing mobile telecommunications, operational support, power generation, search and rescue, and medical life saving actions.	5.3.5 Conduct Post Analysis of Contingency/ Emergency Operation Procedure
Services for Citizens	Transportation	Ground Transportation	Ground Transportation involves the activities related to ensuring the availability of transit and the safe passage of passengers and goods over land. Note: The protection of ground transportation from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.1.3 Provide Inter-modal Transportation Service
Services for Citizens	Transportation	Ground Transportation	Ground Transportation involves the activities related to ensuring the availability of transit and the safe passage of passengers and goods over land. Note: The protection of ground transportation from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.1.4 Manage Gate Operations
Services for Citizens	Homeland Security	Border & Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.	3.1 Landside Operations
Services for Citizens	Homeland Security	Border & Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.	3.1.1.1 Manage Passengers
Services for Citizens	Homeland Security	Border & Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.	3.1.1.1.1 Check In Passengers
Services for Citizens	Homeland Security	Border & Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.	3.1.1.1.1.1 Verify Credential to Reservation Data

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Homeland Security	Border & Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.	3.1.1.1.1.2 Authenticate Passenger to Credential
Services for Citizens	Homeland Security	Border & Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.	3.1.1.1.1.3 Create Passenger Info
Services for Citizens	Homeland Security	Border & Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.	3.1.1.1.2 Process CBP
Services for Citizens	Homeland Security	Border & Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.	3.1.1.1.3 Screen Passengers
Services for Citizens	Homeland Security	Border & Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.	3.1.1.1.4 Manage Manifest
Services for Citizens	Homeland Security	Border & Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.	3.1.1.2 Manage Baggage
Services for Citizens	Homeland Security	Border & Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.	3.1.1.2.1 Check In Baggage
Services for Citizens	Homeland Security	Border & Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.	3.1.1.2.2 Screen Baggage
Services for Citizens	Homeland Security	Border & Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.	3.1.1.2.3 Sort Baggage
Services for Citizens	Homeland Security	Border & Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.	3.1.2 Flight Level Security Screening

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Homeland Security	Border & Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.	3.1.2.1 Flight Level Security Analysis
Services for Citizens	Homeland Security	Border & Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.	3.1.2.2 Manage Airport Security Alerts
Services for Citizens	Homeland Security	Border & Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.	3.5 Cargo Management
Services for Citizens	Homeland Security	Border & Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.	3.5.1 Manage Cargo Operations
Services for Citizens	Homeland Security	Border & Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.	3.5.1.1 Process Cargo
Services for Citizens	Homeland Security	Border & Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.	3.5.1.2 Process Cargo Manifest
Services for Citizens	Homeland Security	Border & Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.	3.5.1.3 Screen Cargo
Services for Citizens	Homeland Security	Border & Transportation Security	Border and Transportation Security includes appropriately facilitating or deterring entry and exit of people, goods, and conveyances at and between U.S. ports of entry, as well as ensuring the security of transportation and infrastructure networks, facilities, vehicles, and personnel within the United States.	3.5.2 Manage Cargo Risk Assessment
Services for Citizens	Homeland Security	Key Asset & Critical Infrastructure Protection	Key Asset and Critical Infrastructure Protection involves assessing key asset and critical infrastructure vulnerabilities and taking direct action to mitigate vulnerabilities, enhance security, and ensure continuity and necessary redundancy in government operations and personnel.	2.2.1 Collect Airport Risk Assessment Data
Services for Citizens	Homeland Security	Key Asset & Critical Infrastructure Protection	Key Asset and Critical Infrastructure Protection involves assessing key asset and critical infrastructure vulnerabilities and taking direct action to mitigate vulnerabilities, enhance security, and ensure continuity and necessary redundancy in government operations and personnel.	2.2.2 Assess Airport Risk Condition

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Homeland Security	Key Asset & Critical Infrastructure Protection	Key Asset and Critical Infrastructure Protection involves assessing key asset and critical infrastructure vulnerabilities and taking direct action to mitigate vulnerabilities, enhance security, and ensure continuity and necessary redundancy in government operations and personnel.	2.2.3 Manage Airport Risk Assessment
Services for Citizens	Homeland Security	Key Asset & Critical Infrastructure Protection	Key Asset and Critical Infrastructure Protection involves assessing key asset and critical infrastructure vulnerabilities and taking direct action to mitigate vulnerabilities, enhance security, and ensure continuity and necessary redundancy in government operations and personnel.	2.4 Airport Threat Profile Management
Services for Citizens	Homeland Security	Key Asset & Critical Infrastructure Protection	Key Asset and Critical Infrastructure Protection involves assessing key asset and critical infrastructure vulnerabilities and taking direct action to mitigate vulnerabilities, enhance security, and ensure continuity and necessary redundancy in government operations and personnel.	2.4.1 Collect Airport Threat Data
Services for Citizens	Homeland Security	Key Asset & Critical Infrastructure Protection	Key Asset and Critical Infrastructure Protection involves assessing key asset and critical infrastructure vulnerabilities and taking direct action to mitigate vulnerabilities, enhance security, and ensure continuity and necessary redundancy in government operations and personnel.	2.4.2 Analyze Airport Threat Data
Services for Citizens	Homeland Security	Key Asset & Critical Infrastructure Protection	Key Asset and Critical Infrastructure Protection involves assessing key asset and critical infrastructure vulnerabilities and taking direct action to mitigate vulnerabilities, enhance security, and ensure continuity and necessary redundancy in government operations and personnel.	2.4.3 Create Airport Threat Profile
Services for Citizens	Homeland Security	Key Asset & Critical Infrastructure Protection	Key Asset and Critical Infrastructure Protection involves assessing key asset and critical infrastructure vulnerabilities and taking direct action to mitigate vulnerabilities, enhance security, and ensure continuity and necessary redundancy in government operations and personnel.	2.4.4 Submit Threat Profile
Services for Citizens	Homeland Security	Key Asset & Critical Infrastructure Protection	Key Asset and Critical Infrastructure Protection involves assessing key asset and critical infrastructure vulnerabilities and taking direct action to mitigate vulnerabilities, enhance security, and ensure continuity and necessary redundancy in government operations and personnel.	2.4.5 Monitor Airport Threat
Services for Citizens	Environmental Management	Environmental Monitoring & Forecasting	Environmental Monitoring and Forecasting involves the observation and prediction of environmental conditions. This includes but is not limited to the monitoring and forecasting of water quality, water levels, ice sheets, air quality, regulated and non-regulated emissions, as well as the observation and prediction of weather patterns and conditions.	1.1 Weather Operations
Services for Citizens	Environmental Management	Environmental Monitoring & Forecasting	Environmental Monitoring and Forecasting involves the observation and prediction of environmental conditions. This includes but is not limited to the monitoring and forecasting of water quality, water levels, ice sheets, air quality, regulated and non-regulated emissions, as well as the observation and prediction of weather patterns and conditions.	1.1.3 Provide Weather Diagnostic Forecast
Services for Citizens	Environmental Management	Environmental Monitoring & Forecasting	Environmental Monitoring and Forecasting involves the observation and prediction of environmental conditions. This includes but is not limited to the monitoring and forecasting of water quality, water levels, ice sheets, air quality, regulated and non-regulated emissions, as well as the observation and prediction of weather patterns and conditions.	1.7 Environmental Information Management

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Environmental Management	Environmental Monitoring & Forecasting	Environmental Monitoring and Forecasting involves the observation and prediction of environmental conditions. This includes but is not limited to the monitoring and forecasting of water quality, water levels, ice sheets, air quality, regulated and non-regulated emissions, as well as the observation and prediction of weather patterns and conditions.	1.7.1 Monitor Environmental Impacts
Services for Citizens	Environmental Management	Environmental Monitoring & Forecasting	Environmental Monitoring and Forecasting involves the observation and prediction of environmental conditions. This includes but is not limited to the monitoring and forecasting of water quality, water levels, ice sheets, air quality, regulated and non-regulated emissions, as well as the observation and prediction of weather patterns and conditions.	1.7.3 Report Environmental Conditions
Services for Citizens	Environmental Management	Environmental Remediation	Environmental Remediation supports the immediate and long-term activities associated with the correcting and offsetting of environmental deficiencies or imbalances, including restoration activities.	1.7 Environmental Information Management
Services for Citizens	Environmental Management	Environmental Remediation	Environmental Remediation supports the immediate and long-term activities associated with the correcting and offsetting of environmental deficiencies or imbalances, including restoration activities.	1.7.2 Manage Environmental Impact
Services for Citizens	Air Transportation	Weather Operations	Weather Operations involves the activities related to the collection, analysis, and distribution of real-time weather forecasts to stakeholders. It also includes the activities related to proactively alerting, advising, and warning stakeholders via digital communications of significant weather changes in order to reduce weather impact on the Air Transportation System. Note: Some analytical aspects of weather forecasting are included in the Environmental Monitoring and Forecasting Sub-Function in the Environmental Management Line of Business.	1.1 Weather Operations
Services for Citizens	Air Transportation	Weather Operations	Weather Operations involves the activities related to the collection, analysis, and distribution of real-time weather forecasts to stakeholders. It also includes the activities related to proactively alerting, advising, and warning stakeholders via digital communications of significant weather changes in order to reduce weather impact on the Air Transportation System. Note: Some analytical aspects of weather forecasting are included in the Environmental Monitoring and Forecasting Sub-Function in the Environmental Management Line of Business.	1.1.1 Collect/Analyze Weather Observation
Services for Citizens	Air Transportation	Weather Operations	Weather Operations involves the activities related to the collection, analysis, and distribution of real-time weather forecasts to stakeholders. It also includes the activities related to proactively alerting, advising, and warning stakeholders via digital communications of significant weather changes in order to reduce weather impact on the Air Transportation System. Note: Some analytical aspects of weather forecasting are included in the Environmental Monitoring and Forecasting Sub-Function in the Environmental Management Line of Business.	1.1.2 Determine NAS Weather Integration Algorithm

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Air Transportation	Weather Operations	Weather Operations involves the activities related to the collection, analysis, and distribution of real-time weather forecasts to stakeholders. It also includes the activities related to proactively alerting, advising, and warning stakeholders via digital communications of significant weather changes in order to reduce weather impact on the Air Transportation System. Note: Some analytical aspects of weather forecasting are included in the Environmental Monitoring and Forecasting Sub-Function in the Environmental Management Line of Business.	1.1.3 Provide Weather Diagnostic Forecast
Services for Citizens	Air Transportation	Weather Operations	Weather Operations involves the activities related to the collection, analysis, and distribution of real-time weather forecasts to stakeholders. It also includes the activities related to proactively alerting, advising, and warning stakeholders via digital communications of significant weather changes in order to reduce weather impact on the Air Transportation System. Note: Some analytical aspects of weather forecasting are included in the Environmental Monitoring and Forecasting Sub-Function in the Environmental Management Line of Business.	1.1.4 Disseminate Weather Picture
Services for Citizens	Air Transportation	Weather Operations	Weather Operations involves the activities related to the collection, analysis, and distribution of real-time weather forecasts to stakeholders. It also includes the activities related to proactively alerting, advising, and warning stakeholders via digital communications of significant weather changes in order to reduce weather impact on the Air Transportation System. Note: Some analytical aspects of weather forecasting are included in the Environmental Monitoring and Forecasting Sub-Function in the Environmental Management Line of Business.	1.1.4.1 Provide Weather Subscription Services
Services for Citizens	Air Transportation	Weather Operations	Weather Operations involves the activities related to the collection, analysis, and distribution of real-time weather forecasts to stakeholders. It also includes the activities related to proactively alerting, advising, and warning stakeholders via digital communications of significant weather changes in order to reduce weather impact on the Air Transportation System. Note: Some analytical aspects of weather forecasting are included in the Environmental Monitoring and Forecasting Sub-Function in the Environmental Management Line of Business.	1.1.4.2 Publish Weather Picture
Services for Citizens	Air Transportation	Positioning, Navigation & Timing Operations	PNT Operations involves the activities associated with accurately and precisely determining an aircraft's current location, orientation, desired path and position, and time, in order to apply corrections to course, orientation, and speed to attain the desired position. It also includes the activities associated with obtaining accurate and precise time anywhere on the globe within user defined timeliness parameters.	1.2 Positioning, Navigation, and Timing Services
Services for Citizens	Air Transportation	Positioning, Navigation & Timing Operations	PNT Operations involves the activities associated with accurately and precisely determining an aircraft's current location, orientation, desired path and position, and time, in order to apply corrections to course, orientation, and speed to attain the desired position. It also includes the activities associated with obtaining accurate and precise time anywhere on the globe within user defined timeliness parameters.	1.2.1 Provide Positioning Service

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Air Transportation	Positioning, Navigation & Timing Operations	PNT Operations involves the activities associated with accurately and precisely determining an aircraft's current location, orientation, desired path and position, and time, in order to apply corrections to course, orientation, and speed to attain the desired position. It also includes the activities associated with obtaining accurate and precise time anywhere on the globe within user defined timeliness parameters.	1.2.2 Provide Navigation Service
Services for Citizens	Air Transportation	Positioning, Navigation & Timing Operations	PNT Operations involves the activities associated with accurately and precisely determining an aircraft's current location, orientation, desired path and position, and time, in order to apply corrections to course, orientation, and speed to attain the desired position. It also includes the activities associated with obtaining accurate and precise time anywhere on the globe within user defined timeliness parameters.	1.2.3 Provide Timing Service
Services for Citizens	Air Transportation	Surveillance Operations	Surveillance Operations involves the integration of non-cooperative and cooperative surveillance activities, which detect, identify and monitor ground and airborne objects to allow the creation of real-time situational awareness on the surface and air.	1.3 Surveillance Services
Services for Citizens	Air Transportation	Surveillance Operations	Surveillance Operations involves the integration of non-cooperative and cooperative surveillance activities, which detect, identify and monitor ground and airborne objects to allow the creation of real-time situational awareness on the surface and air.	1.3.1 Provide Non-Cooperative Surveillance
Services for Citizens	Air Transportation	Surveillance Operations	Surveillance Operations involves the integration of non-cooperative and cooperative surveillance activities, which detect, identify and monitor ground and airborne objects to allow the creation of real-time situational awareness on the surface and air.	1.3.1.1 Provide Non-Cooperative Air Surveillance
Services for Citizens	Air Transportation	Surveillance Operations	Surveillance Operations involves the integration of non-cooperative and cooperative surveillance activities, which detect, identify and monitor ground and airborne objects to allow the creation of real-time situational awareness on the surface and air.	1.3.1.2 Provide Non-Cooperative Surface Surveillance
Services for Citizens	Air Transportation	Surveillance Operations	Surveillance Operations involves the integration of non-cooperative and cooperative surveillance activities, which detect, identify and monitor ground and airborne objects to allow the creation of real-time situational awareness on the surface and air.	1.3.2 Provide Cooperative Surveillance
Services for Citizens	Air Transportation	Surveillance Operations	Surveillance Operations involves the integration of non-cooperative and cooperative surveillance activities, which detect, identify and monitor ground and airborne objects to allow the creation of real-time situational awareness on the surface and air.	1.3.2.1 Provide Cooperative Air Surveillance
Services for Citizens	Air Transportation	Surveillance Operations	Surveillance Operations involves the integration of non-cooperative and cooperative surveillance activities, which detect, identify and monitor ground and airborne objects to allow the creation of real-time situational awareness on the surface and air.	1.3.2.2 Provide Cooperative Surface Surveillance
Services for Citizens	Air Transportation	Flight Planning & Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.	1.4 Flight Planning and Flight Data Management
Services for Citizens	Air Transportation	Flight Planning & Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.	1.4.1 Conduct Flight Planning Management

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Air Transportation	Flight Planning & Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.	1.4.1.1 File Flight Plan
Services for Citizens	Air Transportation	Flight Planning & Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.	1.4.1.2 Negotiate Flight Plan
Services for Citizens	Air Transportation	Flight Planning & Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.	1.4.1.3 Authorize Flight Plan
Services for Citizens	Air Transportation	Flight Planning & Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.	1.4.2 Provide Flight Data Management
Services for Citizens	Air Transportation	Flight Planning & Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.	1.4.2.1 Establish Aircraft Capabilities
Services for Citizens	Air Transportation	Flight Planning & Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.	1.4.2.2 Provide Flight Data
Services for Citizens	Air Transportation	Flight Planning & Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.	1.4.2.3 Disseminate Flight Data
Services for Citizens	Air Transportation	Flight Planning & Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.	1.4.2.3.1 Provide Flight Data Subscription Services
Services for Citizens	Air Transportation	Flight Planning & Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.	1.4.2.3.2 Publish Flight Data
Services for Citizens	Air Transportation	Flight Planning & Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.	1.4.2.4 Monitor Flight Data

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Air Transportation	Flight Planning & Flight Data Management	Flight Planning and Flight Data Management involves the activities performed before and during flight that include, but are not limited to, reviewing airspace and navigation restrictions, assigning the route, obtaining weather information, filing and negotiating a flight plan, and assigning trajectories to support the flight object.	1.4.2.5 Archive Flight Data
Services for Citizens	Air Transportation	Aeronautical Information Management	Aeronautical Information Management involves the activities related to managing and disseminating near-real-time aeronautical information/data to critical stakeholders. Aeronautical information includes: current performance requirements for airspace access and operation, special use airspace status and activity, airspace affected by temporary flight restrictions, route information and performance metrics, and National Airspace System (NAS) status.	1.5 Aeronautical Information Management
Services for Citizens	Air Transportation	Aeronautical Information Management	Aeronautical Information Management involves the activities related to managing and disseminating near-real-time aeronautical information/data to critical stakeholders. Aeronautical information includes: current performance requirements for airspace access and operation, special use airspace status and activity, airspace affected by temporary flight restrictions, route information and performance metrics, and National Airspace System (NAS) status.	1.5.1 Collect Aeronautical Information
Services for Citizens	Air Transportation	Aeronautical Information Management	Aeronautical Information Management involves the activities related to managing and disseminating near-real-time aeronautical information/data to critical stakeholders. Aeronautical information includes: current performance requirements for airspace access and operation, special use airspace status and activity, airspace affected by temporary flight restrictions, route information and performance metrics, and National Airspace System (NAS) status.	1.5.2 Disseminate Aeronautical Information
Services for Citizens	Air Transportation	Aeronautical Information Management	Aeronautical Information Management involves the activities related to managing and disseminating near-real-time aeronautical information/data to critical stakeholders. Aeronautical information includes: current performance requirements for airspace access and operation, special use airspace status and activity, airspace affected by temporary flight restrictions, route information and performance metrics, and National Airspace System (NAS) status.	1.5.2.1 Provide Aeronautical Information Subscription Services
Services for Citizens	Air Transportation	Aeronautical Information Management	Aeronautical Information Management involves the activities related to managing and disseminating near-real-time aeronautical information/data to critical stakeholders. Aeronautical information includes: current performance requirements for airspace access and operation, special use airspace status and activity, airspace affected by temporary flight restrictions, route information and performance metrics, and National Airspace System (NAS) status.	1.5.2.2 Publish Aeronautical Information
Services for Citizens	Air Transportation	Safety Management Operations	Safety Management Operations involves the activities related to the integration and management of safety (e.g., policy, procedures, risks, and assurance) throughout the Air Transportation System and stakeholder community. It also includes the activities associated with the identification and management of potential problems in a system, organization, or operations in order to mitigate safety risks and improve the level of safety in the US air transportation system, increase the safety of worldwide air transportation, and maintain aviations record as the safest mode of transportation.	1.8 Safety Management Service

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Air Transportation	Safety Management Operations	Safety Management Operations involves the activities related to the integration and management of safety (e.g., policy, procedures, risks, and assurance) throughout the Air Transportation System and stakeholder community. It also includes the activities associated with the identification and management of potential problems in a system, organization, or operations in order to mitigate safety risks and improve the level of safety in the US air transportation system, increase the safety of worldwide air transportation, and maintain aviations record as the safest mode of transportation.	1.8.1 Provide Aviation Safety Service
Services for Citizens	Air Transportation	Safety Management Operations	Safety Management Operations involves the activities related to the integration and management of safety (e.g., policy, procedures, risks, and assurance) throughout the Air Transportation System and stakeholder community. It also includes the activities associated with the identification and management of potential problems in a system, organization, or operations in order to mitigate safety risks and improve the level of safety in the US air transportation system, increase the safety of worldwide air transportation, and maintain aviations record as the safest mode of transportation.	1.8.2 Provide Safety Risk Management
Services for Citizens	Air Transportation	Safety Management Operations	Safety Management Operations involves the activities related to the integration and management of safety (e.g., policy, procedures, risks, and assurance) throughout the Air Transportation System and stakeholder community. It also includes the activities associated with the identification and management of potential problems in a system, organization, or operations in order to mitigate safety risks and improve the level of safety in the US air transportation system, increase the safety of worldwide air transportation, and maintain aviations record as the safest mode of transportation.	1.8.3 Provide Safety Assurance
Services for Citizens	Air Transportation	Communication Service Management	Communication Service Management involves the activities related to managing the command, control, and communications systems and networks that provide real-time services to enable voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.	1.9 Communication Service Management
Services for Citizens	Air Transportation	Communication Service Management	Communication Service Management involves the activities related to managing the command, control, and communications systems and networks that provide real-time services to enable voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.	1.9.1 Manage Communication
Services for Citizens	Air Transportation	Communication Service Management	Communication Service Management involves the activities related to managing the command, control, and communications systems and networks that provide real-time services to enable voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.	1.9.1.1 Manage Communication Connection
Services for Citizens	Air Transportation	Communication Service Management	Communication Service Management involves the activities related to managing the command, control, and communications systems and networks that provide real-time services to enable voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.	1.9.1.2 Monitor Communication Status

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Air Transportation	Communication Service Management	Communication Service Management involves the activities related to managing the command, control, and communications systems and networks that provide real-time services to enable voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.	1.9.1.3 Restore Communication Service
Services for Citizens	Air Transportation	Communication Service Management	Communication Service Management involves the activities related to managing the command, control, and communications systems and networks that provide real-time services to enable voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.	1.9.1.4 Balance Communication Service
Services for Citizens	Air Transportation	Communication Service Management	Communication Service Management involves the activities related to managing the command, control, and communications systems and networks that provide real-time services to enable voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.	1.9.1.5 Collect Utilization Data
Services for Citizens	Air Transportation	Communication Service Management	Communication Service Management involves the activities related to managing the command, control, and communications systems and networks that provide real-time services to enable voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.	1.9.1.6 Report Communication Service Status
Services for Citizens	Air Transportation	Communication Service Management	Communication Service Management involves the activities related to managing the command, control, and communications systems and networks that provide real-time services to enable voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.	1.9.2 Manage Spectrum
Services for Citizens	Air Transportation	Communication Service Management	Communication Service Management involves the activities related to managing the command, control, and communications systems and networks that provide real-time services to enable voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.	1.9.2.1 Manage Frequency Allocation
Services for Citizens	Air Transportation	Communication Service Management	Communication Service Management involves the activities related to managing the command, control, and communications systems and networks that provide real-time services to enable voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.	1.9.2.2 Assign Radio Frequency
Services for Citizens	Air Transportation	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.	2.1 Airport Assets Management
Services for Citizens	Air Transportation	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.	2.1.2 Conduct Facilities Management

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Air Transportation	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.	2.1.3 Conduct Equipment Management
Services for Citizens	Air Transportation	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.	2.2 Risk Assessment Management
Services for Citizens	Air Transportation	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.	2.2.1 Collect Airport Risk Assessment Data
Services for Citizens	Air Transportation	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.	2.2.2 Assess Airport Risk Condition
Services for Citizens	Air Transportation	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.	2.2.3 Manage Airport Risk Assessment
Services for Citizens	Air Transportation	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.	2.2.4 Report Airport Risk Assessment
Services for Citizens	Air Transportation	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.	2.3 Airport Infrastructure Planning
Services for Citizens	Air Transportation	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.	2.3.1 Manage Regional Planning Ops

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Air Transportation	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.	2.3.2 Design Landside Facilities
Services for Citizens	Air Transportation	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.	2.3.3 Design Airside Facilities
Services for Citizens	Air Transportation	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.	2.3.4 Manage Navigation Infrastructure
Services for Citizens	Air Transportation	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.	2.4 Airport Threat Profile Management
Services for Citizens	Air Transportation	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.	2.4.1 Collect Airport Threat Data
Services for Citizens	Air Transportation	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.	2.4.2 Analyze Airport Threat Data
Services for Citizens	Air Transportation	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.	2.4.3 Create Airport Threat Profile
Services for Citizens	Air Transportation	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.	2.4.4 Submit Threat Profile

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Air Transportation	Airport Support	Airport Support involves the activities related to airport preservation, airport planning, and the acquisition of additional assets to provide assurance that the airport is operational. Note: The preparation, mitigation, response, and repair of airport operations from the effects of all disasters is included in the Disaster Preparedness and Planning Sub-Function in the Disaster Management Line of Business.	2.4.5 Monitor Airport Threat
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.1 Landside Operations
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.1.1.1 Manage Passengers
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.1.1.1.1 Check In Passenger
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.1.1.1.1.1 Verify Credential to Reservation Data
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.1.1.1.1.2 Authenticate Passenger to Credential
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.1.1.1.1.3 Create Passenger Info

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.1.1.1.2 Process CBP
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.1.1.1.3 Screen Passengers
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.1.1.1.4 Manage Manifest
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.1.1.2 Manage Baggage
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.1.1.2.1 Check In Baggage
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.1.1.2.2 Screen Baggage
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.1.1.2.3 Sort Baggage

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.1.2 Flight Level Security Screening
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.1.2.1 Flight Level Security Analysis
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.1.2.2 Manage Airport Security Alerts
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.2 Airside Operations
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.2.1 Monitor Surface Support Equipment
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.2.2 Manage Ramp Support
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.2.2.1 Assign Parking Position

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.2.2.2 Manage De-Icing/Anti-Icing
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.2.2.3 Manage Vehicles
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.2.2 Conduct Airfield Inspections
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.2.3 Conduct Airfield Inspections
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.2.4 Report Airfield Condition
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.3 Airport Emergency Response
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.3.1 Monitor Emergency Operations

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.3.2 Manage Emergency Operations
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.4 Auxiliary Operations
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.4.1 Manage Fuel Supply
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.4.2 Manage Waste/ HAZMAT
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.5 Cargo Management
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.5.1 Manage Cargo Operations
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.5.1.1 Process Cargo

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.5.1.2 Process Cargo Manifest
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.5.1.3 Screen Cargo
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.5.2 Manage Cargo Risk Assessment
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.6 Congestion Management
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.6.1 Gather Congestion Data
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.6.2 Perform Impact Analysis
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.6.3 Institute Congestion Procedure

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Air Transportation	Airport Operations	Airport Operations involves the activities that provide the airside, landside operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, security, resource limitations and local environmental issues. Note: The protection of airport operations from deliberate attack is included in the Transportation Security Sub-Function in the Homeland Security Line of Business.	3.6.4 Monitor Congestion
Services for Citizens	Air Transportation	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.	4.2 Capacity Management
Services for Citizens	Air Transportation	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.	4.2.1 Manage Airspace
Services for Citizens	Air Transportation	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.	4.2.2 Analyze Demand and Projected Capacity
Services for Citizens	Air Transportation	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.	4.2.3 Select Capacity Management Strategy
Services for Citizens	Air Transportation	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.	4.2.4 Design Airspace
Services for Citizens	Air Transportation	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.	4.2.5 Disseminate Proposed Airspace Design
Services for Citizens	Air Transportation	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.	4.2.6 Disseminate Execution Plan
Services for Citizens	Air Transportation	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.	4.2.7 Post-analysis of Execution Plan
Services for Citizens	Air Transportation	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.	4.3 Flow Contingency Management

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Air Transportation	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.	4.3.1 Monitor Airport Condition
Services for Citizens	Air Transportation	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.	4.3.2 Monitor Airspace Condition
Services for Citizens	Air Transportation	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.	4.3.3 Select Traffic Management Initiative
Services for Citizens	Air Transportation	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.	4.3.4 Restructure Capacity Limited Airspace
Services for Citizens	Air Transportation	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.	4.3.5 Disseminate Traffic Management Initiative
Services for Citizens	Air Transportation	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.	4.3.6 Reallocate Arrival/ Departures Access
Services for Citizens	Air Transportation	Air Navigation Support	Air Navigation Support involves the activities that provide the short and long term planning aspect needed to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities that establish the criteria for designing dynamic airspace to support flight safety and efficient flow of traffic.	4.3.7 Post-event Analysis of Selected TMI
Services for Citizens	Air Transportation	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.	5.1 Trajectory Management
Services for Citizens	Air Transportation	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.	5.1.1 Manage Arrival/ Departure

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Air Transportation	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.	5.1.1.1 Manage Surface Operations
Services for Citizens	Air Transportation	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.	5.1.1.1.1 Monitor Surface Condition
Services for Citizens	Air Transportation	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.	5.1.1.1.2 Manage Surface Movement
Services for Citizens	Air Transportation	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.	5.1.1.1.3 Issue Clearance
Services for Citizens	Air Transportation	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.	5.1.1.2 Issue Modification Information/ Clearance
Services for Citizens	Air Transportation	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.	5.1.2 Manage Trajectories within Flows
Services for Citizens	Air Transportation	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.	5.1.2.1 Assign Trajectory

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Air Transportation	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.	5.1.2.2 Negotiate Trajectory
Services for Citizens	Air Transportation	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.	5.1.2.3 Assign Spacing and Sequencing
Services for Citizens	Air Transportation	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.	5.1.2.4 Manage Flow Corridors
Services for Citizens	Air Transportation	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.	5.1.2.4.1 Assign Cruise (–Route) Flight Path
Services for Citizens	Air Transportation	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.	5.1.2.4.2 Implement Flow Corridors
Services for Citizens	Air Transportation	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.	5.1.2.4.2.1 Establish Flow Corridors
Services for Citizens	Air Transportation	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.	5.1.2.4.2.2 Designate Entry and Exit Location and Time

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Air Transportation	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.	5.2 Separation Management
Services for Citizens	Air Transportation	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.	5.2.1 Provide Separation Clearance
Services for Citizens	Air Transportation	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.	5.2.2 Delegate Separation Operation
Services for Citizens	Air Transportation	Air Navigation Operations	Air Navigation Operations involves the activities related to managing terminal traffic flow and cruise (en-route) traffic flow to assure safe, secure, and efficient access to national airspace by all users. It also includes the activities associated with, but not limited to, providing pilot briefings, en-route communications and visual flight rules, search and rescue services, assist lost traffic and aircraft in emergency situations, relay air traffic control clearances, and (NAS) status.	5.2.3 Monitor Separation
Services for Citizens	Air Transportation	Airspace Security Operations	Airspace Security Operations involves the activities related to securing the airspace to prevent or counter external attacks on aircraft and other airborne vehicles within the National Airspace System (NAS) or to use an aircraft as a weapon to attack assets and events on the ground. It also includes the activities associated with reducing security risks within the Air Domain, NextGen Secure Airspace systems, and the procedures to detect, prevent, or mitigate: a) anomalies in aircraft operation that indicate unauthorized use or attempted unauthorized use, b) aircraft not providing the appropriate cooperative data concerning identity and intentions, c) external attacks on aircraft, d) aircraft that can pose a threat from operating in the NAS.	4.1 Airspace Security Operations
Services for Citizens	Air Transportation	Airspace Security Operations	Airspace Security Operations involves the activities related to securing the airspace to prevent or counter external attacks on aircraft and other airborne vehicles within the National Airspace System (NAS) or to use an aircraft as a weapon to attack assets and events on the ground. It also includes the activities associated with reducing security risks within the Air Domain, NextGen Secure Airspace systems, and the procedures to detect, prevent, or mitigate: a) anomalies in aircraft operation that indicate unauthorized use or attempted unauthorized use, b) aircraft not providing the appropriate cooperative data concerning identity and intentions, c) external attacks on aircraft, d) aircraft that can pose a threat from operating in the NAS.	4.1.1 Manage Airspace Alerts

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Air Transportation	Airspace Security Operations	Airspace Security Operations involves the activities related to securing the airspace to prevent or counter external attacks on aircraft and other airborne vehicles within the National Airspace System (NAS) or to use an aircraft as a weapon to attack assets and events on the ground. It also includes the activities associated with reducing security risks within the Air Domain, NextGen Secure Airspace systems, and the procedures to detect, prevent, or mitigate: a) anomalies in aircraft operation that indicate unauthorized use or attempted unauthorized use, b) aircraft not providing the appropriate cooperative data concerning identity and intentions, c) external attacks on aircraft, d) aircraft that can pose a threat from operating in the NAS.	4.1.2 Monitor Airspace Alerts
Services for Citizens	Air Transportation	Airspace Security Operations	Airspace Security Operations involves the activities related to securing the airspace to prevent or counter external attacks on aircraft and other airborne vehicles within the National Airspace System (NAS) or to use an aircraft as a weapon to attack assets and events on the ground. It also includes the activities associated with reducing security risks within the Air Domain, NextGen Secure Airspace systems, and the procedures to detect, prevent, or mitigate: a) anomalies in aircraft operation that indicate unauthorized use or attempted unauthorized use, b) aircraft not providing the appropriate cooperative data concerning identity and intentions, c) external attacks on aircraft, d) aircraft that can pose a threat from operating in the NAS.	4.1.3 Restrict Airspace
Services for Citizens	Air Transportation	Flight Support	Flight Support involves the activities that support business objectives and the management and monitoring of the fleet to determine how execution plans and proposed airspace designs will affect business objectives (e.g., cost, planning, scheduling, etc.).	6.1 Business Operations
Services for Citizens	Air Transportation	Flight Support	Flight Support involves the activities that support business objectives and the management and monitoring of the fleet to determine how execution plans and proposed airspace designs will affect business objectives (e.g., cost, planning, scheduling, etc.).	6.1.1 Receive Airspace Design
Services for Citizens	Air Transportation	Flight Support	Flight Support involves the activities that support business objectives and the management and monitoring of the fleet to determine how execution plans and proposed airspace designs will affect business objectives (e.g., cost, planning, scheduling, etc.).	6.1.2 Analyze Business Case
Services for Citizens	Air Transportation	Flight Support	Flight Support involves the activities that support business objectives and the management and monitoring of the fleet to determine how execution plans and proposed airspace designs will affect business objectives (e.g., cost, planning, scheduling, etc.).	6.2 Fleet Management
Services for Citizens	Air Transportation	Flight Support	Flight Support involves the activities that support business objectives and the management and monitoring of the fleet to determine how execution plans and proposed airspace designs will affect business objectives (e.g., cost, planning, scheduling, etc.).	6.2.1 Plan Flight
Services for Citizens	Air Transportation	Flight Support	Flight Support involves the activities that support business objectives and the management and monitoring of the fleet to determine how execution plans and proposed airspace designs will affect business objectives (e.g., cost, planning, scheduling, etc.).	6.2.2 Schedule Flight
Services for Citizens	Air Transportation	Flight Support	Flight Support involves the activities that support business objectives and the management and monitoring of the fleet to determine how execution plans and proposed airspace designs will affect business objectives (e.g., cost, planning, scheduling, etc.).	6.2.3 Determine Flight Support Need

