

# JPDO NextGen EA Briefing

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April 28, 2010

# Partners in the Next Generation Air Transportation System

*Joint Planning and Development Office*



- **Joint mission needs (capacity, security, defense, environment, safety, global harmonization) drive what we architect, engineer, resource, implement, and govern**
- **Today's architect requires a shift to Command, Control + Collaboration → Choices, Actions, Decisions**
- **All NextGen capabilities require information sharing via Net-Centric Operations**
- **Forge innovation through public/private/academic/research efforts**



# Need for Collaboration and Federation

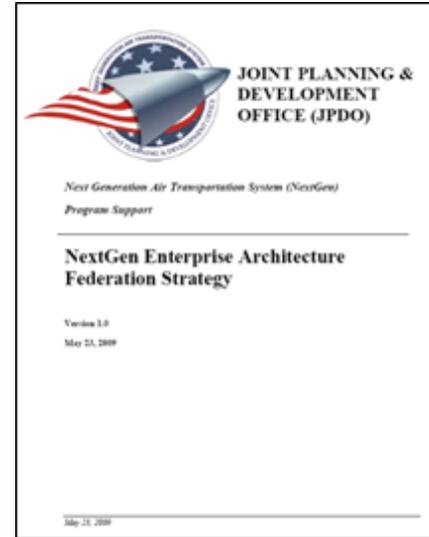
## No “Cookbook” Approach

- Work from core, shared principles, framework, taxonomy and ground work in reality – needs of users and decision-makers.
- Focus on interoperability less integration and support common discoverable services, just enough standards, clear roles and responsibilities, rules of engagement, accountability, decision-making, and innovation opportunities.
- Adequately characterize the degree of collaborative interdependence to understand interoperability requirements, develop appropriate architecture, and design strategies that meet those challenges.

# NextGen EA Federation Goals and Principles

## EA Federation Goals:

- Facilitate cooperative decision-making across the NextGen partner and stakeholder communities and a common understanding of NextGen
- Detail the full spectrum of NextGen concepts and capabilities described in the NextGen ConOps using architecture descriptions and information
- Provide NextGen partners and stakeholders with a well-managed standard body of knowledge that is timely, relevant, and accessible
- Increase the agility, reuse, and interoperability of partner agency assets by leveraging existing architecture descriptions and/or artifacts



## EA Federation Principles:

- Respect the diverse requirements of individual NextGen partner agencies and focus on the associations that cut across organizational boundaries, roles, and responsibilities
- Maximize the use of existing partner agency architecture descriptions and artifacts regardless of structure and format (i.e., not re-building architectures)
- Utilize a data-centric architecture approach rather than product-centric

**By creating a federated environment, the JPDO can conduct interagency analysis (i.e., gap/overlap analysis)**

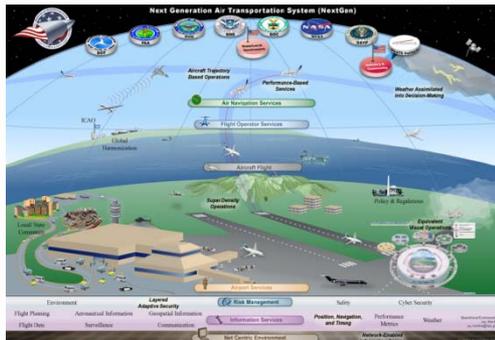
# What is the NextGen EA?

It is the JPDO's method and tool to decompose and describe:

- NextGen concepts and capabilities
- Target operational and system architectures
- Improvements and enabling solutions

But to achieve the transformation will require...

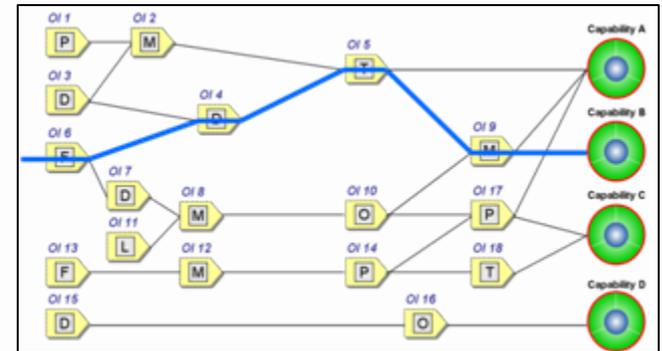
- New policies to create new behavior
- Modernization to prepare the infrastructure
- R&D to create new functionality



