Delivering Digital Services

FAA System Wide Information Management (SWIM)

Program Overview and Status Update

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Federal Aviation Administration

EUROCONTROL

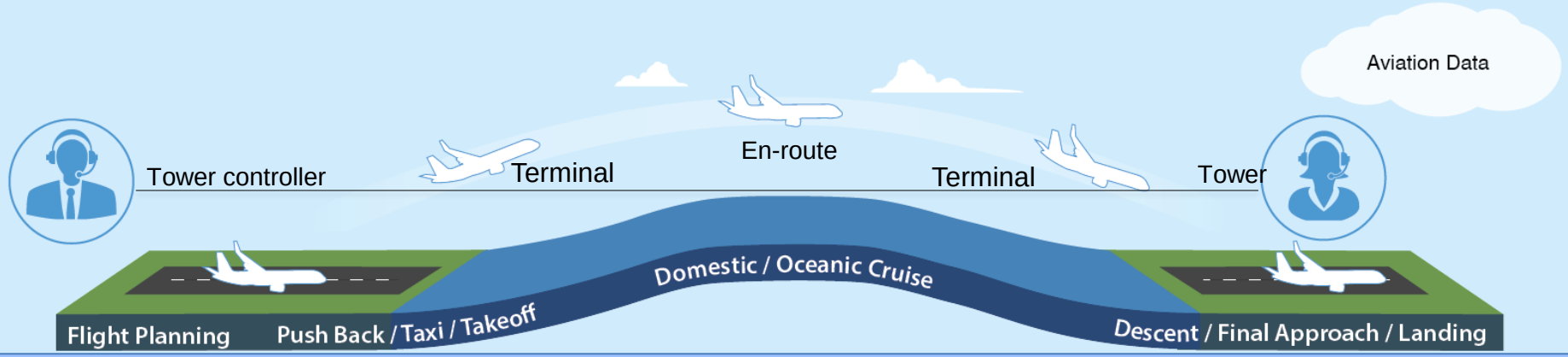
Air Transportation Information Exchange Conference

Delivering Digital Services

August 25 - 27, 2015
NOAA Auditorium and Science Center
Silver Spring, MD

Delivering NextGen Major Investments

Legacy System		NextGen
Radar	→	Satellite
Voice Communications	→	Voice & Digital Communications
Disparate Information	→	Automated Decision Support Tools



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

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 aeronautical, flight and weather information.

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- Replaces unique interfaces with modern standards-based data exchange
- Leverages a single interface to receive multiple data products
- Provides SWIM users access to information without directly connecting to another system
- Provides enterprise security for incoming and outgoing data
- Establishes a single point of contact for FAA data
- Establishes Enterprise Help Desk for SWIM operational consumer calls
- http://www.faa.gov/nextgen/swim