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Air Transportation	Flight Support	Flight Support involves the activities that support business objectives and the management and monitoring of the fleet to determine how execution plans and proposed airspace designs will affect business objectives (e.g., cost, planning, scheduling, etc.).	6.2.4 Secure Aircraft
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.1 Aircraft Surface Operations
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.1.1 Conduct Preflight Operations
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.1.1.1 Conduct Preflight Checklist
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.1.1.2 Receive Arrival/ Departure Information
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.1.1.3 Request Preflight Taxi Clearance
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.1.1.4 Pushback
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.1.1.5 Execute Taxi Preflight Operations
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.1.1.6 Report Flight Readiness
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.1.2 Conduct Post Arrival Operations
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.1.2.1 Request Post Flight Taxi Clearance
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.1.2.2 Execute Post Flight Taxi Operation
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.1.2.3 Park Aircraft
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.1.2.4 Execute Post Flight Reporting
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.2 Airborne Operations

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.2.1 Conduct Aircraft Operations
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.2.1.1 Take-off
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.2.1.2 Command Flight
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.2.1.3 Navigate Flight
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.2.1.3.1 Receive Separation Clearance
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.2.1.3.2 Monitor Airborne Information
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.2.1.4 Land
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.2.2 Monitor Weather Information
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.2.2.1 Obtain In-Flight Weather Data
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.2.2.2 Report In-Flight Weather Data
Services for Citizens	Air Transportation	Flight Operations	Flight Operations involves the activities that provide the flight execution on the ground and air, including ground/airborne 4DT Navigation, and performing self-separation.	7.2.2.3 Receive 4D Weather Picture
Mode of Delivery	Public Goods Creation & Management	Public Resources, Facilities, & Infrastructure Management	Public Resources, Facilities & Infrastructure Management involves the management and maintenance of Government-owned capital goods and resources (natural or otherwise) on behalf of the public, usually with benefits to the community at large as well as to the direct user. Examples of facilities and infrastructure include schools, roads, bridges, dams, harbors, and public buildings. Examples of resources include parks, cultural artifacts and art, endangered species, oil reserves, etc.	2.1 Airport Assets Management
Mode of Delivery	Public Goods Creation & Management	Public Resources, Facilities, & Infrastructure Management	Public Resources, Facilities & Infrastructure Management involves the management and maintenance of Government-owned capital goods and resources (natural or otherwise) on behalf of the public, usually with benefits to the community at large as well as to the direct user. Examples of facilities and infrastructure include schools, roads, bridges, dams, harbors, and public buildings. Examples of resources include parks, cultural artifacts and art, endangered species, oil reserves, etc.	2.1.2 Conduct Facilities Management

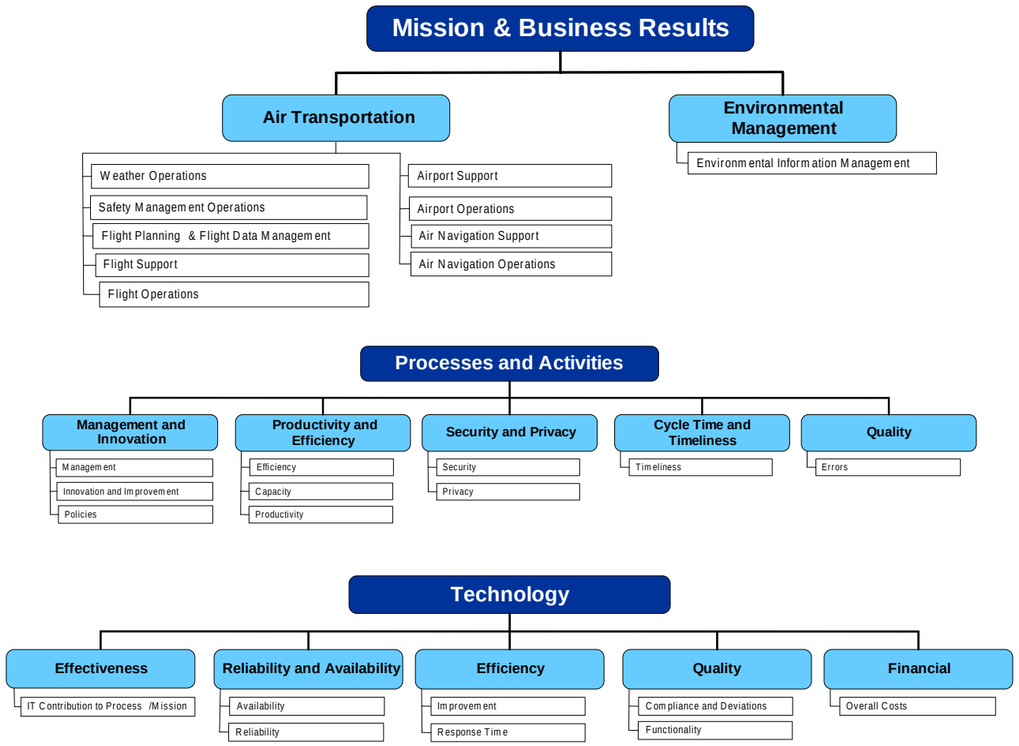
Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Mode of Delivery	Public Goods Creation & Management	Public Resources, Facilities, & Infrastructure Management	Public Resources, Facilities & Infrastructure Management involves the management and maintenance of Government-owned capital goods and resources (natural or otherwise) on behalf of the public, usually with benefits to the community at large as well as to the direct user. Examples of facilities and infrastructure include schools, roads, bridges, dams, harbors, and public buildings. Examples of resources include parks, cultural artifacts and art, endangered species, oil reserves, etc.	2.3 Airport Infrastructure Planning
Mode of Delivery	Public Goods Creation & Management	Public Resources, Facilities, & Infrastructure Management	Public Resources, Facilities & Infrastructure Management involves the management and maintenance of Government-owned capital goods and resources (natural or otherwise) on behalf of the public, usually with benefits to the community at large as well as to the direct user. Examples of facilities and infrastructure include schools, roads, bridges, dams, harbors, and public buildings. Examples of resources include parks, cultural artifacts and art, endangered species, oil reserves, etc.	2.3.1 Manage Regional Planning Ops
Mode of Delivery	Public Goods Creation & Management	Public Resources, Facilities, & Infrastructure Management	Public Resources, Facilities & Infrastructure Management involves the management and maintenance of Government-owned capital goods and resources (natural or otherwise) on behalf of the public, usually with benefits to the community at large as well as to the direct user. Examples of facilities and infrastructure include schools, roads, bridges, dams, harbors, and public buildings. Examples of resources include parks, cultural artifacts and art, endangered species, oil reserves, etc.	2.3.2 Design Landside Facilities
Mode of Delivery	Public Goods Creation & Management	Public Resources, Facilities, & Infrastructure Management	Public Resources, Facilities & Infrastructure Management involves the management and maintenance of Government-owned capital goods and resources (natural or otherwise) on behalf of the public, usually with benefits to the community at large as well as to the direct user. Examples of facilities and infrastructure include schools, roads, bridges, dams, harbors, and public buildings. Examples of resources include parks, cultural artifacts and art, endangered species, oil reserves, etc.	2.3.3 Design Airside Facilities
Mode of Delivery	Public Goods Creation & Management	Construction	Construction involves all programs and activities in which the Federal Government builds or constructs facilities, roads, dams, etc.	2.1 Airport Assets Management
Mode of Delivery	Public Goods Creation & Management	Construction	Construction involves all programs and activities in which the Federal Government builds or constructs facilities, roads, dams, etc.	2.1.2 Conduct Facilities Management
Mode of Delivery	Knowledge Creation & Management	Advising & Consulting	Advising and Consulting involves the guidance and consultative services provided by the Federal Government to support the implementation of a specific Service for Citizen.	8.4 Governance Management
Mode of Delivery	Knowledge Creation & Management	Advising & Consulting	Advising and Consulting involves the guidance and consultative services provided by the Federal Government to support the implementation of a specific Service for Citizen.	8.4.1 Develop Regulations
Mode of Delivery	Knowledge Creation & Management	Advising & Consulting	Advising and Consulting involves the guidance and consultative services provided by the Federal Government to support the implementation of a specific Service for Citizen.	8.4.1.3 Develop Policy and Guidance
Mode of Delivery	Regulatory Compliance & Enforcement	Inspections & Auditing	Inspections and Auditing involves the methodical examination and review of regulated activities to ensure compliance with standards for regulated activity.	8.4 Governance Management
Mode of Delivery	Regulatory Compliance & Enforcement	Inspections & Auditing	Inspections and Auditing involves the methodical examination and review of regulated activities to ensure compliance with standards for regulated activity.	8.4.2 Oversee Regulatory Compliance and Enforcement

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Mode of Delivery	Regulatory Compliance & Enforcement	Inspections & Auditing	Inspections and Auditing involves the methodical examination and review of regulated activities to ensure compliance with standards for regulated activity.	8.4.2.2 Audit Regulated Activities
Mode of Delivery	Regulatory Compliance & Enforcement	Standard Setting / Reporting Guideline Development	Standard Setting/Reporting Guideline Development involves the establishment of allowable limits associated with a regulated activity and the development of reporting requirements necessary to monitor and control compliance with allowable limits. This includes the development of requirements for product sampling and testing, emissions monitoring and control, incident reporting, financial filings, etc.	8.4 Governance Management
Mode of Delivery	Regulatory Compliance & Enforcement	Standard Setting / Reporting Guideline Development	Standard Setting/Reporting Guideline Development involves the establishment of allowable limits associated with a regulated activity and the development of reporting requirements necessary to monitor and control compliance with allowable limits. This includes the development of requirements for product sampling and testing, emissions monitoring and control, incident reporting, financial filings, etc.	8.4.1 Develop Regulations
Mode of Delivery	Regulatory Compliance & Enforcement	Standard Setting / Reporting Guideline Development	Standard Setting/Reporting Guideline Development involves the establishment of allowable limits associated with a regulated activity and the development of reporting requirements necessary to monitor and control compliance with allowable limits. This includes the development of requirements for product sampling and testing, emissions monitoring and control, incident reporting, financial filings, etc.	8.4.1.3 Develop Policy and Guidance
Mode of Delivery	Regulatory Compliance & Enforcement	Standard Setting / Reporting Guideline Development	Standard Setting/Reporting Guideline Development involves the establishment of allowable limits associated with a regulated activity and the development of reporting requirements necessary to monitor and control compliance with allowable limits. This includes the development of requirements for product sampling and testing, emissions monitoring and control, incident reporting, financial filings, etc.	8.4.2 Oversee Regulatory Compliance and Enforcement
Mode of Delivery	Regulatory Compliance & Enforcement	Standard Setting / Reporting Guideline Development	Standard Setting/Reporting Guideline Development involves the establishment of allowable limits associated with a regulated activity and the development of reporting requirements necessary to monitor and control compliance with allowable limits. This includes the development of requirements for product sampling and testing, emissions monitoring and control, incident reporting, financial filings, etc.	8.4.2.1 Develop Standards and Reporting Guidance
Mode of Delivery	Regulatory Compliance & Enforcement	Permits & Licensing	Permits and Licensing involves activities associated with granting, revoking, and the overall management of the documented authority necessary to perform a regulated task or function.	8.1 Human Resource Management
Mode of Delivery	Regulatory Compliance & Enforcement	Permits & Licensing	Permits and Licensing involves activities associated with granting, revoking, and the overall management of the documented authority necessary to perform a regulated task or function.	8.1.5 Certify Personnel
Support Delivery of Services	Controls & Oversight	Program Monitoring	Program Monitoring involves the data-gathering activities required to determine the effectiveness of internal and external programs and the extent to which they comply with related laws, regulations, and policies.	8.4 Governance Management
Support Delivery of Services	Controls & Oversight	Program Monitoring	Program Monitoring involves the data-gathering activities required to determine the effectiveness of internal and external programs and the extent to which they comply with related laws, regulations, and policies.	8.4.3 Monitor Compliance
Support Delivery of Services	Controls & Oversight	Program Monitoring	Program Monitoring involves the data-gathering activities required to determine the effectiveness of internal and external programs and the extent to which they comply with related laws, regulations, and policies.	8.4.3.1 Monitor Programs

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Support Delivery of Services	Controls & Oversight	Program Evaluation	Program Evaluation involves the analysis of internal and external program effectiveness and the determination of corrective actions as appropriate.	8.4 Governance Management
Support Delivery of Services	Controls & Oversight	Program Evaluation	Program Evaluation involves the analysis of internal and external program effectiveness and the determination of corrective actions as appropriate.	8.4.3 Monitor Compliance
Support Delivery of Services	Controls & Oversight	Program Evaluation	Program Evaluation involves the analysis of internal and external program effectiveness and the determination of corrective actions as appropriate.	8.4.3.2 Evaluate Programs
Support Delivery of Services	Regulatory Development	Policy & Guidance Development	Policy and Guidance Development involves the creation and dissemination of guidelines to assist in the interpretation and implementation of regulations.	8.4 Governance Management
Support Delivery of Services	Regulatory Development	Policy & Guidance Development	Policy and Guidance Development involves the creation and dissemination of guidelines to assist in the interpretation and implementation of regulations.	8.4.1 Develop Regulations
Support Delivery of Services	Regulatory Development	Policy & Guidance Development	Policy and Guidance Development involves the creation and dissemination of guidelines to assist in the interpretation and implementation of regulations.	8.4.1.3 Develop Policy and Guidance
Support Delivery of Services	Regulatory Development	Public Comment Tracking	Public Comment Tracking involves the activities of soliciting, maintaining, and responding to public comments regarding proposed regulations.	8.4 Governance Management
Support Delivery of Services	Regulatory Development	Public Comment Tracking	Public Comment Tracking involves the activities of soliciting, maintaining, and responding to public comments regarding proposed regulations.	8.4.1 Develop Regulations
Support Delivery of Services	Regulatory Development			8.4.1.2 Track Public Comment
Support Delivery of Services	Regulatory Development	Regulatory Creation	Regulatory Creation involves the activities of researching and drafting proposed and final regulations.	8.4 Governance Management
Support Delivery of Services	Regulatory Development	Regulatory Creation	Regulatory Creation involves the activities of researching and drafting proposed and final regulations.	8.4.1 Develop Regulations
Support Delivery of Services	Regulatory Development	Regulatory Creation	Regulatory Creation involves the activities of researching and drafting proposed and final regulations.	8.4.1.1 Create Regulations
Support Delivery of Services	Planning & Resource Allocation	Workforce Planning	Workforce Planning involves the processes for identifying the workforce competencies required to meet the agency's strategic goals and for developing the strategies to meet these requirements.	2.1 Airport Assets Management
Support Delivery of Services	Planning & Resource Allocation	Workforce Planning	Workforce Planning involves the processes for identifying the workforce competencies required to meet the agency's strategic goals and for developing the strategies to meet these requirements.	2.1.1 Perform Personnel Management
Support Delivery of Services	Planning & Resource Allocation	Workforce Planning	Workforce Planning involves the processes for identifying the workforce competencies required to meet the agency's strategic goals and for developing the strategies to meet these requirements.	8.1 Human Resource Management
Support Delivery of Services	Planning & Resource Allocation	Workforce Planning	Workforce Planning involves the processes for identifying the workforce competencies required to meet the agency's strategic goals and for developing the strategies to meet these requirements.	8.1.1 Develop HR Strategy
Support Delivery of Services	Planning & Resource Allocation	Budget Formulation	Budget Formulation involves all activities undertaken to determine priorities for future spending and to develop an itemized forecast of future funding and expenditures during a targeted period of time. This includes the collection and use of performance information to assess the effectiveness of programs and develop budget priorities.	8.5 Financial Management
Support Delivery of Services	Planning & Resource Allocation	Budget Formulation	Budget Formulation involves all activities undertaken to determine priorities for future spending and to develop an itemized forecast of future funding and expenditures during a targeted period of time. This includes the collection and use of performance information to assess the effectiveness of programs and develop budget priorities.	8.5.1 Manage Budget

Business Area	Line of Business	Sub-Function	Sub-Function Description	OV-5 Activity
Support Delivery of Services	Planning & Resource Allocation	Strategic Planning	Strategic Planning entails the determination of annual and long-term goals and the identification of the best approach for achieving those goals.	8.5 Financial Management
Support Delivery of Services	Planning & Resource Allocation	Strategic Planning	Strategic Planning entails the determination of annual and long-term goals and the identification of the best approach for achieving those goals.	8.5.1 Manage Budget
Support Delivery of Services	Planning & Resource Allocation	Capital Planning	Capital Planning involves the processes for ensuring that appropriate investments are selected for capital expenditures.	8.5 Financial Management
Support Delivery of Services	Planning & Resource Allocation	Capital Planning	Capital Planning involves the processes for ensuring that appropriate investments are selected for capital expenditures.	8.5.1 Manage Budget
Support Delivery of Services	Planning & Resource Allocation	Enterprise Architecture	Enterprise Architecture is an established process for describing the current state and defining the target state and transition strategy for an organization's people, processes, and technology.	8.5 Financial Management
Support Delivery of Services	Planning & Resource Allocation	Enterprise Architecture	Enterprise Architecture is an established process for describing the current state and defining the target state and transition strategy for an organization's people, processes, and technology.	8.5.1 Manage Budget
Support Delivery of Services	Internal Risk Management & Mitigation	Contingency Planning	Contingency Planning involves the actions required to plan for, respond to, and mitigate damaging events.	2.2 Risk Assessment Management
Support Delivery of Services	Internal Risk Management & Mitigation	Contingency Planning	Contingency Planning involves the actions required to plan for, respond to, and mitigate damaging events.	5.3 Contingency/ Business Continuity Management
Support Delivery of Services	Internal Risk Management & Mitigation	Contingency Planning	Contingency Planning involves the actions required to plan for, respond to, and mitigate damaging events.	5.3.1 Develop Contingency Plan
Support Delivery of Services	Internal Risk Management & Mitigation	Contingency Planning	Contingency Planning involves the actions required to plan for, respond to, and mitigate damaging events.	5.3.2 Initiate Contingency Plan
Support Delivery of Services	Internal Risk Management & Mitigation	Continuity of Operations	Continuity of Operations involves the activities associated with the identification of critical systems and processes, and the planning and preparation required to ensure that these systems and processes will be available in the event of a catastrophic event.	5.3 Contingency/ Business Continuity Management
Support Delivery of Services	Internal Risk Management & Mitigation	Continuity of Operations	Continuity of Operations involves the activities associated with the identification of critical systems and processes, and the planning and preparation required to ensure that these systems and processes will be available in the event of a catastrophic event.	5.3.1 Develop Contingency Plan
Support Delivery of Services	Internal Risk Management & Mitigation	Service Recovery	Service Recovery involves the internal actions necessary to develop a plan for resuming operations after a catastrophic event occurs.	5.3 Contingency/ Business Continuity Management
Support Delivery of Services	Internal Risk Management & Mitigation	Service Recovery	Service Recovery involves the internal actions necessary to develop a plan for resuming operations after a catastrophic event occurs.	5.3.1 Develop Contingency Plan
Support Delivery of Services	Internal Risk Management & Mitigation	Service Recovery	Service Recovery involves the internal actions necessary to develop a plan for resuming operations after a catastrophic event occurs.	5.3.4 Conduct Recovery Operation

NextGen EA Performance Reference Architecture



Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Customer Services	Customer Initiated Assistance	Self-Service	Defines the set of capabilities that allow an organization's customers to sign up for a particular service at their own initiative.	3.1 Landside Operations
Customer Services	Customer Initiated Assistance	Self-Service	Defines the set of capabilities that allow an organization's customers to sign up for a particular service at their own initiative.	3.1.1 Manage Passenger Baggage Processing
Customer Services	Customer Initiated Assistance	Self-Service	Defines the set of capabilities that allow an organization's customers to sign up for a particular service at their own initiative.	3.1.1.1 Manage Passengers
Customer Services	Customer Initiated Assistance	Self-Service	Defines the set of capabilities that allow an organization's customers to sign up for a particular service at their own initiative.	3.1.1.1.1 Check In Passenger
Customer Services	Customer Initiated Assistance	Self-Service	Defines the set of capabilities that allow an organization's customers to sign up for a particular service at their own initiative.	3.1.1.2.1 Check In Baggage
Customer Services	Customer Initiated Assistance	Reservations / Registration	Defines the set of capabilities that allow electronic enrollment and confirmations for services.	3.1.1 Manage Passenger Baggage Processing
Customer Services	Customer Initiated Assistance	Reservations / Registration	Defines the set of capabilities that allow electronic enrollment and confirmations for services.	3.1.1.1 Manage Passengers
Customer Services	Customer Initiated Assistance	Reservations / Registration	Defines the set of capabilities that allow electronic enrollment and confirmations for services.	3.1.1.1.1 Check In Passenger
Customer Services	Customer Initiated Assistance	Reservations / Registration	Defines the set of capabilities that allow electronic enrollment and confirmations for services.	3.1 Landside Operations
Customer Services	Customer Initiated Assistance	Scheduling	Defines the set of capabilities that support the plan for performing work or services to meet the needs of an organization's customers.	6.2 Fleet Management
Customer Services	Customer Initiated Assistance	Scheduling	Defines the set of capabilities that support the plan for performing work or services to meet the needs of an organization's customers.	6.2.2 Schedule Flight
Customer Services	Customer Preferences	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.	1.1.4 Disseminate Weather Picture
Customer Services	Customer Preferences	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.	1.1.4.1 Provide Weather Subscription Services
Customer Services	Customer Preferences	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.	1.4 Flight Planning and Flight Data Management
Customer Services	Customer Preferences	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.	1.4.2 Provide Flight Data Management
Customer Services	Customer Preferences	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.	1.4.2.3.1 Provide Flight Data Subscription Services
Customer Services	Customer Preferences	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.	1.5 Aeronautical Information Management
Customer Services	Customer Preferences	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.	1.5.2 Disseminate Aeronautical Information
Customer Services	Customer Preferences	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.	1.5.2.1 Provide Aeronautical Information Subscription Services

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Customer Services	Customer Preferences	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.	1.6 Geospatial Information Management
Customer Services	Customer Preferences	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.	1.6.2 Disseminate Geospatial Information
Customer Services	Customer Preferences	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.	1.6.2.1 Provide Geospatial Information Subscription Service
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	1.1.4 Disseminate Weather Picture
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	1.1.4.2 Publish Weather Picture
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	1.5 Aeronautical Information Management
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	1.5.2 Disseminate Aeronautical Information
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	1.5.2.2 Publish Aeronautical Information
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	1.6 Geospatial Information Management
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	1.6.2 Disseminate Geospatial Information
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	1.6.2.2 Publish Geospatial Information
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	1.7 Environmental Information Management
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	1.7.3 Report Environmental Conditions
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	3.1 Landside Operations
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	4.1 Airspace Security Operations
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	4.1.1 Manage Airspace Alerts
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	5.3 Contingency/Business Continuity Management
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	5.3.3 Emergency Operation Procedure
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	5.3.3.2 Notify Emergency Responder

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Customer Services	Customer Relationship Management	Partner Relationship Management	Provide a framework to promote the effective collaboration between an organization and its business partners, particularly members of the distribution chain (e.g., channel and alliance partners, resellers, agents, brokers, and dealers) and other third parties that support operations and service delivery to an organization's customers; includes performance evaluation of partners, if necessary.	8.1 Human Resource Management
Customer Services	Customer Relationship Management	Partner Relationship Management	Provide a framework to promote the effective collaboration between an organization and its business partners, particularly members of the distribution chain (e.g., channel and alliance partners, resellers, agents, brokers, and dealers) and other third parties that support operations and service delivery to an organization's customers; includes performance evaluation of partners, if necessary.	8.1.6 Manage Labor Relations
Customer Services	Customer Relationship Management	Partner Relationship Management	Provide a framework to promote the effective collaboration between an organization and its business partners, particularly members of the distribution chain (e.g., channel and alliance partners, resellers, agents, brokers, and dealers) and other third parties that support operations and service delivery to an organization's customers; includes performance evaluation of partners, if necessary.	8.4.3 Monitor Compliance
Customer Services	Customer Relationship Management	Partner Relationship Management	Provide a framework to promote the effective collaboration between an organization and its business partners, particularly members of the distribution chain (e.g., channel and alliance partners, resellers, agents, brokers, and dealers) and other third parties that support operations and service delivery to an organization's customers; includes performance evaluation of partners, if necessary.	8.4.3.1 Monitor Programs
Customer Services	Customer Relationship Management	Partner Relationship Management	Provide a framework to promote the effective collaboration between an organization and its business partners, particularly members of the distribution chain (e.g., channel and alliance partners, resellers, agents, brokers, and dealers) and other third parties that support operations and service delivery to an organization's customers; includes performance evaluation of partners, if necessary.	8.4.3.2 Evaluate Programs
Process Automation Services	Tracking & Workflow	Process Tracking	Defines the set of capabilities to allow the monitoring of activities within the business cycle.	3.1 Landside Operations
Process Automation Services	Tracking & Workflow	Process Tracking	Defines the set of capabilities to allow the monitoring of activities within the business cycle.	3.1.1 Manage Passenger Baggage Processing
Process Automation Services	Tracking & Workflow	Process Tracking	Defines the set of capabilities to allow the monitoring of activities within the business cycle.	3.1.1.1.4 Manage Manifest
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	1.5 Aeronautical Information Management

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	1.5.1 Collect Aeronautical Data
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	1.6 Geospatial Information Management
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	1.6.1 Collect Geospatial Information
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	1.9 Communication Service Management
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	1.9.1 Manage Communication
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	1.9.1.5 Collect Utilization Data
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	2.2 Risk Assessment Management
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	2.2.1 Collect Airport Risk Assessment Data
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	2.4 Airport Threat Profile Management
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	2.4.1 Collect Airport Threat Data
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	3.6 Congestion Management
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	3.6.1 Gather Congestion Data
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	6.1 Business Operations
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	6.1.1 Receive Airspace Design
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	7.1 Aircraft Surface Operations

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	7.1.1.2 Receive Arrival/ Departure Information
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	7.1.1.6 Report Flight Readiness
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	7.1.2.1 Request Post Flight Taxi Clearance
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	7.2 Airborne Operations
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	7.2.1.3.1 Receive Separation Clearance
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	7.2.2 Monitor Weather Information
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	7.2.2.1 Obtain In-Flight Weather Data
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	7.2.2.3 Receive 4D Weather Picture
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.1.4 Disseminate Weather Picture
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.1.4.2 Publish Weather Picture
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.10 Metrics Management
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.10.3 Disseminate Performance Metrics Reports
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.4 Flight Planning and Flight Data Management
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.4.2 Provide Flight Data Management
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.4.2.1 Establish Aircraft Capabilities

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.4.2.3 Disseminate Flight Data
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.4.2.3.2 Publish Flight Data
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.5 Aeronautical Information Management
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.5.2 Disseminate Aeronautical Information
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.5.2.2 Publish Aeronautical Information
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.6 Geospatial Information Management
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.6.2 Disseminate Geospatial Information
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.6.2.2 Publish Geospatial Information
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.7 Environmental Information Management
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.7.3 Report Environmental Conditions
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	2.2 Risk Assessment Management
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	2.2.4 Report Airport Risk Assessment
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	2.4 Airport Threat Profile Management
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	2.4.4 Submit Threat Profile
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	3.1 Landside Operations

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	3.1.2 Flight Level Security Screening
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	3.1.2.2 Manage Airport Security Alerts
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	3.2 Airside Operations
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	3.2.1 Monitor Surface Support Equipment
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	4.2 Capacity Management
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	4.2.5 Disseminate Proposed Airspace Design
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	4.2.6 Disseminate Execution Plan
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	4.3 Flow Contingency Management
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	4.3.5 Disseminate Traffic Management Initiative
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	5.1 Trajectory Management
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	5.1.1 Manage Arrival/ Departure
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	5.1.1.1 Manage Surface Operations
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	5.1.1.1.3 Issue Clearance
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	5.1.1.2 Issue Modification Information/Clearance
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	5.3 Contingency/Business Continuity Management

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	5.3.3 Emergency Operation Procedure
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	5.3.3.2 Notify Emergency Responder
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	7.1 Aircraft Surface Operations
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	7.1.1.6 Report Flight Readiness
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	7.1.2.1 Request Post Flight Taxi Clearance
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	1.8 Safety Management Service
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	1.8.1 Provide Aviation Safety Service
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	1.9 Communication Service Management
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	1.9.2 Manage Spectrum
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	1.9.2.1 Manage Frequency Allocation
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	1.9.2.2 Assign Radio Frequency
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	8.4 Governance Management
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	8.4.1 Develop Regulations
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	8.4.1.1 Create Regulations
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	8.4.1.2 Track Public Comment

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	8.4.1.3 Develop Policy and Guidance
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	8.4.2 Oversee Regulatory Compliance and Enforcement
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	8.4.2.1 Develop Standards and Reporting Guidance
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	8.4.2.2 Audit Regulated Activities
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	8.6.5 Conduct Information Management
Business Management Services	Management of Process	Program / Project Management	Defines the set of capabilities for the management and control of a particular effort of an organization.	8.4.3 Monitor Compliance
Business Management Services	Management of Process	Program / Project Management	Defines the set of capabilities for the management and control of a particular effort of an organization.	8.4.3.1 Monitor Programs
Business Management Services	Management of Process	Program / Project Management	Defines the set of capabilities for the management and control of a particular effort of an organization.	8.4.3.2 Evaluate Programs
Business Management Services	Management of Process	Quality Management	Defines the set of capabilities intended to help determine the level that a product or service satisfies certain requirements.	1.7 Environmental Information Management
Business Management Services	Management of Process	Quality Management	Defines the set of capabilities intended to help determine the level that a product or service satisfies certain requirements.	1.7.1 Monitor Environmental Impacts
Business Management Services	Management of Process	Quality Management	Defines the set of capabilities intended to help determine the level that a product or service satisfies certain requirements.	1.7.2 Manage Environmental Impacts
Business Management Services	Management of Process	Quality Management	Defines the set of capabilities intended to help determine the level that a product or service satisfies certain requirements.	8.6 Information and Technology Management
Business Management Services	Management of Process	Quality Management	Defines the set of capabilities intended to help determine the level that a product or service satisfies certain requirements.	8.6.3 Maintain Systems
Business Management Services	Management of Process	Change Management	Defines the set of capabilities that control the process for updates or modifications to the existing documents, software or business processes of an organization.	8.6 Information and Technology Management
Business Management Services	Management of Process	Change Management	Defines the set of capabilities that control the process for updates or modifications to the existing documents, software or business processes of an organization.	8.6.1 Maintain IT Infrastructure
Business Management Services	Management of Process	Change Management	Defines the set of capabilities that control the process for updates or modifications to the existing documents, software or business processes of an organization.	8.6.2 Manage Change
Business Management Services	Management of Process	Change Management	Defines the set of capabilities that control the process for updates or modifications to the existing documents, software or business processes of an organization.	8.6.3 Maintain Systems

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Management Services	Management of Process	Configuration Management	Defines the set of capabilities that control the hardware and software environments, as well as documents of an organization.	8.6 Information and Technology Management
Business Management Services	Management of Process	Configuration Management	Defines the set of capabilities that control the hardware and software environments, as well as documents of an organization.	8.6.1 Maintain IT Infrastructure
Business Management Services	Management of Process	Configuration Management	Defines the set of capabilities that control the hardware and software environments, as well as documents of an organization.	8.6.2 Manage Change
Business Management Services	Management of Process	Configuration Management	Defines the set of capabilities that control the hardware and software environments, as well as documents of an organization.	8.6.3 Maintain Systems
Business Management Services	Management of Process	Requirements Management	Defines the set of capabilities for gathering, analyzing and fulfilling the needs and prerequisites of an organization's efforts.	8.6 Information and Technology Management
Business Management Services	Management of Process	Requirements Management	Defines the set of capabilities for gathering, analyzing and fulfilling the needs and prerequisites of an organization's efforts.	8.6.3 Maintain Systems
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	1.8 Safety Management Service
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	1.8.2 Provide Safety Risk Management
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	2.2 Risk Assessment Management
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	2.2.2 Assess Airport Risk Condition
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	2.2.3 Manage Airport Risk Assessment
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	2.2.4 Report Airport Risk Assessment
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	2.4 Airport Threat Profile Management
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	2.4.1 Collect Airport Threat Data
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	2.4.2 Analyze Airport Threat Data
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	2.4.3 Create Airport Threat Profile

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	2.4.4 Submit Threat Profile
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	2.4.5 Monitor Airport Threat
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	3.1 Landside Operations
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	3.1.2 Flight Level Security Screening
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	3.1.2.2 Manage Airport Security Alerts
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	3.1.4 Manage Gate Operations
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	3.3 Airport Emergency Response
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	3.3.2 Manage Emergency Operations
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	3.5 Cargo Management
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	3.5.2 Manage Cargo Risk Assessment
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	4.1 Airspace Security Operations
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	5.3 Contingency/Business Continuity Management
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	5.3.1 Develop Contingency Plan
Business Management Services	Supply Chain Management	Procurement	Defines the set of capabilities that support the ordering and purchasing of products and services.	2.1 Airport Assets Management
Business Management Services	Supply Chain Management	Procurement	Defines the set of capabilities that support the ordering and purchasing of products and services.	2.1.3 Conduct Equipment Management

