

# SWIM Users Forum

March 9, 2017

**Presented By:**  
SWIM Program Office  
Washington, DC



Federal Aviation  
Administration



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# Today's Agenda

- **Welcome**
- **Program Updates**
  - Public SWIM Announcement: PIR
  - Follow up: CSS – Flight Data Survey
  - SFDPS
  - STDDS
- **The SWIM Help Desk**
- **Bandwidth Numbers per Service**
- **Voice of the User: PASSUR**
- **Coming up**
- **Addressing your questions and concerns**



# SWIM Post-Implementation Review (PIR) Consumer Survey

- PIRs are conducted within the FAA to evaluate the results of an investment program to see if the implementation was as planned and meets needs effectively, or whether changes are required
- A PIR is being conducted on NEMS and SFDPS
- We seek your feedback in determining how SFDPS and NEMS are meeting your needs, and how we could make them more effective, efficient, and usable
- You will receive an email with a link to the PIR Survey - <http://survey.sogosurvey.com/k/RQsWRTWSsXsPsPsP>
- We would appreciate it if you could complete this survey by 3/31
- Your feedback will help us immensely in our future planning



# CSS-FD Survey Update

SWIM Users Forum

March 2017



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# Survey Update

- **Introduced CSS-FD concept at last User Forum (12/8/16) and solicited feedback via online survey**
  - *Thank you to all who have taken the time to fill out the survey!*
- **There have been 15 responses from a wide range of consumers of flight data:**
  - FAA
  - Airlines
  - Research
  - Commercial
- **The majority of respondents consume SWIM flight data; ~50% have consumed for greater than one year**



# Notable Survey Responses

- **Most common flight data processing functions:**
  - Content parsing (86.7%)
  - Data correlation (80%)
  - Data deconfliction (66.7%)
  - Data format conversion (66.7%)
- **Most respondents were confident in their business' ability to accurately match flights across data sources, but noted that this comes at a high cost.**
  - The complexity of data correlation was a common theme, and the lack of a unique flight identifier across all systems makes it much more difficult.
- **93.3% of respondents apply internal filtering, but only 46.7% of utilize filtering available from external systems.**
- **When a flight data feed is interrupted or lost, there is a medium to high impact on operations depending on availability of a recovery option**

# Help Shape CSS-FD

- **We are still actively collecting responses to the survey.**
- **If you have yet to take survey, please take this opportunity to help drive the requirements for an enhanced flight data sharing infrastructure.**
- **How?**
  - On-line survey : <https://goo.gl/wRStnr>
  - Direct contact via email: Jon Cunningham, [jcunningham@mosaicatm.com](mailto:jcunningham@mosaicatm.com)



# Questions?



# SFDPS Update

SWIM Users Forum

March 2017



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# Agenda

- SFDPS Release 1.3.0 Cutover Status
- Availability of 12 Second Track Updates and Simple XML Format
- Consumer Migration from NEMS to Solace
- Solace Qualification Testing
- SFDPS Client Testing
- Data Consumption from Solace vs. NEMS
- The SFDPS Web Page
- SFDPS Services Information in NSRR
- FAA Contacts
- Q&A



# SFDPS Release 1.3.0 Cutover Status

- SFDPS Release 1.3.0 was successfully cutover into Operations on February 21/22, 2017
- This release addressed the batching of track messages to alleviate bandwidth utilization issues
- Batched one minute updates of track messages are now published in operations
- SFDPS data is available to external consumers via NEMS (ATL/SLC and ACY OEX) and Solace (ACY and OEX)
- Client changes were required of flight data consumers to correctly interpret FIXM messages (due to batching of track messages, which also necessitated changes to the root element of other messages) and were communicated via User Forums over the past few months
- For problems in operations, please contact the FAA Enterprise Service Desk at 1-855-322-6362 option 3 or at [NEO-ES@faa.gov](mailto:NEO-ES@faa.gov)



# SFDPS Release 1.3.0 Cutover Status

- How did the cutover go for you? Would you like to share any feedback?
  - Type it in
  - Raise your hand to be unmuted to share your feedback over the phone
  - Send an email to [swim@faa.gov](mailto:swim@faa.gov) with the subject line: SFDPS Release 1.3.0 cutover feedback
  - Share with your SWIM project lead



# Availability of 12 Second Track Updates and Simple XML Format

- Consumers who made the request for 12 second track updates before February 21<sup>st</sup> should see the 12 second track data in their Solace queues in late March/early April
- If you have not yet made the request but would like to receive 12 second track updates, please contact your SWIM project lead. Turnaround time for requests is 8-10 weeks
- All track updates, 12 second or one minute, are batched
- Flight and Airspace data are now available in Simple XML format. If you need this format instead of FIXM/AIXM, please contact your SWIM project lead