NextGen Concepts and Capabilities



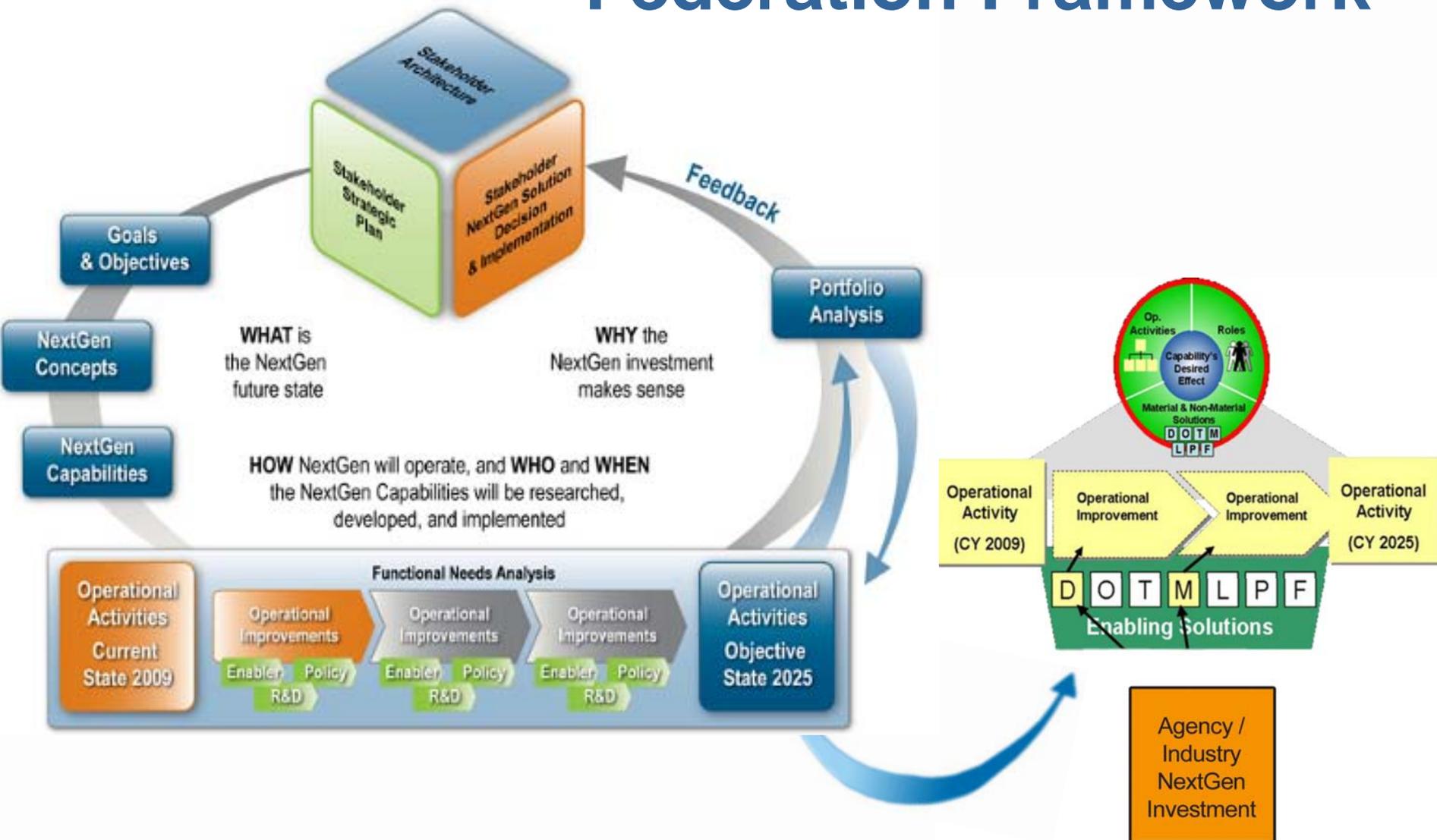
Target Operational and System Architectures



