LEFT TO RIGHT:

Joseph Lahoud speaking SWIM banner

Joseph Lahoud welcomes the ATCA attendees with an overview of the gate to gate flight flow that can be experienced at the stations in the SWIM Connect Showcase.

SWIM Connect 2014: Ready for Takeoff!

Joseph Lahoud, SWIM Implementation Lead, FAA

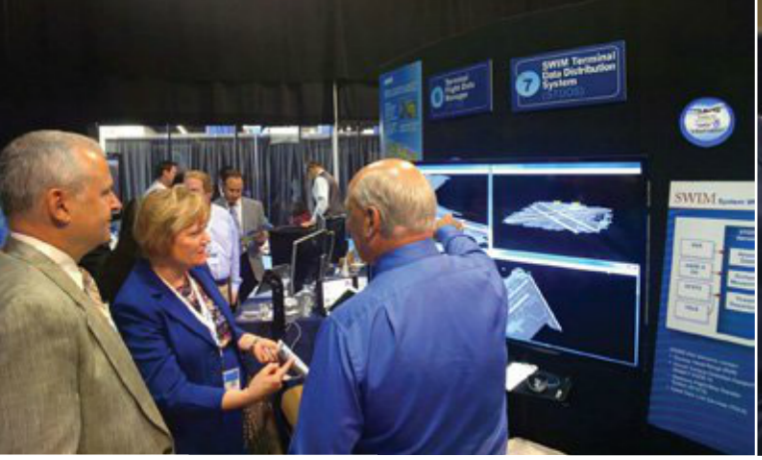
Nicole Morrow, SWIM Outreach, Evans Inc.

Robert Rozier, Director, Program Management Solutions, Flatirons Solutions

At the Air Traffic Control Association (ATCA) 59th Annual Conference and Exposition, attendees were a buzz about SWIM CONNECT 2014, which highlighted how Federal Aviation Administration's (FAA) System Wide Information Management (SWIM) is transforming all phases of flight with their partner FAA programs.

SWIM, one of the key transformational NextGen programs, provides an enterprise messaging solution based on a service-oriented architecture and open source technologies. In most cases, users lease point-to-point lines directly to the FAA system to access the data.

SWIM is more of a consumer-centric, information sharing model that allows a National Airspace System (NAS) system to publish data once to the SWIM messaging infrastructure and, with the proper authorization, a user can consume any or all data important to their mission and can do this with just one single connection.



ABOVE LEFT: Joseph Lahoud, SWIM Implementation Lead, and Maureen Cedro, Communications Information & Network Programs Group Manager, take a closer look at a live feed of the SWIM Visualization Tool (SVT). **ABOVE RIGHT:** Sarah Mumford and Morgan Lindsay, SWIM Program Office Support, welcome attendees as they enter the SWIM Connect 2014 Presentation Theater in the Exhibit Hall.

True Example of Stakeholder Collaboration

The event was a true example of stakeholder collaboration between the FAA, industry, international entities, and users in the aviation community. In a sea of questions about the future of information access, SWIM Connect was a one-stop place for answers.

One clear message from the event is that the data is available now, and the FAA is asking industry to get creative with how to use the data. It is an opportunity to be more efficient and cost effective to enable industry to drive innovation and create value-added products.

SWIM is Playing a Transformational Role

Attendees commented about an impressive interactive gate-to-gate experience of data accessible through SWIM. They had a unique environment where they could learn more about how the aviation community is creating innovative tools, cutting business costs and improving the experience of the flying public, all enabled through SWIM.

SWIM is playing a transformational role in NextGen and Single European Sky ATM Research (SESAR), and the questions are many. FAA and SWIM office representatives, along with industry partners, and other FAA implementing programs were on hand for three days to speak with visitors and discuss the benefits of connecting the global aviation community through SWIM.

Connecting the Dots: Data Today and Future

SWIM Connect 2014 featured spotlight talks throughout each day with key stakeholders in the FAA and industry covering today's hottest topics. Industry experts from around the world discussed a variety of relevant topics, with presentations such as Debunking SWIM, What's In It for Me, World Wide SWIM, and several success stories from airline and airport representatives.

Day one of the conference was opened by Steve Bradford, Chief Scientist, Architecture and NextGen Development at the FAA, who said "Getting information before SWIM was like the Pony Express. Now, with SWIM, we are in the modern age." The focus of the day was on data available through SWIM.

SWIM is all about its partners, so Tuesday, SWIM partners highlighted their successes (both what is realized today and what is coming in the future). Day three focused on the future of SWIM and engagement with international partners.

Collaboration: The Key to Success

Fourteen speakers and over fifty stakeholders and experts from the FAA and the aviation industry helped create a unique experience for close to 800 visitors of the SWIM Connect showcase. Jim Robb, SWIM Program Manager, said "The agenda for the SWIM Connect Spotlight series is a representation of SWIM's daily collaboration efforts. Without continued collaboration, SWIM could not be the success it is today and will not achieve the planned success in the future."

