

SWIFT: SWIM Industry-FAA Team

Presented to:

CDM General Session 2022

By:

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**Federal Aviation
Administration**



Why SWIM?



Facilitates an innovative and efficiently run airspace.



Increase efficiency with which users exchange valuable information



Creates collaboration opportunities across borders



Supports development and adoption of a global aviation language



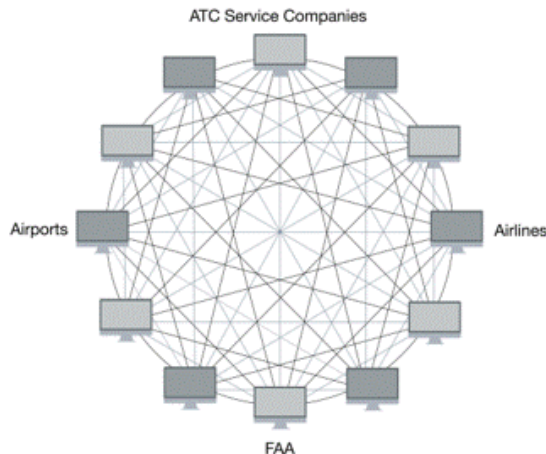
Drives innovation to create new and cutting-edge tools and applications.



Provides enterprise-level capabilities

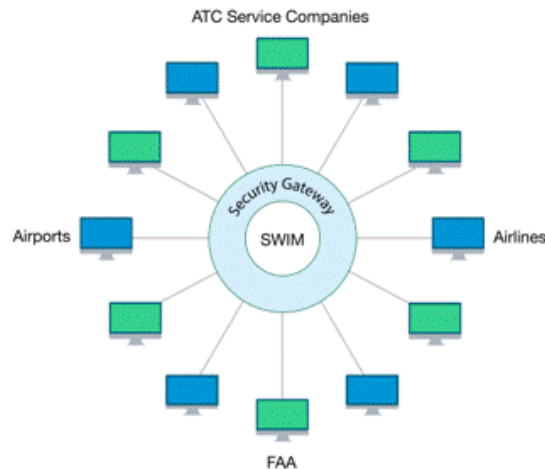
SWIM: Connecting the NAS More Efficiently

Before SWIM



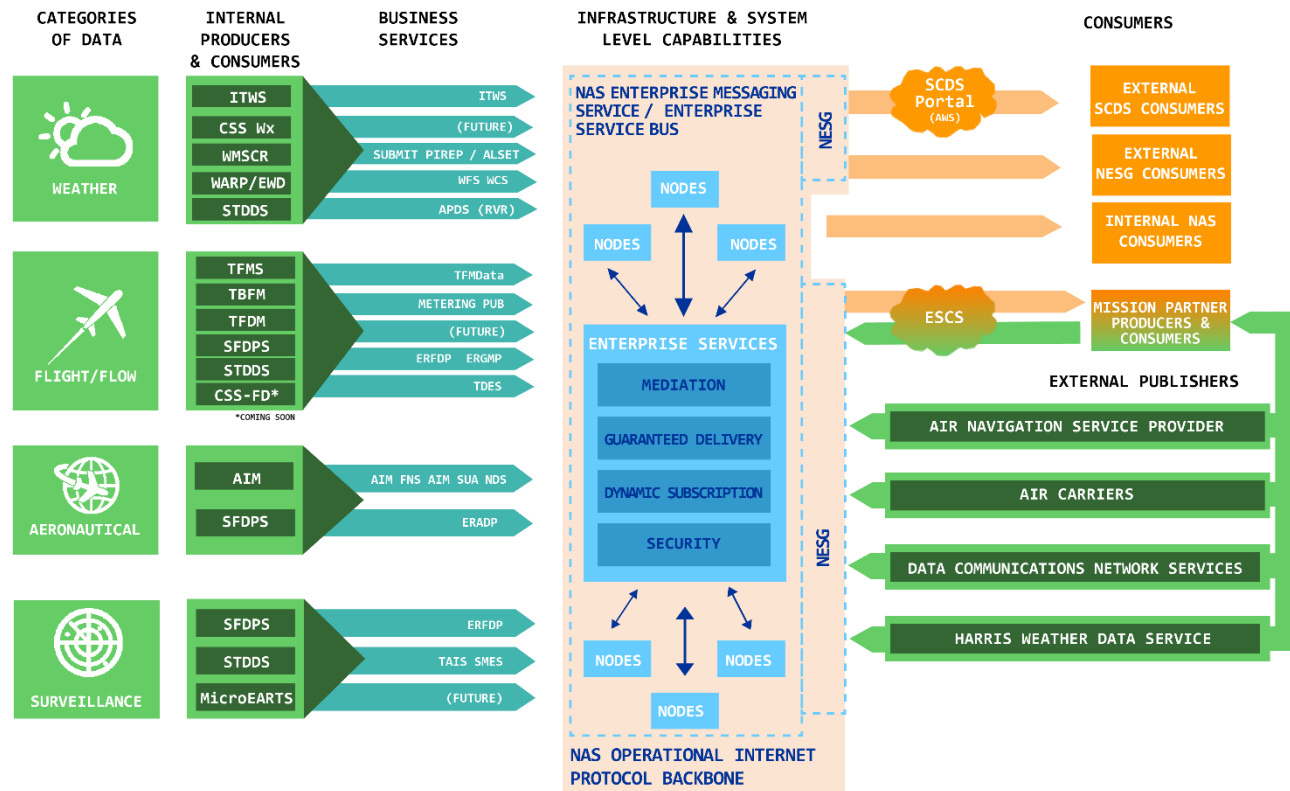
Before SWIM, connecting two systems required a fixed network connection and custom, point-to-point, application-level data interfaces.