Operational Improvements and Enabling Solutions, Policies, and R&D

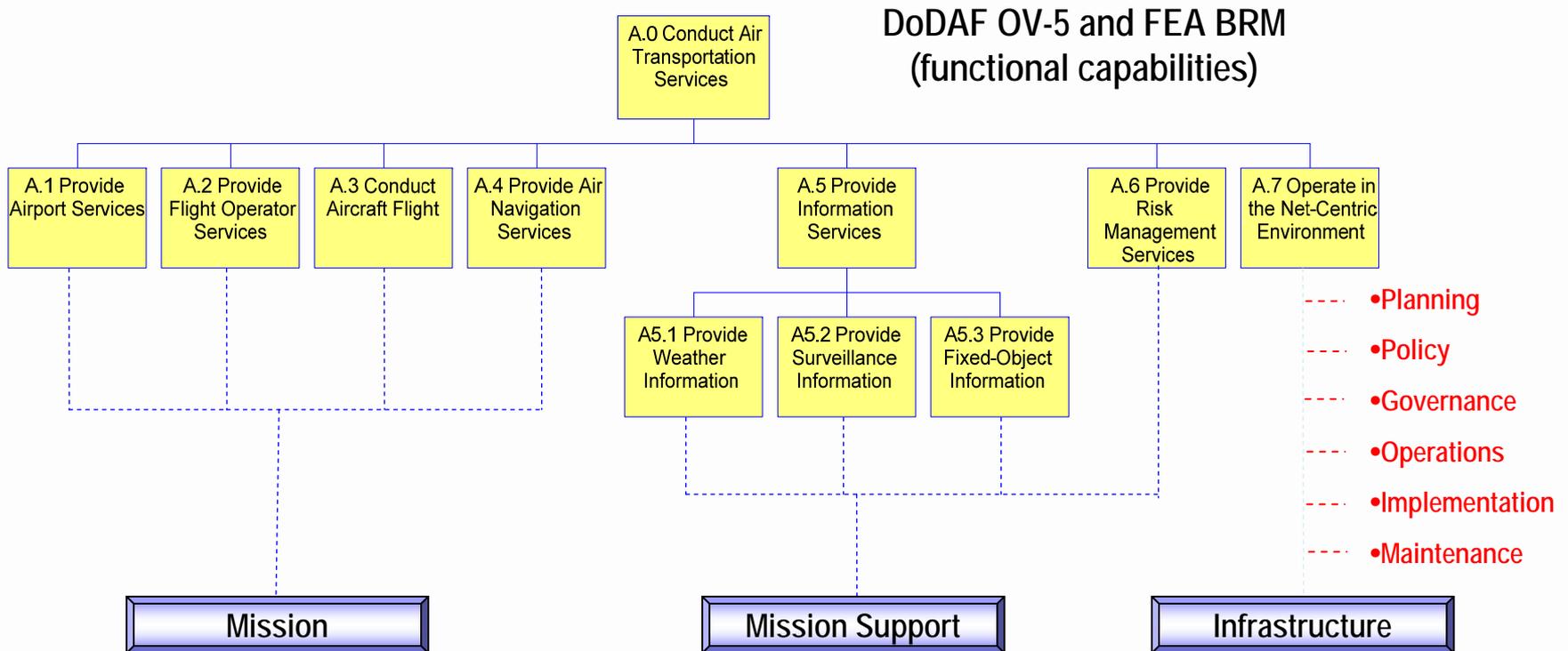
*The NextGen EA goal is to articulate the 'curb-to-curb' transformation of air transportation...*

