

SWIFT:

SWIM Industry

Collaboration

Workshop #11

**SWIM, Services & SWIFT
(SWIM Industry-FAA Team)**

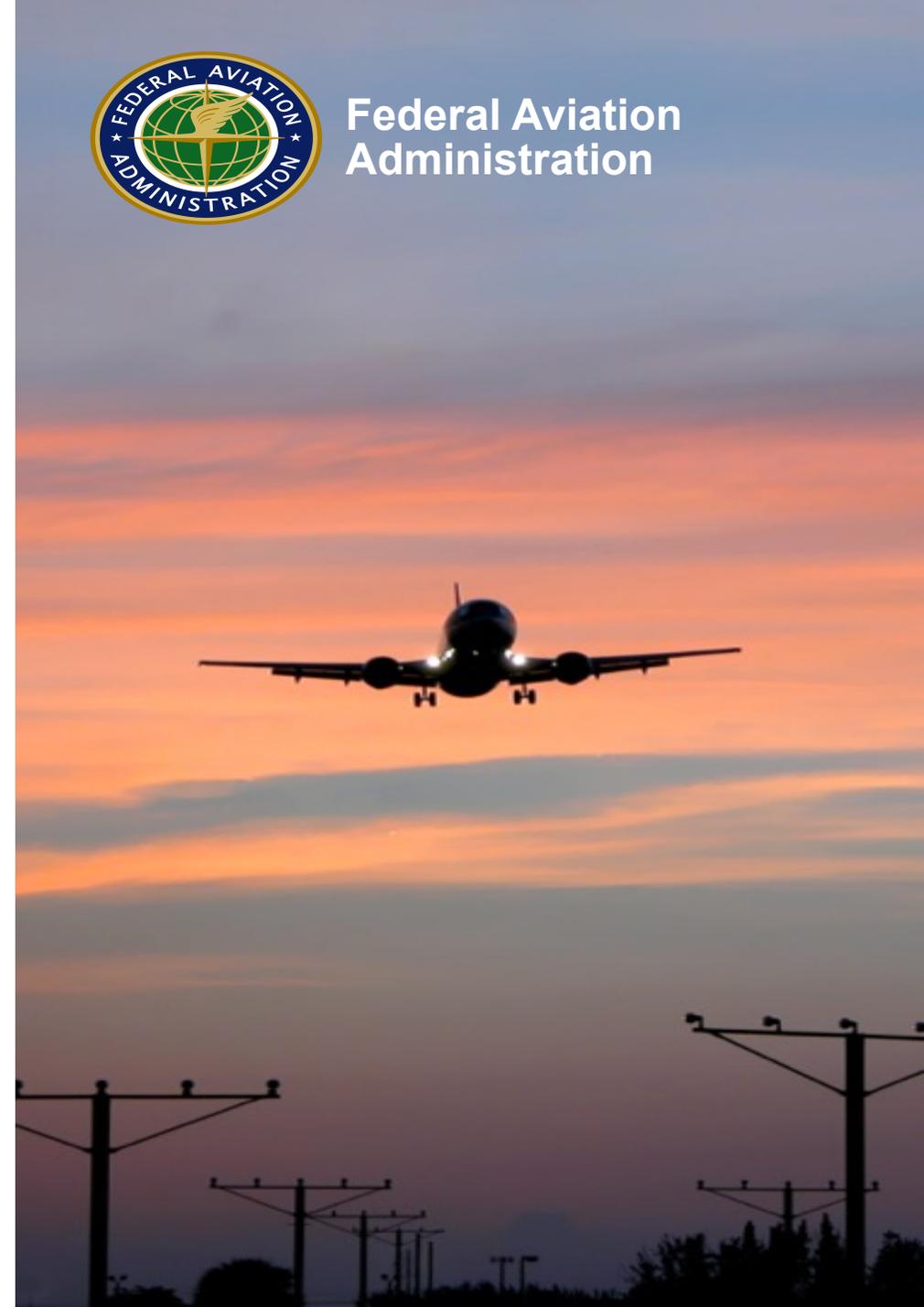
FAA SWIM Program

Communications, Information and Network Programs

August 19th, 2020

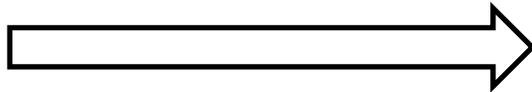


Federal Aviation
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“Airwave Procedures”

- Please note during the session all attendees should ensure they are muted, and will need to use the zoom controls to the right to interact with presenters



- If you would like to ask questions, or engage during a topic of interest please use the “Chat” feature and the SWIFT team will either announce your question/comment for you or unmute you as applicable

Chat: Click the “Chat” icon to send a chat message to the host.



SWIFT Collaborative Workshop #11

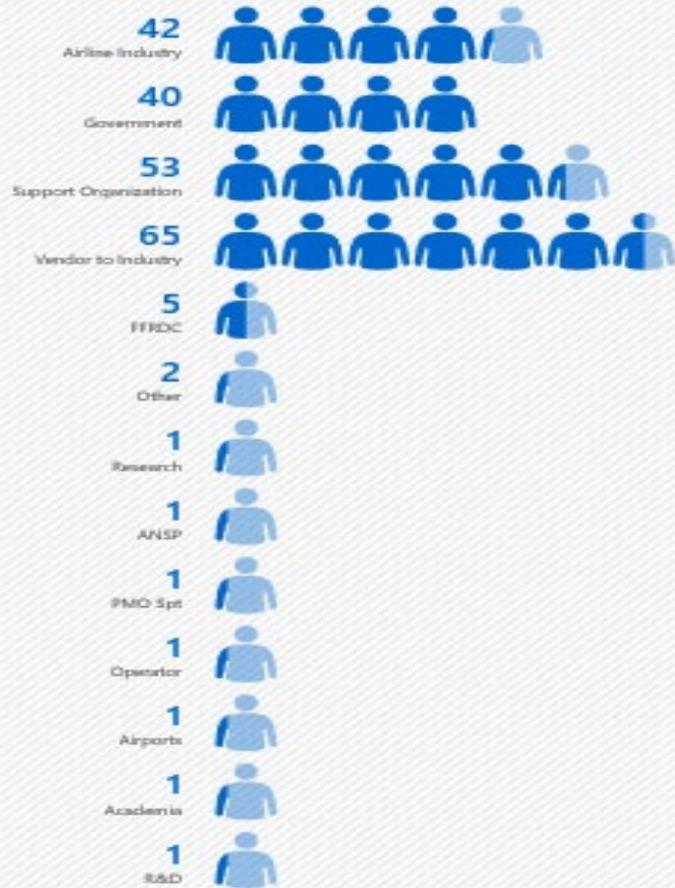
August 19, 2020 – Virtual Conference

- **On-line Virtual Conference Starts Promptly 12:30pm**
- **Welcome and Introductions**
 - David Almeida (LS Technologies LLC)
- **SWIFT Focus Group Updates**
 - Erin Cobette (Delta), Chris Gottlieb (JetBlue)
- **Special Topic: Update on Key Data Standards FIXM**
 - Kelly Mulholland (FAA)
- **Producer Program: TBFM**
 - Bob Tyo (FAA), Yong Li (FAA)
- **Break**
- **Special Topic: Innovation in User Experience from TFMS**
 - Robert Mount (FAA), Karen Bohannon (FAA)
- **SWIM Capability: NAS Common Reference (NCR) Update & Demonstration**
 - Kristin Cropf (FAA), Patrick Sheridan (Volpe)
- **Closeout**



Who is in the “Zoom Room” at SWIFT #11?

Attendee Organizations



Other defined as: R&D, Researcher, Airport, Consultant, GA, and ATL IAP

Attended a SWIFT Meeting Before?



215 attendees

SWIFT

SWIFT: Announcements

- **SWIFT 12 Virtual Workshop: Thursday, November 19, 2020**
- **Aeronautical Information Optimization Summit Series: Delivering Data that Matters**
 - Temporary Flight Restrictions August 20, 1:00pm-2:00pm EDT
 - UAS Community Collaboration August 27, 1:00pm-2:00pm EDT
 - Implementing Aeronautical Information API's September 3, 1:00pm-2:00pm EDT
 - https://www.faa.gov/news/conferences_events/aeronautical_information_summit_2020/
- **TFMS Technical Webinar: Every Second Thursday of the month @ 1PM EDT**
 - Next Meeting scheduled for September 10, 2020
 - Send questions or topics to Chris.Burdick@faa.gov, or Thomas.ctr.Paccione@faa.gov
- **SWIFT-er's *On the Move...***
 - *Erin Cobbett: Development & Analytics Focus Group*
 - *Michael Jagmin: Development & Analytics Focus Group*
 - *Joshua Gustin: Deputy Director Air Traffic Systems (Detail) & SWIFT Sponsor*
 - *Stefanie Calabrese: System Wide Information Management SCDS/Portal & Outreach Lead*
 - *Felisa White: Manager, Enterprise Services Program Management & Integration*

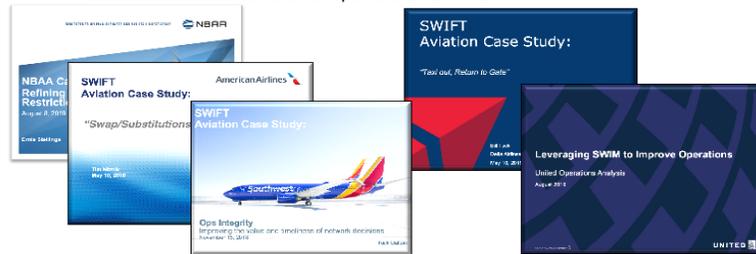


SWIFT Culture under Felisa's Leadership

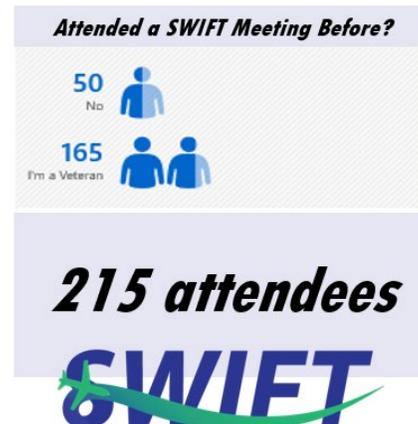
Mission Focused

SWIFT Industry Case Studies

- SWIFT works with industry to solve real-world problems
 - “Show and Tell”: Offer a venue to share uses of SWIM Information Services and related lessons learned with the community
 - “Here is problem I have”: Provide a forum to discuss real-world operational problems and identify underlying NAS systems/related SWIM information services that can contribute operational solutions

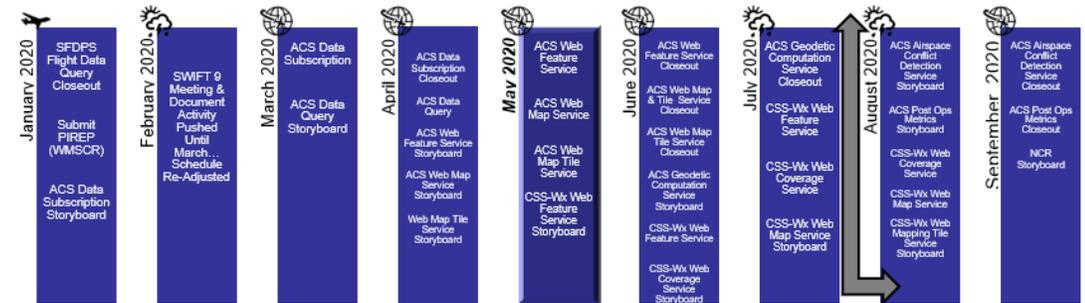


Customer Driven



Results Oriented

Operational Context Focus Group: Document Updates



Partnering

SWIFT Stakeholders

Airspace Users

American Airlines, Alaska Airlines, Allegiant, Delta, FedEx, JetBlue, Spirit, Horizon, Southwest, United, UPS.

Professional Associations

Airlines for America, AOPA, NBAA, IATA, NATA.

Vendors to Industry/Government

ADP SAFEGATE, Agile, Amazon, ATAC, AVMET, Concepta Beyond, CGH, CIRIUM, EAGLE CAP, Evans, FlightAware, FL/GHTKEYS, IBM, GENERAL DYNAMICS, Honeywell, JEPPesen, LEIDOS, LINCOLN LABORATORY, MAPLARGE, METRON, MITRE, MOSAIC, Red Hat, noblis, PASSUR, Palantir, Raytheon, RED CLOUD, objectstream, Rockwell Collins, route 3 software, SITAONAIR, SENSIS, Sabre, solace, SLICKOR, SEATEC, THALES, verizon.

Government



Felisa, Thank you for your contributions to the SWIFT!!!

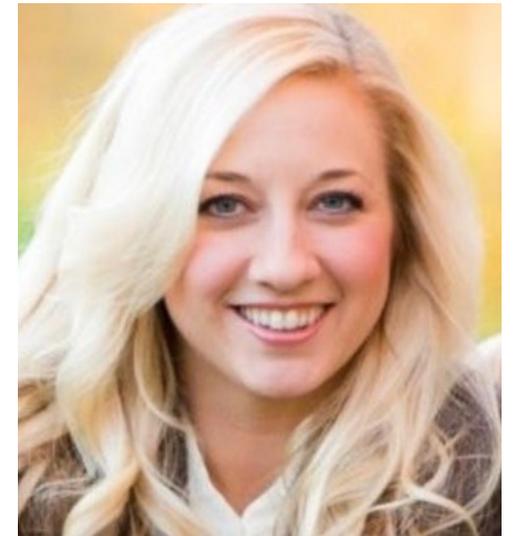


Welcome: Incoming SWIFT Chair, Stefanie Calabrese



Today we're starting a new era: Stefani-Era!

- **SWIM Communications & Outreach Lead**
- **SWIFT Planning & Coordination Team**
- **FAA Communications, Information & Network Programs (CINP) Analyst**
- **Performance Based Navigation Support Team**
- **Stefanie fun fact: we know she's ready for SWIFT...**



As a former staffer on the Hill, Stefanie knows how to listen & help balance needs!



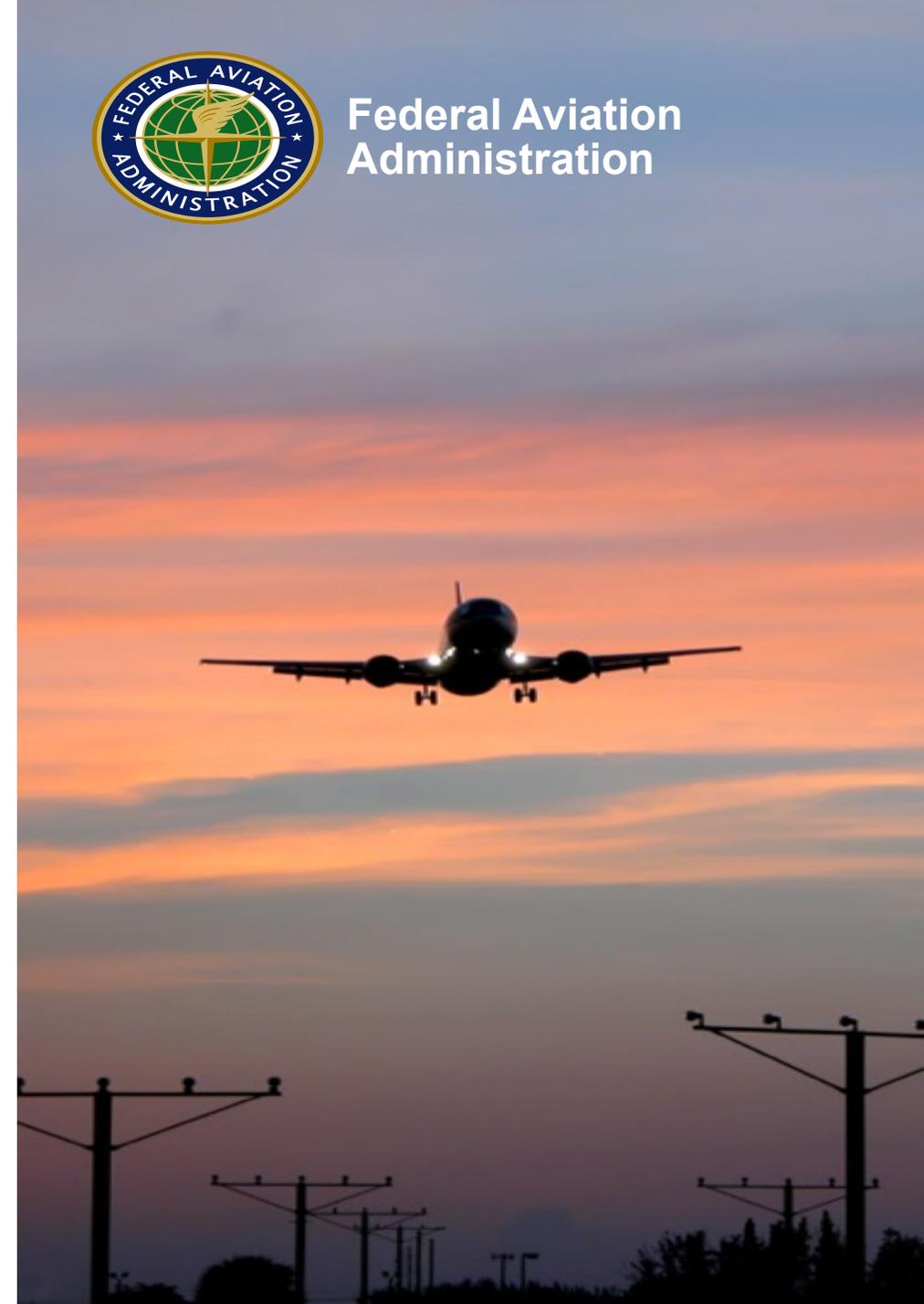
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Operational Context Focus Group

