

*Delivering Digital
Services*

SWIM Flight Data Publication Service (SFDPS)

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Federal Aviation
Administration



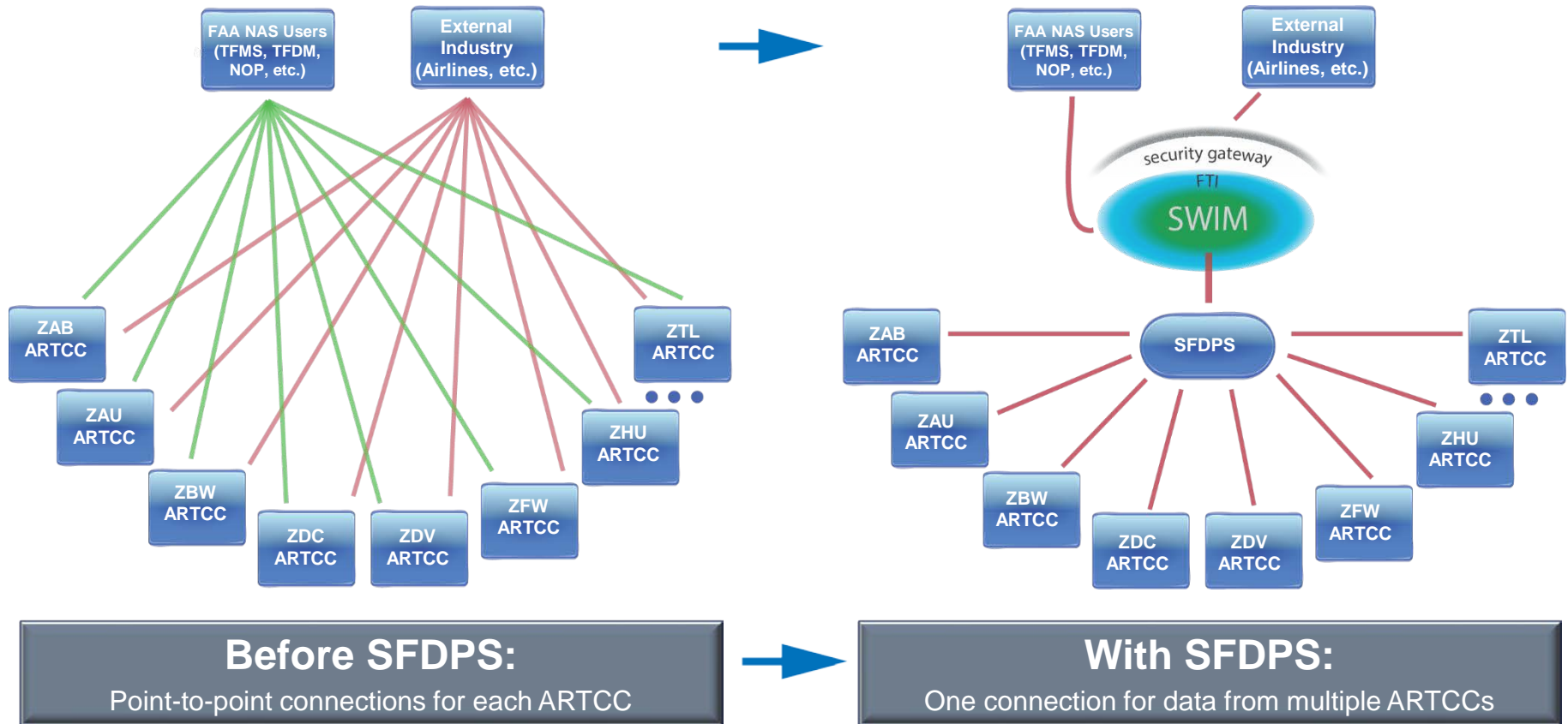
EUROCONTROL

Air Transportation Information Exchange Conference

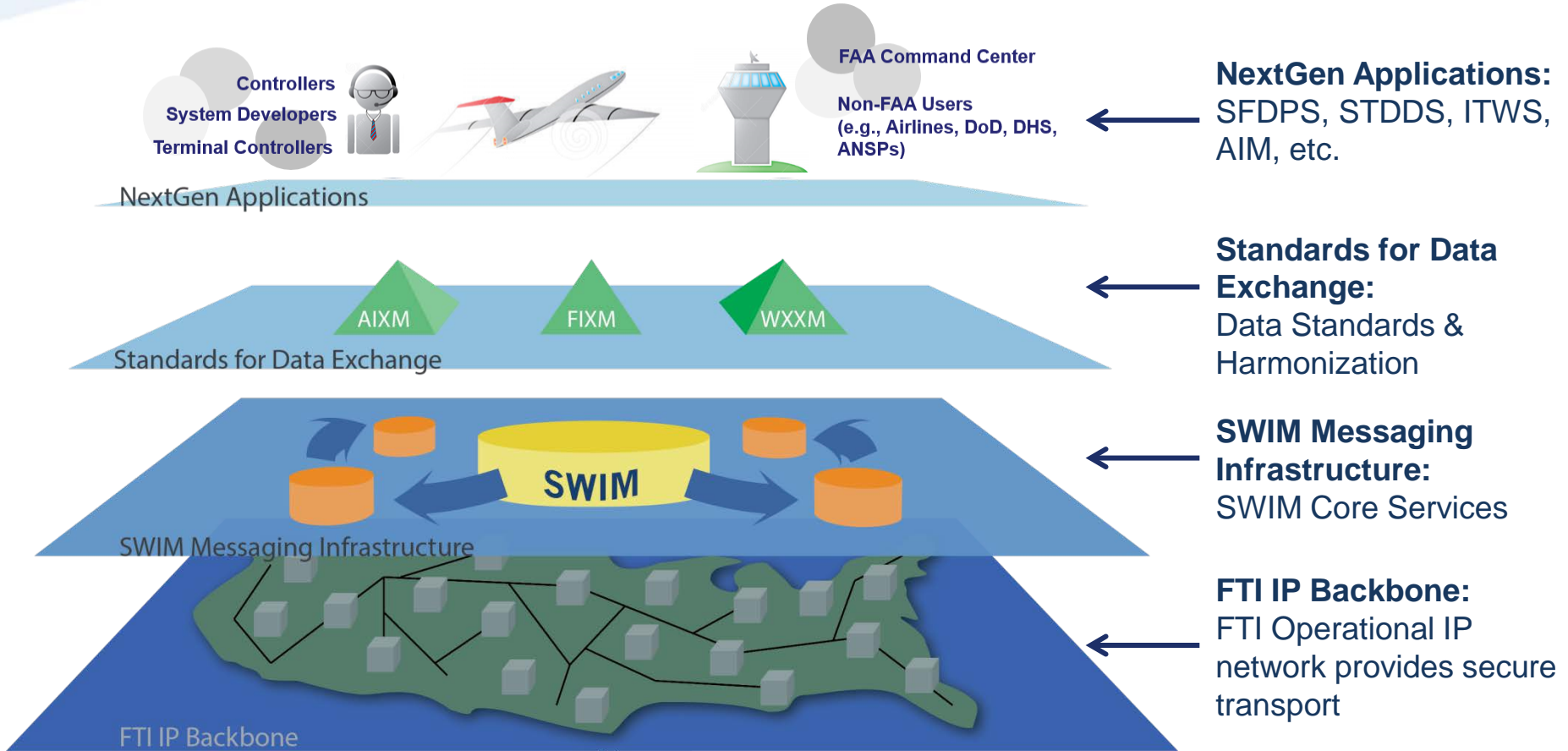
Delivering Digital Services

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