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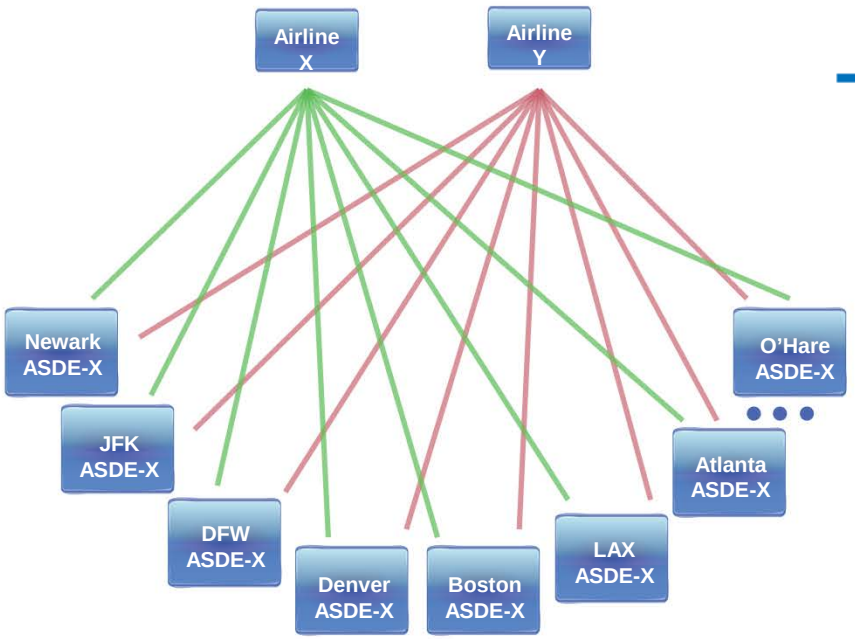
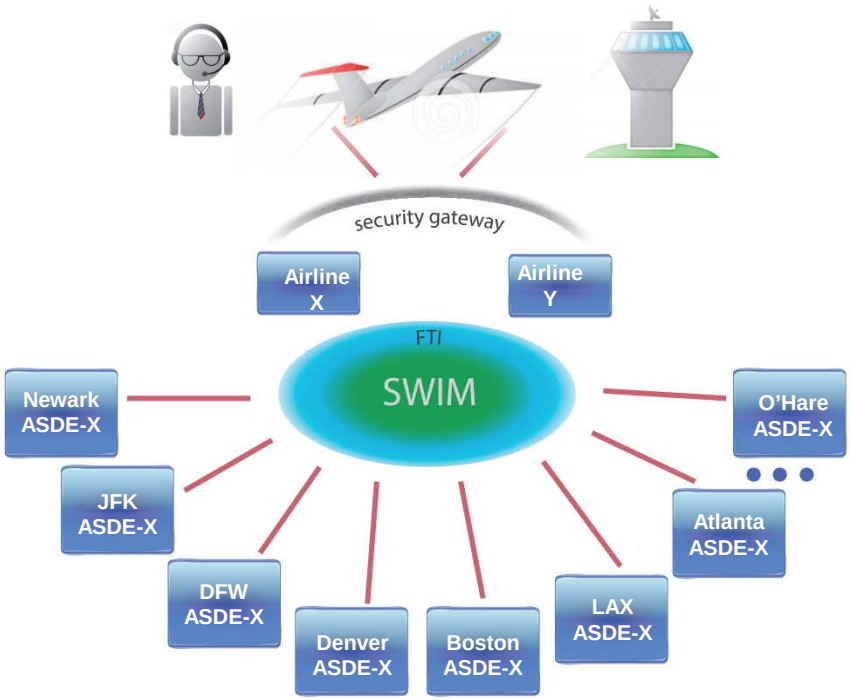
SWIM: Information Access to Transform the Aviation Community





Before SWIM:
Point-to-point connections

With SWIM:
Data Exchange (Published once, consumed by many)

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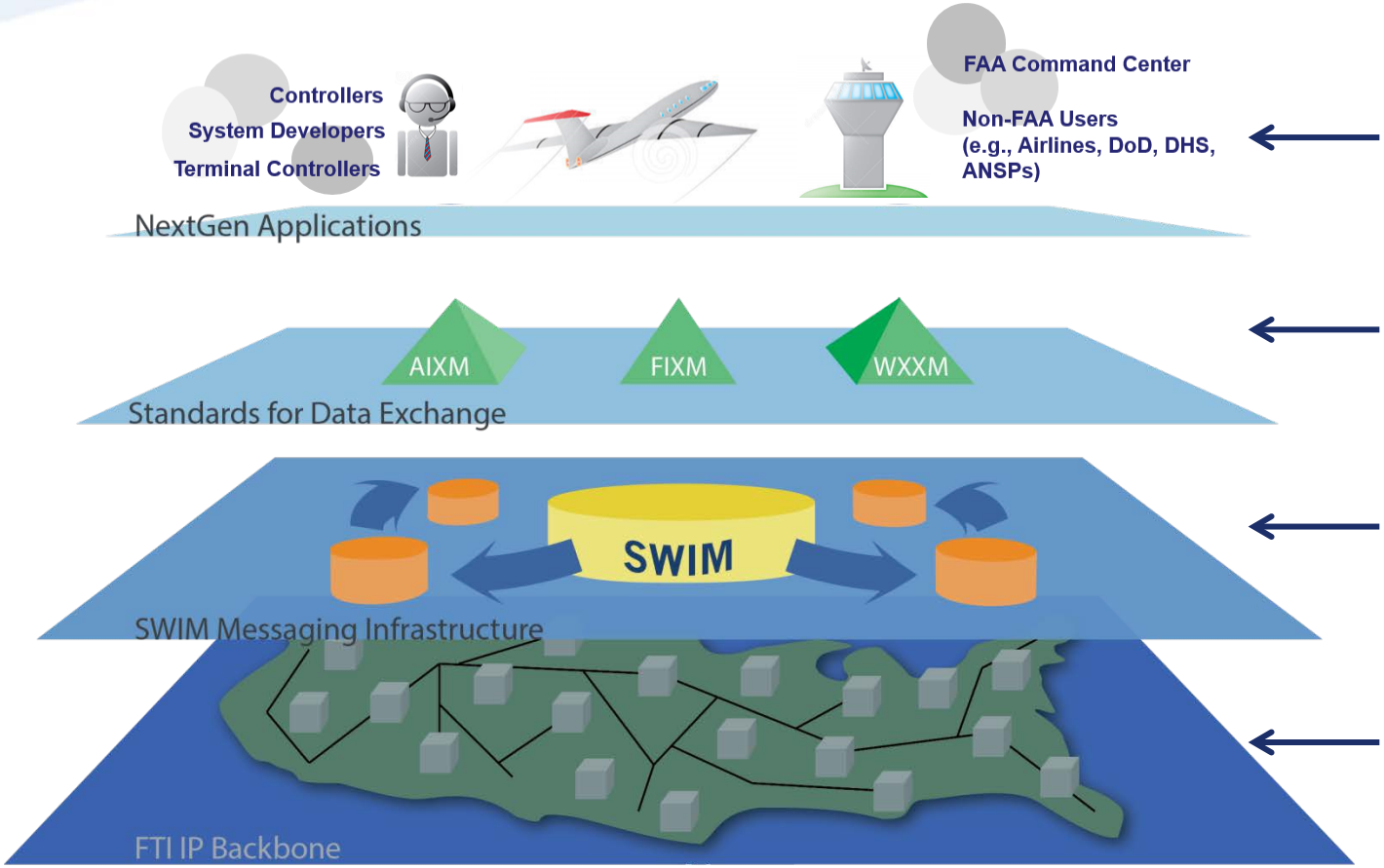
NextGen Information Sharing Architecture



