

SWIFT Focus Group

Afternoon Session

Presented to: Airline Focus Group

By: SWIM Program

Date: November 21st, 2024



**Federal Aviation
Administration**

Agenda

- **Hot Topics** – David Almeida (SWIFT Moderator)
- **Why FMDS & CSS-FD?** – Daniel Johnson (FAA, FMDS Chief Engineer)
- **FMDS Transition Strategy Overview** – Daniel Johnson (FAA, FMDS)
- **TFMData Transition Strategy Overview** – Daniel Johnson (FAA, FMDS)
- **FMDS Services Planned** – Daniel Johnson (FAA, FMDS)
- **CSS-FD Services Planned** – Lucas Curns (FAA, CSS-FD Project Lead)
- **Closeout**



Hot Topics for Industry

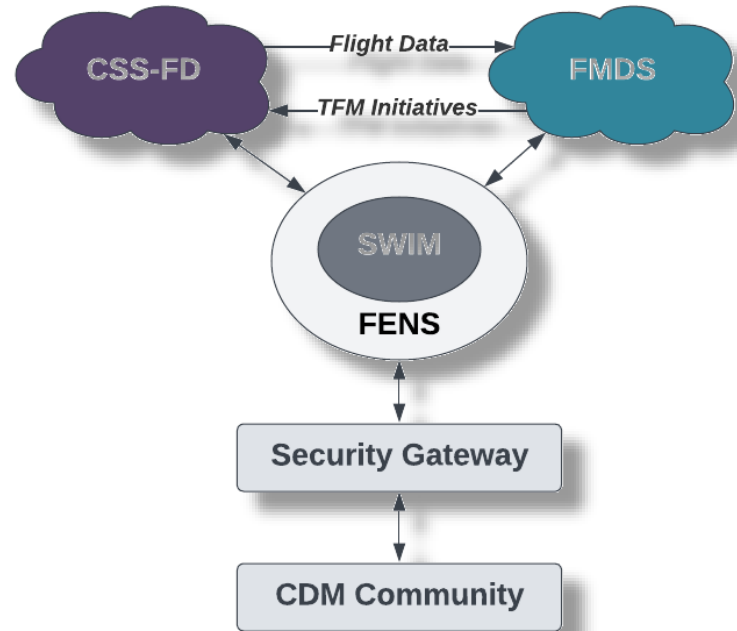
Hot Topics

- ***TFMS and TFMDData challenges***
- ***TFMS Transition***
- ***Industry Direction & Technology Trends***
 - *Flight & Flow for Information Collaborative Environment (FF-ICE)*
 - *Data Standards and Information Models*
 - *Cloud Technology & API's (Application Programming Interfaces)*

