SWIM Users Forum

Presented by:

FAA SWIM Program Office

April 15, 2021

System Wide Information Management
AJM-316

Welcome!

Optional ways to engage during the webinar

As a webinar attendee you should see a toolbar at the bottom of your screen with the icons pictured below. Here's how and when to use each option.

Raise Hand: Click the "**Raise Hand**" icon in your menu bar (see image below) to ask a question **verbally**. The moderator will be alerted and will unmute you so you may ask your question.

Q&A: Click the "**Q&A**" icon in your menu bar (see image below) to submit a question via **text**. The moderator will be alerted and will read your question aloud on your behalf or respond to you via text.

Agenda

- SWIFT Portal Overview and SCDS Subscription Disconnect Policy Reminder
- GitHub Site Overview
- Feedback Session
- SWIFT 13 Recap / SWIFT 14 Preview
- Aviation Case Study

SWIFT Portal Overview and SCDS Subscription Disconnect Policy

Presented by:

Michael Pozsgay

SCDS/SWIFT Portal Lead

Alex Murray

Systems Engineering Support

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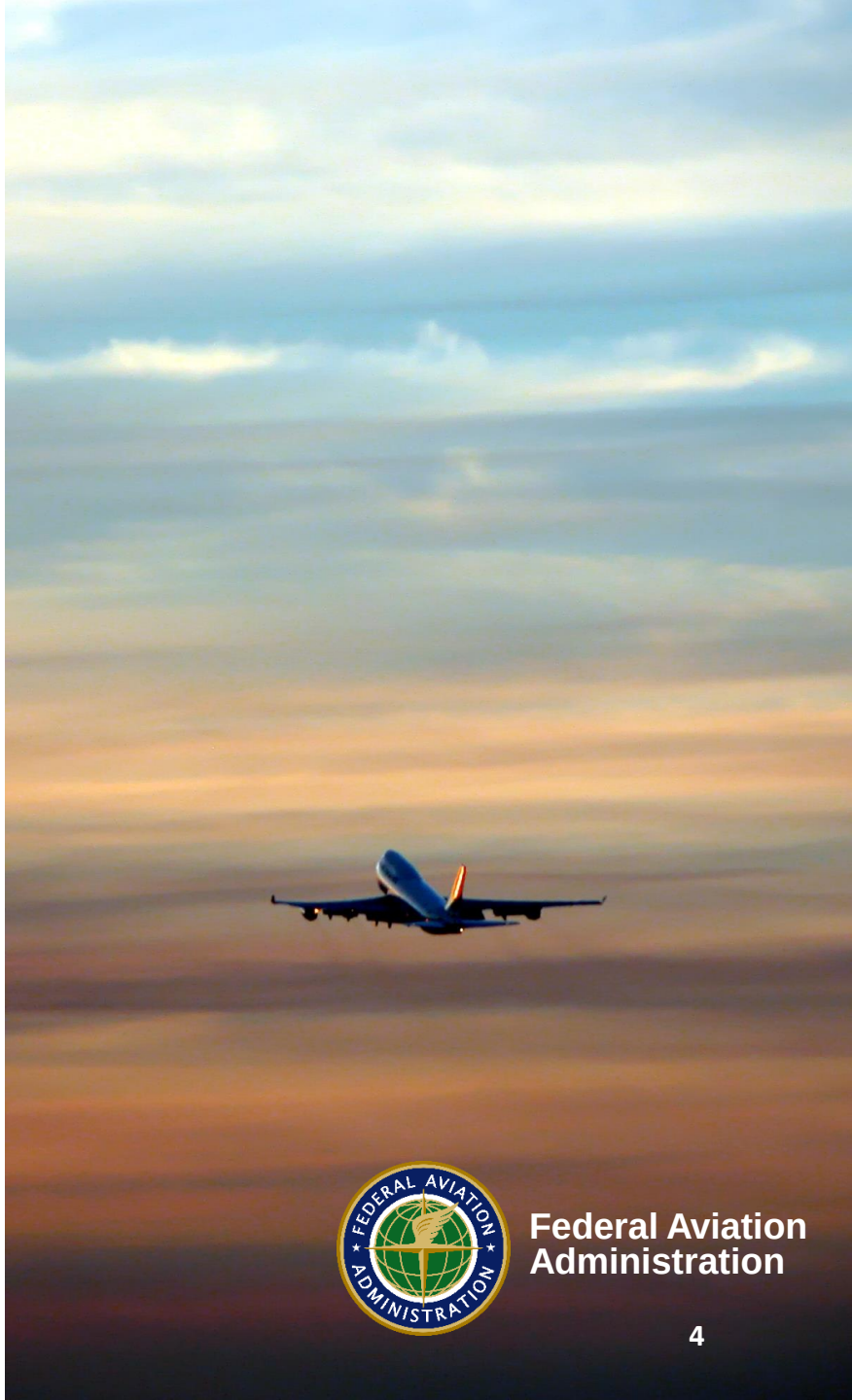