After SWIM

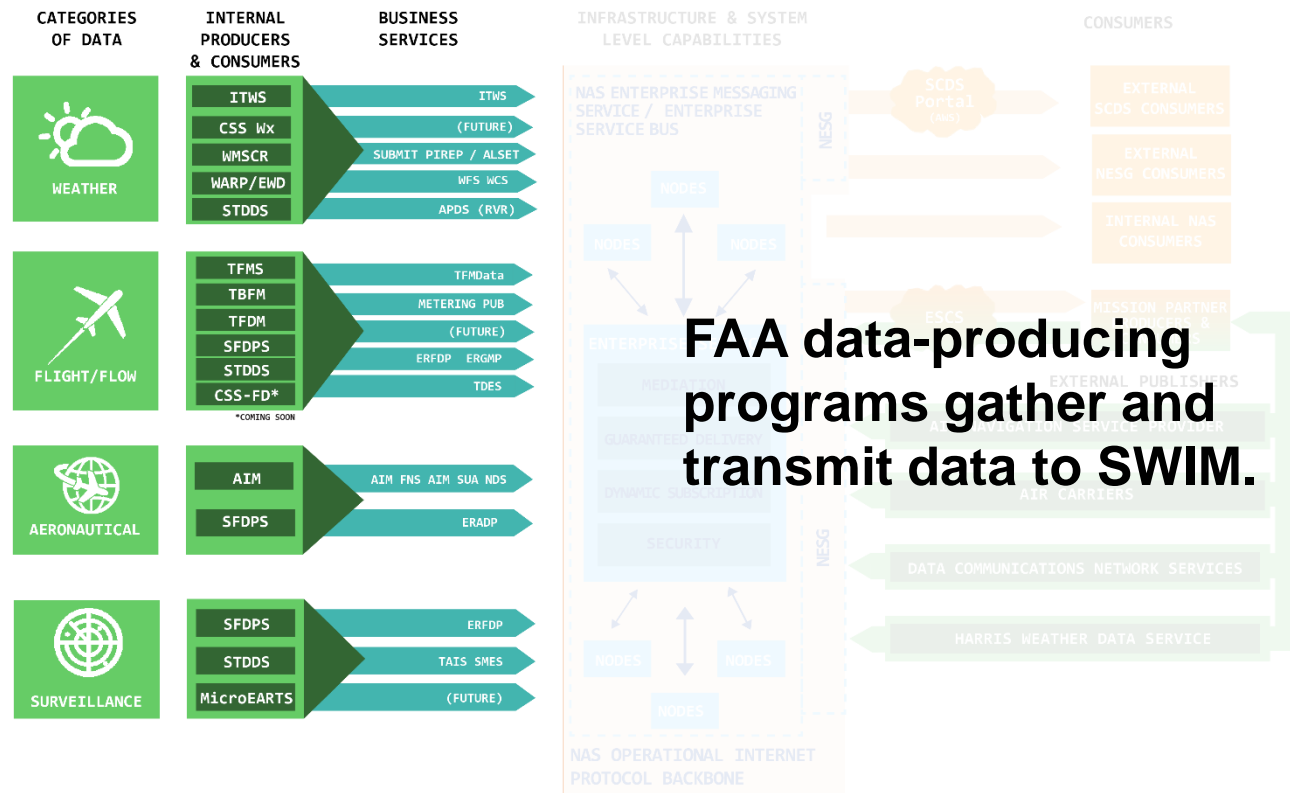


SWIM established a single point of access for aviation data, with producers publishing once and users accessing the information they need through a single connection.