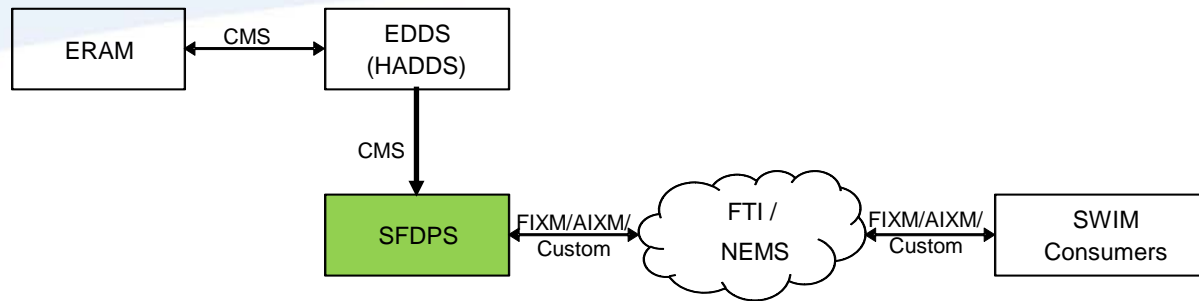
SWIM: Information Access to Transform the Aviation Community



NextGen Information Sharing Architecture



SWIM Flight Data Publication Service (SFDPS)



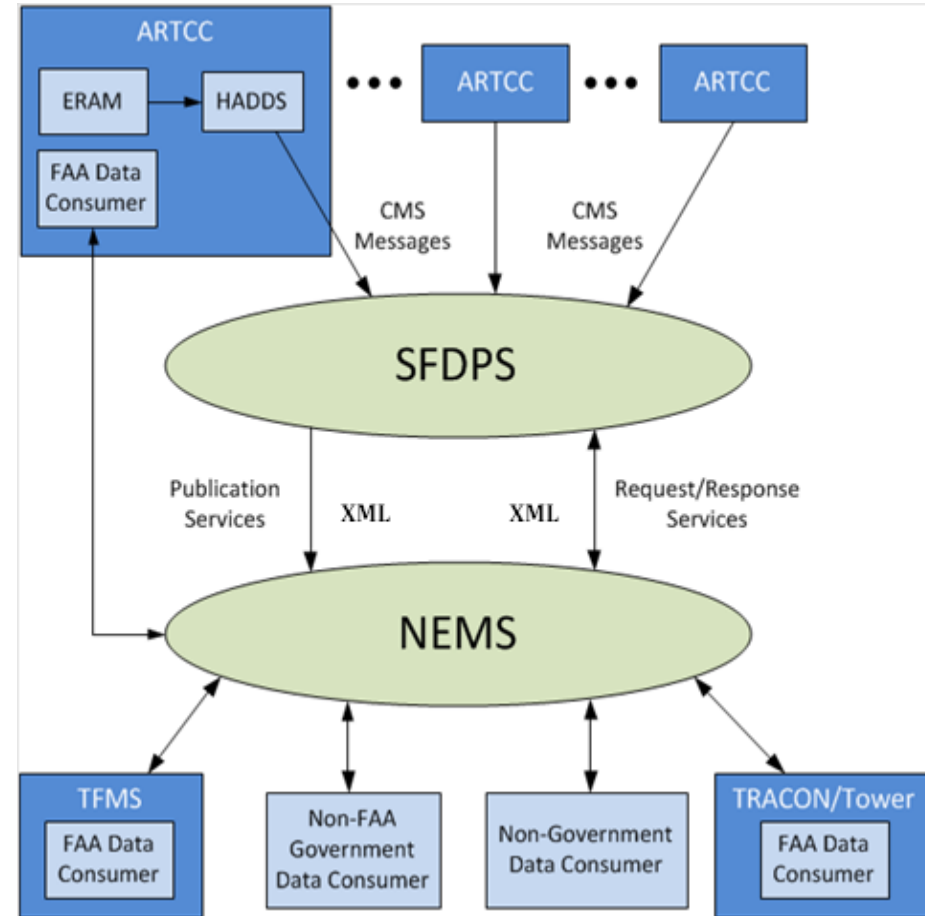
- Provides data using Service-Oriented Architecture paradigms
 - Provides data using Publish-Subscribe and Request-Response message patterns
- Leverages SWIM filtering, routing, and security capabilities to disseminate data and accept requests
- Provides Four Services
 - En Route Flight Data Service (flight and track data)
 - En Route Airspace Data Service (altimeter, route and sector data)
 - En Route Operational Data Service (beacon code utilizations, instrument adjustment counts, sign-in sign-out information etc.)
 - En Route General Information Message Service (general messages)

