System Wide Information Management (SWIM)

SWIM *THE CURRENT*

Welcome Message from the Program Manager

Welcome to the seventh issue of *The Current*, our newsletter distributed to FAA staff, SWIM Implementing Programs (SIPs), and other interested parties.

Since our last newsletter, I am proud to report that the SWIM team has aggressively pursued our agenda in Fiscal Year (FY) 2012. Our accomplishments include the following:

- Successful demonstration of Initial Operating Capability (IOC) by the SWIM Terminal Data Distribution System (STDDS) in May;
- SWIM-enabled Weather Message Switching Center Replacement (WMSCR) Pilot Report (PIREP) and Altimeter Settings publication going operational in June;
- JRC approval of our Segment 2a Final Investment Decision (FID), which includes development of the National Airspace System (NAS) Enterprise Messaging Service (NEMS); and
- JRC approval for our new approach to developing a Flight Data Publication Service (FDPS).

It is an exciting time for the SWIM Program. We've been leading the FAA in its efforts to move NAS services towards cloud computing and have been collaborating with the Air Traffic Organization's Chief Information Officer's Office (AIO) in pursuing this goal. In May, the *FAA Cloud Computing Strategy* was released and the SWIM Cloud Computing team has begun outreach and assessment efforts.

I invite you to learn more about SWIM services. We will use this newsletter to keep stakeholders apprised of the current activities and innovations happening in the SWIM Program. It is my sincere hope that, by delivering this newsletter, our team can keep all programs informed about circumstances that could benefit or affect their activities. We also strive to communicate to newcomers the resources available through SWIM.

As I prepare to leave the SWIM Program after five incredibly challenging and enjoyable years, I want to thank everyone both in the program and outside of it who have helped turn SWIM from a concept into a reality. It is truly a team effort and I am grateful to have been a part of it.

I encourage you to visit us for more information at www.faa.gov/nextgen/swim or email us with any questions at 9-ATOW-HQ-SWIM@faa.gov.

Thank you,
Ahmad Usmani

Highlights

WMSCR Operational

The SWIM-enabled Weather WMSCR PIREP and Altimeter Settings publication went operational in June 2012.

PIREPs, reports of actual weather conditions encountered by an aircraft in flight, are an important ingredient in weather-impact advisories. Capture of crucial pilot observations and distribution of these to other NAS users by WMSCR via the SWIM service will significantly enhance NAS safety. SWIM greatly increases the scope of coverage of the pilot reported weather product.

As of September 20, 2012, the NextGen Integration and Evaluation Capability (NIEC) is receiving both altimeter and PIREP publications. The NIEC is the FAA's research platform to explore, integrate, and evaluate NextGen concepts through simulation activities resulting in concept maturation and requirements definition.

Additional weather products are planned.

STDDS IOC

On May 17, 2012, STDDS successfully demonstrated Initial Operating Capability (IOC). This demonstration occurred at the Y90 Terminal Radar Approach Control (TRACON) located at Bradley International Airport (BDL) in Windsor Locks, CT. A second demonstration, at Miami International Airport (MIA), is scheduled for October 2012.

STDDS is an Internet Protocol (IP)-based front end to several Terminal legacy systems. Existing flight data interfaces to Terminal are limited to receiving a subset of the available data. The SWIM-based direct interface will allow for the flow of information and make available status event information

Paul C. Jackson, NAS Information Architect, addressing the inaugural SWIM SOA CoE

previously only available in Terminal. Terminal automation will be capable of providing the departure clearance status as an acknowledgement that the clearance was delivered, when available.

Full deployment, expected to be completed in 2014, will be to 39 TRACONs with feeds from 119 Towers. STDDS products include the publication of data from services that use the following NAS systems: Electronic Flight Strip Transfer System (EFSTS), Airport Surface Detection System-Model X (ASDE-X), NextGen (NG)-Runway Visual Range (RVR), and Tower Data Link Services (TDLS).

More SWIM Service Subscribers

On February 9, 2012, Sabre Airline Solutions successfully connected to the Integrated Terminal Weather System (ITWS). Sabre is the fifth ISSC subscriber. Other subscribers to the service, which went operational in January 2011, include FedEx, United Parcel Service, Harris, and the U.S. Air Force.