NextGen Applications:
SFDPS, STDDS, ITWS, AIM, etc.

Standards for Data Exchange:
Data Standards & Harmonization

SWIM Messaging Infrastructure:
SWIM Core Services

FTI IP Backbone:
FTI Operational IP network provides secure transport

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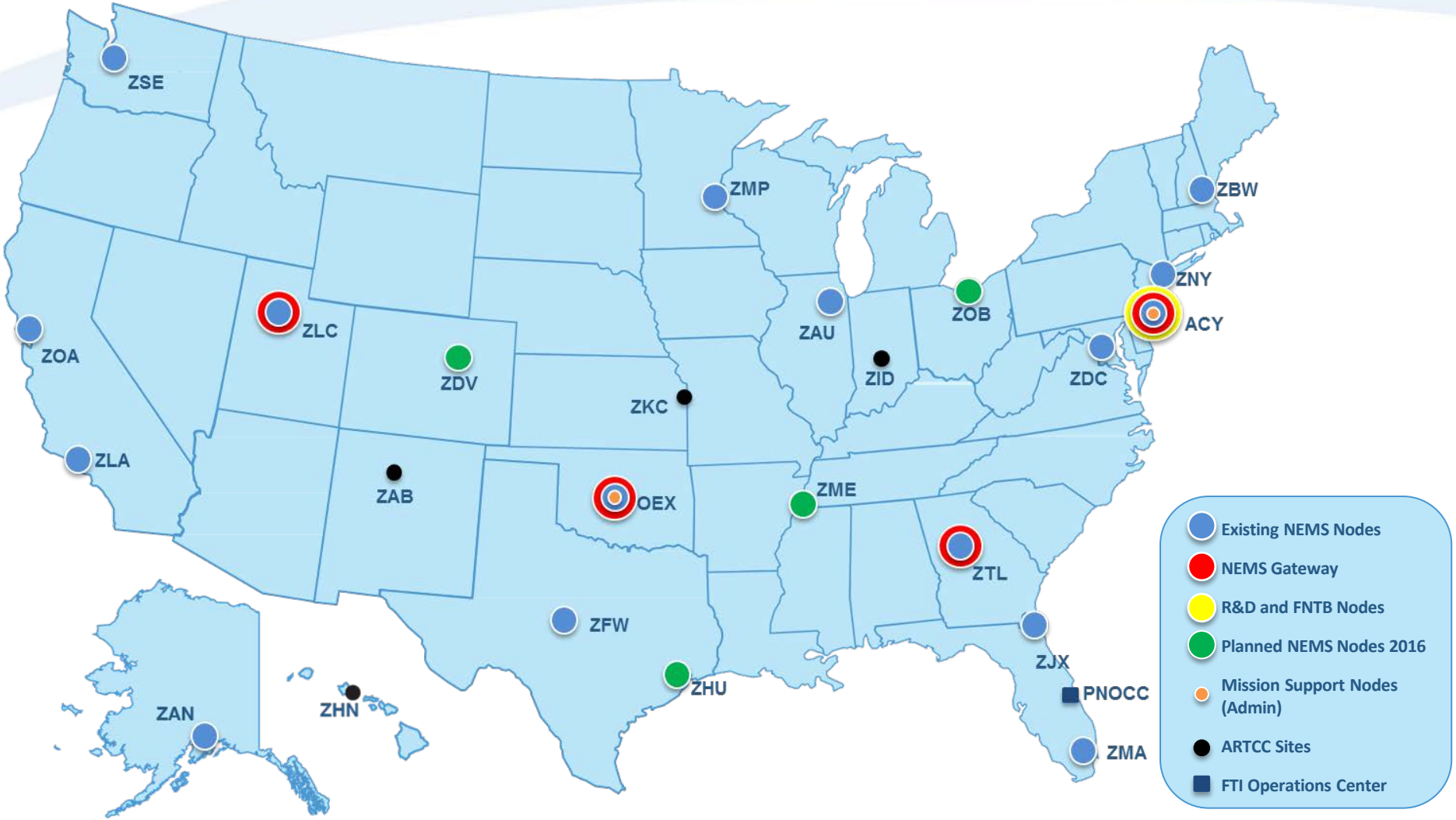
SWIM Infrastructure Deployment

