Delivering

NextGen

Next Generation Air Transportation System

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Federal Aviation Administration
The Current System Is Not Performing Adequately

• Demand remains high in already congested markets
• The problems are worse in the highest density airspace
• Record high fuel prices
• Environment poses a constraint
• Our air traffic system does not take advantage of current technology

The New York Times

Airport Delays Worsen
By MATTHEW L. WALD

...delays at Newark Liberty and La Guardia are worse.
NextGen…

Applying 21st Century technology to transform our aviation system — expanding capacity, enhancing safety and security, and protecting the environment.
The NextGen Vision

A system that is based on satellite navigation and control, digital non-voice communication and advanced networking, and a sharing of decision making between the ground and the cockpit.
NextGen: Improving Efficiency & Capacity

Today’s NAS

- Ground-based Navigation and Surveillance
- Air Traffic Control Communications By Voice
- Disconnected Information Systems
- Air Traffic “Control”
- Fragmented Weather Forecasting
- Airport Operations Limited By Visibility Conditions
- Forensic Safety Systems

NextGen

- Satellite-based Navigation and Surveillance
- Routine Information Sent Digitally
- Information More Readily Accessible
- Air Traffic “Management”
- Forecasts Embedded into Decisions
- Operations Continue Into Lower Visibility Conditions
- Prognostic Safety Systems

The transition to NextGen has already begun.
NextGen is more than just…

**a single project…** It is the integration of many projects, concepts, and technologies.

**a program plan…** It is the integration of many program plans to deliver new service capabilities to meet increasing demand.

**a new system…** It is the integration of new systems, new procedures, new aircraft performance capabilities, new supporting infrastructure and a new way to do business as the Air Transportation System.
Central Management & Oversight – SVP NextGen & Ops Planning

Management Approach

October 22, 2008
Governance
Senior-level Accountability - Building on a Proven Process

NextGen
Management Board
Chair: FAA Deputy Administrator
Membership: FAA Associate Administrators, COO, Dir JPDO

NextGen Review Board
Chair: Director NextGen Integration & Implementation
Membership:
Representatives of agency lines of business key for executing FAA’s NextGen Implementation Plan

Solution Sets
NextGen Capabilities will be Implemented by Solution Set Portfolios

Each solution set is a portfolio of capabilities
NextGen Integration
Transformational Programs

Five cross-cutting programs provide the new infrastructure required to achieve the NextGen vision.

**ADS-B**: Automatic Dependent Surveillance Broadcast
**SWIM**: System Wide Information Management
**DataComm**: NextGen Data Communications
**NVS**: National Airspace System Voice Switch
**NNEW**: NextGen Network Enabled Weather

Enabling programs provide the foundation for NextGen.

**ASDE-X**: Airport Surface Detection Equipment Model X
**ATOP**: Advanced Technologies and Oceanic Procedures
**CIWS**: Corridor Integrated Weather System
**ERAM**: En Route Automation Modernization
**GBAS**: Ground-Based Augmentation System
**RNAV/RNP**: Area Navigation and Required Navigation Performance
**TFM-M**: Traffic Flow Management-Modernization
**TMA**: Traffic Management Advisor
**WAAS**: Wide Area Augmentation System
NextGen Implementation Plan

Flight trials inform decision-making while providing targeted benefits

The FAA is demonstrating vital NextGen concepts in the operational environment.
Aircraft & Operator Requirements

• NextGen aircraft will have more onboard capabilities requiring associated crew training for
  – Precision navigation
  – Merging and spacing
  – Four-dimensional trajectories

• Unmanned aircraft systems will operate among regular aircraft and domestic supersonic cruise operations will be more prevalent

• Represents a significant change in the aircraft’s role and equipage requirements
Air Traffic Operations

- Airport capacity
- Airspace capacity
- Surface efficiency

- Optimized vertical and horizontal trajectories
- Improved fuel consumption

- Increased safety
- Improved access
- Reduced emissions & noise
Near & Mid-Term Benefits

- Surface Traffic Management
- ADS-B in Gulf
- De-conflicting Airports
- “Performance-Required” Routes

- Performance-Based Navigation
- Continuous Descent Approaches
- Closely-Spaced Parallel Operations
National Airspace System (NAS) Enterprise Architecture (EA)

• NAS EA Contains 13 Interdependent Roadmaps
  – Aircraft
  – Air-Ground
  – Automation
  – Weather
  – Communication
  – Navigation
  – Surveillance
  – Airspace & Procedures
  – Enterprise Services
  – Facilities
  – Human Systems Integration Roadmap
  – Information Systems Security
  – Safety

• NAS EA Demonstrates Complexity of the V&V Issue for NextGen
  – Case in Point: Automation Roadmap
The Challenge

System level Verification & Validation is key to NextGen success

We are relying on this team to not only conduct V&V on NextGen systems but to develop the processes & procedures for doing so.