Why FMDS & CSS-FD

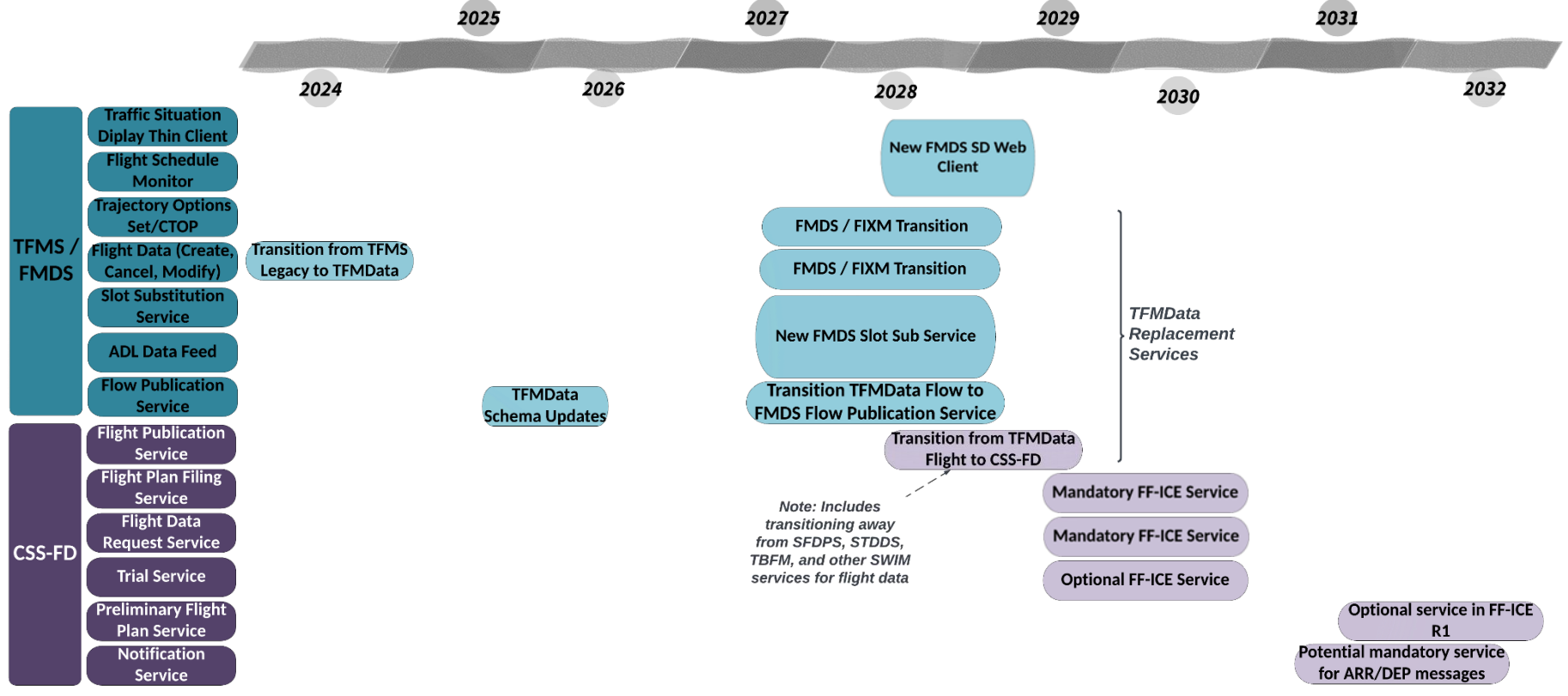
Why CSS-FD and FMDS?

- **FF-ICE and global interoperability**
- **Improved NAS operations and TFM efficiency**
- **Aging infrastructure; inability to address system shortfalls**



FMDS Transition Strategy

Interface Transition Strategy



FMDS Situation Display

- **Replaces:**
 - Thin Client TSD/FSM/NTML and the FSM server and client
- **Key Features:**
 - Commitment to providing common situational awareness with CDM members.
 - Web-based client, requiring only a browser install.
 - Same application as used by FAA traffic managers, with some features disabled.
 - All TFM functions integrated into one application.

FMDS Modernization

Situation Display (SD)