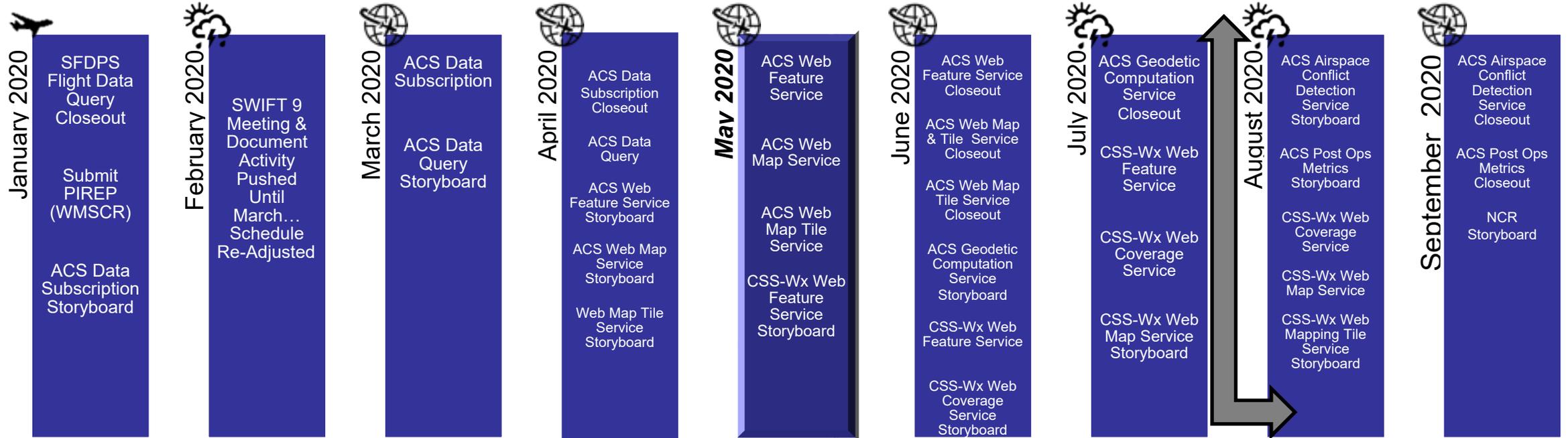
SWIFT 11 Update

David Almeida, LS Technologies

August 19, 2020



Operational Context Focus Group: Document Updates



- **Schedule subject to change if service updates are released and existing Operational Context documents need to be updated**
- **TFDM Use Case and Ops Context are currently under construction**
 - Comments received on Use Case, team currently incorporating updates

Development & Analytics Focus Group

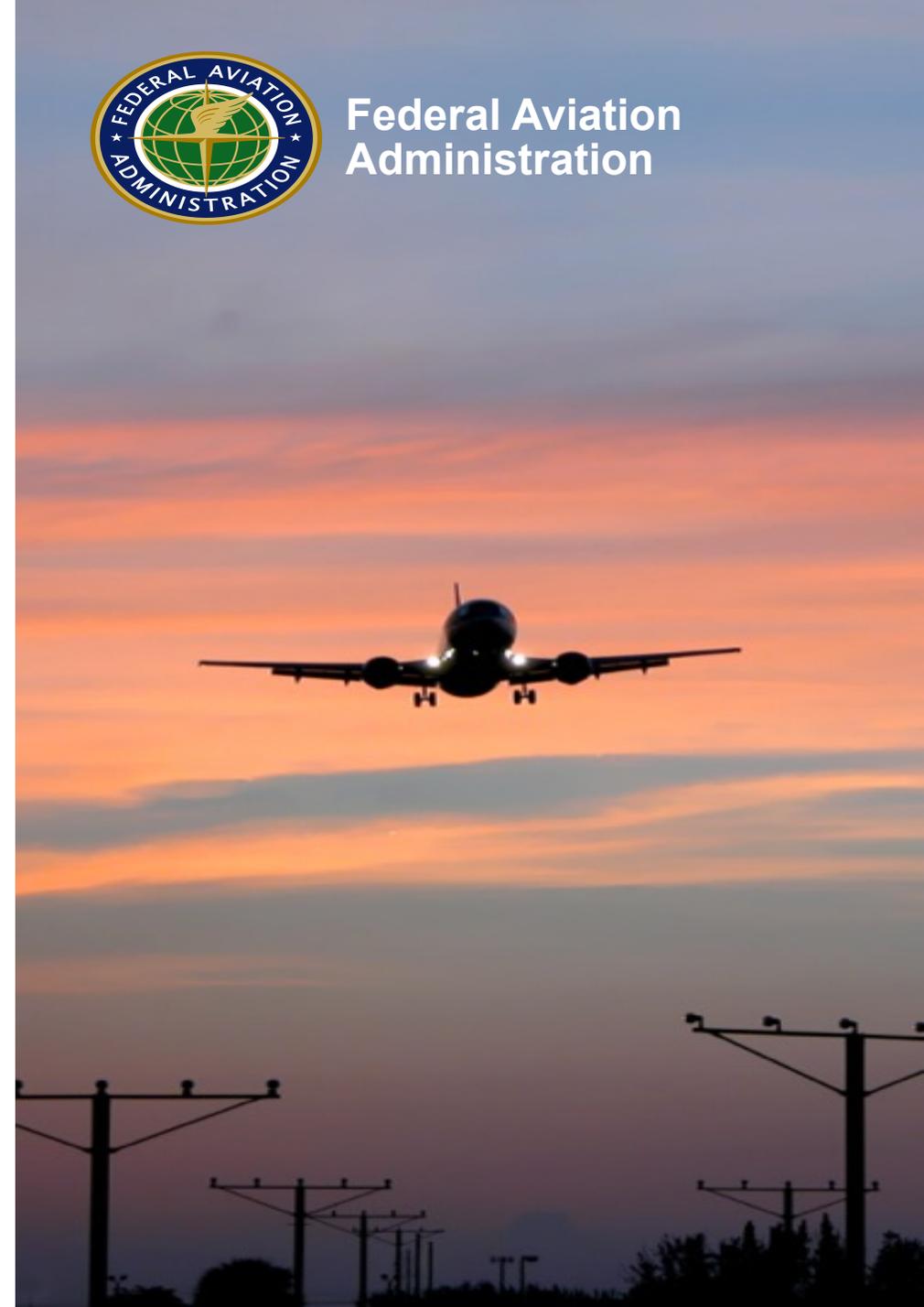
SWIFT 11 Update

Erin Cobbett – Delta Air Lines

August 19th, 2020



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D&A Focus Group Progress

- **Starting with Operational issues, the team leverages the expertise of participants to present solutions using SWIM data**
- **TBFM was identified as a top community priority at SWIFT meetings and by the Operational Focus Group**
- **A trial 4-week sprint with weekly update meetings was selected as the starting point (Sprint 1) to begin work**
 - April and May were dedicated to Sprint 1
 - Early June was used to reflect on Sprint 1 and find areas of opportunity for improving the process
 - Sprint 2 began in late June

What departure delay will this flight incur from TBFM?

How do I get and store the data?

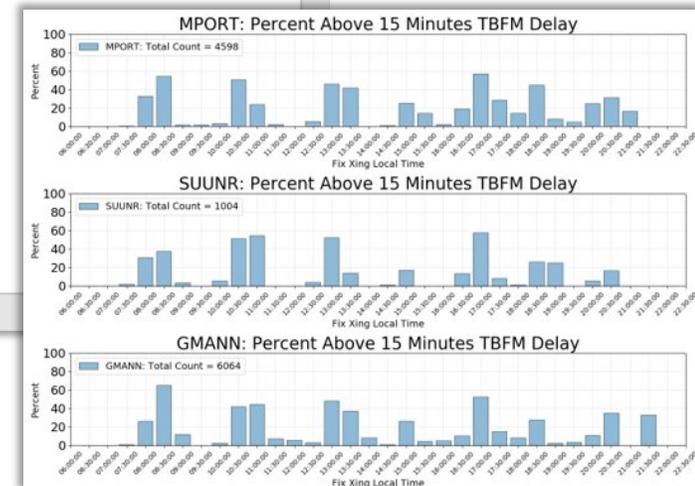
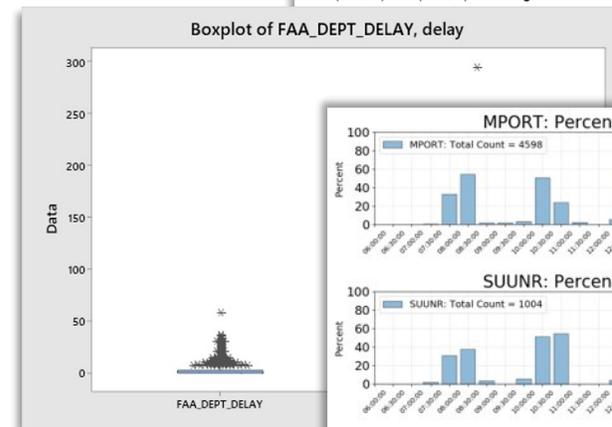
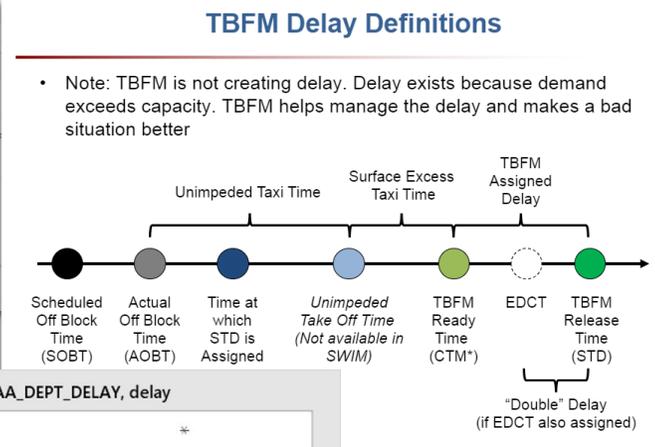
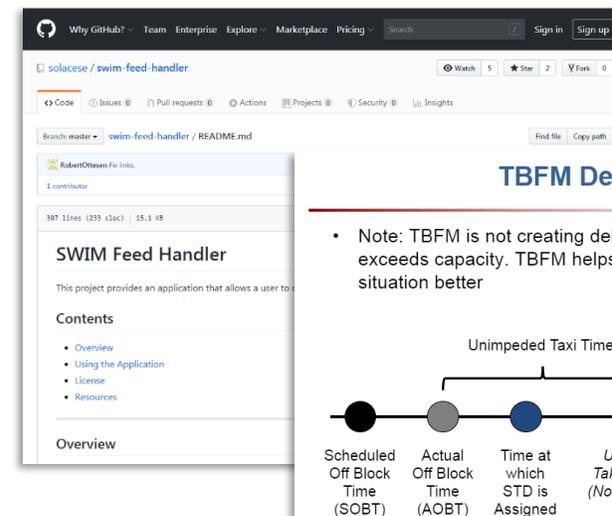
How do I estimate impact / delay?

How do I know this estimate is accurate?

How do I predict this delay?

TBFM Delays Sub Team Sprint 1

- **Several hundred hours of volunteer time were contributed during Sprint 1**
 - Obtained / stored: Raw SWIM TBFM messages, “Truth Data”, and ATD-2 CLT comparison data
 - Created new / transformed data: Fused TFMS & TBFM data, hourly flat files from SCDS TBFM
 - Published code to consume and handle TBFM data from SCDS (GitHub)
 - Mapped all possible elements for TBFM delay definition
 - Created an initial delay definition and compared with “Truth Data” to understand size of disparities
 - Used initial definition to look for time and fix patterns into IAH

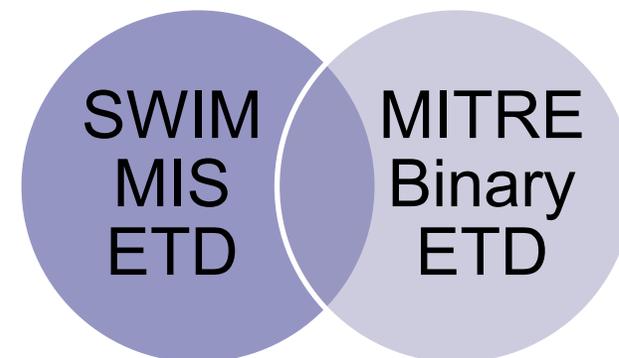


TBFM Delays Sub Team Sprint 2

- **TBFM issue continued, but from a different lens**
 - Sprint 1 was more tactical – *How can we best describe what is happening given the data we have?*
 - Sprint 2 is more strategic - *How can we get better data from the source?*
 - Longer term solution, but one that will be best for the community

Objectives:

1. **Review, analyze, and come to consensus on SWIM TBFM delay estimation**
2. **Quantify data challenges and provide examples**
 - Obtained enhanced “truth data” with new attributes
 - Identified groups of interest to study
 - Collected descriptive statistics on these groups
 - Found / provided examples in data for further study



TBFM Delays Sub Team Sprint 2

- **TBFM Sub Team has held two meetings with the TBFM producer program**
 - Will continue with biweekly interactions
- **Precisely what SWIFT was designed to do**
 - By doing this as a group of stakeholders, it eliminates work for Industry teams and for the FAA
 - Instead of *many* meetings with *many* individuals, the team can meet as *one* to...
 - Describe the challenges more completely
 - Determine root causes more effectively
 - Find appropriate solutions that meet everyone's needs
 - And share results with community faster

Lots of technical problems to solve, join us!

Next full D&A to be scheduled for the week of August 31st

- **Discuss future projects and meeting cadence**
- **Reprioritize list of potential projects based on what is now Top of Mind**
 - Double delays
 - Gate Returns
 - NE SWAP Routing issues
 - FFICE
 - Demand over an Entity
 - Estimated Times
- **Contact Us:** Erin Cobbett - Erin.Cobbett@delta.com
Ray Mitchell - Ray.Mitchell@lstechllc.com

Operational Issues Focus Group

SWIFT 11 Update

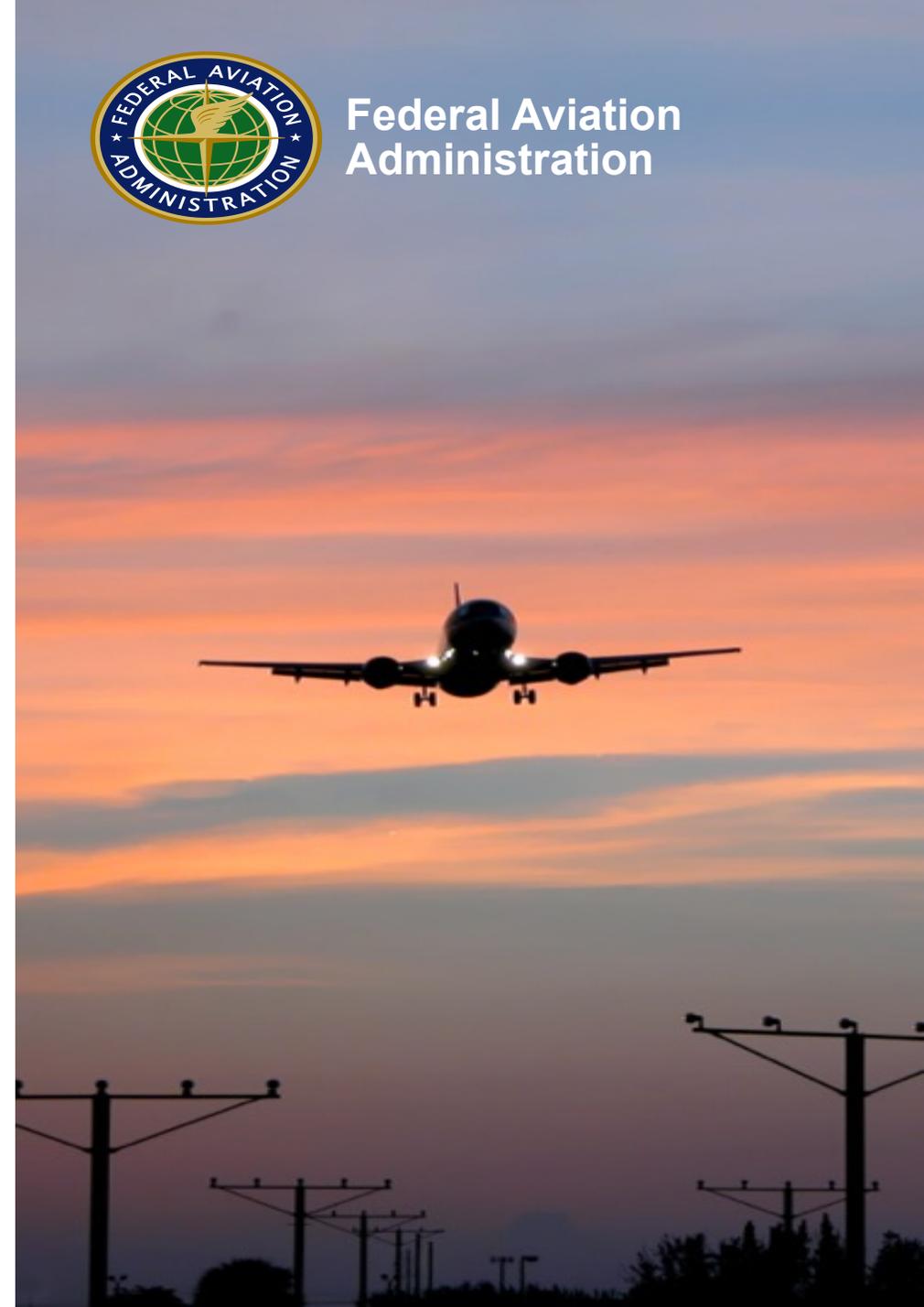
Chris Gottlieb, JetBlue &

David Almeida, LS Technologies

August 19, 2020



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Operational Issues Focus Group

- **Lead: Chris Gottlieb, JetBlue**
- **Goals: Address NAS-wide operational issues that might benefit from information sharing between organizations**
- **Current Prioritized Issues:**
 1. **TBFM delays (United) who, what, why it matters**
 2. **Flight Planning over IP (SWA)**
 3. **Taxi Out Return to Gate (Delta)**
 4. **TBFM/TFMS double delays**
 5. **JFK has long taxi issues (JBU)**
 6. **Early Planning for disruptions**
 1. **Early Detection Deviation over Fix (JBU)**
 2. **Early Detection for Airport Surface Delays (JBU)**



Industry seeking functionality that will help:

- **Focus limited resources on “things that matter”**
 - Establish business processes that maximize flexibility for internal planning and operations
 - Utilize resources more effectively for development activities
 - Optimize data feeds between FAA and airspace users
- **Improve service through increased reliability of operations**
 - Leverage flight planning to improve and deliver results to the operation
 - Identify the value of flight planning inputs as enablers to TBO
 - Define TBO benefits as a component or enabler of broader airspace system efficiency and reliability
- **Understand every flight planning data element and their impact on each stage of operational planning and decision-making**
 - Translating data services into improved airspace user operations management
 - Ensuring internal capabilities are focused on improving passenger service experience

Notional List of Functionalities for Demonstration

- Accept / Process Flight Plans for Filing (FF-ICE, FIXM format)
- Validate Flight Plan (format, basics only)
- GUFM Management (validate, create, store)
- Flight Data Store (Filed FPs) / Request-Reply Retrieval
- Receive / Trial Requests*
- Receive / Preliminary Flight Plans*
- Flight Plan Validation (route elements, trajectory sanity etc.)
- Provide TFM, Aero Constraint Feedback to Airspace Users*
- Efficiency Critical RMA (failover, message integrity)
- Provide ATC Constraint Feedback*
- Flight Planning (interactive trajectory negotiation)
- And more.....

