APPENDIX VII

GLOSSARY

Appendix VII provides a glossary of the Next Generation Air Transportation System (NextGen) terms used within the Integrated Work Plan (IWP). The glossary is arranged in alphabetical order according to the term.

Glossary of Terms for the NextGen Integrated Work Plan

Term	Definition
Air Carrier	Operational users of NextGen that includes commercial passenger or cargo airlines, military air commands, business aviation, and private air vehicle operators.
Air Navigation Service Provider (ANSP)	The organization, personnel, and automation that provide separation assurance, traffic management, infrastructure management, meteorological & aeronautical information, navigation, surveillance services, clearances, airspace management, and aviation assistance services for airspace users.
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.
Airborne Self-Separation	The process by which equipped aircraft maintain separation from all other aircraft, including those managed by the ANSP, within an airspace according to defined rules and separation criteria. The process requires specific ANSP authorization and does not require them to provide separation services to those authorized aircrafts.
Airborne Separation	The process of spacing delegated aircraft from other aircraft (i.e., in flight, on approach, or departure) visually, vertically, longitudinally, and/or laterally.
Airborne Spacing	The distance minima between two aircraft conducting airborne separation. The ANSP is responsible for the aircrafts' delegated separation.
Aircraft	Any machine that is able to fly though the Earth's atmosphere or through any other atmosphere supported by the surrounding air. Aircraft include fixed-wing structures, rotorcrafts, lighter-than-air vehicles, and propulsion vehicles.
Airport	A defined area (including any buildings, installations, and equipment) on land or water intended, either wholly or in part, to be used for the arrival, departure, and surface movement of aircraft.
Airspace Design	The process of designing routes, fixes, sectors, and other structural/operational elements of the National Airspace System (NAS) while ensuring safety, security, and efficiency.
Area Navigation (RNAV) Operations	Aircraft operations that provide more direct routing between the departure and arrival airports. RNAV Operations remove the requirement for a direct link between an aircraft and a navigational aid. Waypoints are developed for the aircraft to navigate by using bearing and distance information from nearby navigational aids.
Area Navigation (RNAV)	A method of navigation that permits aircraft operation on any desired flight path within the coverage of station-referenced navigation aids, within the limits of the capability of self-contained aids, or a combination of these.
Arrival/Departure Airspace	Airspace classified as from the top of climb or descent to the airport surface. It does not include those arrival and departure corridors that are not in current use; however, it does extend to en-route altitudes.

Term	Definition
Automated Virtual Tower (AVT)	A facility where sequencing services and basic airport information are provided without the use of ANSP personnel. This is a more enhanced level of service than that which was typical with non-towered airports in 2006.
Automatic Dependent Surveillance-Broadcast (ADS-B)	A satellite-based technology that consists of two components: (1) ADS-B in and (2) ADS-B out. An aircraft equipped with the ADS-B out function determines its own position using a Global Navigation Satellite System (GNSS) and continuously broadcasts this position and other relevant information to ground stations and other aircraft equipped with ADS-B in.
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.
Capacity	The maximum number of aircraft that can be accommodated in a given time period by the system or one of its components.
Capacity Management	The long-term and short-term management and assignment of airspace and routes to meet expected demand. This includes assigning related NAS assets, as well as, coordinating longer term staffing plans for airspace assignments; additionally, allocating airspace to airspace classifications based on demand, as well as, airspace and routes to ANSP personnel to manage workload.
Collaborative Air Traffic Management (CATM)	The collaborative process among the ANSP, flight operators, airport operators, and other stakeholders, to perform capacity management, flow contingency management, and trajectory management objectives. CATM is the means by which flight operator objectives and constraints are balanced with overall NAS performance objectives.
Common Automated Radar Terminal System (CARTS)	A system that provides real-time support for surveillance/tracking, controller data entry, and displays aircraft separation assistance (safety functions, flight plan processing, data recording, external data publishing, and system monitoring, and control functions) to air traffic controllers at terminal operating environment.
Complexity	A description of traffic demand levels that factors large numbers of vertically transitioning aircraft, aircraft crossing paths, and aircraft speed variations.
Conflict	Any situation involving an aircraft and a hazard where the designated separation minima may be compromised.
Constraint	Any limitation on the implementation of an operational improvement, or reaching a 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.
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's participation.