NAS Enterprise Messaging Service (NEMS)



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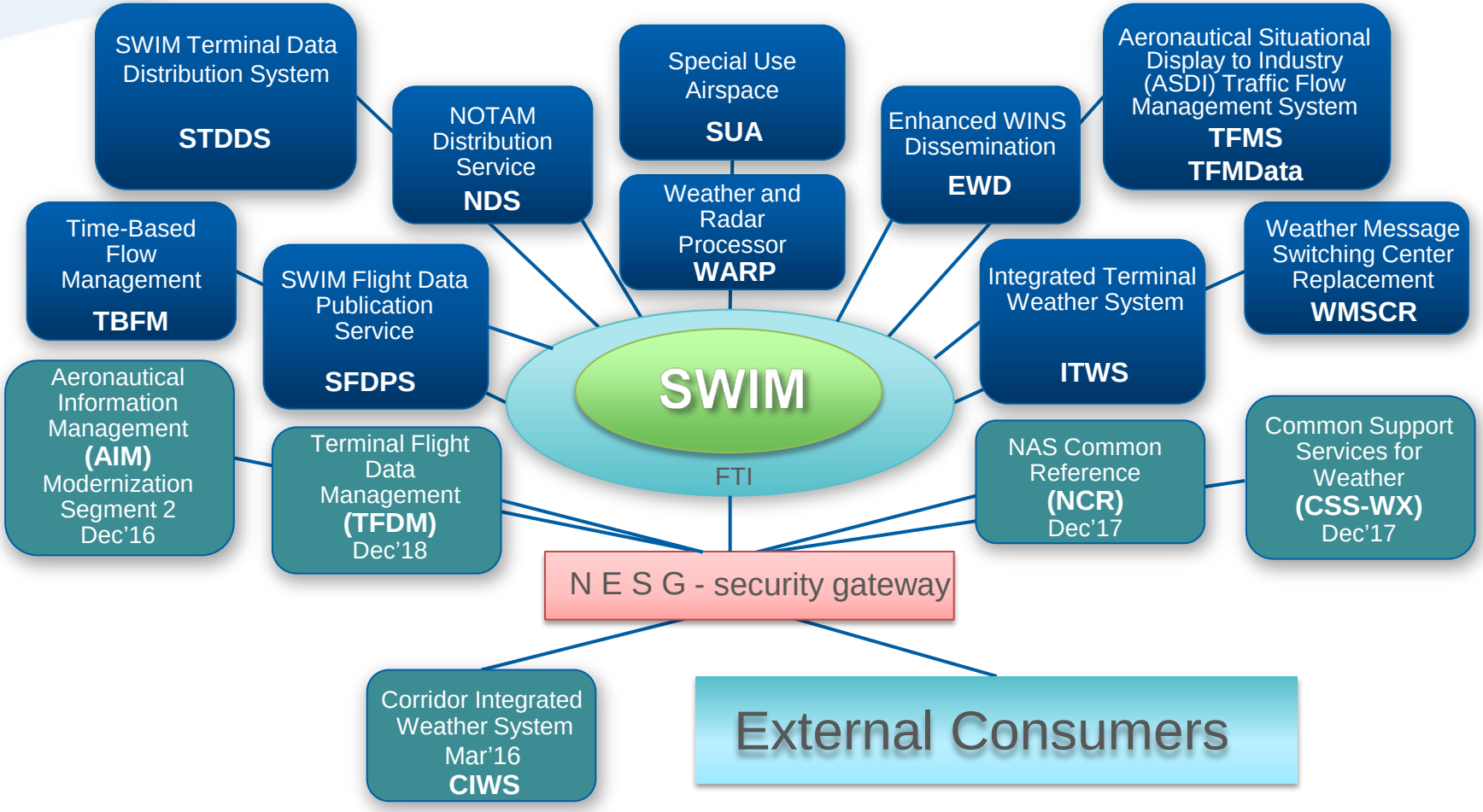
Status of SWIM Services