SWIM SOA CoE

On November 15, 2011, SWIM held its first Service Oriented Architecture (SOA) Center of Excellence (CoE). The SOA CoE was established to have a group of SWIM/SOA stakeholders come together to discuss cross-domain issues for which SWIM may need to provide enterprise-level solutions. The CoE is intended to oversee NAS SOA Governance policies and processes and address specific SOA issues.

The meetings take place on a quarterly basis and have addressed such topics at SWIM's approach to the FDPS and its infrastructure, as well as the SOA-related efforts by other NAS programs. The next CoE is scheduled for October 24, 2012. ∎

Segment 2 Approval

On July 18, 2012, the FAA Joint Resources Council (JRC) approved a SWIM Segment 2a FID. While SWIM Segment 1 introduced SOA into the NAS, delivery of SWIM-compliant services was the responsibility of the implementing programs. In Segment 2, SWIM provides common messaging infrastructure and ensures the successful delivery of SWIM-compliant services to authorized users. This FID will fund SWIM Segment 2 through FY 2016.

SWIM Segment 2 Enterprise Infrastructure will be using FAA Telecommunications Infrastructure (FTI) as the basis for providing its messaging services, the NAS Enterprise Messaging Service (NEMS). This approach will best ensure that SWIM will have an enterprise messaging capability available when needed by programs such as Common Support Services—Weather (CSS-Wx) and Aeronautical Information Management (AIM) Modernization (AIMM). SWIM will use task orders under the FTI contract to implement additional capabilities such as Network Time Protocol/Precision Time Protocol (NTP/PTP) and Domain Name Service (DNS) , as well as to develop the NEMS capability, which will be based on a currently operational prototype.

NAS Enterprise Messaging Service (NEMS)

NEMS will fulfill NextGen's need for NAS-to-NAS distribution of operations data by providing standards based message communication between SWIM-compliant NAS services. Any data product provisioned onto NEMS will be available from any other NEMS node to authorized users.

Currently, there is an operational prototype performing some messaging functions: the Data Exchange (DEX) system. DEX is deployed at

the NAS Enterprise Security Gateways (NESGs) in Atlanta and Atlantic City, the FTI National Test Bed (FNTB) and the Research and Development (R&D) Domain in Atlantic City. SWIM is adding NEMS capabilities to the DEX, which will officially become the NEMS in 2014.

Internal DEX/NEMS nodes have been installed in 2012 to be used for NAS-to-NAS distribution of SOA data products. Additional plans for DEX/NEMS includes the implementation of two-way SOA data exchange, allowing external producers to feed data into the NAS, and integration of DEX/NEMS with Active MQ message broker software. These capabilities are required by NEMS.

The September 2011 issue of *The Current* described the SOA Suitability process enacted for the Segment 2 Authorization To Proceed (ATP). As part of this process, SWIM meets with NAS programs at various points during the service lifecycle to assess their suitability to provide SWIM services. In connection with these meetings, SWIM will discuss connecting to NEMS with the programs.

Network Time Protocol/Precision Time Protocol (NTP/PTP)

In the summer of 2012, the SWIM Program deployed NTP/PTP. This deployment provides for the synchronizing of the clocks of computer systems over packet-switched, variable-latency data networks. These capabilities provide Coordinated Universal Time (UTC) including scheduled leap second adjustments. NTP/PTP can usually maintain time to within tens of milliseconds over the public Internet, and can achieve one-millisecond accuracy in local area networks under ideal conditions.

(continued on next page)

NEMS Capabilities	
Available	**Description**
FY 13	Dynamic Subscription
FY 14	On-Ramping Dynamic Subscription
	Web Service Consumer
	Web Service Producer
	Subscription Producer
	Mediation
	Availability and Performance
	On Ramping Services-Mediation
FY 15	Subscription Consumer
	Run-Time Subscription
	Message Reliability Quality of Service (QoS)
	Security Services
	Web Services
	On-Ramping Services-Performance
FY 16	On-Ramping Services Security
	Producer/Consumer SLA
	On-Ramping Services SLAs
	On-Ramping Services Reports

Table 1: Planned NEMS Capability Deployment

NTP/PTP is needed as the NAS operational environment becomes more cohesive through federated data distribution, telecommunications, and boundary protection; ensuring consistent time across the NAS will become exceedingly important.