# Federation Framework



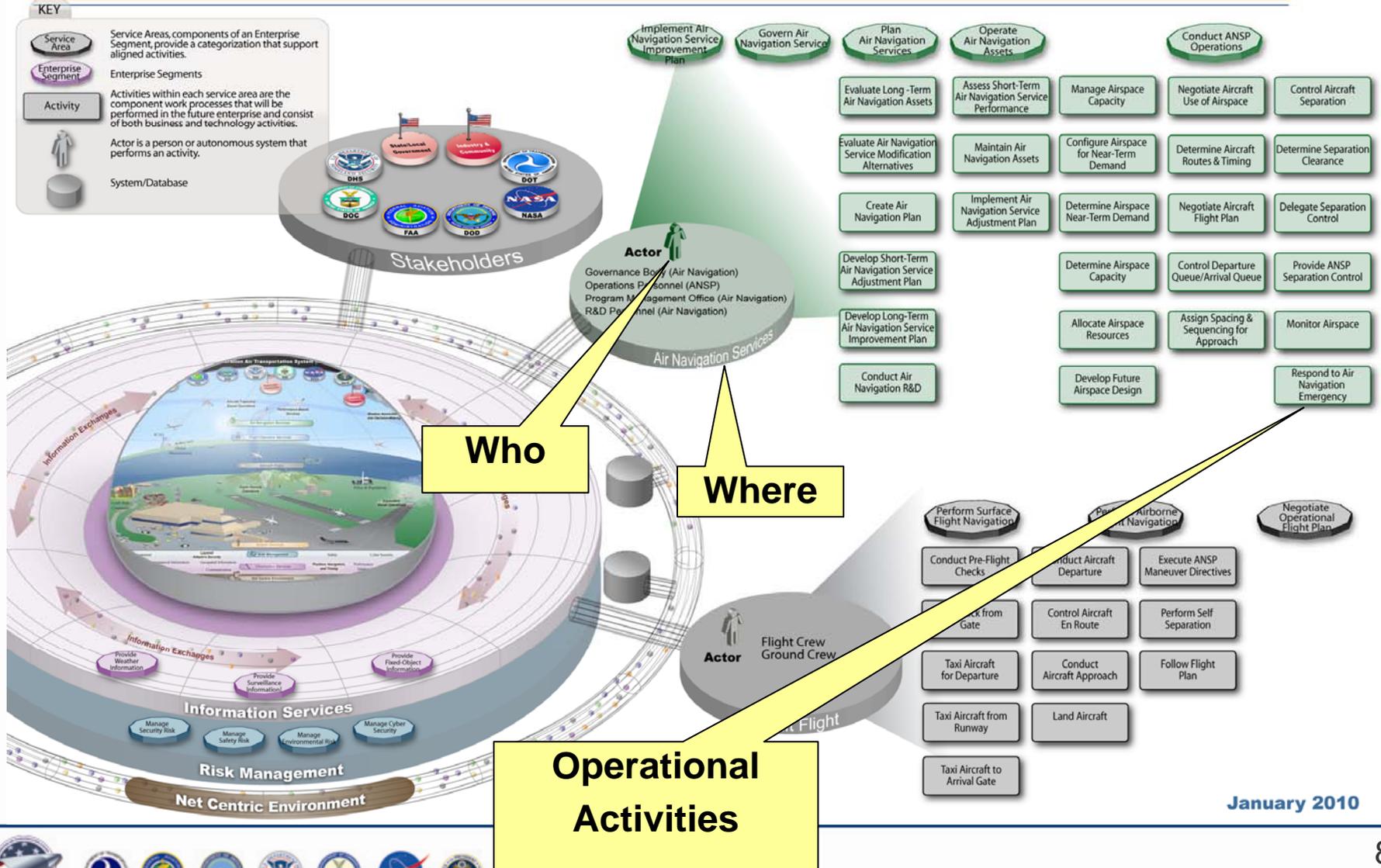
# How is the NextGen EA Organized?

The NextGen EA is operationally focused and organized around Mission Areas, Mission Support, and Infrastructure.



# Enterprise Architecture 2025

## NextGen Community Model View - Air Navigation Services and Aircraft Control



January 2010



# How is the NextGen EA Developed?

The NextGen EA's development methodology uses two industry frameworks (DoDAF and FEA) and is based on a collaborative, iterative approach, organized around capabilities that support the NextGen mission

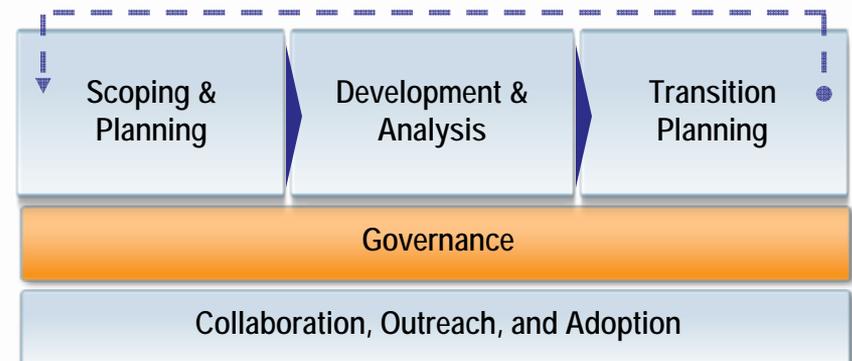
## 1. Iterative approach to developing and sustaining capability-based, mission segment architecture descriptions