SWIM Flight Data Publication Service (SFDPS)

- Transforms ERAM data from legacy into XML formats
- Publishes flight and track data in FIXM
- Publishes airspace data in AIXM
- Publishes operational and general message data in a custom XML format

LEGEND

CMS – Common Message Set
ERAM – En Route Automation Modernization
FIXM – Flight Information Exchange Model
HADDS – Host ATM Data Distribution System
NEMS – NAS Enterprise Messaging Services
SFDPS – SWIM Flight Data Publication Service
TFMS – Traffic Flow Management System
TRACON – Terminal Radar Approach Control facility
XML – Extensible Markup Language



En Route Flight Data Publication Service

- Flight Plan information
- Converted Route Information
- Cancellation Information
- Departure Information
- Aircraft Identification Information
- Hold Information
- Progress Report Information
- Flight Arrival Information
- Flight Plan Update Information
- Expected Departure Time Information
- Beacon Code Restricted
- FDB Fourth Line Information
- Point Out Information
- Inbound Point Out Information
- Handoff Status
- Flight Amendment 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 Information2
- Beacon Code Reassignment

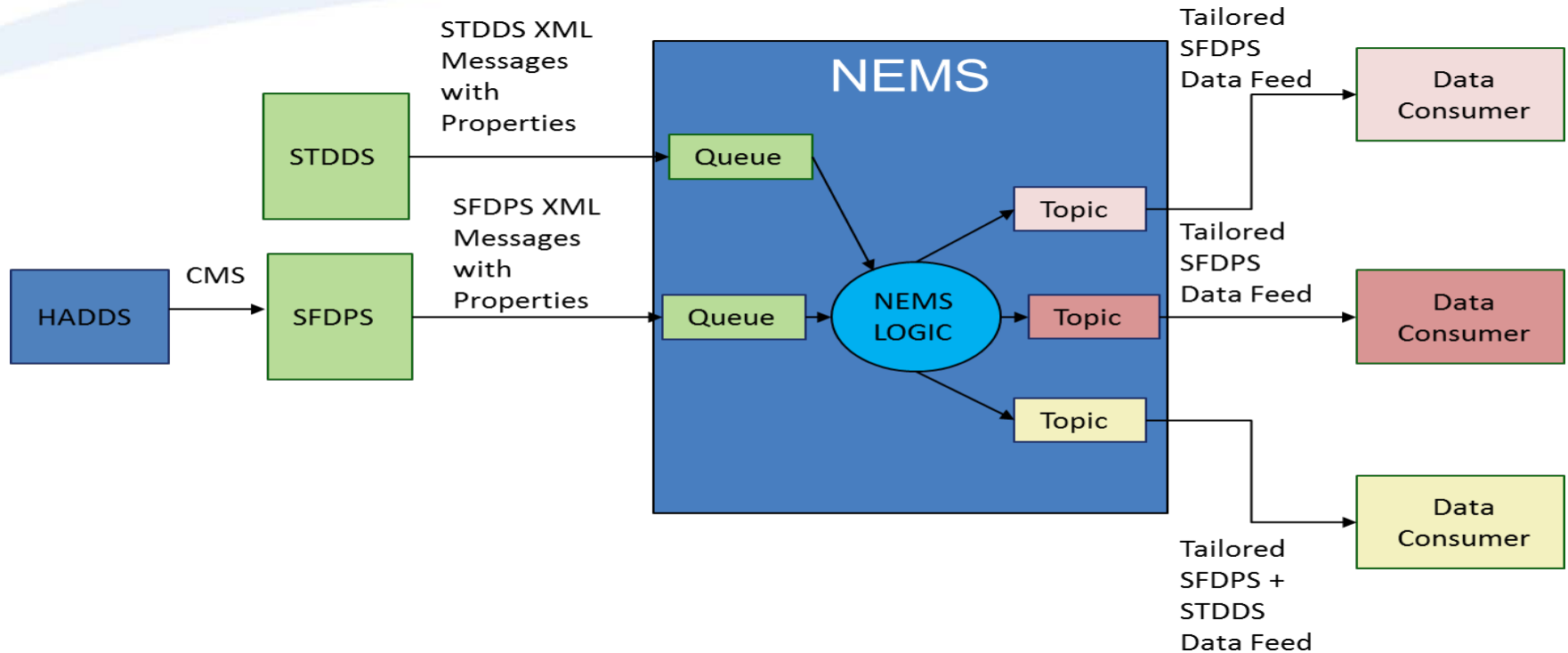


Other Services

- En Route Airspace Data Publication Service
 - Sector Assignment Status
 - Special Activities Airspace (SAA)
 - Altimeter Setting
 - Route Status
- En Route Operational Data Publication Service
 - Traffic count Adjustment
 - Instrument Approach Count Adjustment
 - Sign In Sign Out
 - Beacon Code Utilization
 - Geographic Beacon Code Utilization
- En Route General Information Message Publication Service
 - General Information
 - Interim Altitude Status Information
 - Unsuccessful Information Transmission
 - ERAM Status Information
 - Hold Status Information

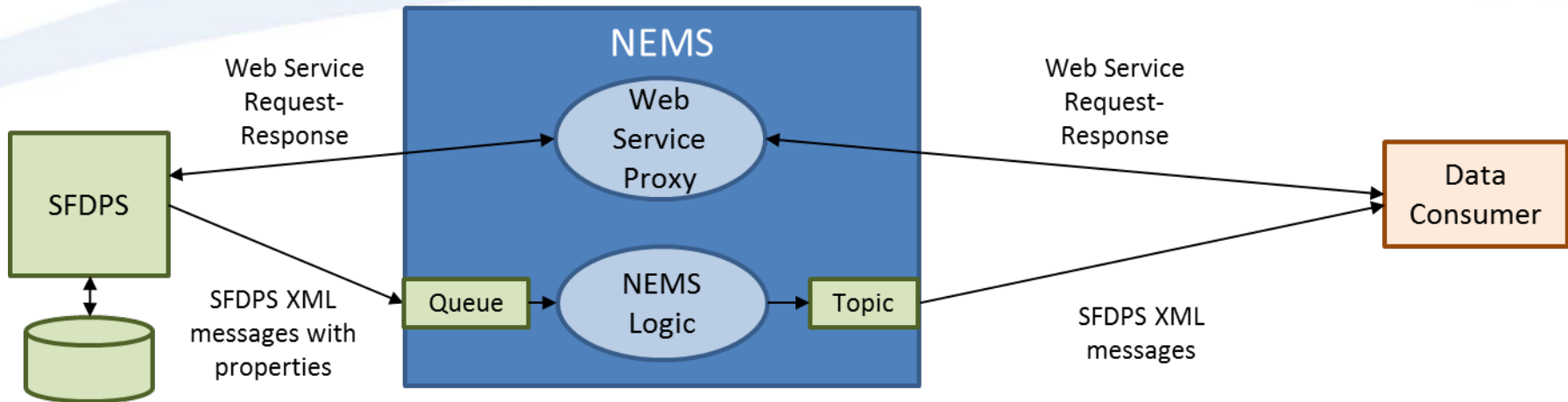


SFDPS Data using Publish-Subscribe Message Pattern



- Customizable data feed
- Consumer can aggregate data from multiple applications through SWIM