SWIM Operation

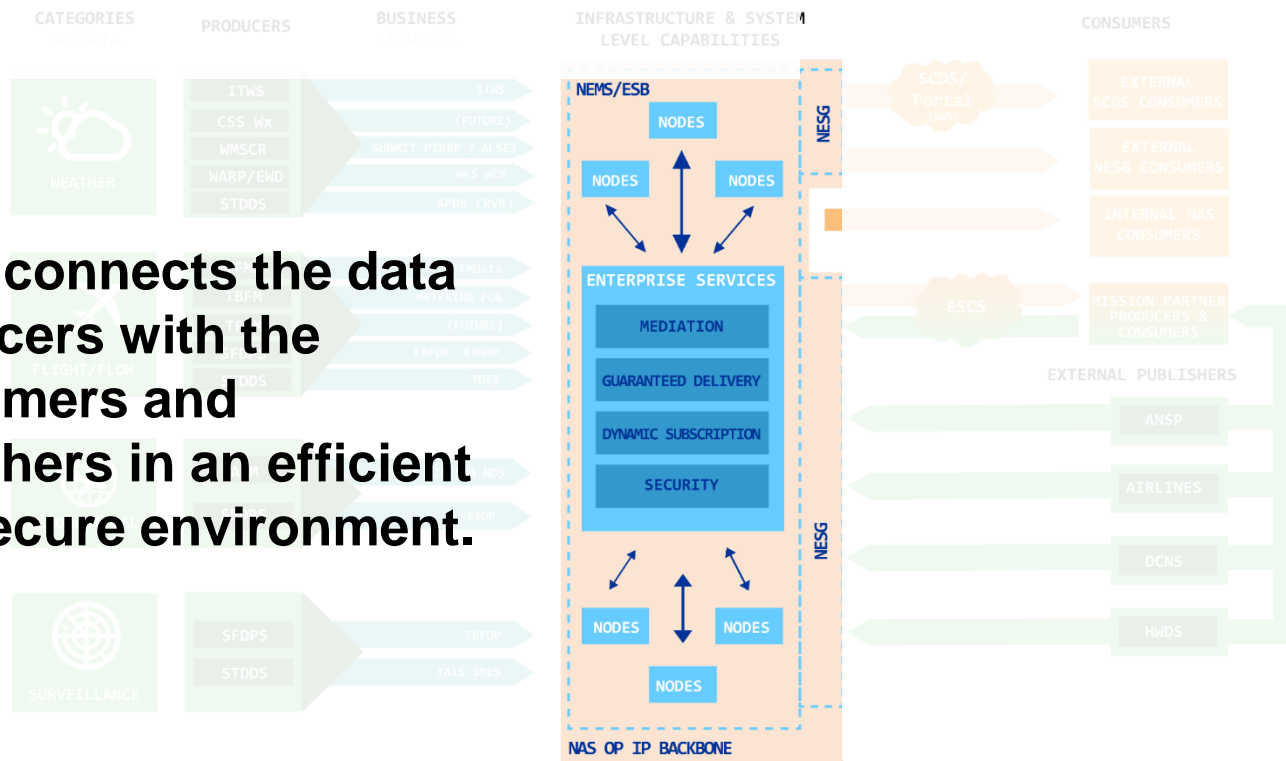


SWIM Operation

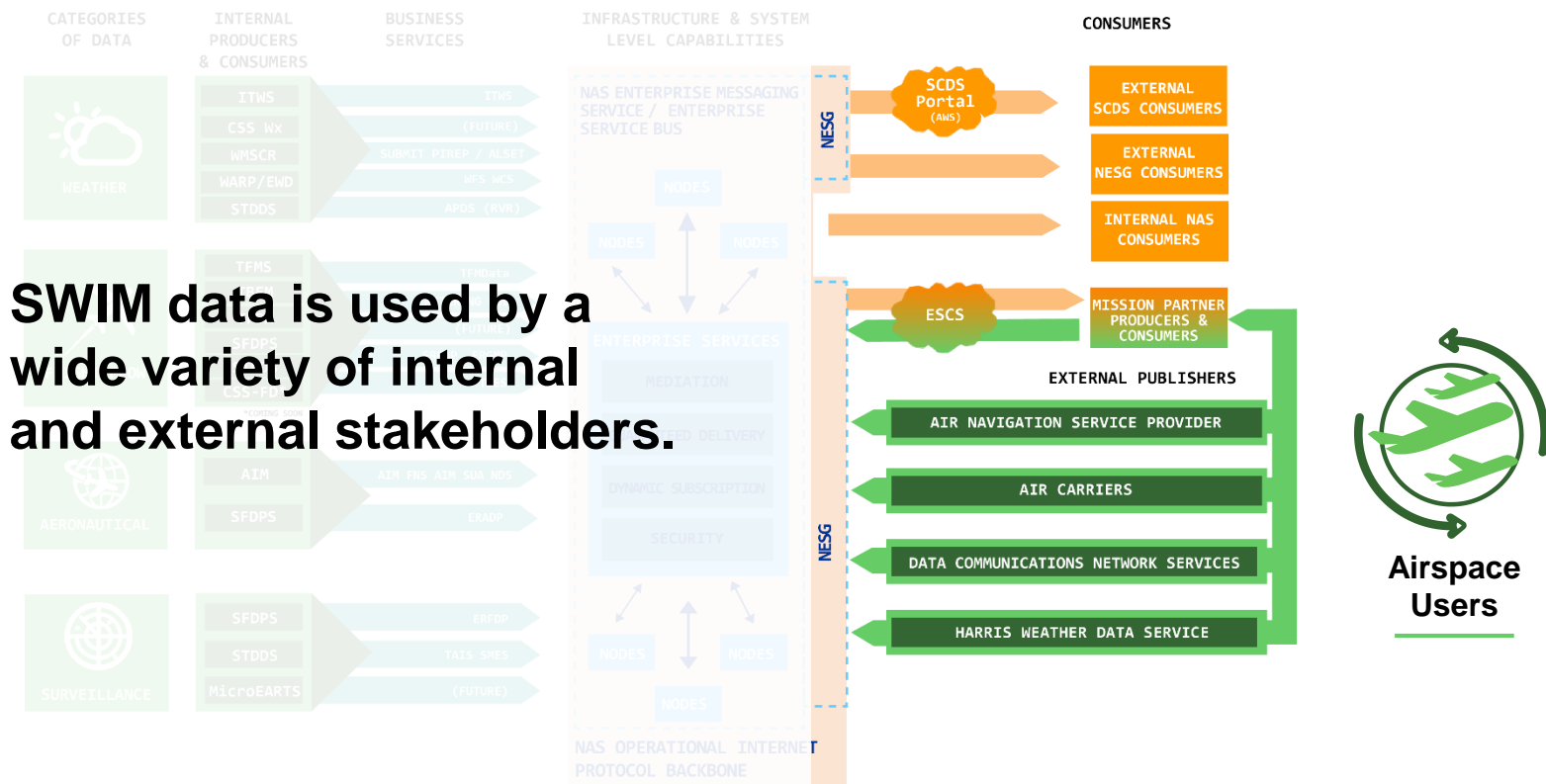


SWIM Operation

SWIM connects the data producers with the consumers and publishers in an efficient and secure environment.



SWIM Operation



Connect with SWIM

SWIM Users Forum

Hear latest updates from the SWIM Program Office, provide user input and feedback

- Next SWIM Users Forum scheduled for Thursday, May 19, 2022



www.faa.gov/air_traffic/technology/swim/users_forum

SWIM Partner Roundtable

Collaborate with FAA Partner Programs to identify how we can work together and accomplish Agency goal.



SWIFT Meetings

Collaborate with airspace partners to innovate, solve common challenges, and improve system interoperability

- Meeting #18 scheduled for Wednesday, May 25, 2022



www.faa.gov/air_traffic/technology/swim/swift/

SWIFT Portal

Explore SWIM data, subscribe to services, and collaborate with other users