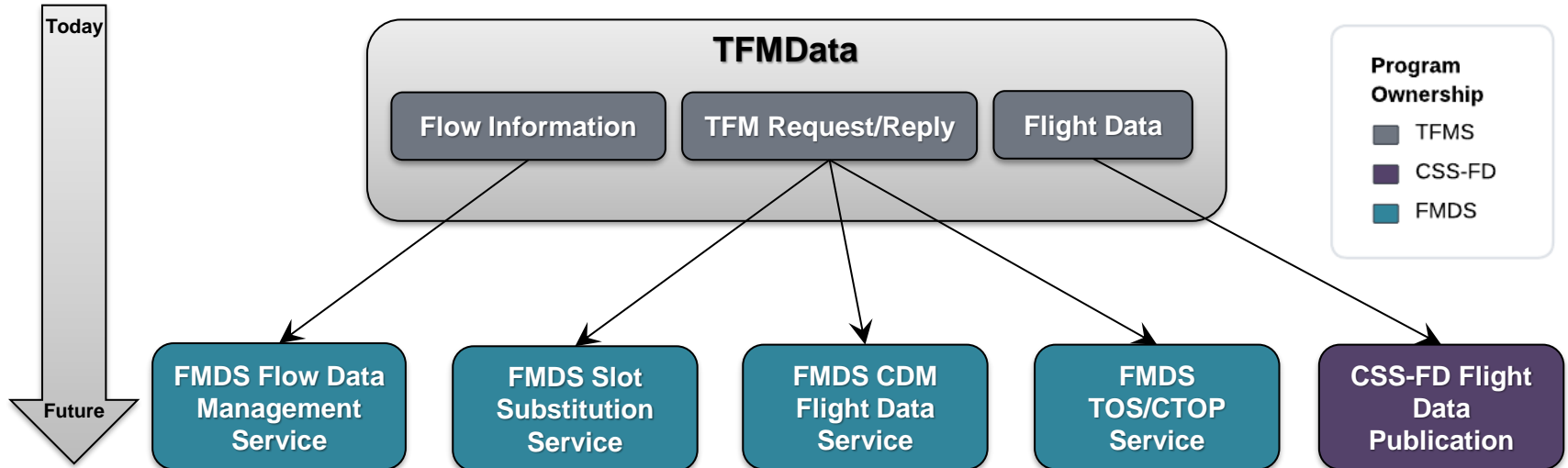


TFMS
Current System

FMDS
Future System

TFMData Transition Strategy

TFMData Transition Strategy



Why Replace TFMDData?

- **Need to adopt a new schema that aligns with international standards for data formats (FIXM, FLXM, etc.)**
- **Numerous shortfalls exist in how TFMS data is published via TFMDData that we do not want to persist in FMDS.**
- **Numerous shortfalls exist in the R/R services, creating challenges with CDM member transition to SWIM.**
- **With the adoption of the flight object and flow object in the NAS architecture, our flight and flow data publication approach should align.**
- **Technologies have evolved since TFMDData was first designed over a decade ago.**

Near Term Transition Activities

- **FDBLOCK messages:**
 - A big thank you to all who have transitioned to TFMDData for providing these messages.
 - Intent is to still ensure all CDM members are using TFMDData for FDBLOCK.
- **SS and TOS/CTOP messages:**
 - A big thank you for all who have provided feedback on the use of these TFMDData R/R services; understand the challenges associated with using TFMDData for this functionality (e.g., no ADL feed on SWIM).
 - Recommend waiting for new FMDS services to transition to SWIM.
- **Mediation from TFMDData format to the new services will be provided for ~2 years, transparent to users.**

FMDS Services

Common Features Across New Services

- **All SWIM-based services hosted in the FAA's Mission Essential Cloud (ME-Cloud), an AWS Gov solution**
- **Single point of access to services**
- **Will provide needed resources for dev and test via an FAA API portal connected to the Cloud National Test Bed (CNTB)**
- **Will not use JMS exclusively (e.g., will support REST services)**
- **Will adopt standard data formats (FIXM, FLXM, etc.)**

Flow Information Publication

- ***Replaces:***
 - TFMDData Flow Information
- ***Key Features:***
 - Will utilize the new FLXM data standard for flow information
 - Provides a unique identifier per flow object (GUFMI) with revision numbers for amendments
 - Will associate flights with flow object via the use of GUFIs
 - Will provide state (proposed, enacted, revised, canceled, expired)
 - Will support true reconstitution (will remove the refresh msgs)
 - Will provide TFM initiatives at first; will evolve to provide all flow events (e.g., TFDM)
- ***Discussion***

Slot Substitution Service

- ***Replaces:***
 - TFMDData Request/Reply SSBLOCK Messages
 - TFMDData Request/Reply Misc. Supporting Messages (APTFIX, ARPTM, EDCTLIST, EDCTSLIST, EDCTSUBSHOW, EDCTUNSLT, TMILIST, TMIRSYNC)
 - Flight Data in the ADL Feed
- ***Key Features:***
 - Ability to receive all needed data to conduct SS for a TMI (no need for the ADL feed) in FIXM format
 - Ability to submit substitution messages
- ***Discussion***

CDM Flight Data Service

- ***Replaces:***
 - TFMDData Request/Reply FDBLOCK Messages
- ***Key Features:***
 - Ability to submit FC, FM, FX, and EI messages using the FIXM standard
 - Data will be integrated within the flight object maintained by CSS-FD
- ***Discussion***

TOS/CTOP Service

- ***Replaces:***
 - TFMDData Request/Reply CTOPFLTHST, FOSCTOPSUB, FOSTOSMSG, FOSTOSSYNC, FOSTRAJASG Messages
- ***Key Features:***
 - Ability to submit TOS messages in FIXM format
 - Ability to request data for a flight, such as the current TOS, trajectory assignment, or CTOP history
 - Ability to request a CTOP slot substitution
- ***Discussion***

