Minutes of the Federal Aviation Administration (FAA) System Wide Information Management (SWIM) Industry Collaboration Workshop and Full SWIM Industry-FAA Team (SWIFT) Meeting #9

February 25th and 26th, 2020

FedEx University Institute of Technology

The Zone, The University of Memphis, 365 Innovation Drive, Memphis, Tennessee 38152

<u>**Day One - SWIM Developer's Workshop**</u>

1. **Doors Open & Registration:**
   1.1. The meeting was held at the FedEx University Institute of Technology, 365 Innovation Drive, The Zone, The University of Memphis, Memphis, Tennessee 38152 on February 25th, 2020 at 1 PM. The half-day SWIM Developers Workshop was the first workshop of its kind for the FAA SWIFT program and was called to order by Josh Gustin, FAA Communications, Information, and Network Programs (CINP) Group Manager within the Program Management Organization (PMO).
2. **Introduction/Welcome:**
   2.1. Welcoming Remarks – Josh Gustin, Felisa White (FAA SWIFT Fed Lead)
      2.1.1. Introduced the SWIM Developers Workshop as a series of discussions/interactive engagements focused on airlines and other consumers wanting to connect and use the data delivered by SWIM, specifically through the SWIM Cloud Distribution Service (SCDS).
   2.2. Described the positive outcomes SWIM has achieved educating consumers how to access data and more recently developed Operational Context Documents (OCDs) to assist consumers to understand what individual data elements mean.
3. **SWIM 101/Overview of SWIFT – (David Almeida – LS Technologies)**
   3.1. SWIFT has been charged with bringing together FAA and Industry entities from information technology, operation research, and business analysts. Together the collective goal is to demystify SWIM, reduce barriers effectively and rapidly using SWIM data, and coordinate and collaborate with industry to move SWIM-based collaborative decision-making forward.
4. **SWIFT Case Study: Example Widgets Built Using SWIM Data (Chris Gottlieb – JetBlue)**
   4.1. Informed the audience that JetBlue is using widgets to describe the "art of the possible" by extending the data offered by SWIM from beyond only improving operational benefit but into opportunities to enhance customer service as well. Described success of using SCDS for building widgets, including one developed to provide common situational displays for operations. This widget has been expanded for broader use within the organization and has grown interest in SWIFT and SCDS within the airline management.
5. **SWIFT Focus Group: Operational Context & Use Case Documentation Updates – (Ray Mitchell Systems Engineer, – LS Technologies)**
      5.1.1. Described the collaborative effort that has proven successful to ensure operation researchers and managers understand the data. The operational context documents include data from surveillance, aeronautical, flight/flow, weather, and status. Provided a walkthrough of the SWIM OCDs structure, use, and access via the NAS Service Registry Repository (NSRR). Previewed current status of deliverables and those planned for release in the next couple of months. SWIFT Operational Context and Use Case documents can be

found at: https://nsrr.faa.gov/library. For more information contact: Ray Mitchell, Email: ray.mitchell@lstechllc.com.

6. **Developers Workshop Intro JMS Overview & Accessing SWIM via SCDS (Alex Murray, Noblis SWIM SME and Technical Lead)**
   6.1.1. Provided an overview of connecting to SCDS and walked through the pre-work provided to registered Day 1 attendees to address any connection issues and questions. Provided brief overview of Java Messaging Service (JMS) and how it is used to advertise event changes. Described the purpose and use of FIXM (Flight Information Exchange Model), an exchange model capturing Flight and Flow information that is globally standardized. FIXM version is currently at version 4.1. Gave the attendees a walkthrough of the SWIM JumpStart Kit, its structure, and getting it loaded into a developer environment.

7. **Enhanced JumpStart Kit for Data Collection & Development Ideas– (Doug Harvey, L3HARRIS)**
   7.1. Provided the concept/philosophy behind SWIM data and the how to of developing widgets/apps. Revealed the approach and tools that developers should leveraged when being the process of developing - starting with documentation and the data hub itself (NSRR, Operational Context, SCDS). L3Harris included the docker compose file and dashboards with the Jumpstart kit made available to the attendees for the workshop. These applications were made available for public use moving forward. Provided an example of SWIM data collecting by pulling data messages from STDDS. The enhanced Jumpstart Kit and startup files are available at github.com/l3harris.

