NextGen Glossary of Terms

4-Dimensional (4-D)
Four dimensional activities, with the fourth dimension being time. 4-D denotes the three spatial dimensions plus a required time of arrival over the threshold.

Automatic Dependent Surveillance – Broadcast (ADS-B)
ADS-B uses the GPS (Global Positioning System) to broadcast the position and intent of the aircraft. It then automatically transmits this information — with more precision than radar — to air traffic controllers and pilots. Through more accurate surveillance, ADS-B will allow for more efficient separation of planes. In the cockpit, pilots will also have access to information on weather, traffic and flight restrictions.

Atlantic Interoperability Initiative to Reduce Emissions (AIRE)
AIRE pairs U.S. and European airline partners in the testing of NextGen procedures, such as tailored arrivals, optimized profile descents and oceanic trajectory-based operations. These procedures will save time and fuel, and reduce emissions.

Airport Surface Detection Equipment – Model X (ASDE-X)
ASDE-X is a radar-based safety tool that depicts the position and identification of aircraft and equipped ground vehicles on the airport movement area, as well as that of aircraft flying within five miles of the airport. Air traffic controllers in the tower see this information presented as a color display of aircraft and vehicle positions overlaid on a map of the airport's runways, taxiways and surface approach corridors. The system creates a continuously updated map of the airport surface movement area that helps controllers spot potential conflicts. ASDE-X is especially helpful to controllers at night or in bad weather when visibility is poor, and will help reduce runway incursions and other operational errors on the airport surface.

Air Traffic Management (ATM)
The mission of ATM is to balance air traffic demand with system capacity to ensure the most efficient utilization of the NAS. A safe, orderly, and expeditious flow of traffic — which minimizes delays — is fostered through the continual analysis, coordination, and dynamic utilization of traffic management tools, initiatives and programs."

Aviation Safety Information Analysis and Sharing (ASIAS)
ASIAS is an Aviation Safety organization program under which data collected from across industry and throughout government is examined in order to identify trends that could impact aviation safety.

Advanced Technologies & Oceanic Procedures (**ATOP)**
ATOP provides a fully modernized oceanic air traffic control automation system that allows users to take further advantage of investments made in cockpit digital communications. ATOP significantly reduces the intensive manual processes that today limit the ability of air traffic controllers to safely provide operators with efficient tracks or altitudes over long oceanic routes. The system allows the FAA to meet international commitments of reducing aircraft separation standards, thereby dramatically increasing capacity and efficiency for our customers.

Collaborative Air Traffic Managemetn (CATM)
CATM is a process under which major demand and capacity imbalances will be corrected collaboratively between the FAA air traffic managers and flight operators.

Cockpit Display of Traffic Information (CDTI)
A cockpit-mounted display that works in conjunction with Traffic Information Service-Broadcast (TIS-B), an application of ADS-B, to provide a complete picture of the air traffic in a 15-mile radius around the aircraft.

Continuous Low Energy, Emissions, and Noise (CLEEN)
CLEEN is a FAA-sponsored initiative aimed at accelerating technological development aimed at reducing aviation's environmental impacts. The Program establishes a consortium to develop and demonstrate certifiable aircraft and engine technologies that reduce noise and emissions and increase fuel efficiency. The Program also advances sustainable alternative aviation fuels.

Continuous Descent Arrival
A CDA is a form of an Optimal Profile Descent (See also Optimal Profile Descent).

Concept of Operations (ConOps)
The ConOps describes how NextGen will work in 2025, and what it will look like from various stakeholders' perspectives. The ConOps is critically important in developing the structure, policy and procedures necessary to make NextGen a reality.

Closely Spaced Parallel Operations (CSPO)
Significant capacity and efficiency are lost when poor weather conditions limit operations on parallel runways spaced closer than 4,300 feet. The FAA seeks to remedy this constraint using a combination of revised standards and new technologies.

Data Communications (Data Comm)
Data Comm is a digital data communications system which will provide comprehensive data connectivity, including ground automation message generation and receipt, message routing and transmission, and aircraft avionics requirements. Data Comm will automate repetitive tasks, supplement voice communications with less workload-intensive data communications, and enable ground systems to use real-time aircraft data to improve traffic management efficiency.