One example of collaboration highlighted during the panel discussion was a success story focusing on how SWIM recently made a big impact on the airport surface with Traffic Management Coordinators from Southern California Terminal Radar Approach Facility (TRACON) and Passur Aerospace, a leading aviation business intelligence and big data company.

The panel described how the FAA responded to an urgent request in March of 2014 by Southern California TRACON (SCT) Air Traffic Supervisors who needed to acquire Airport Surface Detection Equipment Model X (ASDE-X) data at the remote airports in their operation due to upcoming construction at Los Angeles International (LAX) airport.

Within eight weeks, the FAA was able to take advantage of the ASDE-X SWIM service and deliver the capability for the SCT supervisors to see real-time flight positions and the condition at their airports miles away. This demonstrated both the power and flexibility of SWIM services to quickly meet a critical need.

How SWIM Visualization Tool Works at Three SCT Airports

Lori Penwell, Support Manager from SCT, talked more about this success and the impact at her facility. She described how the SWIM Visualization Tool (SVT) enables the Traffic Management Unit, Front Line Managers (FLMs), and the Certified Professional Controllers (CPCs) at SCT to see what's happening on the surface in real-time at the three SCT airports that have ASDE-X: Los Angeles International Airport, San Diego Lindbergh Field Airport, and

LEFT TO RIGHT: Joseph Lahoud, SWIM Implementation Lead, and Maureen Cedro, Communications Information & Network Programs Group Manager, in front of the SWIM Connect 2014 banner.

Orange County John Wayne Airport. Penwell said, *"The SVT is like a window to the airport where we now have shared situational awareness. The tool has become indispensable in reducing coordination time between the Towers and TRACON.*

It enables us to make real-time decisions, be it for dynamically adjusting inbound restrictions vs. static miles in trail restrictions. It facilitates the call-for-release process as we can now see where the airplane is and can better plan releases off adjacent airports.

The SVT has enhanced the ability to run the 9/27 runway operation at San Diego where we run a few in and a few out when weather is poor. It also enables SCT to see when an airplane is on the ground – which is helpful when an airplane misses a void time – to ensure they are still on the ground vs. an emergency on take-off or to know when an airplane is landing in marginal weather to see if they have actually touched down or will be coming back on a missed approach.

The SVT will be utilized even more in the future when LAX has three runways vs. its current four for the next three years due to the construction. A crucial thing to remember about the SVT is that it is an FAA product that can be modified if we choose, but will not be taken out of the facility."

During the same panel discussion, Tim Grovac of Passur Aerospace described how flight operations centers use the SWIM-provided terminal data to manage the time from pushback to liftoff. This prevents hefty tarmac delay fines that are imposed on airlines if the time from pushback to liftoff exceeds three hours.

"It is available for consumers and producers of aviation data to access. When we talk about implementation, we mean communicating to the airlines and users of the data that it is ready for them to use and to help them get on boarded."

This data enables airlines to make the judgment call to return the aircraft to the gate if the three-hour deadline is approaching. Similarly, airlines can use this data to manage tarmac time to avoid pilot timeout and to track de-icing activities.

Ready for Takeoff

The highlight of a visit to SWIM CONNECT 2014 for attendees included an experience of a SWIM journey. Attendees embarked on their journey at the SWIM overview station after they picked up their Connect Card.

Attendees would learn more about its benefits; make a few stopovers for topics such as surface data, flight data and weather; and then land at the "How to Get Started" terminal. The takeaway for attendees was that SWIM makes it possible to securely access real-time, relevant information so users can respond faster and more accurately, creating collaboration opportunities with industry.

What's Coming Next?

The FAA is planning to unveil several new SWIM capabilities in Fiscal Year 2015, when the platform is expected to be largely complete. These include:

Traffic Flow Management System: This capability provides subscribers with Aircraft Situation Display to Industry (ASDI) data access to traffic flow information.

SWIM Flight Data Publication Service: This capability provides subscribers flight and related data in the industry standard XML format (FIXM), an easy to use format for modern aviation applications. It also provides airspace data, operational data, Special Activity Airspace (SAA) data, and general information messages.

Time Based Flow Management (TBFM): This capability will provide a variety of aircraft metering information, estimated time of arrivals, and scheduled time of arrivals. Atlanta is the first site on line and, over the next year, TBFM will begin the rollout to the remaining En Route Centers.

As SWIM evolves, the FAA will continue to expand the SWIM user community and enhance data sharing opportunities to enhance management of the National Airspace System (NAS). Joe Lahoud, SWIM Implementation Lead, highlighted that SWIM is here to stay.