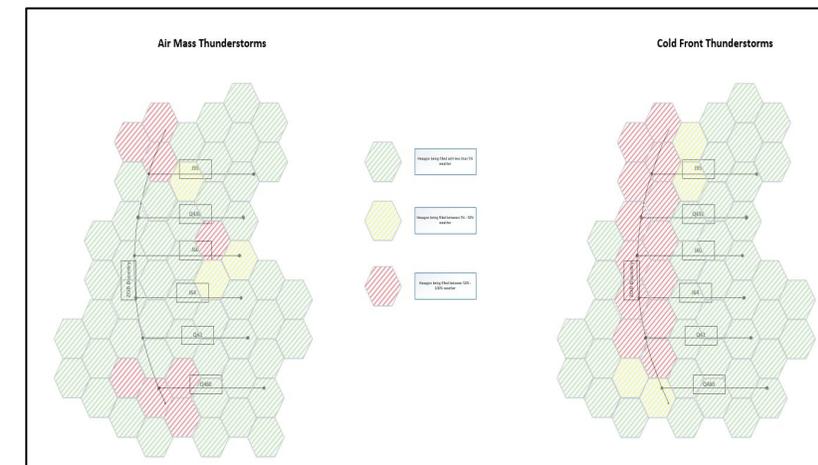
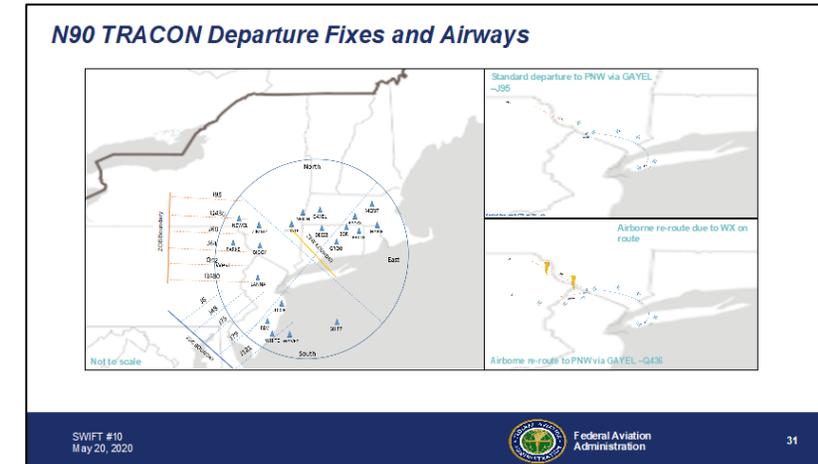
* - Airspace Users' Interests Operationally

Flight Planning Modernization: Next Steps

- **Engage participants:**
 - SWIFT airspace users have shown interested in participating in demos
 - Formal solicitation of participants will be done by open invitation via SWIFT Focus Group
 - All stakeholders will be invited to participate (may have to be virtual, too early to know)
- **Establish common scope:**
 - Constraint feedback with respect to Trial Requests and other Flight Plan submissions are of key interest to airspace users
 - Corrections, modifications, new features considered part of FAA program
 - During demo period; feedback, suggestions accepted, and action taken
- **Project planning:**
 - Develop a common schedule and identify relevant interdependencies
 - Align resources to project milestone dates and work action plans, accordingly

Issue: Early Planning for Disruptions

- **Case #1: Early Detection Deviation over Fix**
 - Need tools to observe or record departure environment metrics that track airspace optimization
 - Need additional analysis capability to gauge how well the airspace is managed, utilized for next day CDM calls, determine issue workload or quantify airspace capacity recovery times
- **Case #2: Early Detection for Airport Planning**
 - Looking into using elements of the previous widget case study to look at different aspect in planning for disruptions
 - Using new SWIM information services with other potential sources to detect operational impacts earlier
 - Goal: Identify capabilities to drive earlier decision-making for planning during disruptions





Next**GEN**

FIXM Overview and Update

Kelly Mulholland
August 19th, 2020



Outline

- FIXM and ICAO
- FIXM Model
 - FIXM Core
 - FIXM Applications
 - FIXM US Extension
- FIXM in Use
- Communication and Collaboration



FIXM and ICAO

- FIXM = Flight Information eXchange Model
- Global exchange standard capturing flight and flow information
 - Implemented in UML and XML
 - Fully supports data exchange requirements Flight and Flow Information for a Collaborative Environment (FF-ICE) concept i.e. ICAO Doc 9965 and FF-ICE Manual, as defined by the ICAO* ATMRPP**
- Enabler for the FF-ICE information exchanges

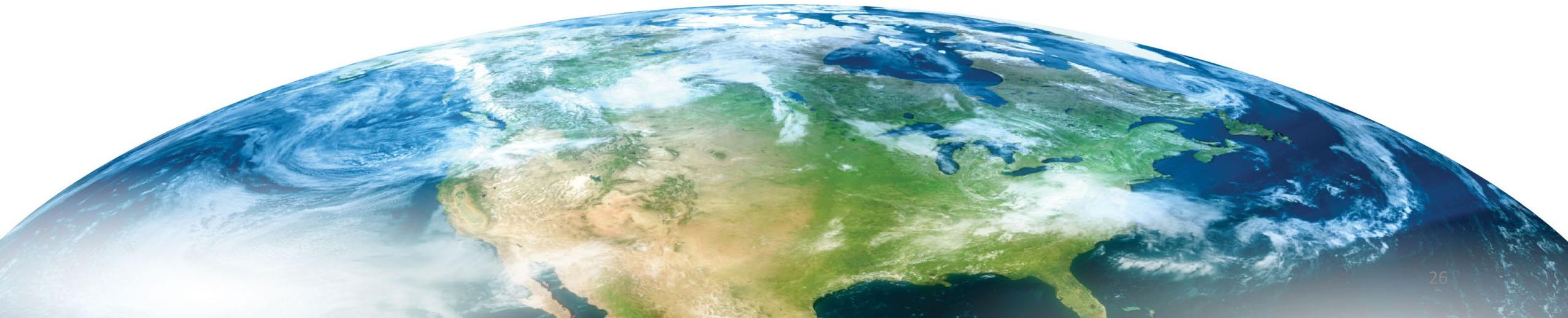
*ICAO = International Civil Aviation Organization

**ATMRPP = Air Traffic Management Requirements and Performance Panel

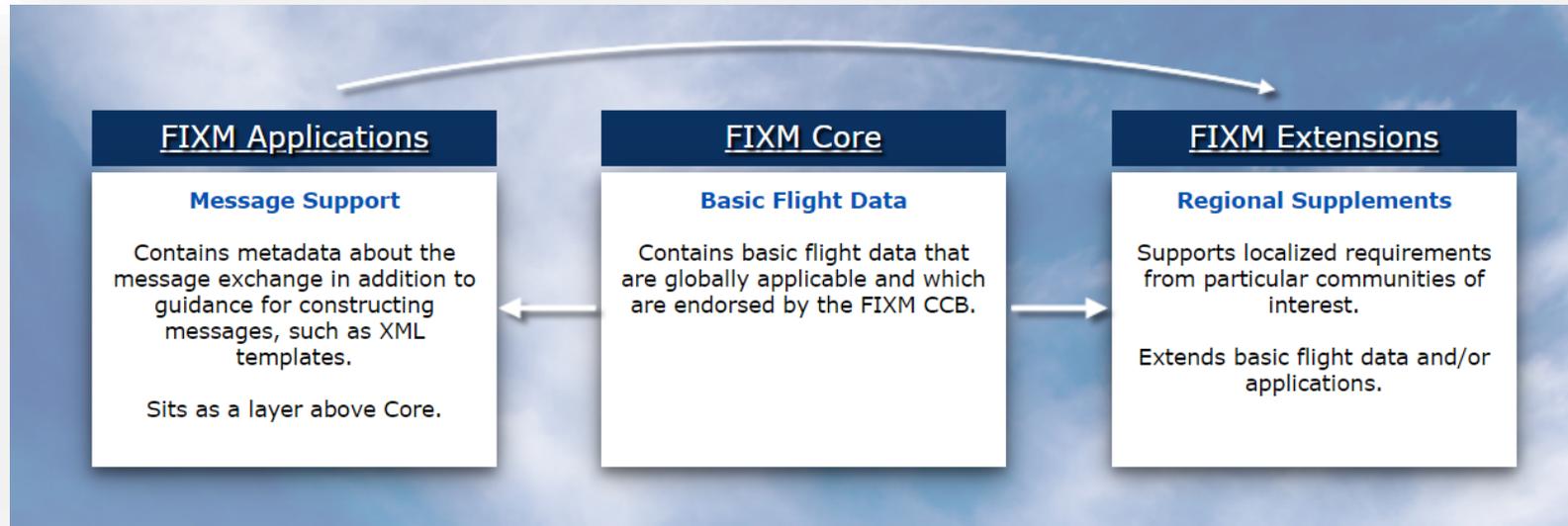


Next**GEN**

FIXM Model



FIXM Model Overview



Note, FIXM Applications was one of the significant changes introduced in v4.2.0

FIXM Core

- Current version is FIXM Core v4.2.0 released February 2020
- FIXM Core v4.2.0 has seen an extensive amount of changes to the FIXM model
 - 61 CRs received and approved by the FIXM CCB for FIXM Core v4.2.0
- Included were long standing issues such as:
 - Messaging
 - Including fields, structure, and FF-ICE message construction guidance (i.e., templates)
 - Absent/deleted data
 - Transition from Workbench to EA generated schemas
 - Extension mechanism updates
 - Aeronautical data representation improvements
 - Limiting root elements in the physical model
 - Restructuring of Significant Point
- These changes appear to have been positively received by the FIXM community



FIXM Applications

- FIXM Applications were introduced in FIXM v4.2.0 to support FF-ICE data exchanges
- Applications and the XML templates contained within balance overall model flexibility with the benefits of XML message guidance and validation
- FIXM v4.2.0 introduced a new package called Applications as a peer to FIXM Core with independent versioning
 - Applications consists of Basic Messaging and FF-ICE Messaging
 - Added templates for all thirteen FF-ICE messages



FIXM Applications:

Message Templates

- Provides detailed, XSD-based guidance for constructing individual FF-ICE messages.
- Message Templates provide a more restrictive subset of message and flight data structures that is relevant to a given information exchange.
- Templates offer message-specific guidance and validation rules while remaining entirely compliant with the broader FIXM structures.
- Templates provide FIXM users with the guidance and structure they desire while at the same time allowing FIXM to remain open and flexible.
- Template supports interoperability and improve data quality.



FIXM Applications:

Benefits of Message Templates

Without templates	With templates
Increased development overhead as each user must independently interpret how message content requirements should be represented in FIXM format.	Tailored schemas reduce development overhead by providing additional guidance for creating messages with a FIXM-based content.
Individual interpretations of requirements could lead to inconsistent message content implementation across users.	Making dedicated implementation templates available to all users should improve implementation consistency.
XML-based validation limited to data syntax checking with no guidance for required vs. optional but allowed vs. not allowed content (failing to fully leverage a major benefit of using XML).	XML-based validation enforces both syntax and content completeness rules (fully leveraging benefits of XML-based validation).

FIXM US Extension Overview

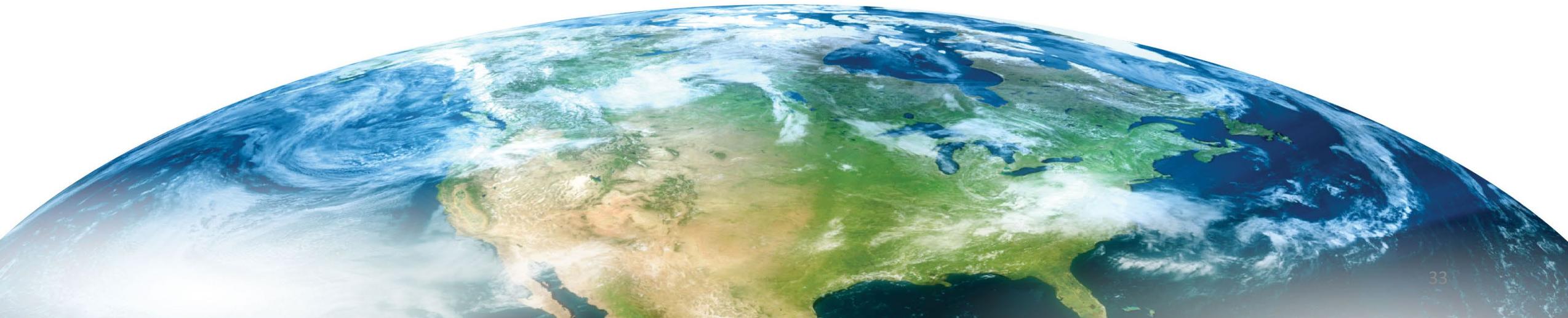
- Extension model supplements the core FIXM model in order to support additional (e.g. regional) requirements
- FIXM US Extension requirements come from the US ATM community e.g. FAA program offices, NAS Airspace Users, etc.
- Current version, 4.2.1, was released on December 2018
- Next version, 4.3.0, will be released late 2020 and include:
 - Realignment with FIXM Core v4.2.0
 - Update TFDM data requirements
 - Update TFMS data requirements
 - Potential updates based on SFDPS data requirements
- FIXM US Extension is available on [FIXM.aero](https://www.fixm.aero)





Next**GEN**

FIXM in Use



FIXM in Use at the FAA

- SWIM Flight Data Publication Services (SFDPS)
 - Publishes En Route flight data from 20 ARTCCs in FIXM v3.0 format
 - Plan for updating to FIXM v4.2
- Traffic Flow Management Data Service (TFMData)
 - Partial data publishes in FIXM v3.0
 - International Flight Data (FPL, CHG, ARR, DEP, CNL, DLA, TIZ, TIO, CLS)
 - Terminal Flight Data (target times for movement area entry, off-block, take-off, the projected wheels-up time)
 - In the process of updating to FIXM v4.2
- SWIM Terminal Data Distribution System (STDDS)
 - Publishes surface track data, terminal flight plan data in FIXM v4.0 format
- Terminal Flight Data Manager (TFDM)
 - Publishes terminal flight data, flight delay data in FIXM

FIXM Data Publication through SWIM

- FAA SWIM TFMDData Mediation Service:
 - Mediates Flight and Flow information into FIXM v4.0 and AIXM v5.1 format
 - Wrapper Approach to the Messages

Flight Information	<ul style="list-style-type: none">• Flight Plan Data initial and subsequent amendment• Departure and arrival time notifications• Flight cancellations• Boundary crossings• Track position reports• Flight management information containing flight times data resulting to route modeling updates
Flow Information	<ul style="list-style-type: none">• General Advisories• Airspace Flow Program (AFP)• Ground Delay Program (GDP)• Ground Stop (GS)• Flow Constraint/Evaluation Area (FCA/FEA)• Reroute• Collaborative Trajectory Options Program (CTOP)• Airport Deicing• Flight Restrictions• Airport Runway Configuration and rates, Route Availability Planning Tool (RAPT)





Next**GEN**

Communication and Collaboration



FIXM Change Management



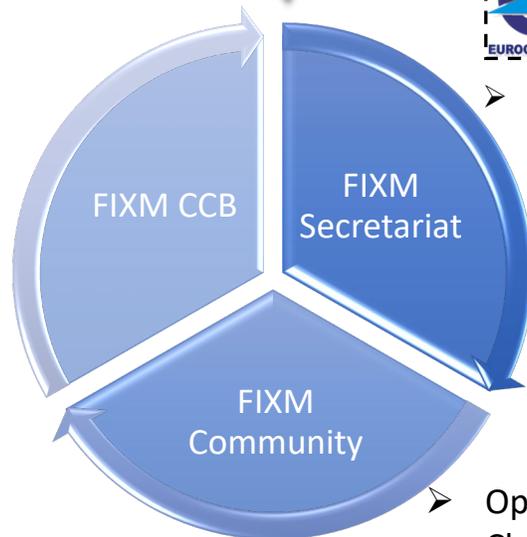
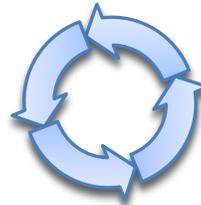
**ICAO
ATMRPP**

- Defines the **FF-ICE IERS**
- Provides operational oversight

CCB Members



- Decides on the evolution of FIXM, under ATMRPP supervision.



- Support the FIXM evolution activities: management of FIXM CRs, maintenance of FIXM components, maintenance of online resources

- Openly issues, consolidates and submits Change Requests for improving FIXM, to be endorsed by the FIXM CCB.



FIXM Change Requests



CR Status: Proposed

FIXM Change Request Template

Change Request created by LEPORI Hubert

Subject
The template file to be used for all FIXM CRs to be uploaded to the repository of FIXM Change Requests.

FIXM Component(s)

- FIXM Logical Model
- FIXM XML Schemas
- FIXM Conceptual Model
- Other: ...

- FIXM Implementation Guidance Package
- FIXM Web site
- FIXM Primer

Verified extension: ...

Target FIXM Release

- FIXM Core version
- Verified extension version

[Target FIXM Release]

Related FIXM CRs
[Related CRs]

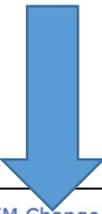
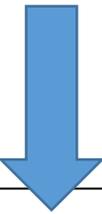
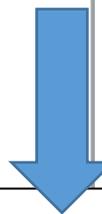
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FIXM Change Request Template

Motivation

Proposed changes

Latest FIXM Change Requests

ID	Title	Subject	CR Status	Target FIXM Release
25	Trim down Dangerous Goods Data Elements	Align Dangerous goods data element to the contents of NOTOC in FIXM Core (deprecate unneeded data elements from FIXM Core).	Proposed	4.1.0
23	Modify GUFU Pattern	Improve FIXM model.	Approved	4.1.0
22	Add FF-ICE Step 1 Airport Slot information to FIXM Core	Building on ICAO ATM RPP Working paper WP653, this CR proposes the inclusion of two new data elements related to Airport slot information.	Proposed	4.1.0
21	Modify Operational Acceptability Status Documentation	Improve documentation in FIXM schema	Approved	4.1.0
20	Modify Message Recipient Format	Purpose of this CR is to correct the issue in FIXM model.	Approved	4.1.0

1 - 5 ▶

Reporting FIXM bugs

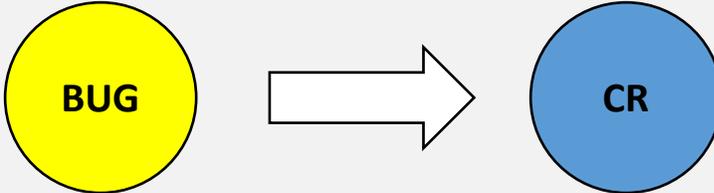
Site Actions ▾ Browse List Tools LEPORI Hubert ▾

OneSky Teams **FIXM Work Area** ▸ Bug reports ▸ Subject ▾

Use this discussion board for reporting about possible bugs observed in the FIXM components (FIXM core or verified extensions). Bugs that are confirmed by the community will require JIRA Change Requests to be created and eventually submitted to FIXM CCB for endorsement, before any change can be implemented in FIXM components.

Home Search this site... ?