(SWIM Industry-FAA Team) portal.swim.faa.gov

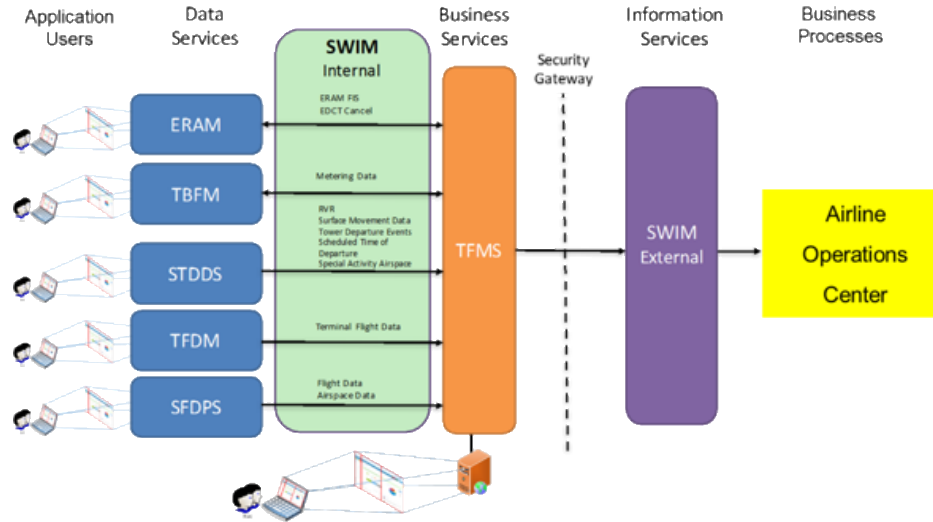
- **A little bit of history:**
 - ~2012, FAA worked with an airline to get Data Release Agreement signed, and that took some effort collectively
 - In 2016, FAA briefed the RTCA Tactical Operations Committee (TOC) and announced data was available for consumption by users via SWIM
 - “*SWIM is hard...*” – Anonymous Airline
- **Got data...Now what do we do with it?**
 - Surface NextGen Integration Working Group, collaboration between industry & FAA offered surface traffic management and data sharing recommendations
 - Industry needed information service documentation that supports end user understanding the operational context of data and information services

Based on industry needs and SWIM expansion, the FAA created the SWIM Industry-FAA Team, SWIFT

SWIM Industry-FAA Team (SWIFT)

SWIFT addresses industry recommendation to:

- Establish a community forum that acts as a single environment for collaborative engagement around NAS information and data sharing
- **Educate:** Synchronize community on information services
- **Collaborate:** Discuss issues most relevant to community
- **Communicate:** Inform community about SWIM & NAS programs





Stakeholders

Airspace Users



Airport/Airspace Authorities



Standards Bodies



Professional Associations



Vendors to Industry/Government



Government



SWIFT: Where we've been & way forward

2021

- Updates on NAS Programs (NOTAMS, weather) & initiatives (Automation Evolution)
- Engaged FAA and Industry on Flight Planning risk reduction (CSS-FD) activities
- Partnered with TBFM on Metering Information Service & new data enhancements
- NY Area Airport Study: refined issue, identified tools, source data & started analysis

2020

- Case Studies: “Art of possible in data”
- Expanded Vendor engagement
- Focus: Ops Issues & Data Analytics

2019

- Understanding data & ops context
- Partner with TFDM on new services
- Develop & review case studies

2018

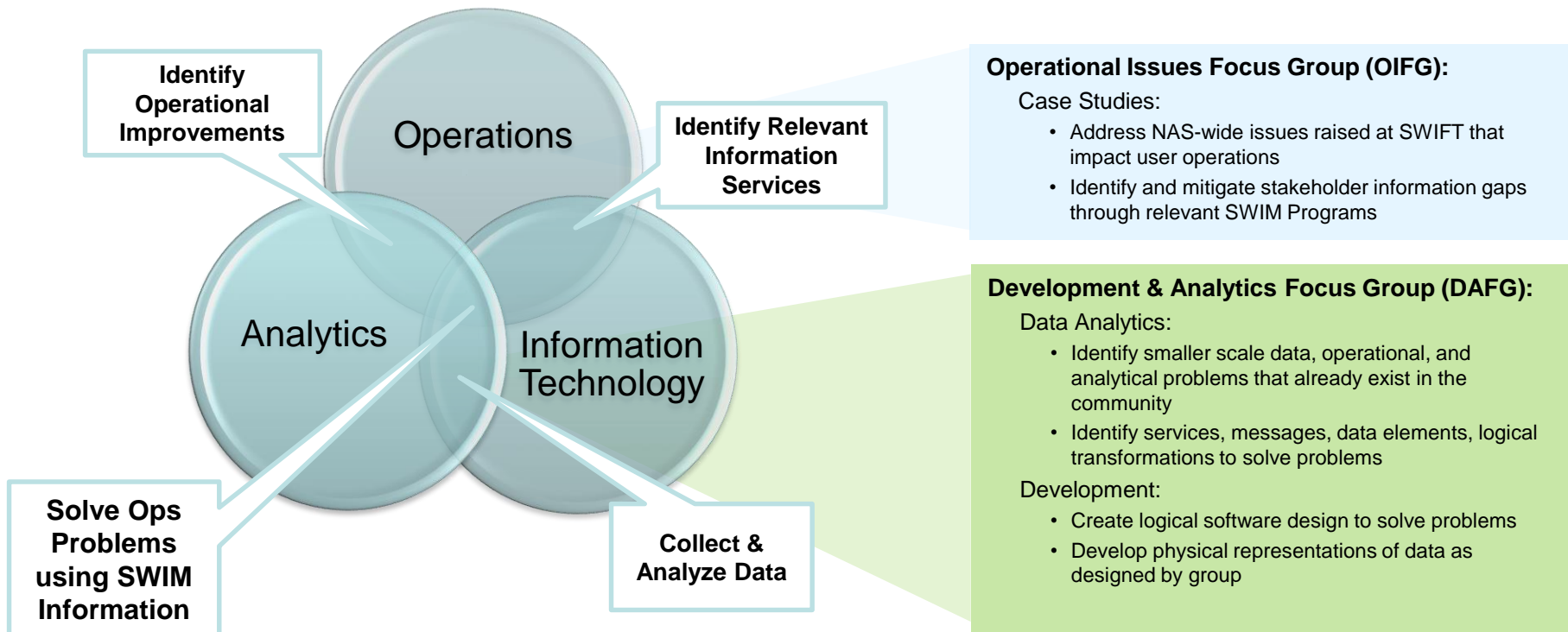
- SWIM awareness & connectivity
- Standardize lexicon for services
- Airline access to SWIM data

Where we're heading in 2022

Support NAS stakeholder data exchange for:

- Evolution of operational concepts: TBO & FF-ICE
- Industry migration to information-centric Ops
- NASA's Digital Information Platform
- Applying analytical tools (AI/ML) to improve Ops
- New entrant integration via info-centric NAS Ops
- Vendor engagement for industry Ops improvements
- Delivering specific operational improvements