CSS-FD Flight Data Publication

- ***Replaces:***
 - TFMData Flight Data, and provides a single source for data from SFDPS, STDDS, etc.
- ***Key Features:***
 - Provides flight object data containing merged/correlated flight data received from FAA systems, ANSPs, and CDM members.
 - Provides a unique identifier per flight object (GUFI)
- ***Discussion***

FMDS Resources

- **Acting Program Manager**
 - Matt Sanders
- **Website**
 - www.faa.gov/fmlds



The screenshot shows the FAA website page for FMDS. The header includes the FAA logo and navigation links: About, Jobs, News, Search, Aircraft, Air Traffic, Airports, Pilots & Airmen, Data & Research, Regulations, Space, Drones. The breadcrumb trail is Home / Air Traffic / Technology / Air Traffic. The main heading is 'Flow Management Data and Services (FMDS)'. A sidebar on the left contains links: Overview, Air Traffic By the Numbers, Community Engagement, Environmental Reviews, Flight Information, International Aviation, National Airspace System, Noise & Emissions, Obstruction Evaluation, Separation Standards, and Technology. The main content area features a graphic with the text 'The future of traffic flow management' and a section titled 'Why FMDS?' with the following text: 'The FAA manages the safest, busiest and most complex airspace system in the world. Our air traffic professionals manage this airspace 24 hours a day, 7 days a week using a variety of systems to maintain the efficiency and safety to all users; one of these systems is the existing Traffic Flow Management System (TFMS). The current traffic management system is aging. Over the next five years, the FAA will modernize and replace the legacy TFMS with the Flow Management Data and Services (FMDS) system to reflect the needs of the National Airspace System (NAS) today and in the future to maintain the efficiency and safety for all users.'

FMDS Services Discussion

- What aspects of using today's TFMData services are challenging?
- What capabilities are missing in today's services?
- What inputs on implementation do you have that would be beneficial for replacement services?

CSS-FD Services



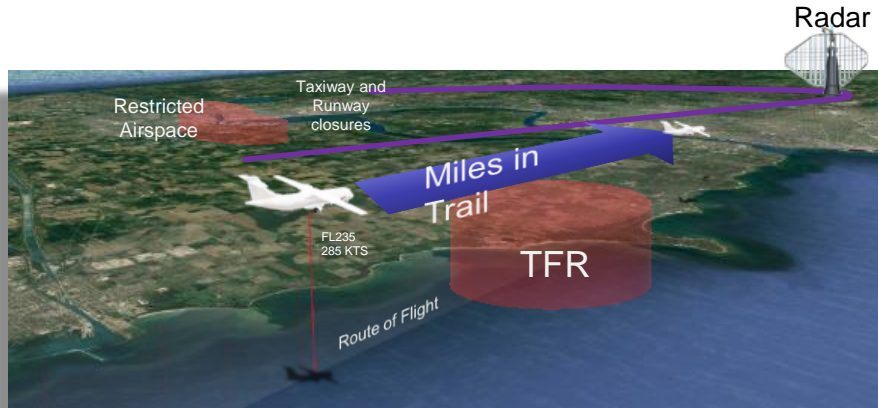
What is CSS-FD in Plain Language?

- Modernization of Flight Plan filing, and consolidation of flight plan data that is used by FAA and industry for analysis and other purposes
- Important infrastructure improvement
- Harmonization with ICAO standards to improve NAS efficiency
- Support an establishment a Global Unique Flight Identifier (GUFI)



Flight Object

- **Create a Flight Object for each flight**
 - A Flight Object for a flight will contain:
 - The current status of that flight in space and time constantly updated as the flight progresses
 - Applicable Traffic Management (TM), airspace, airport, and National Airspace System (NAS) constraints