- Define actionable plan for architecture development and integrated study team
- Develop and analyze a cohesive baseline and target architecture
- Develop transition plan aligned with the broader enterprise
- Translate outputs into terms decision-makers can act upon: implementation plan, business case, & briefings

## 2. End-to-end governance activities infused throughout

## 3. Continual collaboration, outreach, and adoption activities span the entire methodology

### Mission Segment/Capability Architecture Development Methodology



- Concept Development
- Operational Scenarios
- Use Cases
- Information Exchange Requirements
- Supporting EA Views (OV and SV)
- IWP assessment

## At the NextGen Enterprise Level...

### DoDAF 1.5 Views

- Architecture Overview and Summary (AV-1)
- Integrated Dictionary (AV-2)
- Community Model (OV-1)
- Operational Node Connectivity Description (OV-2)
- Operational Information Exchange Matrix (OV-3)
- Operational Activity Decomposition (OV-5a)
- Operational Activity Flows (OV-5b)
- System Node Connectivity Description (SV-1)
- System to System Matrix (SV-3)
- Agency-specific Cross Reference Table (New)
- Integrated Work Plan (Transition Plan)

### Data exists to create the following DoDAF 2.0 Viewpoints

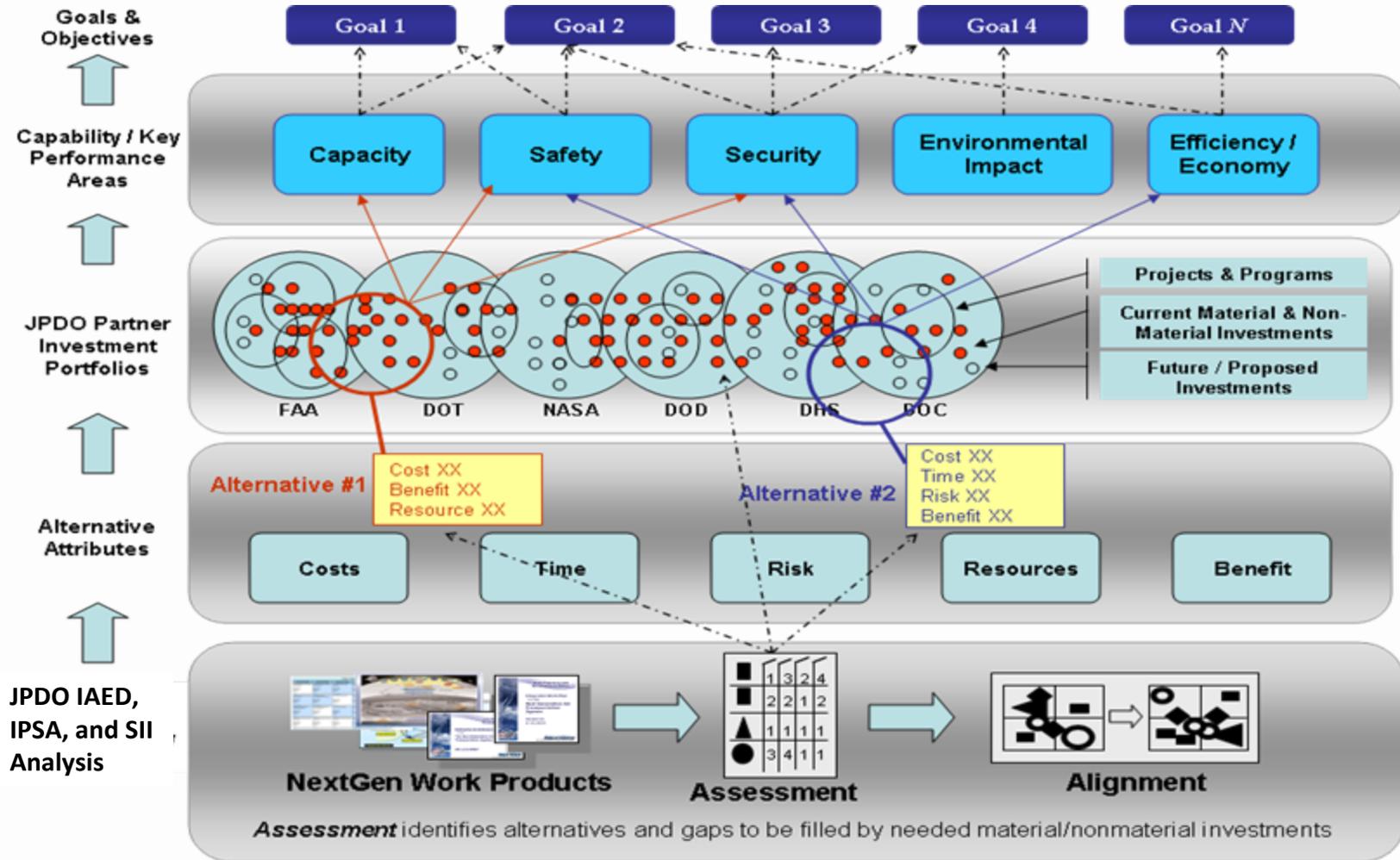
- Vision (CV-1)
- Capability Taxonomy (CV-2)
- Capability Phasing (CV-3)
- Capability Dependencies (CV-4)
- Capability to Organization Mapping (CV-5)
- Capability to Operational Activity (CV-6)
- Project Portfolio Relationships (PV-1)
- Project Timelines (PV-2)
- Project to Capability Mapping (PV-3)