# Consumer Migration from NEMS to Solace

- SFDPS data consumers in ACY and OEX currently consuming data via NEMS are urged to transition to Solace
- SFDPS feeds to NEMS topics will be discontinued in about six months (August/September time frame)
- All consumers of SFDPS data connecting at these locations are expected to have moved to Solace by then
- Consumers of SFDPS data in ATL or SLC who wish to receive 12 second track updates should consider moving to ACY or OEX and connecting via Solace. Please contact your project leads if you wish to do this

# Solace Qualification Testing

- All SFDPS consumers new to Solace must undergo FNTB qualification testing
- SFDPS consumers who have successfully undergone Solace FNTB qualification testing for another service are exempt
- For connections or to initiate qualification testing, please contact your SWIM project lead



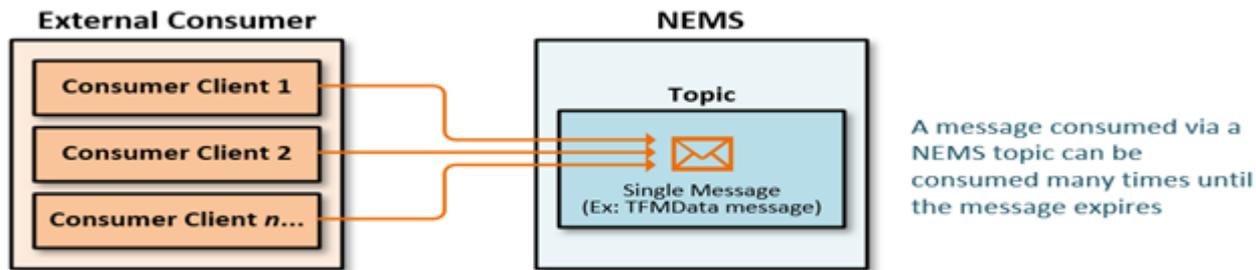
# SFDPS Client testing

- SFDPS Release 1.3.0 is also available in the R&D environment
- Consumers may test their clients with data from SFDPS Release 1.3.0 in the R&D environment
- For connections or problems during testing, please contact your SWIM project lead

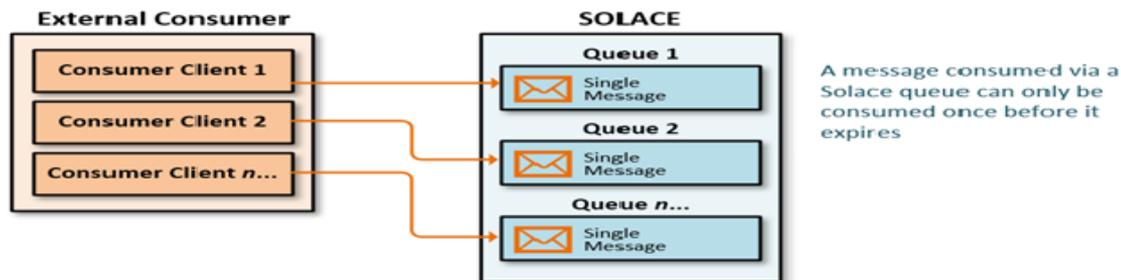


# Data Consumption from Solace vs. NEMS

- NEMS provides topics for consumption of data. Consumers with multiple clients are able to consume the same message before it expires from a topic with each client.



- Solace utilizes queues, allowing only a single client to consume a message before the message expires