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Management Services	Supply Chain Management	Procurement	Defines the set of capabilities that support the ordering and purchasing of products and services.	3.2 Airside Operations
Business Management Services	Supply Chain Management	Procurement	Defines the set of capabilities that support the ordering and purchasing of products and services.	3.2.2.3 Manage Vehicles
Business Management Services	Supply Chain Management	Procurement	Defines the set of capabilities that support the ordering and purchasing of products and services.	8.3 Supply Chain Management
Business Management Services	Supply Chain Management	Procurement	Defines the set of capabilities that support the ordering and purchasing of products and services.	8.3.1 Acquire Goods
Business Management Services	Supply Chain Management	Procurement	Defines the set of capabilities that support the ordering and purchasing of products and services.	8.3.2 Acquire Services
Business Management Services	Supply Chain Management	Inventory Management	Provide for the balancing of customer service levels with inventory investment.	8.3 Supply Chain Management
Business Management Services	Supply Chain Management			8.3.3 Manage Inventory
Business Management Services	Supply Chain Management	Catalog Management	Defines the set of capabilities that support the listing of available products or services that an organization offers.	8.3 Supply Chain Management
Business Management Services	Supply Chain Management			8.3.3 Manage Inventory
Business Management Services	Supply Chain Management	Ordering / Purchasing	Defines the set of capabilities that allow the placement of request for a product.	2.1 Airport Assets Management
Business Management Services	Supply Chain Management	Ordering / Purchasing	Defines the set of capabilities that allow the placement of request for a product.	2.1.3 Conduct Equipment Management
Business Management Services	Supply Chain Management	Ordering / Purchasing	Defines the set of capabilities that allow the placement of request for a product.	3.2 Airside Operations
Business Management Services	Supply Chain Management	Ordering / Purchasing	Defines the set of capabilities that allow the placement of request for a product.	3.2.2.3 Manage Vehicles
Business Management Services	Supply Chain Management	Ordering / Purchasing	Defines the set of capabilities that allow the placement of request for a product.	8.3 Supply Chain Management
Business Management Services	Supply Chain Management	Ordering / Purchasing	Defines the set of capabilities that allow the placement of request for a product.	8.3.1 Acquire Goods
Business Management Services	Investment Management	Strategic Planning & Management	Defines the set of capabilities that support the determination of long-term goals and the identification of the best approach for achieving those goals.	8.5 Financial Management
Business Management Services	Investment Management	Strategic Planning & Management	Defines the set of capabilities that support the determination of long-term goals and the identification of the best approach for achieving those goals.	8.5.1 Manage Budget
Business Management Services	Investment Management	Portfolio Management	Defines the set of capabilities that support the administration of a group of investments held by an organization.	8.5 Financial Management
Business Management Services	Investment Management	Portfolio Management	Defines the set of capabilities that support the administration of a group of investments held by an organization.	8.5.1 Manage Budget
Business Management Services	Investment Management	Performance Management	Defines the set of capabilities for measuring the effectiveness of an organization's financial assets and capital.	8.4.3 Monitor Compliance
Business Management Services	Investment Management	Performance Management	Defines the set of capabilities for measuring the effectiveness of an organization's financial assets and capital.	8.4.3.1 Monitor Programs

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Management Services	Investment Management	Performance Management	Defines the set of capabilities for measuring the effectiveness of an organization's financial assets and capital.	8.4.3.2 Evaluate Programs
Digital Asset Services	Document Management	Library / Storage	Defines the set of capabilities that support document and data warehousing and archiving.	1.4 Flight Planning and Flight Data Management
Digital Asset Services	Document Management	Library / Storage	Defines the set of capabilities that support document and data warehousing and archiving.	1.4.2 Provide Flight Data Management
Digital Asset Services	Document Management	Library / Storage	Defines the set of capabilities that support document and data warehousing and archiving.	1.4.2.5 Archive Flight Data
Digital Asset Services	Document Management	Library / Storage	Defines the set of capabilities that support document and data warehousing and archiving.	8.6.5 Conduct Information Management
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	1.1.1 Collect/Analyze Weather Observation
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	1.10 Metrics Management
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	1.10.1 Collect Performance Metrics Data
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	1.5 Aeronautical Information Management
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	1.5.1 Collect Aeronautical Data
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	1.6 Geospatial Information Management
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	1.6.1 Collect Geospatial Information
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	1.9 Communication Service Management
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	1.9.1 Manage Communication
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	1.9.1.5 Collect Utilization Data
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	2.2 Risk Assessment Management
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	2.2.1 Collect Airport Risk Assessment Data
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	2.4 Airport Threat Profile Management
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	2.4.1 Collect Airport Threat Data
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	3.6 Congestion Management
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	3.6.1 Gather Congestion Data
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	5.3 Contingency/Business Continuity Management
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	5.3.3 Emergency Operation Procedure
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	5.3.3.1 Manage Emergency Information
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	5.3.3.1.1 Manage Alert Information
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	6.1 Business Operations

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	6.1.1 Receive Airspace Design
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	7.1 Aircraft Surface Operations
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	7.1.1.2 Receive Arrival/ Departure Information
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	7.2 Airborne Operations
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	7.2.1.3.1 Receive Separation Clearance
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	7.2.2 Monitor Weather Information
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	7.2.2.1 Obtain In-Flight Weather Data
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	7.2.2.3 Receive 4D Weather Picture
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	8.6.5 Conduct Information Management
Digital Asset Services	Knowledge Management	Knowledge Engineering	Defines the set of capabilities that support the translation of knowledge from an expert into the knowledge base of an expert system.	1.1.2 Determine NAS Weather Integration Algorithm
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.1.4 Disseminate Weather Picture
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.1.4.2 Publish Weather Picture
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.10 Metrics Management
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.10.3 Disseminate Performance Metrics Reports
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.4 Flight Planning and Flight Data Management
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.4.2 Provide Flight Data Management
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.4.2.1 Establish Aircraft Capabilities
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.4.2.3 Disseminate Flight Data
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.4.2.3.2 Publish Flight Data
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.5 Aeronautical Information Management
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.5.2 Disseminate Aeronautical Information
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.5.2.2 Publish Aeronautical Information

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.6 Geospatial Information Management
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.6.2 Disseminate Geospatial Information
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.6.2.2 Publish Geospatial Information
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.7 Environmental Information Management
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.7.3 Report Environmental Conditions
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	2.2 Risk Assessment Management
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	2.2.4 Report Airport Risk Assessment
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	2.4 Airport Threat Profile Management
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	2.4.4 Submit Threat Profile
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	3.1 Landside Operations
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	3.1.2 Flight Level Security Screening
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	3.1.2.2 Manage Airport Security Alerts
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	3.2 Airside Operations
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	3.2.1 Monitor Surface Support Equipment
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	4.2 Capacity Management
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	4.2.5 Disseminate Proposed Airspace Design
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	4.2.6 Disseminate Execution Plan
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	4.3 Flow Contingency Management
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	4.3.5 Disseminate Traffic Management Initiative

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	5.1 Trajectory Management
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	5.1.1 Manage Arrival/ Departure
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	5.1.1.1 Manage Surface Operations
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	5.1.1.1.3 Issue Clearance
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	5.1.1.2 Issue Modification Information/Clearance
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	5.3 Contingency/Business Continuity Management
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	5.3.3 Emergency Operation Procedure
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	5.3.3.2 Notify Emergency Responder
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	8.6.5 Conduct Information Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.1.4 Disseminate Weather Picture
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.1.4.2 Publish Weather Picture
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.10 Metrics Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.10.3 Disseminate Performance Metrics Reports
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.4 Flight Planning and Flight Data Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.4.2 Provide Flight Data Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.4.2.1 Establish Aircraft Capabilities
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.4.2.3 Disseminate Flight Data

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.4.2.3.2 Publish Flight Data
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.5 Aeronautical Information Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.5.2 Disseminate Aeronautical Information
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.5.2.2 Publish Aeronautical Information
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.6 Geospatial Information Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.6.2 Disseminate Geospatial Information
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.6.2.2 Publish Geospatial Information
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.7 Environmental Information Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.7.3 Report Environmental Conditions
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	2.2 Risk Assessment Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	2.2.4 Report Airport Risk Assessment
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	2.4 Airport Threat Profile Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	2.4.4 Submit Threat Profile
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	3.1 Landside Operations
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	3.1.2 Flight Level Security Screening

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	3.1.2.2 Manage Airport Security Alerts
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	3.2 Airside Operations
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	3.2.1 Monitor Surface Support Equipment
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	4.2 Capacity Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	4.2.5 Disseminate Proposed Airspace Design
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	4.2.6 Disseminate Execution Plan
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	4.3 Flow Contingency Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	4.3.5 Disseminate Traffic Management Initiative
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	5.1 Trajectory Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	5.1.1 Manage Arrival/ Departure
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	5.1.1.1 Manage Surface Operations
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	5.1.1.1.3 Issue Clearance
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	5.1.1.2 Issue Modification Information/Clearance
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	5.3 Contingency/Business Continuity Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	5.3.3 Emergency Operation Procedure

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	5.3.3.2 Notify Emergency Responder
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	1.1.1 Collect/Analyze Weather Observation
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	1.1.2 Determine NAS Weather Integration Algorithm
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	1.10 Metrics Management
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	1.10.2 Analyze Performance Metrics Data
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	2.4 Airport Threat Profile Management
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	2.4.2 Analyze Airport Threat Data
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	3.1 Landside Operations
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	3.1.2 Flight Level Security Screening
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	3.1.2.1 Flight Level Security Analysis
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	3.6 Congestion Management
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	3.6.2 Perform Impact Analysis
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	4.2 Capacity Management
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	4.2.2 Analyze demand and projected capacity
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	4.2.7 Post-analysis of Execution Plan

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	4.3 Flow Contingency Management
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	4.3.7 Post-event analysis of selected TMI
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	5.3 Contingency/Business Continuity Management
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	5.3.5 Conduct Post Analysis of Contingency/ Emergency Operation Procedure
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	8.5 Financial Management
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	8.5.3 Report Financials
Business Analytical Services	Analysis & Statistics	Radiological	Defines the set of capabilities that support the use of radiation and x-ray technologies for analysis and scientific examination.	3.1 Landside Operations
Business Analytical Services	Analysis & Statistics	Radiological	Defines the set of capabilities that support the use of radiation and x-ray technologies for analysis and scientific examination.	3.1.1.2.2 Screen Baggage
Business Analytical Services	Analysis & Statistics	Radiological	Defines the set of capabilities that support the use of radiation and x-ray technologies for analysis and scientific examination.	3.5 Cargo Management
Business Analytical Services	Analysis & Statistics	Radiological	Defines the set of capabilities that support the use of radiation and x-ray technologies for analysis and scientific examination.	3.5.1.3 Screen Cargo
Business Analytical Services	Visualization	Mapping, Geospatial, Elevation	Provides for the representation of position information through the use of attributes such as elevation, latitude, and longitude coordinates.	1.6 Geospatial Information Management
Business Analytical Services	Visualization	Mapping, Geospatial, Elevation	Provides for the representation of position information through the use of attributes such as elevation, latitude, and longitude coordinates.	1.6.1 Collect Geospatial Information
Business Analytical Services	Visualization	Graphing / Charting	Defines the set of capabilities that support the presentation of information in the form of diagrams or tables.	7.2 Airborne Operations
Business Analytical Services	Visualization	Graphing / Charting	Defines the set of capabilities that support the presentation of information in the form of diagrams or tables.	7.2.2 Monitor Weather Information
Business Analytical Services	Visualization	Graphing / Charting	Defines the set of capabilities that support the presentation of information in the form of diagrams or tables.	7.2.2.2 Report In-Flight Weather Data
Business Analytical Services	Visualization	Graphing / Charting	Defines the set of capabilities that support the presentation of information in the form of diagrams or tables.	1.1.3 Provide Weather Diagnostic Forecast
Business Analytical Services	Visualization	Imagery	Defines the set of capabilities that support the creation of film or electronic images from pictures, paper forms or graphics for static or dynamic use.	1.1.3 Provide Weather Diagnostic Forecast

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Analytical Services	Visualization	Imagery	Defines the set of capabilities that support the creation of film or electronic images from pictures, paper forms or graphics for static or dynamic use.	7.2 Airborne Operations
Business Analytical Services	Visualization	Imagery	Defines the set of capabilities that support the creation of film or electronic images from pictures, paper forms or graphics for static or dynamic use.	7.2.2 Monitor Weather Information
Business Analytical Services	Visualization	Imagery	Defines the set of capabilities that support the creation of film or electronic images from pictures, paper forms or graphics for static or dynamic use.	7.2.2.2 Report In-Flight Weather Data
Business Analytical Services	Reporting	Ad Hoc	Defines the set of capabilities that support the use of dynamic reports on an as needed basis.	1.1.3 Provide Weather Diagnostic Forecast
Business Analytical Services	Reporting	Ad Hoc	Defines the set of capabilities that support the use of dynamic reports on an as needed basis.	1.7 Environmental Information Management
Business Analytical Services	Reporting	Ad Hoc	Defines the set of capabilities that support the use of dynamic reports on an as needed basis.	1.7.3 Report Environmental Conditions
Business Analytical Services	Reporting	Ad Hoc	Defines the set of capabilities that support the use of dynamic reports on an as needed basis.	8.5 Financial Management
Business Analytical Services	Reporting	Ad Hoc	Defines the set of capabilities that support the use of dynamic reports on an as needed basis.	8.5.3 Report Financials
Business Analytical Services	Reporting	Ad Hoc	Defines the set of capabilities that support the use of dynamic reports on an as needed basis.	3.2.1 Monitor Surface Support Equipment
Business Analytical Services	Reporting	Ad Hoc	Defines the set of capabilities that support the use of dynamic reports on an as needed basis.	3.2.4 Report Airfield Condition
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	1.1.3 Provide Weather Diagnostic Forecast
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	1.10 Metrics Management
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	1.10.3 Disseminate Performance Metrics Reports
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	1.7 Environmental Information Management
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	1.7.3 Report Environmental Conditions
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	2.2 Risk Assessment Management
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	2.2.4 Report Airport Risk Assessment
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	3.2.1 Monitor Surface Support Equipment

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	3.2.4 Report Airfield Condition
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	7.2 Airborne Operations
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	7.2.2 Monitor Weather Information
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	7.2.2.2 Report In-Flight Weather Data
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	8.5 Financial Management
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	8.5.3 Report Financials
Business Analytical Services	Reporting	OLAP	Defines the set of capabilities that support the analysis of information that has been summarized into multidimensional views and hierarchies.	8.5 Financial Management
Business Analytical Services	Reporting	OLAP	Defines the set of capabilities that support the analysis of information that has been summarized into multidimensional views and hierarchies.	8.5.3 Report Financials
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	1.1.2 Determine NAS Weather Integration Algorithm
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	1.1.3 Provide Weather Diagnostic Forecast
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	2.2 Risk Assessment Management
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	2.2.2 Assess Airport Risk Condition
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	2.4 Airport Threat Profile Management
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	2.4.2 Analyze Airport Threat Data
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	3.1 Landside Operations
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	3.1.2 Flight Level Security Screening

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	3.1.2.1 Flight Level Security Analysis
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	3.6 Congestion Management
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	3.6.2 Perform Impact Analysis
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	4.2 Capacity Management
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	4.2.2 Analyze demand and projected capacity
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	5.3 Contingency/Business Continuity Management
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	5.3.3 Emergency Operation Procedure
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	5.3.3.1 Manage Emergency Information
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	5.3.3.1.1 Manage Alert Information
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	7.2 Airborne Operations
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	7.2.2 Monitor Weather Information
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	7.2.2.2 Report In-Flight Weather Data
Business Analytical Services	Knowledge Discovery	Modeling	Develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.	1.1.2 Determine NAS Weather Integration Algorithm
Business Analytical Services	Knowledge Discovery	Modeling	Develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.	1.1.3 Provide Weather Diagnostic Forecast
Business Analytical Services	Knowledge Discovery	Modeling	Develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.	2.2 Risk Assessment Management

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Analytical Services	Knowledge Discovery	Modeling	Develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.	2.2.2 Assess Airport Risk Condition
Business Analytical Services	Knowledge Discovery	Modeling	Develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.	2.4 Airport Threat Profile Management
Business Analytical Services	Knowledge Discovery	Modeling	Develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.	2.4.2 Analyze Airport Threat Data
Business Analytical Services	Knowledge Discovery	Modeling	Develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.	3.6 Congestion Management
Business Analytical Services	Knowledge Discovery	Modeling	Develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.	3.6.2 Perform Impact Analysis
Business Analytical Services	Knowledge Discovery	Modeling	Develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.	4.2 Capacity Management
Business Analytical Services	Knowledge Discovery	Modeling	Develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.	4.2.2 Analyze demand and projected capacity
Business Analytical Services	Knowledge Discovery	Simulation	Utilize models to mimic real-world processes.	2.2 Risk Assessment Management
Business Analytical Services	Knowledge Discovery	Simulation	Utilize models to mimic real-world processes.	2.2.2 Assess Airport Risk Condition
Business Analytical Services	Business Intelligence	Demand Forecasting / Management	Defines the set of capabilities that facilitate the prediction of sufficient production to meet an organization's sales of a product or service.	6.1 Business Operations
Business Analytical Services	Business Intelligence	Demand Forecasting / Management	Defines the set of capabilities that facilitate the prediction of sufficient production to meet an organization's sales of a product or service.	6.1.2 Analyze Business Case
Business Analytical Services	Business Intelligence	Demand Forecasting / Management	Defines the set of capabilities that facilitate the prediction of sufficient production to meet an organization's sales of a product or service.	8.1.1 Develop HR Strategy
Business Analytical Services	Business Intelligence	Decision Support & Planning	Defines the set of capabilities that support the analyze information and predict the impact of decisions before they are made.	3.6 Congestion Management
Business Analytical Services	Business Intelligence	Decision Support & Planning	Defines the set of capabilities that support the analyze information and predict the impact of decisions before they are made.	3.6.2 Perform Impact Analysis
Business Analytical Services	Business Intelligence	Decision Support & Planning	Defines the set of capabilities that support the analyze information and predict the impact of decisions before they are made.	4.2 Capacity Management
Business Analytical Services	Business Intelligence	Decision Support & Planning	Defines the set of capabilities that support the analyze information and predict the impact of decisions before they are made.	4.2.2 Analyze demand and projected capacity
Business Analytical Services	Business Intelligence	Decision Support & Planning	Defines the set of capabilities that support the analyze information and predict the impact of decisions before they are made.	7.2 Airborne Operations

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Analytical Services	Business Intelligence	Decision Support & Planning	Defines the set of capabilities that support the analyze information and predict the impact of decisions before they are made.	7.2.2 Monitor Weather Information
Business Analytical Services	Business Intelligence	Decision Support & Planning	Defines the set of capabilities that support the analyze information and predict the impact of decisions before they are made.	7.2.2.2 Report In-Flight Weather Data
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	1.10 Metrics Management
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	1.10.1 Collect Performance Metrics Data
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	1.5 Aeronautical Information Management
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	1.5.1 Collect Aeronautical Data
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	1.6 Geospatial Information Management
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	1.6.1 Collect Geospatial Information
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	1.9 Communication Service Management
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	1.9.1 Manage Communication
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	1.9.1.5 Collect Utilization Data
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	2.2 Risk Assessment Management
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	2.2.1 Collect Airport Risk Assessment Data
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	2.4 Airport Threat Profile Management
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	2.4.1 Collect Airport Threat Data

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	3.6 Congestion Management
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	3.6.1 Gather Congestion Data
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	5.3 Contingency/Business Continuity Management
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	5.3.3 Emergency Operation Procedure
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	5.3.3.1 Manage Emergency Information
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	5.3.3.1.1 Manage Alert Information
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	6.1 Business Operations
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	6.1.1 Receive Airspace Design
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	7.1 Aircraft Surface Operations
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	7.1.1.2 Receive Arrival/ Departure Information
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	7.2 Airborne Operations
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	7.2.1.3.1 Receive Separation Clearance
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	7.2.2 Monitor Weather Information
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	7.2.2.1 Obtain In-Flight Weather Data
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	7.2.2.3 Receive 4D Weather Picture

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	8.6.5 Conduct Information Management
Back Office Services	Data Management	Data Mart	Defines the set of capabilities that support a subset of a data warehouse for a single department or function within an organization.	8.6.5 Conduct Information Management
Back Office Services	Data Management	Data Warehouse	Defines the set of capabilities that support the archiving and storage of large volumes of data.	1.4 Flight Planning and Flight Data Management
Back Office Services	Data Management	Data Warehouse	Defines the set of capabilities that support the archiving and storage of large volumes of data.	1.4.2 Provide Flight Data Management
Back Office Services	Data Management	Data Warehouse	Defines the set of capabilities that support the archiving and storage of large volumes of data.	1.4.2.5 Archive Flight Data
Back Office Services	Data Management	Data Warehouse	Defines the set of capabilities that support the archiving and storage of large volumes of data.	8.6.5 Conduct Information Management
Back Office Services	Data Management	Data Cleansing	Defines the set of capabilities that support the removal of incorrect or unnecessary characters and data from a data source.	8.6.5 Conduct Information Management
Back Office Services	Data Management	Extraction & Transformation	Defines the set of capabilities that support the manipulation and change of data.	8.6.5 Conduct Information Management
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	1.5 Aeronautical Information Management
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	1.5.1 Collect Aeronautical Data
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	1.6 Geospatial Information Management
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	1.6.1 Collect Geospatial Information
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	1.9 Communication Service Management
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	1.9.1 Manage Communication
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	1.9.1.5 Collect Utilization Data
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	1.10 Metrics Management
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	1.10.1 Collect Performance Metrics Data
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	2.2 Risk Assessment Management
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	2.2.1 Collect Airport Risk Assessment Data

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	2.4 Airport Threat Profile Management
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	2.4.1 Collect Airport Threat Data 3.6 Congestion Management
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	3.6.1 Gather Congestion Data
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	5.3 Contingency/Business Continuity Management
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	5.3.3 Emergency Operation Procedure
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	5.3.3.1 Manage Emergency Information
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	5.3.3.1.1 Manage Alert Information
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	6.1 Business Operations
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	6.1.1 Receive Airspace Design
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	7.1 Aircraft Surface Operations
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	7.1.1.2 Receive Arrival/ Departure Information
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	7.2 Airborne Operations
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	7.2.1.3.1 Receive Separation Clearance
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	7.2.2 Monitor Weather Information
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	7.2.2.1 Obtain In-Flight Weather Data
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	7.2.2.3 Receive 4D Weather Picture
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	8.6.5 Conduct Information Management
Back Office Services	Data Management	Data Classification	Defines the set of capabilities that allow the classification of data.	8.6.5 Conduct Information Management
Back Office Services	Data Management	Data Recovery	Defines the set of capabilities that support the restoration and stabilization of data sets to a consistent, desired state.	8.6.5 Conduct Information Management
Back Office Services	Human Resources	Recruiting	Defines the set of capabilities that support the identification and hiring of employees for an organization.	8.1 Human Resource Management

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Back Office Services	Human Resources	Recruiting	Defines the set of capabilities that support the identification and hiring of employees for an organization.	8.1.3 Acquire Staff
Back Office Services	Human Resources	Career Development & Retention	Defines the set of capabilities that support the monitoring of performance as well as the professional growth, advancement, and retention of an organization's employees.	8.1 Human Resource Management
Back Office Services	Human Resources	Career Development & Retention	Defines the set of capabilities that support the monitoring of performance as well as the professional growth, advancement, and retention of an organization's employees.	8.1.4 Manage Employee Development and Performance
Back Office Services	Human Resources	Education / Training	Defines the set of capabilities that support the active building of employee capacities.	8.1 Human Resource Management
Back Office Services	Human Resources	Education / Training	Defines the set of capabilities that support the active building of employee capacities.	8.1.3 Acquire Staff
Back Office Services	Human Resources	Education / Training	Defines the set of capabilities that support the active building of employee capacities.	8.1.4 Manage Employee Development and Performance
Back Office Services	Financial Management	Billing & Accounting	Defines the set of capabilities that support the charging, collection and reporting of an organization's accounts.	8.5 Financial Management
Back Office Services	Financial Management	Billing & Accounting	Defines the set of capabilities that support the charging, collection and reporting of an organization's accounts.	8.5.3 Report Financials
Back Office Services	Financial Management	Internal Controls	Support the methods and procedures used by the organization to safeguard its assets, produce accurate accounting data and reports, contribute to efficient operations, and encourage staff to adhere to management policies and mission requirements.	8.5 Financial Management
Back Office Services	Financial Management	Internal Controls	Support the methods and procedures used by the organization to safeguard its assets, produce accurate accounting data and reports, contribute to efficient operations, and encourage staff to adhere to management policies and mission requirements.	8.5.2 Manage Assets and Liabilities
Back Office Services	Financial Management	Internal Controls	Support the methods and procedures used by the organization to safeguard its assets, produce accurate accounting data and reports, contribute to efficient operations, and encourage staff to adhere to management policies and mission requirements.	8.5.3 Report Financials
Back Office Services	Financial Management	Auditing	Defines the set of capabilities that support the examination and verification of records for accuracy.	8.5 Financial Management
Back Office Services	Financial Management	Auditing	Defines the set of capabilities that support the examination and verification of records for accuracy.	8.5.2 Manage Assets and Liabilities
Back Office Services	Human Capital / Workforce Management	Resource Planning & Allocation	Support the determination of strategic direction, the identification and establishment of programs and processes, and the allocation of resources (capital and labor) among those programs and processes.	2.1 Airport Assets Management

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Back Office Services	Human Capital / Workforce Management	Resource Planning & Allocation	Support the determination of strategic direction, the identification and establishment of programs and processes, and the allocation of resources (capital and labor) among those programs and processes.	2.1.1 Perform Personnel Management
Back Office Services	Human Capital / Workforce Management	Resource Planning & Allocation	Support the determination of strategic direction, the identification and establishment of programs and processes, and the allocation of resources (capital and labor) among those programs and processes.	8.1 Human Resource Management
Back Office Services	Human Capital / Workforce Management	Resource Planning & Allocation	Support the determination of strategic direction, the identification and establishment of programs and processes, and the allocation of resources (capital and labor) among those programs and processes.	8.1.1 Develop HR Strategy
Back Office Services	Human Capital / Workforce Management	Skills Management	Defines the set of capabilities that support the proficiency of employees in the delivery of an organization's products or services.	8.1 Human Resource Management
Back Office Services	Human Capital / Workforce Management	Skills Management	Defines the set of capabilities that support the proficiency of employees in the delivery of an organization's products or services.	8.1.4 Manage Employee Development and Performance
Back Office Services	Human Capital / Workforce Management	Team / Organization Management	Defines the set of capabilities that support the hierarchy structure and identification of employees within the various sub-groups of an organization.	8.1 Human Resource Management
Back Office Services	Human Capital / Workforce Management	Team / Organization Management	Defines the set of capabilities that support the hierarchy structure and identification of employees within the various sub-groups of an organization.	8.1.2 Administer Organization and Position Management
Back Office Services	Human Capital / Workforce Management	Team / Organization Management	Defines the set of capabilities that support the hierarchy structure and identification of employees within the various sub-groups of an organization.	
Back Office Services	Human Capital / Workforce Management	Contingent Workforce Management	Defines the set of capabilities that support the continuity of operations for an organization's business through the identification of alternative organization personnel.	2.1 Airport Assets Management
Back Office Services	Human Capital / Workforce Management	Contingent Workforce Management	Defines the set of capabilities that support the continuity of operations for an organization's business through the identification of alternative organization personnel.	2.1.1 Perform Personnel Management
Back Office Services	Human Capital / Workforce Management	Contingent Workforce Management	Defines the set of capabilities that support the continuity of operations for an organization's business through the identification of alternative organization personnel.	8.1 Human Resource Management
Back Office Services	Human Capital / Workforce Management	Contingent Workforce Management	Defines the set of capabilities that support the continuity of operations for an organization's business through the identification of alternative organization personnel.	8.1.1 Develop HR Strategy
Back Office Services	Human Capital / Workforce Management	Contingent Workforce Management	Defines the set of capabilities that support the continuity of operations for an organization's business through the identification of alternative organization personnel.	8.1.2 Administer Organization and Position Management

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Back Office Services	Human Capital / Workforce Management	Workforce Acquisition / Optimization	Defines the set of capabilities that support the hiring and re-structuring of employees and their roles within an organization.	2.1 Airport Assets Management
Back Office Services	Human Capital / Workforce Management	Workforce Acquisition / Optimization	Defines the set of capabilities that support the hiring and re-structuring of employees and their roles within an organization.	2.1.1 Perform Personnel Management
Back Office Services	Human Capital / Workforce Management	Workforce Acquisition / Optimization	Defines the set of capabilities that support the hiring and re-structuring of employees and their roles within an organization.	8.1 Human Resource Management
Back Office Services	Human Capital / Workforce Management	Workforce Acquisition / Optimization	Defines the set of capabilities that support the hiring and re-structuring of employees and their roles within an organization.	8.1.2 Administer Organization and Position Management
Back Office Services	Human Capital / Workforce Management	Workforce Acquisition / Optimization	Defines the set of capabilities that support the hiring and re-structuring of employees and their roles within an organization.	
Back Office Services	Assets / Materials Management	Property / Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.	2.1 Airport Assets Management
Back Office Services	Assets / Materials Management	Property / Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.	2.1.3 Conduct Equipment Management
Back Office Services	Assets / Materials Management	Property / Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.	2.3 Airport Infrastructure Planning
Back Office Services	Assets / Materials Management	Property / Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.	2.3.1 Manage Regional Planning Ops
Back Office Services	Assets / Materials Management	Property / Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.	2.3.2 Design Landside Facilities
Back Office Services	Assets / Materials Management	Property / Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.	2.3.3 Design Airside Facilities
Back Office Services	Assets / Materials Management	Property / Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.	2.3.4 Manage Navigation Infrastructure
Back Office Services	Assets / Materials Management	Property / Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.	3.2 Airside Operations
Back Office Services	Assets / Materials Management	Property / Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.	3.2.2.3 Manage Vehicles
Back Office Services	Assets / Materials Management	Asset Transfer, Allocation, & Maintenance	Defines the set of capabilities that support the movement, assignment, and replacement of assets.	2.1 Airport Assets Management
Back Office Services	Assets / Materials Management	Asset Transfer, Allocation, & Maintenance	Defines the set of capabilities that support the movement, assignment, and replacement of assets.	2.1.3 Conduct Equipment Management

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Back Office Services	Assets / Materials Management	Facilities Management	Defines the set of capabilities that support the construction, management and maintenance of facilities for an organization.	2.1 Airport Assets Management
Back Office Services	Assets / Materials Management	Facilities Management	Defines the set of capabilities that support the construction, management and maintenance of facilities for an organization.	2.1.2 Conduct Facilities Management
Back Office Services	Assets / Materials Management	Facilities Management	Defines the set of capabilities that support the construction, management and maintenance of facilities for an organization.	2.3 Airport Infrastructure Planning
Back Office Services	Assets / Materials Management	Facilities Management	Defines the set of capabilities that support the construction, management and maintenance of facilities for an organization.	2.3.1 Manage Regional Planning Ops
Back Office Services	Assets / Materials Management	Facilities Management	Defines the set of capabilities that support the construction, management and maintenance of facilities for an organization.	2.3.2 Design Landside Facilities
Back Office Services	Assets / Materials Management	Facilities Management	Defines the set of capabilities that support the construction, management and maintenance of facilities for an organization.	2.3.3 Design Airside Facilities
Back Office Services	Assets / Materials Management	Facilities Management	Defines the set of capabilities that support the construction, management and maintenance of facilities for an organization.	2.3.4 Manage Navigation Infrastructure
Back Office Services	Development & Integration	Instrumentation & Testing	Defines the set of capabilities that support the validation of application or system capabilities and requirements.	8.6 Information and Technology Management
Back Office Services	Development & Integration	Instrumentation & Testing	Defines the set of capabilities that support the validation of application or system capabilities and requirements.	8.6.3 Maintain Systems
Back Office Services	Development & Integration	Software Development	Defines the set of capabilities that support the creation of both graphical and process application or system software.	8.6 Information and Technology Management
Back Office Services	Development & Integration	Software Development	Defines the set of capabilities that support the creation of both graphical and process application or system software.	8.6.3 Maintain Systems
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	1.1 Weather Operations
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	1.1.4 Disseminate Weather Picture
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	1.1.4.2 Publish Weather Picture
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	1.4.2.3 Disseminate Flight Data
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	1.4.2.3.2 Publish Flight Data
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	1.5 Aeronautical Information Management
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	1.5.2 Disseminate Aeronautical Information
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	1.5.2.2 Publish Aeronautical Information
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	1.7 Environmental Information Management

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	1.7.3 Report Environmental Conditions
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	5.1 Trajectory Management
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	5.1.1 Manage Arrival/ Departure
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	5.1.1.1 Manage Surface Operations
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	5.1.1.1.3 Issue Clearance
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	5.1.1.2 Issue Modification Information/Clearance
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	7.1.1.6 Report Flight Readiness
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	7.1.2.1 Request Post Flight Taxi Clearance
Support Services	Communication	Event / News Management	Defines the set of capabilities that monitor servers, workstations and network devices for routine and non-routine events.	8.6.6 Monitor Systems and Network Performance
Support Services	Systems Management	License Management	Defines the set of capabilities that support the purchase, upgrade and tracking of legal usage contracts for system software and applications.	8.6 Information and Technology Management
Support Services	Systems Management	License Management	Defines the set of capabilities that support the purchase, upgrade and tracking of legal usage contracts for system software and applications.	8.6.3 Maintain Systems
Support Services	Systems Management	Remote Systems Control	Defines the set of capabilities that support the monitoring, administration and usage of applications and enterprise systems from locations outside of the immediate system environment.	8.6.6 Monitor Systems and Network Performance
Support Services	Systems Management	System Resource Monitoring	Defines the set of capabilities that support the balance and allocation of memory, usage, disk space and performance on computers and their applications.	8.6.6 Monitor Systems and Network Performance
Support Services	Systems Management	Software Distribution	Defines the set of capabilities that support the propagation, installation and upgrade of written computer programs, applications and components.	8.6 Information and Technology Management
Support Services	Systems Management	Software Distribution	Defines the set of capabilities that support the propagation, installation and upgrade of written computer programs, applications and components.	8.6.3 Maintain Systems
Support Services	Systems Management	Issue Tracking	Receive and track user-reported issues and problems in using IT systems, including help desk calls.	8.6 Information and Technology Management
Support Services	Systems Management	Issue Tracking	Receive and track user-reported issues and problems in using IT systems, including help desk calls.	8.6.3 Maintain Systems
Support Services	Security Management	Identification & Authentication	Defines the set of capabilities that support obtaining information about those parties attempting to log on to a system or application for security purposes and the validation of those users.	3.1 Landside Operations