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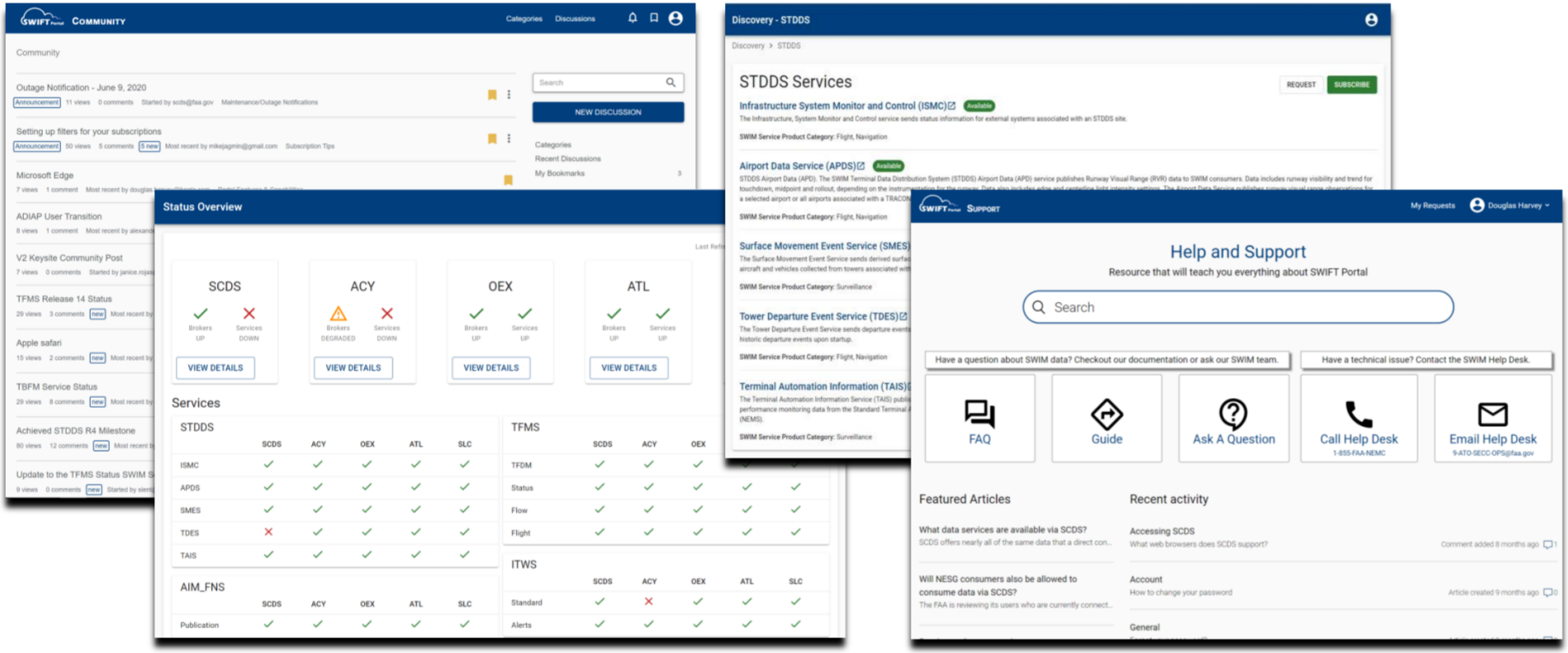
SWIFT Portal Overview

SWIFT Portal is a publicly accessible cloud-based infrastructure that brings new capabilities to build upon the SWIM Cloud Distribution Service (SCDS).

This service will include new Service Discovery, Service Status, Community Forum, Cloud Distribution Service, and Self-Service Help Desk.



SWIFT Portal – Timeline

SWIFT Portal Go Live:
Anticipated by the end of May 2021

- A general notification has been placed on the SCDS website, and users will be notified of the Portal rollout prior to going live.
- SWIM will communicate the change through direct emails from SCDS@faa.gov, SWIM Users Forums, SWIFT meetings, the SWIM website, and notifications within SCDS upon login.
- Following the rollout, when logging into SCDS you will be automatically redirected to the new Portal login page. Your SCDS account, password, and subscriptions will be migrated automatically.

Load Balancer Update with SWIFT Portal Rollout

- Along with the release of the SWIFT Portal the FAA is updating the AWS load balancers to switch from Dynamic to Static routing.
- Impact to Users:
  - Type A (Minimal Impact - No Action Required on Part of Users)
    - Users that have no outbound firewall rules that allow their SWIM client to connect out of their network to SCDS.
  - Type B (Minimal Impact - No Action Required on Part of Users)
    - Users that have outbound firewall rules to allow their SWIM client to connect out of their network to SCDS and the firewall supports and is configured for the SCDS host name(s).
  - Type C (Minimal Impact - Action Required)
    - Users that have outbound firewall rules to allow their SWIM client to connect out of their network to SCDS and the firewall does not support the use of hostname, i.e., can only be configured using IP addresses.
    - User will need to update their firewall rules to include the new Static Public IP(s) for SCDS.

Load Balancer Update with SWIFT Portal Rollout

- All users will experience impact when the IP of the SCDS(s) servers change to Static.
- When this occurs, a user's client will stop receiving data from SCDS and will disconnect after the connection keep-alive stops flowing for several seconds.
- When the client attempts to reconnect, it will perform a DNS lookup, the new IP will be provided back, and the client should reconnect without issue.
- This re-connection may or may not result in message loss depending on the Time To Live (TTL) for the service being consumed.

SCDS Subscription Disconnect Policy

The FAA has developed an SCDS policy to preserve system resources and maintain accurate information on system usage.