Snapshot of a Flight



ICAO FF-ICE (R1) Services

Mandatory



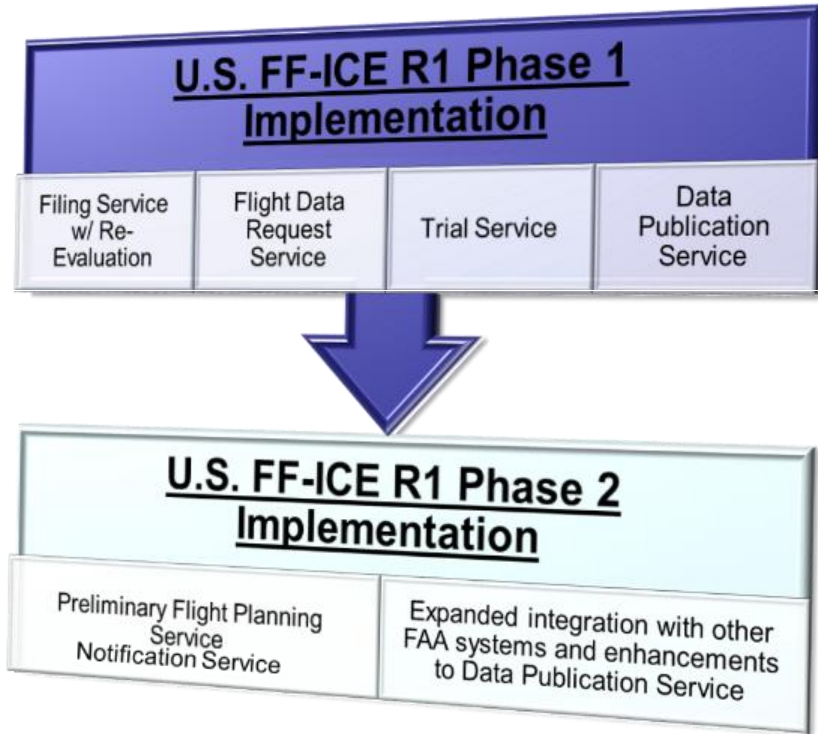
- **Filing Service**
 - Related Messages: (Filed Flight Plan, Flight Plan Update, Flight Cancellation, Submission Response, Filing Status)
- **Flight Data Request Service**
 - Related Messages: (Flight Data Request, Submission Response, Flight Data Response)

Optional



- **Trial Service**
 - Related Messages: (Trial Request, Submission Response, Trial Response)
- **Data Publication Service**
 - eASP will indicate the events and/or criteria to which a subscriber can subscribe
- **Planning Service**
 - Related Messages: (Preliminary Flight Plan, Flight Plan Update, Flight Cancellation, Submission Response, Planning Status)
- **Notification Service (Arr and Dep Messages)**

CSS-FD FF-ICE (R1) Services (Planned)



**CSS-FD Scope being finalized and may be adjusted before implementation*

Capability 1: Data Management & Security Framework

New SWIM Publication/Subscription

- Combines Multiple Existing SWIM Flight Data Sources (e.g., SFDPS and TFMDData) into a Flight Object database with Built-in Flight Matching/Unique Flight Identifier
- Subscribe to All Flight Data or Specific Subsets