8. **Introduction of Development & Analytics Focus Group (Erin Cobbett – Delta)**
   8.1. Day 1 should be viewed as a sneak peek into the type of analysis and solutions that will be further flushed out during the working sessions of the focus group.
      8.1.1. Challenged the room to come up with an acronym for the new group and informed the developers that were present to reach out to LS Tech if they were interested in Participating.

9. **Closing Remarks**
   9.1. Expressed desire for feedback from participants on this half-day event. We're not going to build the application for you, but we can move enabling technology forward that will help you [SWIFT community].

10. **Meeting Adjourned**

Day Two

1. **Doors Open and Registration**
   1.1. The meeting was held at the FedEx University Institute of Technology, 365 Innovation Drive, The Zone, The University of Memphis, Memphis, Tennessee 38152 on February 26th, 2020 at 8:30 AM. The ninth meeting of the FAA-SWIFT was called to order by David Almeida, LS Technologies, SWIM SME and Strategist.

2. **Introduction:**
   2.1. Opening Remarks:
      2.1.1. SWIFT is here not only to fill a technical gap, but also to show how to implement and use the data. The SWIFT team is continuously looking for feedback on SWIFT and SWIM. SWIFT is a process, focusing on where we are and where we hope to end up. SWIFT Team is here to assist with SWIM, SCDS, and Operational Context for automation services/systems.

Attendance Breakdown: 45 airline industry attendees, 24 government attendees 18 support organizations attendees, 52 vendors to industry attendees, 58 attendees are attending for first time, 87 SWIFT veterans.

3. **David Almeida, SWIFT & General Updates Introduction:**

   3.1. Informed the audience that we had a two-day event, and that we had a developer's workshop on the 25th. Provided a quick summation of the SWIFT Members & Stakeholders attending. Touched on the new Focus Groups – Dev Analytics and Ops Issues. Informed attendees that we are reaching out to producers of the programs (e.g. TFMS/TBFM) to get information sooner, so SWIFT team can write the ops context documents faster than waiting for JMS DD.

4. **Special Topic: Natesh Manikoth, FAA Data Strategy – Governance**

   4.1.1. Informed the audience that the current state of data governance takes a lot of time to gather the data to do the analysis. Time is spent to find out who has data, determine if it's useful, and put the data in context. Federal Data Strategy was released last year with a 10-year vision with goals for a 5-10-year horizon. Future State will have data available to all users based on roles, and more effective use of data, which will push and derive more business information from data.

   4.1.2. The purpose of governance is to control, influence, or change behavior. What should be governed? A data set that drives safety of flight or being released to the community, should be governed. If multiple parties are collaborating, they should be governed. What is outcome of governance? A data Catalog.

5. **Producer Program Briefing: Traffic Flow Management System (TFMS): TFMS Request/Reply (Steven Lewandowski)**

   5.1.1. Provided a walkthrough demo via slide presentation of several aspects of TFMS - Airport Monitoring and described how the system/user interaction would be handled. Airport Monitoring allows users to subscribe to flight data info updates for flights that are arriving or departing from specified airports. Airport Monitoring Request: Initial pull is limited to once per user per airport every 60 mins. This may change in the future. All Request/Reply functions require a service code to receive data. Limited to 7 airports per request and specify the monitoring type.

6. **Special Topic: Flight and Flow for an Information Collaborative Environment (FF-ICE) (Ray Ahlberg – FAA, AJV-S)**

   6.1.1. Provided background and status update on FF-ICE, current snapshot, amendments, implementation plan and guidance manual – similar to requirements document. FF-ICE is a supporting set of functions for TBO, current capabilities are FF-ICE r1.0. FF-ICE r1.0 looks at information exchange for collaboration and negotiation. FF-ICE services use a similar "early intent" flight plan, to get feedback from user, to see resources and constraints may affect that flight. FF-ICE Release 4.2 is out for review.

7. **SWIM Capability: SWIFT Portal (Damon Thomas – FAA, AJM-316)**

   7.1.1. Provided background and status update on SCDS, current snapshot, and planned program activities. Requested folks to reach out and talk to SCDS people to fix or get feedback on program. Also request people to finish application for SCDS.

