The Next Generation Air Transportation System (NextGen) and Global Partnership

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Why We Need NextGen?

- US Economy depends on Aviation
- Demand remains high in already congested markets
- Environmental impacts of delays can be reduced
- Our air traffic system does not utilize current available technologies
NextGen will...

- Increase airport capacity
- Maximize airspace capacity
- Increase surface efficiency
- Allow planes to fly optimal flight paths
- Improve fuel consumption
- Increase safety
- Improve access
- Reduce emissions & noise
Mid-Term Technologies…. REALITY
International Cooperation…
A Necessity

• Daily interaction with 18 foreign ANSPs
Back up Slides / Notes
NEXTGEN

• Why Invest in NEXTGEN Technologies now?
  – Near term investment is critical as Demand and Delay will return
  – Aviation is key to our economy and global competitiveness

• What is NEXTGEN?
  – NEXTGEN focuses on technologies and procedures to increase capacity, safety, and reduce delays and emissions
  – Biggest challenges in today's system are during weather events where we have difficulties responding to changing conditions
  – NEXTGEN infrastructure being put in place to improve Air Traffic Management information accuracy, transmission speed, and provide a shared view to controllers, pilots, and airline dispatchers
  – Key technologies are ADS-B, DataComm, SWIM, and NNEW
NEXTGEN

• **What are NEXTGEN Risks?**
  – Many opportunities exists to build off commercial technologies but implementation in the Aviation Infrastructure is complex as implementation is real time and safety level must remain highest
  – FAA NEXTGEN plan is to focus on Near Term improvements that have high certainty of success and provide platform for additional future improvements

• **How does NEXTGEN tie into the Global ATM system?**
  – NEXTGEN requires Collaboration with Global Partners as we serve the same airlines
  – FAA has established key partnerships around the world including with the European SESAR program, Asia and the South Pacific through ASPIRE, and continued partnerships with ICAO and CANSO.
NextGen Defined

Next Generation Air Transportation System (NextGen)

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 Service Delivery

From Today…..

- Ground-based navigation and surveillance
- ATC communications by voice
- Air traffic “control”

… To the NextGen System

- Satellite-based navigation and surveillance
- Routine information sent digitally
- Air traffic “management”

The transition to NextGen has already begun.
## Opportunity Pools (Delays)

<table>
<thead>
<tr>
<th>Estimated excess time on flights to/from the main 34 airports (2007)</th>
<th>TIME per flight (minutes)</th>
<th>Predictability</th>
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</thead>
<tbody>
<tr>
<td><strong>Gate/ departure holdings</strong></td>
<td>EUR</td>
<td>US</td>
</tr>
<tr>
<td>en-route-related</td>
<td>1.4</td>
<td>0.1</td>
</tr>
<tr>
<td>airport-related</td>
<td>1.4</td>
<td>1.1</td>
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<tr>
<td><strong>Taxi-out phase</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.7</td>
<td>6.8</td>
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<tr>
<td><strong>Horizontal en-route flight efficiency</strong></td>
<td></td>
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<tr>
<td></td>
<td>2.2-3.8</td>
<td>1.5-2.7</td>
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<tr>
<td><strong>Terminal areas (ASMA/TMA)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.2</td>
<td>2.5</td>
</tr>
<tr>
<td><strong>Total estimated excess time per flight</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11.9-13.5</td>
<td>12.0-13.2</td>
</tr>
</tbody>
</table>

- The benefit pool represents a theoretical optimum. Safety and capacity constraints limit the practicality of ever fully recovering these “inefficiencies”
- Similar total estimated excess times in US and Europe but with differences in the distribution along the phase of flight. Inefficiencies have a different impact (fuel burn, time) on airspace users, depending on the phase of flight (airborne vs. ground) and the level of predictability (strategic vs. tactical).
NextGen Transformational Programs

Automatic Dependent Surveillance – Broadcast (ADS-B)
• Infrastructure includes ground stations and aircraft avionics.

System Wide Information Management (SWIM)
• IT infrastructure program that makes it easier for FAA to create interfaces between systems.

Data Communications
• Most functionality will flow through ERAM. Expect there would be COTS boxes hosted in ARTCCs and/or TRACONs.

Network Enable Weather (NNEW)
• Provides weather data that can be shared by internal and external users

Stages of readiness:
- Implementation
- Investment Analysis
- Concept Development
RNAV & RNP

- 211 RNAV routes
- 331 RNAV standard departure/approach procedures
- 193 RNP SAAAR procedures
RTCA Task Force 5 Report

• Task Force report was delivered to the FAA on September 9th
  – Documented commitments by the FAA and Operators
  – Prioritized the Operational Capability Sets
  – Recommended strategies and means to accelerate NAS-wide operational benefits
  – Recommended business strategies to ensure delivery of benefits and encourage equipage

• The FAA Response was delivered in January of 2010
• The updated changes are included in the FY10 NextGen Implementation Plan which was released March 8, 2010
FAA’s NextGen Budget Progression
(FY 2007 – FY 2011)

$867.7M
Δ 31.7%

$695.1M
Δ 22.8%

$215.5M
Δ 68.9%

$127.6M

*FY11 President’s Budget Request

NextGen Briefing - Leipzig, Germany
May 26, 2010

Federal Aviation Administration
Impact of Aviation on the U.S. Economy

Aviation is vital to U.S. and World economies

Aviation accounts for

– 12 million aviation-related jobs
– $230 billion in Travel and Tourism
– $66 billion in Exports
– $1.3 trillion in economic activity
– 5.6 Percent Contribution to Gross Domestic Product
NextGen Strategic Partnerships

• FAA must promote harmonization with key strategic partners

• Bilateral and Multilateral partnerships
  – FAA/China NextGen Air Traffic Management Steering Group (NATMSG)
  – US/Canada/Mexico NextGen Trilateral Steering Group
  – NextGen and European SESAR Harmonization
  – Asia and Pacific Initiative to Reduce Emissions (ASPIRE)
  – Atlantic Interoperability Initiative to Reduce Emissions (AIRE)

• ICAO and regional PIRGS
NextGen – SESAR Collaboration

• Single European Skies ATM Research (SESAR) – the European future vision

• NextGen – SESAR harmonization is uniquely critical to success

• The FAA and SESAR partners are building a new framework for collaboration

• Developing agreements with the SESAR Joint Undertaking/European Commission and Eurocontrol
The Atlantic Interoperability Initiative to Reduce Emissions (AIRE)

- Hasten development of operational procedures to reduce aviation’s environmental footprint on a “gate-to-gate” basis
- Quantify environmental benefits to aid in formulation of potential business cases
- Accelerate incorporation and worldwide interoperability of procedures/standards
- Capitalize on existing technology on either side of Atlantic
- Identify implementation issues, obstacles, choke points, metrics and solutions, working with our International partners
The ASIA and Pacific Initiative to Reduce Emissions (ASPIRE)

- ASPIRE is a regional approach to environmental stewardship
- Emphasizes
  - Best Practices for ASIA-Pacific international flights
  - Shared performance measurement
  - Collaborative efficiency improvement through enhanced procedures and technologies
  - Shared operational demonstration exercises
- On Feb 1, Civil Aviation Authority of Singapore will be the newest ASPIRE Partner
www.faa.gov/nextgen
NextGen
Air Traffic Operations Solution Sets

Increase Flexibility in the Terminal Environment

Improve Collaborative ATM

Reduce Weather Impact

Increase Safety, Security, and Environmental Performance

Transform Facilities

Increase Arrivals/Departures at High Density Airports

Initiate Trajectory Based Operations

Separation Management
Trajectory Management

Data Management
CapacityManagement