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Current SWIM Product Portfolio (1 of 2)

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

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)
- ✓ Aeronautical Situational 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 100+ airports

- ✓ Airport Surface Detection Equipment, Model X (ASDE-X) streaming data service and Runway visibility data
- ✓ Surface Movement Events (SME)
- ✓ Runway Visual Range (RVR) Data
- ✓ 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
- ✓ Tentative Aircraft identification Amendment Information
- ✓ Tentative Flight Plan Removal
- ✓ Tentative Flight Plan Amendment Information
- ✓ Track Information
- ✓ Drop Track Information
- ✓ Interim Altitude Information
- ✓ Automated Radar Terminal System (ARTS) Flow Control Track/Full Data Block Information
- ✓ Beacon Code Reassignment
- ✓ Beacon Code Restricted
- ✓ Full Data Block (FDB) Fourth Line Information
- ✓ Point Out Information
- ✓ Inbound Point Out Information
- ✓ Handoff Status

Airspace Data Publication Service:

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

Operational Data Publication Service:

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

General Information Message Publication Service:

- ✓ General Information

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Current SWIM Product Portfolio (2 of 2)

Weather Data

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

- ✓ Configured Alerts
- ✓ Forecast Accuracy
- ✓ Forecast Contour
- ✓ Forecast Image
- ✓ Gust Front TRACON Map
- ✓ Microburst TRACON Map
- ✓ Precipitation 5nm
- ✓ Precipitation Long Range
- ✓ Precipitation TRACON
- ✓ Storm Motion (SM) Storm Extrapolated Positions (SEP) 5nm
- ✓ SM SEP Long Range
- ✓ SM SEP TRACON
- ✓ Terminal Weather Text Normal
- ✓ Tornado Alert
- ✓ Tornado Detections Wind Profile
- ✓ Anomalous Propagation (AP) Indicated Precipitation
- ✓ AP Status
- ✓ Gust Front Estimated Time to Impact
- ✓ Hazard Text 5nm
- ✓ Hazard Text Long Range
- ✓ Hazard Text TRACON
- ✓ ITWS Status Information
- ✓ Microburst Automatic Terminal Information Service (ATIS)
- ✓ Runway Configuration
- ✓ Storm Motion 5NM
- ✓ Storm Motion TRACON
- ✓ Terminal Weather Text Special
- ✓ Wind Shear ATIS

Corridor Integrated Weather System (CIWS) Data Publication*: Provides specialized 3D storm related weather information in the Enroute area

- ✓ Vertically Integrated Liquid (VIL) Mosaic (1km resolution)
- ✓ VIL 2-hr. Forecast
- ✓ Echo Tops Mosaic (1 km resolution)
- ✓ Echo Tops 2-hr. Forecast
- ✓ Satellite Mosaic
- ✓ Storm Info: Echo Top Tags
- ✓ Storm Info: Leading Edges
- ✓ Storm Info: Motion Vectors
- ✓ VIL Forecast Contours (Std. Mode)
- ✓ VIL Forecast Contours (Winter Mode)
- ✓ Echo Tops Forecast Contours
- ✓ Growth & Decay Contours
- ✓ Forecast Accuracy: Echo Tops
- ✓ Forecast Accuracy: Std. Precip
- ✓ Forecast Accuracy: Winter Precip

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

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

Weather and Radar Processor (WARP) Publications

- ✓ Next Generation Weather Radar (NEXRAD)

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***Service in development or on-ramping process**