8. **Special Topic: Widget Demonstration (SWIFT attendees from Day 1 – Joey Menzenski - MITRE)**

   8.1.1. The demo showcased integration with the Uber algorithm, SWIM data and the functionality of calculating time through polygons of airport surface locations. The demo

pulled out position report from STDDS and plots out airport surface data, and movement on airport map- the selected location was ORD (Chicago). **This is essentially an FCA visualization widget.**

9. **Focus Group Summary (Ops Context, Analytics/Development, Operational) (Ray Mitchell, Chris Gottlieb, and Erin Cobbett)**

    9.1. **Ray Mitchell – LS Technologies**

    9.2. Provided background on SWIFT Operational Focus Groups and the current snapshot, planned activities in regard to the Operational Context and Use Case development. Described the collaborative effort that has proven successful to ensure operation researchers and managers understand the data. Provided a walkthrough of the SWIM Operational Context Documents (OCDs) structure, use, and how to access the documentation via the NAS Service Registry Repository (NSRR). SWIFT Operational Context and Use Case documents can be found at: https://nsrr.faa.gov/library. For more information contact: Ray Mitchell, Email: ray.mitchell@lstechllc.com. In addition to the NSRR, all SWIFT Documentation can also be found at: https://connect.lstechllc.com/index.cfm/main/swifthome.

    9.3. **Chris Gottlieb – JetBlue (Operational Issues Focus Group)**

        9.3.1. Shared airline experience, main goals, and focus - customer experience, and how SWIM data continues to help with impacts to operations. SWIM App development is an essential tool that they use to make sure operations are up to date, specifically with flights and avoiding delays. When not possible to avoid, they leverage the SWIM data to provide information on impacts 30 mins/60mins SWAP ROUTE. The Future state for JetBlue is to have iPad/iWatch apps to frontline Crewmembers.

    9.4. **Erin Cobbett – Delta (Development & Analytics Focus Group)**

        9.4.1. Shared airline experience and common problems. Pointed out the most critical objective for the Development & Analytics Focus Group is to solve problems, and prioritize them with speedy transitions from just insight to more informative. Challenged the audience to think about what data view/types are of interested for the Development & Analytics Focus Group to start investigating and eventually resolve.

10. **Special Topic: Ops Context for TBFM (Xavier Pratt – LS Technologies)**

    10.1. Provided information on TBFM – data elements and challenges, answering the question of how to connect to TBFM and pull data I need. Level set group on TBFM and how the operational context document supports the operational group. Previewed the content sections of the operational context- explained the layout of the document. Provided program information as there is an update to TBFM Metering Information Service expected within the next 12 months.

11. **Special Topic: TBFM & Machine Learning (Al Capps - NASA)**

    11.1. Provided walk thru process of machine learning, beginning with identify operational problem. The process of machine learning or training of the algorithm will leverage free data and predict what run-way airlines are going to land on and ties closer to ROI. Hoping to have 20 examples that we can walkthrough with machine learning by the end of the year. TBFM – was selected because there are a lot of questions surrounding TBFM. It is being used in ATD-2.

12. **Case Study: SWIFT Flight Information Widget (Doug Harvey - Advance Concept Engineer L3 HARRIS)**

    12.1. Provided background information and the setup/development process for the widget. Innovation Sprints – and SWIFT supported the development of the widgets. Widget (1) ETA -

shows the differences between ETAS and compares them. TFMS doesn't consider "Flight Plan Update Data" TBFM takes in more data points such as wind etc. that others don't account for – great visualization so that folks can understand data sources. Widget (2) Taxi – out Time, showed the power of projecting timeframe for taxi-out via machine learning.

13. **Producer Program Briefing: SWIM Flight Data Publishing Service (SFDPS) – Ross Skiles**
    13.1. Provided background on SFDPS. Pointed out the single source for SFDPS is ERAM. Not aware that there has ever been an outage on SFDPS – there may be some latency issues, however, SFDPS does auto heal – recovery on its own. SFDPS from a technical view will be moving from an essential to critical service.

14. **Producer Update Briefing Aeronautical Common Service (ACS) Davy Andrew & Suzanne Koppanen**
    14.1. Provided update on ACS enhancements, break down as to where Data comes from and how users can query this data. Status update on NOTAM Moderations and the process to sunset UAS has begun. Next will be the FNS piece, finish formatting in ICAO format, and continue to approve NOTAMS overall – looking into cloud like environment.

15. **Close Out**
    15.1. Provided the location and date for SWIFT 10, Washington DC Area, MITRE.

16. **Meeting Adjourned**

Appendix A: SWIM Industry - FAA Team (SWIFT) Meeting #9 Attendees Day 1 – February 25, 2020

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