And have the framework to capture the data to create other DoDAF 2.0 Viewpoints

## At the NextGen Mission Segment / Capability Level...

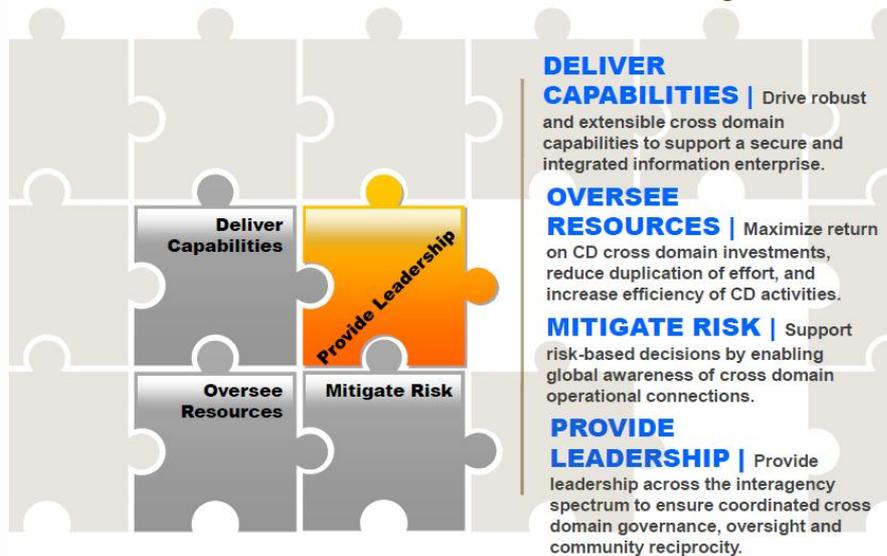
	<u>Weather</u>	<u>Int. Surv.</u>	<u>TBO Study</u>
• Operational Node Connectivity Description (OV-2).....	X	X	In Progress
• Operational Information Exchange Matrix (OV-3) .....	X	X	In Progress
• Operational Scenarios & Use Cases (OV-6c) .....	X	X	In Progress
• System Node Connectivity Description (SV-1) .....	X	X	To Update
• System to System Matrix.....	X	X	To Update
• System Function Descriptions (SV-4) .....	X	X	To Update

# Goal to Inform Decision-Making



# What Can We Expect More of In Future?

- More attention to organizational and social architecture (non-material reqs.) in addition to operational and systems architecture
- Pull the pieces together ... collaboration, integrated architecture and engineering efforts fused into interagency experimentation efforts (public/private, academia, R&D, tests, prototypes, demos, etc.)



