SWIM Industry Collaboration Workshop

Federal Aviation Administration

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

SWIM Stakeholders

FAA SWIM Program

November 9, 2017

SWIFT Kickoff & Working Session Agenda

- **Session 1: Introductions, Engaging as a Community**
  - Introductions and SWIM Program
  - SWIFT Charter, Governance, and Operations
- **Session 2: Interactive Working Session**
  - Deep Dive on current SWIM initiatives
    - SWIM Operational Context Project: Airport Surface Movements
- **Break**
- **Session 3: Collaboration Session on SWIM Services**
  - SWIM Engagement using Services
  - SWIM Operations Status Dashboard (OSD)
  - Next Steps and Actions
- **Close-out/Wrap-up Session**
  - Upcoming SWIFT Tasking

Session 1:

Introductions & SWIFT

Introduction Exercise

<< Virtual Easel >>

- **Purpose:**
  - Perspective: Gain understanding of who is in the room, your role and experience level
- **Instructions:**
  - **(1) Name**
  - **(2) Company**
  - **(3) Role**
  - **(4) Familiarity with SWIM**
    - **Expert → Got it!**
    - **Heard of it → I get it!**
    - **New → What is it?**

ROLES

- **Operations**
- **IT/Engineering**
- **Ops Research**
- **Policy**
- **Other**

Example

- ***David Almeida***
- ***LS Technologies***
- ***Ops Research***
- ***Got it!***

SWIM

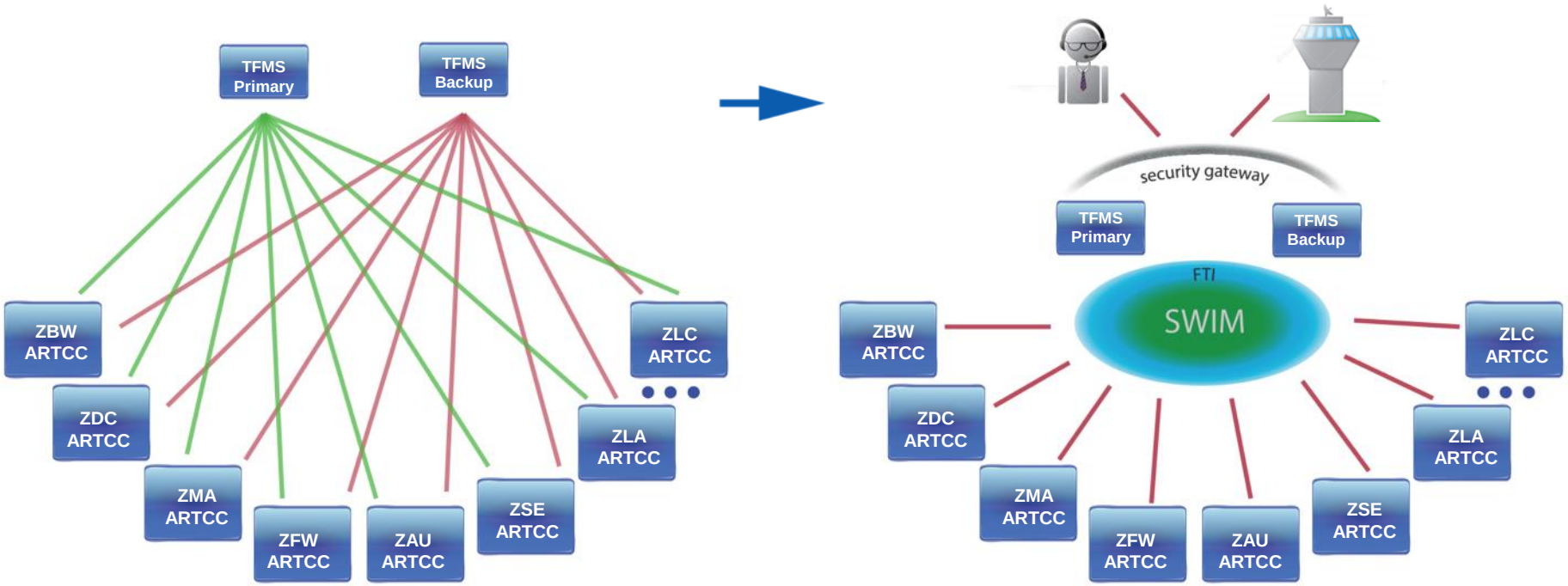
Information Access to Transform the Aviation Community.