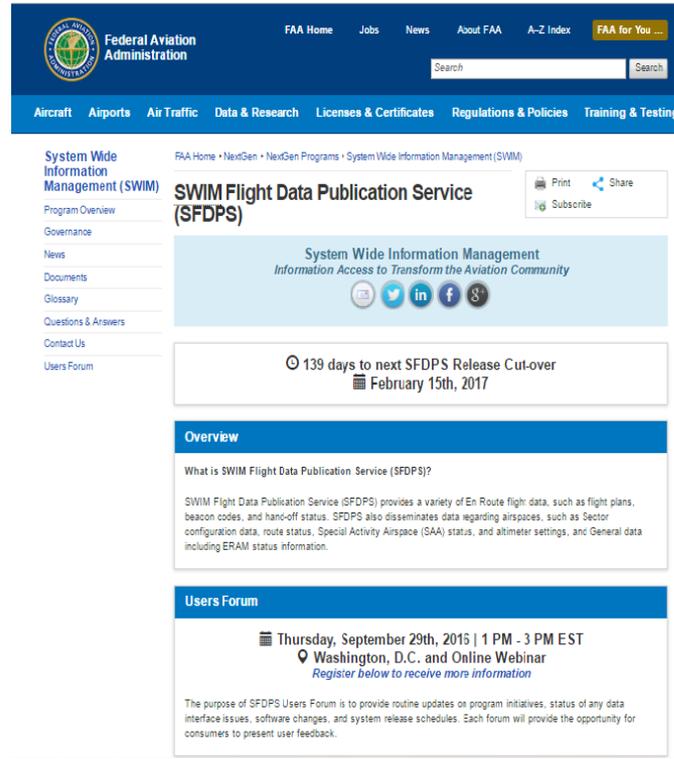
# Data Consumption from Solace vs. NEMS

- New consumers will only be provided with one Solace queue per NESG
  - A fan-out mechanism internal to the consumer organization should be developed to distribute copies of a message to multiple clients
- Existing consumers with multiple clients consuming the same message from a NEMS topic who are moving to Solace will be provided with a grace period (of approximately one year) to implement internal mechanisms to distribute data to multiple clients
  - Please work with your FAA project lead if you need additional Solace queues configured for each of your clients currently consuming data from the same topic

# The SFDPS Web Page

- SFDPS user forum announcements
- User forum presentations
- Q&As on SFDPS topics
- SFDPSConnect tutorial videos

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



The screenshot shows the Federal Aviation Administration (FAA) website for the System Wide Information Management (SWIM) Flight Data Publication Service (SFDPS). The page features a blue header with the FAA logo and navigation links. A search bar is located in the top right. Below the header, there is a navigation menu with links for Aircraft, Airports, Air Traffic, Data & Research, Licenses & Certificates, Regulations & Policies, and Training & Testing. The main content area is titled "SWIM Flight Data Publication Service (SFDPS)" and includes a "System Wide Information Management" banner with social media icons. A prominent message states "139 days to next SFDPS Release Cut-over" on February 15th, 2017. The "Overview" section explains that SFDPS provides En Route flight data, including flight plans, beacon codes, and hand-off status. The "Users Forum" section announces a forum on Thursday, September 29th, 2015, from 1 PM to 3 PM EST in Washington, D.C., and an online webinar, with a link to register for more information.

# Services Information in NSRR

- The following services in the NSRR are associated with SFDPS Release 1.3.0
  - En Route Flight Data Publication – v2.0
  - En Route Airspace Data Publication – v2.0
  - En Route General Message Publication – v2.0
  - En Route Flight Data Query – v2.0
  - En Route Airspace Data Query – v2.0
  - En Route General Message Query – v2.0
- Please check both the Service Documents and Service References sections of the above services for documents, test clients, and other information on the services (links are also provided on the next slide)

# Links to documents and other artifacts in NSRR

- SFDPSConnect Release and SFDPS documents are available on NSRR
  - <https://nsrr.faa.gov/sites/default/files/SFDPSConnect-Release-2-1-3-08012016.zip>
  - <https://nsrr.faa.gov/sites/default/files/SFDPSConnect-v2.1.3-source.tgz>
  - <https://nsrr.faa.gov/sites/default/files/SFDPSConnect-v2.1.3-Documentation.zip>
  - [https://nsrr.faa.gov/sites/default/files/sfdps-connect-tutorial-1-v2\\_0.zip](https://nsrr.faa.gov/sites/default/files/sfdps-connect-tutorial-1-v2_0.zip)
  - <https://nsrr.faa.gov/sites/default/files/sfdps-connect-tutorial-2-final.zip>
  - [https://nsrr.faa.gov/sites/default/files/NAS\\_JMSDD\\_Draft\\_RevB\\_20161229.pdf](https://nsrr.faa.gov/sites/default/files/NAS_JMSDD_Draft_RevB_20161229.pdf)
  - [https://nsrr.faa.gov/sites/default/files/NAS\\_WSDD\\_4309\\_001\\_Draft\\_RevB-20161229.pdf](https://nsrr.faa.gov/sites/default/files/NAS_WSDD_4309_001_Draft_RevB-20161229.pdf)
  - [https://nsrr.faa.gov/sites/default/files/SFDPSSchema\\_v1.3.8.xsd](https://nsrr.faa.gov/sites/default/files/SFDPSSchema_v1.3.8.xsd)
  - [https://nsrr.faa.gov/sites/default/files/AIXM-5-1-20100201-xsd\\_with\\_annotations\\_SFDPS\\_1.1.tgz](https://nsrr.faa.gov/sites/default/files/AIXM-5-1-20100201-xsd_with_annotations_SFDPS_1.1.tgz)
  - [https://nsrr.faa.gov/sites/default/files/FIXM\\_Core\\_v3\\_0\\_Schemas.zip](https://nsrr.faa.gov/sites/default/files/FIXM_Core_v3_0_Schemas.zip)
  - [https://nsrr.faa.gov/sites/default/files/FIXM\\_US\\_Extension\\_v3\\_0\\_Schemas.zip](https://nsrr.faa.gov/sites/default/files/FIXM_US_Extension_v3_0_Schemas.zip)