Core/Ext	Affects FIXM Version	Applies to	Subject	Status	Created By	Replies	Last Updated	CR#
FIXM Core	4.0.0	AspFlightPlanVersionTypeType;AuFlightPlanVersionTypeType	[EXAMPLE - based on FAA inputs] flight plan identifier data type too generic	Under discussion	LEPORI Hubert	0	07/12/2016 09:43	
FIXM Core	4.0.0	Organization;RangesAndChoices;Airspace;Aerodrome	Associations vs Attributes	Under discussion	CHISHOLM Paul	0	23/01/2017 21:48	
FIXM Core	4.0.0	Flight.Capabilities	Flight.Capability package issues	Under discussion	CHISHOLM Paul	0	23/01/2017 22:04	
FIXM Core	4.0.0	Flight.FlightData	Flight.FlightData package issues	Under discussion	CHISHOLM Paul	0	23/01/2017 22:16	
FIXM Core	4.0.0			Under discussion	CHISHOLM Paul	0	23/01/2017 23:15	
FIXM Core	4.0.0			Under discussion	CHISHOLM Paul	0	23/01/2017 23:26	
FIXM Core	4.0.0			Under discussion	CHISHOLM Paul	0	23/01/2017 23:33	
FIXM Core	4.0.0			Under discussion	CHISHOLM Paul	0	23/01/2017 23:50	
FIXM Core	4.0.0			Under discussion	CHISHOLM Paul	0	24/01/2017 02:39	
FIXM Core	4.0.0			Under discussion	CHISHOLM Paul	0	24/01/2017 02:45	
FIXM Core	4.0.0			Under discussion	CHISHOLM Paul	0	24/01/2017 02:51	
FIXM Core	4.0.0	Base.Aerodrome	Base.Aerodrome package issues	Under discussion	CHISHOLM Paul	0	24/01/2017 02:59	
FIXM Core	4.0.0	Base.Address.OnlineContact	Base.Address.OnlineContact clarification	Under discussion	CHISHOLM Paul	0	24/01/2017 03:51	
FIXM Core	4.0.0	Base.Airspace; Flight.FlightRouteTrajectory.Trajectory	Latitude class required?	Under discussion	CHISHOLM Paul	0	24/01/2017 04:42	
FIXM Core	4.0.0	Flight.FlightData.Flight;Flight.Emergency.FlightEmergency	Modelling of Flight Operator	Under discussion	CHISHOLM Paul	0	24/01/2017 04:49	
FIXM Core	4.0.0	Base.Types	Aircraft Identification pattern	Under discussion	CHISHOLM Paul	0	24/01/2017 04:56	
FIXM Core	4.0.0	Base.Measures	Make Base Classes Abstract	Under discussion	CHISHOLM Paul	0	31/01/2017 02:45	
FIXM Core	4.0.0	EnRoute	Flight.EnRoute	Under discussion	COSTAS Pablo	1	02/02/2017 21:23	



A bug that is confirmed should be corrected by a CR.

FIXM Lists
 FIXM Announcements
 FIXM Calendar
 FIXM Community Members
 FIXM Community Actions
 FIXM CCB Members
 FIXM CCB Actions
Discussion Forum
 Bug reports
 FIXM Community Discussions
 FIXM CCB Discussions
Document Libraries
 FIXM Community Repository
 FIXM CCB Repository
 FIXM Change Requests
 Recycle Bin
 All Site Content

FIXM Workshop 2020

- Fully virtual, 4 sessions
- Event dates: 12/7/2020 – 12/10/2020
- Registration: [FIXM Virtual Workshop 2020](#)
- More information and agenda is available on FIXM Work Area (["FIXM Virtual Workshop 7-10 December 2020"](#) folder)
- Discussion will include FIXM Core v4.2.0 overview, Implementation example, lessons learned, and FIXM Extensions



FIXM.aero



[All Downloads](#)

[Home](#) [About](#) [Documents](#) [Change Management](#) [User Support](#)

The **Flight Information Exchange Model (FIXM)** is a global exchange standard capturing Flight and Flow information. FIXM is implemented in UML and XML and fully supports the data exchange requirements for the Flight and Flow Information for a Collaborative Environment (FF-ICE) concept, as defined by the ICAO¹ ATM RPP².



```
graph TD; Applications[FIXM Applications  
Message Support  
Contains metadata about the message exchange in addition to guidance for constructing messages, such as XML templates.  
Sits as a layer above Core.] --> Core[FIXM Core  
Basic Flight Data  
Contains basic flight data that are globally applicable and which are endorsed by the FIXM CCB.]; Core --> Extensions[FIXM Extensions  
Regional Supplements  
Supports localized requirements from particular communities of interest.];
```



[All Downloads](#)

[Home](#) [About](#) [Documents](#) [Change Management](#) [User Support](#)

FIXM DOWNLOADS [Expand All](#)

- ▶ **FIXM Applications**
- ▶ **FIXM Extensions**
- ▼ **FIXM Core**
Contains basic flight data that are globally applicable and which are endorsed by the FIXM CCB.

	Version	Released	Details
Current Version	4.2.0	28-Feb-2020	More Details
▼ Previous Versions			
	4.1.0	15-Dec-2017	More Details
	4.0.0	31-Aug-2016	More Details
	3.0.1	11-Feb-2015	More Details
	3.0.0	1-Aug-2014	More Details
	2.0.0	1-Aug-2013	More Details
	1.1.0	1-Dec-2012	More Details

FIXM Work Area

Site Actions TEJASEN Kam

OneSky Teams **FIXM Work Area** Home
 Collaboration tool and repository of documents for the development of the FIXM standard.

Home

FIXM
 Flight Information Exchange Model

Work Area

Welcome to the FIXM work area, the collaborative workspace of the FIXM Community! This workspace is created in order to support the collaborative work on FIXM, to facilitate the discussions between FIXM stakeholders about any FIXM-related subject and to further improve the overall transparency of the FIXM evolution.

Important note: The FIXM Work Area supports the technical work on core FIXM and on verified extensions, i.e. extensions managed under FIXM CCB supervision. It shall not be used in support of the development of extensions that are not managed by the FIXM CCB. The discussion forum of the FIXM community or the "announcement" area can however be used in order to provide, or ask for, high-level information about extensions developed by individual organisations.

Should you have any question about this work space, please address it to the FIXM CCB Secretariat.

Useful Links

- URL
- [The main FIXM website](#)
- [Contact the Secretariat](#)
- [Contact the FIXM CCB](#)
- [FIXM Work Area User guide](#)
- [OneSky Teams support page](#)
- [Common work space for the ADXM, FIXM and IWXXM communities](#)
- [FIXM Release Plan](#)
- [FIXM 4.2.0 Development Plan](#)
- [Add new link](#)

Notes

- The main FIXM website is the authoritative reference for FIXM. It stores the official FIXM releases and related materials endorsed by the governing body.
- The email address for reaching the Secretariat.
- The email address for reaching the CCB.
- A document providing guidance on how to use the FIXM Work Area.
- General support and FAQ about the FIXM Work Area.
- A public online work space open to all interested parties, such as versioning, naming, and other technical details.
- The link to the latest version of the FIXM 4.2.0 Development Plan, that describes the principal milestones.

Document Libraries

- [FIXM Community Repository](#)
- [FIXM CCB Repository](#)
- [FIXM Change Requests](#)
- [Recycle Bin](#)
- [All Site Content](#)

Discussion Forum

- [Bug reports](#)
- [FIXM Community Discussions](#)
- [FIXM CCB Discussions](#)

Bug reports

Core/Ext Affects FIXM Version Subject Created By Replies Last Updated Status

Site Actions TEJASEN K

OneSky Teams **FIXM Work Area** FIXM Community Discussions Subject -
 Use the Team Discussion list to hold newsgroup-style discussions on topics relevant to FIXM.

Home

Subject

- Subject
- Webinar Topics and FIXM Workshop 2020
- Welcome 4.2.0 RC -- a simple example instance
- FIXM 4.2.0 Implementation Guidance - Early Draft Review
- Supported tools for FIXM - gSOAP
- fx:FlightType: why are the elements in alphabetic order?
- FIXM 4.2.0 Beta review -- remark on definitions in Address.xsd
- FIXM 4.2.0 Beta review -- remark on "verticalRange" element
- FIXM 4.2.0 Beta review -- remark on "airspace.xsd"
- FIXM 4.2.0 Beta review -- remark on "TelecomNetworkTypeType"
- FIXM Core V4.2.0 Alpha 2 - is their an issue with LastContact in Emergency Using XLINK in FIXM
- CR58 - Folding ICAO extension into the FIXM Core - Alternative proposal
- A Formal View of FIXM
- Opening FIXM_v4.2.0_Beta_Constraints_Draft_20190318v2_FAA.EAP
- Route Trajectory Group Aerodromes
- The purpose of the FlightChanges package
- Extension Mechanism Update - using xsi:any
- Extension Mechanism Update - Which fields?
- CR 69 - Clarify Aircraft Operator
- CR 70 - Constrain Counts
- Alternative SignificantPoint Proposal
- FIXM Implementation guidance - your comments and recommendation about chapter "Guidance for the implementation of FIXM to encode existing FPL [as a precursor towards FF-ICE/1]"
- FF-ICE Flight Plan Update Messages
- Issue with Java code generation from FIXM schema
- Choice vs. Abstract Base Class
- Special Use Airspace
- Extension Mechanism Issues
- AerodromeReference complexity
- September 2018 FIXM Workshop Logistics
- FIXM Implementation guidance - your comments and recommendation about chapter "FIXM XML samples"
- FIXM Implementation guidance - your comments and recommendation about chapter "general guidance for the implementation of FIXM"
- FIXM Implementation guidance - your comments and recommendation about chapter "Guidance for the implementation of FIXM in support of FF-ICE/1"
- Representation of a partial flight data (delta)

Created By	Replies	Last Updated
TEJASEN Kanvasi	0	23/03/2020
STEFAN Keller	1	18/03/2020
GRACIANI HIGUERO Francisco (EXT)	1	30/01/2020
HAAS Markus	0	17/12/2019
STEFAN Keller	4	04/12/2019
STEFAN Keller	0	04/12/2019
STEFAN Keller	0	04/12/2019
STEFAN Keller	0	04/12/2019
KUO Dean	1	21/06/2019
PIROLI Christopher	1	21/06/2019
GUERARD Paul	4	10/05/2019
CHISHOLM Paul	4	01/05/2019
KUO Dean	1	09/04/2019
PIROLI Christopher	1	06/03/2019
CHISHOLM Paul	1	06/03/2019
PIROLI Christopher	0	11/10/2018
PIROLI Christopher	0	10/10/2018
PIROLI Christopher	0	10/10/2018
PIROLI Christopher	0	10/10/2018
WILSON Ross	5	23/08/2018
FIXM Secretariat	7	09/08/2018
PIROLI Christopher	1	17/07/2018
CHISHOLM Paul	2	02/07/2018
PIROLI Christopher	1	25/06/2018
PIROLI Christopher	1	15/06/2018
PIROLI Christopher	0	13/06/2018
CHISHOLM Paul	1	24/05/2018
TEJASEN Kanvasi	1	16/05/2018
FIXM Secretariat	9	12/03/2018
FIXM Secretariat	5	12/02/2018
FIXM Secretariat	1	18/01/2018
BARISOT Louis	3	05/12/2017

Document Libraries

- [FIXM Community Repository](#)
- [FIXM CCB Repository](#)
- [FIXM Change Requests](#)
- [Recycle Bin](#)
- [All Site Content](#)

FIXM Resources

- FIXM Websites
 - www.FIXM.aero
 - [FIXM Work Area](#) (register [here](#))
- FIXM Documentation
- FIXM Community
 - FIXM CCB: FIXM.CCB@eurocontrol.int
 - FIXM Secretariat: fixm.secretariat@eurocontrol.int





Time Based Flow Management (TBFM)

Bob Tyo, TBFM Program Manager, AJM-221

August 19, 2020



Federal Aviation
Administration



Agenda

- **Who we are**
 - DSS Program
 - Networked Leadership>DSS
- **Products and Services**
 - Regional Integration
 - IDAC
 - TSAS
 - NEC
- **Interaction with Industry**

Decision Support Systems – 3T Phases of Flight by Capability (Future State)

Surface / Ramp

- TFMS (Future Surface viewer)
 - TFMS-DSP (Replaced in 2020 w/TFDM)
 - TFMS Improved Demand Predictions
 - TFMS Pre-Departure Reroute (PDRR)
 - TFMS Ground Stop
 - TFMS Ground Delay
 - TFMS Airspace Flow Program
 - TFMS Collaborative Trajectory Options Program
-
- TFDM (Departure Metering)
 - TFDM (Surface Scheduler)
 - TFDM (Electronic Flight Strips)
 - TFDM (Runway balancing)

Departure / Climb

- TFMS (IDRP)
 - TFMS Improved Demand Predictions
 - TFMS Airborne Reroute (ABRR)
 - TFMS Collaborative Trajectory Options Program
-
- **TBFM (*IDAC/EDC)**

EnRoute / Oceanic

- TFMS
 - TFMS Improved Demand Predictions
 - TFMS Airborne Reroute (ABRR)
 - TFMS Airspace Flow Program
 - TFMS Collaborative Trajectory Options Program
-
- **TBFM (Coupled Scheduling)**
 - **TBFM (*Extended Metering)**
 - **TBFM (GIM-S Speed Advisory)**
 - **TBFM (ACM)**

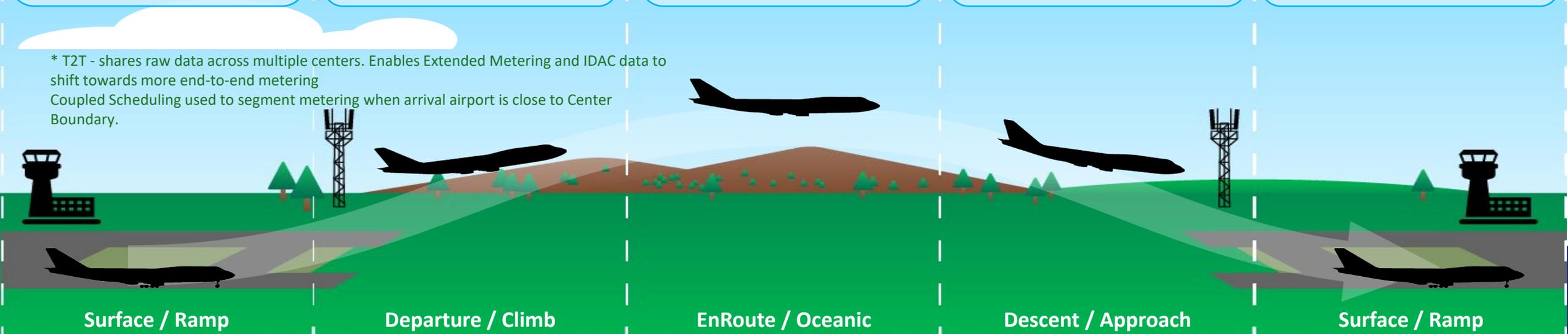
Descent / Approach

- TFMS
 - TFMS Improved Demand Predictions
 - TFMS Airborne Reroute (ABRR)
 - TFMS Collaborative Trajectory Options Program
-
- **TBFM (Future TSAS)**

Surface / Ramp

- TFMS (Future surface viewer)
- TFMS Ground Stop
- TFDM (Electronic Flight Strips)
- TFDM (Surface Scheduler)

* T2T - shares raw data across multiple centers. Enables Extended Metering and IDAC data to shift towards more end-to-end metering
 Coupled Scheduling used to segment metering when arrival airport is close to Center Boundary.