Distance Measuring Equipment (DME)
DME is used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid.

Electronic Flight Bag (EFB)
The EFB is an electronic information management device that helps flight crews perform required flight management tasks more easily and efficiently, with less paper. EFB is a general purpose computing platform intended to reduce, or replace, paper-based reference material often found in the Pilot's carry-on Flight Bag, including the Aircraft Operating Manual, Aircrew Operating Manual, and Navigational Charts (including moving map for air and ground operations). In addition, the EFB can host purpose-built software applications to automate other functions normally conducted by hand, such as performance take-off calculations.

Enhanced Flight Vision System (EFVS)
EFVS uses an aircraft-mounted infrared camera or radar to collect real-time terrain information. That data is then combined with database information to create a virtual landscape of the aircraft's surroundings.

Environmental Management System (EMS)
An EMS is a proactive systematic approach used by organizations to manage and improve the potential environmental consequences of their operations. EMS will integrate environmental protection and related energy objectives into the core business and operational strategies of NextGen to achieve improvements.

En Route Automation Modernization (ERAM)
ERAM is the air traffic control automation system used by en route controllers to monitor aircraft position, separation, and predicted flight path. ERAM performs surveillance data processing for en route airspace and flight data processing, as well as distribution for both en route and terminal airspaces, including the track and trajectory predictions used to generate safety alerts. ERAM further performs aircraft-specific route eligibility checking and trajectory calculation to determine automated handoffs and flight data distribution, as well as to detect strategic conflicts with the predicted flight path. ERAM has been designed as a scalable system capable of incorporating future NextGen functionality.

Future Air Navigation System (FANS)
FANS is an avionics system which provides direct data link communication between the pilot and the air traffic controller. The communications include air traffic control clearances, pilot requests and position reporting.

Far-Term
The NextGen integration and implementation period defined as 2019 and beyond.

Flight Information Service – Broadcast (FIS-B)
An application of ADS-B that enhances pilots' knowledge of where they are in relation to potentially dangerous weather and gives them information that is critical to their flight path. FIS-B broadcasts graphical weather displays from the National Weather Service and flight information from FAA NOTAMs, such as temporary flight restrictions and special use airspace, on the cockpit display (See also ADS-B).

Flight Data Object (FDO)
Flight Data Object. The Flight Data Object is intended as the future medium for capturing and sharing the most up-to-date information on any flight. The Flight Data Object is the single common reference for all system information about a flight. A Flight Data Object instance is created for each proposed flight. The airline operator or pilot provides a request for service that includes a declaration of the flight's capabilities, what the aircraft operator intends to do, and the operator's preferences and constraints to be considered if changes are imposed on the plan. The Flight Data Object information is updated as the flight progresses from gate to gate.

Flight Management System (FMS)
FMS is an electronic avionics system that performs a host of aircraft functions including management of navigation of the flight. It can contain the flight plan, which the pilot can modify while in flight. Using various sensors to determine the aircraft's position, the FMS guides the aircraft along the flight plan under a pilot's direction.

Ground Based Augmentation System (GBAS)
GBAS is a global positioning system that provides precise navigation in the terminal area and landing in zero visibility conditions. Ground based augmentation systems are commonly composed of four or more GPS monitoring stations, which take measurements concerning the Global Navigation Satellite System (see below), and one or more radio transmitters, which transmit the information directly to the end user.

GBAS Landing System (GLS)
GLS provides GPS correction data and navigational landing data to all aircraft entering a landing pattern within a thirty (30) mile radius of the GBAS Reference Stations (RSs). The GBAS transmits these data via a VHF Data Broadcast to local aircraft, allowing an aircraft to determine its position to within two meters, and to land with repeatable predictability at a predetermined location on the target runway under Category I instrument landing conditions (See also GBAS).

Global Navigation Satellite System (GNSS)
Global Navigation Satellite System. A term used by the International Civil Aviation Organization for a satellite-based navigation system or augmentation system used to determine a user's precise position for navigation services. There are standalone satellite constellations such as the U.S. GPS and Russian GLONASS, and augmentation systems that improve the basic services.

