SWIM Users Forum

March 9, 2017

Presented By:
SWIM Program Office
Washington, DC
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
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/wRSfnr
  – Direct contact via email: Jon Cunningham, jcunningham@mosaicatm.com
Questions?
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
SFDP5 Release 1.3.0 Cutover Status

- SFDP5 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
- SFDP5 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
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 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\textsuperscript{st} 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
- SFDPSConect tutorial videos

www.faa.gov/nextgen/programs/swim/sfdps/
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/SFPDPSchema_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/FIXM_Core_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

March 9, 2017
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

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

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<td>Start deployment (may be expedited to begin in mid-May)</td>
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<td>NLT mid-August</td>
<td>Complete deployment</td>
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• Sites with more user impact are front-loaded in the schedule
• Updated STDDS Site Data Availability file in NSRR
STDDS R4

• **Planned Changes**
  – Correlated GUFI 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**

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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
EDS Help Desk Overview

NEO Enterprise Data Services Help Desk

March 2017
SWIM On-Boarding Process

1. Review Data Catalog
   - Access the data catalogue (no log in required)
   - Catalogue contains available Data Sets

2. Select Data Service(s) and Sign Access Agreement(s)
   - Review and identify one or multiple Data Sets
   - Create log-on account
   - Sign Access Agreement
   - Notification via email that an Access Agreement for specific Data Set(s) has been signed

3. Consumer Processing / Formalize Requirements
   - Complete the R&D Domain Connectivity Form
   - Confirm Data Sets to be consumed

4. Development and testing of Consumer interface in the R&D Domain
   - Establish connectivity to the R&D Domain
   - Develop consumer interface
   - Test with the Enterprise Messaging Service (NEMS)

5. Interoperability testing in the FTI National Test Bed (FNTB)
   - Conduct a series of formal tests to ensure compatibility with NAS Production systems

6. Cutover of Consumer interface to Operational NEMS
   - Establish connectivity to the NESG
   - Establish connectivity with the operational NEMS

7. Start consuming NAS data

EDS
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 (STDDDS)  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 – Integrated Enterprise Services Platform
- SFDPS – SWIM Flight Data Publishing Service
- HADDS – Host ATM Data Distribution System
- NEMS – NAS Enterprise Messaging System
- NESG – NAS Enterprise Security Gateway
- SWIM – System Wide Information Management
- STDDS – SWIM Terminal Data Distribution System
- ASDE-X – Airport Surface Detection Equipment Model X
- RVR – Runway Visual Range
- EFSTS – Electronic Flight Strip Transfer System
- TDLS – Tower Data Link Services
- ITWS – Integrated Terminal Weather Service
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Voice of the User:

David Brukman
Chief Technology Officer
PASSUR Aerospace

March 2017
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

March 2017
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
For questions about today’s forum, contact swim@faa.gov