This policy addresses the following:

- **Subscriptions Pending Approval**
  - Subscriptions in the “pending approval” status for more than 30 days will be denied.
  - Notification at 15 and 30 days, deleted after 1 additional week
- **Unused Approved Subscriptions**
  - Approved subscriptions that have not been connected in 60 or more days will be removed.
  - Notification at 30 and 60 days, disabled after 1 additional week
    - Contact the SCDS on-boarding team (scds@faa.gov) if you plan to use a subscription
    - If no request is received to re-enable the subscription within 30 days from disablement (90 days from last connect time) it will be deleted from the system.

SCDS/SWIFT Portal Reminder

Reminder: SCDS is not intended for Operational Use.

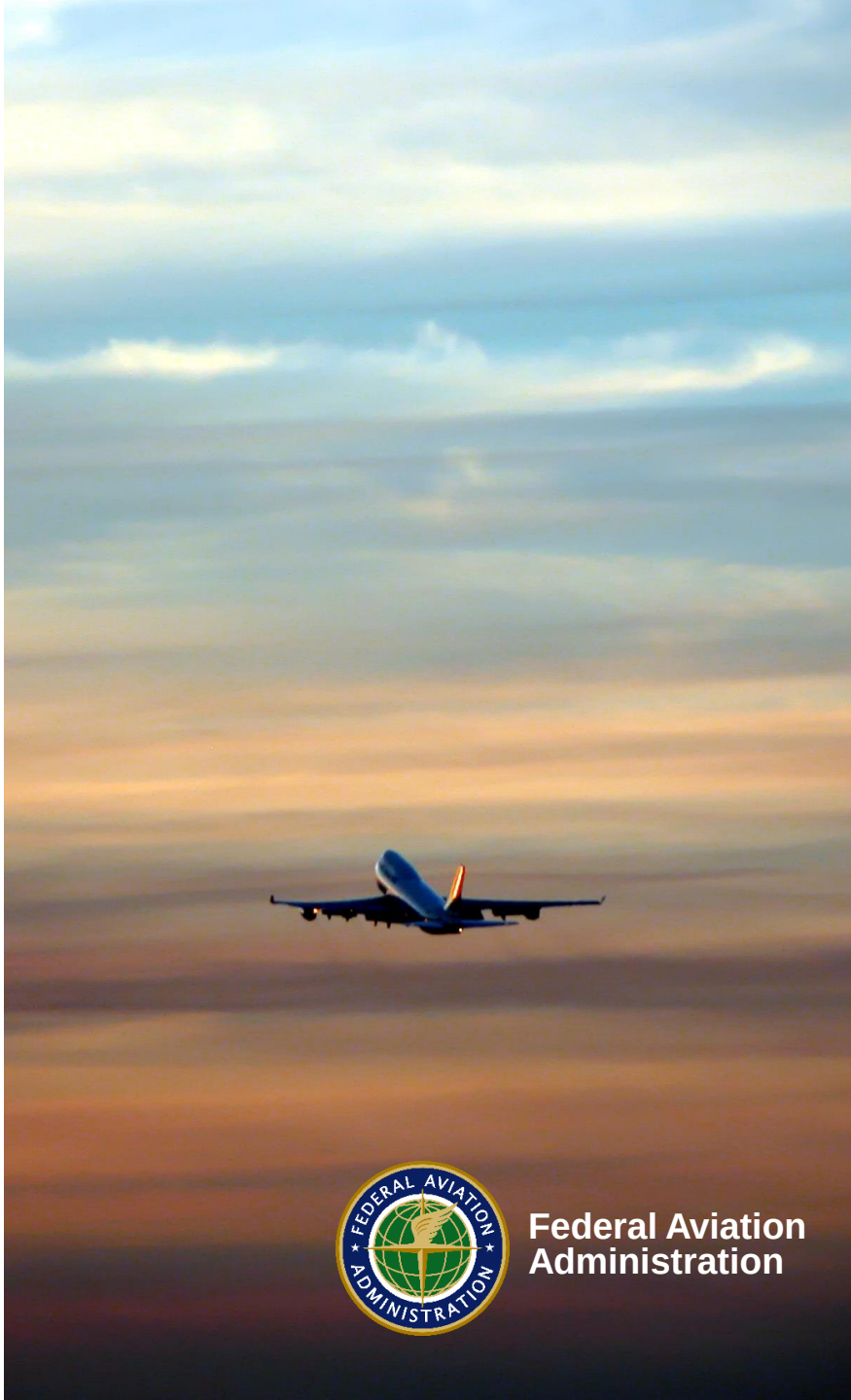
- SCDS is meant for Public External SWIM Users.
- FAA Partners that use SWIM in their operations should still consume data from their Legacy NESG connection.

SWIM GitHub Overview

Presented by:

Alex Murray

Systems Engineering Support



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SWIM GitHub is Live!

5 Repositories w/ More to Come

swim-utilities
Basic set of utilities to help in working with consuming SWIM data

aixm-5.1
Provides Java XML Bindings for the AIXM 5.1 Schema for use with the FAA SWIM FNS Service.

jms-client
Provides a very basic JMS Client that simplifies connecting and consuming from FAA SWIM.

fns-client
Provides an example implementation on how to establish and maintain a local instance of the FNS NOTAM Database through the use of the FNS Initial Load (FIL) and SWIM FNS JMS services.

BasicScdsAmqpDotNetConsumer
Provides a basic example of how to connect to SCDS using AMQP in .net core.

SWIM GitHub provides the community with access to reference examples for connecting to and using SWIM services with the aim to make adopting SWIM easier.