Global Positioning System (GPS)
A Global Navigation Satellite System (see GNSS above) developed by the United States Department of Defense. It is the only fully functional GNSS in the world.

Guidance Display
An ADS-B enabled capability that provides relative guidance, predominantly based on speed control, to maintain a given spacing from a selected target —such as another aircraft (See also Automatic Dependent Surveillance - Broadcast).

Instrument Landing System (ILS)
A ground-based radio aid that allows an instrument approach to a runway by providing precision guidance to an approaching aircraft, using radio signals to enable a safe landing during instrument meteorological conditions (IMC), such as low ceilings or reduced visibility due to fog, rain, or blowing snow.

Integrated Surface Data
Transfers data from ASDE-X to the Traffic Flow Management System, providing improved traffic predictions (See also Airport Surface Detection Equipment – Model X).

Mid-Term
The NextGen integration and implementation period defined as 2013-2018.

National Airspace System (NAS)
The U.S. NAS is one of the most complex aviation systems in the world — consisting of thousands of people, procedures, facilities, and pieces of equipment — that enables safe and expeditious air travel in the United States and over large portions of the world's oceans.

NAS Enterprise Architecture (NASEA)
The NAS Enterprise Architecture is updated annually, and includes a database of architecture views and products which the FAA uses to manage the evolution of the NAS portfolio of systems from the "As Is" to the "To Be" architecture. The NAS Enterprise Architecture includes a set of transition roadmaps that describe the FAA's time based plan for evolving our existing portfolio to the target architecture. It is a planning document published by the FAA outlining all of its current and future modernization and replacement projects. The NAS Enterprise Architecture captures and links existing and planned projects and programs to future benefits for the stakeholder community that will realized with NextGen.

NAS Voice Switch (NVS)
The NAS Voice Switch will replace the 17 different voice switches in use in the NAS today with one common platform that provides the foundation for all air/ground and ground/ground voice communications in the future air traffic control environment. It will allow the FAA to achieve voice switching modernization objectives, such as a network-based infrastructure, and evolve toward a flexible communications routing architecture that supports dynamic re-sectorization, resource reallocation, airspace redesign and NextGen.

Near-Term
The NextGen integration and implementation period defined as 2009-2012.

NextGen Network Enabled Weather (NNEW)
NNEW will define and provide the FAA's portion of the interagency infrastructure known as the 4-Dimensional Weather Data Cube (4-D (W) Data Cube). The 4-D (W) Data Cube will provide common, universal access to aviation weather data. All categories of weather users will have improved access to timely and accurate weather information to support improved decision making while enhancing safety. A subset of the data published to the 4-D (W) Data Cube will be designated the 4-D Weather Single Authoritative Source (SAS). The SAS is that data that must be consistent (only one answer) to support collaborative (more than one decision maker) air traffic management decisions, e.g., the capability to support retrieval requests for data along a flight trajectory.

NextGen Weather Processer (NWP)
NWP is planned to be a distributed capability, providing weather data generation where needed. It is the initial implementation of the consolidated weather processing required to support advanced automated forecast capabilities. The NWP WP1 will not only subsume the functionality of the Weather and Radar Processor (WARP) system and the Corridor Integrated Weather System (CIWS) but, together with NNEW, will ingest additional data sets to include surface-, airborne-, and space-based data to meet the expanded weather requirements of NextGen. These advanced weather capabilities will be integrated into decision support tools for the NAS. The initial operating capability of NWP WP1 is anticipated in FY2013.

Optimal Profile Descent (OPD)
An umbrella term for environmentally-friendly and energy-efficient aircraft arrival procedures aimed at improving operations while reducing fuel consumption, engine emissions, and noise — all with minimal impact to operations. An OPD procedure keeps an arriving aircraft at its most operationally efficient cruise altitude as long as possible before beginning a smooth, continuous descent to its final destination without the need for changes in thrust.