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Current SWIM Consumers

Airports, FAA Facilities, & FAA Programs	
Boston Consolidated TRACON Viewer MS	ASDE-X / all airports
ATCSCC	ASDE-X
Atlanta Airport Authority	ASDE-X
ATO Safety	STDDS (ASDEX, ISMC, ASDE-X, RVR)
BOS	ASDE-X
Chicago Consolidated TRACON	ASDE-X
CIWS	WMSS NEXRAD /all radar
CRCT	ASDE-X / LGA, EWR, JFK
ELG Viewer MS	ASDE-X
I90A Viewer MS	ASDE-X
N90 Viewer MS	ASDE-X
NCT Viewer MS	ASDE-X
OASIS	HWDS
PCT Viewer MS	ASDE-X
PDARS	TDES
SDFZ Viewer MS	ASDE-X
SOSC	STDDS
Southern California TRACON	ASDE-X
TBFM	CDDS
WARP	Enhanced WINS, HWDS
ZLA Viewer MS	ASDE-X
ZNY Viewer MS	ASDE-X
Non FAA Government Entities	
DoD Aeronautical Information Portal (DAIP)	AIM FNS
Seattle Port Authority	ASDE-X

Airlines	
American Airlines	ASDE-X
FedEx	ASDE-X / MEM
JetBlue	ASDE-X
United Airlines	ASDE-X
USAIR	ASDE-X
UPS	ASDE-X
Industry	
Kent State	CIWS / all products
MIT - Lincoln Labs	ASDE-X, NEXRAD, ITWS
MITRE	ASDE-X, TFMData, RVR
Volpe	ASDE-X, ITWS, TBFM, TFMData, FDPS
Alliance	ASDE-X
Embry Riddle	TFMData, ASDE-X
FlightAware	TFMData, ASDE-X
Metron	ASDE-X
Lockheed Martin	ASDE-X/ ATL, CLT, MSP, DTW, BOS, IAD, LAS
MOSAIC ATM	ASDE-X, TFMData
Passur	TFMData, ASDE-X, TBFM
Raytheon	ASDE-X
Rockwell Collins	CIWS / all products
Sabre	ASDE-X, ITWS, TFMData, RVR
Saab Sensis	ASDE-X
Thales	TFMData, RVR, ASDE-X, ITWS
WSI	ASDE-X, TFMData, RVR

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Non-NAS Consumer Pipeline (as of August 3, 2015)

Start Process & Sign Access Agreement → Connect to R&D & Develop SOA Client & Backend System Integration → FAA Infrastructure Integration Testing → Cutover Planning & Readiness → OPS Cutover Complete

171 unique Non-NAS Consumers have *started* the process

47 have *completed* the process

124 are *in* the process

31 new Consumers are actively in development

78 are preparing for R&D

11 Consumers are prepping for FNTB Integration Testing

4 Consumers are prepping for cutover to Operations

47 non-NAS Consumers are consuming from SWIM in Operations

Timeline to complete is primarily driven by customer

Timeline to complete is primarily driven by FTI PMO & Tech OPS/NEO resources

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Questions

How to become a SWIM user?

- Getting started…
  - ✓ Email your request to: Data-to-Industry@faa.gov
  - ✓ Contact Joe Lahoud, SWIM Implementation Lead
    - Phone: 202-267-7406 (desk), 202-253-1896 (cell); e-mail: Joseph.Lahoud@faa.gov

- Key Takeaways for External User Community
  - ✓ Contact the FAA and establish an agreement
  - ✓ Establish connectivity and build your SOA client
  - ✓ Connect and Test with SWIM in R&D and FNTB

  Take advantage of FAA-published user documentation
    - Listed on the next slide →

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FAA Documents and Links

SWIM Background
http://www.faa.gov/nextgen/swim

Access Agreement Portal
http://data.faa.gov

NSRR Account Request Form
http://www.faa.gov/nextgen/programs/swim/nsrr_form/

SWIM Jumpstart Kit v4.3
http://www.faa.gov/nextgen/programs/swim/documentation/media/swim_standards/JumpstartR4.zip

FTI NBPS User Guide Volume II- For Non-NAS Users
http://www.faa.gov/nextgen/programs/swim/documentation/media/user-guide/FTI_NBPS_User_Guide.pdf

SWIM NEMS User Guide
http://www.faa.gov/nextgen/programs/swim/documentation/media/user-guide/SWIM_NEMS_User_Guide.pdf

Consumer On-Ramping Form
http://www.faa.gov/nextgen/programs/swim/documentation/media/user-guide/External_Consumer_On-Ramping_Form_Template.xls

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