Term	Definition
Delegated Separation	The transfer of responsibility for maintaining separation between aircraft or vehicles from ANSP to relevant flight or vector operator. Scope may vary with context. For example, an ANSP could delegate separation responsibilities to an operator for a specific maneuver relative to a specific aircraft
Demand	The number of aircraft requesting to use the Air Traffic Management (ATM) system in a given time period.
Departure Spacing Program (DSP)	Once called the Departure Sequencing Program. This program evaluates aircraft departure flight plans at participating airports. The models project aircraft demand at departure resources, such as first and second departure fixes, and provides windows of departure times to controllers. It displays current and predicted fixes and provides windows of departure times to controllers.
Environmental Management System (EMS)	An organizational business process that 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 are 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.
Flight Crew	The individual or group of individuals responsible for the control of an individual aircraft while it is moving on the surface or 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.
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.
Flight Plan	Specified information relating to the intended flight of an aircraft that is filed electronically, orally, or in writing with an ANSP facility.
Flight Planning	A series of activities preformed before a flight that includes, but is not limited to, reviewing airspace and navigation restrictions, developing the route, obtaining a weather briefing, completing a navigation log, filing a flight plan, and inspecting the aircraft.

Term	Definition
Flow Contingency Management	The process that identifies potential flow problems, such as large demand capacity imbalances, congestion, a 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 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 it 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 Analysis Services	This capability 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.
Four-Dimensional Trajectory (4DT)	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.
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, nonscheduled cargo jet flights.
Hazards	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.
Human Factors	The discipline concerned with the understanding of interactions among humans and other elements of a system. It applies theory, principles, data, and other scientific methods to system design to optimize human well-being and overall system performance.
Information Services	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 Services	Provides communications connectivity to ensure information flows work reliably to support information communications and sharing functions.

Term	Definition
Intent	The projected aircraft position, 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.
Layered Adaptive Security	The security system will be constructed in "layers of defense" to detect threats early while minimally affecting efficient operations. Airports and aircrafts 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.
Metroplex	A group of two or more adjacent airports whose arrival and departure operations are highly interdependent.
Microprocessor Enroute Automated Radar Tracking System (MEARTS)	A radar processing system implemented with commercial off-the-shelf equipment for use in both Enroute and Terminal environments. It provides single sensor and mosaic display of traffic and weather using long- and short-term radars.
NAS Voice Switch (NVS)	The National Airspace System (NAS) Voice Switch (NVS) program will replace legacy voice switches in Enroute and Terminal domains. NVS will incorporate a networking capability to enable voice switch to connect to extended resources for air-to-ground communications. The NVS supports air traffic control (ATC) operational ground-to-ground voice communications interconnectivity between controllers within ATC facilities for "intercom" communications.
Net-Centricity	A robust globally interconnected network environment, in the context of aviation transportation, in which information is shared in a timely and consistent manner among users, applications, and platforms.
Net-Enabled Infrastructure (NEI)	An information network where information is available, securable, and usable in real time and is distributed to decision makers. Information may be available to known users or also available to other users, including those not previously identified as having a need for the information.
Network Enabled Operations (NEO)	The decision support and other applications using NEI for information transfer and retrieval.

Term	Definition
Oceanic Airspace	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.
Optimized Profile Descent	An arrival where an aircraft is cleared to descend from cruise altitude to final approach using the most economical power settings at all times. Also known as Continuous Descent Arrival.
Paired Approach	A maneuver used to land two aircraft on parallel runways at nearly the same time ("side-by-side"). Paired approaches facilitate runway efficiency while minimizing wake turbulence concerns, but separation assurance must be carefully managed.
Pair-Wise Maneuver	A maneuver where movements of one aircraft is in relatively close proximity to that of another, from the perspective of separation assurance. Examples include: crossing another aircraft's trajectory, or passing in a parallel fashion. This proximity could be horizontal or vertical.
Performance-Based Navigation	RNAV system performance requirements for aircraft operating along an ATS route, on an instrument approach procedure, or in an 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, and so forth. 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, and other considerations. The performance-based approach is used to analyze risks (e.g., safety, security, and environment) 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.
Positioning , Navigation, and Timing (PNT) Services	A service that enables the ability to accurately and precisely determine one's current location and orientation in relation to one's 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.