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Support Services	Security Management	Identification & Authentication	Defines the set of capabilities that support obtaining information about those parties attempting to log on to a system or application for security purposes and the validation of those users.	3.1.1 Manage Passenger Baggage Processing
Support Services	Security Management	Identification & Authentication	Defines the set of capabilities that support obtaining information about those parties attempting to log on to a system or application for security purposes and the validation of those users.	3.1.1.1.1.1 Verify Credential to Reservation Data
Support Services	Security Management	Identification & Authentication	Defines the set of capabilities that support obtaining information about those parties attempting to log on to a system or application for security purposes and the validation of those users.	3.1.1.1.1.2 Authenticate Passenger to Credential
Support Services	Security Management	Identification & Authentication	Defines the set of capabilities that support obtaining information about those parties attempting to log on to a system or application for security purposes and the validation of those users.	8.6.4 Provide Information Assurance
Support Services	Security Management	Access Control	Defines the set of capabilities that support the management of permissions for logging onto a computer or network.	8.6.4 Provide Information Assurance
Support Services	Security Management	Encryption	Defines the set of capabilities that support the encoding of data for security purposes.	8.6.4 Provide Information Assurance
Support Services	Security Management	Digital Signature	Defines the set of capabilities that guarantee the unaltered state of a file.	8.6.4 Provide Information Assurance
Support Services	Security Management	Intrusion Detection	Defines the set of capabilities that support the detection of illegal entrance into a computer system.	8.6.4 Provide Information Assurance
Support Services	Security Management	Audit Trail Capture & Analysis	Defines the set of capabilities that support the identification and monitoring of activities within an application or system.	8.6.4 Provide Information Assurance
Support Services	Security Management	User Management	Defines the set of capabilities that support the administration of computer, application and network accounts within an organization.	8.6.4 Provide Information Assurance
Support Services	Security Management	Role / Privilege Management	Defines the set of capabilities that support the granting of abilities to users or groups of users of a computer, application or network.	8.6.4 Provide Information Assurance
Support Services	Security Management	Verification	Defines the set of capabilities that support the confirmation of authority to enter a computer system, application or network.	8.6.4 Provide Information Assurance
Operational Services	Surveillance Services	Cooperative	Defines the set of capabilities that allow the reliable, consistent, and unambiguous detection (i.e., multi-dimensional position) of airborne objects and other	1.3 Surveillance Services
Operational Services	Surveillance Services	Cooperative	vehicles equipped with functioning avionics (i.e., surveillance sensors on the airframe) while in the air and on the ground.	1.3.2 Provide Cooperative Surveillance
Operational Services	Surveillance Services	Cooperative	vehicles equipped with functioning avionics (i.e., surveillance sensors on the airframe) while in the air and on the ground.	1.3.2.1 Provide Cooperative Air Surveillance
Operational Services	Surveillance Services	Cooperative	vehicles equipped with functioning avionics (i.e., surveillance sensors on the airframe) while in the air and on the ground.	1.3.2.2 Provide Cooperative Surface Surveillance

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Surveillance Services	Non-Cooperative	Defines the set of capabilities that allow an airborne object to be detected by ground-based, airborne, or space-based surveillance systems even if it does not have functional avionics equipment (i.e., surveillance sensors on the airframe) or when cooperative surveillance systems malfunction.	1.3 Surveillance Services
Operational Services	Surveillance Services	Non-Cooperative	Defines the set of capabilities that allow an airborne object to be detected by ground-based, airborne, or space-based surveillance systems even if it does not have functional avionics equipment (i.e., surveillance sensors on the airframe) or when cooperative surveillance systems malfunction.	1.3.1 Provide Non-Cooperative Surveillance
Operational Services	Surveillance Services	Non-Cooperative	Defines the set of capabilities that allow an airborne object to be detected by ground-based, airborne, or space-based surveillance systems even if it does not have functional avionics equipment (i.e., surveillance sensors on the airframe) or when cooperative surveillance systems malfunction.	1.3.1.1 Provide Non-Cooperative Air Surveillance
Operational Services	Surveillance Services	Non-Cooperative	Defines the set of capabilities that allow an airborne object to be detected by ground-based, airborne, or space-based surveillance systems even if it does not have functional avionics equipment (i.e., surveillance sensors on the airframe) or when cooperative surveillance systems malfunction.	1.3.1.2 Provide Non-Cooperative Surface Surveillance
Operational Services	Airspace Services	Airspace Design	Defines the set of capabilities that support the establishment of the guidelines for airspace structures in order to accommodate the different types of air activity, volume of traffic, and differing levels of service.	4.2 Capacity Management
Operational Services	Airspace Services	Airspace Design	Defines the set of capabilities that support the establishment of the guidelines for airspace structures in order to accommodate the different types of air activity, volume of traffic, and differing levels of service.	4.2.3 Select Capacity Management Strategy
Operational Services	Airspace Services	Airspace Design	Defines the set of capabilities that support the establishment of the guidelines for airspace structures in order to accommodate the different types of air activity, volume of traffic, and differing levels of service.	4.2.4 Design Airspace
Operational Services	Airspace Services	Airspace Design	Defines the set of capabilities that support the establishment of the guidelines for airspace structures in order to accommodate the different types of air activity, volume of traffic, and differing levels of service.	4.2.5 Disseminate Proposed Airspace Design
Operational Services	Airspace Services	Airspace Design	Defines the set of capabilities that support the establishment of the guidelines for airspace structures in order to accommodate the different types of air activity, volume of traffic, and differing levels of service.	4.2.6 Disseminate Execution Plan

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Airspace Services	Airspace Management	Defines the set of capabilities by which airspace options	4.1 Airspace Security Operations
Operational Services	Airspace Services	Airspace Management	are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.	4.1.1 Manage Airspace Alerts
Operational Services	Airspace Services	Airspace Management	are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.	4.1.2 Monitor Airspace Alerts
Operational Services	Airspace Services	Airspace Management	are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.	4.1.3 Restrict Airspace
Operational Services	Airspace Services	Airspace Management	are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.	4.2 Capacity Management
Operational Services	Airspace Services	Airspace Management	are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.	4.2.1 Manage Airspace
Operational Services	Airspace Services	Airspace Management	are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.	4.2.3 Select Capacity Management Strategy

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Airspace Services	Airspace Management	are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.	4.3 Flow Contingency Management
Operational Services	Airspace Services	Airspace Management	are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.	4.3.2 Monitor Airspace Condition
Operational Services	Airspace Services	Airspace Management	are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.	4.3.4 Restructure Capacity Limited Airspace
Operational Services	Airspace Services	Airspace Management	are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.	4.3.5 Disseminate Traffic Management Initiative
Operational Services	Airspace Services	Airspace Management	are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.	4.3.6 Reallocate Arrival/ Departures Access
Operational Services	Navigation Services	Positioning	Defines the set of capabilities that provide stakeholders with a highly accurate and reliable positioning source, improving surveillance capabilities and reduced separation standards.	1.2 Positioning, Navigation, and Timing Services
Operational Services	Navigation Services	Positioning	Defines the set of capabilities that provide stakeholders with a highly accurate and reliable positioning source, improving surveillance capabilities and reduced separation standards.	1.2.1 Provide Positioning Service
Operational Services	Navigation Services	Navigation	Defines the set of capabilities that enable area navigation (RNAV) as the standard method of navigation in the National Airspace System and provides the foundation for performance-based navigation operations.	1.2 Positioning, Navigation, and Timing Services

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Navigation Services	Navigation	Defines the set of capabilities that enable area navigation (RNAV) as the standard method of navigation in the National Airspace System and provides the foundation for performance-based navigation operations.	1.2.2 Provide Navigation Service
Operational Services	Navigation Services	Timing	Defines the set of capabilities that provide stakeholders with the precise synchronization of standard universal coordinated time to reduce the uncertainties associated with disparate timing sources.	1.2 Positioning, Navigation, and Timing Services
Operational Services	Navigation Services	Timing	Defines the set of capabilities that provide stakeholders with the precise synchronization of standard universal coordinated time to reduce the uncertainties associated with disparate timing sources.	1.2.3 Provide Timing Service
Operational Services	Weather Information Services	Weather Forecasting	Defines the set of capabilities that provide stakeholders with a common picture of current (i.e. real-time) and forecasted weather information, including weather attributes organized by horizontal, vertical, altitude, time, and probability components.	1.1 Weather Operations
Operational Services	Weather Information Services	Weather Forecasting	Defines the set of capabilities that provide stakeholders with a common picture of current (i.e. real-time) and forecasted weather information, including weather attributes organized by horizontal, vertical, altitude, time, and probability components.	7.2 Airborne Operations
Operational Services	Weather Information Services	Weather Forecasting	Defines the set of capabilities that provide stakeholders with a common picture of current (i.e. real-time) and forecasted weather information, including weather attributes organized by horizontal, vertical, altitude, time, and probability components.	7.2.2 Monitor Weather Information
Operational Services	Weather Information Services	Weather Forecasting	Defines the set of capabilities that provide stakeholders with a common picture of current (i.e. real-time) and forecasted weather information, including weather attributes organized by horizontal, vertical, altitude, time, and probability components.	7.2.2.1 Obtain In-Flight Weather Data
Operational Services	Weather Information Services	Weather Forecasting	Defines the set of capabilities that provide stakeholders with a common picture of current (i.e. real-time) and forecasted weather information, including weather attributes organized by horizontal, vertical, altitude, time, and probability components.	7.2.2.3 Receive 4D Weather Picture
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	1.10 Metrics Management
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	1.10.1 Collect Performance Metrics Data

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	1.10.2 Analyze Performance Metrics Data
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	1.7 Environmental Information Management
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	1.7.1 Monitor Environmental Impacts
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	1.9 Communication Service Management
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	1.9.1 Manage Communication
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	1.9.1.2 Monitor Communication Status
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	2.4 Airport Threat Profile Management
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	2.4.5 Monitor Airport Threat
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	3.1 Landside Operations
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	3.2 Airside Operations

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	3.2.1 Monitor Surface Support Equipment
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	3.3 Airport Emergency Response
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	3.3.1 Monitor Emergency Operations
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	3.4 Auxiliary Operations
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	3.4.1 Manage Fuel Supply
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	3.6 Congestion Management
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	3.6.4 Monitor Congestion
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	4.1 Airspace Security Operations
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	4.1.1 Manage Airspace Alerts
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	4.1.2 Monitor Airspace Alerts

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	4.3 Flow Contingency Management
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	4.3.1 Monitor Airport Condition
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	4.3.2 Monitor Airspace Condition
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	5.1 Trajectory Management
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	5.1.1 Manage Arrival/ Departure
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	5.1.1.1 Manage Surface Operations
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	5.1.1.1.1 Monitor Surface Condition
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	5.2 Separation Management
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	5.2.3 Monitor Separation
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	5.3 Contingency/Business Continuity Management

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	5.3.3 Emergency Operation Procedure
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	5.3.3.1 Manage Emergency Information
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	5.3.3.1.2 Monitor Emergency Data
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	7.2 Airborne Operations
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	7.2.1.3.2 Monitor Airborne Information
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	7.2.2 Monitor Weather Information
Operational Services	Security Services	Secure People	Defines the set of capabilities that secure (e.g., screen, credential, identify, etc.) people in order to mitigate security risks to themselves or others.	3.1 Landside Operations
Operational Services	Security Services	Secure People	Defines the set of capabilities that secure (e.g., screen, credential, identify, etc.) people in order to mitigate security risks to themselves or others.	3.1.1 Manage Passenger Baggage Processing
Operational Services	Security Services	Secure People	Defines the set of capabilities that secure (e.g., screen, credential, identify, etc.) people in order to mitigate security risks to themselves or others.	3.1.1.1 Manage Passengers
Operational Services	Security Services	Secure People	Defines the set of capabilities that secure (e.g., screen, credential, identify, etc.) people in order to mitigate security risks to themselves or others.	3.1.1.1.1 Check In Passenger
Operational Services	Security Services	Secure People	Defines the set of capabilities that secure (e.g., screen, credential, identify, etc.) people in order to mitigate security risks to themselves or others.	3.1.1.1.1.1 Verify Credential to Reservation Data
Operational Services	Security Services	Secure People	Defines the set of capabilities that secure (e.g., screen, credential, identify, etc.) people in order to mitigate security risks to themselves or others.	3.1.1.1.1.2 Authenticate Passenger to Credential

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Security Services	Secure People	Defines the set of capabilities that secure (e.g., screen, credential, identify, etc.) people in order to mitigate security risks to themselves or others.	3.1.1.1.1.3 Create Passenger Info
Operational Services	Security Services	Secure People	Defines the set of capabilities that secure (e.g., screen, credential, identify, etc.) people in order to mitigate security risks to themselves or others.	3.1.1.1.2 Process CBP
Operational Services	Security Services	Secure People	Defines the set of capabilities that secure (e.g., screen, credential, identify, etc.) people in order to mitigate security risks to themselves or others.	3.1.1.1.3 Screen Passengers
Operational Services	Security Services	Secure People	Defines the set of capabilities that secure (e.g., screen, credential, identify, etc.) people in order to mitigate security risks to themselves or others.	3.1.1.1.4 Manage Manifest
Operational Services	Security Services	Secure People	Defines the set of capabilities that secure (e.g., screen, credential, identify, etc.) people in order to mitigate security risks to themselves or others.	3.1.2 Flight Level Security Screening
Operational Services	Security Services	Secure People	Defines the set of capabilities that secure (e.g., screen, credential, identify, etc.) people in order to mitigate security risks to themselves or others.	3.1.2.2 Manage Airport Security Alerts
Operational Services	Security Services	Secure Baggage / Cargo	Defines the set of capabilities that secure (e.g., screen	3.1 Landside Operations
Operational Services	Security Services	Secure Baggage / Cargo	assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).	3.1.1 Manage Passenger Baggage Processing
Operational Services	Security Services	Secure Baggage / Cargo	assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).	3.1.1.2 Manage Baggage
Operational Services	Security Services	Secure Baggage / Cargo	assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).	3.1.1.2.1 Check In Baggage
Operational Services	Security Services	Secure Baggage / Cargo	assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).	3.1.1.2.2 Screen Baggage
Operational Services	Security Services	Secure Baggage / Cargo	assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).	3.1.1.2.3 Sort Baggage
Operational Services	Security Services	Secure Baggage / Cargo	assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).	3.1.2 Flight Level Security Screening
Operational Services	Security Services	Secure Baggage / Cargo	assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).	3.1.2.2 Manage Airport Security Alerts
Operational Services	Security Services	Secure Baggage / Cargo	assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).	3.1.4 Manage Gate Operations

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Security Services	Secure Baggage / Cargo	assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).	3.5 Cargo Management
Operational Services	Security Services	Secure Baggage / Cargo	assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).	3.5.1 Manage Cargo Operations
Operational Services	Security Services	Secure Baggage / Cargo	assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).	3.5.1.1 Process Cargo
Operational Services	Security Services	Secure Baggage / Cargo	assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).	3.5.1.3 Screen Cargo
Operational Services	Security Services	Secure Baggage / Cargo	assess, protect, etc.) baggage and cargo to mitigate security risks and potential threats (e.g. chemical, biological, radiological, nuclear, explosive, etc.).	3.5.2 Manage Cargo Risk Assessment
Operational Services	Security Services	Secure Airspace	Defines the set of capabilities that secure the air domain by preventing or countering external attacks on aircraft and other airborne vehicles in the National Airspace System or the use of aircraft as a weapon to attack assets and people on the ground.	4.1 Airspace Security Operations
Operational Services	Security Services	Secure Airspace	Defines the set of capabilities that secure the air domain by preventing or countering external attacks on aircraft and other airborne vehicles in the National Airspace System or the use of aircraft as a weapon to attack assets and people on the ground.	4.1.1 Manage Airspace Alerts
Operational Services	Security Services	Secure Airspace	Defines the set of capabilities that secure the air domain by preventing or countering external attacks on aircraft and other airborne vehicles in the National Airspace System or the use of aircraft as a weapon to attack assets and people on the ground.	4.1.2 Monitor Airspace Alerts
Operational Services	Security Services	Secure Airspace	Defines the set of capabilities that secure the air domain by preventing or countering external attacks on aircraft and other airborne vehicles in the National Airspace System or the use of aircraft as a weapon to attack assets and people on the ground.	4.1.3 Restrict Airspace
Operational Services	Security Services	Secure Facilities / Equipment	Defines the set of capabilities that secure facilities (e.g. buildings, airports, etc.) and equipment (e.g. aircraft, vehicles, hardware, etc.) to mitigate dynamically evolving security risks and threats (e.g., unauthorized access, hijacking/ unauthorized diversion, internal/external attacks, etc.).	3.1 Landside Operations
Operational Services	Security Services	Secure Facilities / Equipment	Defines the set of capabilities that secure facilities (e.g. buildings, airports, etc.) and equipment (e.g. aircraft, vehicles, hardware, etc.) to mitigate dynamically evolving security risks and threats (e.g., unauthorized access, hijacking/ unauthorized diversion, internal/external attacks, etc.).	3.1.2 Flight Level Security Screening

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Security Services	Secure Facilities / Equipment	Defines the set of capabilities that secure facilities (e.g. buildings, airports, etc.) and equipment (e.g. aircraft, vehicles, hardware, etc.) to mitigate dynamically evolving security risks and threats (e.g., unauthorized access, hijacking/ unauthorized diversion, internal/external attacks, etc.).	3.1.2.2 Manage Airport Security Alerts
Operational Services	Security Services	Secure Facilities / Equipment	Defines the set of capabilities that secure facilities (e.g. buildings, airports, etc.) and equipment (e.g. aircraft, vehicles, hardware, etc.) to mitigate dynamically evolving security risks and threats (e.g., unauthorized access, hijacking/ unauthorized diversion, internal/external attacks, etc.).	6.2 Fleet Management
Operational Services	Security Services	Secure Facilities / Equipment	Defines the set of capabilities that secure facilities (e.g. buildings, airports, etc.) and equipment (e.g. aircraft, vehicles, hardware, etc.) to mitigate dynamically evolving security risks and threats (e.g., unauthorized access, hijacking/ unauthorized diversion, internal/external attacks, etc.).	6.2.4 Secure Aircraft
Operational Services	Voice/Data Communication Management Services	Ground Network	Defines the set of capabilities that support ground-to-ground information sharing (e.g., facilities, communication and data infrastructure, people, and systems) and provide service providers access to surveillance, communications, and flight data management regardless of physical location.	1.9 Communication Service Management
Operational Services	Voice/Data Communication Management Services	Ground Network	Defines the set of capabilities that support ground-to-ground information sharing (e.g., facilities, communication and data infrastructure, people, and systems) and provide service providers access to surveillance, communications, and flight data management regardless of physical location.	1.9.1 Manage Communication
Operational Services	Voice/Data Communication Management Services	Ground Network	Defines the set of capabilities that support ground-to-ground information sharing (e.g., facilities, communication and data infrastructure, people, and systems) and provide service providers access to surveillance, communications, and flight data management regardless of physical location.	1.9.1.1 Manage Communication Connection
Operational Services	Voice/Data Communication Management Services	Ground Network	Defines the set of capabilities that support ground-to-ground information sharing (e.g., facilities, communication and data infrastructure, people, and systems) and provide service providers access to surveillance, communications, and flight data management regardless of physical location.	1.9.1.3 Restore Communication Service

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Voice/Data Communication Management Services	Ground Network	Defines the set of capabilities that support ground-to-ground information sharing (e.g., facilities, communication and data infrastructure, people, and systems) and provide service providers access to surveillance, communications, and flight data management regardless of physical location.	1.9.1.4 Balance Communication Service
Operational Services	Voice/Data Communication Management Services	Ground Network	Defines the set of capabilities that support ground-to-ground information sharing (e.g., facilities, communication and data infrastructure, people, and systems) and provide service providers access to surveillance, communications, and flight data management regardless of physical location.	1.9.1.6 Report Communication Service Status
Operational Services	Voice/Data Communication Management Services	Ground Network	Defines the set of capabilities that support ground-to-ground information sharing (e.g., facilities, communication and data infrastructure, people, and systems) and provide service providers access to surveillance, communications, and flight data management regardless of physical location.	1.9.2 Manage Spectrum
Operational Services	Voice/Data Communication Management Services	Ground Network	Defines the set of capabilities that support ground-to-ground information sharing (e.g., facilities, communication and data infrastructure, people, and systems) and provide service providers access to surveillance, communications, and flight data management regardless of physical location.	1.9.2.1 Manage Frequency Allocation
Operational Services	Voice/Data Communication Management Services	Ground Network	Defines the set of capabilities that support ground-to-ground information sharing (e.g., facilities, communication and data infrastructure, people, and systems) and provide service providers access to surveillance, communications, and flight data management regardless of physical location.	1.9.2.2 Assign Radio Frequency
Operational Services	Voice/Data Communication Management Services	Air to Ground Network	Defines the set of capabilities that provide near-real time	1.9 Communication Service Management
Operational Services	Voice/Data Communication Management Services	Air to Ground Network	critical voice/data communications to flight crew and flight deck that ensures data is available for flight deck automation (i.e., avionics to support flight crew decision-making) as well as real-time data to the Air Navigation Service Provider (ANSP) on the operational aspects of flights.	1.9.1 Manage Communication
Operational Services	Voice/Data Communication Management Services	Air to Ground Network	critical voice/data communications to flight crew and flight deck that ensures data is available for flight deck automation (i.e., avionics to support flight crew decision-making) as well as real-time data to the Air Navigation Service Provider (ANSP) on the operational aspects of flights.	1.9.1.1 Manage Communication Connection

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Voice/Data Communication Management Services	Air to Ground Network	critical voice/data communications to flight crew and flight deck that ensures data is available for flight deck automation (i.e., avionics to support flight crew decision-making) as well as real-time data to the Air Navigation Service Provider (ANSP) on the operational aspects of flights.	1.9.1.3 Restore Communication Service
Operational Services	Voice/Data Communication Management Services	Air to Ground Network	critical voice/data communications to flight crew and flight deck that ensures data is available for flight deck automation (i.e., avionics to support flight crew decision-making) as well as real-time data to the Air Navigation Service Provider (ANSP) on the operational aspects of flights.	1.9.1.4 Balance Communication Service
Operational Services	Voice/Data Communication Management Services	Air to Ground Network	critical voice/data communications to flight crew and flight deck that ensures data is available for flight deck automation (i.e., avionics to support flight crew decision-making) as well as real-time data to the Air Navigation Service Provider (ANSP) on the operational aspects of flights.	1.9.1.6 Report Communication Service Status
Operational Services	Voice/Data Communication Management Services	Air to Ground Network	critical voice/data communications to flight crew and flight deck that ensures data is available for flight deck automation (i.e., avionics to support flight crew decision-making) as well as real-time data to the Air Navigation Service Provider (ANSP) on the operational aspects of flights.	1.9.2 Manage Spectrum
Operational Services	Voice/Data Communication Management Services	Air to Ground Network	critical voice/data communications to flight crew and flight deck that ensures data is available for flight deck automation (i.e., avionics to support flight crew decision-making) as well as real-time data to the Air Navigation Service Provider (ANSP) on the operational aspects of flights.	1.9.2.1 Manage Frequency Allocation
Operational Services	Voice/Data Communication Management Services	Air to Ground Network	critical voice/data communications to flight crew and flight deck that ensures data is available for flight deck automation (i.e., avionics to support flight crew decision-making) as well as real-time data to the Air Navigation Service Provider (ANSP) on the operational aspects of flights.	1.9.2.2 Assign Radio Frequency
Operational Services	Voice/Data Communication Management Services	Network Infrastructure	Defines the set of capabilities that provide infrastructure	1.9 Communication Service Management
Operational Services	Voice/Data Communication Management Services	Network Infrastructure	security and service continuity through virtual and physical facilities to enable flexible ground and air-to-ground communication networks.	1.9.1 Manage Communication
Operational Services	Voice/Data Communication Management Services	Network Infrastructure	security and service continuity through virtual and physical facilities to enable flexible ground and air-to-ground communication networks.	1.9.1.1 Manage Communication Connection
Operational Services	Voice/Data Communication Management Services	Network Infrastructure	security and service continuity through virtual and physical facilities to enable flexible ground and air-to-ground communication networks.	1.9.1.3 Restore Communication Service

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Voice/Data Communication Management Services	Network Infrastructure	security and service continuity through virtual and physical facilities to enable flexible ground and air-to-ground communication networks.	1.9.1.4 Balance Communication Service
Operational Services	Voice/Data Communication Management Services	Network Infrastructure	security and service continuity through virtual and physical facilities to enable flexible ground and air-to-ground communication networks.	1.9.1.6 Report Communication Service Status
Operational Services	Voice/Data Communication Management Services	Network Infrastructure	security and service continuity through virtual and physical facilities to enable flexible ground and air-to-ground communication networks.	1.9.2 Manage Spectrum
Operational Services	Voice/Data Communication Management Services	Network Infrastructure	security and service continuity through virtual and physical facilities to enable flexible ground and air-to-ground communication networks.	1.9.2.1 Manage Frequency Allocation
Operational Services	Voice/Data Communication Management Services	Network Infrastructure	security and service continuity through virtual and physical facilities to enable flexible ground and air-to-ground communication networks.	1.9.2.2 Assign Radio Frequency
Operational Services	Certification Services	Facility/Equipment Certification	Defines the set of capabilities that support the certification of facilities, equipment and products to ascertain the suitability, quality, performance, and compliance with a set of codes, regulations, standards, etc.	8.2 Certification Services Management
Operational Services	Certification Services	Facility/Equipment Certification	Defines the set of capabilities that support the certification of facilities, equipment and products to ascertain the suitability, quality, performance, and compliance with a set of codes, regulations, standards, etc.	8.2.1 Certify Equipment
Operational Services	Certification Services	Facility/Equipment Certification	Defines the set of capabilities that support the certification of facilities, equipment and products to ascertain the suitability, quality, performance, and compliance with a set of codes, regulations, standards, etc.	8.2.2 Certify Facilities
Operational Services	Certification Services	Information System / Application Certification	Defines the set of capabilities that support the certification of information systems and applications to ensure the protection of information and information systems from unauthorized access, use, disclosure, disruption, modification, or destruction.	n/a at this time; included because this service component was proposed by the JPDO.
Operational Services	Certification Services	Personnel Certification / Licensure	Defines the set of capabilities that support the certification/licensing of personnel (e.g., profession certification, trade certification, professional designation, etc.) to qualify the individuals knowledge, skills, or abilities.	8.1 Human Resource Management
Operational Services	Certification Services	Personnel Certification / Licensure	Defines the set of capabilities that support the certification/licensing of personnel (e.g., profession certification, trade certification, professional designation, etc.) to qualify the individuals knowledge, skills, or abilities.	8.1.5 Certify Personnel
Operational Services	Certification Services	Operation Certification / Licensure	Defines the set of capabilities that support the certification (e.g., licensing) and qualification of an operation, process, procedure, etc.	1.8 Safety Management Service
Operational Services	Certification Services	Operation Certification / Licensure	Defines the set of capabilities that support the certification (e.g., licensing) and qualification of an operation, process, procedure, etc.	1.8.3 Provide Safety Assurance

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Flight Management Services	Flight Planning	Defines the set of capabilities that optimize flights based on individual mission objectives, available aircraft, security and airspace constraints, and forecasted weather.	1.4 Flight Planning and Flight Data Management
Operational Services	Flight Management Services	Flight Planning	Defines the set of capabilities that optimize flights based on individual mission objectives, available aircraft, security and airspace constraints, and forecasted weather.	1.4.1 Conduct Flight Planning Management
Operational Services	Flight Management Services	Flight Planning	Defines the set of capabilities that optimize flights based on individual mission objectives, available aircraft, security and airspace constraints, and forecasted weather.	1.4.1.1 File Flight Plan
Operational Services	Flight Management Services	Flight Planning	Defines the set of capabilities that optimize flights based on individual mission objectives, available aircraft, security and airspace constraints, and forecasted weather.	1.4.1.2 Negotiate Flight Plan
Operational Services	Flight Management Services	Flight Planning	Defines the set of capabilities that optimize flights based on individual mission objectives, available aircraft, security and airspace constraints, and forecasted weather.	1.4.1.3 Authorize Flight Plan
Operational Services	Flight Management Services	Flight Planning	Defines the set of capabilities that optimize flights based on individual mission objectives, available aircraft, security and airspace constraints, and forecasted weather.	6.2 Fleet Management
Operational Services	Flight Management Services	Flight Planning	Defines the set of capabilities that optimize flights based on individual mission objectives, available aircraft, security and airspace constraints, and forecasted weather.	6.2.1 Plan Flight
Operational Services	Flight Management Services	Flight Tracking	Defines the set of capabilities that monitor flight object data to track aircraft execution conformance against the flight plan (filed information) and subsequent instructions (clearances).	1.4 Flight Planning and Flight Data Management
Operational Services	Flight Management Services	Flight Tracking	Defines the set of capabilities that monitor flight object data to track aircraft execution conformance against the flight plan (filed information) and subsequent instructions (clearances).	1.4.2 Provide Flight Data Management
Operational Services	Flight Management Services	Flight Tracking	Defines the set of capabilities that monitor flight object data to track aircraft execution conformance against the flight plan (filed information) and subsequent instructions (clearances).	1.4.2.2 Provide Flight Data
Operational Services	Flight Management Services	Flight Tracking	Defines the set of capabilities that monitor flight object data to track aircraft execution conformance against the flight plan (filed information) and subsequent instructions (clearances).	1.4.2.4 Monitor Flight Data
Operational Services	Flight Management Services	Flight Tracking	Defines the set of capabilities that monitor flight object data to track aircraft execution conformance against the flight plan (filed information) and subsequent instructions (clearances).	