## Fusion

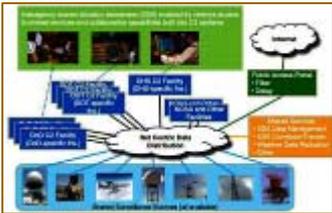


# Key Interagency Strategic Initiatives



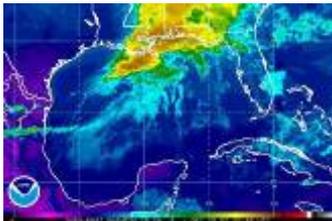
- **Integrated Surveillance**

- Draft Concept of Operations and Architecture analysis completed
- C2 Gap Filler multi-agency demonstration (DoD leadership) aligned
- Governance options being prepared for SPC decision



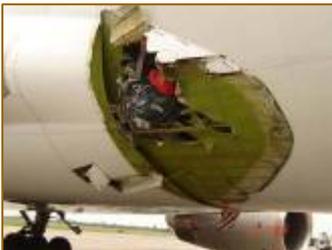
- **Net-Centric Operations Information Exchange**

- Multi-agency commitment to development
- DoD leadership established and planning underway



- **Aviation Weather**

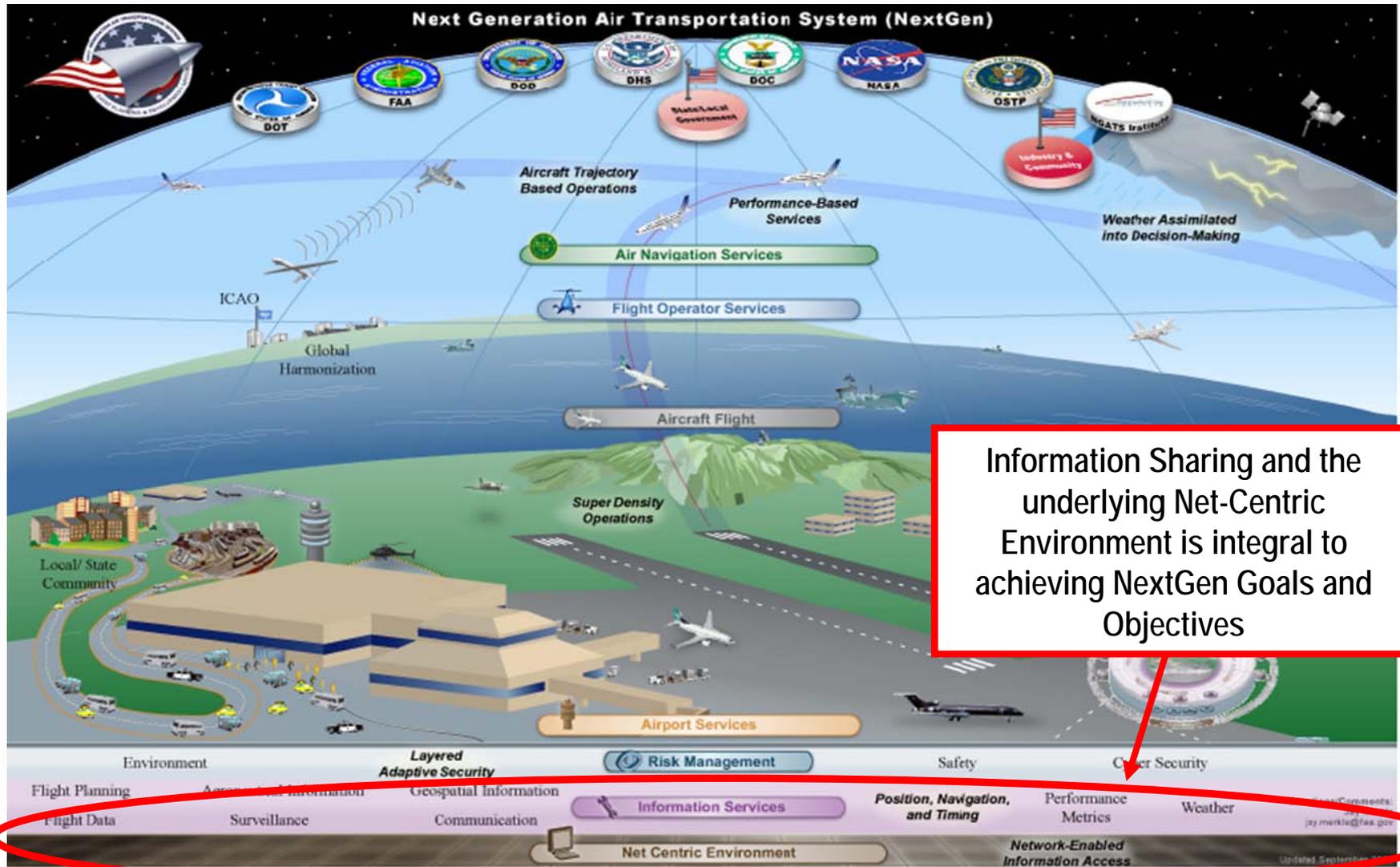
- Decision on Roles and Responsibilities (FAA, DOC, DoD)
- Detailed planning and implementation underway