Area Navigation/Required Navigation Performance (RNAV/RNP)
Area Navigation (RNAV) enables aircraft to fly on any desired flight path within the coverage of ground- or spaced-based navigation aids. As such, RNAV-equipped aircraft have better access and flexibility for point-to-point operations. With the addition of Required Navigation Performance (RNP) avionics, the aircraft's navigation system is also able to evaluate how well it is maintaining position and can alert the crew if there is a significant deviation from the intended flight path. RNAV- and RNP-equipped aircraft can safely fly around obstacles when visibility is reduced. Because we are assured they will maintain their exact position on a flight path, we can also space these aircraft closer together, an important capability for increasing capacity in NextGen.

Runway Visual Range (RVR)
RVR is a system that measures visibility, background luminance, and runway light intensity in order to determine the distance a pilot should be able to see down the runway. RVRs support increased landing capacity at existing airports and support new airport construction.

Space Based Augmentation System (SBAS)
SBAS is an ICAO term for GNSS augmentation systems that transmit signals from a geostationary satellite.

Safety Management System (SMS)
The systematic collection, cataloguing, and analysis of accident and aviation safety data, no matter how seemingly insignificant, to identify potential relationships and trends related to aviation safety.

Solution Set
A solution set is a group of capabilities designed to improve a specific segment of the National Airspace System. There are seven NextGen solution sets: initiate trajectory-based operations; arrivals/departures at high-density airports; flexibility in the terminal environment; collaborative air traffic management; weather impact; safety, security and environmental performance; and transformation of facilities.

Surface Moving Maps
A flight deck display that provides a constantly changing view of an airport's runways, taxiways and structures to help pilots identify and anticipate the airplane's location on the surface. Global Positioning Satellite technology and ASDE-X makes it possible for the moving map to show pilots their actual position (own aircraft) on the airport surface. (See also Global Positioning System, Electronic Flight Bag and Airport Surface Detection Equipment – Model X)

Surveillance
Surveillance is the monitoring of behavior. In aviation, that means monitoring all aspects of an aircraft in flight, including position, altitude, heading, and speed.

System Wide Information Management (SWIM)
System Wide Information Management provides the infrastructure and services to deliver network-enabled information access across the NextGen air transportation operations.
SWIM will provide an open, flexible, and secure information management architecture for sharing NAS advisory data and enabling increased common situational awareness and improved NAS agility. Further, SWIM will provide policies and standards to support data management, along with the mechanisms for the core services needed to publish data to the network, retrieve it, secure its integrity, and control its access and use. And it will use commercial off-the-shelf hardware and software to support a loosely coupled service-oriented architecture that allows for easier addition of new systems and connections.

Trajectory Based Operations (TBO)
Flight operations which are based on negotiated trajectories.

Traffic Collision and Avoidance System (TCAS)
An electronic system designed to reduce the incidence of mid-air collisions between aircraft. TCAS monitors the immediate airspace around an aircraft for other aircraft equipped with a corresponding active transponder, and independent of air traffic control, TCAS warns pilots of the presence of other transponder-equipped aircraft which may present a threat of mid-air collision.

Traffic Information Service – Broadcast (TIS-B)
A service which provides ADS-B equipped aircraft with position reports from secondary surveillance radar on non-ADS-B equipped aircraft. (See also Automatic Dependent Surveillance – Broadcast)

Traffic Management Advisor (TMA)
Traffic Management Advisor helps air traffic managers and controllers sequence aircraft through high altitude airspace and into the airspace around major airports by calculating their precise routes as well as the minimum safe distances between aircraft. TMA calculates meter fix times and delays and assigns meter fix/arc crossing times to aircraft to manage airport arrival demand.

Vertical Navigation (VNAV)
VNAV is an autopilot function which directs vertical movement of aircraft either according to pre-programmed FMS flight plan during cruise or according to ILS glideslope during approach. (See also Flight Management System and Instrument Landing System)

Wide Area Augmentation System with Localizer Performance Vertical Approach (WAAS LPV)
WAAS LPV approaches use GPS to guide properly equipped aircraft to runways, particularly in lower visibility conditions. Without this ability, aircraft might otherwise have to divert to other airports because of prevailing weather conditions. Unlike systems typically used at large airports, WAAS does not require additional costly ground infrastructure; the capability resides solely in the aircraft. There are currently 1,433 published WAAS LPV approaches at 833 airports across the United States. FAA plans to publish 500 additional LPV approaches in FY2009. (See also Global Positioning System)