# FAA Contacts

- **New SFDPS Consumers:**
  - If you have not yet been assigned an FAA project lead, use the [Data-to-Industry@faa.gov](mailto:Data-to-Industry@faa.gov) email address to request consumption of SFDPS data
- **Existing SWIM Consumers:**
  - Work with your assigned FAA project lead to get started with SFDPS Release 1.3.0



# Q&A

- **Please ask your questions now**
  - Type your question in, or
  - Raise your hand to be unmuted to ask your question over the phone
- **If you have questions at a later date**
  - Please contact your FAA Project Lead



# STDDS Update

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# STDDS R3.3 Contents

(This slide information is same as presented in Dec SWIM User Forum)

- **SMES**

- Only new messages added; only received if subscription changed
- Non-Movement Area (NMA) data publication derived from MLAT and ADS-B CAT10 data published by ASDE-X/ASSC
- ASDE-X/ASSC Safety Alerts publication

- **APDS**

- Add airport identifier to payload of messages
- Downsample RVRDataUpdate messages

- **TAIS**

- Add latitude/longitude to track points
- Filter out flights above FL180 to reduce bandwidth

- **URN Namespace and Header Property**

- e.g. *us:gov:dot:faa:atm:terminal:entities:smes:v3-0*
- *version = 3.0*

Interfaces must  
be updated to  
R3.3 or  
messages may  
be dropped or  
fail!



# STDDS R3.3 Status

- **R3.3.0.1 is the current build in key site testing (3 sites)**
- **R3.3.0.2 will contain a small schema change (1 key site)**
- **Problems motivating the R3.3.0.2 change:**
  - ADS-B sends callsigns to ASDE-X containing spaces
    - E.g., ground vehicles at PHX have configured identifiers like “OPS 4”
  - ASDE-X users can manually tag targets with lower-case letters
    - E.g., “Zebra2” vehicle at SAN -> callNum
    - callNum affects callsign in SafetyLogicAlertReport messages
  - Target callsigns can start with numbers
  - ***STDDS is using a restrictive pattern; therefore, these targets are currently excluded from the SMES data streams***



# STDDS R3.3.0.2 Details

- **No namespace change**
- **Should only affect clients doing schema validation**
- **Affects three files, specific to SMES:**
  - commontypes/CommonTypes.xsd
  - smes/sd/positionreport.xsd
  - smes/SafetyLogicTypes.xsd
- **Updates to NSRR:**
  - Final SMES JMSDD to be uploaded by Wed. 3/15
  - Final R3.3 schema
  - Sample R3.3.0.2 data



# STDDS R3.3 Deployment Status

- **Key-site status**

1/24/2017	R3.3.0.1 installed at Y90
2/21/2017	R3.3.0.1 installed at SCT
3/7/2017	R3.3.0.1 installed at CLT
4/17/2017	R3.3.0.2 to be installed at JAX
Late-April	R3.3.0.2 to be installed back at Y90

- **Waterfall status (remaining 34 + 2 “go-back” sites)**

Mid-June	Start deployment (may be expedited to begin in mid-May)
NLT mid-August	Complete deployment

- Sites with more user impact are front-loaded in the schedule
- Updated STDDS Site Data Availability file in [NSRR](#)



# STDDS R4

- **Planned Changes**

- Correlated GUF1 in SMES, TAIS, TDES
- Publish filtered TDES data (EFSTS and TDLS event times)
- Add airportId to SurfaceMovementEvent message body
- AIG200 batching to reduce bandwidth
- AIG510 changes to reduce bandwidth
- Changes to improve reliability
- PTRs and security patches

- **Tentative schedule**

June 2018	1 <sup>st</sup> key-site deployed
March 2019	100% deployed



# STDDS Documentation/Communication Changes

- Planning new STDDS page at [FAA SWIM](#)

- Overview
- News and Events
- Documents
  - STDDS Site Data Availability file
  - Sample STDDS client
  - TAIS lat/long info
- FAQs

- Still in [NSRR](#):

- Release Notes
- Schema
- JMSDDs
- Sample data

[FAA Home](#) » [NextGen](#) » [NextGen Programs](#) » [System Wide Information Management \(SWIM\)](#)

## SWIM Flight Data Publication Service (SFDPS)

**System Wide Information Management**  
*Information Access to Transform the Aviation Community*



### SFDPS Overview



**NAS Service Registry and Repository**  
Making Services Visible, Discoverable, and Understandable

STDDS Surface Movement Event (SMES)

[Home](#) » [Services](#) » [STDDS Surface Movement Event \(SMES\)](#) » [Documents](#)

Service Profile

Service Documents

- Service Background
- Service Provider
- Points of Contact
- Service Consumers
- Service Functionality
- Security
- Qualities of Service

Document Type: XML Schema Definition (XSD)