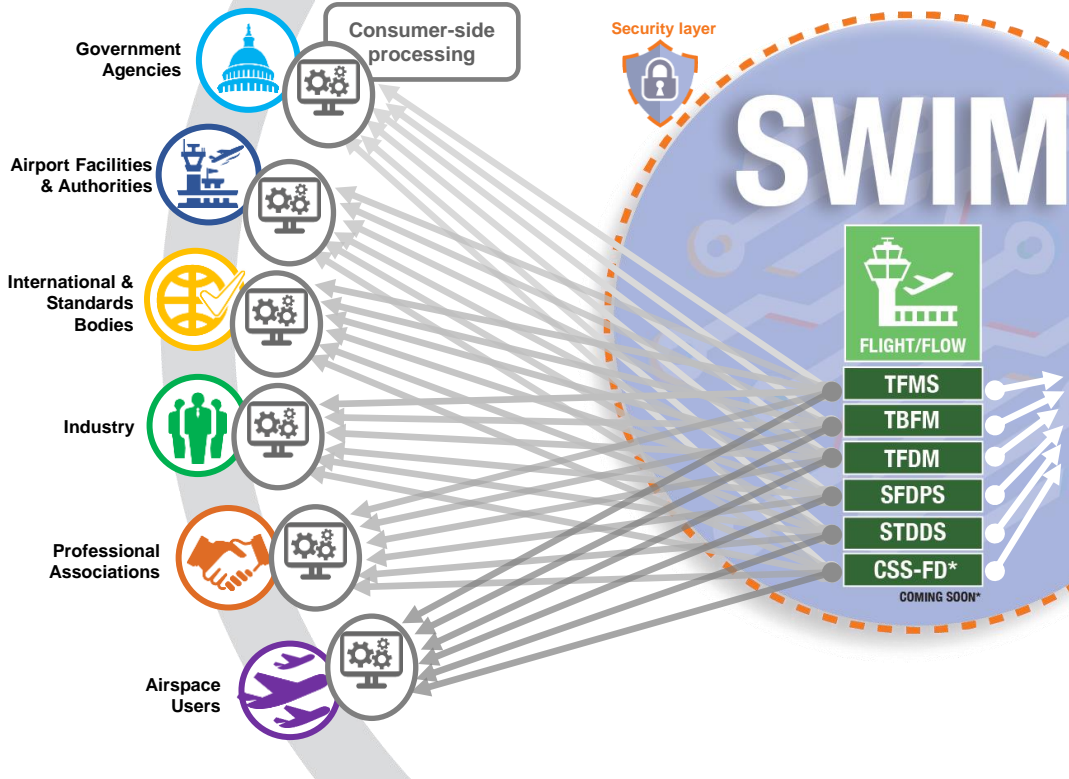
New SWIM Request/Reply

- Request Reconstitution/Historical Flight Data



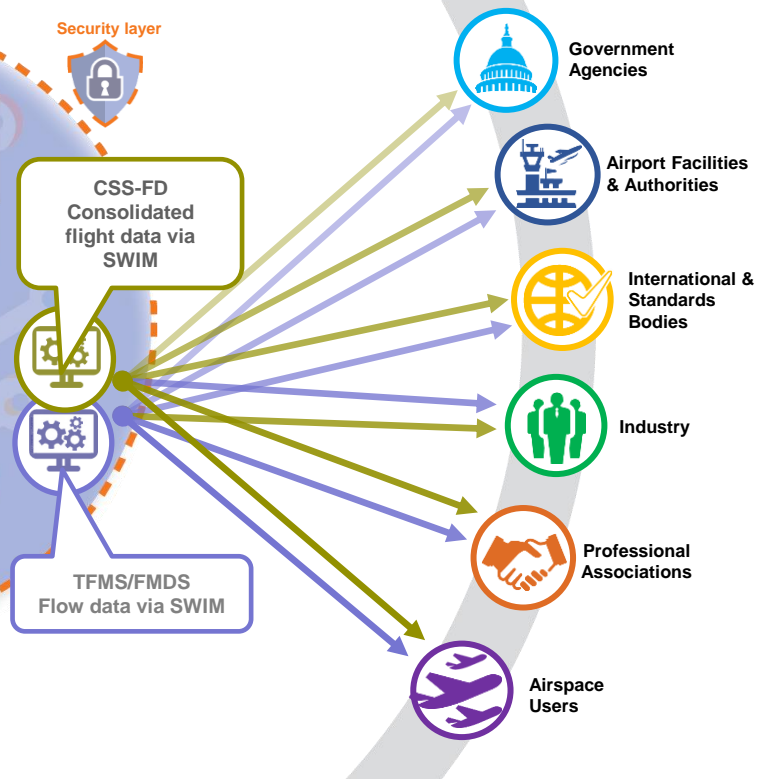
CURRENT

External Producers & Consumers

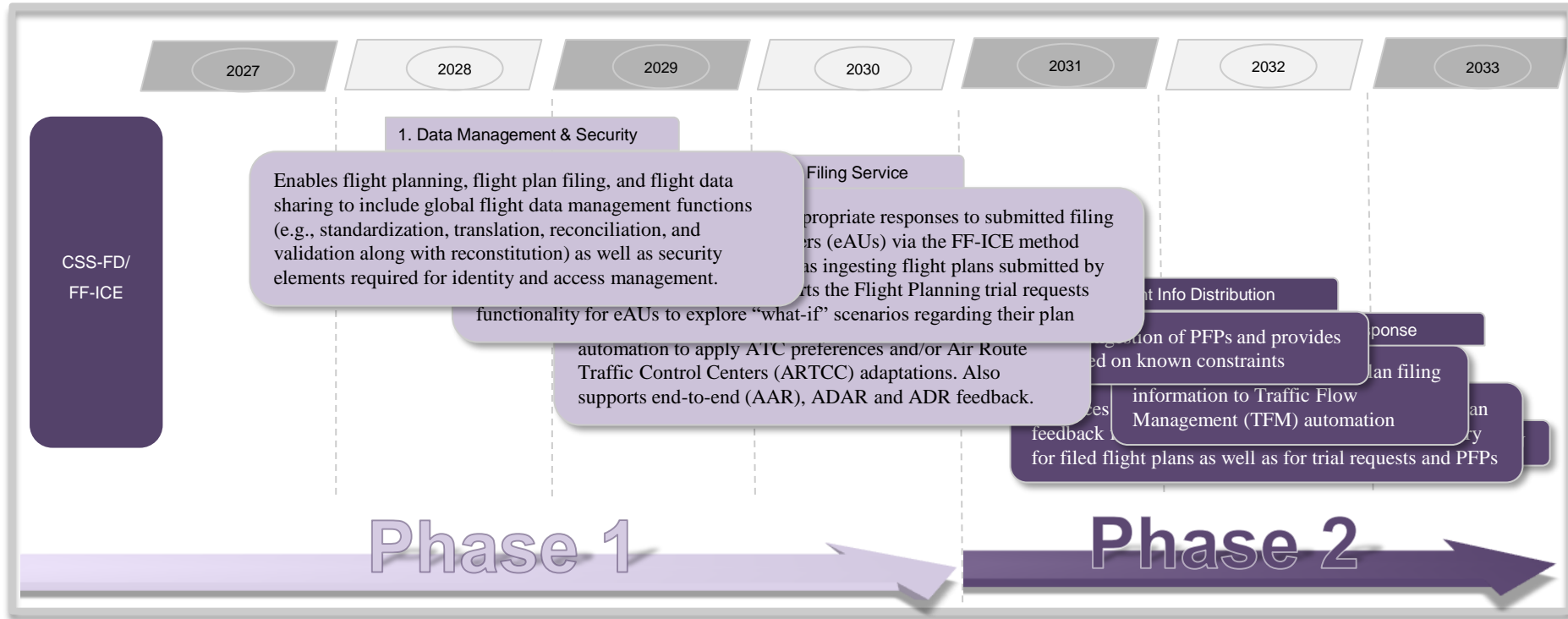


FUTURE

External Producers & Consumers



CSS-FD Phase Capability Roadmap



CSS-FD Discussion Topics

- Preliminary Flight Plan (PFL) will replace FD Block messages
- Will transitioning to CSS-FD allow you to gain new efficiencies and enhanced awareness in your operations?
 - streamlining data sources
 - reduction in data processing effort and software maintenance
 - more accurate operational view of individual flights
 - Flight Data consistent with FAA's view of NAS users
- How do CSS-FD's planned capabilities compare to currently available services?



CSS-FD Resources

- **Contract Office –**
 - Maria Ashby - maria.j.ashby@faa.gov
