

## System Wide Information Management (SWIM) Information Access to Transform the Aviation Community

System Wide Information Management (SWIM), one of the five transformational NextGen programs, 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). By providing access to real-time or near-real-time, relevant information, SWIM increases collaboration among aviation partners, reduces costs and increases the agility of the air traffic system. Taxpayers, the flying public and the environment all benefit from the increased efficiencies enabled by SWIM.

### How SWIM Works

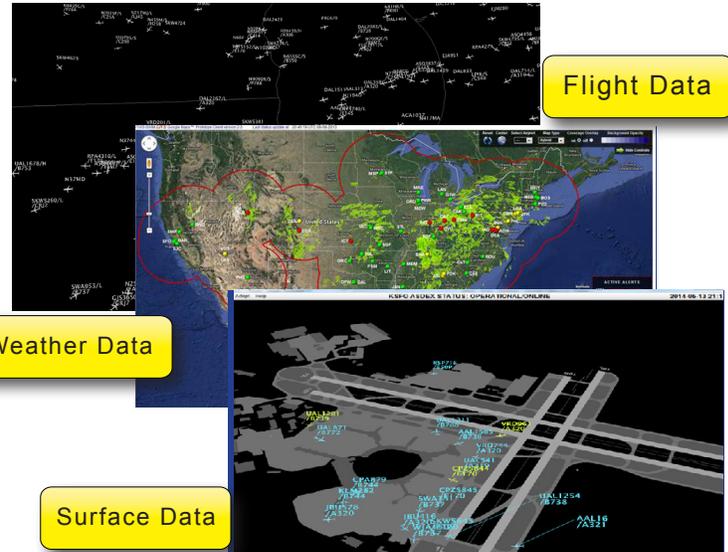
The SWIM infrastructure allows more efficient data sharing among aviation partners than has ever before been possible. This is accomplished through two major SWIM features:

- SWIM streamlines connections among different data systems so users can access multiple systems through one connection.
- SWIM translates data from different systems into standard data formats, thereby supporting collaboration among industry and governments both within the United States and around the world.

### Early Successes

Early implementation efforts have already resulted in significant advancements in aviation management. For example:

- By providing current weather and flight planning information to users of the NAS, SWIM enables airline dispatchers and traffic managers to collaborate on the routing and rerouting of traffic based on real-time information, such as current traffic management initiatives, airport runway configurations, and airport deicing activities.
- The SWIM Terminal Data Distribution System converts raw surface data into easily accessible information and sends it from airport towers to the corresponding Terminal Radar Approach Control (TRACON) facility. TRACONs use SWIM to transfer this information to airlines and airports which, in turn, use the information to streamline surface operations and increase efficiency.
- SWIM is accelerating the transition to global harmonization of information standards. Initial implementation of several core information models is underway, including the Aeronautical Information Exchange (AIXM), Weather Information Exchange (WIXM) and Flight Information Exchange (FIXM) Models.



### What's New

The FAA has unveiled several new SWIM capabilities in the last year, including:

- **Traffic Flow Management System (TFMS):** This capability provides subscribers with a replacement to Aircraft Situation Display to Industry (ASDI) for access to flight data, and further enhances it with new flow information products.
- **SWIM Flight Data Publication Service (SFDPS):** This capability provides subscribers flight and related data in the industry standard XML format (FIXM), an easy to use format for modern aviation applications. It also provides airspace data, operational data, and general information messages.
- **Time Based Flow Management (TBFM):** This capability provides a variety of aircraft metering information, estimated time of arrivals and scheduled time of arrivals. Atlanta is the first site on line, and TBFM has begun the roll out to on-ramp at the remaining En Route Centers.

As SWIM evolves, the FAA will continue to expand the SWIM user community and enhance data sharing opportunities to enhance management of the NAS.