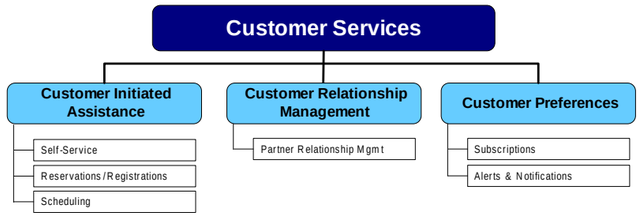
Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Flight Management Services	Aeronautical Information Management	Defines the set of capabilities that allow aeronautical information to be uploaded, received, and exchanged with more accuracy and in a timely manner.	1.5 Aeronautical Information Management
Operational Services	Flight Management Services	Aeronautical Information Management	Defines the set of capabilities that allow aeronautical information to be uploaded, received, and exchanged with more accuracy and in a timely manner.	1.5.1 Collect Aeronautical Data
Operational Services	Flight Management Services	Aeronautical Information Management	Defines the set of capabilities that allow aeronautical information to be uploaded, received, and exchanged with more accuracy and in a timely manner.	1.5.2 Disseminate Aeronautical Information
Operational Services	Flight Management Services	Aeronautical Information Management	Defines the set of capabilities that allow aeronautical information to be uploaded, received, and exchanged with more accuracy and in a timely manner.	1.5.2.1 Provide Aeronautical Information Subscription Services
Operational Services	Flight Management Services	Aeronautical Information Management	Defines the set of capabilities that allow aeronautical information to be uploaded, received, and exchanged with more accuracy and in a timely manner.	1.5.2.2 Publish Aeronautical Information
Operational Services	Flight Management Services	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.	5.1 Trajectory Management
Operational Services	Flight Management Services	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.	5.1.1 Manage Arrival/ Departure
Operational Services	Flight Management Services	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.	5.1.1.1 Manage Surface Operations
Operational Services	Flight Management Services	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.	5.1.1.1.1 Monitor Surface Condition
Operational Services	Flight Management Services	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.	5.1.1.1.3 Issue Clearance

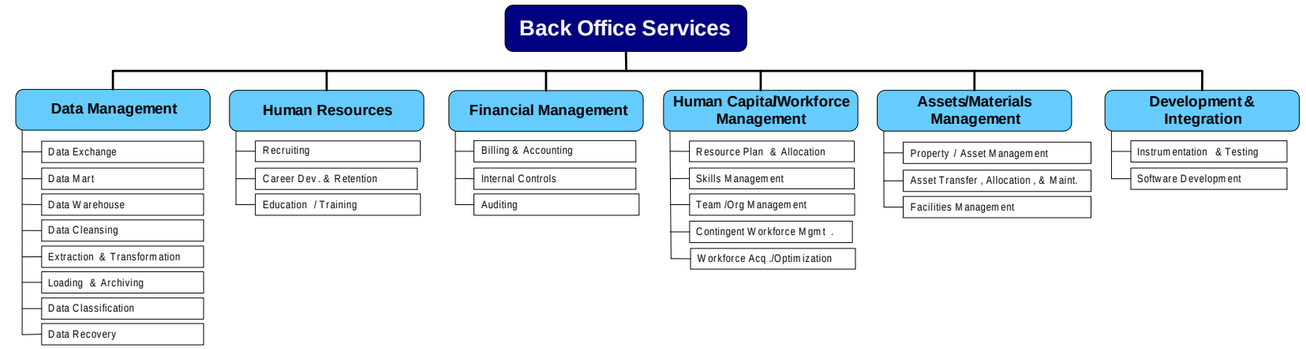
Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Flight Management Services	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.	5.1.1.2 Issue Modification Information/Clearance
Operational Services	Flight Management Services	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.	5.1.2 Manage Trajectories within Flows
Operational Services	Flight Management Services	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.	5.1.2.1 Assign Trajectory
Operational Services	Flight Management Services	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.	5.1.2.2 Negotiate Trajectory
Operational Services	Flight Management Services	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.	5.1.2.3 Assign Spacing and Sequencing
Operational Services	Flight Management Services	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.	5.1.2.4 Manage Flow Corridors
Operational Services	Flight Management Services	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.	5.1.2.4.1 Assign Cruise (En-Route) Flight Path

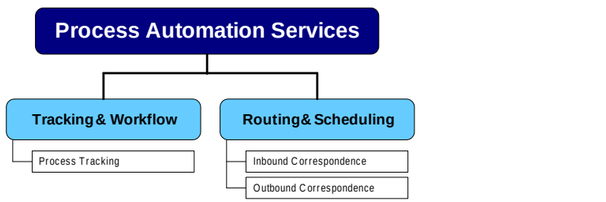
Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Flight Management Services	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.	5.1.2.4.2 Implement Flow Corridors
Operational Services	Flight Management Services	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.	5.1.2.4.2.1 Establish Flow Corridors
Operational Services	Flight Management Services	Trajectory Management Services	Defines the set of capabilities that provide stakeholders the ability to examine individual or aggregate impacts of proposed flow strategies to enable common situational awareness of current and projected National Airspace System status and constraints and the management and resolution of conflicts.	5.1.2.4.2.2 Designate Entry and Exit Location and Time
Operational Services	Flight Management Services	Separation Analysis	Defines the set of capabilities that identify and tactically	5.2 Separation Management
Operational Services	Flight Management Services	Separation Analysis	resolve airspace conflicts among aircraft (i.e., automatic issuance of revised four-dimensional trajectories) to ensure the avoidance of weather, airspace, terrain, or	5.2.1 Provide Separation Clearance
Operational Services	Flight Management Services	Separation Analysis	resolve airspace conflicts among aircraft (i.e., automatic issuance of revised four-dimensional trajectories) to ensure the avoidance of weather, airspace, terrain, or	5.2.2 Delegate Separation Operation
Operational Services	Flight Management Services	Separation Analysis	resolve airspace conflicts among aircraft (i.e., automatic issuance of revised four-dimensional trajectories) to ensure the avoidance of weather, airspace, terrain	5.2.3 Monitor Separation
Operational Services	Flight Management Services	Flow Contingency Management Services	Defines the set of capabilities that identify and resolve congestion or airspace complexity resulting from blocked or constrained airspace or other off-nominal conditions (e.g. weather, security, etc.).	4.3 Flow Contingency Management
Operational Services	Flight Management Services	Flow Contingency Management Services	Defines the set of capabilities that identify and resolve congestion or airspace complexity resulting from blocked or constrained airspace or other off-nominal conditions (e.g. weather, security, etc.).	4.3.1 Monitor Airport Condition
Operational Services	Flight Management Services	Flow Contingency Management Services	Defines the set of capabilities that identify and resolve congestion or airspace complexity resulting from blocked or constrained airspace or other off-nominal conditions (e.g. weather, security, etc.).	4.3.2 Monitor Airspace Condition
Operational Services	Flight Management Services	Flow Contingency Management Services	Defines the set of capabilities that identify and resolve congestion or airspace complexity resulting from blocked or constrained airspace or other off-nominal conditions (e.g. weather, security, etc.).	4.3.4 Restructure Capacity Limited Airspace

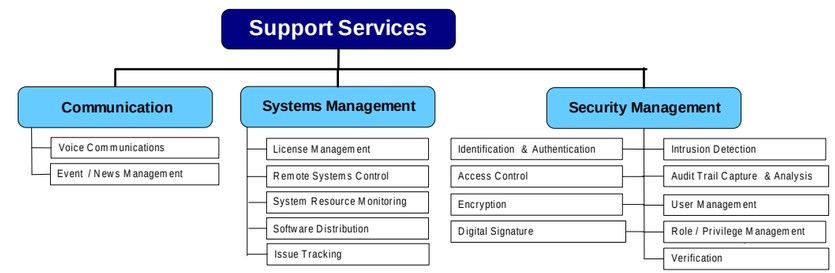
Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Flight Management Services	Flow Contingency Management Services	Defines the set of capabilities that identify and resolve congestion or airspace complexity resulting from blocked or constrained airspace or other off-nominal conditions (e.g. weather, security, etc.).	4.3.5 Disseminate Traffic Management Initiative
Operational Services	Flight Management Services	Flow Contingency Management Services	Defines the set of capabilities that identify and resolve congestion or airspace complexity resulting from blocked or constrained airspace or other off-nominal conditions (e.g. weather, security, etc.).	4.3.6 Reallocate Arrival/ Departures Access

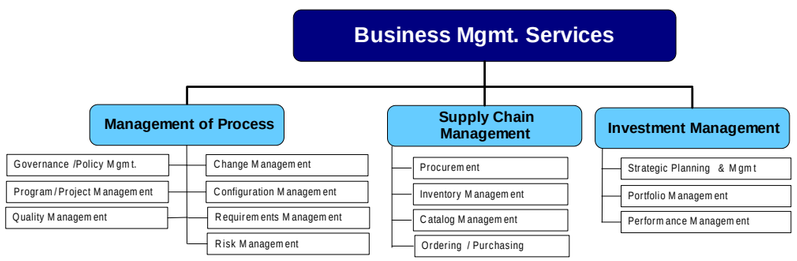
NextGen EA Service Component Reference Architecture

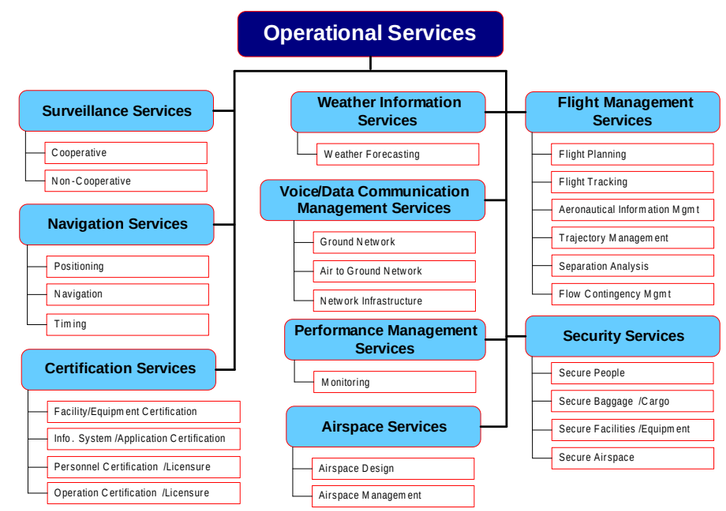


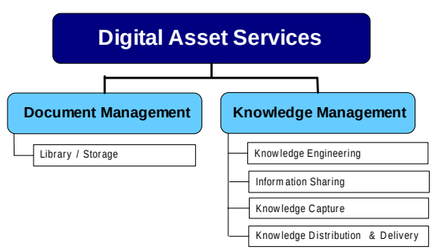


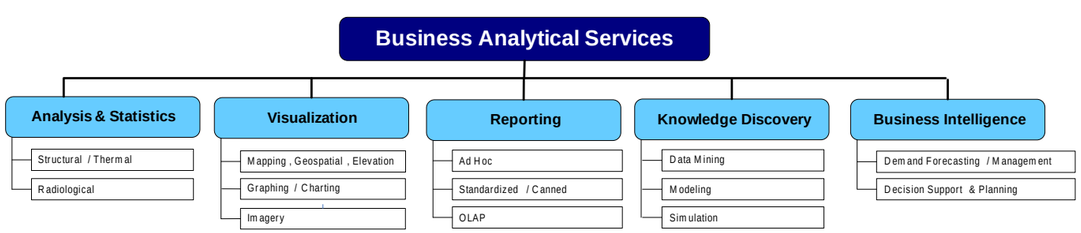












Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Customer Services	Customer Initiated Assistance	Self-Service	Defines the set of capabilities that allow an organization's customers to sign up for a particular service at their own initiative.	3.1 Landside Operations
Customer Services	Customer Initiated Assistance	Self-Service	Defines the set of capabilities that allow an organization's customers to sign up for a particular service at their own initiative.	3.1.1 Manage Passenger Baggage Processing
Customer Services	Customer Initiated Assistance	Self-Service	Defines the set of capabilities that allow an organization's customers to sign up for a particular service at their own initiative.	3.1.1.1 Manage Passengers
Customer Services	Customer Initiated Assistance	Self-Service	Defines the set of capabilities that allow an organization's customers to sign up for a particular service at their own initiative.	3.1.1.1.1 Check In Passenger
Customer Services	Customer Initiated Assistance	Self-Service	Defines the set of capabilities that allow an organization's customers to sign up for a particular service at their own initiative.	3.1.1.2.1 Check In Baggage
Customer Services	Customer Initiated Assistance	Reservations / Registration	Defines the set of capabilities that allow electronic enrollment and confirmations for services.	3.1.1 Manage Passenger Baggage Processing
Customer Services	Customer Initiated Assistance	Reservations / Registration	Defines the set of capabilities that allow electronic enrollment and confirmations for services.	3.1.1.1 Manage Passengers
Customer Services	Customer Initiated Assistance	Reservations / Registration	Defines the set of capabilities that allow electronic enrollment and confirmations for services.	3.1.1.1.1 Check In Passenger
Customer Services	Customer Initiated Assistance	Reservations / Registration	Defines the set of capabilities that allow electronic enrollment and confirmations for services.	3.1 Landside Operations
Customer Services	Customer Initiated Assistance	Scheduling	Defines the set of capabilities that support the plan for performing work or services to meet the needs of an organization's customers.	6.2 Fleet Management
Customer Services	Customer Initiated Assistance	Scheduling	Defines the set of capabilities that support the plan for performing work or services to meet the needs of an organization's customers	6.2.2 Schedule Flight

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Customer Services	Customer Preferences	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.	1.1.4 Disseminate Weather Picture
Customer Services	Customer Preferences	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.	1.1.4.1 Provide Weather Subscription Services
Customer Services	Customer Preferences	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.	1.4 Flight Planning and Flight Data Management
Customer Services	Customer Preferences	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.	1.4.2 Provide Flight Data Management
Customer Services	Customer Preferences	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.	1.4.2.3.1 Provide Flight Data Subscription Services
Customer Services	Customer Preferences	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.	1.5 Aeronautical Information Management
Customer Services	Customer Preferences	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.	1.5.2 Disseminate Aeronautical Information
Customer Services	Customer Preferences	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.	1.5.2.1 Provide Aeronautical Information Subscription Services
Customer Services	Customer Preferences	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.	1.6 Geospatial Information Management
Customer Services	Customer Preferences	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.	1.6.2 Disseminate Geospatial Information
Customer Services	Customer Preferences	Subscriptions	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list.	1.6.2.1 Provide Geospatial Information Subscription Service
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	1.1.4 Disseminate Weather Picture

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	1.1.4.2 Publish Weather Picture
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	1.5 Aeronautical Information Management
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	1.5.2 Disseminate Aeronautical Information
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	1.5.2.2 Publish Aeronautical Information
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	1.6 Geospatial Information Management
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	1.6.2 Disseminate Geospatial Information
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	1.6.2.2 Publish Geospatial Information
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	1.7 Environmental Information Management
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	1.7.3 Report Environmental Conditions
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	3.1 Landside Operations
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	4.1 Airspace Security Operations
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	4.1.1 Manage Airspace Alerts

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	5.3 Contingency/ Business Continuity Management
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	5.3.3 Emergency Operation Procedure
Customer Services	Customer Preferences	Alerts & Notifications	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest.	5.3.3.2 Notify Emergency Responder
Customer Services	Customer Relationship Management	Partner Relationship Management	Provide a framework to promote the effective collaboration between an organization and its business partners, particularly members of the distribution chain (e.g., channel and alliance partners, resellers, agents, brokers, and dealers) and other third parties that support operations and service delivery to an organization's customers; includes performance evaluation of partners, if necessary.	8.1 Human Resource Management
Customer Services	Customer Relationship Management	Partner Relationship Management	Provide a framework to promote the effective collaboration between an organization and its business partners, particularly members of the distribution chain (e.g., channel and alliance partners, resellers, agents, brokers, and dealers) and other third parties that support operations and service delivery to an organization's customers; includes performance evaluation of partners, if necessary.	8.1.6 Manage Labor Relations
Customer Services	Customer Relationship Management	Partner Relationship Management	Provide a framework to promote the effective collaboration between an organization and its business partners, particularly members of the distribution chain (e.g., channel and alliance partners, resellers, agents, brokers, and dealers) and other third parties that support operations and service delivery to an organization's customers; includes performance evaluation of partners, if necessary.	8.4.3 Monitor Compliance

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Customer Services	Customer Relationship Management	Partner Relationship Management	Provide a framework to promote the effective collaboration between an organization and its business partners, particularly members of the distribution chain (e.g., channel and alliance partners, resellers, agents, brokers, and dealers) and other third parties that support operations and service delivery to an organization's customers; includes performance evaluation of partners, if necessary.	8.4.3.1 Monitor Programs
Customer Services	Customer Relationship Management	Partner Relationship Management	Provide a framework to promote the effective collaboration between an organization and its business partners, particularly members of the distribution chain (e.g., channel and alliance partners, resellers, agents, brokers, and dealers) and other third parties that support operations and service delivery to an organization's customers; includes performance evaluation of partners, if necessary.	8.4.3.2 Evaluate Programs
Customer Services	Customer Relationship Management	Partner Relationship Management	Provide a framework to promote the effective collaboration between an organization and its business partners, particularly members of the distribution chain (e.g., channel and alliance partners, resellers, agents, brokers, and dealers) and other third parties that support operations and service delivery to an organization's customers; includes performance evaluation of partners, if necessary.	
Customer Services	Customer Relationship Management	Partner Relationship Management	Provide a framework to promote the effective collaboration between an organization and its business partners, particularly members of the distribution chain (e.g., channel and alliance partners, resellers, agents, brokers, and dealers) and other third parties that support operations and service delivery to an organization's customers; includes performance evaluation of partners, if necessary.	

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Customer Services	Customer Relationship Management	Partner Relationship Management	Provide a framework to promote the effective collaboration between an organization and its business partners, particularly members of the distribution chain (e.g., channel and alliance partners, resellers, agents, brokers, and dealers) and other third parties that support operations and service delivery to an organization's customers; includes performance evaluation of partners, if necessary.	
Process Automation Services	Tracking & Workflow	Process Tracking	Defines the set of capabilities to allow the monitoring of activities within the business cycle.	3.1 Landside Operations
Process Automation Services	Tracking & Workflow	Process Tracking	Defines the set of capabilities to allow the monitoring of activities within the business cycle.	3.1.1 Manage Passenger Baggage Processing
Process Automation Services	Tracking & Workflow	Process Tracking	Defines the set of capabilities to allow the monitoring of activities within the business cycle.	3.1.1.1.4 Manage Manifest
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	1.5 Aeronautical Information Management
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	1.5.1 Collect Aeronautical Data
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	1.6 Geospatial Information Management
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	1.6.1 Collect Geospatial Information
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	1.9 Communication Service Management

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	1.9.1 Manage Communication
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	1.9.1.5 Collect Utilization Data
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	2.2 Risk Assessment Management
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	2.2.1 Collect Airport Risk Assessment Data
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	2.4 Airport Threat Profile Management
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	2.4.1 Collect Airport Threat Data
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	3.6 Congestion Management
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	3.6.1 Gather Congestion Data
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	6.1 Business Operations
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	6.1.1 Receive Airspace Design

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	7.1 Aircraft Surface Operations
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	7.1.1.2 Receive Arrival/ Departure Information
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	7.1.1.6 Report Flight Readiness
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	7.1.2.1 Request Post Flight Taxi Clearance
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	7.2 Airborne Operations
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	7.2.1.3.1 Receive Separation Clearance
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	7.2.2 Monitor Weather Information
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	7.2.2.1 Obtain In-Flight Weather Data
Process Automation Services	Routing & Scheduling	Inbound Correspondence	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders.	7.2.2.3 Receive 4D Weather Picture
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.1.4 Disseminate Weather Picture

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.1.4.2 Publish Weather Picture
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.10 Metrics Management
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.10.3 Disseminate Performance Metrics Reports
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.4 Flight Planning and Flight Data Management
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.4.2 Provide Flight Data Management
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.4.2.1 Establish Aircraft Capabilities
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.4.2.3 Disseminate Flight Data
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.4.2.3.2 Publish Flight Data
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.5 Aeronautical Information Management
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.5.2 Disseminate Aeronautical Information

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.5.2.2 Publish Aeronautical Information
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.6 Geospatial Information Management
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.6.2 Disseminate Geospatial Information
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.6.2.2 Publish Geospatial Information
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.7 Environmental Information Management
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	1.7.3 Report Environmental Conditions
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	2.2 Risk Assessment Management
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	2.2.4 Report Airport Risk Assessment
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	2.4 Airport Threat Profile Management
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	2.4.4 Submit Threat Profile

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	3.1 Landside Operations
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	3.1.2 Flight Level Security Screening
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	3.1.2.2 Manage Airport Security Alerts
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	3.2 Airside Operations
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	3.2.1 Monitor Surface Support Equipment
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	4.2 Capacity Management
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	4.2.5 Disseminate Proposed Airspace Design
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	4.2.6 Disseminate Execution Plan
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	4.3 Flow Contingency Management
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	4.3.5 Disseminate Traffic Management Initiative

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	5.1 Trajectory Management
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	5.1.1 Manage Arrival/ Departure
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	5.1.1.1 Manage Surface Operations
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	5.1.1.1.3 Issue Clearance
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	5.1.1.2 Issue Modification Information/ Clearance
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	5.3 Contingency/ Business Continuity Management
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	5.3.3 Emergency Operation Procedure
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	5.3.3.2 Notify Emergency Responder
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	7.1 Aircraft Surface Operations
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	7.1.1.6 Report Flight Readiness

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Process Automation Services	Routing & Scheduling	Outbound Correspondence	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders.	7.1.2.1 Request Post Flight Taxi Clearance
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	1.8 Safety Management Service
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	1.8.1 Provide Aviation Safety Service
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	1.9 Communication Service Management
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	1.9.2 Manage Spectrum
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	1.9.2.1 Manage Frequency Allocation
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	1.9.2.2 Assign Radio Frequency
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	8.4 Governance Management
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	8.4.1 Develop Regulations
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	8.4.1.1 Create Regulations

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	8.4.1.2 Track Public Comment
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	8.4.1.3 Develop Policy and Guidance
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	8.4.2 Oversee Regulatory Compliance and Enforcement
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	8.4.2.1 Develop Standards and Reporting Guidance
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	8.4.2.2 Audit Regulated Activities
Business Management Services	Management of Process	Governance/ Policy Management	Defines the set of capabilities intended to influence and determine decisions, actions, business rules and other matters within an organization.	8.6.5 Conduct Information Management
Business Management Services	Management of Process	Program / Project Management	Defines the set of capabilities for the management and control of a particular effort of an organization.	8.4.3 Monitor Compliance
Business Management Services	Management of Process	Program / Project Management	Defines the set of capabilities for the management and control of a particular effort of an organization.	8.4.3.1 Monitor Programs
Business Management Services	Management of Process	Program / Project Management	Defines the set of capabilities for the management and control of a particular effort of an organization.	8.4.3.2 Evaluate Programs
Business Management Services	Management of Process	Quality Management	Defines the set of capabilities intended to help determine the level that a product or service satisfies certain requirements.	1.7 Environmental Information Management
Business Management Services	Management of Process	Quality Management	Defines the set of capabilities intended to help determine the level that a product or service satisfies certain requirements.	1.7.1 Monitor Environmental Impacts

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Management Services	Management of Process	Quality Management	Defines the set of capabilities intended to help determine the level that a product or service satisfies certain requirements.	1.7.2 Manage Environmental Impacts
Business Management Services	Management of Process	Quality Management	Defines the set of capabilities intended to help determine the level that a product or service satisfies certain requirements.	8.6 Information and Technology Management
Business Management Services	Management of Process	Quality Management	Defines the set of capabilities intended to help determine the level that a product or service satisfies certain requirements.	8.6.3 Maintain Systems
Business Management Services	Management of Process	Change Management	Defines the set of capabilities that control the process for updates or modifications to the existing documents, software or business processes of an organization.	8.6 Information and Technology Management
Business Management Services	Management of Process	Change Management	Defines the set of capabilities that control the process for updates or modifications to the existing documents, software or business processes of an organization.	8.6.1 Maintain IT Infrastructure
Business Management Services	Management of Process	Change Management	Defines the set of capabilities that control the process for updates or modifications to the existing documents, software or business processes of an organization.	8.6.2 Manage Change
Business Management Services	Management of Process	Change Management	Defines the set of capabilities that control the process for updates or modifications to the existing documents, software or business processes of an organization.	8.6.3 Maintain Systems
Business Management Services	Management of Process	Configuration Management	Defines the set of capabilities that control the hardware and software environments, as well as documents of an organization.	8.6 Information and Technology Management
Business Management Services	Management of Process	Configuration Management	Defines the set of capabilities that control the hardware and software environments, as well as documents of an organization.	8.6.1 Maintain IT Infrastructure
Business Management Services	Management of Process	Configuration Management	Defines the set of capabilities that control the hardware and software environments, as well as documents of an organization.	8.6.2 Manage Change
Business Management Services	Management of Process	Configuration Management	Defines the set of capabilities that control the hardware and software environments, as well as documents of an organization.	8.6.3 Maintain Systems

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Management Services	Management of Process	Requirements Management	Defines the set of capabilities for gathering, analyzing and fulfilling the needs and prerequisites of an organization's efforts.	8.6 Information and Technology Management
Business Management Services	Management of Process	Requirements Management	Defines the set of capabilities for gathering, analyzing and fulfilling the needs and prerequisites of an organization's efforts.	8.6.3 Maintain Systems
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	1.8 Safety Management Service
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	1.8.2 Provide Safety Risk Management
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	2.2 Risk Assessment Management
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	2.2.2 Assess Airport Risk Condition
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	2.2.3 Manage Airport Risk Assessment
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	2.2.4 Report Airport Risk Assessment
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	2.4 Airport Threat Profile Management
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	2.4.1 Collect Airport Threat Data

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	2.4.2 Analyze Airport Threat Data
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	2.4.3 Create Airport Threat Profile
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	2.4.4 Submit Threat Profile
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	2.4.5 Monitor Airport Threat
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	3.1 Landside Operations
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	3.1.2 Flight Level Security Screening
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	3.1.2.2 Manage Airport Security Alerts
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	3.1.4 Manage Gate Operations
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	3.3 Airport Emergency Response
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	3.3.2 Manage Emergency Operations

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	3.5 Cargo Management
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	3.5.2 Manage Cargo Risk Assessment
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	4.1 Airspace Security Operations
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	5.3 Contingency/ Business Continuity Management
Business Management Services	Management of Process	Risk Management	Defines the set of capabilities that support the identification and probabilities or chances of hazards as they relate to a task, decision or long-term goal.	5.3.1 Develop Contingency Plan
Business Management Services	Supply Chain Management	Procurement	Defines the set of capabilities that support the ordering and purchasing of products and services.	2.1 Airport Assets Management
Business Management Services	Supply Chain Management	Procurement	Defines the set of capabilities that support the ordering and purchasing of products and services.	2.1.3 Conduct Equipment Management
Business Management Services	Supply Chain Management	Procurement	Defines the set of capabilities that support the ordering and purchasing of products and services.	3.2 Airside Operations
Business Management Services	Supply Chain Management	Procurement	Defines the set of capabilities that support the ordering and purchasing of products and services.	3.2.2.3 Manage Vehicles
Business Management Services	Supply Chain Management	Procurement	Defines the set of capabilities that support the ordering and purchasing of products and services.	8.3 Supply Chain Management
Business Management Services	Supply Chain Management	Procurement	Defines the set of capabilities that support the ordering and purchasing of products and services.	8.3.1 Acquire Goods

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Management Services	Supply Chain Management	Procurement	Defines the set of capabilities that support the ordering and purchasing of products and services.	8.3.2 Acquire Services
Business Management Services	Supply Chain Management	Inventory Management	Provide for the balancing of customer service levels with inventory investment.	8.3 Supply Chain Management
Business Management Services	Supply Chain Management	Inventory Management	Provide for the balancing of customer service levels with inventory investment.	8.3.3 Manage Inventory
Business Management Services	Supply Chain Management	Catalog Management	Defines the set of capabilities that support the listing of available products or services that an organization offers.	8.3 Supply Chain Management
Business Management Services	Supply Chain Management	Catalog Management	Defines the set of capabilities that support the listing of available products or services that an organization offers.	8.3.3 Manage Inventory
Business Management Services	Supply Chain Management	Ordering / Purchasing	Defines the set of capabilities that allow the placement of request for a product.	2.1 Airport Assets Management
Business Management Services	Supply Chain Management	Ordering / Purchasing	Defines the set of capabilities that allow the placement of request for a product.	2.1.3 Conduct Equipment Management
Business Management Services	Supply Chain Management	Ordering / Purchasing	Defines the set of capabilities that allow the placement of request for a product.	3.2 Airside Operations
Business Management Services	Supply Chain Management	Ordering / Purchasing	Defines the set of capabilities that allow the placement of request for a product.	3.2.2.3 Manage Vehicles
Business Management Services	Supply Chain Management	Ordering / Purchasing	Defines the set of capabilities that allow the placement of request for a product.	8.3 Supply Chain Management
Business Management Services	Supply Chain Managemen	Ordering / Purchasing	Defines the set of capabilities that allow the placement of request for a product.	8.3.1 Acquire Goods
Business Management Services	Investment Management	Strategic Planning & Management	Defines the set of capabilities that support the determination of long-term goals and the identification of the best approach for achieving those goals.	8.5 Financial Management
Business Management Services	Investment Management	Strategic Planning & Management	Defines the set of capabilities that support the determination of long-term goals and the identification of the best approach for achieving those goals.	8.5.1 Manage Budget

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Management Services	Investment Management	Portfolio Management	Defines the set of capabilities that support the administration of a group of investments held by an organization.	8.5 Financial Management
Business Management Services	Investment Management	Portfolio Management	Defines the set of capabilities that support the administration of a group of investments held by an organization.	8.5.1 Manage Budget
Business Management Services	Investment Management	Performance Management	Defines the set of capabilities for measuring the effectiveness of an organization's financial assets and capital.	8.4.3 Monitor Compliance
Business Management Services	Investment Management	Performance Management	Defines the set of capabilities for measuring the effectiveness of an organization's financial assets and capital.	8.4.3.1 Monitor Programs
Business Management Services	Investment Management	Performance Management	Defines the set of capabilities for measuring the effectiveness of an organization's financial assets and capital.	8.4.3.2 Evaluate Programs
Digital Asset Services	Document Management	Library / Storage	Defines the set of capabilities that support document and data warehousing and archiving.	1.4 Flight Planning and Flight Data Management
Digital Asset Services	Document Management	Library / Storage	Defines the set of capabilities that support document and data warehousing and archiving.	1.4.2 Provide Flight Data Management
Digital Asset Services	Document Management	Library / Storage	Defines the set of capabilities that support document and data warehousing and archiving.	1.4.2.5 Archive Flight Data
Digital Asset Services	Document Management	Library / Storage	Defines the set of capabilities that support document and data warehousing and archiving.	8.6.5 Conduct Information Management
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	1.1.1 Collect/ Analyze Weather Observation
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	1.10 Metrics Management
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	1.10.1 Collect Performance Metrics Data

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	1.5 Aeronautical Information Management
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	1.5.1 Collect Aeronautical Data
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	1.6 Geospatial Information Management
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	1.6.1 Collect Geospatial Information
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	1.9 Communication Service Management
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	1.9.1 Manage Communication
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	1.9.1.5 Collect Utilization Data
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	2.2 Risk Assessment Management
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	2.2.1 Collect Airport Risk Assessment Data
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	2.4 Airport Threat Profile Management
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	2.4.1 Collect Airport Threat Data
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	3.6 Congestion Management
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	3.6.1 Gather Congestion Data
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	5.3 Contingency/ Business Continuity Management
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	5.3.3 Emergency Operation Procedure

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	5.3.3.1 Manage Emergency Information
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	5.3.3.1.1 Manage Alert Information
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	6.1 Business Operations
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	6.1.1 Receive Airspace Design
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	7.1 Aircraft Surface Operations
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	7.1.1.2 Receive Arrival/ Departure Information
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	7.2 Airborne Operations
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	7.2.1.3.1 Receive Separation Clearance
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	7.2.2 Monitor Weather Information
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	7.2.2.1 Obtain In-Flight Weather Data
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	7.2.2.3 Receive 4D Weather Picture
Digital Asset Services	Knowledge Management	Knowledge Capture	Defines the set of capabilities that facilitate collection of data and information.	8.6.5 Conduct Information Management
Digital Asset Services	Knowledge Management	Knowledge Engineering	Defines the set of capabilities that support the translation of knowledge from an expert into the knowledge base of an expert system.	1.1.2 Determine NAS Weather Integration Algorithm
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.1.4 Disseminate Weather Picture
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.1.4.2 Publish Weather Picture

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.10 Metrics Management
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.10.3 Disseminate Performance Metrics Reports
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.4 Flight Planning and Flight Data Management
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.4.2 Provide Flight Data Management
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.4.2.1 Establish Aircraft Capabilities
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.4.2.3 Disseminate Flight Data
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.4.2.3.2 Publish Flight Data
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.5 Aeronautical Information Management
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.5.2 Disseminate Aeronautical Information
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.5.2.2 Publish Aeronautical Information
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.6 Geospatial Information Management
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.6.2 Disseminate Geospatial Information
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.6.2.2 Publish Geospatial Information
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.7 Environmental Information Management

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	1.7.3 Report Environmental Conditions
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	2.2 Risk Assessment Management
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	2.2.4 Report Airport Risk Assessment
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	2.4 Airport Threat Profile Management
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	2.4.4 Submit Threat Profile
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	3.1 Landside Operations
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	3.1.2 Flight Level Security Screening
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	3.1.2.2 Manage Airport Security Alerts
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	3.2 Airside Operations
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	3.2.1 Monitor Surface Support Equipment
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	4.2 Capacity Management
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	4.2.5 Disseminate Proposed Airspace Design
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	4.2.6 Disseminate Execution Plan
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	4.3 Flow Contingency Management
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	4.3.5 Disseminate Traffic Management Initiative

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	5.1 Trajectory Management
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	5.1.1 Manage Arrival/ Departure
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	5.1.1.1 Manage Surface Operations
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	5.1.1.1.3 Issue Clearance
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	5.1.1.2 Issue Modification Information/ Clearance
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	5.3 Contingency/ Business Continuity Management
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	5.3.3 Emergency Operation Procedure
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	5.3.3.2 Notify Emergency Responder
Digital Asset Services	Knowledge Management	Knowledge Distribution & Delivery	Defines the set of capabilities that support the transfer of knowledge to the end customer.	8.6.5 Conduct Information Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.1.4 Disseminate Weather Picture
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.1.4.2 Publish Weather Picture
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.10 Metrics Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.10.3 Disseminate Performance Metrics Reports

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.4 Flight Planning and Flight Data Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.4.2 Provide Flight Data Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.4.2.1 Establish Aircraft Capabilities
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.4.2.3 Disseminate Flight Data
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.4.2.3.2 Publish Flight Data
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.5 Aeronautical Information Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.5.2 Disseminate Aeronautical Information
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.5.2.2 Publish Aeronautical Information
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.6 Geospatial Information Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.6.2 Disseminate Geospatial Information

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.6.2.2 Publish Geospatial Information
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.7 Environmental Information Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	1.7.3 Report Environmental Conditions
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	2.2 Risk Assessment Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	2.2.4 Report Airport Risk Assessment
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	2.4 Airport Threat Profile Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	2.4.4 Submit Threat Profile
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	3.1 Landside Operations
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	3.1.2 Flight Level Security Screening
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	3.1.2.2 Manage Airport Security Alerts

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	3.2 Airside Operations
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	3.2.1 Monitor Surface Support Equipment
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	4.2 Capacity Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	4.2.5 Disseminate Proposed Airspace Design
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	4.2.6 Disseminate Execution Plan
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	4.3 Flow Contingency Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	4.3.5 Disseminate Traffic Management Initiative
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	5.1 Trajectory Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	5.1.1 Manage Arrival/ Departure
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	5.1.1.1 Manage Surface Operations

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	5.1.1.1.3 Issue Clearance
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	5.1.1.2 Issue Modification Information/ Clearance
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	5.3 Contingency/ Business Continuity Management
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	5.3.3 Emergency Operation Procedure
Digital Asset Services	Knowledge Management	Information Sharing	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by an organization and its stakeholders.	5.3.3.2 Notify Emergency Responder
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	1.1.1 Collect/ Analyze Weather Observation
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	1.1.2 Determine NAS Weather Integration Algorithm
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	1.10 Metrics Management
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	1.10.2 Analyze Performance Metrics Data
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	2.4 Airport Threat Profile Management

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	2.4.2 Analyze Airport Threat Data
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	3.1 Landside Operations
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	3.1.2 Flight Level Security Screening
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	3.1.2.1 Flight Level Security Analysis
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	3.6 Congestion Management
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	3.6.2 Perform Impact Analysis
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	4.2 Capacity Management
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	4.2.2 Analyze demand and projected capacity
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	4.2.7 Post-analysis of Execution Plan
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	4.3 Flow Contingency Management

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	4.3.7 Post-event analysis of selected TMI
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	5.3 Contingency/ Business Continuity Management
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	5.3.5 Conduct Post Analysis of Contingency/ Emergency Operation Procedure
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	8.5 Financial Management
Business Analytical Services	Analysis & Statistics	Structural / Thermal	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data.	8.5.3 Report Financials
Business Analytical Services	Analysis & Statistics	Radiological	Defines the set of capabilities that support the use of radiation and x-ray technologies for analysis and scientific examination.	3.1 Landside Operations
Business Analytical Services	Analysis & Statistics	Radiological	Defines the set of capabilities that support the use of radiation and x-ray technologies for analysis and scientific examination.	3.1.1.2.2 Screen Baggage
Business Analytical Services	Analysis & Statistics	Radiological	Defines the set of capabilities that support the use of radiation and x-ray technologies for analysis and scientific examination.	3.5 Cargo Management
Business Analytical Services	Analysis & Statistics	Radiological	Defines the set of capabilities that support the use of radiation and x-ray technologies for analysis and scientific examination.	3.5.1.3 Screen Cargo
Business Analytical Services	Visualization	Mapping, Geospatial, Elevation	Provides for the representation of position information through the use of attributes such as elevation, latitude, and longitude coordinates.	1.6 Geospatial Information Management