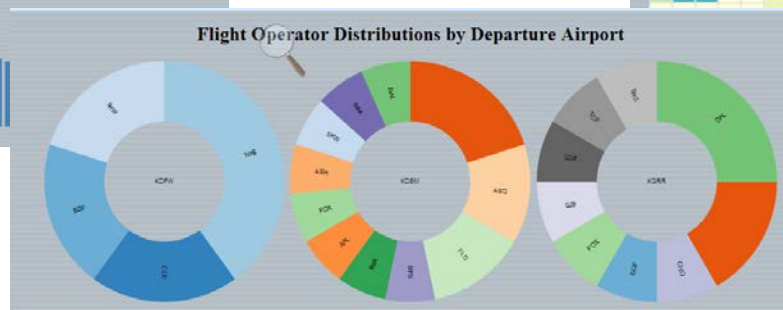
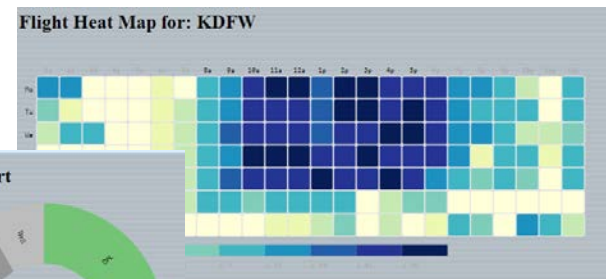
SFDPS Data using Request-Response Message Pattern



- Supports standard SOAP-over-HTTP(s)
- Loosely coupled scalable design supports wide variety of queries
- Common use cases (such as single flight history lookup) engineered to run with very fast performance
- Ad-hoc queries for current and historical data over two weeks (e.g. flight status, sector configuration)

SFDPS Data

- Allows consumers to:
 - Compare predicted and actual departure times
 - Compare control times and actual departure times
 - Determine the busiest departure and arrival fixes
 - Measure the busiest traffic areasand glean other such valuable insights



SFDPS Benefits in a Nutshell

- One connection for consolidated feed from multiple CONUS ARTCCs
- XML message formats (FIXM, AIXM, and custom)
- Publish-Subscribe and Request-Response Message Patterns
- Fast and accurate flight matching
- Enhanced feeds (eliminating redundant or conflicting information)
- Current and historical databases providing snapshots and reconstitution
- Consumer-customizable data feeds
- Easy integration with applications such as Google Maps
- Built on a modern and scalable infrastructure
 - Uses the FUSE Enterprise Service Bus
 - Uses HBase and Hadoop
- Loosely coupled services enabling simple integration, consumption and reuse
- Custom M&C interfaces and integration with other M&C tools (such as those provided by Hewlett-Packard)



SFDPS Status

- Available to users in operational environment
- Working with 42 prospective consumers. Goal is to on-ramp 15 to 20 consumers by December 2015
- R&D and FNTB environments available for testing
- Consumers on-ramped to operational environment after qualification
- Supports FIXM 3.0 and AIXM 5.1
 - Updates to future versions of FIXM and AIXM in planning phase

SFDPS Prospective Consumers – Partial List

FAA Programs

- TFMS
- TBFM
- TFDM
- PDARS
- NOP
- Data Comm

R & D Organizations

- MITRE
- NASA
- MIT Lincoln Lab
- University of North Dakota UAS
- Embry Riddle

External Industry

- Aerospace Engineering
- Boeing ATM
- CSC DUATS
- Delta Airlines
- FedEx
- General Dynamics Information Technology
- JetBlue
- Korean Airlines
- Mosaic ATM
- NetJets
- Noblis
- Northrop Grumman
- PASSUR
- Saab Sensis
- Thales



Contact Information

- Visit:
<http://www.faa.gov/NextGen/SWIM>
- Email requests to:
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