- **SWIM Program Office –**
 - Cassandra Leid - cassandra.leid@faa.gov
 - Kristin Cropf - kristin.m.cropf@faa.gov
- **Project Lead –**
 - Lucas Curns - lucas.a.curns@faa.gov
- **Draft SIR Link –**
 - <https://sam.gov/opp/3ad8b39362d0446a87bda6d16c273aad/view>
- **CSS-FD Website -**
 - https://www.faa.gov/air_traffic/technology/swim/common-support-services-flight-data-css-fd
- **Community Forums –**
 - <https://community.swim.faa.gov/categories/css-fd>



Final Announcements

SWIFT ***#22 Workshop***

- **Date** – February 5, 2025
- **Location** – TBD



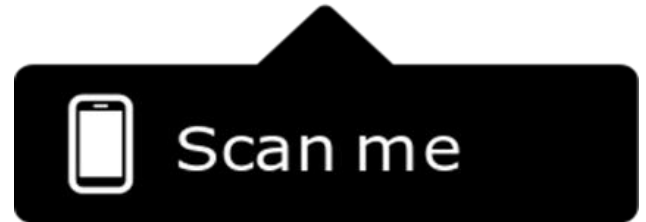
Let's Connect

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

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Xavier Pratt, SWIM Outreach & Communications Lead

- Email: Xavier.Pratt@LSTechLLC.com



BACK UP



CSS-FD Phase Capability Roadmap