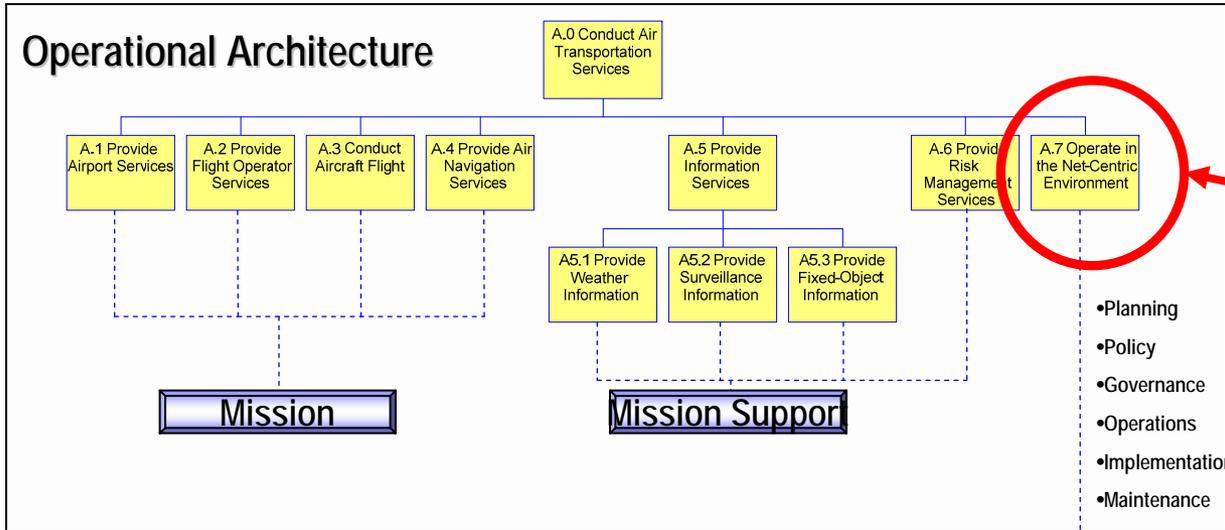
- **Aviation Safety**

- Common Safety Management System Standard and Information Sharing approved
- National Aviation Safety Strategic Plan prepared for SPC decision

# Federation Opportunity Net-Centricity in NextGen



# NextGen EA Net-Centric Focus



*The NextGen EA OV-5 is structured to include the extended taxonomy for how the NextGen Net-Centric environment will operate.*

**Information Architecture**  
Architectural descriptions of the conceptual, logical and physical NextGen Data Model, including the business rules for data exchange, message formats, file structures, and schemas.

**System / Service Architecture**  
Architectural descriptions of the systems and services, their functionality, the interfaces and interconnections, the resources being exchanged, the metrics, and how they will be implemented over time.

**Infrastructure / Technology Architecture**  
Architectural descriptions of the standards that apply to NextGen Net-centric Operations, as well as emerging standards and their potential impact.

*The existing NextGen EA views can be further decomposed, or new views can be created, to ensure Net-centric capabilities are properly reflected.*

**Thank you!**

**Questions?**