### Flight and Flow Data

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

- ✓ Scheduled Time of Arrival (STAs)
- ✓ Estimated Time of Arrival (ETAs)
- ✓ Meter Reference Elements (MREs) Assignments
- ✓ Airport Configuration Information
- ✓ Satellite Airport Configurations

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

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

**SWIM Terminal Data Distribution Systems (STDDS):** Collects and publishes data from 150+ airports

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| <p><b>Surface Movement Event Service</b></p> <ul style="list-style-type: none"> <li>✓ Spot-In / Spot-Out Times</li> <li>✓ Wheels-Up / Wheels-Down Times</li> <li>✓ Aircraft ID / Type / Wake Class</li> <li>✓ Position / Heading / Speed / Altitude</li> <li>✓ Mode S / Mode 3A</li> <li>✓ Departure or Arrival Runway</li> <li>✓ Departure Fix for Departures</li> <li>✓ Departure Airport for Arrivals</li> <li>✓ Coasted / Suspended Track No.</li> <li>✓ Fused Track Acceleration</li> <li>✓ ADS-B Information</li> <li>✓ Source Information</li> </ul> | <p><b>Terminal Automation Info. Service</b></p> <p><u>Flight Plan (FP)</u></p> <ul style="list-style-type: none"> <li>✓ Aircraft ID / Type</li> <li>✓ Flight Rules in FP Record</li> <li>✓ FP Status (pending, active, etc.)</li> <li>✓ Flight Type (arr. / dep. / enroute)</li> <li>✓ RNAV Indicator</li> <li>✓ Assigned Runway</li> <li>✓ Entry / Exit Fix</li> </ul> <p><u>Track</u></p> <ul style="list-style-type: none"> <li>✓ Track Status (active / coast / drop)</li> <li>✓ Position / Velocity</li> <li>✓ Beacon Code / Mode C</li> </ul> |
| <p><b>Airport Data Service</b></p> <ul style="list-style-type: none"> <li>✓ Runway Visual Range (100s of feet)</li> <li>✓ Visibility Trend (steady / incr. / decr.)</li> <li>✓ Runway Edge / Center Lighting</li> </ul>   | <p><b>Tower Departure Event Service</b></p> <ul style="list-style-type: none"> <li>✓ Aircraft Parking Gate</li> <li>✓ Pre-Departure Clearance Time</li> <li>✓ Taxi-Start / Takeoff Times</li> </ul>   |

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

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| <ul style="list-style-type: none"> <li>✓ Flight Plan &amp; Update Information</li> <li>✓ Flight Amendment Information</li> <li>✓ Converted Route Information</li> <li>✓ Cancellation Information</li> <li>✓ Departure Information</li> <li>✓ Aircraft ID Amendment</li> <li>✓ Hold Information</li> <li>✓ Progress Report Information</li> <li>✓ Expected Departure Time Information</li> <li>✓ Position Update Information</li> <li>✓ Tentative Flight Plan Information</li> </ul> | <ul style="list-style-type: none"> <li>✓ Tentative Aircraft Identification Amendment Information</li> <li>✓ Tentative Flight Plan Removal</li> <li>✓ Tentative Flight Plan Amendment Information</li> <li>✓ Track / Drop Track Information</li> <li>✓ Interim Altitude Information</li> <li>✓ ARTS Flow Control Track/Full Data Block Information</li> <li>✓ Beacon Code Reassignment</li> <li>✓ Beacon Code Restricted</li> <li>✓ Flight Plan Data Bank (FDB) Fourth Line Information</li> <li>✓ Point Out / Inbound Point Out Info</li> <li>✓ Handoff Status</li> </ul> |
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**Airspace Data Publication Service:** Published by SFDPS

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

**Operational Data Publication Service:** Published by SFDPS

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

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

- ✓ General Information

### Aeronautical Data

**Aeronautical Information Management (AIM) Special Use Airspace (SUA) Data Exchange:** Provides notification and status regarding airspace

- ✓ SUA Data, dynamically provided in the Aeronautical Information Exchange Model (AIXM) standard
- ✓ AIXM SUA Definitions