**All code provided through the FAA SWIM GitHub site is for reference use only and the FAA takes no responsibility for its use.*

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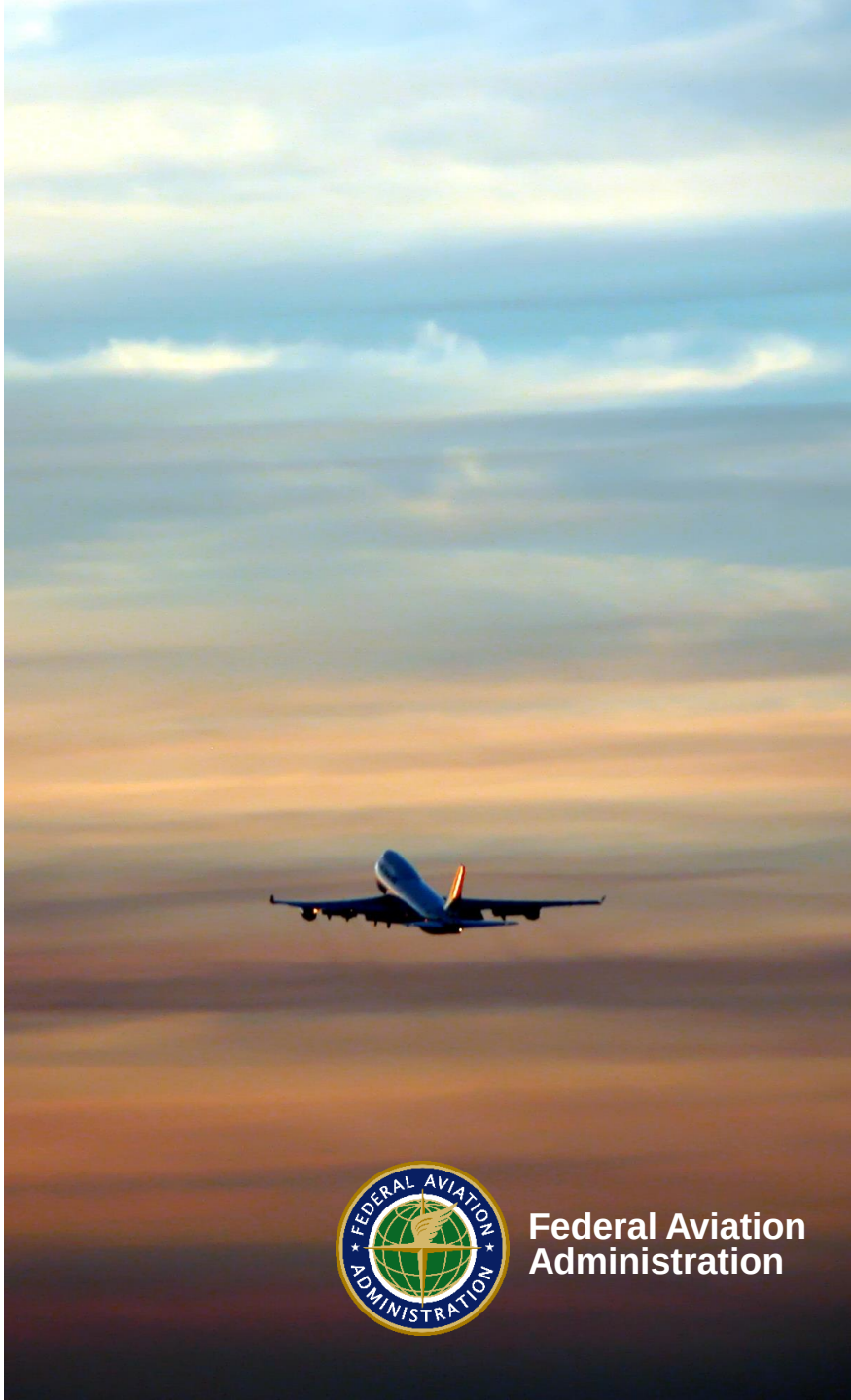
Feedback Session



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SWIM Industry-FAA Team (SWIFT)

Status Update

Presented by:

Ray Mitchell

Systems Engineer LST Contract Support

Xavier Pratt

Systems Engineer LST Contract Support

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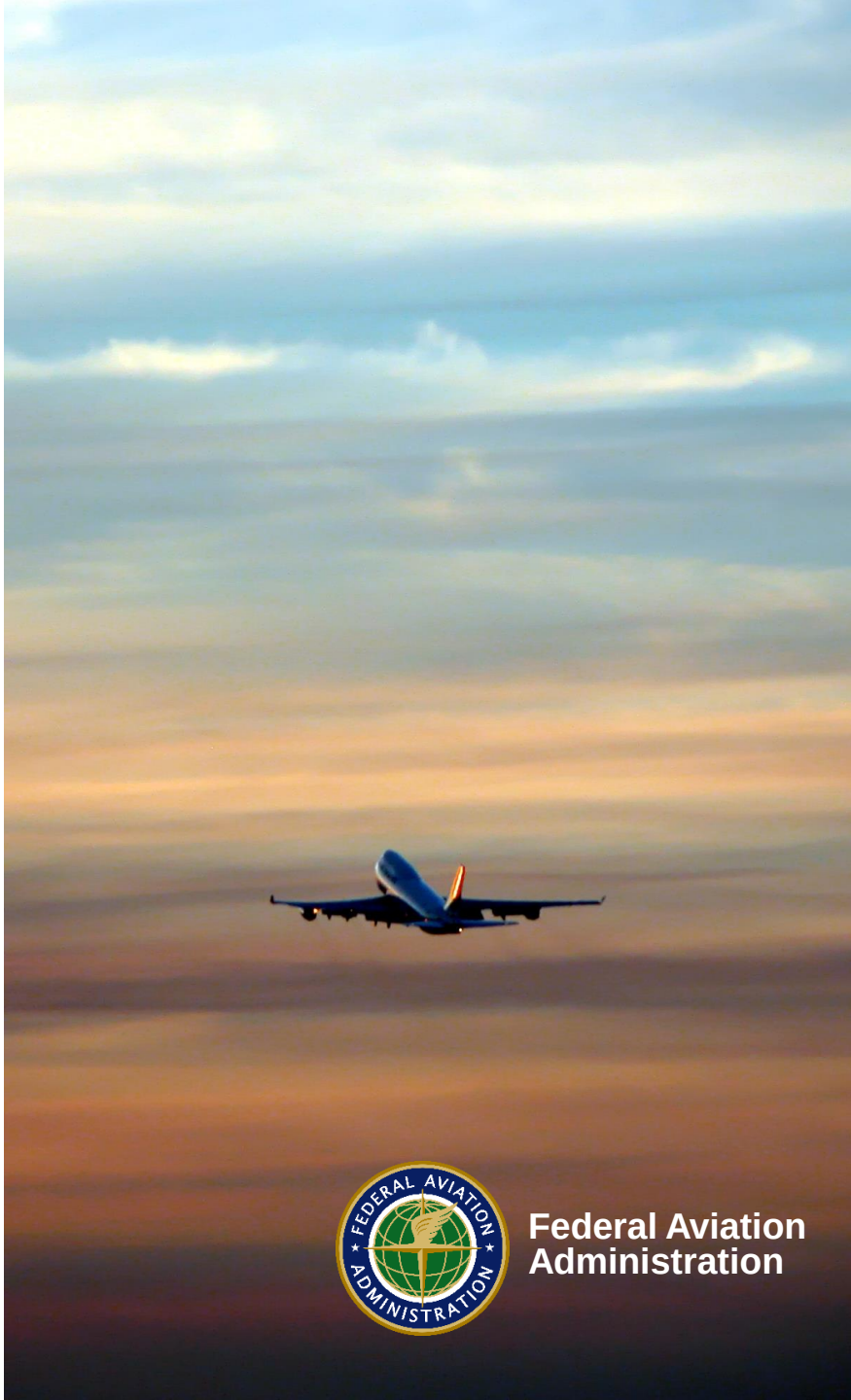
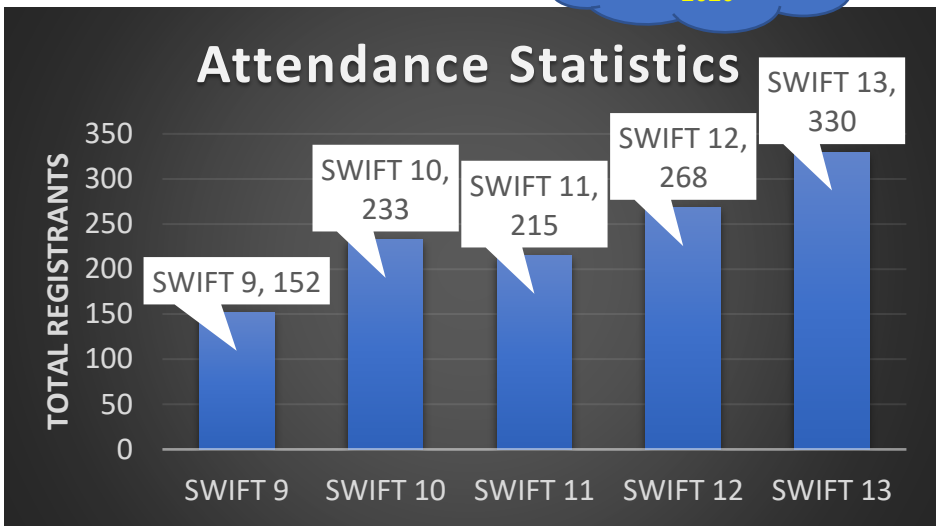
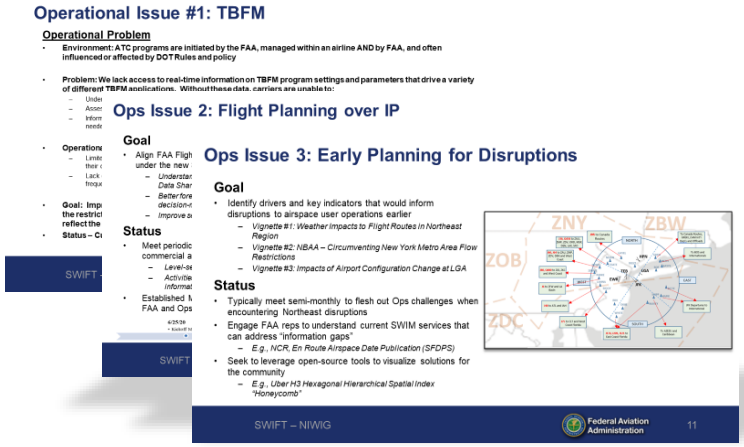