Accurate time is fundamentally an Enterprise function, on which many other services rely. NTP/PTP will be deployed at over 20 sites in the NAS. This deployment will create eight NTP regions with three Network Clock servers per region. All NAS users will be able to access a minimum of three Network Clock servers located at three NAS NESG sites in Atlanta, Salt Lake City, and Atlantic City.

Once deployed, NTP services will require a minimum amount of effort to be used by the NAS programs. NAS programs are not going to be charged for the use of NTP services: they are to be available as long as the program has existing FTI IP services. To start using NTP, a NAS program has to simply point its systems to the correct server: no additional setup or paperwork is required and additional bandwidth requirement is negligible.

Domain Name Service (DNS)

In 2012, the SWIM Program deployed an enterprise DNS capability on the NAS. DNS translates queries for domain names (such as www.faa.gov) into IP addresses for the purpose of locating computer services and devices worldwide. It serves as the phone book for the Internet by translating human-friendly computer hostnames into IP addresses. For example, the domain name www.faa.gov translates to the IP address 173.222.184.95.

DNS makes it possible to assign domain names to groups of Internet resources and users in a meaningful way, independent of each entity's physical location. Because of this, hyperlinks and Internet contact information can remain consistent and constant even if the current Internet routing arrangements change.

SWIM stood up the enterprise DNS capability to address several concerns, including requirements for the deployment of SWIM and other enterprise services, cost savings due to economy of scale associated with an enterprise approach to implementing DNS, and improved security, interoperability, and operational efficiency with a single enterprise solution.

SWIM deployed DNS services via FTI in the NAS, the NESG, the FNTB, and parts of the R&D Domain. FTI is managing DNS. This DNS service offers NAS Programs name resolution capabilities and uses a standardized naming scheme that will not be routable on the Internet; however, NESG DNS services shall be available to authorized NESG external users.

SWIM DNS is a subscription service. While, NAS programs that do not want DNS do not have to use this service, NAS programs that want DNS and do not currently have a DNS solution will follow SWIM's provisioning process. NAS programs that currently have DNS will be integrated into the Enterprise DNS service. In addition, NAS programs will have the capability to make additions, deletions and modifications to their name records through the DNS portal and the capability to make additions, deletions and modifications to DNS zones (portions of a domain name space). NAS programs are not to be charged for the use of DNS services. ■

Cloud Computing Progress

As discussed in the last issue of *The Current*, the SWIM Program has been developing a cloud computing strategy for the NAS. In May 2012, the *FAA Cloud Computing Strategy*, developed by SWIM in collaboration with other offices in the FAA, was approved by senior FAA leadership.

SWIM's Cloud Computing team is now in the process of executing the FAA Cloud Computing Strategy to implement the FAA's vision to:

Identify and migrate suitable IT services to a cloud computing environment to reduce costs and increase IT provisioning speed, while ensuring that FAA Air Traffic Control and Management systems maintain their current high levels of safety, security, reliability, and performance.

The FAA's strategy on cloud computing establishes five foundational agency goals to enable the vision and capture potential benefits:

Goal 1: Adopt an FAA-wide approach to cloud computing. Define and adopt a comprehensive approach to identify, evaluate, select, migrate, and operate cloud services

Goal 2: Define and develop an FAA Cloud Computing Architecture and integrate it into the FAA's Enterprise Architecture (EA). The FAA EA will be expanded to incorporate cloud computing architectural elements as required

Goal 3: Develop a cloud computing program implementation strategy. The FAA will ensure that all relevant processes and policies support cloud computing program adoption as required

Goal 4: Increase the efficiency of current and future IT investments. Ensure that potential benefits are captured and measured along the FAA lifecycle

Goal 5: Manage technical and management risks and support FAA transition to cloud services

In order to meet the goals, the team has been conducting cloud computing assessments and working with various stakeholders across the agency to identify opportunities and requirements for the application of cloud computing across the FAA. The team is currently developing cloud governance, a Concept of Operations (ConOps), an implementation plan, and various documents to support the target state of incorporating cloud technologies in the FAA.