Surface / Ramp

Departure / Climb

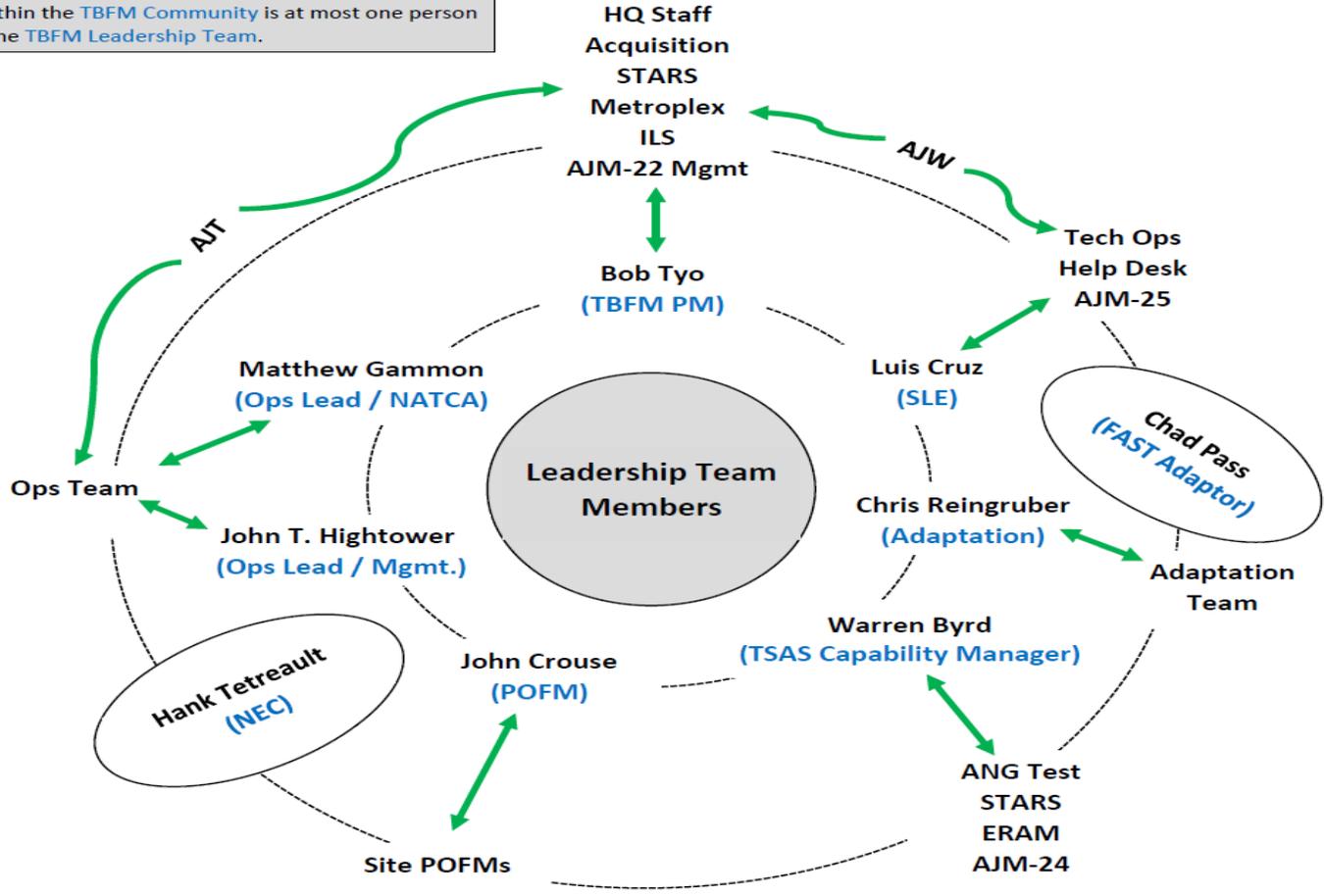
EnRoute / Oceanic

Descent / Approach

Surface / Ramp

TBFM Leadership Team

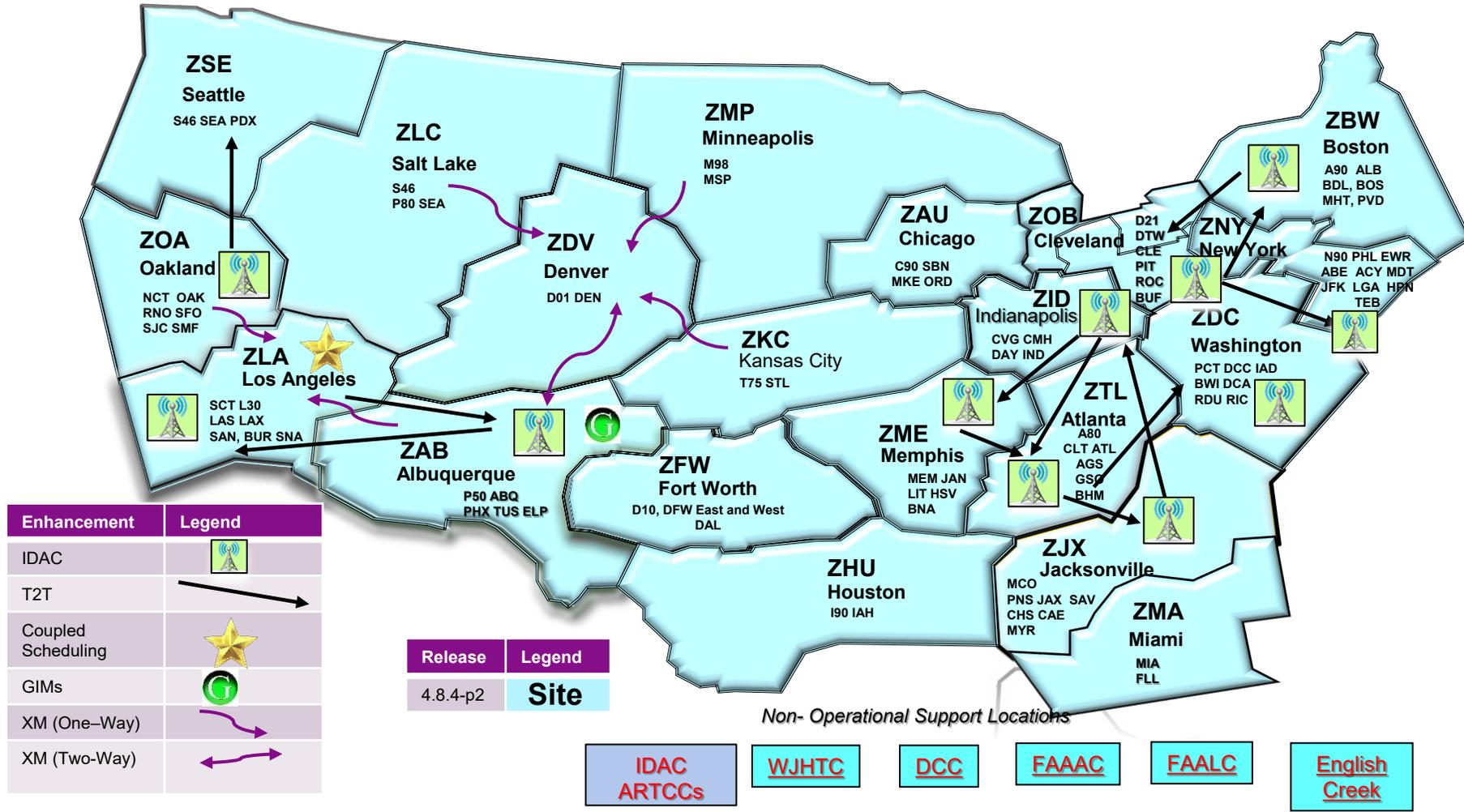
Everyone within the TBFM Community is at most one person away from the TBFM Leadership Team.



Products and Services



TBFM Current Release Install Status – As of 03/19/2020



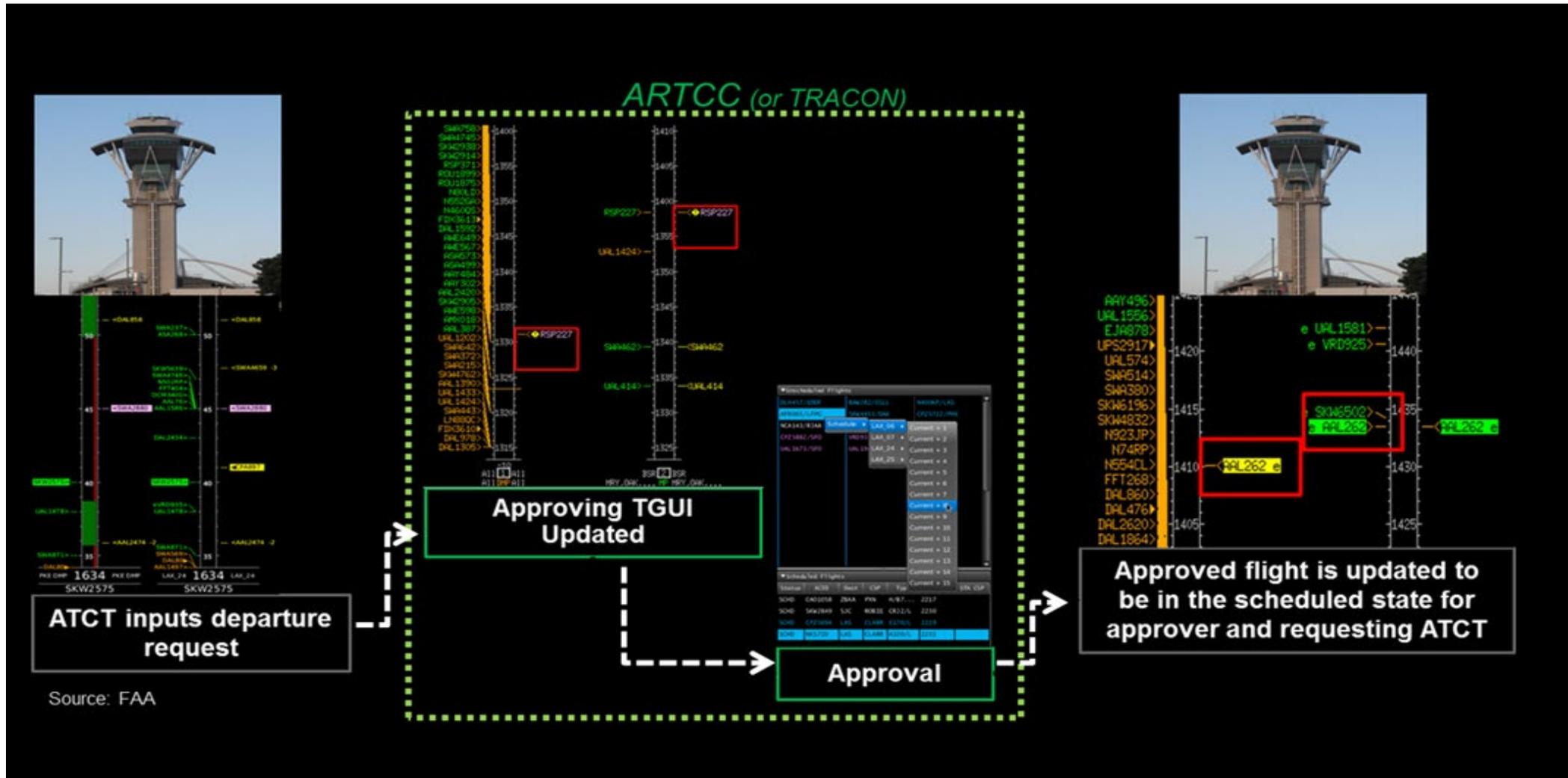
All Sites are on 4.8.4-p2

TBFM Regional Integration

Key Characteristics:

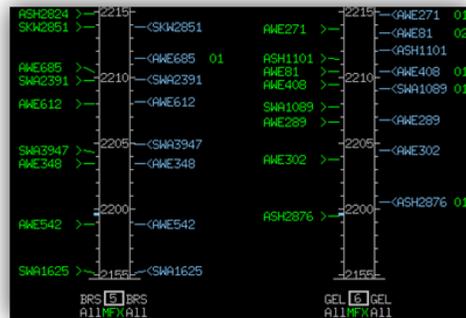
- Integration occurs among multiple ARTCCs (parent + first tier + selective beyond)
 - High degree of coordination starts at the design analysis level
 - Intra-stakeholder team must design, develop, and implement solution at regional level; all need to commit to and execute a consistent path forward throughout
- Focus on implementing a suite of tools to apply “Right tools, right place, right time” methodology
- Goal is to achieve a holistic operational balance (i.e., it’s not about one flow)
- Approach requires a change management component, including regional education and training
- Analysis, stakeholder coordination, facility adaptation and customization, evaluation and testing must occur at a multi-ARTCC level
- Supporting FAA goals identified via TBO
- AJT is the Regional Integration Lead

IDAC – Integrated Departure Arrival Capability

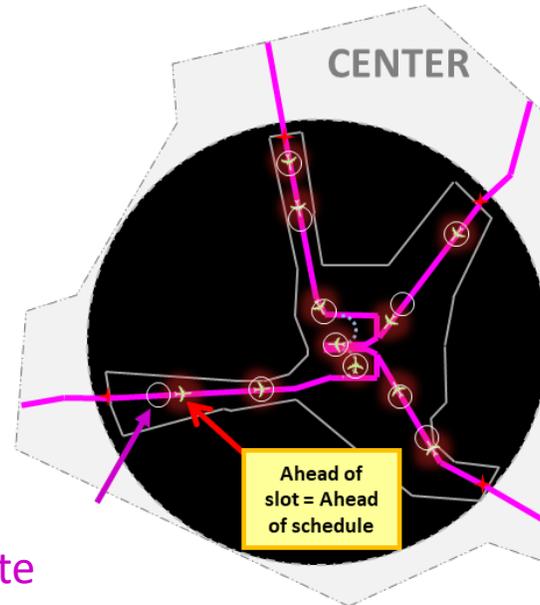


TSAS

- Extends metering operation into terminal
 - Provides higher fidelity scheduling to account for merge points inside TRACON airspace
 - Provides ground-automation tools (e.g., slot marker, runway and approach, speed advisory, sequence number) to assist TRACON controllers and TMU with meeting the schedule
- TRACON ATC communicates to pilot the required speed changes that place the aircraft within slot marker; pilot executes speed clearance
- Lab results are encouraging; typical 8 mi separation at Hand-off with 4.8 mi avg on final (71 rate) → 7 mi separation at Hand-off with a 2.5+0.2 separation (94 rate).



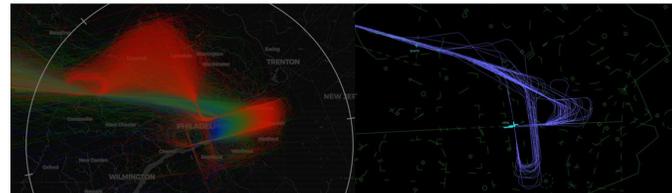
Spatial representation
of the aircraft's **schedule**
drawn along its **route**



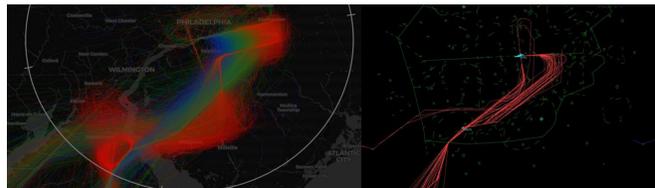
NEC

- NAC goals for PHL and EWR.
- Cross-ARTCC engagement at Design Level. High buy-in and traction.
- Data indicates high benefit pool; before/after below.
- Highly engaged and aligned NAS Team
- Resource-intensive; SMEs with cross-ARTCC coordination and awareness.
- High re-use for other regions.

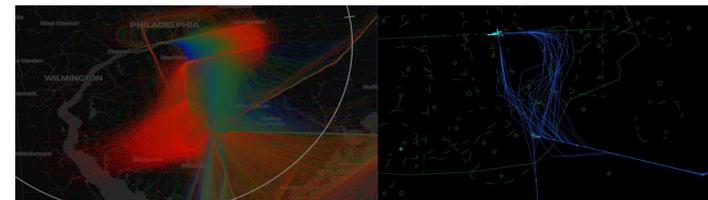
Traffic Set: 2C
27R_35_ARVL change to 27L_17_ARVL



Traffic Set: 2C
27R_35_ARVL change to 27L_17_ARVL



Traffic Set: 2C
27R_35_ARVL change to 27L_17_ARVL



Interaction with Industry



Interaction with Industry

- **History**
 - 2014; TBFM data sharing turned on
 - Dubious benefits and value
 - Decipherability vs. focus/use
- **Today**
 - Focus on Ready Time
 - ATD foundation but Inconsistent Data
 - Causal analyses - ongoing
 - Establish future path/partnership?

Questions?



Time Based Flow Management (TBFM)

Metering Information Service (MIS)

Presented to:

SWIFT Conference

By:

Yong Li

Date:

August 19, 2020



**Federal Aviation
Administration**



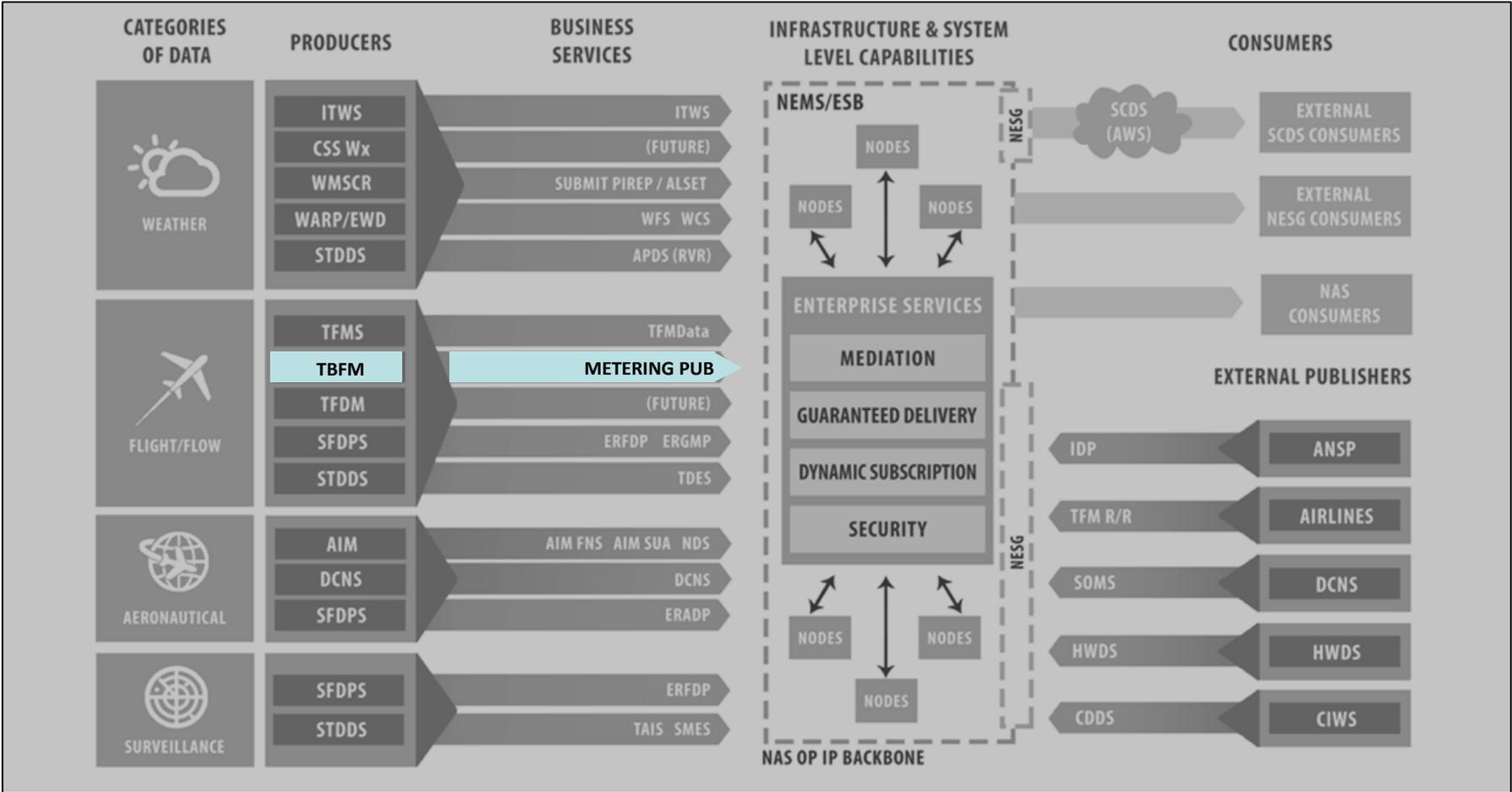
AGENDA

- **MIS Overview**
- **TBFM MIS Data**
- **Updates to MIS**
- **Recent FIXM Impacts**
- **Questions**

What is TBFM MIS?

