System Wide Information Management (SWIM)

Presented to: National Defense Industrial Association
Systems Engineering Division

Presented by: Jim Robb,
SWIM Program Manager
Delivering NextGen Major Investments

**Legacy System**
- Radar
- Voice Communications
- Disparate Information

**NextGen**
- Satellite
- Voice & Digital Communications
- Automated Decision Support Tools

**NextGen**
- Automatic Dependent Surveillance-Broadcast (ADS-B)
- System-Wide Information Management (SWIM)
- DataComm
- National Airspace System (NAS) Voice System (NVS)
- Terminal Flight Data Manager (TFDM)

**Foundational**
- En Route Automation Modernization (ERAM)
- Terminal Automation Modernization/Replacement (TAMR)
WHAT IS SWIM?

System Wide Information Management (SWIM) is the infrastructure that allows members of the Aviation Community to access the information needed to facilitate an innovative and efficiently run National Airspace System (NAS).

What is SWIM doing for the Aviation community?

SWIM makes it possible to have access to real-time, relevant information so users can respond faster, more accurately, creating collaboration opportunities with industry.

SWIM enables the efficient transition to Global Harmonization Information Standards.

Enables the conversion from “data” to “information”.

SWIM helps to REDUCE COSTS & INCREASE AGILITY for the Air Traffic Community.

DO MORE WITH LESS.
SWIM: Information Access to Transform the Aviation Community

Legacy operating environment:
Point-to-point connections

SWIM operating environment:
Data Exchange
(Published once, consumed by many)
NextGen Information Sharing Architecture

**Common Support:**
- Data Standards & Harmonization

**Mission Services/Application Layer:**
- FDPS, STDDS, ITWS, AIM, etc.

**Enterprise Messaging:**
- SWIM Core Services

**Physical Network:**
- FTI Operational IP network provides secure transport
Status of SWIM Services

- SWIM Terminal Data Distribution System (STDDS)
- NOTAM Distribution Service (NDS)
- SWIM Flight Data Publication Service (SFDPS)
- Special Use Airspace (SUA)
- Weather and Radar Processor (WARP)
- Enhanced WINS Dissemination (EWD)
- Integrated Terminal Weather System (ITWS)
- Weather Message Switching Center Replacement (WMSCR)
- National Weather Service (NWS)
- Corridor Integrated Weather System (CIWS)

External Consumers

- New Aeronautical Situational Display to Industry (ASDI) Traffic Flow Management System (TFMS)
- TFMDATA
- N E S G - security gateway
# SWIM Product Portfolio

## Aeronautical Data

<table>
<thead>
<tr>
<th>Aeronautical Information Management (AIM) Special Use Airspace (SUA) Data Exchange</th>
<th>Provides notification and status regarding airspace</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ SUA data, dynamically provided in the Aeronautical Information Exchange Model (AIXM) standard</td>
<td>✓ AIXM SUA definitions</td>
</tr>
</tbody>
</table>

### Notices to Airmen (NOTAM) Distribution Service

△ Digital NOTAMs AIXM 5.1

## Flight and Flow Data

### Time Based Flow Management (TBFM): Provides metering information

| Scheduled Time of Arrival (STAs) | Airports configuration information |
| Estimated Time of Arrival (ETAs) | Satellite airport configurations |

### Traffic Flow Management System (TFMS): Provides flight and flow information

| Flow Constrained Area (FCA) / Flow Evaluation Area (FEA) | Ground Stops (GS) |
| Airspace Flow Program (AFP) | Reroutes |
| Aeronautical Situational Display to Industry (ASDI) | Advisories |
| Ground Delay Program (GDP) / Unified Delay Program (UDP) | Collaborative Trajectory Options Program (CTOP) |

### SWIM Terminal Data Distribution Systems (STDDS): Collects and publishes data from 100+ airports

| Airport Surface Detection Equipment, Model X (ASDE-X) streaming data service and Runway visibility data | Runway Visual Range (RVR) Data |
| Surface Movement Events (SME) | Tower Departure Events (TDE) |

## SWIM Flight Data Publication Service (SFDPS)*: Provides flight data and updates to clients for filed and active flight plans

- Flight Plan information
- Flight Amendment Information
- Converted Route Information
- Cancellation Information
- Departure Information
- Aircraft Identification Amendment Information
- Hold Information
- Progress Report Information
- Flight Arrival Information
- Flight Plan Update Information
- Expected Departure Time Information
- Position Update Information
- Tentative Flight Plan Information
- Handoff Status

## Airspace Data Publication Service*: Published by SFDPS

- Sector Assignment Status
- Special Activities Airspace (SAA)
- Route Status
- Altimeter Setting

## Operational Data Publication Service*: Published by SFDPS

- Traffic Count Adjustment
- Beacon Code Utilization
- Instrument Approach Count Adjustment
- Geographic Beacon Code Utilization
- Sign In Sign Out

## General Information Message Publication Service*: Published by SFDPS

- General Information

*Service in development and on-ramping process
## SWIM Product Portfolio (cont.)

