



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: SYSTEM OPERATIONS

NextGen represents an incredible opportunity for us to transform our operations, systems, and procedures to improve our level of service.

As NextGen transformational technologies like ADS-B and SWIM are deployed, you can expect new and improved operational capabilities to emerge that will improve the way we manage capacity and demand.

New decision support tools will provide unprecedented access to real-time information from system users and greatly improve our ability to manage weather, congestion and security constraints in a more effective manner.

Airspace redesign efforts are already underway to accommodate expected trends of fleet mixes, capacity increases and environmental initiatives. And more changes to existing airspace will be necessary.

In the near-term, you can expect:

- Completion of the TFM modernization effort along with a re-engineered Traffic Situation Display (TSD).
- Expansion and enhancements of Traffic Management Advisor.
- Focus on increased throughput for arrival and departure flows in metro areas.
- Improved data integration amongst key decision support tools. For example, TFMS,

TMA, FSM will consistently display key information like ETAs.

- More sophisticated algorithms to model, create, and execute traffic management initiatives.
- Improved access to surface traffic information and planning tools.
- Clear, unambiguous dissemination and access of NOTAMS/TFR and aviation security related information.
- New Performance-Based Navigation (PBN) routes and procedures that leverage emerging technologies and aircraft navigation capabilities (RNAV and RNP).
- Improvements in the manner in which we provide TFM services through improved FAA-industry data exchange. Our improved toolset will allow us to provide better options for flow management when demand exceeds capacity.

We will continue to leverage key processes to examine and improve our operations through S2K, CDM, and other established forums. In addition, we will emphasize continued integration across the ATO, prioritizing interoperability amongst procedures and systems. Continued emphasis on global harmonization will require us to move toward adopting and implementing international standards.

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)