- **Metering Information Service that follows a “publish/subscribe” messaging model**
- **Users subscribe to TBFM SWIM services**
- **Employs single interface to NEMS using JMSDD**
- **Publishes metering data to:**
 - TBFM system
 - FAA system
 - External entities

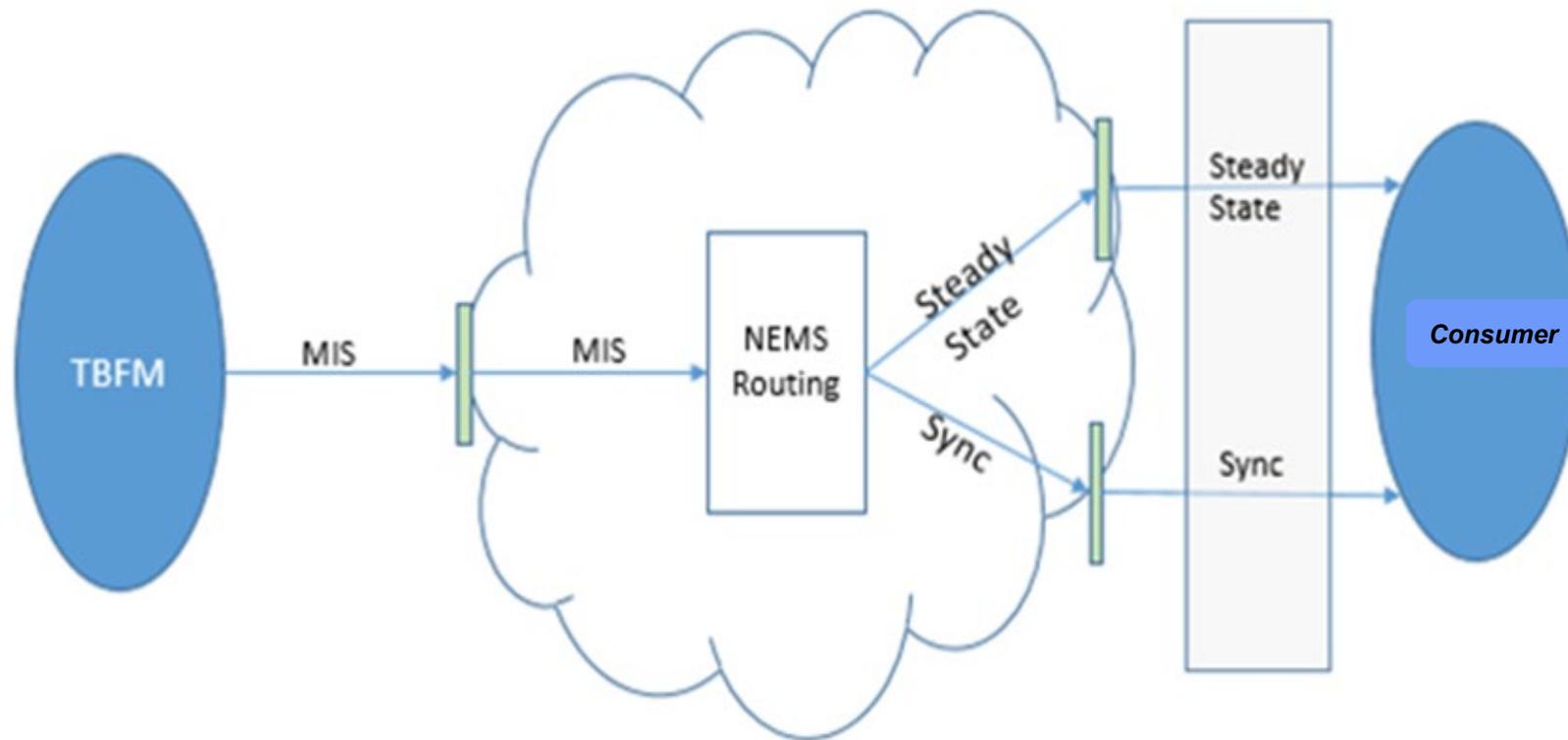
Where are we in SWIM?



*Image taken from SWIFT web site



TBFM JMSDD – Message Data Timing



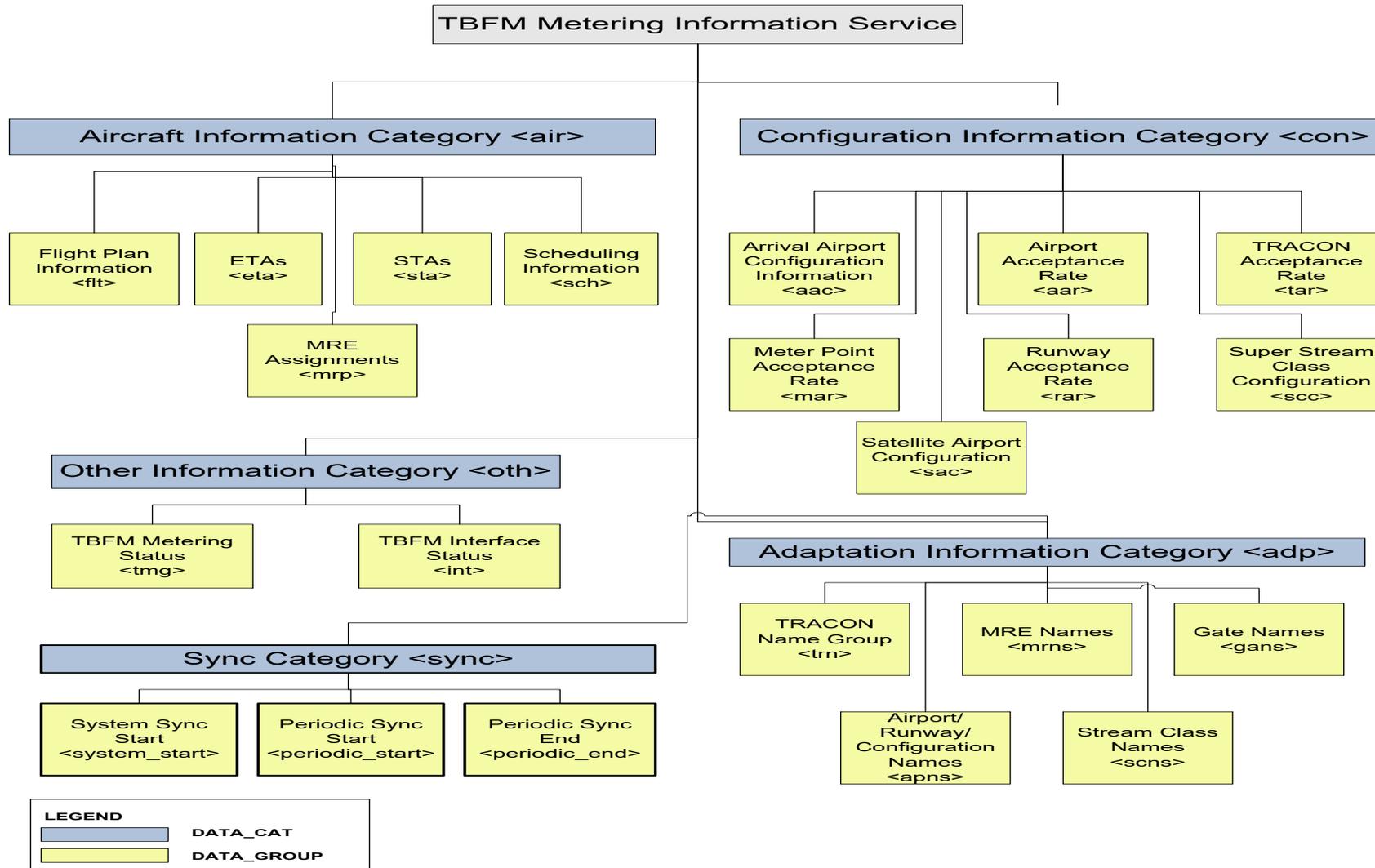
Current MIS Data Category Message Types

- **Aircraft Information**
- **Configuration Information**
- **Adaptation Information**
- **Synchronization**
- **Status Group/ Other**

TBFM MIS JMSDD Category Group Message Types

Message Category	Message Group	Message
"air" (Aircraft Information)	<flt>	Flight Plan Information
	<trk>	Tracking Information
	<mrp>	Meter Reference Element (MRE) Assignments
	<eta>	Estimated Time of Arrival (ETA)s
	<sta>	Scheduled Time of Arrival (STA)s
	<sch>	Scheduling Information
"con" (Configuration Information)	<aac>	Arrival Airport Configuration Information
	<mar>	Meter Point Acceptance Rate
	<sac>	Satellite Airport Configuration
	<rar>	Runway Acceptance Rate
	<aar>	Airport Acceptance Rate
	<scs>	Super Stream Class Configuration
	<tar>	TRACON Acceptance Rate
	<gar>	Gate Acceptance Rate
"oth" (Other Information)	<int>	TBFM Interface Status Information Group
	<tmg>	TBFM Metering Status Information Group
"adp" (Adaptation Information)	<trn>	TRACON Name Group
	<gans>	Gate Names
	<apns>	Airport/Runway/Configuration Names
	<mrns>	MRE Names
	<scns>	Stream Class Names
"sync" (Synchronization)	<system_start>	System Sync Start
	<periodic_start>	Periodic Sync Start
	<periodic_end>	Periodic Sync End

MIS Data



MIS Updates - Release 4.12

In support of TFDM Build 2, added the following enhancements to MIS:

- **Versioning**
- **Departure Airport**
- **Destination Airport**
- **Computer Identifier (CID)**
- **Global Unique Flight Indicator (GUFI)**
- **Heartbeat Message**

*Image taken from ATCA newsletter



MIS Updates in Release 4.12

Update	Message Group	What's the Update	Message Type	Data Format/Range
Versioning		MIS JMS Header Update	All Message Types	N.N.N, where each N can range from 0-99
Departure Airport Information	<dap>	MIS JMS Header Update	Air Information (all); Configuration Information (subset of messages)	3-4 characters
Destination Airport Information	<apt>	MIS JMS Header Update	Air Information (all); Configuration Information (subset of messages)	3-4 characters
Computer ID (CID)	<cid>	New Aircraft Information Data	Aircraft Information Data	3 alphanumeric ASCII Character
GUFI (Global Unique Flight Indicator)	<gufi>	New Aircraft Information Data	Aircraft Information Data	10 character ASCII string with 10 characters: A-Z or 0-9
Heartbeat Message	<hb>	New Synchronization Data	Synchronization	

TBFM Subscribes to TFDM Terminal Publication (TTP) Service

- **The TTP service is defined by the TTP JAVA Messaging Service Description Document (JMSDD)**
- **An updated draft version of the TTP JMSDD includes technical changes to the TTP SWIM service that are of interest to TBFM:**
 - Updates to Flight Information Exchange Model (FIXM) structuring

TFDM TTP JMSDD Changes

- **TBFM is subscribing to six TTP messages including the Flight Add and Flight Update messages.**
- **Flight Add and Flight Update messages include a JMS Text body consisting of a FIXM message**
- **The TFDM TTP JMSDD includes the following FIXM changes:**
 - Xpath updates
 - Nillable attribute added (set to true, 'Y') to identified data elements

Updates to TBFM

- **TBFM baseline R4.13 will incorporate FIXM updates to the TTP JMSDD:**
 - Xpath updates should be included in FIXM Schema definition files provided with the TTP JMSDD
 - Handle FIXM data elements with nillable attributes set to true. Those data elements are: ComputerId, CidCreatorUnit, EstimatedTimeOfDeparture, DepartureRunwayPredicted

Questions?



INTERMISSION



TFMS Status Briefing

Presented to: SWIFT
By: Bob Mount, TFMS Program Mgr.
Date: August 19, 2020
Version: 1.0



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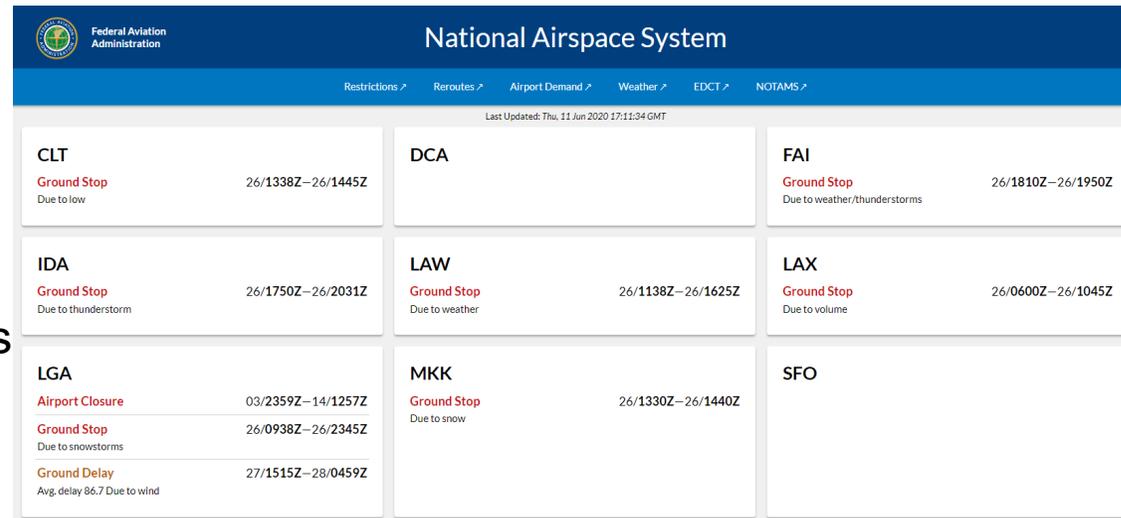
TFMS Rapid Development – Background

- Background
 - TFMS Action Plan (Dec 2018) includes initiative to separate TFMS applications from TFMS core functionality
- TFMS sought an opportunity to innovate
 - Leverage cloud integration technologies
 - Fill gap between NAS Critical & Mission Support environments
 - Reduce time to market
- Focus on rapid innovation and customer centric development
- Initial TFMS candidate - **fly.faa.gov**
- Partnership with FAA Rapid Development & Deployment Team (ELROY)
 - Use of Pivotal platform & development processes
 - New product development (Jan 2020-Aug 2020)

TFMS Rapid Development – way forward

- Initial product development complete (!)
 - Initial feedback very positive
 - Focus evolved to reflect opportunity for enterprise solution

- How do we evaluate?
 - Validate value proposal
 - Define processes
 - Quantify program benefits



The screenshot shows the National Airspace System (NAS) website interface. The header includes the Federal Aviation Administration logo and the text "National Airspace System". Below the header are navigation tabs: Restrictions, Reroutes, Airport Demand, Weather, EDCT, and NOTAMS. A timestamp indicates the data was last updated on Thursday, June 11, 2020, at 17:11:34 GMT. The main content area displays a grid of airport status cards for CLT, DCA, FAI, IDA, LAW, LAX, LGA, MKK, and SFO. Each card lists the airport name, the type of status (e.g., Ground Stop, Airport Closure, Ground Delay), the reason (e.g., Due to low, Due to weather, Due to snowstorms), and the affected time period.

Airport	Status	Reason	Time Period
CLT	Ground Stop	Due to low	26/1338Z–26/1445Z
DCA			
FAI	Ground Stop	Due to weather/thunderstorms	26/1810Z–26/1950Z
IDA	Ground Stop	Due to thunderstorm	26/1750Z–26/2031Z
LAW	Ground Stop	Due to weather	26/1138Z–26/1625Z
LAX	Ground Stop	Due to volume	26/0600Z–26/1045Z
LGA	Airport Closure		03/2359Z–14/1257Z
	Ground Stop	Due to snowstorms	26/0938Z–26/2345Z
	Ground Delay	Avg. delay 86.7 Due to wind	27/1515Z–28/0459Z
MKK	Ground Stop	Due to snow	26/1330Z–26/1440Z
SFO			

- Where do we go from here?
 - Program office evaluation of Product & Process
 - Plan for full deployment of initial product (fly.faa.gov)
 - Plan for future development

NAS Status

Fly Redesign

Presented to: SWIFT
By: FAA Product Team
Date: August 19, 2020



Federal Aviation
Administration



Objective

- **Investigate new techniques to release faster and provide more user value.**
- **Investigate user-centered design to enable capture of relevant needs through rapid user feedback sessions**
- **Design a platform to be used as the infrastructure to support future applications.**
- **Enable expertise within the FAA to continue further development**

Current System

(Note: This page will refresh every 5 minutes. Last updated Fri, 13 Mar 2020 21:01:02 UTC. Provided by the FAA's Air Traffic Control System Command Center.)

NATIONAL PROGRAMS Help									
PROGRAM NAME	START	END	SCOPE	REASON	AVG	AAR	PR	ADVZY	DA
BOS	1800	0359	ALL + CZY	WEATHER / WIND	48	34	34	076	DA
EWR	1715	0359	ALL+CZY	WEATHER / WIND	76	34	34	051	DA
LGA	1547	0259	1425 NM + CZY	WEATHER / LOW CEILINGS	35	34	34	064	DA
PBI	1715	2329	1000 NM	VOLUME / VOLUME	89	28	28	079	DA
SEA	2100	0659	ALL+CZV	WEATHER / LOW CEILINGS	57	32	32	088	DA

GROUND STOPS Help					
ARPT	UPDATE	POE	SCOPE	REASON	ADVZY
TEB	2145	MED	ZDC	VOLUME / VOLUME	103

DELAY INFO Help				
ARPT	AD	DD	TIME	REASON
ASE	+60		1955	ASE/WX:Low Ceilings
EWR		+45	2026	TM Initiatives:Other:VOL
LGA		+30	2031	TM Initiatives:STOP:
MIA		+15	2047	VOL:Volume
TEB		+45	2043	VOL:Multi-taxi

AIRPORT CLOSURES Help			
ARPT	TIME	REASON	REOPEN

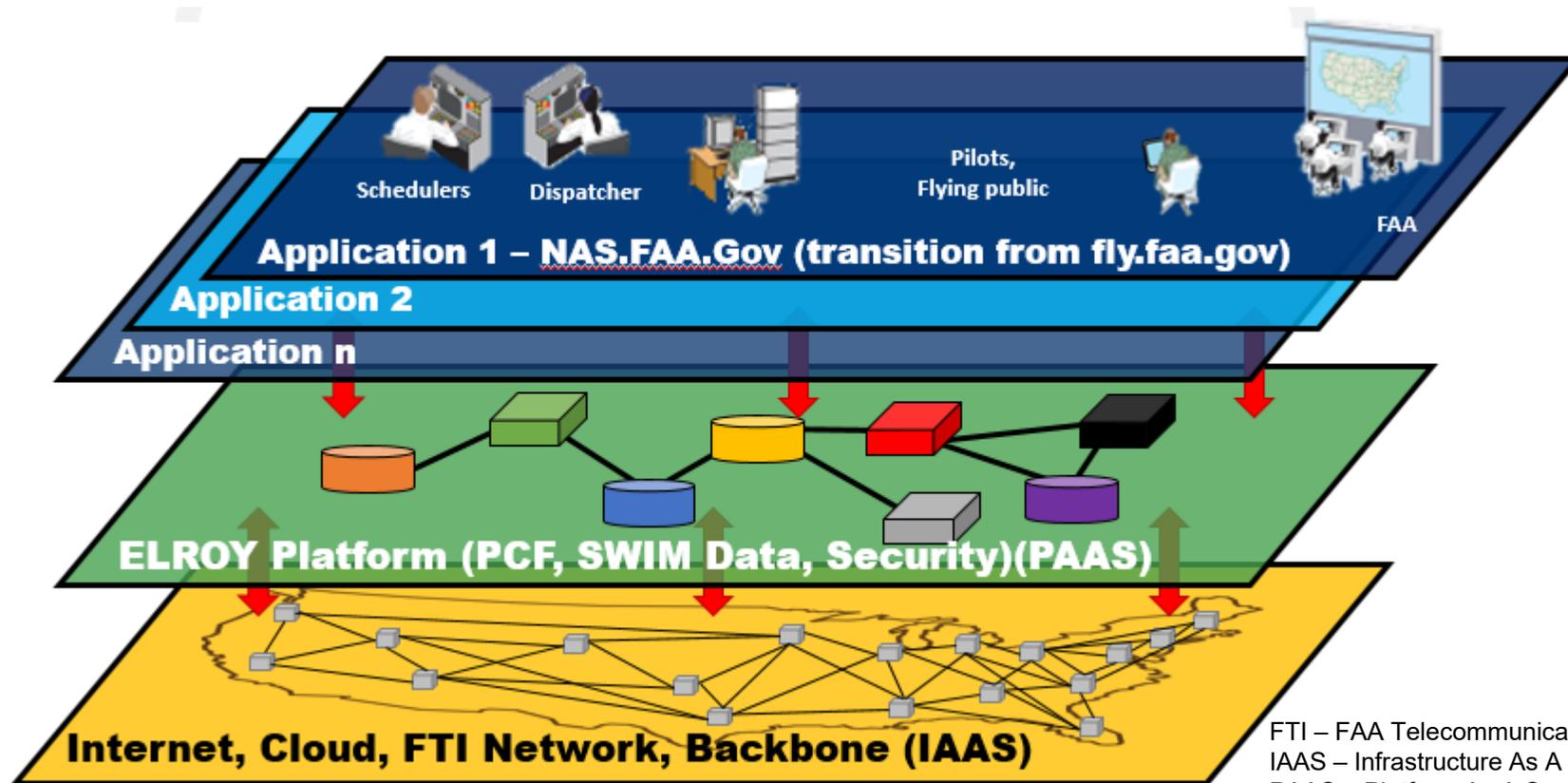
DEICING Help	
ARPT	DATE/TIME

Runway/Equipment Info Help	
This is not a complete list of Runway/Equipment Status. Please consult the current NOTAMs for complete information.	
Facility	Product Practice Guide sites.google.com/a/.../stakeholder-map