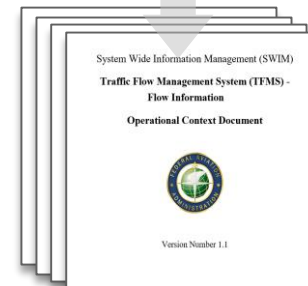
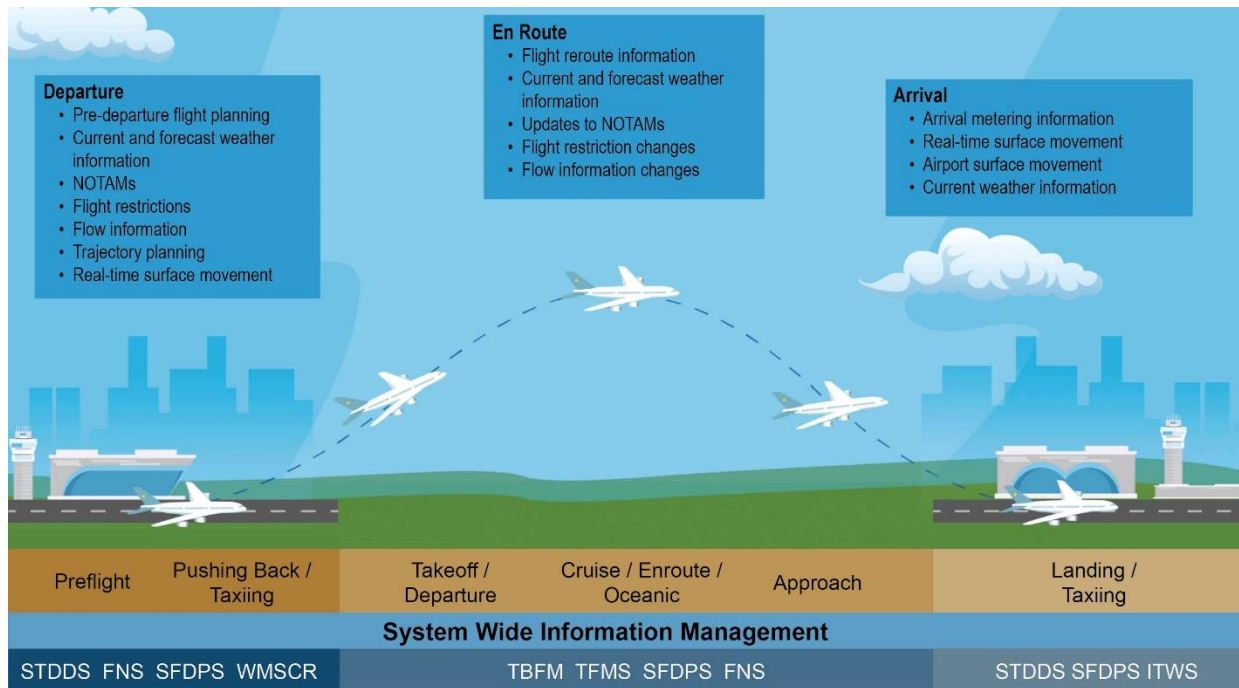
Ops Improvements using Information Services



SWIFT: Where Information Supports the NAS

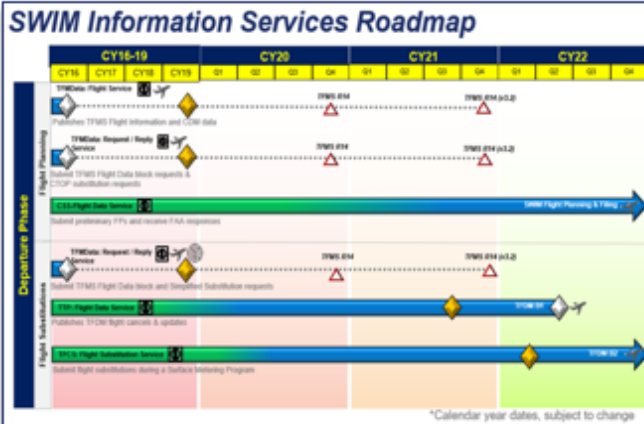
SWIM Services By Phase of Flight Operational Context Documents

Documentation found in NAS Service Registry and Repository (NSRR) at <https://nsrr.faa.gov/>



Information Services Roadmap

1. SWIM Information Service



2. Information Service Context

TFMS – TFMData: Flight Data Service



Service Description

TFDM Build 1 – TTP Airport, Flight Data, Flight Delay, Ops Metrics, TMR Services

Service Interface

Service Description

- TFDM is the surface management solution for NextGen. TFDM is planned to provide Airport and Flight Information Service (AFIS), which is expected to be deployed in the timeframe. AFIS data includes airport configurations, airport specific demand and delay information, and airport-initiated departure stop restrictions. AFIS will provide more timely and specific information on individual flights from the operators, including gate and estimated off block times as well as schedule and surface metering information from TFDM to operators. TFDM services will interface with other information services to provide airport-specific arrival predictions and schedules, call for release data exchanges, flight data, and surface situational awareness