SWIM Industry-FAA Team (SWIFT) Update

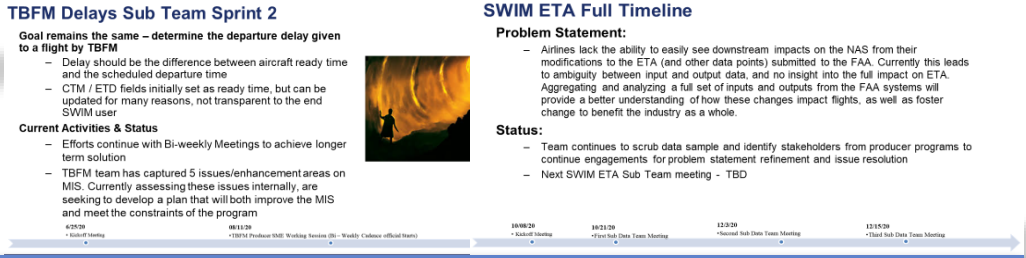
- Operational Context Document Focus Group – will reconvene April 22nd focused on TFDM services
- SWIFT continues to expand the scope of the Operational Issues Focus Group and the Development Analytics Focus Group
- **SWIFT 14** Updated Date - ***May 27th, 2021***, official email correspondence released
- Focus groups continue to discover new initiatives while making great progress for resolution of the priority items



- SWIFT 13 (latest & largest) saw virtual crowds of up to 330 registered attendees with 242 active attendees participating during the 3.5-hour event. Perfect way to kickoff 2021!



Operational Issues Focus Group



Development & Analytics Focus Group

SWIFT 14 Registration Link

Special Focus Update: Aviation Case Study

Formally known as Early Planning for Disruptions in the North East Region (NER)

Operational Condition

- NAS Operational Improvement Goals:
  - Identify drivers and key indicators that would inform disruptions to airspace user operations earlier
  - Apply SWIM Information Services to improve operational decision-making through advanced planning
  - Use Tabletop exercise to capture key procedures, operational processes and relevant information to study application of data analytics and machine learning to improve operational decision-making
- Operational Problem Statement:
  - Traffic Management Initiatives (TMI) and related delays resulting from Aircraft deviations over fix
    - There is no clear way to readily identify aircraft deviation indicators (e.g., weather, traffic volume) and anticipate enroute delays
    - There is a lack of available post-ops data analysis to determine threshold boundaries for traffic deviation and where disruptions are severe
    - This limits the operational community from effectively planning or implementing work-arounds for airspace condition changes and resource constraints

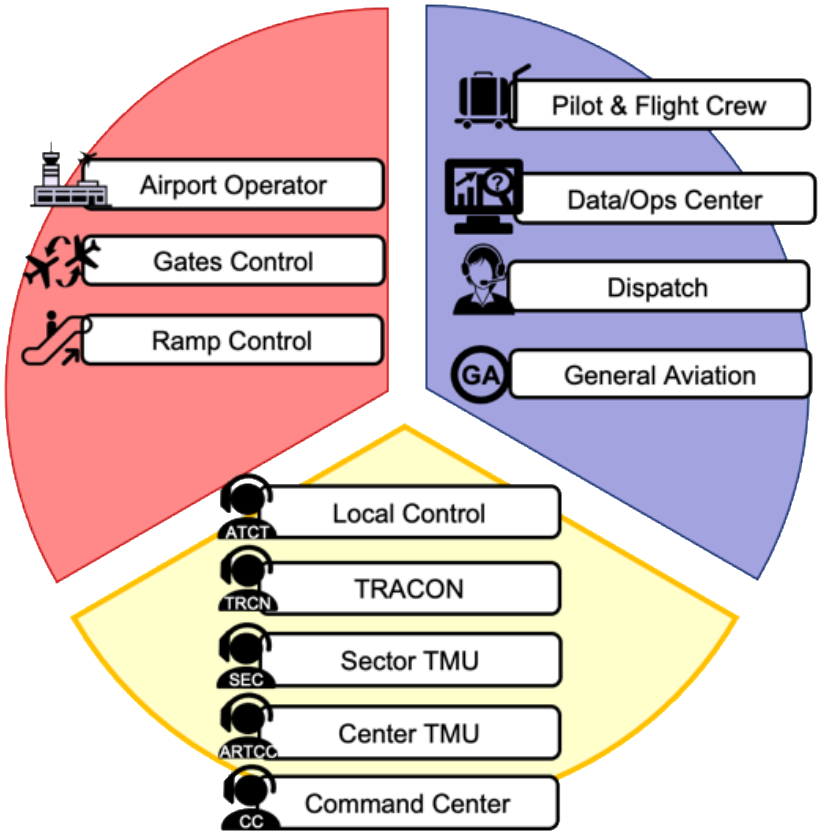
Operational Condition (Cont'd)

- Environment:
  - NAS Northeast Region Centers: ZNY, ZOB, ZBW, ZDC
  - New York metro and Vermont airports: LGA, JFK, EWR, TEB, HPN and BTV
  - Airways and jet routes impacted by Traffic Management Initiatives (TMI) events or closures

Applying SWIM information services to improve operations

- State of aircraft deviation assessment on operational impacts
  - Lack visibility into TMI triggers and resulting effects on air traffic delays
  - Inability to fuse/correlate TMI restrictions to impacted flight plan filings, active trajectories
  - Missing earlier aircraft deviation detection on departure routes, surface traffic management
  - Inability to measure key drivers for reroutes to better inform FAA-airline collaboration
  - Lacking ability to store and leverage data for post Ops analysis to assess accuracy of delay estimates and recovery times
- SWIM Data & Information Services…what is needed?
  - How can airspace users and ATC better anticipate and plan for disruptions earlier?
  - Can data analytics help accurately correlate NAS constraints to airspace user operations?
  - What automation systems are required to provide value added data for improved decisions?
  - What indicators (i.e., airport surface, aircraft movements, etc.) can help make decisions earlier?