# EDS Help Desk Overview

NEO Enterprise Data Services  
Help Desk

March 2017

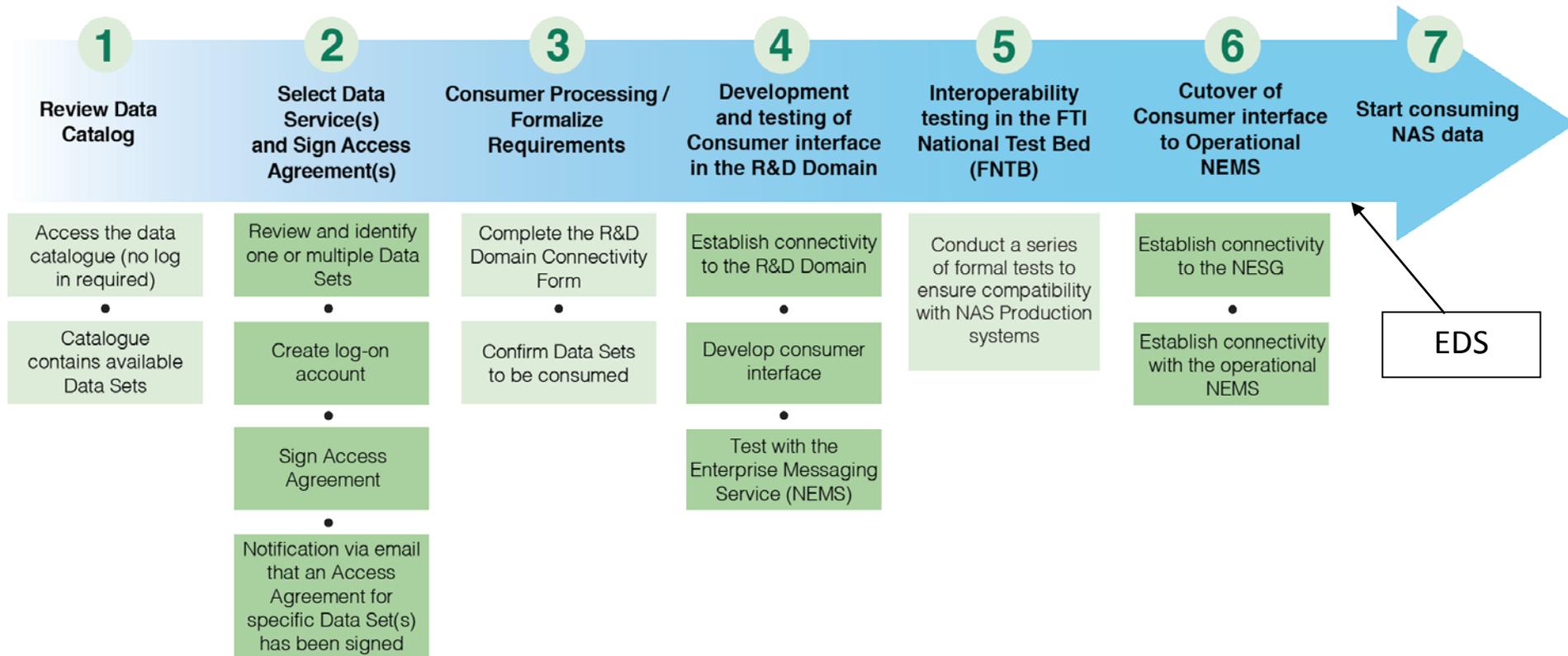


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# SWIM On-Boarding Process



# Enterprise Data Services Desk

- **A.K.A. “SWIM Helpdesk” or “Enterprise Services Desk”**
  - Launched Oct. 2014
- **Tasked with:**
  - Developing a single point of contact for internal/external SWIM user issues.
  - Performing triage of SWIM service impacting events
  - Primary point of contact for FTI services
  - FAA Logging & reporting SWIM service impacts
  - Notification of SWIM events to internal/external consumers



# EDS Functions

- **Primary POC for Internal/External SWIM user issues**
  - Support user issues **after** Service Acceptance (SA) is complete.
  - Provide notification for scheduled/unscheduled maintenance events.
  - Serve as the focal point between:
    - FAA and SWIM users
    - SWIM users and FTI NEMS/Security



# EDS Functions (cont.)

- Triage of SWIM-Related events
  - EDS will prioritize outage events and notification
  - National events and SWIM Producer outages are a top priority.
  - Status updates provided when feasible



# EDS Functions (cont.)

- Primary POC for FTI (FAA Telecommunications Infrastructure) Services
  - NEMS: Backbone of SWIM Exchange services
    - JMS/Web Logic: Direct connection to NEMS
    - Solace: Message router implemented to reduce latency and provide a buffer for NEMS node processing for connected user topics.
  - Security: VPN connectivity
    - EDS provides external consumer support for connection problems related to VPN tunnels.