MISCELLANEOUS

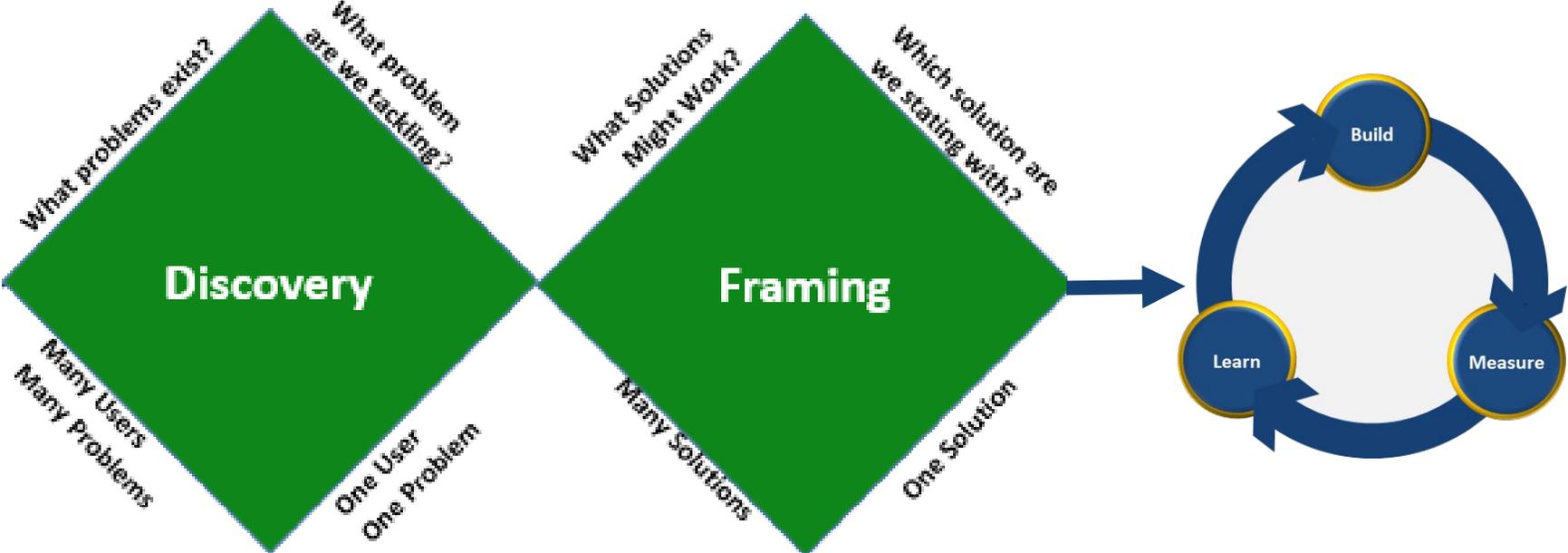


Configuration

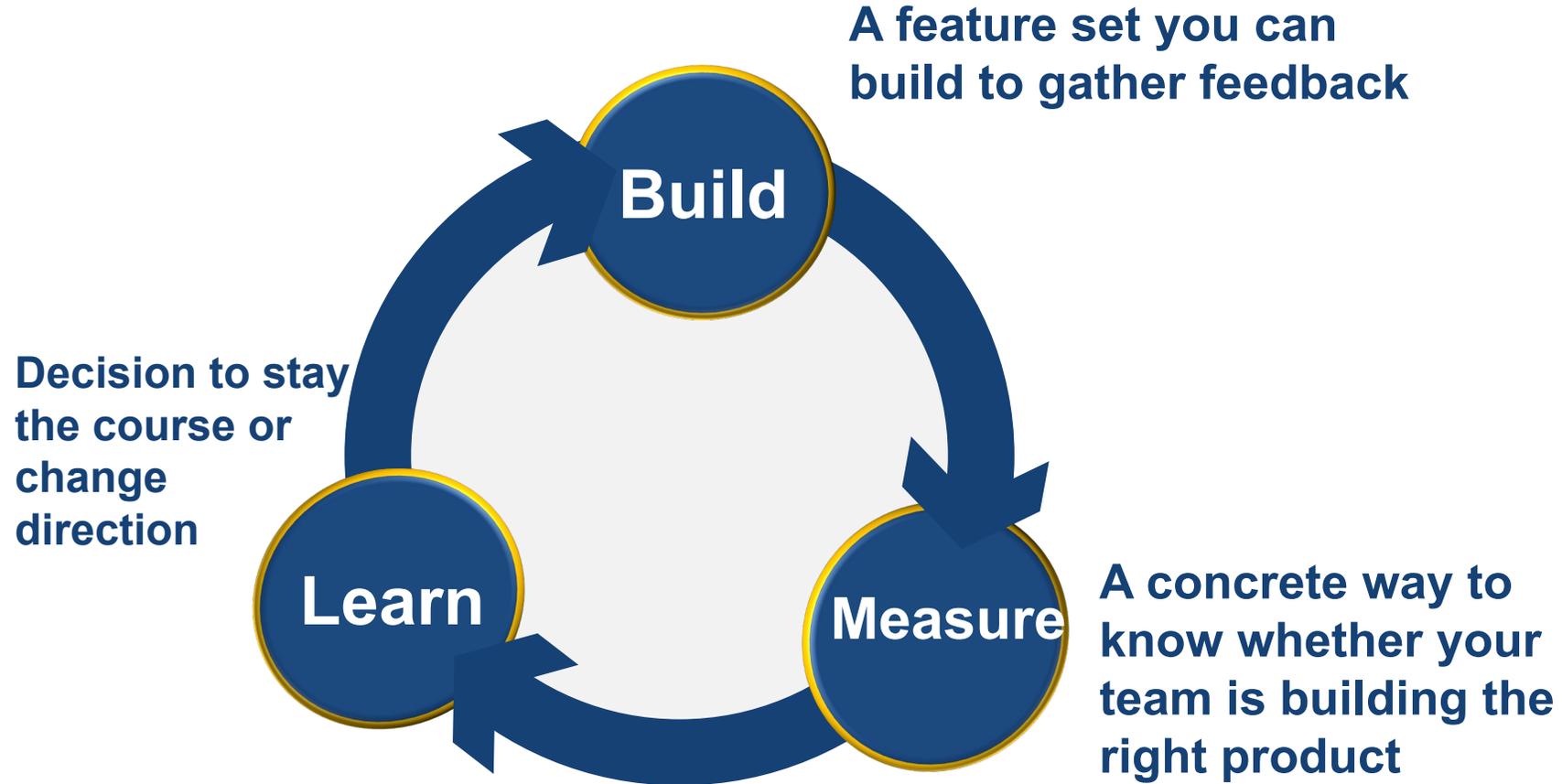


FTI – FAA Telecommunications Infrastructure
IAAS – Infrastructure As A Service
PAAS – Platform As A Service
PCF – Pivotal Cloud Foundry
SWIM – System Wide Information Management

Overview



Build – Measure – Learn



Build: Static Prototype

fly.faa.gov

Airport Origin → Destination

National Airspace Status

LGA New York LaGuardia Airport [Details](#)

Ground Delay Program Due to low ceilings	2000Z-0259Z	Average delays +120 min.	View Advisory
Departure Delay Due to volume	Began 30 min. ago	Average delays exceed 15 min.	View Advisory

FCAPV1 Flow Constrained Area [Details](#)

Airspace Flow Program Due to volume	2100Z - 0130Z	Altitude floor: 0 ft / ceiling: 60,000 ft
---	---------------	---

ATL Atlanta Hartsfield [Details](#)

Arrival Delay Due to fog	Began 1 hour ago	Average delays exceed 15 min.
------------------------------------	------------------	-------------------------------

fly.faa.gov

Airport Origin → Destination

National Airspace Status

LGA New York LaGuardia Airport [Hide](#)

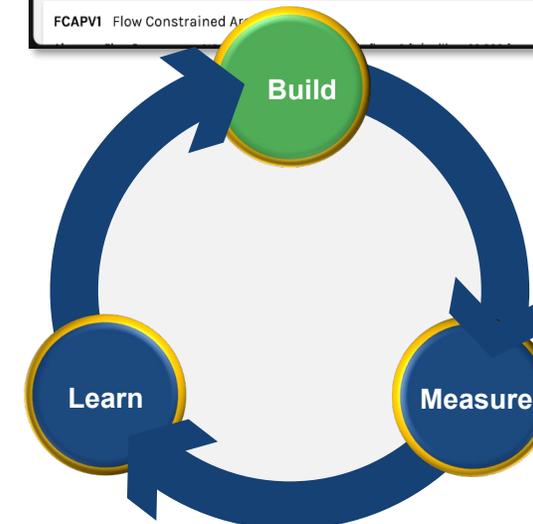
Ground Delay Program Due to low ceilings	2000Z-0259Z	Average delays +120 min.	View Advisory
Departure Delay Due to volume	Began 30 min. ago	Average delays exceed 15 min.	View Advisory

Restrictions	Reroutes	Current Delay Assignment	Runway Config.
9	4	90 min.	4 31
View All	View All	Full Delay Chart	Landing Departing

Additional LGA Advisories

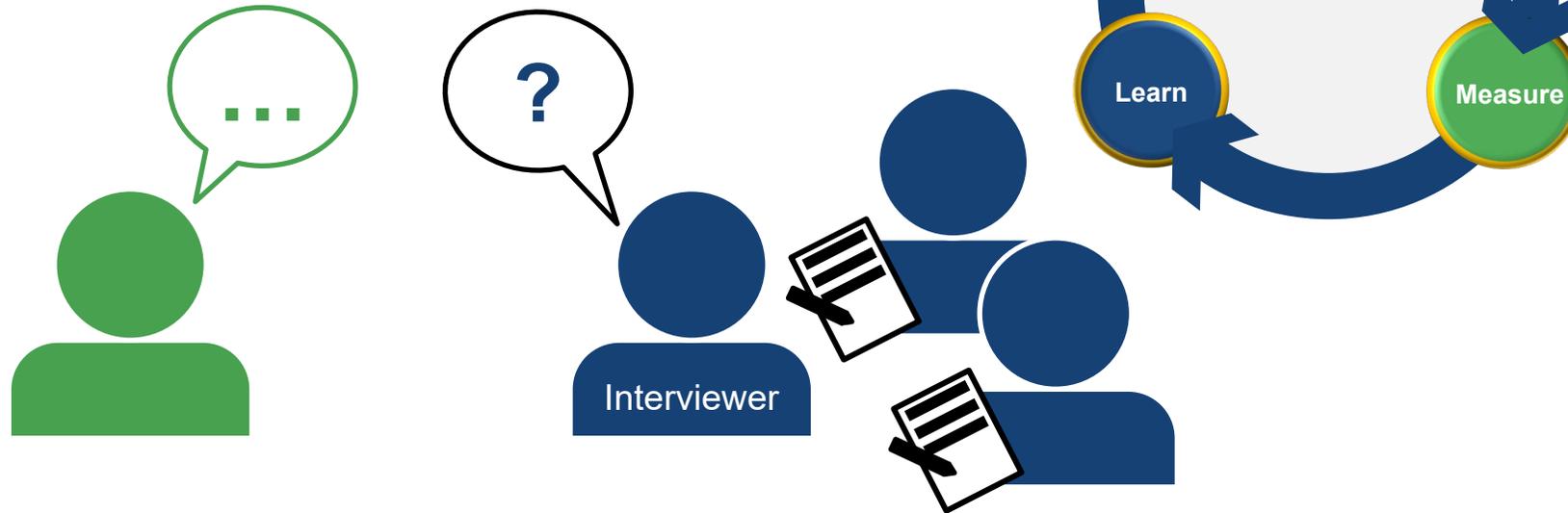
Reroute	010 - DCC 2/17/2020 Route Required Route: LGA Wind Route
Capping/Tunnel	014 - DCC 2/17/2020 Capped Departures
Operations Plan	022 - DCC 2/17/2020 1300 Z

FCAPV1 Flow Constrained Area



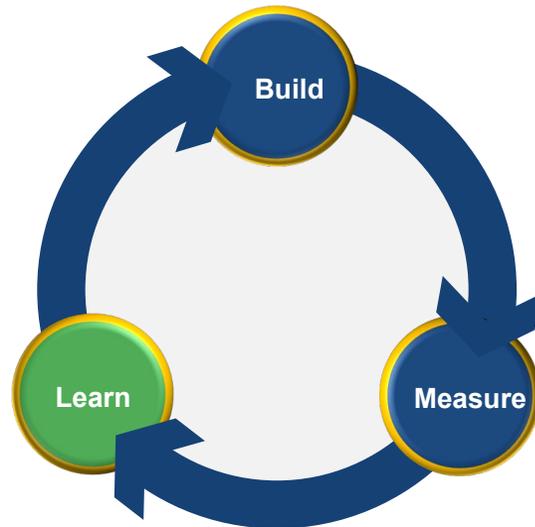
Measure: User Feedback

We gather feedback from users through one-on-one interviews. During the interviews we evaluate the prototype to ensure it satisfies user needs, is intuitive to navigate, and the information provides value.



Learn: Identify Insights

After the interviews we group similar ideas from different users. We pull out the key insights and use them to inform what we build next.



Example: One Stop Shop

Restrictions	Reroutes	Current Delay Assignment
9	4	90 min.
View All	View All	Full Delay Chart
Additional LGA Advisories		
Reroute	010 - DCC 2/17/2020 Route Required (Route: LGA Wind Route)	
Capping/Tunnel	014 - DCC 2/17/2020 Capped Departures	
Operations Plan	022 - DCC 2/17/2020 1300 Z	

General Aviation Feedback:

“Interesting...9 restrictions... not sure what restrictions mean in this case...4 aircraft or choices for me?”

“View all... I don’t know.. I’m not sure maybe where flights are coming from.”

“If reroute brought up specific routes that would be great.”

“I do see the reroute name.. Wind Route.. Where the heck is that?... I’d have to look in a different part of the website”

Build: Update Prototype

United States Department of Transportation
Federal Aviation Administration

National Airspace System Status

Current Time: 19:19:06 Z
Last Updated: 19:12:00 Z

Home Restrictions Reroutes Advisories Airport Demand Weather EDCT NOTAMS TFR RVR City Pair Search

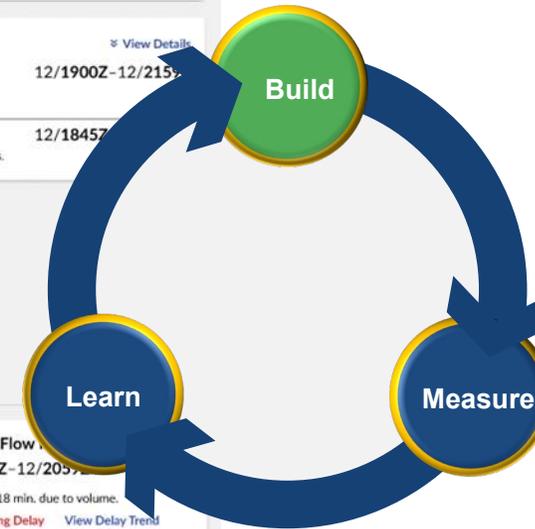
Tile View Map View

Active Airport Events

BOS Ground Stop Due to weather. 12/1830Z-12/1930Z View Details Advisory	DEN Ground Delay Avg. 80 min. due to snow. 12/1700Z-13/0259Z View Details Advisory Deicing Started 12/1600Z	EWR Ground Stop Due to low ceilings. 12/1900Z-12/2150Z View Details Ground Delay Avg. 45 min. due to low ceilings. 12/1845Z
LGA Airport Closure 12/1100Z-12/1700Z View Details	TEB Ground Delay Avg. 50 min. due to volume. 12/1700Z-12/2259Z View Details Advisory Departure Delay Updated 1730Z Avg. 45 min. (and increasing) due to volume.	

Active En Route Events

 <p>Airspace Flow Program FCAOB3 12/1730Z-12/2359Z Avg. delays 38 min. due to thunderstorms. Decreasing Delay View Delay Trend Alt. Floor/Ceiling: 120/410 Flights From: Any centers (except ZBW, ZNY, ZDC). And Flights To: ZBW, ZNY, ZDC. Comments: ROUTE OUT EAST - MODIFIED AZEZU WHEN AVAILABLE.</p>	 <p>Airspace Flow Program FCAJX 12/1730Z-12/2059Z Avg. delays 18 min. due to volume. Increasing Delay View Delay Trend Alt. Floor/Ceiling: 200/500 Flights From: Any airports (except TPA, MCO, JAX). And Flights To: TPA, MCO, JAX Comments: DUE TO ROCKET LAUNCH ACTIVITY.</p>
--	---

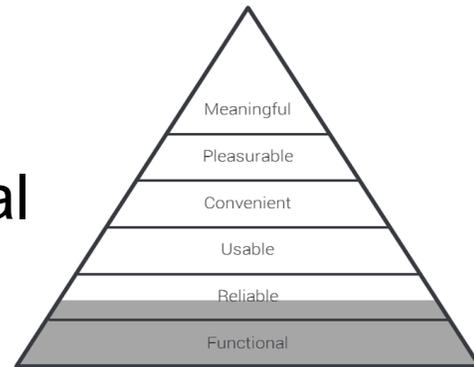


MVP

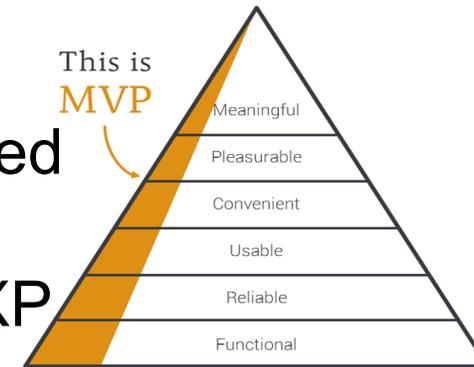
A minimum viable product (MVP) is:

“the version of a new product which allows a team to collect the maximum amount of validated learning about customers with the least effort“.