Lahoud said, *"It is available for consumers and producers of aviation data to access. When we talk about implementation, we mean communicating to the airlines and users of the data that it is ready for them to use and to help them get on board."*

For more information about SWIM, visit *www.faa.gov/nextgen/SWIM* or *www.faa.gov/nextgen*

How SWIM Transforms All Phases of Flight

Attendees joined the SWIM Connect Showcase on a flight journey from gate-to-gate to learn how SWIM is transforming all phases of flight. Here is a description of the FAA programs partnering with SWIM today and in the future to enable efficiency and cost savings:

Overview

STATION 1: SWIM allows members of the aviation community to access the information needed to facilitate an innovative and efficiently run NAS. Attendees that were ready to get plugged in also were able to sign up for the NAS Service Registry and Repository (NSRR), which provides detailed information regarding SWIM services and data products. Staff from FAA Enterprise Engineering Services (EES) were available to talk with potential SWIM data consumers about SWIM's "on–ramping" process.

Swim Transforming Integrated Flight Planning

STATION 2: NAS Common Reference (NCR) is an enterprise-level, NAS status and constraint information exchange service that will be available both to NAS and non-NAS consumers in a SWIM-compliant manner.

It will provide cross-domain information in the same reference models to support common situational awareness. NCR will be available as a data service planned for 2016-2017 that can be integrated with other systems or displays, or be directly accessed via a web application.

STATION 3: Attendees learned more about FAA's Traffic Flow Management System (TFMS), a decision support system for planning and mitigating imbalances between demand and capacity in the NAS. By the end of calendar year 2014, SWIM will help integrate data between TFMS and other programs monitoring various conditions (terminal data, weather, En Route data) to increase efficiency in the NAS.

STATION 4: Aeronautical Information Management (AIM) Modernization is FAA's program to modernize, collect, manage, maintain, and distribute aeronautical information, and SWIM provides the messaging system to enable these and future AIM Modernization activities.

Additionally, as part of the AIM view, the Federal Notice to Airmen (NOTAM) System is the modernized single source for digital collection, dissemination, and storage of NOTAMs. SWIM provides the Federal NOTAM System (FNS) with the enterprise-level infrastructure to efficiently and safely share high quality, digital NOTAM data with end users.

FNS is currently providing a digital NOTAM service leveraging SWIM's information and data sharing infrastructure, thereby saving costs that would otherwise be associated with creating these program-specific capabilities.

STATION 5: NextGen Weather will consist of two new programs to perform the weather processing and dissemination needs of the FAA. NextGen Weather Processor (NWP) will consolidate several legacy weather processing systems while Common Support Services – Weather (CSS-Wx) will be FAA's single source of aviation weather data, consolidating several legacy weather dissemination systems. To facilitate collaborative decision-making and common situational awareness, CSS-Wx will standardize all weather data formats and enable sharing of weather data using web services. CSS-Wx will publish weather information from a number of sources including advanced aviation specific weather products produced by NWP and National Oceanic and Atmospheric Administration (NOAA).

SWIM will provide delivery and security capabilities to allow global access of weather data generated by the FAA. Consumers of the information will include air traffic controllers, traffic managers, commercial aviation, general aviation, the flying public, and other government agencies including the Department of Defense (DoD), and Department of Homeland Security (DHS). Users will be able to receive tailored weather information based on their respective needs."

Swim Transforming the Surface

STATION 6: The Terminal Flight Data Manager (TFDM) program will provide efficiencies in the airport surface and terminal airspace by providing new integrated surface traffic control and management capabilities. In the future, SWIM will enable TFDM to deliver real-time data from the surface and terminal, thus supporting collaborative decision-making that will benefit the flying public and the environment.

STATION 7: FAA is expanding the sharing of aircraft surface movement and runway visibility data with airlines, NAS systems, and other stakeholders to improve efficiency and reduce delays.

Terminal Data Distribution System (STDDS) collects data from Terminal/airport systems and makes the data available remotely to NAS and non-NAS consumers via the NAS Enterprise Messaging Service (NEMS).

This shared situational awareness supports collaborative decision-making that benefits the flying public and the environment. Shared, remote awareness of aircraft surface movement and runway visibility will improve efficiency and reduce delays.

Swim Transforming En Route and Arrival Management

STATION 8: SWIM Flight Data Publication Service (SFDPS) publishes en route flight and related data in the industry standard XML format (FIXM), an easy to use format for modern aviation applications. SFDPS leverages the SWIM platform to efficiently provide subscribers with en route data from 20 centers through this one connection.

STATION 9: Time Based Flow Management (TBFM) creates a schedule for aircraft arriving and departing busy airspace, thereby optimizing the flow of aircraft into busy airspace. SWIM will enable TBFM to provide scheduling information, including the aircraft's Scheduled Time of Arrival (STA), to aviation partners.

TBFM was installed in all 20 En Route centers to meter aircraft through all phases of flight. This permits the correct number of aircraft to airspace sectors and down the runway at the exact pace at which aircraft can be accommodated.