# NAS Enterprise Messaging Services (NEMS)

- NEMS (NAS Enterprise Messaging Service) is a Federated Bus Architecture that uses a central messaging backbone (bus) for message propagation.
  - Exchange Service: application layer NAS ESB infrastructure service that brokers the delivery of business service content (products and sub-products) from producers to consumers includes software components and configuration data on many physical devices that broker the exchange of data across the ESB
  - Producer Service: configuration on NEMS that allows producers to feed data products to the NAS ESB
  - Consumer Service: configuration on NEMS that allows consumers to consume data products from the NAS ESB



# EDS Functions (cont.)

- **Notification of SWIM events**
  - **EDS provides notification for scheduled events**
    - NEMS node(s) outage
    - Internet Gateway (ACY/OEX) outage
    - Producer outages
      - TFMS
      - STDDS (ASDEX, RVR, STARS, EFSTS)
      - SFDPS
      - ITWS
      - Other Producers (Delta, AAL, TBFM)



# EDS Help Desk Process

- Step by step of events.....



# Upcoming changes for EDS

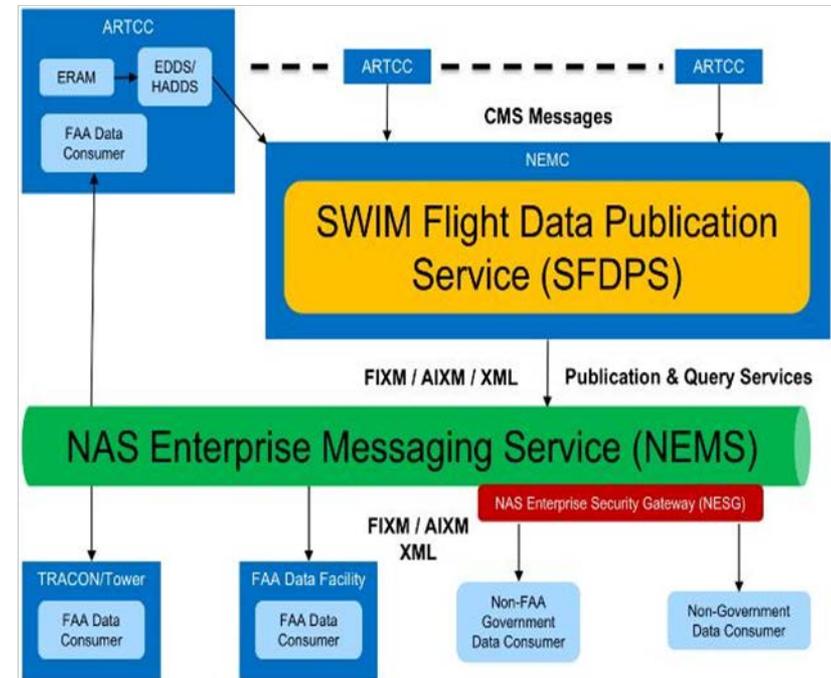
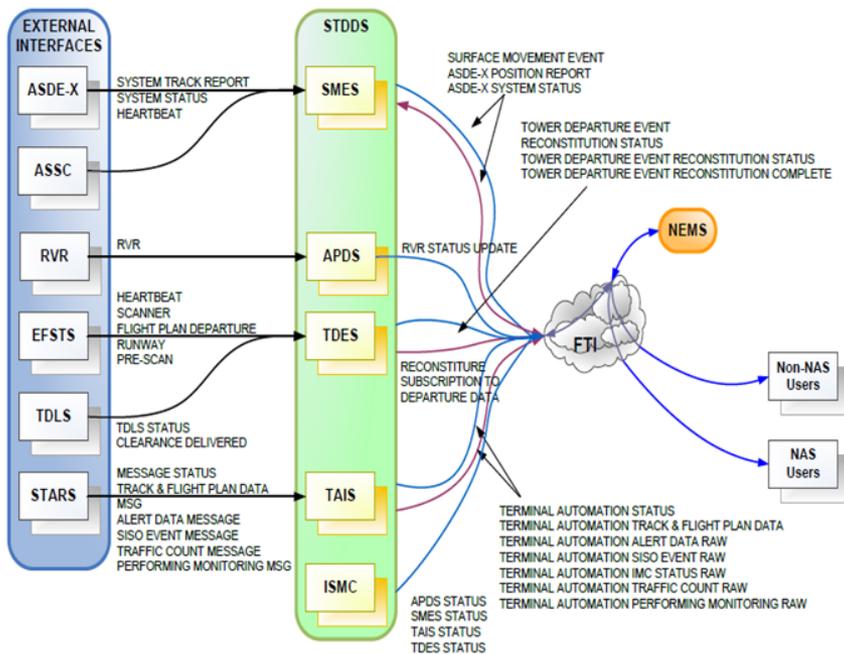
- **Functions to be separated into multi-tiered Enterprise Control Center (ECC) concept**
- **Tier 1 tasks move to “SWIM” ECC**
  - Monitoring, logging & reporting
  - Including all NAS equipment & scheduled maintenance
- **EDS will become Tier 2 (all SWIM)**
  - In-depth troubleshooting & restoration
  - Systems operations & management (SFDPS, AIMM, ESM, IAM, CSS-Wx, STDDS, etc.)