### Weather Data

<table>
<thead>
<tr>
<th>Integrated Terminal Weather System (ITWS) Data Publication: Provides specialized weather products in the terminal area</th>
<th>Corridor Integrated Weather System (CIWS) Data Publication*: Provides specialized 3D storm related weather information in the Enroute area</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Airport Lightning Warning ✓ Tornado Detections Wind Profile</td>
<td>✓ Vertically Integrated Liquid (VIL) Mosaic (1km resolution) ✓ VIL Forecast Contours (Std. Mode)</td>
</tr>
<tr>
<td>✓ Configured Alerts ✓ Anomalous Propagation (AP) Indicated Precipitation</td>
<td>✓ VIL 2-hr. Forecast ✓ VIL Forecast Contours (Winter Mode)</td>
</tr>
<tr>
<td>✓ Forecast Accuracy ✓ AP Status</td>
<td>✓ Echo Tops Mosaic (1 km resolution) ✓ Echo Tops Forecast Contours</td>
</tr>
<tr>
<td>✓ Forecast Contour ✓ Gust Front Estimated Time to Impact</td>
<td>✓ Echo Tops 2-hr. Forecast ✓ Growth &amp; Decay Contours</td>
</tr>
<tr>
<td>✓ Forecast Image ✓ Hazard Text 5nm</td>
<td>✓ Satellite Mosaic ✓ Forecast Accuracy: Echo Tops</td>
</tr>
<tr>
<td>✓ Gust Front TRACON Map ✓ Hazard Text Long Range</td>
<td>✓ Storm Info: Echo Top Tags ✓ Forecast Accuracy: Std. Precip</td>
</tr>
<tr>
<td>✓ Microburst TRACON Map ✓ Hazard Text TRACON</td>
<td>✓ Storm Info: Leading Edges ✓ Forecast Accuracy: Winter Precip</td>
</tr>
<tr>
<td>✓ Precipitation 5nm ✓ ITWS Status Information</td>
<td>✓ Storm Info: Motion Vectors ✓ Forecast Accuracy: Echo Tops</td>
</tr>
<tr>
<td>✓ Precipitation Long Range ✓ Microburst Automatic Terminal Information Service (ATIS)</td>
<td></td>
</tr>
<tr>
<td>✓ Precipitation TRACON ✓ Runway Configuration</td>
<td></td>
</tr>
<tr>
<td>✓ Storm Motion (SM) Storm Extrapolated Positions (SEP) 5nm ✓ Storm Motion 5NM</td>
<td></td>
</tr>
<tr>
<td>✓ SM SEP Long Range ✓ Storm Motion TRACON</td>
<td></td>
</tr>
<tr>
<td>✓ SM SEP TRACON ✓ Terminal Weather Text Special</td>
<td></td>
</tr>
<tr>
<td>✓ Terminal Weather Text Normal ✓ Wind Shear ATIS</td>
<td></td>
</tr>
<tr>
<td>✓ Tornado Alert</td>
<td></td>
</tr>
</tbody>
</table>

*Service in development or on-ramping process*

### Weather Message Switching Center Replacement (WMSCR) Publications: Provides NWS textual aviation weather products

| ✓ Transmission of voice Pilot Reports (PIREPs) to WMSCR ✓ Altimeter settings |
| ✓ Stored PIREPs |

### Enhanced Weather Information Network System

| ✓ Current Icing Product (CIP) ✓ Airmen's Meteorological Information (AIMET) |
| ✓ Weather Research and Forecasting-Rapid Refresh (WRF-RR) Model Data ✓ National Convective Weather Forecast (NCWF) |
| ✓ North American Mesoscale (NAM) ✓ National Convective Weather Diagnostic (NCWD) |
| ✓ Model Data ✓ Aviation Routine Weather Report (METAR) |
| ✓ Global Forecast System (GFS) ✓ Significant Meteorological Information (SIGMET) |
| ✓ Model Data ✓ Collaborative Convective Forecast Product (CCFP) |