Service Interface

- Publish/Subscribe via JMS

Message Sets

Business Function	Steady State Flow Message Types
Airport Information	Airport Information Heartbeat
Flight Data	Flight Add Flight Update Flight Notification Flight Delete Heartbeat
Flight Delay	Flight Delay Heartbeat
Surface Metering Programs	SMP Data Message SMP Flight List Update Heartbeat
Traffic Management Restrictions	Traffic Management Restrictions Heartbeat

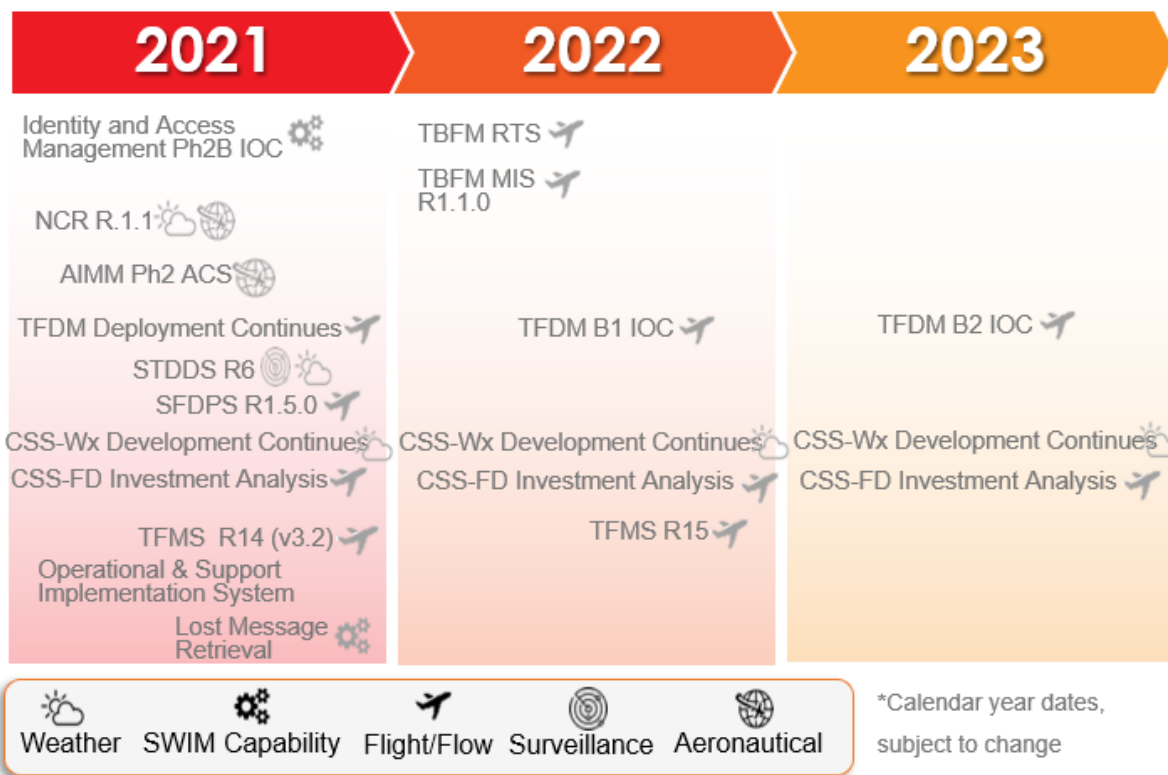
Latest News

- Developed remote TFDM lab access for developmental testing of the TFDM software
 - Completed Build 1 software updates and completed most of testing
 - Waterfall Deployment Schedule Target Release in January 2022
- TFDM Build 1
 - Testing at WJH Tech Center
 - Key Site: Phoenix Sky Harbor International Airport (PHX)
 - New Projected* IOC Date: Summer 2022



Drill down for quick insight into a service description, message sets and latest news.

Information Services Roadmap Plans



What's New?

TBFM MIS: R1.1.0 targeting Spring 2022. New JMS properties for message routing based on additional A/C data attributes.

TFDM Build 1: IOC targeting Summer 2022. Includes TTP which provides airport and flight information, surface scheduling and metering.

TFMS: R15 targeting Fall 2022. Include Reroute Impact Assessment (RRIA). Retirement of FDFE Direct Service; FDFE data exchange replicated in Request/Reply.

SFDPS: Release of COTS update to OS, FUSE software and Hadoop database planned for remainder of 2022

CSS-Wx: IOC Targeting 2024. Integration with ERAM and system testing at WJHTC. End user systems, SWIM to support CSS-Wx & NWP testing

CSS-FD: RRA Industry demo/testing targeting Q4 2022. Gather feedback and findings on FP use case, R&D connection testing and user test client development.

AIMM ACS Ph 2: completed Dec 2021. Providing integrated aeronautical information via WS subscriptions and queries.