Cloud computing can't be implemented in isolation or silos to be efficient for the agency. The SWIM Cloud Computing team has begun conducting outreach and education activities to facilitate communication and knowledge-sharing sessions that ensure that cloud computing benefits and opportunities are understood by all NAS program managers and stakeholders.

The *FAA Cloud Computing Strategy* is available on the SWIM website, www.faa.gov/nextgen/swim. ∎

A New Path To FDPS

On July 18, 2012, in addition to receiving a Segment 2a FID approval at the JRC, SWIM received approval for a Segment 1 replan, marking a new tack to developing a Flight Data Publication Service (FDPS) .

Today in the NAS there are multiple versions of flight data, depending upon the state of flight. Prior to filing, Traffic Flow Management (TFM) flight data is based on various schedule data, airline provided data, historical information and/or foreign flight plans not yet processed by En Route. Once filed, flight data is processed by En Route Automation Modernization (ERAM) and is sent to many Air Traffic Management (ATM) systems. Subsequent flight data updates for active aircraft are managed by the En Route Domain and distributed to other ATM systems. This creates multiple databases carrying various kinds of information, which can become tedious to collect and can result in inconsistencies or incomplete information.

One of the goals of the SWIM Program is to improve sharing flight data to ensure consistency of this data across the NAS, and to begin consolidating the flight data maintained by multiple systems into a common repository into a flight object accessible by all. Towards this end, SWIM is developing the FDPS.

Despite its name, the FDPS is not a single service. Rather, it is a collection of software and hardware running on a communications infrastructure to provide en route data services to authorized consumers. The FDPS will include Flight data, airspace data, operational data and general information messages. The purpose of FDPS Phase 1 is to make en route data, generated originally by the ERAM system, available to a varied set of data consumers in a SWIM-compliant manner.

This SWIM service will supplement and enhance legacy flight data interfaces provided today by En Route Data Distribution/Common Message Set (EDDS/CMS) with a NEMS integrated system. Originally, ERAM proposed developing FDPS in four phases; however, due to revised costs and delayed implementation, the SWIM Program is taking a new, in-house approach to FDPS development to meet SWIM Segment 1 Final Program Requirements (FPR) within the original FAA JRC-approved cost and schedule. FDPS will satisfy SWIM Segment 1 FPR requirements independent of ERAM releases. The SWIM functionality in ERAM release 3 will eventually be supported as designed in FDPS to support Pre-Departure Reroute. A prototype FDPS component was successfully developed by a team at the William J. Hughes Technical Center (WJHTC).

According to Linda Chen, SWIM Development Lead, the replan has allowed for numerous improvements, such as the ability to group the types of information. For example, the new "flight data publication service" would include all data useful for modeling, predicting, tracking, and post-analyzing flights. It integrates flight data that was previously split between the Flight, Track, and Beacon Code Information Services. This data would include data such as flight plan data, activations (departures), position updates, arrivals, route changes, converted routes, beacon code assignments, and cancellations. Users will be able to see the full picture in one convenient place.

In addition, the replan has allowed more time for FDPS to strategize and it will now comply with International Civil Aviation Organization (ICAO) 2012 standards, the Flight Information Exchange Model (FIXM), and the NextGen long-term Flight Information Service (FIS) strategy .

SWIM has conducted FDPS System Definition Review and Preliminary Design Review with large amount of stakeholder participation. The design for the FDPS system, architecture, and software will be completed by early December 2012. Consumers can expect to receive FDPS data from NAS R&D enclave by December 2013. It is planned to be operational by March 2015 with the following proposed services:
- En Route Flight Data Service,
- En Route Airspace Data Service,
- En Route Operational Data Service, and
- En Route General Message Service. ∎