**Notices to Airmen (NOTAM) Distribution Service**

- ✓ Digital NOTAMs AIXM 5.1

### Weather Data

**Integrated Terminal Weather System (ITWS) Data Publication:** Provides specialized weather products in the terminal area

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| <ul style="list-style-type: none"> <li>✓ Configured Alerts</li> <li>✓ Forecast Accuracy / Contour / Image</li> <li>✓ ITWS Status Information</li> <li>✓ Gust Front TRACON Map</li> <li>✓ Microburst TRACON Map</li> <li>✓ Tornado Alert</li> <li>✓ Precipitation: 5nm, Long Range, TRACON</li> <li>✓ Wind Shear ATIS</li> <li>✓ Storm Motion: 5NM, TRACON</li> <li>✓ Storm Motion - Storm Extrapolated Positions: 5nm, Long Range, TRACON</li> </ul> | <ul style="list-style-type: none"> <li>✓ Tornado Detections Wind Profile</li> <li>✓ Anomalous Propagation (AP) Indicated Precipitation</li> <li>✓ AP Status</li> <li>✓ Gust Front Estimated Time to Impact</li> <li>✓ Hazard Text: 5nm, Long Range, TRACON</li> <li>✓ Runway Configuration</li> <li>✓ Microburst Automatic Terminal Information Service (ATIS)</li> <li>✓ Terminal Weather Text Normal</li> <li>✓ Terminal Weather Text Special</li> </ul> |
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**Corridor Integrated Weather System (CIWS) Data Publication\*:** Provides specialized 3D storm related weather information in the En Route area

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| <ul style="list-style-type: none"> <li>✓ Vertically Integrated Liquid (VIL) Mosaic (1km resolution)</li> <li>✓ VIL 2-hr. Forecast</li> <li>✓ Echo Tops Mosaic (1 km resolution)</li> <li>✓ Echo Tops 2-hr. Forecast</li> <li>✓ Satellite Mosaic</li> <li>✓ Storm Info: Echo Top Tags, Leading Edges, Motion Vectors</li> </ul> | <ul style="list-style-type: none"> <li>✓ VIL Forecast Contours (Std. Mode)</li> <li>✓ VIL Forecast Contours (Winter Mode)</li> <li>✓ Echo Tops Forecast Contours</li> <li>✓ Growth &amp; Decay Contours</li> <li>✓ Forecast Accuracy: Echo Tops, Std. Precipitation, Winter Precipitation</li> </ul> |
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**Weather Message Switching Center Replacement (WMSCR) Publications:** Provides NWS textual aviation weather products

- ✓ Transmission of Voice Pilot Reports (PIREPs) to WMSCR
- ✓ Stored PIREPs
- ✓ Altimeter Settings

**Enhanced Weather Information Network System**

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| <ul style="list-style-type: none"> <li>✓ Current Icing Product (CIP)</li> <li>✓ Weather Research and Forecasting-Rapid Refresh (WRF-RR) Model Data</li> <li>✓ North American Mesoscale (NAM) Model Data</li> <li>✓ Global Forecast System (GFS) Model Data</li> <li>✓ Airmen's Meteorological Information (AIRMET)</li> </ul> | <ul style="list-style-type: none"> <li>✓ National Convective Weather Forecast (NCWF)</li> <li>✓ National Convective Weather Diagnostic (NCWD)</li> <li>✓ Aviation Routine Weather Report (METAR)</li> <li>✓ Significant Meteorological Information (SIGMET)</li> <li>✓ Collaborative Convective Forecast Product (CCFP)</li> </ul> |
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**Weather and Radar Processor (WARP) Publications**

- ✓ Next Generation Weather Radar (NEXRAD)

For more information, visit:

[www.faa.gov/nextgen/programs/swim](http://www.faa.gov/nextgen/programs/swim)



\* Service in development and on-ramping process