Stakeholder Perspectives



FAA Perspective

- Maintain safe separation flights
- Effective & efficient sequencing of flights operations
- Ensure updates to NAS operating plans, scheduled configurations, and other airspace constraint information is disseminated to NAS users

Airspace User Perspective

- Operate flights with required and necessary information
- Flight intent information
- Maintaining flight plan data and processes for business operations

Airport Ops Perspective

- Coordinating airport conditions impacting surface Ops
- Maintain and communicate airport surface schedule (e.g., taxiway construction and equipment outages)

Case Study Scenarios

Vignette #1: Weather Impacts Fixes in Northeast Region

Weather events impact airspace capacity. What are the implications to flights Ops for New York metro airports? What is needed to help mitigate early disruptions?

Drivers to Account for:

Weather Location & Intensity Alerts

- Alerts for when Wx over specific fixes *or any point along the flight trajectory)* would typically *cause flights to deviate off track)* or throw flights into holding stacks.

Sector Thresholds

- Alert when sectors become saturated (configurable scale). Dispatch/crew have more time to estimate fuel needs and diversion alternates

Planned Taxi Times

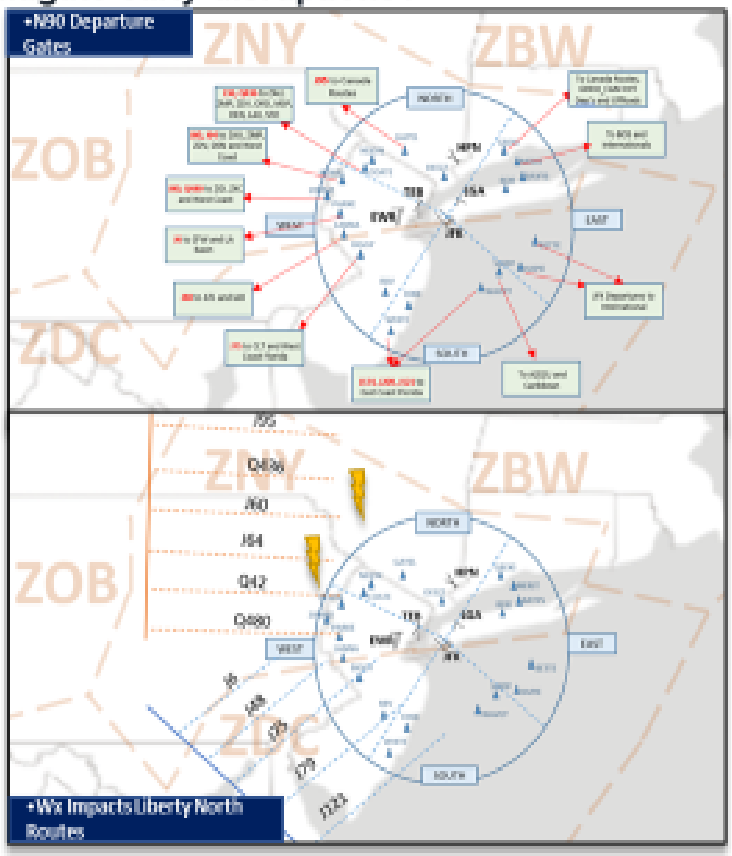
- Alerts to minimize taxi times. Data inform increased gate hold times; fuel revision needed

Prevailing RWY Configs

- Alerts for extra time to anticipate RWY changes. Dispatch/crewcan use time to rerun performance numbers (may be overweight for shorter runways)

Flight Scheduling

- Pre-emptive alert or data that assists crew scheduling and aircraft router/planner



Case Study Scenarios

Vignette #2: NBAA – Circumventing ZNY Flow Restrictions

Requesting FAA to consider lower FCA ceiling restrictions to assist GA flights with flyover to BTV. What coordination is needed for minimal disruptions?

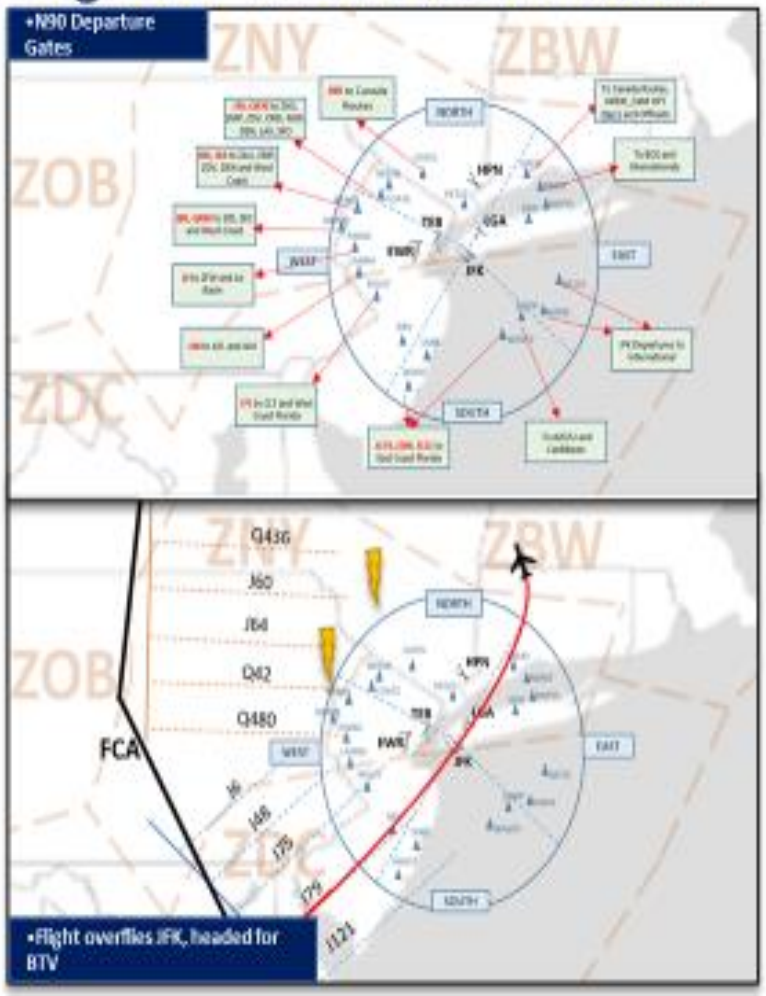
Drivers to Account for:

Resource Availability
- Data sharing that alerts aircraft/crew availability
- Gate space at diversion airports
- Fix and sector demand/capacity levels
- Diversion airports AAR

Flight Scheduling
- Alert for AOC scheduling (pre-emptive cancels beneficial earlier in the day); Earlier heads up for Command Center demand

Sector TMU coordination with AOC
- Alert to assist controller coverage/coordination with TMUs and AOCs
- TMUs/ATCSCC earlier evaluation of raising floor or lowering ceiling of FCA – possibly during FCA planning

Weather Location & Intensity Alerts
- Alerts for when Wx over specific fixes would typically throw domestic flights into holding stacks



Case Study Scenarios

Vignette #3: Airport Configuration Change at LGA

Weather has moved to the East and surface winds are creating dangerous conditions, prompting runway change at LGA and EWR. What early information alerts, or traffic flow data would help airspace users of pending RWY changes to New York metro Ops?

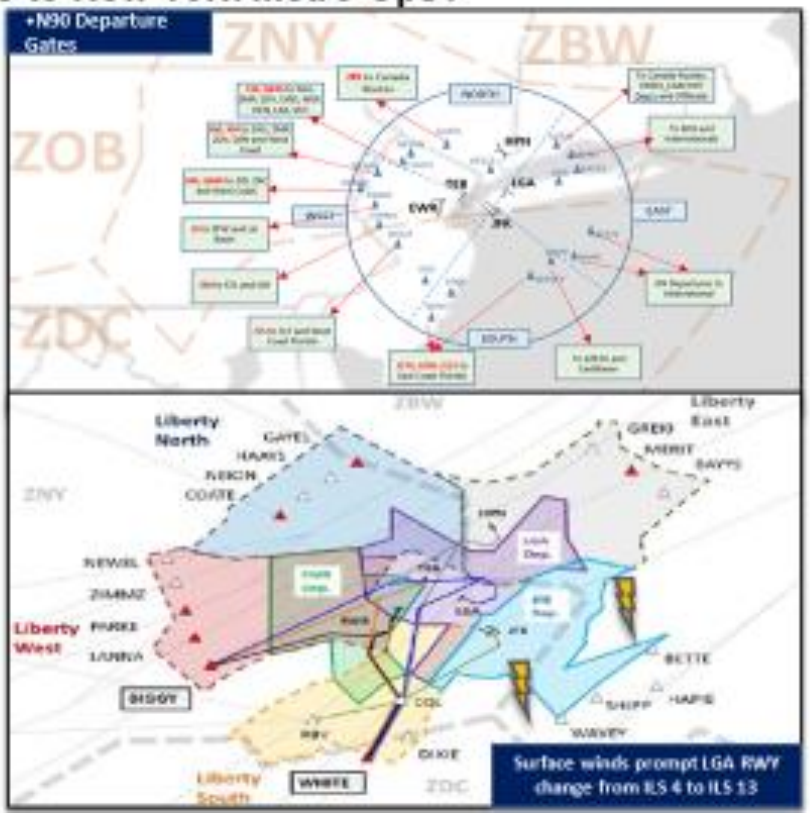
Drivers to Account for:

Weather Location & Intensity
- Alerts for speed and wind direction at fixes or airspace (i.e., access to Wx data near LGA)

Enroute Traffic
- Alert for dispatchers to minimize airborne diversions; crew/dispatcher have more time to evaluate bingo fuel and alternates; perhaps stay higher to conserve fuel to avoid diversion

Gate & RWY Assignments
- Alerts/Data that provide insight for reevaluating runway assignments

Airport Status
- AOC would need airport information to resolve potential crew time outs, potential aircraft unavailability; gate scheduling



Next Steps for Early Planning for Disruptions

- Use tabletop discussion items to model the *Early Planning for Disruption* to model study during Convective Season
- Define terminal domain deviation from a data analytics standpoint and translate its impacts to surface operations
- Identify potential data services that can provide advanced insights into the impact and magnitude of irregular operations
- Evaluate technical strategies and approaches for predictive analytics and machine learning to improve operational decision-making

Contact information

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SWIFT FAA website / LST SWIFT

Upcoming SWIM Events

- SWIFT 14
  - May 27, 2021 from 12:30-4pm ET

We hope to see you there!

Thank You

Questions? Email swim@faa.gov