



The Next Generation Air Transportation System

The Next Generation Air Transportation System, NextGen, is an umbrella term for the ongoing, wide-ranging evolution of the United States' national airspace system. NextGen is not a single piece of equipment or a program or a system that will instantaneously transform the NAS. Rather, it is a portfolio of changes to systems, procedures, airspace, and airfields that allow us to improve operations across every phase of flight.

At its most basic level, NextGen transforms how we communicate, navigate and provide surveillance. These core improvements derive from aviation-specific applications of widely-used technologies that are similarly transforming our personal and professional lives, such as GPS, digital communications, and network-to-network data sharing. In addition to the new tools and procedures these improvements will enable, NextGen also includes airfield improvements at key locations across the country. Taken together, NextGen's comprehensive portfolio will increase safety and operational efficiency, improve aviation's environmental performance, and support future air traffic growth.

FAA's NextGen Implementation Plan describes the operational changes we aim to implement over the next 10 years. It shows how systems we're installing today—ERAM and ASDE-X, for example—will combine with the core transformational programs, like System Wide Information Management (SWIM) and Data Communications, to support these changes. It takes an initial look at the degree of benefits we expect from early NextGen implementation, and starts a dialogue with the aviation community

about the avionics equipment that may be required to complement systems on the ground. FAA's NAS Enterprise Architecture provides the technical details and decision milestones behind the evolution. Both are available online on FAA's NextGen Web site.

NextGen has been characterized by Congressional leaders as "a systems engineering, management, and regulatory challenge as complex as any the nation has ever faced." Much research, development and testing remain to be done to prove the feasibility and value of the operational capabilities defined in the Plan, and the agency has been given the green light to aggressively pursue this work. NextGen is fully supported by Congress. We received more than \$600 million for fiscal year 2009, and the President's fiscal year 2010 budget proposes \$800 million for the effort. Transportation Secretary Ray LaHood said that "civil aviation is one of the most critical components of our economy and it needs to be a part of our economic recovery. You're going to see some dramatic movements in the area of NextGen."

NextGen's success depends on the participation of a highly-trained workforce with the technical and operational expertise and the business acumen to continue to deliver complex programs on time and on budget. Everyone who works in the system—researchers, engineers, program managers, policy makers, pilots, controllers, dispatchers and technicians—each and every discipline has a role and a stake in NextGen. NextGen offers tremendous career opportunities for those who want to lead this chapter in aviation history.

NextGen on the Web

Public Web site: www.faa.gov/nextgen

Intranet site: atoexperience.faa.gov/nextgen

E-mail: nextgen@faa.gov



**Federal Aviation
Administration**



WHAT THIS MEANS TO YOU:

AIR TRAFFIC CONTROLLERS

While our current air traffic control system has served us well, it is not flexible or scalable enough to meet the projected demand for safe and efficient service from an increasingly diverse fleet. NextGen will provide us with more precise and commonly available information about aircraft from the moment a flight plan is filed, throughout the flight, and all the way to the gate. That information will be more easily shared across facilities, automation systems and decision support tools, allowing us to greatly improve our ability to keep traffic flowing in the face of weather, congestion and other constraints.

In the near-term, you can expect:

- A full-court press to make greater use of the ground systems and aircraft avionics already in place today. The FAA is working with the user community to identify operational changes that could remedy our immediate challenges in specific locations.
- Airspace redesign efforts that address our present challenges, such as at airports where building new runways is not possible, where congestion and complexity have increased, or where special use airspace or other constraints limit the efficiency of operations.
- Initial use of ADS-B. Traffic and weather information is already available for ADS-B equipped aircraft in southern Florida. We will begin to use ADS-B to provide critical surveillance services

at Louisville International Airport, the Gulf of Mexico, Philadelphia International Airport, and in the en route area around Juneau.

- Operational demonstrations of technologies and procedures that build on today's successes. For example, we're examining the technical possibility and potential benefits of rolling weather information directly into Traffic Management Advisor.

Looking ahead, NextGen will provide:

- Data communications, which will simplify and clarify routine communications between controller and pilots, and reduce read-back errors. Data communications also could be used to reduce manual labor when assigning tactical reroutes around weather, for example.
- Changes to standards and procedures that allow us to safely operate more like VMC while in IMC conditions.

While technology and procedures are the components of NextGen that are most often addressed, success can not be claimed when a box is installed or a chart changed. Success is declared when the benefits begin to appear in the day-to-day operations of the system. Controllers will have a direct bearing on the outcome. There will be opportunities for controllers to provide input as subject matter experts during development and technology demonstrations, just as controllers did with the current legacy system.

NextGen Transformational and Enabling Technologies

- **Communication and Data Sharing**

- Collaborative Air Traffic Management Technologies (CATMT)
 - Data Communications (Data Comm)
 - En Route Automation Modernization (ERAM)
 - NAS Voice Switch (NVS)
 - System Wide Information Management (SWIM)

- **Navigation**

- Area Navigation (RNAV) / Required Navigation Performance (RNP)

- **Surveillance**

- Airport Surface Detection Equipment – Model X (ASDE-X)
 - Automatic Dependent Surveillance – Broadcast (ADS-B)

- **Weather**

- NextGen Network Enabled Weather (NNEW)