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Analytical Services	Visualization	Mapping, Geospatial, Elevation	Provides for the representation of position information through the use of attributes such as elevation, latitude, and longitude coordinates.	1.6.1 Collect Geospatial Information
Business Analytical Services	Visualization	Graphing / Charting	Defines the set of capabilities that support the presentation of information in the form of diagrams or tables.	7.2 Airborne Operations
Business Analytical Services	Visualization	Graphing / Charting	Defines the set of capabilities that support the presentation of information in the form of diagrams or tables.	7.2.2 Monitor Weather Information
Business Analytical Services	Visualization	Graphing / Charting	Defines the set of capabilities that support the presentation of information in the form of diagrams or tables.	7.2.2.2 Report In-Flight Weather Data
Business Analytical Services	Visualization	Graphing / Charting	Defines the set of capabilities that support the presentation of information in the form of diagrams or tables.	1.1.3 Provide Weather Diagnostic Forecast
Business Analytical Services	Visualization	Imagery	Defines the set of capabilities that support the creation of film or electronic images from pictures, paper forms or graphics for static or dynamic use.	1.1.3 Provide Weather Diagnostic Forecast
Business Analytical Services	Visualization	Imagery	Defines the set of capabilities that support the creation of film or electronic images from pictures, paper forms or graphics for static or dynamic use.	7.2 Airborne Operations
Business Analytical Services	Visualization	Imagery	Defines the set of capabilities that support the creation of film or electronic images from pictures, paper forms or graphics for static or dynamic use.	7.2.2 Monitor Weather Information
Business Analytical Services	Visualization	Imagery	Defines the set of capabilities that support the creation of film or electronic images from pictures, paper forms or graphics for static or dynamic use.	7.2.2.2 Report In-Flight Weather Data
Business Analytical Services	Reporting	Ad Hoc	Defines the set of capabilities that support the use of dynamic reports on an as needed basis.	1.1.3 Provide Weather Diagnostic Forecast
Business Analytical Services	Reporting	Ad Hoc	Defines the set of capabilities that support the use of dynamic reports on an as needed basis.	1.7 Environmental Information Management

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Analytical Services	Reporting	Ad Hoc	Defines the set of capabilities that support the use of dynamic reports on an as needed basis.	1.7.3 Report Environmental Conditions
Business Analytical Services	Reporting	Ad Hoc	Defines the set of capabilities that support the use of dynamic reports on an as needed basis.	8.5 Financial Management
Business Analytical Services	Reporting	Ad Hoc	Defines the set of capabilities that support the use of dynamic reports on an as needed basis.	8.5.3 Report Financials
Business Analytical Services	Reporting	Ad Hoc	Defines the set of capabilities that support the use of dynamic reports on an as needed basis.	3.2.1 Monitor Surface Support Equipment
Business Analytical Services	Reporting	Ad Hoc	Defines the set of capabilities that support the use of dynamic reports on an as needed basis.	3.2.4 Report Airfield Condition
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	1.1.3 Provide Weather Diagnostic Forecast
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	1.10 Metrics Management
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	1.10.3 Disseminate Performance Metrics Reports
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	1.7 Environmental Information Management
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	1.7.3 Report Environmental Conditions
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	2.2 Risk Assessment Management
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	2.2.4 Report Airport Risk Assessment
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	3.2.1 Monitor Surface Support Equipment
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	3.2.4 Report Airfield Condition
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	7.2 Airborne Operations

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	7.2.2 Monitor Weather Information
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	7.2.2.2 Report In-Flight Weather Data
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	8.5 Financial Management
Business Analytical Services	Reporting	Standardized / Canned	Defines the set of capabilities that support the use of pre-conceived or pre-written reports.	8.5.3 Report Financials
Business Analytical Services	Reporting	OLAP	Defines the set of capabilities that support the analysis of information that has been summarized into multidimensional views and hierarchies.	8.5 Financial Management
Business Analytical Services	Reporting	OLAP	Defines the set of capabilities that support the analysis of information that has been summarized into multidimensional views and hierarchies.	8.5.3 Report Financials
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	1.1.2 Determine NAS Weather Integration Algorithm
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	1.1.3 Provide Weather Diagnostic Forecast
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	2.2 Risk Assessment Management
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	2.2.2 Assess Airport Risk Condition
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	2.4 Airport Threat Profile Management
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	2.4.2 Analyze Airport Threat Data

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	3.1 Landside Operations
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	3.1.2 Flight Level Security Screening
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	3.1.2.1 Flight Level Security Analysis
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	3.6 Congestion Management
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	3.6.2 Perform Impact Analysis
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	4.2 Capacity Management
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	4.2.2 Analyze demand and projected capacity
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	5.3 Contingency/ Business Continuity Management
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	5.3.3 Emergency Operation Procedure
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	5.3.3.1 Manage Emergency Information
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	5.3.3.1.1 Manage Alert Information
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	7.2 Airborne Operations

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	7.2.2 Monitor Weather Information
Business Analytical Services	Knowledge Discovery	Data Mining	Provide for the efficient discovery of non-obvious, valuable patterns and relationships within a large collection of data.	7.2.2.2 Report In-Flight Weather Data
Business Analytical Services	Knowledge Discovery	Modeling	Develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.	1.1.2 Determine NAS Weather Integration Algorithm
Business Analytical Services	Knowledge Discovery	Modeling	Develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.	1.1.3 Provide Weather Diagnostic Forecast
Business Analytical Services	Knowledge Discovery	Modeling	Develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.	2.2 Risk Assessment Management
Business Analytical Services	Knowledge Discovery	Modeling	Develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.	2.2.2 Assess Airport Risk Condition
Business Analytical Services	Knowledge Discovery	Modeling	Develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.	2.4 Airport Threat Profile Management
Business Analytical Services	Knowledge Discovery	Modeling	Develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.	2.4.2 Analyze Airport Threat Data
Business Analytical Services	Knowledge Discovery	Modeling	Develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.	3.6 Congestion Management
Business Analytical Services	Knowledge Discovery	Modeling	Develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.	3.6.2 Perform Impact Analysis

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Analytical Services	Knowledge Discovery	Modeling	Develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.	4.2 Capacity Management
Business Analytical Services	Knowledge Discovery	Modeling	Develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organization of data.	4.2.2 Analyze demand and projected capacity
Business Analytical Services	Knowledge Discovery	Simulation	Utilize models to mimic real-world processes.	2.2 Risk Assessment Management
Business Analytical Services	Knowledge Discovery	Simulation	Utilize models to mimic real-world processes.	2.2.2 Assess Airport Risk Condition
Business Analytical Services	Business Intelligence	Demand Forecasting / Management	Defines the set of capabilities that facilitate the prediction of sufficient production to meet an organization's sales of a product or service.	6.1 Business Operations
Business Analytical Services	Business Intelligence	Demand Forecasting / Management	Defines the set of capabilities that facilitate the prediction of sufficient production to meet an organization's sales of a product or service.	6.1.2 Analyze Business Case
Business Analytical Services	Business Intelligence	Demand Forecasting / Management	Defines the set of capabilities that facilitate the prediction of sufficient production to meet an organization's sales of a product or service.	8.1.1 Develop HR Strategy
Business Analytical Services	Business Intelligence	Decision Support & Planning	Defines the set of capabilities that support the analyze information and predict the impact of decisions before they are made.	3.6 Congestion Management
Business Analytical Services	Business Intelligence	Decision Support & Planning	Defines the set of capabilities that support the analyze information and predict the impact of decisions before they are made.	3.6.2 Perform Impact Analysis
Business Analytical Services	Business Intelligence	Decision Support & Planning	Defines the set of capabilities that support the analyze information and predict the impact of decisions before they are made.	4.2 Capacity Management
Business Analytical Services	Business Intelligence	Decision Support & Planning	Defines the set of capabilities that support the analyze information and predict the impact of decisions before they are made.	4.2.2 Analyze demand and projected capacity

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Business Analytical Services	Business Intelligence	Decision Support & Planning	Defines the set of capabilities that support the analyze information and predict the impact of decisions before they are made.	7.2 Airborne Operations
Business Analytical Services	Business Intelligence	Decision Support & Planning	Defines the set of capabilities that support the analyze information and predict the impact of decisions before they are made.	7.2.2 Monitor Weather Information
Business Analytical Services	Business Intelligence	Decision Support & Planning	Defines the set of capabilities that support the analyze information and predict the impact of decisions before they are made.	7.2.2.2 Report In-Flight Weather Data
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	1.10 Metrics Management
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	1.10.1 Collect Performance Metrics Data
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	1.5 Aeronautical Information Management
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	1.5.1 Collect Aeronautical Data
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	1.6 Geospatial Information Management
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	1.6.1 Collect Geospatial Information
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	1.9 Communication Service Management

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	1.9.1 Manage Communication
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	1.9.1.5 Collect Utilization Data
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	2.2 Risk Assessment Management
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	2.2.1 Collect Airport Risk Assessment Data
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	2.4 Airport Threat Profile Management
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	2.4.1 Collect Airport Threat Data
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	3.6 Congestion Management
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	3.6.1 Gather Congestion Data
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	5.3 Contingency/ Business Continuity Management
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	5.3.3 Emergency Operation Procedure

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	5.3.3.1 Manage Emergency Information
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	5.3.3.1.1 Manage Alert Information
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	6.1 Business Operations
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	6.1.1 Receive Airspace Design
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	7.1 Aircraft Surface Operations
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	7.1.1.2 Receive Arrival/ Departure Information
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	7.2 Airborne Operations
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	7.2.1.3.1 Receive Separation Clearance
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	7.2.2 Monitor Weather Information
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	7.2.2.1 Obtain In-Flight Weather Data

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	7.2.2.3 Receive 4D Weather Picture
Back Office Services	Data Management	Data Exchange	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered.	8.6.5 Conduct Information Management
Back Office Services	Data Management	Data Mart	Defines the set of capabilities that support a subset of a data warehouse for a single department or function within an organization.	8.6.5 Conduct Information Management
Back Office Services	Data Management	Data Warehouse	Defines the set of capabilities that support the archiving and storage of large volumes of data.	1.4 Flight Planning and Flight Data Management
Back Office Services	Data Management	Data Warehouse	Defines the set of capabilities that support the archiving and storage of large volumes of data.	1.4.2 Provide Flight Data Management
Back Office Services	Data Management	Data Warehouse	Defines the set of capabilities that support the archiving and storage of large volumes of data.	1.4.2.5 Archive Flight Data
Back Office Services	Data Management	Data Warehouse	Defines the set of capabilities that support the archiving and storage of large volumes of data.	8.6.5 Conduct Information Management
Back Office Services	Data Management	Data Cleansing	Defines the set of capabilities that support the removal of incorrect or unnecessary characters and data from a data source.	8.6.5 Conduct Information Management
Back Office Services	Data Management	Extraction & Transformation	Defines the set of capabilities that support the manipulation and change of data.	8.6.5 Conduct Information Management
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	1.5 Aeronautical Information Management
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	1.5.1 Collect Aeronautical Data
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	1.6 Geospatial Information Management
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	1.6.1 Collect Geospatial Information

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	1.9 Communication Service Management
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	1.9.1 Manage Communication
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	1.9.1.5 Collect Utilization Data
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	1.10 Metrics Management
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	1.10.1 Collect Performance Metrics Data
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	2.2 Risk Assessment Management
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	2.2.1 Collect Airport Risk Assessment Data
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	2.4 Airport Threat Profile Management
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	2.4.1 Collect Airport Threat Data 3.6 Congestion Management
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	3.6.1 Gather Congestion Data
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	5.3 Contingency/ Business Continuity Management
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	5.3.3 Emergency Operation Procedure
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	5.3.3.1 Manage Emergency Information
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	5.3.3.1.1 Manage Alert Information

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	6.1 Business Operations
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	6.1.1 Receive Airspace Design
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	7.1 Aircraft Surface Operations
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	7.1.1.2 Receive Arrival/ Departure Information
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	7.2 Airborne Operations
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	7.2.1.3.1 Receive Separation Clearance
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	7.2.2 Monitor Weather Information
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	7.2.2.1 Obtain In-Flight Weather Data
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	7.2.2.3 Receive 4D Weather Picture
Back Office Services	Data Management	Loading & Archiving	Defines the set of capabilities that support the population of a data source with external data.	8.6.5 Conduct Information Management
Back Office Services	Data Management	Data Classification	Defines the set of capabilities that allow the classification of data.	8.6.5 Conduct Information Management
Back Office Services	Data Management	Data Recovery	Defines the set of capabilities that support the restoration and stabilization of data sets to a consistent, desired state.	8.6.5 Conduct Information Management
Back Office Services	Human Resources	Recruiting	Defines the set of capabilities that support the identification and hiring of employees for an organization.	8.1 Human Resource Management
Back Office Services	Human Resources	Recruiting	Defines the set of capabilities that support the identification and hiring of employees for an organization.	8.1.3 Acquire Staff

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Back Office Services	Human Resources	Career Development & Retention	Defines the set of capabilities that support the monitoring of performance as well as the professional growth, advancement, and retention of an organization's employees.	8.1 Human Resource Management
Back Office Services	Human Resources	Career Development & Retention	Defines the set of capabilities that support the monitoring of performance as well as the professional growth, advancement, and retention of an organization's employees.	8.1.4 Manage Employee Development and Performance
Back Office Services	Human Resources	Education / Training	Defines the set of capabilities that support the active building of employee capacities.	8.1 Human Resource Management
Back Office Services	Human Resources	Education / Training	Defines the set of capabilities that support the active building of employee capacities.	8.1.3 Acquire Staff
Back Office Services	Human Resources	Education / Training	Defines the set of capabilities that support the active building of employee capacities.	8.1.4 Manage Employee Development and Performance
Back Office Services	Financial Management	Billing & Accounting	Defines the set of capabilities that support the charging, collection and reporting of an organization's accounts.	8.5 Financial Management
Back Office Services	Financial Management	Billing & Accounting	Defines the set of capabilities that support the charging, collection and reporting of an organization's accounts.	8.5.3 Report Financials
Back Office Services	Financial Management	Internal Controls	Support the methods and procedures used by the organization to safeguard its assets, produce accurate accounting data and reports, contribute to efficient operations, and encourage staff to adhere to management policies and mission requirements.	8.5 Financial Management
Back Office Services	Financial Management	Internal Controls	Support the methods and procedures used by the organization to safeguard its assets, produce accurate accounting data and reports, contribute to efficient operations, and encourage staff to adhere to management policies and mission requirements.	8.5.2 Manage Assets and Liabilities

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Back Office Services	Financial Management	Internal Controls	Support the methods and procedures used by the organization to safeguard its assets, produce accurate accounting data and reports, contribute to efficient operations, and encourage staff to adhere to management policies and mission requirements.	8.5.3 Report Financials
Back Office Services	Financial Management	Auditing	Defines the set of capabilities that support the examination and verification of records for accuracy.	8.5 Financial Management
Back Office Services	Financial Management	Auditing	Defines the set of capabilities that support the examination and verification of records for accuracy.	8.5.2 Manage Assets and Liabilities
Back Office Services	Human Capital / Workforce Management	Resource Planning & Allocation	Support the determination of strategic direction, the identification and establishment of programs and processes, and the allocation of resources (capital and labor) among those programs and processes.	2.1 Airport Assets Management
Back Office Services	Human Capital / Workforce Management	Resource Planning & Allocation	Support the determination of strategic direction, the identification and establishment of programs and processes, and the allocation of resources (capital and labor) among those programs and processes.	2.1.1 Perform Personnel Management
Back Office Services	Human Capital / Workforce Management	Resource Planning & Allocation	Support the determination of strategic direction, the identification and establishment of programs and processes, and the allocation of resources (capital and labor) among those programs and processes.	8.1 Human Resource Management
Back Office Services	Human Capital / Workforce Management	Resource Planning & Allocation	Support the determination of strategic direction, the identification and establishment of programs and processes, and the allocation of resources (capital and labor) among those programs and processes.	8.1.1 Develop HR Strategy
Back Office Services	Human Capital / Workforce Management	Skills Management	Defines the set of capabilities that support the proficiency of employees in the delivery of an organization's products or services.	8.1 Human Resource Management

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Back Office Services	Human Capital / Workforce Management	Skills Management	Defines the set of capabilities that support the proficiency of employees in the delivery of an organization's products or services.	8.1.4 Manage Employee Development and Performance
Back Office Services	Human Capital / Workforce Management	Team / Organization Management	Defines the set of capabilities that support the hierarchy structure and identification of employees within the various sub-groups of an organization.	8.1 Human Resource Management
Back Office Services	Human Capital / Workforce Management	Team / Organization Management	Defines the set of capabilities that support the hierarchy structure and identification of employees within the various sub-groups of an organization.	8.1.2 Administer Organization and Position Management
Back Office Services	Human Capital / Workforce Management	Team / Organization Management	Defines the set of capabilities that support the hierarchy structure and identification of employees within the various sub-groups of an organization.	
Back Office Services	Human Capital / Workforce Management	Contingent Workforce Management	Defines the set of capabilities that support the continuity of operations for an organization's business through the identification of alternative organization personnel.	2.1 Airport Assets Management
Back Office Services	Human Capital / Workforce Management	Contingent Workforce Management	Defines the set of capabilities that support the continuity of operations for an organization's business through the identification of alternative organization personnel.	2.1.1 Perform Personnel Management
Back Office Services	Human Capital / Workforce Management	Contingent Workforce Management	Defines the set of capabilities that support the continuity of operations for an organization's business through the identification of alternative organization personnel.	8.1 Human Resource Management
Back Office Services	Human Capital / Workforce Management	Contingent Workforce Management	Defines the set of capabilities that support the continuity of operations for an organization's business through the identification of alternative organization personnel.	8.1.1 Develop HR Strategy
Back Office Services	Human Capital / Workforce Management	Contingent Workforce Management	Defines the set of capabilities that support the continuity of operations for an organization's business through the identification of alternative organization personnel.	8.1.2 Administer Organization and Position Management

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Back Office Services	Human Capital / Workforce Management	Workforce Acquisition / Optimization	Defines the set of capabilities that support the hiring and re-structuring of employees and their roles within an organization.	2.1 Airport Assets Management
Back Office Services	Human Capital / Workforce Management	Workforce Acquisition / Optimization	Defines the set of capabilities that support the hiring and re-structuring of employees and their roles within an organization.	2.1.1 Perform Personnel Management
Back Office Services	Human Capital / Workforce Management	Workforce Acquisition / Optimization	Defines the set of capabilities that support the hiring and re-structuring of employees and their roles within an organization.	8.1 Human Resource Management
Back Office Services	Human Capital / Workforce Management	Workforce Acquisition / Optimization	Defines the set of capabilities that support the hiring and re-structuring of employees and their roles within an organization.	8.1.2 Administer Organization and Position Management
Back Office Services	Human Capital / Workforce Management	Workforce Acquisition / Optimization	Defines the set of capabilities that support the hiring and re-structuring of employees and their roles within an organization.	
Back Office Services	Human Capital / Workforce Management	Property / Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.	2.1 Airport Assets Management
Back Office Services	Human Capital / Workforce Management	Property / Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.	2.1.3 Conduct Equipment Management
Back Office Services	Human Capital / Workforce Management	Property / Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.	2.3 Airport Infrastructure Planning
Back Office Services	Human Capital / Workforce Management	Property / Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.	2.3.1 Manage Regional Planning Ops
Back Office Services	Human Capital / Workforce Management	Property / Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.	2.3.2 Design Landside Facilities
Back Office Services	Human Capital / Workforce Management	Property / Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.	2.3.3 Design Airside Facilities

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Back Office Services	Human Capital / Workforce Management	Property / Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.	2.3.4 Manage Navigation Infrastructure
Back Office Services	Human Capital / Workforce Management	Property / Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.	3.2 Airside Operations
Back Office Services	Human Capital / Workforce Management	Property / Asset Management	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources.	3.2.2.3 Manage Vehicles
Back Office Services	Human Capital / Workforce Management	Asset Transfer, Allocation, & Maintenance	Defines the set of capabilities that support the movement, assignment, and replacement of assets.	2.1 Airport Assets Management
Back Office Services	Human Capital / Workforce Management	Asset Transfer, Allocation, & Maintenance	Defines the set of capabilities that support the movement, assignment, and replacement of assets.	2.1.3 Conduct Equipment Management
Back Office Services	Human Capital / Workforce Management	Facilities Management	Defines the set of capabilities that support the construction, management and maintenance of facilities for an organization.	2.1 Airport Assets Management
Back Office Services	Human Capital / Workforce Management	Facilities Management	Defines the set of capabilities that support the construction, management and maintenance of facilities for an organization.	2.1.2 Conduct Facilities Management
Back Office Services	Human Capital / Workforce Management	Facilities Management	Defines the set of capabilities that support the construction, management and maintenance of facilities for an organization.	2.3 Airport Infrastructure Planning
Back Office Services	Human Capital / Workforce Management	Facilities Management	Defines the set of capabilities that support the construction, management and maintenance of facilities for an organization.	2.3.1 Manage Regional Planning Ops
Back Office Services	Human Capital / Workforce Management	Facilities Management	Defines the set of capabilities that support the construction, management and maintenance of facilities for an organization.	2.3.2 Design Landside Facilities
Back Office Services	Human Capital / Workforce Management	Facilities Management	Defines the set of capabilities that support the construction, management and maintenance of facilities for an organization.	2.3.3 Design Airside Facilities

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Back Office Services	Human Capital / Workforce Management	Facilities Management	Defines the set of capabilities that support the construction, management and maintenance of facilities for an organization.	2.3.4 Manage Navigation Infrastructure
Back Office Services	Development & Integration	Instrumentation & Testing	Defines the set of capabilities that support the validation of application or system capabilities and requirements.	8.6 Information and Technology Management
Back Office Services	Development & Integration	Instrumentation & Testing	Defines the set of capabilities that support the validation of application or system capabilities and requirements.	8.6.3 Maintain Systems
Back Office Services	Development & Integration	Software Development	Defines the set of capabilities that support the creation of both graphical and process application or system software.	8.6 Information and Technology Management
Back Office Services	Development & Integration	Software Development	Defines the set of capabilities that support the creation of both graphical and process application or system software.	8.6.3 Maintain Systems
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	1.1 Weather Operations
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	1.1.4 Disseminate Weather Picture
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	1.1.4.2 Publish Weather Picture
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	1.4.2.3 Disseminate Flight Data
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	1.4.2.3.2 Publish Flight Data
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	1.5 Aeronautical Information Management
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	1.5.2 Disseminate Aeronautical Information
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	1.5.2.2 Publish Aeronautical Information
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	1.7 Environmental Information Management

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	1.7.3 Report Environmental Conditions
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	5.1 Trajectory Management
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	5.1.1 Manage Arrival/ Departure
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	5.1.1.1 Manage Surface Operations
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	5.1.1.1.3 Issue Clearance
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	5.1.1.2 Issue Modification Information/ Clearance
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	7.1.1.6 Report Flight Readiness
Support Services	Communication	Voice Communication	Provide telephony or other voice communications.	7.1.2.1 Request Post Flight Taxi Clearance
Support Services	Communication	Event / News Management	Defines the set of capabilities that monitor servers, workstations and network devices for routine and non-routine events.	8.6.6 Monitor Systems and Network Performance
Support Services	Systems Management	License Management	Defines the set of capabilities that support the purchase, upgrade and tracking of legal usage contracts for system software and applications.	8.6 Information and Technology Management
Support Services	Systems Management	License Management	Defines the set of capabilities that support the purchase, upgrade and tracking of legal usage contracts for system software and applications.	8.6.3 Maintain Systems
Support Services	Systems Management	Remote Systems Control	Defines the set of capabilities that support the monitoring, administration and usage of applications and enterprise systems from locations outside of the immediate system environment.	8.6.6 Monitor Systems and Network Performance
Support Services	Systems Management	System Resource Monitoring	Defines the set of capabilities that support the balance and allocation of memory, usage, disk space and performance on computers and their applications.	8.6.6 Monitor Systems and Network Performance

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Support Services	Systems Management	Software Distribution	Defines the set of capabilities that support the propagation, installation and upgrade of written computer programs, applications and components.	8.6 Information and Technology Management
Support Services	Systems Management	Software Distribution	Defines the set of capabilities that support the propagation, installation and upgrade of written computer programs, applications and components.	8.6.3 Maintain Systems
Support Services	Systems Management	Issue Tracking	Receive and track user-reported issues and problems in using IT systems, including help desk calls.	8.6 Information and Technology Management
Support Services	Systems Management	Issue Tracking	Receive and track user-reported issues and problems in using IT systems, including help desk calls.	8.6.3 Maintain Systems
Support Services	Security Management	Identification & Authentication	Defines the set of capabilities that support obtaining information about those parties attempting to log on to a system or application for security purposes and the validation of those users.	3.1 Landside Operations
Support Services	Security Management	Identification & Authentication	Defines the set of capabilities that support obtaining information about those parties attempting to log on to a system or application for security purposes and the validation of those users.	3.1.1 Manage Passenger Baggage Processing
Support Services	Security Management	Identification & Authentication	Defines the set of capabilities that support obtaining information about those parties attempting to log on to a system or application for security purposes and the validation of those users.	3.1.1.1.1.1 Verify Credential to Reservation Data
Support Services	Security Management	Identification & Authentication	Defines the set of capabilities that support obtaining information about those parties attempting to log on to a system or application for security purposes and the validation of those users.	3.1.1.1.1.2 Authenticate Passenger to Credential
Support Services	Security Management	Identification & Authentication	Defines the set of capabilities that support obtaining information about those parties attempting to log on to a system or application for security purposes and the validation of those users.	8.6.4 Provide Information Assurance
Support Services	Security Management	Access Control	Defines the set of capabilities that support the management of permissions for logging onto a computer or network.	8.6.4 Provide Information Assurance

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Support Services	Security Management	Encryption	Defines the set of capabilities that support the encoding of data for security purposes.	8.6.4 Provide Information Assurance
Support Services	Security Management	Digital Signature	Defines the set of capabilities that guarantee the unaltered state of a file.	8.6.4 Provide Information Assurance
Support Services	Security Management	Intrusion Detection	Defines the set of capabilities that support the detection of illegal entrance into a computer system.	8.6.4 Provide Information Assurance
Support Services	Security Management	Audit Trail Capture & Analysis	Defines the set of capabilities that support the identification and monitoring of activities within an application or system.	8.6.4 Provide Information Assurance
Support Services	Security Management	User Management	Defines the set of capabilities that support the administration of computer, application and network accounts within an organization.	8.6.4 Provide Information Assurance
Support Services	Security Management	Role / Privilege Management	Defines the set of capabilities that support the granting of abilities to users or groups of users of a computer, application or network.	8.6.4 Provide Information Assurance
Support Services	Security Management	Verification	Defines the set of capabilities that support the confirmation of authority to enter a computer system, application or network.	8.6.4 Provide Information Assurance
Operational Services	Surveillance Services	Cooperative	Defines the set of capabilities that allow the reliable, consistent, and unambiguous detection (i.e., multi-dimensional position) of airborne objects and other	1.3 Surveillance Services
Operational Services	Surveillance Services	Cooperative	vehicles equipped with functioning avionics (i.e., surveillance sensors on the airframe) while in the air and on the ground.	1.3.2 Provide Cooperative Surveillance
Operational Services	Surveillance Services	Cooperative	vehicles equipped with functioning avionics (i.e., surveillance sensors on the airframe) while in the air and on the ground.	1.3.2.1 Provide Cooperative Air Surveillance
Operational Services	Surveillance Services	Cooperative	vehicles equipped with functioning avionics (i.e., surveillance sensors on the airframe) while in the air and on the ground.	1.3.2.2 Provide Cooperative Surface Surveillance

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Surveillance Services	Non-Cooperative	Defines the set of capabilities that allow an airborne object to be detected by ground-based, airborne, or space-based surveillance systems even if it does not have functional avionics equipment (i.e., surveillance sensors on the airframe) or when cooperative surveillance systems malfunction.	1.3 Surveillance Services
Operational Services	Surveillance Services	Non-Cooperative	Defines the set of capabilities that allow an airborne object to be detected by ground-based, airborne, or space-based surveillance systems even if it does not have functional avionics equipment (i.e., surveillance sensors on the airframe) or when cooperative surveillance systems malfunction.	1.3.1 Provide Non-Cooperative Surveillance
Operational Services	Surveillance Services	Non-Cooperative	Defines the set of capabilities that allow an airborne object to be detected by ground-based, airborne, or space-based surveillance systems even if it does not have functional avionics equipment (i.e., surveillance sensors on the airframe) or when cooperative surveillance systems malfunction.	1.3.1.1 Provide Non-Cooperative Air Surveillance
Operational Services	Surveillance Services	Non-Cooperative	Defines the set of capabilities that allow an airborne object to be detected by ground-based, airborne, or space-based surveillance systems even if it does not have functional avionics equipment (i.e., surveillance sensors on the airframe) or when cooperative surveillance systems malfunction.	1.3.1.2 Provide Non-Cooperative Surface Surveillance
Operational Services	Airspace Services	Airspace Design	Defines the set of capabilities that support the establishment of the guidelines for airspace structures in order to accommodate the different types of air activity, volume of traffic, and differing levels of service.	4.2 Capacity Management

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Airspace Services	Airspace Design	Defines the set of capabilities that support the establishment of the guidelines for airspace structures in order to accommodate the different types of air activity, volume of traffic, and differing levels of service.	4.2.3 Select Capacity Management Strategy
Operational Services	Airspace Services	Airspace Design	Defines the set of capabilities that support the establishment of the guidelines for airspace structures in order to accommodate the different types of air activity, volume of traffic, and differing levels of service.	4.2.4 Design Airspace
Operational Services	Airspace Services	Airspace Design	Defines the set of capabilities that support the establishment of the guidelines for airspace structures in order to accommodate the different types of air activity, volume of traffic, and differing levels of service.	4.2.5 Disseminate Proposed Airspace Design
Operational Services	Airspace Services	Airspace Design	Defines the set of capabilities that support the establishment of the guidelines for airspace structures in order to accommodate the different types of air activity, volume of traffic, and differing levels of service.	4.2.6 Disseminate Execution Plan
Operational Services	Airspace Services	Airspace Management	Defines the set of capabilities by which airspace options	4.1 Airspace Security Operations
Operational Services	Airspace Services	Airspace Management	are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.	4.1.1 Manage Airspace Alerts

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Airspace Services	Airspace Management	are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.	4.1.2 Monitor Airspace Alerts
Operational Services	Airspace Services	Airspace Management	are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.	4.1.3 Restrict Airspace
Operational Services	Airspace Services	Airspace Management	are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.	4.2 Capacity Management
Operational Services	Airspace Services	Airspace Management	are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.	4.2.1 Manage Airspace
Operational Services	Airspace Services	Airspace Management	are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.	4.2.3 Select Capacity Management Strategy
Operational Services	Airspace Services	Airspace Management	are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.	4.3 Flow Contingency Management
Operational Services	Airspace Services	Airspace Management	are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.	4.3.2 Monitor Airspace Condition
Operational Services	Airspace Services	Airspace Management	are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.	4.3.4 Restructure Capacity Limited Airspace

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Airspace Services	Airspace Management	are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.	4.3.5 Disseminate Traffic Management Initiative
Operational Services	Airspace Services	Airspace Management	are selected and applied to meet the needs of the Air Transportation Management (ATM) community and ensure dynamic airspace boundaries, flexible service delivery points for balancing controller workload, non-managed airspace with visual flight rule procedures, self-separation within flow corridors, and staffed virtual towers.	4.3.6 Reallocate Arrival/ Departures Access
Operational Services	Navigation Services	Positioning	Defines the set of capabilities that provide stakeholders with a highly accurate and reliable positioning source, improving surveillance capabilities and reduced separation standards.	1.2 Positioning, Navigation, and Timing Services
Operational Services	Navigation Services	Positioning	Defines the set of capabilities that provide stakeholders with a highly accurate and reliable positioning source, improving surveillance capabilities and reduced separation standards.	1.2.1 Provide Positioning Service
Operational Services	Navigation Services	Navigation	Defines the set of capabilities that enable area navigation (RNAV) as the standard method of navigation in the National Airspace System and provides the foundation for performance-based navigation operations.	1.2 Positioning, Navigation, and Timing Services
Operational Services	Navigation Services	Navigation	Defines the set of capabilities that enable area navigation (RNAV) as the standard method of navigation in the National Airspace System and provides the foundation for performance-based navigation operations.	1.2.2 Provide Navigation Service

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Navigation Services	Timing	Defines the set of capabilities that provide stakeholders with the precise synchronization of standard universal coordinated time to reduce the uncertainties associated with disparate timing sources.	1.2 Positioning, Navigation, and Timing Services
Operational Services	Navigation Services	Timing	Defines the set of capabilities that provide stakeholders with the precise synchronization of standard universal coordinated time to reduce the uncertainties associated with disparate timing sources.	1.2.3 Provide Timing Service
Operational Services	Weather Information Services	Weather Forecasting	Defines the set of capabilities that provide stakeholders with a common picture of current (i.e. real-time) and forecasted weather information, including weather attributes organized by horizontal, vertical, altitude, time, and probability components.	1.1 Weather Operations
Operational Services	Weather Information Services	Weather Forecasting	Defines the set of capabilities that provide stakeholders with a common picture of current (i.e. real-time) and forecasted weather information, including weather attributes organized by horizontal, vertical, altitude, time, and probability components.	7.2 Airborne Operations
Operational Services	Weather Information Services	Weather Forecasting	Defines the set of capabilities that provide stakeholders with a common picture of current (i.e. real-time) and forecasted weather information, including weather attributes organized by horizontal, vertical, altitude, time, and probability components.	7.2.2 Monitor Weather Information
Operational Services	Weather Information Services	Weather Forecasting	Defines the set of capabilities that provide stakeholders with a common picture of current (i.e. real-time) and forecasted weather information, including weather attributes organized by horizontal, vertical, altitude, time, and probability components.	7.2.2.1 Obtain In-Flight Weather Data

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Weather Information Services	Weather Forecasting	Defines the set of capabilities that provide stakeholders with a common picture of current (i.e. real-time) and forecasted weather information, including weather attributes organized by horizontal, vertical, altitude, time, and probability components.	7.2.2.3 Receive 4D Weather Picture
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	1.10 Metrics Management
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	1.10.1 Collect Performance Metrics Data
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	1.10.2 Analyze Performance Metrics Data
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	1.7 Environmental Information Management
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	1.7.1 Monitor Environmental Impacts

Service Domain	Service Type	Service Component	Service Component Description	OV-5 Activity
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	1.9 Communication Service Management
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	1.9.1 Manage Communication
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	1.9.1.2 Monitor Communication Status
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	2.4 Airport Threat Profile Management
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	2.4.5 Monitor Airport Threat
Operational Services	Performance Management Services	Monitoring	Defines the set of capabilities that observe, detect, or record the health, quality, availability, performance, etc. of supporting operational environments, systems, services, processes, etc. against predefined measurement indicators.	3.1 Landside Operations

NextGen EA Data Reference Architecture

The NextGen EA Data Reference Architecture will be included in a subsequent release.

