Agenda

- NextGen Overview
- SWIM Program Overview and Status
- SWIM Segment 2 and Next Steps
- SWIM/SWIM-SUIT Interoperability demonstration
NextGen: *Delivering safety, capacity, efficiency & environmental stewardship*

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<th>NextGen</th>
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<td>Forensic Safety Systems</td>
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<td>Focus on major airports</td>
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<td>Inefficient routes &amp; fuel consumption</td>
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NextGen Implementation Plan
FY10 NextGen Transformational Programs

- System-Wide Information Management (SWIM)
- Automatic Dependent Surveillance – Broadcast (ADS-B)
- Data Communications (Data Comm)
- NextGen Network-Enabled Weather (NNEW)
- NAS Voice Switch (NVS)
- Collaborative Air Traffic Management Technologies (CATMT)
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SWIM and the Evolution of Air Transportation

SWIM supports FAA’s long-term goals for the Next Generation Air Transportation System to:
• Allow more aircraft to fly more closely together on more direct routes
• Reduce delays and congestion
• Provide benefits for the environment and the economy through reductions in carbon emissions, fuel consumption, and noise

Specifically, SWIM will support these goals by:
• Providing data and services to support better real-time planning
• Streamlining communications
• Connecting more FAA systems to more customers
Program Concept

SWIM is an IT infrastructure program that will operate in the background to provide data to authorized users.

SWIM will:

• Implement a Service-Oriented Architecture (SOA) in the National Airspace System (NAS)
• Allow the FAA to create new system interfaces more quickly and more cheaply than is possible today
• Facilitate the increased data-sharing that is required for NextGen

SWIM is not:

• A set of avionics equipment
• A substitute for NAS modernization programs
• A telecom program
Conceptual Overview

FTI IP Backbone

NextGen Applications

SWIM Infrastructure for Messaging

Federal Aviation Administration

Presented to: SWIM-SUIT User Forum
Date: June 24, 2010
SWIM Segment 1 Capabilities

Aeronautical Information Management (AIM) COI
- Special Use Airspace (SUA) Automated Data Exchange

Weather COI
- Corridor Integrated Weather System (CIWS) Publication
- Integrated Terminal Weather System (ITWS) Publication
- Pilot Report (PIREP) Data Publication

Flight & Flow Management COI
- Flight Data Publication
- SWIM Terminal Data Distribution System
- Flow Information Publication
- Runway Visual Range (RVR) Publication
- Reroute Data Exchange

Capabilities will be implemented as multiple services over the next five years
FY09-10 Accomplishments

- Integrated Terminal Weather System (ITWS) Publication prototype service subscribed to by UPS, Harris, DoD, and FedEx
- Trained developers from SWIM Implementing Programs (SIPs) on Progress FUSE Middleware. SIPs have started software development
- Conducting Service Oriented Architecture (SOA) suitability assessments of other FAA programs
- Finishing development of the Airspace Information Management (AIM) portion of the Special Use Airspace (SUA) Automated Data Exchange capability
- Developing Corridor Integrated Weather System (CIWS) Publication prototype service
- SWIM COTS Repository operational
- Released the SWIM Segment 2 Technical Overview and draft Final Program Requirements
- Met with SESAR JU to discuss commonality and interoperability between future SWIM environments
Screenshots of Prototype Developments

ITWS SWIM-compliant data overlaid on a Google map

ITWS-ME v1.0
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Next Steps for FY10

• Provide SWIM-compliant information to more external users/agencies/aircraft

• Procure and start operating SWIM service registry v2.0

• Deploy AIM Special Use Airspace Automated Data Exchange
Publisher Requirements for SWIM-Compliance

• Use of FUSE Software
  – SOAP Message Processing
  – Java Message Service (JMS) Provider Standardization (Apache Active MQ)

• Supported Message Formats and Transports
  – SOAP-over-HyperText Transfer Protocol (HTTP)/HyperText Transfer Protocol Secure (HTTPS)
  – eXtensible Mark-up Language (XML)-over-HTTP/HTTPS
  – SOAP-over-JMS
  – XML-over-JMS

• SOAP Attachments
  – Message Transmission Optimization Mechanism

• JMS Message Type - Text message

• Registry / Repository
  – Discoverability – Web Services Description Language (WSDL)
  – Categorization – SWIM Taxonomy

• Service Management – Java Management Extensions (JMX)
Beyond 2010

- **Building SWIM Segment 2**
  - Support data exchange needs of NextGen
  - Build on Segment 1 Governance, for all NAS programs that score high on the SOA Suitability Checklist
  - Expand SWIM infrastructure to include additional Enterprise Service Management, Security, other SOA infrastructure services, and Core services that were delegated to the SIPs in Segment 1
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SWIM/SWIM-SUIT Interoperability Demo

- The SWIM/SWIM-SUIT Interoperability demo has been a key step in ensuring future SWIM compatibility between Europe and the US. Benefits have included:
  - Exploring methods, protocols, techniques, and processes required to enable data exchange between a European SWIM-SUIT prototype and a US SWIM prototype
  - Promoting dialogue between key stakeholders involved with SWIM and SWIM-SUIT implementation
  - Providing a forum for evaluating technologies in a prototype environment
  - Facilitating cooperation and sharing of lessons learned
  - Sharing expectations of requirements
SWIM Web Site

www.swim.gov