# SWIM Enterprise Control Center

## SWIM Terminal Data Distribution System (STDDS)

## SWIM Flight Data Publication Service (SFDPS)



# FAQs

- **The most common issues reported by users**
  - Client application/feed down
    - Most common reason is either Java issues or network connectivity before connecting to NEMS.
  - Latency on Topics/Feeds
    - Latency can be caused by NEMS server issues or a producer issue for the data.
  - NEMS login issues
    - If VPN is active, but still no data; NEMS login could be the issue



# FAQs (cont.)

- **Common issues reported by users**
  - FTI Security issues (VPN tunnel)
    - Network issue/change in IP addressing
    - Incorrect pre-shared key
    - Not cutover in FTI security yet. (service not ordered/in process)
    - FTI firewall settings or updates that delete authorization
  - Data issues
    - Data from Producer degraded or missing (outage)
    - NEMS stuck threads causing backlogs



# Acronyms

- **IESP** – **I**ntegrated **E**nterprise **S**ervices **P**latform
- **SFDPS** – **SWIM** **F**light **D**ata **P**ublishing **S**ervice
- **HADDS** – **H**ost **ATM** **D**ata **D**istribution **S**ystem
- **NEMS** – **NAS** **E**nterprise **M**essaging **S**ystem
- **NESG** – **NAS** **E**nterprise **S**ecurity **G**ateway
- **SWIM** – **S**ystem **W**ide **I**nformation **M**anagement
- **STDDS** – **SWIM** **T**erminal **D**ata **D**istribution **S**ystem
- **ASDE-X** – **A**irport **S**urface **D**etection **E**quipment **M**odel **X**
- **RVR** – **R**unway **V**isual **R**ange
- **EFSTS** – **E**lectronic **F**light **S**trip **T**ransfer **S**ystem
- **TDLS** – **T**ower **D**ata **L**ink **S**ervices
- **ITWS** – **I**ntegrated **T**erminal **W**eather **S**ervice



# SWIM NEMS Producer Bandwidth Estimates

Steve Link  
Harris Corporation

March 2017



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# SWIM Publisher Bandwidth Estimates - Fall'16

Harris Proprietary Information

Warning: NON-Export Controlled Information

Program	Product	Data Type	Producer Peak Message Rate (msg per sec)	Producer Estimated Peak Mbps (Mbits per Sec) Bandwidth	Msg Size Maximum (Bytes)
STDDS		XML		--	
	APDS	XML	3.0	0.2	
	SMES-Event	XML	0.7	0.0	
	SMES-ASDEX	XML	266.7	4.3	
	MLAPlotReport	XML	440.0	108.8	30,902
	ADSBPlotReport	XML	440.0	109.1	31,002
	SafetyLogicAlertReport	XML	44.0	0.5	1,450
	SafetyLogicHoldBar	XML	44.0	0.1	375
	ISMC	XML	1.1	0.0	
	STDDSStatus	XML	0.3	0.1	41,000
	TDES	XML	5.4	0.1	
	TAIS-2 All Sites	XML	2,347.0	28.8	
HWDS		Binary	6.7	3.0	
NEXRAD		Binary	3.3	0.1	
EWD		XML	4.4	0.1	
CIWS/CDDS	WFS	XML	6.3	0.1	
CIWS/CDDS	WCS	Binary	0.0	0.0	
CIWS/CDDS	WCS HTTP Get	Binary	1.3	0.0	
WMSCR		XML	0.0	--	
	PIREPS	XML	0.4	0.0	
	Altimeter Settings	XML	0.1	0.0	
TBFM		XML	308.6	2.0	
NDS-AIM	NOTAMS	Web Service	2.0	0.6	
ITWS		XML	11.3	1.9	
ITWS Alert		XML	17.5	0.8	
AIM-SUA		XML	0.0	0.0	
TFMS		XML	0.0	--	
	Flight Data	XML	3.3	8.0	
	Flow Information	XML	0.2	0.0	
	R13 Flight Data			12.0	
	R13 Flow Information			1.8	
FDPS - low rate		XML	120.0	6.8	
FDPS - high rate				25 - 38	

# Voice of the User:



David Brukman  
Chief Technology Officer  
PASSUR Aerospace

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# PASSUR Aerospace's SWIM Story

## Introduction to PASSUR and its use of SWIM

### Kudos:

- Positive effects of recent changes in SWIM
- Excellent communications from Enterprise Services