NextGen EA Technical Reference Architecture

The NextGen EA Technical Reference Architecture will be included in a subsequent release.

Notes

GEORGETO
323 GTN
GEORGETO
DCA 5
WASHINGTON
0 DCA
Chan 47
NOTE: Prob
of D
LOM
OXONN
332 DC
I-DCA 5.6
DCA
R-186
R-295
PISCA INT
I-DCA 10.7
R-274
DCA
R-185
2500 to Pisca Int
321° (3.1) and
LOC (3)
LATAS
OTT 12.2
10 NM
500
2000
GTN
DCA R-325
111.0
323
OXONN
LOM/INT
I-DCA 5.6
1551
I-DCA
1
MM
007°
0.5
4.1 NM
TDZE
15
CATEGORY
A
B
S-ILS 1
215/18
S-LOC 1
480/24
465 (500-½)
620-1
660-1
150
180

4.10 Appendix J - Federal Transition Framework

DRAFT Federal Transition Framework (FTF)

The Federal Transition Framework (FTF) is an extension of the strategy of the FEA in support of cross-agency information technology initiatives. Since, JPDO is a joint initiative (DOT, DOD, DOC, DHS, NASA, FAA and OSTP) to develop and implement the next Air Transportation System to meet the Nation's demands of 2025; JPDO's Enterprise Architecture Team is working to socialize and formalize the DRAFT NextGen ATS FTF submission package for OMB. This effort will help to facilitate a standardization and organization of NextGen ATS as a cross agency initiative and provide Partner Agencies architects, as well as, program managers a series of processes to better understand how NextGen ATS affects their missions.

As shown in Figure 1, the catalog is organized into several sections, which correspond to FEA reference models. The initiative layer merely describes the Federal cross agency initiative.

Figure 1

The current NextGen ATS DRAFT submission is focused on a the first four layers: Initiative, Performance & Strategy, Business and Service Components which correspond to the DRAFT NextGen Reference Models. The initial April 2007 DRAFT FTF submission to OMB is a 75% solution to establish NextGen as cross agency initiative with the understanding that JPDO will continue to socialize and formalize the submission for OMB's September 07 FTF Catalog release.

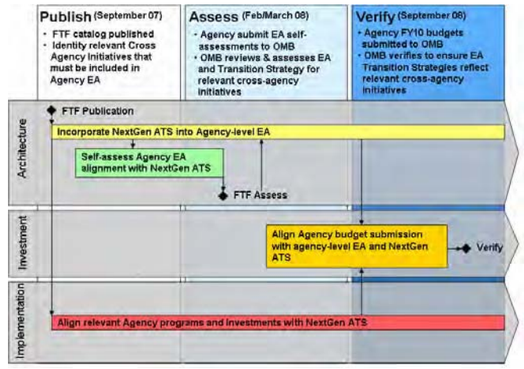
The FTF Catalog is published annually the OMB and the Budget EA Assessment Framework. As such, JPDO will continue to modify the NextGen ATS FTF as a catalog item as the architecture continues to mature and resubmit to reflect changes as necessary. Figure 2 represents the Agency Partner planning cycle if NextGen ATS is published in as part of the September 2007 FTF Catalog. Publication of the FTF is the first step in a three-step process to simplify the packaging and dissemination of information describing NextGen cross-agency IT initiatives.

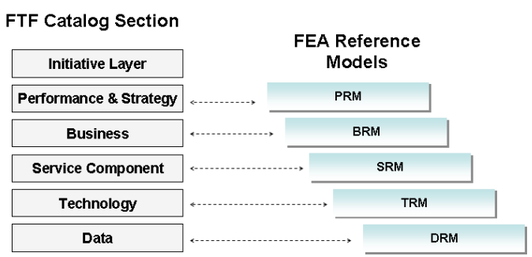
Figure 2 - Agency Planning Cycle if NextGen ATS is Added to FTF

- Step 1 – The FTF Catalog is published in September FY07 with the latest version of the OMB EA Assessment Framework. The catalog describes NextGen ATS as cross-agency initiatives required to be included as an element of agency enterprise architecture.
- Step 2 – Agency EA self-assessments are submitted to OMB and Budget to be reviewed and assessed in March FY08. Submission packages include enterprise architecture work products and an EA Transition Strategy including mandatory cross-agency initiatives related to the agency mission.
- Step 3 – Agency budget submissions are submitted to the OMB and Budget in September FY08. Budget submissions are verified to ensure they reflect the agency EA Transition Strategy including relevant cross-agency initiatives.

The expected benefits of adding NextGen ATS to the FTF Catalog include:

- Advancing the JPDO's FEA leadership positioning with OMB, as well as demonstrating proactive outreach, communications, and architectural coordination with NextGen Stakeholders (e.g. Chief Architects and Business Leaders) at FAA, DOT, NASA, Commerce, Homeland Security, and DOD.
- Sharing more consistent, complete, and detailed information about NextGen DoDAF materials including Enterprise Architecture artifacts, Capital Planning Investment Control guidance, and various implementation and planning activities with cross-agency working groups and stakeholders who have responsibility to developing components of the NextGen architecture.
- Providing cross stakeholders with access to NextGen information to help make better informed decisions about their respective IT investments, and improve the effectiveness and efficiency of their IT investment decisions in order to contribute to and demonstrate alignment with future NextGen EA releases





Cross-Agency Initiative	
Description	JPDO is a joint initiative that includes the DOT, the DOD, DOC, DHS, NASA, FAA, and OSTP in the White House to develop and implement an air transportation system (ATS) to meet the nation's needs in 2025. Oversight of the JPDO is provided by a Senior Policy Committee that is chaired by the Secretary of Transportation with senior leadership designees from the other participating departments and agencies. Realization of the NextGen will be accomplished through a partnership of public and private sector organizations. In contrast to today's system, the NextGen will be more flexible, resilient, scalable, adaptive, and highly automated – meeting up to two to three times current demand. The NextGen includes security, safety, and efficiency of passenger, cargo and aircraft operations. Aircraft will be able to use information technology in a more robust way, with enhanced capabilities in the cockpit, better navigation and landing capabilities, and far more comprehensive and accurate knowledge of weather and traffic conditions in real time. Passengers will have more choices and will move from airport curb to their airplanes in 30 minutes or less with more security and less intrusion.
Mandatory/Informational	Mandatory
URL	http://www.jpdo.aero/
Applicable Agencies	DHS, DOT, FAA, DOC, NASA, DOD
Managing Partner	JDPO
Communities of Interest	
Name	Joint Architecture and Engineering Board (JAEB)
Description	It is evident that a great deal of integration across governmental entities will be driven by the alignment of partner agencies' enterprise architectures under the oversight of OMB. To address this integrative activity, the JPDO will form a Joint Architecture & Engineering Board (JAEB). The JAEB serves as the standing governance body serving the JPDO Integration Council to implement an effective architecture that manages the application and use of information technology in meeting NextGen mission and business needs. The Board will be co-chaired by the JPDO Chief Architect and the JPDO Enterprise Architecture & Engineering Division Director. Actions of the JAEB will be carried by consensus. Membership will consist of representatives appropriate to represent the CIO's and Chief Architects of the NextGen partner federal agencies as nominated by those entities. The Board will meet as necessary.
Contact Name	Jay Merkle, JPDO Chief Architect
Contact E-mail	jay.merkle@faa.gov
Name	Regulatory Council
Description	Regulatory Council (RC) organizationally recognizes the regulatory, procedural, inter-governmental, and certification issues to be addressed in transforming the current NAS and is chaired by the JPDO Director. These requirements must be anticipated and prepared for during implementation to ensure that they do not create barriers to execution. Similarly, there will be regulatory requirements that may serve as constraints to existing or future NextGen concepts. These also must be anticipated and addressed . - FAA Aviation Safety - FAA Environmental Policy - FAA Air Traffic Organization (ATO) - FAA ATO International (Global Harmonization) - Department of Homeland Security - Department of Defense
Contact Name	Charles Leader, JPDO Director
Contact E-mail	
Name	Airport Working Group
Description	The Airport Working is responsible for the NextGen strategy to develop airport infrastructure to meet future demand by empowering local communities and regions to create alternative concepts of how airports will be used and managed in the future. The WG will assemble plans that indicate the course of exploration and development and the role of individual agency and industry contributions. The WG will examine the economics of its area, refine the understanding of problems and options for future solutions, assess existing programs and plans, leverage what is available, and identify gaps and key questions for further research and development.
URL	http://www.ncat.com/ngats/ipt_airports.html
Contact Name	Charles Everett
Contact E-mail	Charles.everett@faa.gov
Name	Security Working Group
Description	
URL	http://www.jpdo.aero/whoswho.html#ipt
Contact Name	Paul Polski
Contact E-mail	paul.polski@dhs.gov
Name	Aircraft Working Group
Description	The Aircraft working group is charged with establishing an agile air traffic system that will: be responsive to market elasticity; deliver capacity and efficiency improvements; support a wide range of operations tailored to user needs.
URL	http://www.ncat.com/ngats/ipt_agile.html
Contact Name	Doug Arbuckle
Contact E-mail	p.d.arbuckle@nasa.gov
Name	Air Navigation Services Working Group
Description	The Air Navigation Working Group is charged with establishing an agile air traffic system that will: be responsive to market elasticity; deliver capacity and efficiency improvements; support a wide range of operations tailored to user needs.
URL	http://www.ncat.com/ngats/ipt_agile.html
Contact Name	Doug Arbuckle

Contact E-mail	p.d.arbuckle@nasa.gov				
Name	Net-Centric Operations Working Group				
Description	Vision/purpose of the Net-Centric Working Group is to "enable the development of an information sharing environment (framework), globally compatible, accessible, and secure when required, that allows Air Transportation System communities of interest to share relevant up-to-the second, accurate, and credible information to make possible informed decision making for routine, planned, or crisis events."				
URL	http://www.jpdo.aero/whoswho.html#ipt				
Contact Name	Mark Powell				
Contact E-mail	mark.t.powell@faa.gov				
Name	Safety Working Group				
Description	JPDO Safety Working Group's mission is to support the development of an integrated Next Generation Air Transportation System (NextGen) The JPDO Safety WG created several subordinate teams to further develop the concepts, plans, and products needed to accomplish its mission. The objectives of the Safety IPT Mission are to: * Create a national-level integrated safety management framework that addresses all facets of the air transportation system, building safety design assurances into operations and products * Establish an on-going, integrated operational data analysis capability to proactively identify and resolve safety concerns before incidents occur * Establish and track a safety improvement culture where safety and its continuous improvement are seen as the primary goals * Lead and manage research efforts to determine national safety strategy In order to affect its mission, the Safety WG has created four sub-teams to focus on framework elements. These are: Safety Management Framework (SMF), Aviation Safety Strategic Plan (ASSP), Aviation Safety Information Analysis & Sharing (ASIAS) and Safety Management System (SMS) sub-teams				
URL	http://www.jpdo.aero/whoswho.html#ipt				
Contact Name	Jay J. Pardee				
Contact E-mail	jay.pardee@faa.gov				
Name	Environment Working Group				
Description	The Environment Working Group is responsible for the NextGen strategy to develop environmental protection that allows sustained aviation growth. The WG will research, develop, implement, and maintain the NextGen environmental protection strategy. The primary environmental impact areas of concern for aviation are noise, air quality and water quality. Five Working Group Panels (Science/Metrics, Analytical Tools, Operations, Technology, and Policy) have been formed. Based on technical expertise, the Panels will lead the work to achieve the goals of the JPDO environmental protection strategy including refining the understanding of problems and options for future solutions, assessing existing programs and plans, leveraging what is available, and identifying gaps and key questions for further research and development.				
URL	http://www.jpdo.aero/whoswho.html#ipt				
Contact Name	Carl Burleson				
Contact E-mail	carl.burleson@faa.gov				
Name	Weather Working Group				
Description					
URL	http://www.jpdo.aero/whoswho.html#ipt				
Contact Name	Mark Andrews				
Contact E-mail	mark.andrews@noaa.gov				
Name	Global Harmonization Working Group				
Description	Global WG's mission is to ensure global interoperability for the NextGen by developing and supporting implementation of global air and space transportation policies, standards, and procedures. U.S. leadership toward global standards will improve safety, security, mobility, environmental quality, and economic viability. Working in concert with other WGs, the Global team will: * Identify air transportation system technologies, air traffic management operational concepts, policies, and procedures that require or benefit from global standardization or interoperability. *Assess current plans for transformation in other countries and international organizations. *Identify similarities and potential conflicts between air transportation developments in the United States and in other countries.				
URL	http://www.jpdo.aero/whoswho.html#ipt				
Contact Name	Carey Fagan				
Contact E-mail	carey.fagan@faa.gov				
Guidance					
Name	US Code, Title 49, SUBTITLE VII – AVIATION PROGRAMS				
Description					
URL					
Author					
Name	"Vision 100 – Century of Aviation Reauthorization Act" (Public Law #108-176)				
Description					
URL	http://www.jpdo.aero/links.html				
Author					
Name	NGATS Integrated Plan (2004)				
Description					

URL	http://techhangar.jpdo.aero/index.php?option=com_content&task=view&id=29&Itemid=91				
Author	Joint Planning and Development Office				
Name	NextGen "DRAFT" CONOP v1.2 (MAR07)				
Description	Report required by statute; it describes concepts behind the Next Generation Air Transportation System so it can meet air transportation safety, security, mobility, efficiency, and capacity needs				
URL	http://techhangar.jpdo.aero/				
Author	Joint Planning and Development Office				
Name	The Recommended Security Guidelines for Airport Planning, Design and Construction (revised June 15, 2006) issued by TSA				
Description	developed with the assistance of a different working group formed under ASAC addressed near-term recommendations for best practices with regard to security planning across a number of different functional components of airports. The section on checked baggage screening describes a number of lessons learned, but focuses on the implementation of systems with currently certified				
URL	http://www.tsa.gov/research/asac/index.shtm				
Author	TSA				
Name	NextGen ATS Business Reference Model v 2.0 (Will be release in JUN 08)				
Description	The NextGen ATS LoB BRM v 2.0 provides an end-to-end depiction of the NextGen ATS Proposed Federal LoB business processes.				
URL	TBD				
Author	JPDO				
Name	NextGen ATS Service Component Reference Model (SRM) v 2.0 (Will be release in JUN 08)				
Description	The NextGen ATS LoB Service Component Model will describes the service components, service delivery framework, and enabling technology for the NextGen LoB.				
URL	TBD				
Author	JPDO				
Name	OMB Circular No. A-11, Part 7, Section 300				
Description					
URL					
Author					
Name	OMB Circular A-130, Transmittal Memorandum #4				
Description					
URL					
Author					
Name	OMB Circular A-131, Value Engineering (05/21/1993)				
Description					
URL					
Author					

Strategy and Performance Layer					
Mandates					
Name	VISION 100 - Century of Aviation Reauthorization Act (P.L 108-176)				
Description	Establishes the mandate for the multi-government agency NextGen ATS and formally created the Joint Planning and Development Office (JPDO) to mange the work associated with the effort. Signed in December 2003				
URL	http://www.jpdo.aero/links.html				
Type					
Requirements					
JPDO is not the authorizing authority for the contracts and expenditures that supports planning (research and development) and acquisition (implementation) of assets. Partner agencies are responsible for monitoring their contracts/task orders. JPDO recommends OMB reference agencies' EA Self Assessment for alignment to the NextGen ATS as a catalog within the FTF as well agencies' program level Exhibit 300's for compliance. JPDO will track milestones through high level requirements (stakeholder agreed upon milestones/tasks) required to reach the end-state NextGen capabilities. The requirements specify actions/tasks needed to be completed by date and responsible partner agency.					
Name	ATM System Requirements supporting the Operational Concept				
Description					
URL					
Name	National Airspace System - System Engineering Manual, FAA, ASD-100 Architecture and System Engineering, V 2.1 Nov 13, 2003				
Description					
URL					
Name	Airport Certification Requirements (Part 139)				
Description					
URL	http://www.faa.gov/licenses_certificates/airport_certification/				
Outcomes					
NextGen Strategic Outcomes					
Name	**Trajectory Based Operations**				

Description	Trajectory Based Operations is the basis for changing the way traffic is managed in the system to achieve increases in capacity and efficiency. It is the process by which individual aircraft trajectories are managed just before and during the flight to ensure efficient individual trajectories within a flow. Trajectory management corrects imbalances within an established flow to ensure that congestion is managable.				
Source Document & URL	Operational Evolution Plan (OEP) http://www.faa.gov/programs/oep				
PRM Measurement Category	NextGen ATS (Pending OMB Approval as LoB)				
Name	**Collaborative Air Traffic Management**				
Description	Collaborative ATM covers both the strategic and tactical interactions with the customers to manage demand when the desired use of capacity cannot be accommodated. CATM includes the flow programs as well as collaboration on procedures that will establish balance by shifting demand to less desirable capacity alternatives; e.g., routings, altitudes, times.				
Source Document & URL	Operational Evolution Plan (OEP) http://www.faa.gov/programs/oep				
PRM Measurement Category	NextGen ATS (Pending OMB Approval as LoB)				
Name	**Reduced Weather Impact**				
Description	Reduced weather impact is closely akin to the other capabilities. The focus here is in specific actions to improve the forecast or the use of the forecast. Development of the weather product and ascertaining impact on individual flights and flows is a reduced weather impact issue. Note: The actual allocation in the response to individual flights, etc. is CATM. The detection of the wake for purposes of changing pair-wise separation is part of reduced weather impact, inclusion of that data into traffic management tools for arrivals and departures would be high-density arrival/departure terminals and airports.				
Source Document & URL	Operational Evolution Plan (OEP) http://www.faa.gov/programs/oep				
PRM Measurement Category	NextGen ATS (Pending OMB Approval as LoB)				
PRM Measurement Category	Environmental Management				
PRM Performance Indictors	Reduce Wx Impact				
Name	**High Density Arrival/Departure Terminal and Airports**				

Description	High density Arr/Dep Terminals and Airports involves airports in which either the demand for the runway capacity is high, there are multiple runways with both airspace and taxiing interactions, or there are airports with close proximity that create the potential for airspace interference. (The current and future major metros (e.g. N90), and other very large airports (DEN). These airports require all the capabilities of the flexible terminals and airspace plus integrated tactical and strategic flow capabilities. They may require higher performance navigation and communications capabilities to support these additional operational requirements.
Source Document & URL	Operational Evolution Plan (OEP) http://www.faa.gov/programs/oep
PRM Measurement Category	NextGen ATS (Pending OMB Approval as LoB)
Name	**Increase Flexibility in the Terminal Environment**
Description	Flexible Terminals and Airports includes activities to improve both pilot and controller situational awareness to improve the safety and efficiency of operations. Includes activities related to both automated and remote virtual towers for the purpose of providing an improved service. The activities do not rise to a level which requires flow management.
Source Document & URL	Operational Evolution Plan (OEP) http://www.faa.gov/programs/oep
PRM Measurement Category	NextGen ATS (Pending OMB Approval as LoB)
Name	**Increase Safety, Security, and Environment Performance**
Description	Involves activities which relate directly to safety, security, and environment. This may relate to the deployment of a procedure and system if the purpose is directly about one of the three; e.g., airport, runway or airspace status
Source Document & URL	Operational Evolution Plan (OEP) http://www.faa.gov/programs/oep
PRM Measurement Category	FTF: Geospatial
PRM Performance Indictors	Increase Safety Performance
PRM Measurement Category	Homeland Security
PRM Performance Indictors	Increase Security and Safety Performance
PRM Measurement Category	Disaster Management
PRM Performance Indictors	Increase Security and Safety Performance
PRM Measurement Category	Internal Risk Management and Mitigation
PRM Performance Indictors	Increase Safety and Security Performance
PRM Performance Indictors	Environmental Management
Name	**Networked Facilities**

Description	Includes activities to develop and implement a facility concept that supports the NextGen operations concept
Source Document & URL	Operational Evolution Plan (OEP) http://www.faa.gov/programs/oep
PRM Measurement Category	Planning & Resource Allocation
PRM Performance Indictors	Networked Facilities
PRM Measurement Category	Human Resource Management
PRM Performance Indictors	Recruitment & Retention
NextGen Measureable Outcomes	
Name	**Reduced Delays**
Description	Overall airport throughput is increased and delays reduced. Arrival and departure rates at the nation's busiest airports are constrained by the limited number of runways that can be in active use simultaneously. The addition of new runways at 12 airports between now and 2013 will expand airport throughput at the target airport, and possibly for other airports in the same metropolitan area. In most cases the new runways are sufficient to keep pace with forecast demand. But, half of the benchmark airports will not have new runways. The 35 airports included in the OEP account for 75% of all passenger enplanements. Much of the delay to air traffic can be traced to inadequate throughput (measured as arrival and departure rates) at these airports. The construction of new runways is the most effective method of increasing throughput.
Source Document & URL	JPDO OMB Exhibit 300; http://www.faa.gov/programs/oep/Archive/v5/v51/ad-1%205.1.htm
PRM Measurement Category	Productivity and Efficiency; Customer Quality and Satisfaction
Name	**Reduced Flight Time**
Description	Overall flight time is minimized due to efficiency gains at terminals and En route
Source Document & URL	JPDO OMB Exhibit 300
PRM Measurement Category	Productivity and Efficiency; Timeliness & Responsiveness
Name	**Improved Fuel Efficiency**
Description	Fuel usage and flight time would fall based on decrease in separation requirements
Source Document & URL	JPDO OMB Exhibit 300
PRM Measurement Category	Productivity and Efficiency; Financial

Name	**Fewer Communication Interfaces**
Description	Integrating the various automation platforms and communications vehicles through system side information management (SWIM) is expected to reduce the requirement for duplicative communication as it exists today
Source Document & URL	JPDO OMB Exhibit 300
PRM Measurement Category	Financial
Name	**Improved Controller Productivity**
Description	Controller productivity increases as new automation and digital communications incorporates improved information available information available from satellite based infrastructure
Source Document & URL	JPDO OMB Exhibit 300
PRM Measurement Category	Productivity and Efficiency
Name	**Reduced congestion at major airports and airspace**
Description	Sufficient throughput at major airports and in the busiest airspace corridors to meet peak demand without the need for constraints
Source Document & URL	JPDO OMB Exhibit 300
PRM Measurement Category	Productivity and Efficiency
Name	**Adequate Capacity**
Description	Capacity is sufficient to safely meet demand through 2025 without the need to impose constraints
Source Document & URL	JPDO OMB Exhibit 300
PRM Measurement Category	Mission Achievement; Productivity and Efficiency
Name	**Improved Safety**
Description	NextGen technologies and procedures enhance aviation safety both in the US and, through partnerships and technical assistance, internationally
Source Document & URL	JPDO OMB Exhibit 300
PRM Measurement Category	Mission Achievement; Security & Privacy; Service Quality
Name	**Minimize environmental impacts**
Description	Reduced emissions and noise due to continuous descent arrivals and more direct flight routes
Source Document & URL	JPDO OMB Exhibit 300
PRM Measurement Category	Quality
Name	**Decrease Costs**
Description	Decrease in overall cost associated with NextGen spans multiple areas to include but not limited to: Reduce user Operational and Maintenance (O&M) Cost for NextGen capable equipment; reduce unit cost for federal service providers (FAA, DHS); reduced direct operating costs through delay reductions
Source Document & URL	JPDO OMB Exhibit 300
PRM Measurement Category	Financial
Name	**Efficient Facilities**
Description	Facilities can be streamlined to improve efficiency and productivity. Efficient Facilities is the overall measurement of operational efficiency to perform the overall mission of existing, consolidated, modified an or newly developed facilities within the NextGen ATS. "Efficient Facilities" takes into account the consolidation of FAA ATC Facilities to reduce controller workload and increase capacity; as well as, the continued development and design of new or modified airport facilities capable of facilitating the transition to "common use gates/ facilities" at airports.
Source Document & URL	JPDO OMB Exhibit 300
PRM Measurement Category	Financial; Productivity and Efficiency
Name	**Proposed NextGen ATS Proposed LoB (Pending OMB approval)**

Description	NextGen Air Transportation System (ATS) expands beyond the current National Air Space System (NAS); the transformation of the current NAS will significantly increase the safety, security, and capacity of air transportation operations and meet the demands of an already stained system. The NextGen ATS vision requires advancements and transformation of air transportation operations to include airport support/ operations; layered adaptive security throughout the ATS (i.e. ensuring passenger/airport security, aircraft and airspace); aviation safety; air navigation support/operations; and flight support/operations. Additionally, advancements are also required in aircraft capabilities allowing for reduced separation that support the transition from rules-based operations to performance-based operations; establishing a net-centric infrastructure for information sharing and operational services (i.e. Wx, Safety Management Services, Voice Data Communication Management, Surveillance Services...); and in environmental				
Common Business Process					
Name	*2.1 Weather Operations*				
Description	This activity is the collection , analysis, and distribution of real-time and forecast weather to stakeholders. Weather information is tailored to the operational needs of those interested parties, maintaining a consistent view of weather information. Pre-flight and in-flight decisions are aided by weather services that assist the user in making tailored inquiries into the common weather picture. Other weather information such as alerts, advisories and warnings regarding significant weather changes are proactively published to stakeholders via digital communications				
Common Business Process	2.1.1 Collect Real-Time Weather Data 2.1.2 Analyze Weather Data 2.1.3 Produce Weather Reports 2.1.4 Disseminate Weather Reports				
URL					
Process Owner	DOC & FAA				
BRM Sub function	*Environmental Monitoring and Forecasting; Proposed Air Transportation LoB - Sub Function Weather Operations*				

Name	*2.2 Positioning, Navigation, and Timing Operations*				
Description	This activity is the ability to accurately and precisely determine ones current location and orientation; desired path and position, apply corrections to course, orientation, and speed to attain the desired position; and to obtain accurate and precise time anywhere on the globe, within user defined timeliness parameters, which are enabled through PNT. Trajectory based operations relies on PNT services.				
Common Business Process	2.2.1 Provide Positioning Service 2.2.2 Provide Navigation Service 2.2.3 Provide Timing Service				
URL					
Process Owner	FAA, DoD, DHS				
BRM Sub function	*NextGen ATS - Proposed Sub-Function: Positioning, Navigation, and Timing Services*				
Name	*2.3 Surveillance Operations*				
Description	This activity involves the integration of non-cooperative and cooperative surveillance, which detects, identifies and monitors ground and airborne objects to permit creation of real-time situational awareness on the surface of an airport and airborne.				
URL					
Common Business Process	2.3.1 Provide Non-Cooperative Surveillance 2.3.2 Provide Cooperative Surveillance				
Process Owner	FAA, DoD				
BRM Sub function	*NextGen ATS - Proposed Sub-Function: Surveillance Services*				
Name	*2.4 Flight Planning and Flight Data Management*				
Description	This activity encompasses a series of activities performed before a flight that include, but are not limited to, reviewing airspace and navigation restrictions, developing the route, obtaining weather information, completing a navigation log, filing a flight plan, and inspecting the aircraft. Flight Data management is the management of data related to flight planning. Additionally, flight planning and flight data management provides the provisioning of daily and extended flight planning services such as weather briefings, Notices to Airmen (NOTAMS), SIGMET, AIRMETS, TAF as well as the ability to file flight plans				

Common Business Process	2.4.1 Conduct Flight Planning Management 2.4.2 Provide Flight Data Management
URL	
Process Owner	FAA, DoD
BRM Sub function	*NextGen ATS - Proposed Sub-Function: Flight Planning & Flight Data Management*
Name	*2.5 Aeronautical Information Mgmt*
Description	This activity provides management and dissemination of near-real-time aeronautical information/data to critical stakeholders. Aeronautical information includes : Current performance requirements for airspace access and operation, special use airspace status and activity, airspace affected by temporary flight restrictions, route information and performance metrics, system outages affecting Global Positioning System (GPS), Wide Area Augmentation System (WAAS), Local Area Augmentation System (LAAS), and other NAVAIDS, including lighting, weather status, such as convective activity, winds aloft, icing, etc. airport status information, including runway availability and planned long- and short-term activities affecting the airport such as construction, snow removal, etc. and definitional data for airspace boundaries, fixes, terminal procedures, runways, and other supporting information
Common Business Process	2.5.1 Collect Aeronautical Data 2.5.2 Disseminate Aeronautical Information
URL	
Process Owner	FAA, DoD
BRM Sub function	*NextGen ATS - Proposed Sub-Function: Aeronautical Info Mgmt*
Name	*2.8 Safety Management Operations*
Description	This activity integrates and manages safety (policy, procedures, risks, and assurance) throughout the NextGen ATS and includes identifying and managing potential problems in a system, organization, or operations in order to mitigate safety risks and improve the level of safety in the US air transportation system, increase the safety of worldwide air transportation, and maintain aviations record as the safest mode of transportation.

Common Business Process	2.8.1 Provide Aviation Safety Service 2.8.2 Provide Safety Risk Management 2.8.3 Provide Safety Assurance
URL	
Process Owner	FAA, DoD, DHS, Airports (State, Regional)
BRM Sub function	*NextGen ATS - Proposed Sub-Function: Safety Management Service*
Name	*2.9 Communication Service Management*
Description	This activity manages the command, control and communications systems and networks that provide real-time services to exercise executive, administrative, and supervisory direction within NextGen ATS and enables voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations.
URL	
Common Business Process	2.9.1 Manage Communication 2.9.2 Manage Spectrum
Process Owner	FAA, DoD, DHS, Airports (State, Regional)
BRM Sub function	*Proposed NextGen ATS Sub-Function: Communication Service Mgmt*
Name	*3.0 Airport Support*
Description	This activity provides assurance that the airport is operational, ensuring airport preservation, airport planning, and the acquisition of additional assets if required.
URL	
Common Business Process	3.1 Airport Assets Management 3.3. Airport Infrastructure Planning 3.4 Airport Threat Profile Management
Process Owner	
BRM Sub function	*NextGen ATS - Proposed Sub-Function: Airport Support*
Name	*4.0 Airport Operations*
Description	This activity provides the airside, terminal operation, and multimodal transportation links. This enables passenger, flight and cargo operations to be conducted within an airport with consideration of safety, efficiency, resource limitations and local environmental issues.
Common Business Process	4.1 Passenger, Baggage, & Cargo Management 4.2 Congestion Information Management 4.3 Airport Emergency Response 4.4. Airport Security Operations 4.5 Passenger Jetway Operations 4.6 Airport Surface Support Operations

URL					
Process Owner	Airports (State, Local) and DHS				
BRM Sub function	*NextGen ATS - Proposed Sub-Function: Airport Operations*				
Name	*5.0 Air Navigation Support*				
Description	This activity provides the short and long term planning aspect needed to assure a safe, secure, and efficient access to national airspace by all users within terminal and cruise. This activity established the criteria for designing structures in the airspace to support safety of flight and efficient flow of traffic. Design criteria including the guidelines for establishing classes of airspace, designation of volumes of airspace for the provision of separation (sectors, special use, etc.), waypoints, published routes etc. The criteria include identification of those structures, which require rulemaking, publication, environmental evaluations, etc. The guidelines also include criteria to support the design process - objectives in the design to meet demand, performance criteria for evaluating the efficiency of the design, infrastructure coverage criteria and constraints, etc				
Common Business Process	5.2 Capacity Management 5.3 Flow Contingency Management				
URL					
Process Owner	FAA, DOD, NASA				
BRM Sub function	*NextGen ATS - Proposed Sub-Function: Air Navigation Support*				
Name	*5.1 Airspace Secruity Operations*				

Description	This activity for secure airspace is to prevent or counter external attacks on aircraft and other airborne vehicles anywhere in the NAS or to use an aircraft as a weapon to attack assets and events on the ground. To reduce the security risk within the Air Domain, NextGen Secure Airspace systems and procedures detect and prevent or mitigate: a) anomalies in aircraft operation that indicate unauthorized use or attempted unauthorized use, b) aircraft not providing the appropriate cooperative data concerning identity and intentions, c) external attacks on aircraft, d) aircraft that can pose a threat from operating in the NAS. These risk management requirements include defining (usually dynamically) the boundaries of security-restricted airspace (SRA) and temporary flight restrictions (TFR), the cooperative division of responsibilities between the DSP and the SSP in the event of security events in flight or by airborne threat aircraft, security personnel on flights, and modifications and equipage to the aircraft.				
Common Business Process	5.1.1 Manage Airspace Alerts 5.1.2 Monitor Airspace Alerts 5.1.3 Restrict Airspace				
URL					
Process Owner	FAA, DOD, NASA				
BRM Sub function	*NextGen ATS - Proposed Sub-Function: Air Navigation Support*				
Name	*6.0 Air Navigation Operations*				

Description	This activity encompasses two sub activities "conduct terminal traffic flow management" and "conduct cruise (en-route) traffic flow management" and collectively all activities performed by the ANSP within the terminal and cruise to assure safe, secure, and efficient access to national airspace by all users. This activities include but not limited to providing pilot briefings, en route communications and VFR search and rescue services, assist lost aircraft and aircraft in emergency situations, relay ATC clearances, originate NOTAMS, broadcast aviation weather and NAS information, receive and process IFR flight plans, and monitor NAVAIDS. In addition provides en route advisory service, takes weather observations, issues airport advisories, and advises Customs and Immigration of transborder flights. (NAS_EA_v00.21) (Modified)
Common Business Process	6.1 Trajectory Management 6.2 Separation Management
URL	
Process Owner	FAA, DOD, NASA
BRM Sub function	*NextGen ATS - Proposed Sub-Function: Air Navigation Support*
Name	*7.0 Flight Support*
Description	This activity provides the business objectives and management of the fleet to include the development of the execution plan and proposed airspace design in order to determine how and if it will affect business objectives (cost, planning, etc.); as well as, monitoring fleet operations to ensure business objectives are met.
Common Business Process	7.1 Business Operations 7.2 Fleet Management
URL	
Process Owner	FAA, DOD, NASA
BRM Sub function	*NextGen ATS - Proposed Sub-Function: Flight Support*
Name	*8.0 Flight Operations*
Description	This activity provides the flight execution on the ground and airborne, including ground/ airborne 4DT Navigation, and performing self-separation.
Common Business Process	8.1 Aircraft Surface Operations 8.2 Airborne Operations
URL	
Process Owner	FAA, DOD, NASA
BRM Sub function	*NextGen ATS - Proposed Sub-Function: Flight Operations*
Name	*2.6 Geospatial Information Management*

Description	This activity provides the capability to access and update information about the physical locations of fixed and mobile assets as well as information referenced to unique earth-based geographic coordinates transmitted in the form of electrical energy above the audio range that is capable of being radiated into space. Stakeholders are provided the capability to employ a common indexing structure to support the asset information development, exchange of information, as well as to query overall asset inventories. The function to detect This service manages current information, as well as maintaining historical information.
Common Business Process	2.6.1 Collect Geospatial Information 2.6.2 Disseminate Geospatial Information
URL	
Process Owner	
BRM Sub function	*FTF: Geospatial - Information Management*
Name	*2.7 Environmental Information Management*
Description	This activity will provide monitoring of the noise and air quality around an airport, and to report environmental conditions at the airport
Common Business Process	2.7.1 Monitor Noise & Air Quality 2.7.2 Report Environmental Conditions
URL	
Process Owner	Public & Private Sector; Airports (EPA Compliance)
BRM Sub function	*Environmental Remediation; Environmental Monitoring & Forecasting; Pollution Prevention and Control*
Name	*3.1 Airport Assets Management*
Description	This activity provides the inventory of current systems, identifying future system needs, and developing strategic implementation plans for future systems in order to meet current and future demand.
Common Business Process	8.1 Aircraft Surface Operations 8.2 Airborne Operations
URL	
Process Owner	
BRM Sub function	Public Resources, Facilities, & Infrastructure Management
Name	*6.3 Contingency Planning/ Business Continuity*
Description	Contingency Planning involves the actions required to plan for, respond to, and mitigate damaging events.