System Wide Information System (SWIM) Flight Data Publication Service (FDPS)
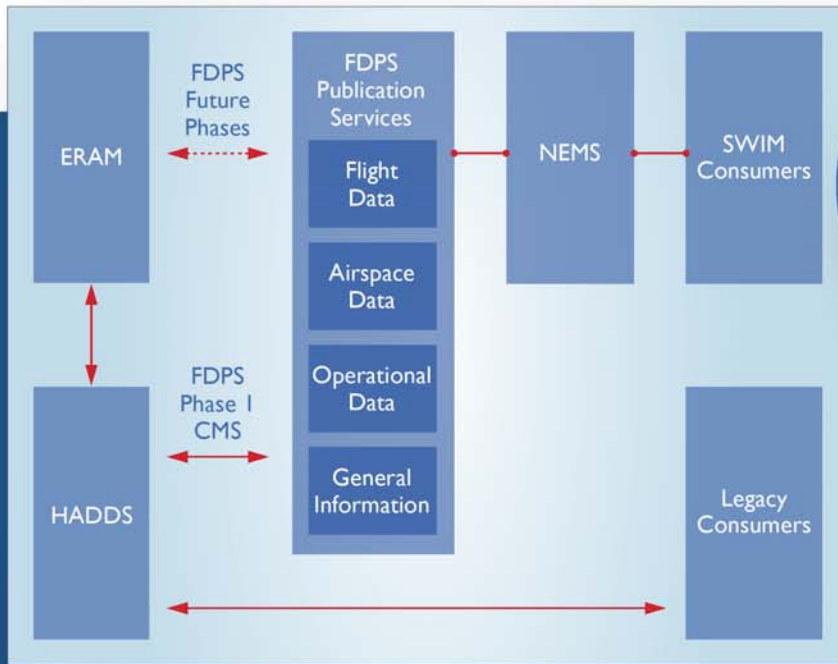
FDPS moves ERAM data exchange into SWIM

FDPS

Provides a SWIM compliant interface to En Route Data

Distributes all data through the NAS Enterprise Messaging Service (NEMS)

Allows SWIM Consumers to customize their data feed

Phase 1 Services

- Flight Data Publication
  - Flight data of general interest
- Airspace Data Publication
  - Airspace data of general interest
- Operational Data Publication
  - Data of interest to specific FAA systems
- General Information Message Publication
  - Outgoing GI messages

Future Phases

- Additional flight data
- Two-way data exchange
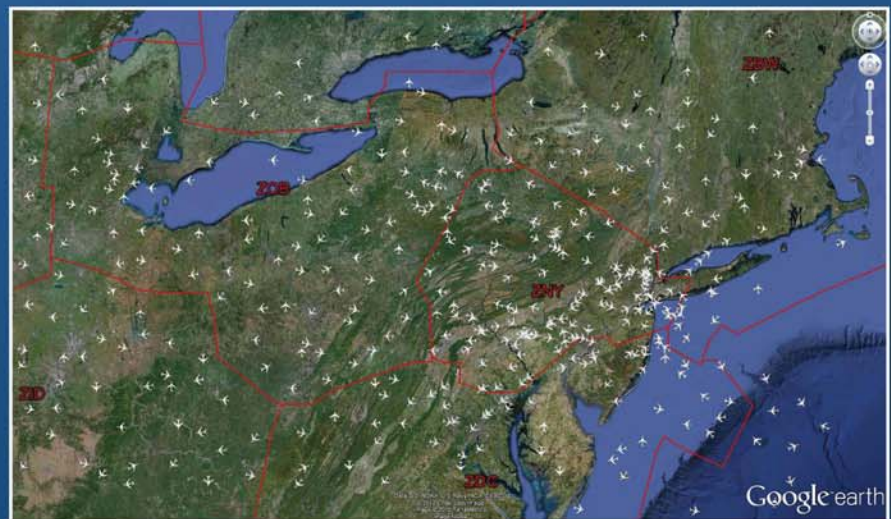
Source: John A. Volpe National Transportation Systems Center

Message from the COO
Safety Culture Data Drives Response to Recent Incidents

Hello everybody. This is David Grizzle with my latest message to you all. As you all know, we had a few widely reported safety incidents during July and August, and I want to discuss with you what steps we're taking.

I want to start by putting things into perspective. We successfully manage over 45,000 Instrument Flight Rules (IFR) operations every day, almost every one flawlessly executed. Serious incidents are extremely rare. Yet, even if one incident occurs, we fail to meet the high expectations of the public, and ourselves. Our safety culture compels us to find out why incidents occur and put in place corrective actions to prevent them from happening again. This is just what we're doing in this case, where we discovered that we did not have standard procedures in place for operations where a departure or an arrival is moving in a different direction from the established flow of the airport.