Term	Definition
Required Navigation Performance (RNP)	A statement of the navigation performance accuracy necessary for operation within a defined airspace. RNP Operations introduce the requirement for on-board navigational performance monitoring and alerting.
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.
Safety Assurance	The independent oversight function that tests, evaluates, and certifies, as necessary, products and processes to ensure that they are safe for the public and stakeholders.
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.
Self Separation	A mode of operation in which an aircraft or vehicle operator is responsible for maintaining separations from all other traffic. It is most often associated with Self-Separation Airspace, but it may apply to other contexts in a more limited sense (for example, self-separation within a formation).
Self-Separation Airspace	Airspace in which each aircraft's operator is responsible for maintaining separation from all other traffic within the airspace.
Separation Management	The management function to ensure aircrafts or vehicles maintain a 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.
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). The Organization for the Advancement of Structured Information Standards (OASIS) 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.*"
Shared Situational Awareness (SSA)	The sharing of information among the processes and applications that constitute the information services function to the stakeholders in the system.
Situational Awareness	Refers to a service provider or operator's ability to identify, process, and comprehend important information about what is happening with regard to the operation of an aircraft within the NAS. Airborne traffic situational awareness is an aspect of overall situational awareness for the flight crew of an aircraft operating in proximity to other aircraft.

Term	Definition
Special Use Airspace (SUA)	A volume of airspace where certain aircraft must be restricted from transiting that airspace. May be defined for Alert Areas, Controlled Firing Areas, Military Operations Areas (MOAs), Prohibited Areas, Restricted Areas, or Warning Areas.
Stakeholders	All entities that have a vested interest in ensuring the safest and most efficient operation of 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 Terminal Automation Replacement System (STARS)	A digital radar/flight data processing and display system for use by terminal air traffic controllers. Controllers use STARS to ensure the safe separation of military and civilian aircraft throughout the nation's airspace.
Surveillance Services	This service integrates cooperative and noncooperative airport surface and airspace surveillance systems, fostering real-time air and airport situational awareness and enhancing safety and security.
System-Wide Information Management (SWIM)	SWIM provides for NAS-wide transport and sharing of information between the FAA systems and all NextGen users. It is a uniform single point of entry for all Communities of Interest to publish and subscribe to NAS services and data.
Tower Data Link Services (TDLS)	TDLS automates tower-generated information for transmission to aircraft via data link. TDLS interfaces with sources of local weather data and flight data and provides pilots with Pre-Departure Clearance, Digital-Automatic Terminal information System (D-ATIS), and emulated Flight Data Input/Output (FDIO).
Traffic Management Advisor (TMA)	TMA computes flight arrival sequencing, Scheduled Time of Arrival and Estimated Time of Arrival at various points along the aircraft flight path to an airport. In response to changing events and controller inputs, TMA provides results to the Enroute sector team to maintain optimum flow rates to runways. TMA also maintains statistics on the traffic flow and the efficiently of the airport and displays them to the Traffic management Specialists.
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 (TBO)	The use of 4D trajectories as the basis for planning and executing all flight operations supported by the air navigation service provider.
Transition Airspace	Airspace that allows aircraft to transition from one classification of airspace to another while maintaining separation from other airspace and aircraft entering and exiting adjacent airspace.
Unmanned Aircraft System (UAS)	A aircraft flown without a pilot-in-command or onboard and is either remotely or fully controlled from another place (ground, another aircraft, space) or programmed and fully autonomous. The UAS includes the pilotless vehicle, control system, and operator.

Term	Definition
Virtual Tower	A facility that provides surface and tower services without the requirement for ANSP personnel providing direct visual observation. Virtual towers may be automated or staffed.
Weather Information Services	A common service providing the following generic capabilities: sensor configuration, observation, forecast, and history.