STDDS: R6P2 completed Sep 2021. Includes TAIS message enhancements, publish additional TDLS messages, and SMES runway event and CAT10 enhancements

OIFG Use Case: Flight Planning over IP

Issue:

- Industry seeks insight into FAA Flight Plan Modernization efforts to validate alignment with Flight Operators' needs, under the SWIM paradigm
 - Understand operator systems' technical needs for Flight Planning, Filing and Data Sharing
 - Better foresight into NAS constraints and impacts to Ops planning and decision-making
 - Improve Flight Planning and Data Management services through increased reliability of operations

Current Activities:

- Common Support Services-Flight Data (CSS-FD) FAA team and industry held kickoff meeting to evaluate and refine proposed SWIM Flight Planning functionality in support of stakeholder buy-in

Next Steps:

- CSS-FD team will schedule workgroups and TIMs to validate SWIM Flight Planning use case and develop client demos, targeting Q3/Q4 2022

DAFG Use Case: TBFM Delay Analysis

Issue:

- Industry requires a reliable means of determining the amount of delay TBFM allocated during the departure scheduling process. The TBFM <ctm> field currently doesn't always allow for this. During analysis of TBFM Metering Information Service (MIS) data, DAFG identified 10 separate items requiring clarification on system behavior

Current Status:

- DAFG team is actively supporting the TBFM Sprint 2 resolution activities, continuing to meet Bi-Weekly with TBFM producer program team to fully flush out proposed solutions
- FAA and Airlines have provided comments to the updated Java Message Description Document (JMSDD) and will be closing out the comment adjudication process in the next few weeks

Next Steps:

- Key members of the DAFG have been asked to support the Ops Issues Focus Group – New York Area Case Study. As progress continues with the study, the DAFG may spin off more ad hoc sessions or even another small working group

Issue:

- Identify drivers and key indicators that would inform disruptions to airspace user JFK-operations earlier. How do we improve planning and execution for IROP events?
 - Unable to readily identify aircraft deviation indicators (e.g., weather, traffic volume) to anticipate en route delays
 - Lack of available post-ops data analysis to determine threshold boundaries for traffic deviation
 - Limited planning or work-arounds for airspace condition changes and resource constraints

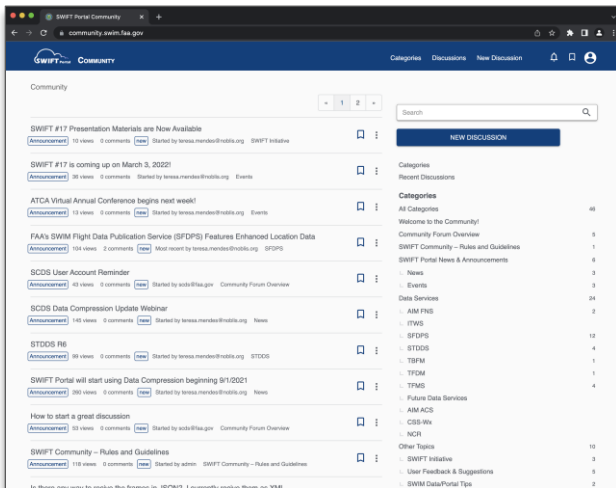
Current Activities:

- Investigate flight trajectory deviation around convective weather, at ZOB/ZNY boundary
- Leverage FAA Enterprise Information Management (EIM) platform to access tools/services for predictive model development

Next Steps:

- Develop data frame of relevant SWIM messages to support model baseline functionality (e.g. model inputs and outputs)

SWIFT Portal by SWIM



(SWIM Industry-FAA Team)
portal.swim.faa.gov

Help Desk Support:
Dedicated Help Desk with FAQs, Ticketing and Chat functionality.

Community Forum:
A place interact with members of the SWIM Community and learn more about the latest SWIM news and events.

Status: Information on infrastructure and SWIM Product health status.

Discovery: Additional information on all SWIM products and services.

Subscriptions:
SWIM Cloud Distribution Service – Access to SWIM data.

Subscription Level Metrics: Detailed view of message rates, bandwidth and other metrics.





#18 Virtual Workshop: May 25th 12:30 – 4pm EST

Register by email:

SWIFT@faa.gov



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Deputy Director Air Traffic Systems

- Email: Joshua.Gustin@faa.gov

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SWIM Program Lead

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SWIM Industry-FAA Team



*"It's easy to be
inspirational when
discussing anything
about SWIM."*

*- Rick Dalton
Southwest Airlines*

*"...post-op analyses (of
SWIM Data) are going
to feed our tactical
decisions."*

*- Capt. Rob Goldman
Delta Airlines*

***"We want to improve your abilities for decision-
making, predictability and post-ops analysis."***

*"In the end, what we're talking
about here is enabling
you to do business."*

*- Joshua Gustin
Acting Deputy Director, Air Traffic
Systems (AJM-2)*

*"There aren't any think tanks out
there for this, so we haven't really
known what data we need."*

*- Phil Santos
FedEx*

*"More information in the hands of
our operators ensures more
efficient airspace."*

*- Heidi Williams
NBAA*

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Questions?