URL	
Process Owner	FAA, DoD, DHS, Airports
BRM Sub function	Disaster Repair & Restore; Emergency Response; Disaster Preparedness and Planning
Name	*3.2 Risk Assessment Management*
Description	Contingency Planning involves the actions required to plan for, respond to, and mitigate damaging events.
URL	
Process Owner	FAA, DoD, DHS, Airports
BRM Sub function	*Disaster Repair & Restore; Emergency Response; Disaster Preparedness and Planning*
Name	*1.1.6 Personnel Certification*
Description	This activity is the certification of personnel (ANSP certification for monitoring and regulating airspace, flight crew certification for operating aircraft, and airport personnel) to meet the demands of the NextGen ATS.
URL	
Process Owner	FAA, DoD, DHS, Airports
BRM Sub function	*Human Resource Management*
Name	*1.6.6 Real-Time Systems & Networking Performance*
Description	This activity monitors real-time systems and networks to ensure everything is working optimally. The resulting performance metrics are collected and reported to stakeholders
URL	
Process Owner	FAA, DoD, DHS, Airports
BRM Sub function	*Systems & Network Performance*
Name	*1.2.1 Certify Equipment*
Description	This activity will certify equipment in order to meet the standard requirements to conduct safe operations.
URL	
Process Owner	FAA, DoD, DHS, Airports
BRM Sub function	*Facilities, Fleet and Equipment Management*
Name	*1.2.2 Certify Facilities*
Description	This activities includes the evaluation and certification of all facilities within the Air Transportation System
URL	
Process Owner	FAA, DoD, DHS, Airports
BRM Sub function	*Facilities, Fleet and Equipment Management*
Name	*1.4.1 Regulatory Development*

Description	Policy and Guidance Development involves the creation and dissemination of guidelines to assist in the interpretation and implementation of regulations. Standard Setting/ Reporting Guideline Development involves the establishment of allowable limits associated with a regulated activity and the development of reporting requirements necessary to monitor and control compliance with allowable limits.
URL	
Process Owner	FAA, DoD, DHS, Airports
BRM Sub function	*Policy & Guidance Development; Regulatory Creation; Standard Setting/Reporting Guideline Development*
Name	*1.1.1 Human Resource Strategy*
Description	Within NextGen, it is critical to continue to evaluate and access human roles/responsibilities within the NextGen ATS and develop an overall strategy to enable human operators to safely and effectively manage proposed advanced automation systems and technology as required and implemented. As NextGen matures it is essential to ensure effective human capital management strategies are in place to recruit, select, develop, train, and manage a high-quality, productive workforce in accordance with merit system principles. Human Resource Strategy includes : developing human resources and strategies and plans; establishing human resources policy and practices; managing current and future workforce competencies; developing workforce plans and managing developing succession plans and measuring and improving human resources performance.
URL	
Process Owner	FAA, DoD, DHS, Airports
BRM Sub function	*Policy & Guidance Development; Regulatory Creation; Standard Setting/Reporting Guideline Development*
Data Layer	
Taxonomies	
Name (AV-2)	Taxonomy
Description	The NextGen All View (AV2) provides an end-to-end depiction of NextGen common taxonomies and roles within the enterprise.

Examples	
URL	TBD - AV2 will be release as part of NextGen EA v 2.0 in June 07
Topics	
Name	Topic
Description	A category w/in Taxonomy. A topic is the central concept for applying context to data. For example, an agency may have a taxonomy representing their organizational structure. In such a taxonomy, each role in the organizational structure (e.g. CIO) represents a topic. Topic is often synonymous w/ "node"
Examples	Country
URL	
Data Assets	
Name	Data Asset
Description	A managed container for data in many cases, this will be a relational Db; however, a Data Asset may also be a Web Site, a document repository, directory or data service
URL	
Type	
Query Points	
Name	Query Point
Description	An endpoint providing an interface for accessing and querying a Data Asset. A concrete representation of a Query Point may be a specific URL at which a query Web Service may be invoked. A Query Point returns a result set specified in an Exchange Package
URL	
Query Languages	
Exchange Packages	
Name	Exchange Package
Description	Information exchanges within the NextGen ATS and are in development. Detailed information on Exchange Packages will be forthcoming.
URL	
Entities	
Name	Entity
Description	An abstraction for a person, place, object, event, or concept described (or characterized) by common Attributes. For example, "Person" and "Agency" are Entities. An instance of an Entity represents one particular occurrence of the Entity, such as a specific person or a specific agency.
URL	
Service Component Layer	
Proposed "NEW" Service Domain	
Name	**Operational Services**

Justification	Existing Domains to do not address the specific operational "mission" oriented services required to meet the needs of NextGen ATS				
Description	Operational Services categorizes Service Types specific to meeting the overall operational needs of an organizational mission as well as the command and control aspect that support or extend across the operational enterprise; Operational Service Types are not a direct service provide to citizens but may have an indirect impact				
Shared Service					
Name	**Certification Services**				
Description	This provides certification services and standards for facilities (including airports); equipment and workforce personnel				
Supporting Services	**Facility Certification: ensures the certification of facilities operating in support of NextGen ATS**				
Supporting Services	**Equipment Certification:** provides the certification of equipment operating within NextGen ATS				
Supporting Services	**Personnel Certification:** provides required skill set certification to employees and operators				
Supporting Services	**Operational Certification:** provides the certification of operational missions and or supporting processes				
URL					
Service Provider	TBD - as NextGen human roles are further refined and determined in support of NextGen ATS				
SRM Service Type	***Proposed Operational Services - Service Type (Pending OMB approval)***				
Shared Service					
Name	**Surveillance Services**				

Description	Surveillance Services provide non-cooperative and cooperative surveillance of air and ground sensors and automation hardware to enable the identification and determination of the position of the aircraft operating in the US airspace. Non-cooperative and cooperative surveillance systems will be designed and integrated to provide mutually supporting surveillance services information; Surveillance Information Services enables: reduced separation standards; comprehensive tracking of aircraft and vehicles operating on airport surface and within the ANSP - responsible airspace, along with sovereign airspace, to improve safety, security, and operational effectiveness; Increases C-ATM; Improves 4DT information by providing aircraft intent and conformance monitoring; flexible assignment of multiple NextGen surveillance sources to any operational position at anytime, enabling more flexibility in assigning airspace; and adaptive flexible spacing and sequencing of aircraft on the ground and in the air
Supporting Services	**Cooperative Surveillance Services:** Require aircraft to be equipped with functioning avionics, allowing surveillance sensors to reliably, consistently, and unambiguously detect the aircraft while in the air and on the ground. This type of surveillance information is considered the primary method of aerial vehicle detection because of the additional flight information it can provide. Provides stakeholders the determination of an aircraft's multi-dimensional position utilizing equipment on the airframe. (CONOP 5.5.2.1)
Supporting Services	**Non-Cooperative Surveillance Services:** Allows an airborne object to be detected by ground-based, airborne, or space-based surveillance systems even if it does not have functional avionics equipment. Non-cooperative surveillance can be used when airborne or ground cooperative surveillance systems malfunction. NextGen non-cooperative and cooperative surveillance systems are designed and integrated to provide mutually supporting surveillance services information. (CONOP 5.5.2.2)
URL	
Service Level Agreement	
Service Provider	

SRM Service Type	***Proposed Operational Services - Service Type (Pending OMB approval)***				
Shared Service					
Name	**Navigation Services**				
Description	Navigation Services provide the ability to accurately and precisely determine one's current location and orientation; desired path and position, apply corrections to course, orientation, and speed to attain the desired position; and to obtain accurate and precise time anywhere on the globe, within user defined timeliness parameters, which are enabled through PNT. There are two components to the navigation service (dynamic and static). The dynamic aspect is the provision of a signal(s) in space used by air vehicles airborne and on the ground to establish one's position and support the safe movement of these aircraft in the airspace. The static aspect of navigation services is the development of charts, graphs and signage information that are used in real-time or in planning to establish safe trajectories through the airspace down to and including the airport surface and . support the determination and execution of safe and efficient paths through the airspace system.				
Supporting Services	**Positioning Services:** Provides users of the NextGen with a highly accurate and reliable positioning source, which enables improved surveillance capabilities and reduced separation standards. Positioning is also needed for other activities in the NextGen, such as surveying stationary assets ; this service also provides the fundamentals for navigation				
Supporting Services	**Navigation Services:** Navigation Services enable area navigation (RNAV) as the standard method of navigation in the NAS and provides the foundation for performance-based navigation operations including those that have specified RNP				
Supporting Services	**Timing Services:** Provides and enables users with the precise synchronization of operations and the reduction of uncertainties associated with disparate timing source				
URL					
Service Level Agreement					
Service Provider					
SRM Service Type	Proposed Operational Services - Service Type (Pending OMB approval)				

Shared Service					
Name	**Weather Information Services**				
Description	Weather services is the use of air and ground sensors to collect and disseminate forecast and real-time weather data to enable a common weather picture through distribution to critical stakeholders. Weather information is tailored to the operational needs of interested parties, maintaining a consistent view of weather information and identifying and disseminating hazardous weather information to aircraft or other vehicles operating in the US airspace and surface. Pre-flight and in-flight decisions are aided by weather services that assist the user in making tailored inquiries into the common weather picture. Other weather information such as alerts, advisories and warnings regarding significant weather changes are proactively published to stakeholders via digital communications to aid in the decision making process.				
Supporting Services	**Weather Forecasting** Provides stakeholders will a common picture for current and forecast weather information includes weather attributes organized by horizontal, vertical, altitude, time, and probability components (x, y, z, t, plus probability). Optimal air transportation decision-making mitigates the risk of conflicting courses of action by requiring a single reliable NextGen common weather picture				
URL					
Service Level Agreement					
Service Provider					
SRM Service Type	Proposed Operational Services - Service Type (Pending OMB approval)				
Shared Service					
Name	**Voice/Data Communication Mgmt Service**				

Description	Manages the overall NextGen communication service and enables shared situational awareness in both Enterprise and Operational Services. Voice Data/Communication Mgmt Service is composed of two principle subsets: 1) Information Services, which provides data and information to subscribers when and where needed in an accessible format and 2) Infrastructure Services, which provides communications connectivity to ensure information flows reliably to support information communications before sharing functions. Overall Voice/Data Communication Mgmt Services provide a safety critical fixed and mobile command and control network for the transmission of operational data and instructions (executive, administrative, and supervisory) that enable real-time voice and/or data transmission between and/or among properly equipped airborne platforms and one or more ground stations as well as ground to ground operational facilities. Voice Data/ Communication Mgmt Services - Infrastructure services are composed of the following
Supporting Services	**Ground Network Services:** Defines the communication & data infrastructure capability that supports ground to ground (facilities, people and systems) information sharing - provides access to surveillance, communications, and flight data management, including automation-assisted coordination, to any service provider regardless of its physical location to appropriate COI. Additionally, the networking capability also provides a robust contingency/ business continuity capability.

Supporting Services	**Air Ground Network Services:** Defines the capability to provide near-real time critical voice/data communications to flight crew and flight deck and ensures data is available for flight deck automation (i.e., avionics to support flight crew decision-making) as well as real-time data to the ANSP on the operational aspects of flights. In certain defined airspace, data communications are the primary means of communicating clearances, routine communications, and 4DT agreements between the ANSP and flight deck. Voice communications are used to supplement data communications for tactical situations and for emergencies to augment procedural responses or risk mitigations. Voice communications are used to communicate with lesser-equipped aircraft in appropriate airspace.				
Supporting Services	**Network Infrastructure :** Provides infrastructure security, service continuity, through sited facilities to enable flexible ground and air-ground communication networks. Monitors infrastructure health and remote maintenance to maintain service availability and automatically alert the community about the status of NextGen assets.				
URL					
Service Level Agreement					
Service Provider					
SRM Service Type	Proposed Operational Services - Service Type (Pending OMB approval)				
Shared Service					
Name	**Flight Planning Management Services**				

Description	Flight Plan Mgmt Services provide support to flight operations for flight planning activities and manage data related to flight from the initial filing of a proposed flight to the closing of the flight plan and the archiving of the data to support performance management analysis. (NextGen CONOP 5.6); Flight Plan Mgmt Services addresses the real time tracking of aircraft operating in the US airspace. Flight Plan Mgmt includes flight tracking services and flight planning services. Flight Tracking Services supports conformance monitoring of aircraft execution against its plan (filed information) and subsequent instructions (clearances). The Flight Tracking and Planning service are supported by and/or provide to support DOT, DOD and DHS for national security and FAA, NASA and DOC for safe and cost effective operation.
Supporting Services	**Flight Planning:** Begins when either the ANSP or the flight operator initialize or requires a change in a new or existing flight plan. Fight operators and the ANSP have a range of flight planning capabilities that optimize flights based on individual mission objectives, available aircraft, security and airspace constraints, and forecasted weather (see Chapter 3). Operators also have access to an authoritative source of weather information that provides forecasts and current conditions; the Planning service supports the agency to balance its resources against the project demand or allow the agency to strategically manage the movement of aircraft for more efficient operation (JPDO/FAA previously proposed extension definition)
Supporting Services	**Flight Tracking:** Monitors the flight data to track any changes made to the flight; Flight Tracking Services supports conformance monitoring of aircraft execution against its plan (filed information) and subsequent instructions (clearances).

Supporting Services	**Aeronautical Information Mgmt:** Defines the capability for aeronautical information to be uploaded, received, and exchanged with more accuracy and in a timely manner. Aeronautical information includes : Current performance requirements for airspace access and operation, special use airspace status and activity, airspace affected by temporary flight restrictions, route information and performance metrics, system outages affecting Global Positioning System (GPS), Wide Area Augmentation System (WAAS), Local Area Augmentation System (LAAS), and other NAVAIDS, including lighting, weather status, such as convective activity, winds aloft, icing, etc. airport status information, including runway availability and planned long- and short-term activities affecting the airport such as construction, snow removal, etc. and definitional data for airspace boundaries, fixes, terminal procedures, runways, and other supporting information. AIM information also includes NOTAMs, dynamic route construction and dissemination, infr
Supporting Services	**Trajectory Management:** Ensures the overall flows are well behaved so that potential conflicts are kept to a minimum; provides is a common flow strategy and trajectory analysis service that enables common situational awareness of current and projected NAS status and constraints. This service provides stakeholders with a capability to examine the individual or aggregate impacts of proposed strategies for CM or FCM and thereby managing complexity and ensuring conflicts can be safely resolved.
Supporting Services	**Separation Analysis:** Provides the provisions of separation between aircraft and tactically resolves conflicts among aircraft and ensures avoidance of weather, airspace, terrain, or other hazards. Identifies airspace conflicts and automatically issues revised four-dimensional trajectories (4DT) to flight operators

Supporting Services	**Flow Contingency Management:** Identifies and resolves congestion or complexity resulting from blocked or constrained airspace or other off-nominal conditions. FCM deals with demand-capacity imbalances that cannot be addressed through the CM process. FCM involves managing the conflicting objectives of multiple stakeholders regarding the operational use of over-subscribed airspace and airports while taking advantage of available capacity to address demand. The collaborative process among flow contingency managers, flight operators, and airport operators allows flight operators to find solutions that best meet their priorities and constraints while satisfying the conditions specified in a given FCM plan
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	Proposed Operational Services - Service Type Flight Planning Management Services (Pending OMB approval)
Shared Service	
Name	**Security Services**
Description	NextGen Security Services ensure prevention, protection, response and mitigation and recovery operations across the entire NextGen ATS; services also ensure collaborative decision making contributions based on the Shared Situational Awareness (SSA) across stakeholders. NextGen's Security services will require key transformations in current security areas and services: checkpoint operations; credentialing/authentication; passenger, baggage and cargo screening; and chemical, biological, radiological, nuclear, and explosives (CBRNE) detection. Services Components include: Secure People, Secure Facilities, Secure Baggage, Cargo, Secure Airspace and Secure Equipment
Supporting Services	**Secure People:** Defines the capability which mitigates aviation risks by enabling greater reliance on an integrated approach correlating credentialing and identification processes with screening.

Supporting Services	**Secure Baggage/Cargo:** Defines the capability to screen baggage at remote off-airport locations and then be transported directly to the sterile area of the airport terminal and their screened checked bags directly to the aircraft. NextGen vision for cargo security includes freight vulnerability assessments (through the IRM process), identifying the risk level of cargo, use of sterile area cargo packing areas, cargo transit safety and integrity, and CBRNE screening for air cargo.				
Supporting Services	**Secure Facilities:** Defines an Integrated facility security capability scalable to differing capacity, access, and risk environments will likely include both technological and procedural measures to protect against the dynamically evolving threat. NextGen Airport Security will seamlessly link sensors and data sources from access and screening checkpoints for passengers, visitors, employees and vehicles, perimeters and critical facility infrastructure.				
Supporting Services	**Secure Airspace:** Defines the capability to prevent or counter external attacks on aircraft and other airborne vehicles anywhere in the NAS or using an aircraft as a weapon to attack assets and people on the ground to reduce the overall security risk within the air domain.				
Supporting Services	**Secure Equipment:** Defines the capability to increase the safety and security of the NextGen aircraft in flight and mitigate potential threats such as hijacking/unauthorized diversion; internal explosive destruction; external attack; onboard CBRNE or other attack of crew, passengers, or aircraft systems.				
URL					
Service Level Agreement					
Service Provider					
SRM Service Type	Proposed Operational Services - Service Type (Pending OMB approval)				
Shared Service					
Name	**Airspace Services**				
Description	Airspace Services provides dynamic changes to airspace configuration to flight crews so that maximum flexibility is possible				
Supporting Services	**Airspace Design:**				
Supporting Services	**Airspace Management:**				
URL					
Service Level Agreement					
Service Provider					

SRM Service Type	Proposed Operational Services - Service Type (Pending OMB approval)				
Shared Service					
Name	**Performance Management Services**				
Description	Defines a set of capabilities that monitors and evaluates NextGen ATS environment, supporting systems and process (airports, national airspace and environment) and provides input back to stakeholders to improve overall operational performance and transformations				
Supporting Services	**Monitoring:** Defines a set of capabilities that observe the overall NextGen ATS behavior to include systems and processes to improve overall operational performance. Performance Monitoring Services extend throughout the entire spectrum of the NextGen ATS operational environment in order to enhance overall decision making and operational performance.				
URL					
Service Level Agreement					
Service Provider					
SRM Service Type	Proposed Operational Services - Service Type (Pending OMB approval)				
Shared Service					
Name	**Self-Service**				
Description	Defines the set of capabilities that allows NextGen Stakeholders and COI to subscribe/sign up for a particular service enhancing overall collaboration and shared situational awareness.				
URL					
Service Level Agreement					
Service Provider					
SRM Service Type	Customer Initiated Assistance				
Shared Service					
Name	**Reservations/Registration**				
Description	Defines the set of capabilities that allow electronic enrollment and confirmations for services. Supports Passenger, Baggage and Cargo Mgmt and Airlines Operations				
URL					
Service Level Agreement					
Service Provider					
SRM Service Type	Customer Initiated Assistance				
Shared Service					
Name	**Scheduling**				

Description	Defines the set of capabilities that support the plan for performing work or services to meet the needs of NextGen ATS stakeholder and or customers. Within NextGen operational environment scheduling impacts the effectiveness and benefits the management of the airspace through flight planning and flight operations; fleet management and the overall workforce
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	Customer Initiated Assistance
Shared Service	
Name	**Partner Relationship Mgmt**
Description	Defines the set of capabilities that support the plan for performing work or services to meet the needs of an organization's customers. Supports the following Core Business Services: Labor Relations and Controls and Oversight
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	Customer Relationship Management
Shared Service	
Name	**Subscriptions**
Description	Defines the set of capabilities that allow a customer to join a forum, listserv, or mailing list. Supports information sharing in a net-centric environment; Wx Products; Flight Data Management Products; Aeronautical Information; Geospatial Information
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	Customer Preference
Shared Service	
Name	**Alerts & Notifications**
Description	Defines the set of capabilities that allow a customer to be contacted in relation to a subscription or service of interest. Alert and Notifications Services increase NextGen ATS Safety and Security Measures through dissemination of NRT "alerts & notifications" to subscribed stakeholders (pilots, security personnel, airports operators, etc...). Information includes but is not limited to Aeronautical Data, Geospatial Data, Environmental Conditions, Emergency Reponses Notifications; Security Notifications

URL	
Service Level Agreement	
Service Provider	
SRM Service Type	Customer Preference
Shared Service	
Name	**Process Tracking**
Description	Defines the set of capabilities to allow the monitoring of activities within the business cycle. Enables Passenger, Baggage & Cargo Management - Passengers and their baggage are tracked based on their planned intent and their respective locations. Manifests for baggage and cargo are reviewed/modified/assessed and cleared prior to departure. Enables security operations and managing of passenger credentials and verification
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	Tracking and Workflow
Shared Service	
Name	**Inbound Correspondence**
Description	Defines the set of capabilities for the management of externally initiated communication between an organization and its stakeholders; supports flow contingency management operations as well as trajectory management
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	Routing and Scheduling
Shared Service	
Name	**Outbound Correspondence**
Description	Defines the set of capabilities for the management of internally initiated communication between an organization and its stakeholders; supports fleet management
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	Routing and Scheduling
Shared Service	
Name	**Library / Storage**
Description	Defines the set of capabilities that support document and data warehousing and archiving. Store Flight Data; Passenger, Baggage and Cargo tracking/manifest; historical Wx data
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	Document Management

Shared Service	
Name	**Knowledge Capture**
Description	Defines the set of capabilities that facilitate collection of data and information in support of NextGen ATS Operations. Supports the collection of Wx Data, Aeronautical Data, Geospatial Information; Communication Performance Data and other NextGen ATS performance metrics data; Airport Threat Information; aircraft incidents/ accidents on or near the airport, as well as security incidents (e.g. Natural Hazards and Human & Technology); aircraft spacing "trajectory information"
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	Knowledge Management
Shared Service	
Name	**Knowledge Distribution & Delivery**
Description	Defines the set of capabilities that support the transfer of knowledge to the end customer. Supports the dissemination of information exchange requirements from NextGen Stakeholders and Customers; provides the appropriate operational entities within the NextGen environment with the appropriate data at the opportune time to allow cooperative understanding and collaborative decision making. Stakeholders decisions are supported through access to a rich information exchange environment and transformed Collaborative Decision Making (CDM) process.
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	Knowledge Management
Shared Service	
Name	**Information Retrieval**
Description	Defines the set of capabilities that allow access to stored data and information for use by NextGen ATS stakeholders and COIs. Supports NextGen Information Management (data exchange) and SSA across Operational and Enterprise Shared Services
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	Knowledge Management
Shared Service	
Name	**Information Sharing**
Description	Defines the set of capabilities that support the use of documents and data in a multi-user environment for use by NextGen ATS stakeholders and COIs. Supports NextGen Information Management and SSA across Operational and Enterprise Shared Services
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	Knowledge Management
Shared Service	
Name	**Structural / Thermal**
Description	Defines the set of capabilities that support the use of data flow and data modeling diagrams for applying systematic analysis of data. Supports NextGen ATS in the following areas: Analyze Wx Data; Performance Metrics; Developing Airport Threat Profiles; Mitigating Congestion and Managing Airspace
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Analysis & Statistics**
Shared Service	
Name	**Predictive**
Description	Defines the set of capabilities that support the foretelling of something in advance by the use of data; provides stakeholders with predicative data analysis which can facilitate collaboration, risk management and enhance the decision making. Examples include: Analysis of Wx data, performance metrics; airport threat data profile management; Congestion Management through ability to reconfigure resources; trajectory prediction...
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Analysis & Statistics**
Shared Service	
Name	**Radiological**
Description	Defines the set of capabilities that support the use of radiation and x-ray technologies for analysis and scientific examination; supports the Airport Security Procedures
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Analysis & Statistics**
Shared Service	

Name	**Mapping / Geospatial / Elevation / GPS**
Description	Provides for the representation of position information through the use of attributes such as elevation, latitude, and longitude coordinates. Supports the collection and disseminating of Geospatial Information to the reconfiguration of airspace and airport assets to provide maximum utilization of the available capacity to meet traffic volume, while adjusting constraints
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Visualization**
Shared Service	
Name	**Graphing / Charting**
Description	Defines the set of capabilities that support the presentation of information in the form of diagrams or tables. Supports the Wx Product development and visualization; Supports Airborne Operations through displaying 4DT Navigation Data. Aircraft may perform autonomous operations, monitor weather and other airspace events to negotiate the best flight path. Supports the static aspect of navigation service is development of charts, graphs and signage information that are used in real-time or in planning to establish safe trajectories through the airspace down to and including the airport surface.
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Visualization**
Shared Service	
Name	**Imagery**
Description	Defines the set of capabilities that support the creation of film or electronic images from pictures, paper forms or graphics for static or dynamic use.
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Visualization**
Shared Service	
Name	**Ad Hoc**
Description	Defines the set of capabilities that support the use of dynamic (near-real-time) reports on an as needed basis; supports NextGen enterprise reporting and Information procedures: Environmental Conditions; Emergency Operations and Dissemination of critical Wx Data
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Reporting**
Shared Service	
Name	**Standardized and Canned**
Description	Defines the set of capabilities that support the use of pre-conceived or pre-written reports; supports daily NextGen ATS Planning and Operational Procedures and processes
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Reporting**
Shared Service	
Name	OLAP
Description	Defines the set of capabilities that support the analysis of information that has been summarized into multidimensional views and hierarchies.
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Reporting**
Shared Service	
Name	**Data Mining**
Description	defines the set of capabilities that support the exploring and analyzing of detailed business transactions to uncover patterns and relationships within the business activity and history.
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Knowledge Discovery**
Shared Service	
Name	**Modeling**
Description	defines the set of capabilities that support the simulating of conditions or activities by performing a set of equations on a set of data; supports the generation of NextGen 4D Weather Picture; Establishing Risk Assessments and contingency operations; Managing the Airspace through CM and FCM; fleet operations; as well as NextGen ATS Operational Performance

URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Knowledge Discovery**
Shared Service	
Name	**Simulation**
Description	defines the set of capabilities that support the representation of the interaction between real-world objects; supports the generation of NextGen 4D Weather Picture; Establishing Risk Assessments and contingency operations; Managing the Airspace through CM and FCM; fleet operations; as well as NextGen ATS Operational Performance
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Knowledge Discovery**
Shared Service	
Name	**Demand Forecasting/ Management**
Description	Defines the set of capabilities that facilitate the prediction of sufficient production to meet an organization's mission and or services. Forecast demand/ capacity imbalances and Wx
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Business Intelligence**
Shared Service	
Name	**Decision Support and Planning**
Description	defines the set of capabilities that support the analyze information and predict the impact of decisions before they are made; NextGen decision-support tools will enable more strategic decision making
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Business Intelligence**
Shared Service	
Name	**Voice Communications**

Description	defines the set of capabilities that provide voice communications not only critical to the National Airspace System (NAS) but a in support of NextGen ATS in both real time operational mission areas and administrative buisness operations. VHF band 118-137 MHz currently provides the primary communications medium for ATS and AOC communications for all areas of the world where ground stations providing radio line-of-sight services can be established in a practical manner. The VHF band is used by civil authorities to provide ATS communications and by the airlines, business aviation, and general aviation to provide AOC communications. For Air Traffic Management, Voice Communication message exchanges for directing airport gate departures, ground traffic instructions, take-off clearances, landing sequences, air route change information and aircraft maneuvers as well as air-space, region and sector-to-sector transitions are typical voice sequences which occur via voice communication.
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Communication**
Shared Service	
Name	**Real Time/ Chat**
Description	Real Time / Chat – defines the set of capabilities that support the Real Time conferencing capability between two or more users on a local area network or the internet.
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Communication**
Shared Service	
Name	**Computer / Telephony Integration**
Description	defines the set of capabilities that support the connectivity between server hardware, software and telecommunications equipment into a single logical system; Connectivity addresses standardized interfaces, security, and compression algorithms inherent to the standardized enterprise NextGen communication protocols that are independent of the underlying communications infrastructure.

URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Communication**
Shared Service	
Name	**Access Control**
Description	Defines the set of capabilities that support the management of permissions for logging onto a computer or network.
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Security Management**
Shared Service	
Name	**Audit Trail Capture and Analysis**
Description	Defines the set of capabilities that support the identification and monitoring of activities within an application or system
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Security Management**
Shared Service	
Name	**Digital Signature**
Description	Defines the set of capabilities that guarantee the unaltered state of a file
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Security Management**
Shared Service	
Name	**Encryption**
Description	Defines the set of capabilities that support the encoding of data for security purposes
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Security Management**
Shared Service	
Name	**Identification and Authentication**
Description	Defines the set of capabilities that support obtaining information about those parties attempting to log on to a system or application for security purposes and the validation of those users.
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Security Management**
Shared Service	
Name	**Intrusion Detection**

Description	Defines the set of capabilities that support the detection of illegal entrance into a computer system.
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Security Management**
Shared Service	
Name	**Role / Privilege Management**
Description	Defines the set of capabilities that support the granting of abilities to users or groups of users of a computer, application or network.
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Security Management**
Shared Service	
Name	**User Management**
Description	Defines the set of capabilities that support the administration of computer, application and network accounts within an organization.
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Security Management**
Shared Service	
Name	**Verification**
Description	Defines the set of capabilities that support the confirmation of authority to enter a computer system, application or network.
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Security Management**
Shared Service	
Name	**Data Exchange**
Description	Support the interchange of information between multiple systems or applications; includes verification that transmitted data was received unaltered
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Data Management**
Shared Service	
Name	**Data Mart**
Description	Defines the set of capabilities that support a subset of a data warehouse for a single department or function within an organization
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Data Management**
Shared Service	

Name	**Data Recovery**
Description	Defines the set of capabilities that support the restoration and stabilization of data sets to a consistent, desired state.
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Data Management**
Shared Service	
Name	**Data Recovery**
Description	Defines the set of capabilities that support the archiving and storage of large volumes of data.
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Data Management**
Shared Service	
Name	**Extraction and Transformation**
Description	Defines the set of capabilities that support the manipulation and change of data.
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Data Management**
Shared Service	
Name	**Loading and Archiving**
Description	Defines the set of capabilities that support the population of a data source with external data.
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Data Management**
Shared Service	
Name	**Data Cleansing**
Description	Defines the set of capabilities that support the removal of incorrect or unnecessary characters and data from a data source.
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Data Management**
Shared Service	
Name	**Data Classification**
Description	Defines the set of capabilities that allow the classification of data.
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Data Management**
Shared Service	
Name	**Resource Planning and Allocation**
Description	Support the determination of strategic direction, the identification and establishment of programs and processes, and the allocation of resources (capital and labor) among those programs and processes
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Human Capital/Workforce Management**
Shared Service	
Name	**Skills Management**
Description	Defines the set of capabilities that support the proficiency of employees in the delivery of an organization's products or services
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Human Capital/Workforce Management**
Shared Service	
Name	**Contingent Workforce Management**
Description	Defines the set of capabilities that support the continuity of operations for an organization's business through the identification of alternative organization personnel
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Human Capital/Workforce Management**
Shared Service	
Name	**Workforce Acquisition / Optimization**
Description	Defines the set of capabilities that support the hiring and re-structuring of employees and their roles within an organization
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Human Capital/Workforce Management**
Shared Service	
Name	**Asset Cataloging / Identification**
Description	Defines the set of capabilities that support the listing and specification of available assets
URL	
Service Level Agreement	
Service Provider	
SRM Service Type	**Assets/Materials Management**
Shared Service	
Name	**Asset Transfer, Allocation, and Maintenance**
Description	Defines the set of capabilities that support the movement, assignment, and replacement of assets

URL					
Service Level Agreement					
Service Provider					
SRM Service Type	**Assets/Materials Management**				
Shared Service					
Name	**Facilities Management**				
Description	Defines the set of capabilities that support the construction, management and maintenance of facilities for an organization				
URL					
Service Level Agreement					
Service Provider					
SRM Service Type	**Assets/Materials Management**				
Shared Service					
Name	**Property / Asset Management**				
Description	Defines the set of capabilities that support the identification, planning and allocation of an organization's physical capital and resources				
URL					
Service Level Agreement					
Service Provider					
SRM Service Type	**Assets/Materials Management**				
Technology Layer					
Technology Standards					
Name	**Standing FAA Standards**				
Description					
URL	http://ato-p.se-apps.faa.gov/faastandards/				
TRM Service Standard					
SmartBuy Agreements					
Name					
Description					
URL					
Contact Name					
Contact e-mail					
TRM Service Category					
GOTS Product					
Name					
Description					
URL					
Contact Name					
Contact e-mail					
TRM Service Standard					

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