I know there may be a sense among some of you that we reacted too quickly. But I'm here to tell you that our corrective efforts are supported by and greatly informed by data from programs like TARP, CEDAR and ATSAP – data that was not previously available. Adding to that, the great cooperation between our safety experts and our colleagues at the facilities where these incidents occurred means we're in a great position to identify and target the cause of problems.

Immediately, we called for all facilities to ensure they had written procedures to conduct opposite direction operations and to provide a verbal briefing to every controller on those procedures before working an operational position. These actions were implemented very swiftly and with minimal impact to all of our stakeholders. I want to thank everyone in Terminal and Safety and others who were involved in implementing these actions.

Those were interim steps. Toward a more permanent solution, we've convened a work group to look at all the data we have on these operations and come up with specific procedures and tools to improve the safety of opposite direction operations. When we finalize this work, we'll move ahead with nationwide training and make changes to the controller handbook.

But let me talk about a few things I think we really need to do right away. We need strong teamwork and oversight of the operations by our supervisors and controllers in charge. This way, there's an extra set of eyes on the operation when challenges come up.

Supervisors have repeatedly told me they're burdened with a lot of administrative tasks. I'm committed to finding a way to make sure that those administrative duties do not prevent us from providing oversight of the operation. And I'll tell you, I've been surprised by how many controllers on the boards have also said that they appreciate the extra set of eyes, and they consider an attentive supervisor or controller in charge to be an asset and not a nuisance. We're going to bring controllers, managers and SUPCOM together to identify specific actions we can take in the near term. I also continue to encourage front line staff, including managers, to actively participate in our safety programs and provide their insights to ATSAP, because we're seeing the benefit of their involvement.

Let's also make sure our operational decisions always produce a positive outcome. Use vertical separation whenever possible. It's one of the best methods to ensure a safe result when things don't go as expected, because of an equipment failure, miscommunication, or for some other reason.

And folks, we need to use standard phraseology 100% of the time. As a former legal executive with the airlines, I can tell you that what we say, who we say it to, and how we say it are all critical safety elements. Air traffic controllers are known for precise, succinct communication. Let's live up to that reputation every single time.

Finally, I want to underscore our commitment to principles-based professionalism. We do the right thing, even when no one is looking and even when distractions are around us. As you come in to work, take a minute to get your mind ready for what you need to do. Incidents happen when we're not on top of our game.

In closing, let's remember that in the ATO, safety is everyone, everywhere, everyday. We'll never be at a point where our safety record is good enough. We've got to keep striving to mitigate risk. In doing so, we'll continue to be the best.

Thanks, folks. And until next time, take care.

For more messages from David Grizzle, please visit the COO Weekly Message Archives: https://employees.faa.gov/org/linebusiness/ato/news/coo_weekly/index.cfm

Practitioner Profile:
Bud Timoteo

Dominic "Bud" Timoteo is a SWIM pioneer. Bud started working on SWIM in 2005, when it was a part of the Global Communications, Navigation and Surveillance System (GCNSS) Program and before it was known as the SWIM Program. He began his work with SWIM under the leadership of John Loynes, initially to determine how the FAA's WJHTC could help realize the SWIM concept. Bud, along with Kelly Mesveskas, was instrumental in the establishment of the SWIM Labs at the WJHTC, originally named the "SWIM DOC" or Development and Operations Center and now known as the SWIM Integration Facility (SIF) and the SWIM Prototyping Facility (SPF). The SIF began as a demonstration lab of NEO and SWIM-enabled applications like the Enhanced Airspace Security (EAS) demo system. The lab has evolved to function in its present SWIM implementation role as an evaluation environment for SWIM Segment 1 COTS products and SWIM infrastructure services. The SPF is where prototyping for SWIM Segment 2 takes place. These labs are the official FAA labs for SOA software.