### Use of SWIM in real life: some challenges

- Importance of backup -- within SWIM, and with non-SWIM sources
- Complexity of data fusion -- within SWIM, and to other sources

### Value of SWIM: Importance of focusing on customer objectives

### Future directions:

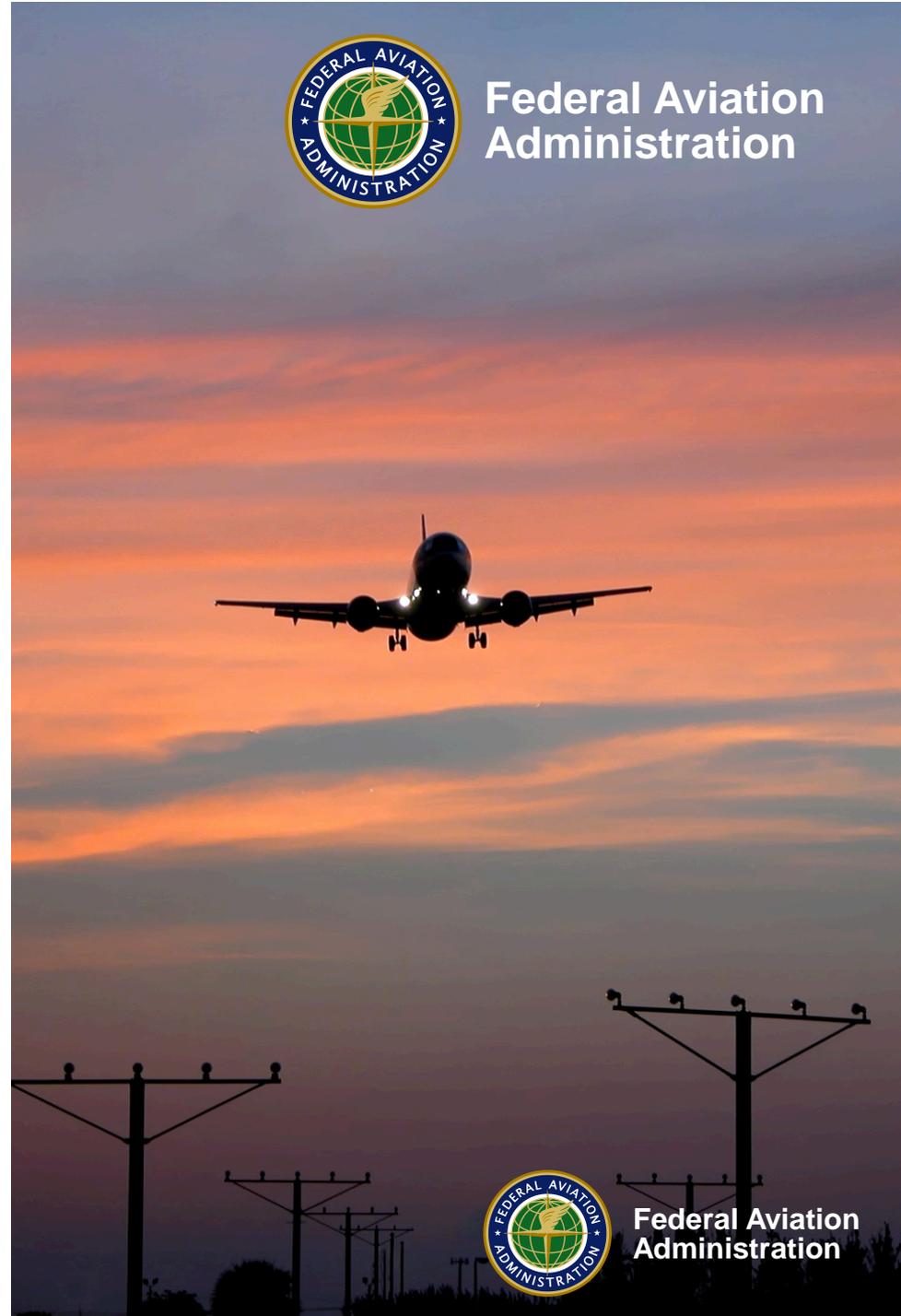
- Better uptime
- Improved accuracy
- A transparent way to log and view bugs
- Missing Data: Industry partnerships to help in data distribution

# Coming up

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# Upcoming Events

- **ATCA Technical Symposium**
  - May 16-18, Atlantic City
  - Presenting SWIM teams from Identity Access Management (IAM) and Enterprise Service Management (ESM)
- **Next Users Forum**
  - June 8, 2017
  - Will you be the next “Voice of the User”? If so, email us at [swim@faa.gov](mailto:swim@faa.gov)

**For questions about  
today's forum, contact  
[swim@faa.gov](mailto:swim@faa.gov)**