Traditional
Life cycle



User-Centered
Design/Lean
Production/XP



United States Department of Transportation
Federal Aviation Administration

National Airspace System Status

Advisories Airport Demand EDCT NOTAMS Reroutes Restrictions RVR Weather

This is a test. Provide feedback here to help us improve. Visit the legacy page for your operational status.

Active Airport Events

FAI Ground Stop Due to weather/thunderstorms. 26/1810Z–26/1950Z View Details Advisory	LGA Airport Closure 03/2359Z–14/1257Z View Details Ground Stop Due to snowstorms. 26/0928Z–26/2355Z Advisory Ground Delay 27/1515Z–28/0459Z Avg. delay 87 min. due to wind. Advisory	MDW Ground Avg. del:
--	---	--

Active En Route Events

FCAPR1 Airspace Flow Program 04/1730Z–05/0059Z Avg. delays: 30 mins due to thunderstorms. Delay Trend Alt. Floor/Ceiling: 200/410 Origin: All except ZAB Destination: All Comments: HOLDING MAY BE EXPECTED TO MANAGE ANY ADDITIONAL VOLUME CONCERNS	FCAPR2 Airspace Flow Program
--	---

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We Need Your Feedback!

- **If you are a regular user of the fly.faa.gov site, we need your input**
 - If you are willing to sign up for a interview, email fly-faa@faa.gov

System Wide Information Management (SWIM) NAS Common Reference (NCR)

NCR Briefing to SWIFT 11

Presented by: Kristin Cropf
SWIM Program Manager
AJM-316

Date: August 19, 2020



Federal Aviation
Administration



Federal Aviation
Administration

Agenda

- **NCR Introduction**
- **Purpose**
- **NCR Overview**
- **NCR System Architecture**
- **NCR Data**
- **NCR Interfaces**
- **NCR Request / Response**
- **Flow Diagram**
- **Demo**

Introduction

- NAS Common Reference (NCR) is a new SWIM Program
- Currently in Development and Testing
- Will be available in Q2 CY2021 (subject to COVID impact)

Purpose of NCR

Consolidate NAS Data

- Acquire and integrate NAS status and constraint information from cross-domain sources

Provide Filtered Constraints

- Provide the ability for constraints to be retrieved for a specific 4D trajectory (4DT) and/or a defined airspace volume

Provide Auto - Updates

- Provide an interface to obtain defined sets of information via one-time request or via request with future updates, using web services and pub-sub messaging patterns

Correlate NAS Data

- Create a spatially and temporally correlated view of NAS data to improve common situational awareness

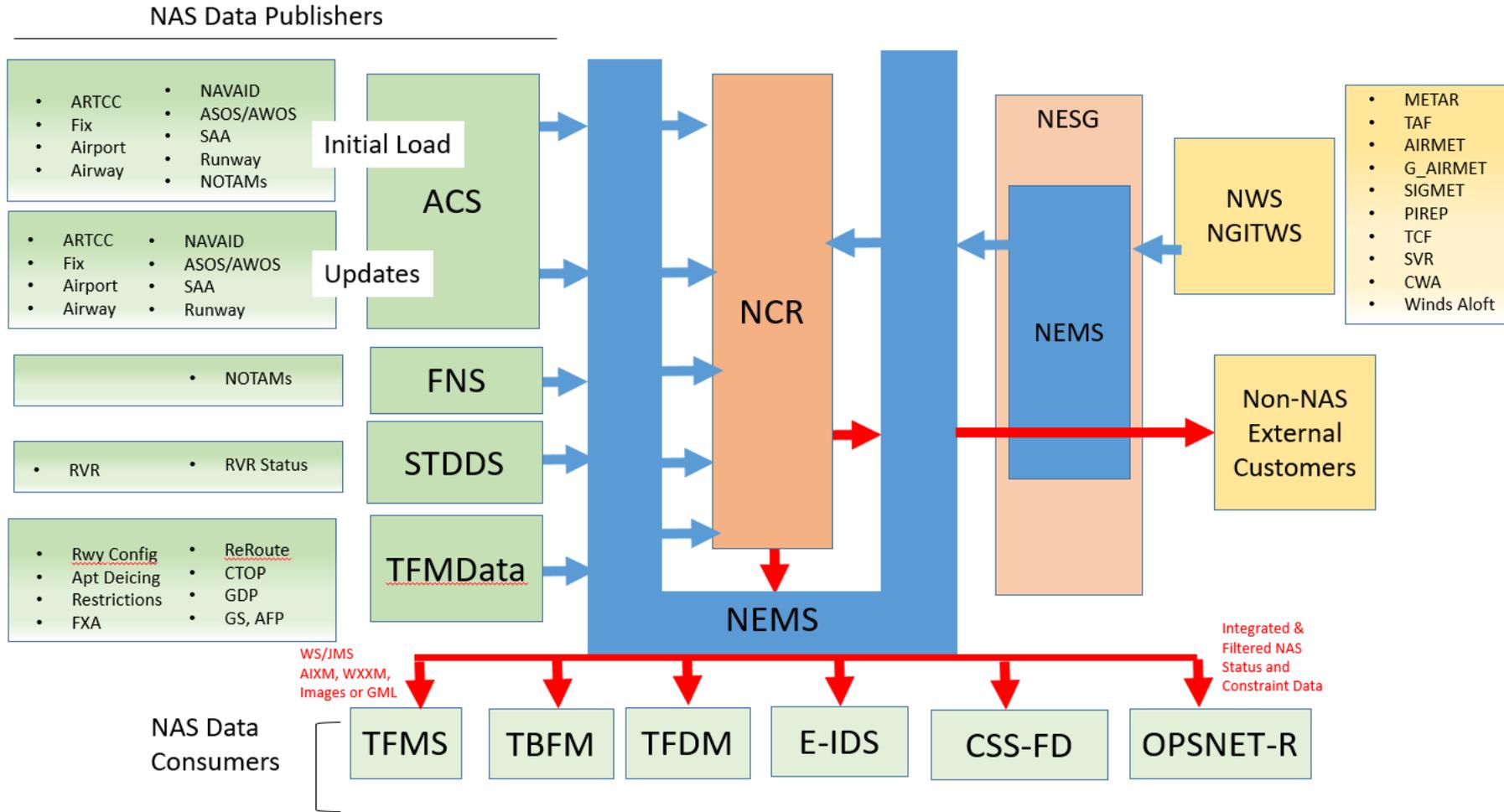
NCR Overview

- NCR is a NAS Program that provides SWIM Services for parsing, storing, and correlating NAS data
 - Consumers multiple SWIM producers across NAS domains
 - aeronautical
 - weather
 - traffic flow management
 - Data standardization
 - Geo-referencing
 - units of measure
 - coordinate reference systems (CRS)
 - Dynamic user queries
 - Any combination of geospatial, temporal, and attribute filters
 - Think of a database query
 - Queries can be submitted as subscriptions
 - Applies constraints to trajectories (in 2D, 3D or 4D)
 - GML or GeoJSON response integrates with open source code

NCR Overview (cont'd)

- SWIM compliant infrastructure and interface standards
 - NAS Enterprise Messaging Service (NEMS) interface with producer systems and authorized NAS and Non-NAS consumers using.
- NCR interfaces with the following NAS producers
 - Traffic Flow Management System (TFMS)
 - SWIM Terminal Data Distribution System (STDDS)
 - Aeronautical Common Services (ACS)
 - FNS
 - National Weather Service (NWS)
 - In lieu of Common Support Services – Weather (CSS-Wx)

NCR System Architecture



NCR Data

NASR + FNS-NDS

TFM Data Flow Information Service

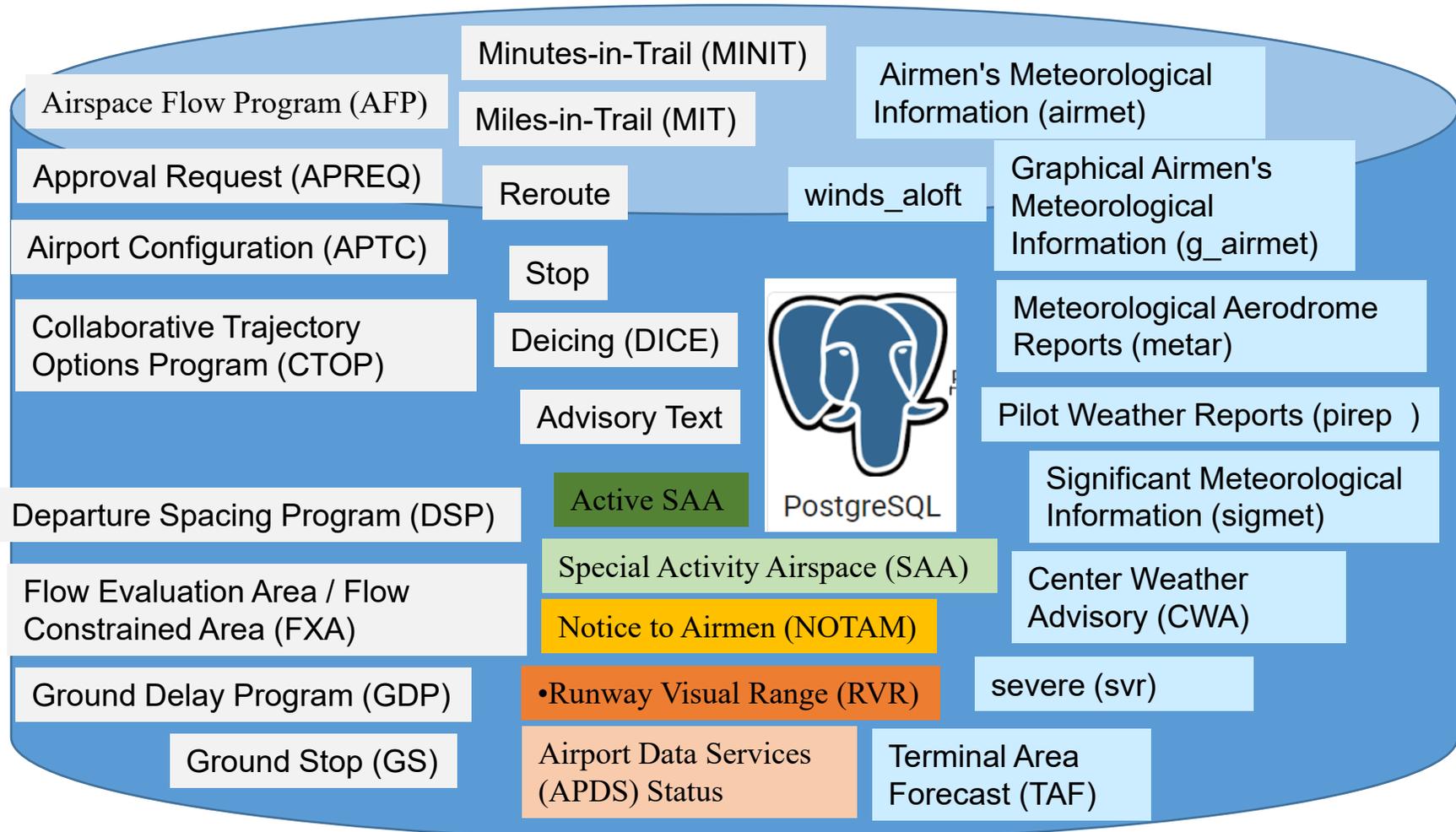
Federal NOTAM System – NOTAM Distribution Service (FNS-NDS)

National Airspace System – Resources (NASR)

National Weather Service

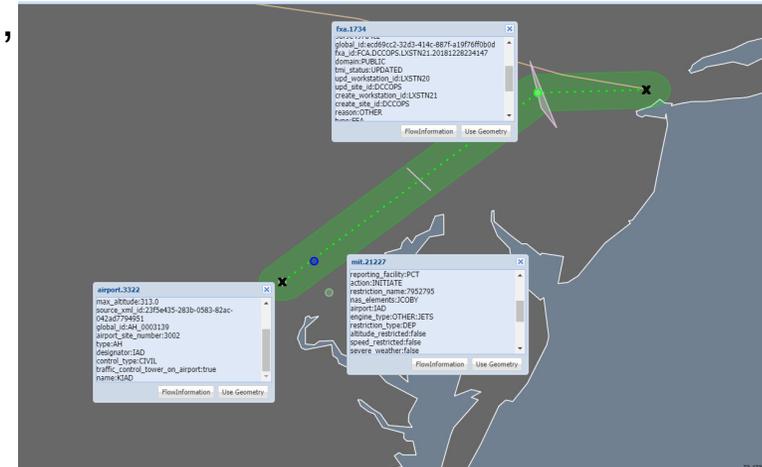
STDDS ISMC

Standard Terminal Data Distribution Service (STDDS) APDS

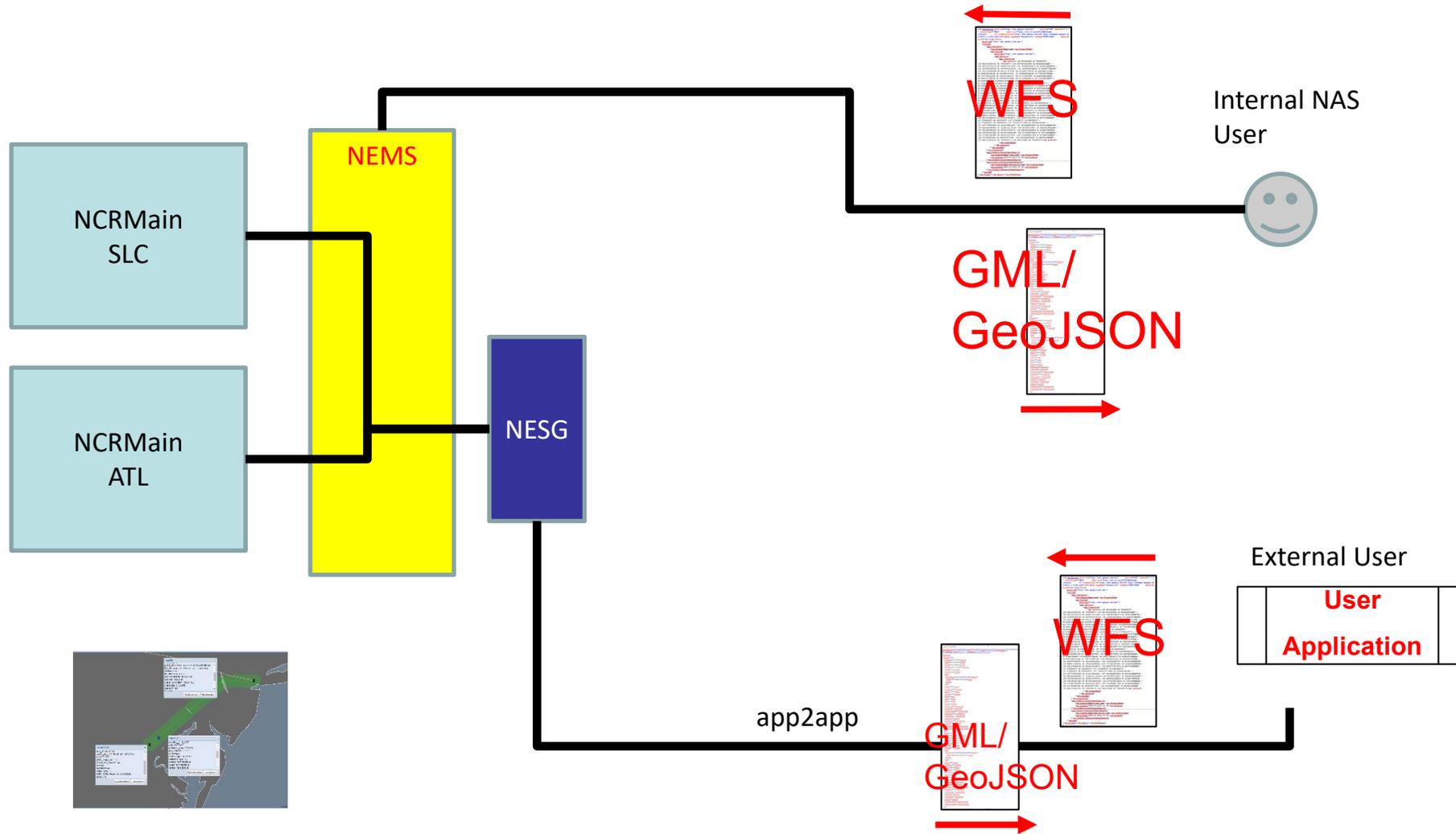


NCR Interfaces

- Web Feature Service (WFS) returns GML textual format
 - Route: user submits route string or 3-D/4-D trajectory with optional spatial buffer, and NCR returns features that overlap with the route in space/time
 - General: user submits geometry (e.g., circle, polygon) and NCR returns features that overlap with geometry in space/time
- Web Map Service (WMS) returns matching features as image
- Subscription created via WFS Request
 - Publications return source messages via Java Messaging Service (JMS)
AIXM or WXXM format pertaining to matching features
- Retrieve source message via XM Service



NCR Flow Diagram



Route Constraint Widget Demo

- Christopher Gottlieb (Jet Blue) & Jeremy Lindsey (Mosaic ATM)
- Route Constraint Widget
- Coordination between NCR program and Jet Blue
- Demonstrate how NCR data can be used to aid operational needs
- Less than 1 staff week of development time

NCR Discussion

- **Q & A**



SWIFT 11 CLOSEOUT



Final Announcements

SWIFT *Workshop #12*

- **Date**
 - **November 19th, 2020**
 - **Time - TBD**
- **Location**
 - **Online Session**

SWIFT Site Information

- SWIFT@faa.gov
 - Any SWIFT-related questions
 - Sign up for SWIFT mailing list
- https://www.faa.gov/air_traffic/technology/swim/swift
 - Register for future SWIFT meetings
 - Stay up to date with SWIFT
 - Past meeting slides



SWIFT Contact Information

SCAN ME



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- Email: SWIFT@faa.gov



- David Almeida, SWIFT Community Moderator
- Phone: (321) 735-2774
- Email: David.Almeida@LSTechLLC.com

TFMS Technical Webinar Schedule

Every Second Thursday of the month.

Next TELCON Sept 10th, 2020 **1:00ET**

- Register ahead of time to receive the bridge number and passcode
- Register, send questions or advance TELCON topics to:

Chris.Burdick@faa.gov and/or
Thomas.ctr.Paccione@faa.gov



BACK-UP SLIDES



```

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