If nothing else, Bud has found an abundance of variety in his work at the FAA. Prior to joining SWIM, Bud worked on the Multi-Center Traffic Management Advisor (McTMA), a joint FAA- National Aeronautics and Space Administration (NASA) program. McTMA combined individual TMAs in multiple Air Route Traffic Control Centers (ARTCCs) to schedule arrivals to major airports in complex airspace. One of Bud's roles on this project was to gain support to install the TMA processors from Philadelphia airport and the four ARTCCs that feed Philadelphia TRACON. Before working on McTMA, Bud was the Terminal Lead for the Interagency Air Traffic Management Integrated Product Team (IAIPT), where he collaborated with NASA to evaluate various improvements for the FAA Terminal Domain. Farther back in his career he co-authored the report *Chicago O'Hare Simultaneous Instrument Landing System (ILS) Approach Data Collection and Analysis* (1990) after collecting surveillance data and conducting analysis on simultaneous approaches to closely spaced parallel runways.

Bud began working at the WJHTC on January 1, 1974, as an FAA Co-operative student while completing an undergraduate degree in Mathematics from Drexel University (later, he earned a graduate degree in Mathematics there). He joined the agency as a full-time employee after he graduated, with a position as a mathematician for the Applied Math Group (AMG). With the AMG, Bud programmed mainframes (IBM-7090, Xerox Sigma 7) and early micro-computers, like the PDP-11-03, for various projects at the WJHTC, exposing him to the array of work done by FAA scientists and engineers. One of these jobs was to add automation to the WJHTC Chemistry Laboratory.

Unfortunately, after five years with SWIM, Bud will be leaving the program to work on Enterprise Security in the NAS. While some things change for Bud, one thing is constant, his carpool between Philadelphia and Atlantic City, which can boast the same participants for the last 35 years. Bud remarks, "Our wives joke that we know each other better than they do."

When he is not hard at work at the FAA, Bud enjoys sailing on his 28-foot Cal sailboat up and down the New Jersey coast and singing. Bud has been singing baritone and bass in his church choir for more than 10 years. He also enjoys reading and watching good movies. He recommends the book *Worm: The First Digital World War,* about the Conficker computer worm that invaded and infected over eight million computers around the world starting in 2008. It seems like he's ready to pioneer his next frontier. ∎

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The Current is provided to you courtesy of the following: Faiza Shah, John Wendelken, and the SWIM Team, with special thanks to Eric Carlson.

All documents are available to the public on the SWIM external website at http://www.faa.gov/nextgen/swim. ∎

SWIM Across the Globe

In 2012, the SWIM Program continued to engage with its colleagues at other Air Navigation Service Providers (ANSPs), such as EUROCONTROL, Japan Civil Aviation Bureau (JCAB), and Civil Aviation Authority of China/Air Traffic Management Bureau (CAAC/ATMB), through meetings and working groups. In addition, SWIM has become an important topic of discussion for ICAO, an agency of the United Nations that promotes the safe and orderly development of international civil aviation throughout the world.

The SWIM concept has become a topic of discussion at various ICAO meetings and the FAA SWIM Program has contributed to a SWIM Concept of Operations (ConOps) being developed by ICAO ATM Requirements and Performance Panel (ATMRPP), *Information Management Supporting the Global Air Traffic Management Operational Concept.* The paper provides SWIM background and overview, the relationship to data and information domains, the conceptual framework description, the interoperability (implementation) framework description, and the difference between information management and information services. The program also contributed to a paper on FAA's SWIM implementation and progress for the Communications/Navigation/Surveillance and Meteorology (CNS/MET) Subgroup of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG).

SWIM is on the agenda for the ICAO's Twelfth Air Navigation Conference (AN-Conf/12) in November 2012. At this meeting, ICAO will be presenting a working paper on SWIM and seeks to get international agreement on the SWIM concept and its place in the aviation through the *Global Air Navigation Plan* (GANP). This upcoming discussion of the SWIM concept and its implementation is an opportunity for standards to be agreed upon internationally. With the FAA already implementing the concept, it's a loud and clear voice on how SWIM can be realized. ∎

SWIM Website

The SWIM Program website has moved!
Its new home on the web will be http://www.faa.gov/nextgen/swim - please update your bookmarks.
The SWIM Program invites you to check out the site, which has new features, including an online account request form for the NAS Service Registry/Repository (NSRR).
If you have a suggestion or information to contribute to our website, please contact the Communications Team at 9-ATOW-HQ-SWIM@faa.gov. ∎