### Weather and Radar Processor (WARP) Publications

| ✓ WARP Maintenance and Sustainment Services (WMSS) ✓ Next Generation Weather Radar (NEXRAD) |
# SWIM Service Planning

<table>
<thead>
<tr>
<th>Program</th>
<th>Discovery</th>
<th>Architecture, Requirements</th>
<th>Qualification (Data Arch, Design, HSV test)</th>
<th>Operations Rollout / Cutover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal Automation Modernization and Replacement (TAMR)</td>
<td>In Progress</td>
<td>In Progress</td>
<td>TBD</td>
<td>Sep’15</td>
</tr>
<tr>
<td>Data Comm Network Services (DCNS) Monitoring Service</td>
<td>In Progress</td>
<td>In Progress</td>
<td>TBD</td>
<td>2015</td>
</tr>
<tr>
<td>NAS Information Display System (NIDS) Consumer</td>
<td>In Progress</td>
<td>In Progress</td>
<td>TBD</td>
<td>2015</td>
</tr>
<tr>
<td>Aeronautical Information Management (AIM) Segment 2</td>
<td>In Progress</td>
<td>In Progress</td>
<td>TBD</td>
<td>2015+</td>
</tr>
<tr>
<td>Common Support Services –Weather (CSS-Wx)</td>
<td>In Progress</td>
<td>In Progress</td>
<td>TBD</td>
<td>2015+</td>
</tr>
<tr>
<td>Terminal Flight Data Manager (TFDM)</td>
<td>In Progress</td>
<td>In Progress</td>
<td>TBD</td>
<td>2015-16</td>
</tr>
<tr>
<td>NAVLean</td>
<td>In Progress</td>
<td>In Progress</td>
<td>TBD</td>
<td>2015-16</td>
</tr>
</tbody>
</table>
# Current SWIM Consumers

## Airlines
- **American Airlines**: ASDE-X / LGA, BOS, MIA
- **Delta Airlines**: ASDE-X / LGA
- **FedEx**: ASDE-X / MEM
- **JetBlue**: ASDE-X / all airports
- **United Airlines**: ASDE-X / all airports
- **USAIR**: ASDE-X / PHX, DCA

## Research & Development
- **Kent State**: CIWS / all products
- **MIT - Lincoln Labs**: ASDE-X / all airports, WMSS NEXRAD
- **MITRE**: ASDE-X / all airports
- **Volpe**: ASDE-X / all airports

## Industry
- **Alliance**: ASDE-X / MEM, ATL, JFK
- **ARINC**: CIWS / all products
- **Lockheed Martin**: ASDE-X / ATL, CLT, MSP, DTW, BOS, IAD, LAS
- **MOSAIC ATM**: ASDE-X / LGA, JFK, BOS, ATL, PHL, EWR, ORD, IAD, CLT; ITWS / all products
- **Passur**: ASDE-X / all airports / STDDS
- **Rockwell Collins**: CIWS / all products
- **Sabre**: ASDE-X / all airports; ITWS / all products
- **Sensis**: ASDE-X / ATL, JFK
- **Veracity**: ASDE-X / LGA

## Airports, FAA Facilities, & FAA Programs
- **Atlanta Airport Authority**: ASDE-X / all airports
- **San Francisco (SFO) Airport Authority**: SFO Airport Surface Surveillance Capability (ASSC) data
- **Southern California TRACON**: ASDE-X / San Diego, Los Angeles, Long Beach airport data
- **CIWS**: WMSS NEXRAD / all radar sites
- **CRCT**: ASDE-X / LGA, EWR, JFK
- **OASIS**: HWDS / all products
- **WARP**: Enhanced WINS
How to become a user of SWIM services

• Getting started…
  – Email your request to: 9-AJM-312-EnterpriseEngineeringServices@faa.gov
  – Contact Jim Robb, FAA Manager
    • Enterprise Infrastructure Services Team, AJM-312
    • Phone: 202-267-8357 (desk), 703-622-8563 (cell); e-mail: Jim.Robb@faa.gov

• Two things are needed:
  1. Establishing an IP service connection to an FAA network security gateway; and
  2. Ensuring your application follows the FAA’s governance policies and standards for producing/consuming SWIM data products

Take advantage of FAA-published user documentation
  • Listed on the next slide
FAA Documents Available to SWIM Consumers*

• FTI OPIP User Guide (for External Connections)
• SWIM User Guide
• SWIM Jump-start Kit

*Available on:

www.faa.gov/NextGen/SWIM
Questions
Contact Information

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