- Replaces unique interfaces with **modern standards based data exchange**
- **Leverages a single interface** to receive multiple data products
- **Provides SWIM users access to information** without directly connecting to another system
- **Provides enterprise security** for incoming and outgoing data
- **Establishes Enterprise Help Desk** for SWIM operational consumer calls

http://www.faa.gov/nextgen/swim

SWIM Benefits

- Provides **access to information**
- Eliminates **point-to-point connections**
- Provides **enterprise security services**
- Provides **enterprise service monitoring**



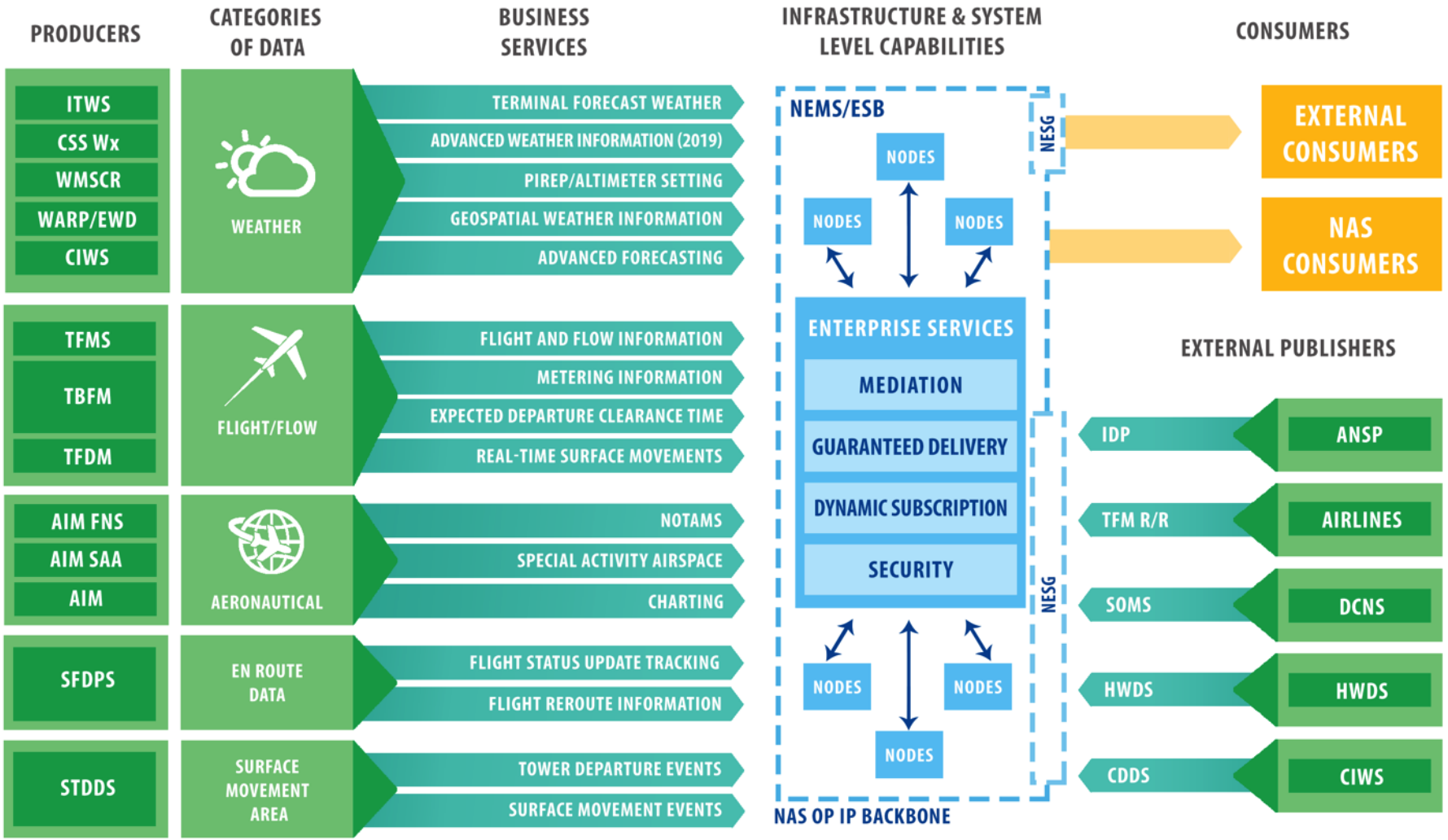
Before SWIM:

Point-to-point connections

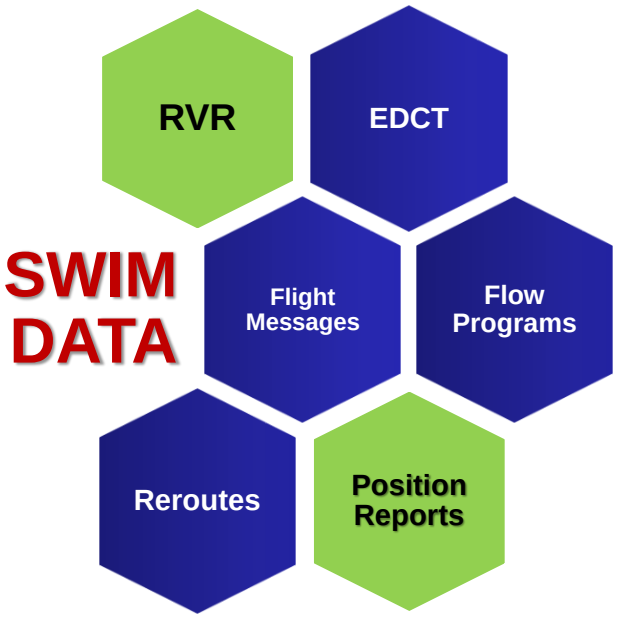
With SWIM:

Data Exchange
(Published once, consumed by many)

SWIM Business Service

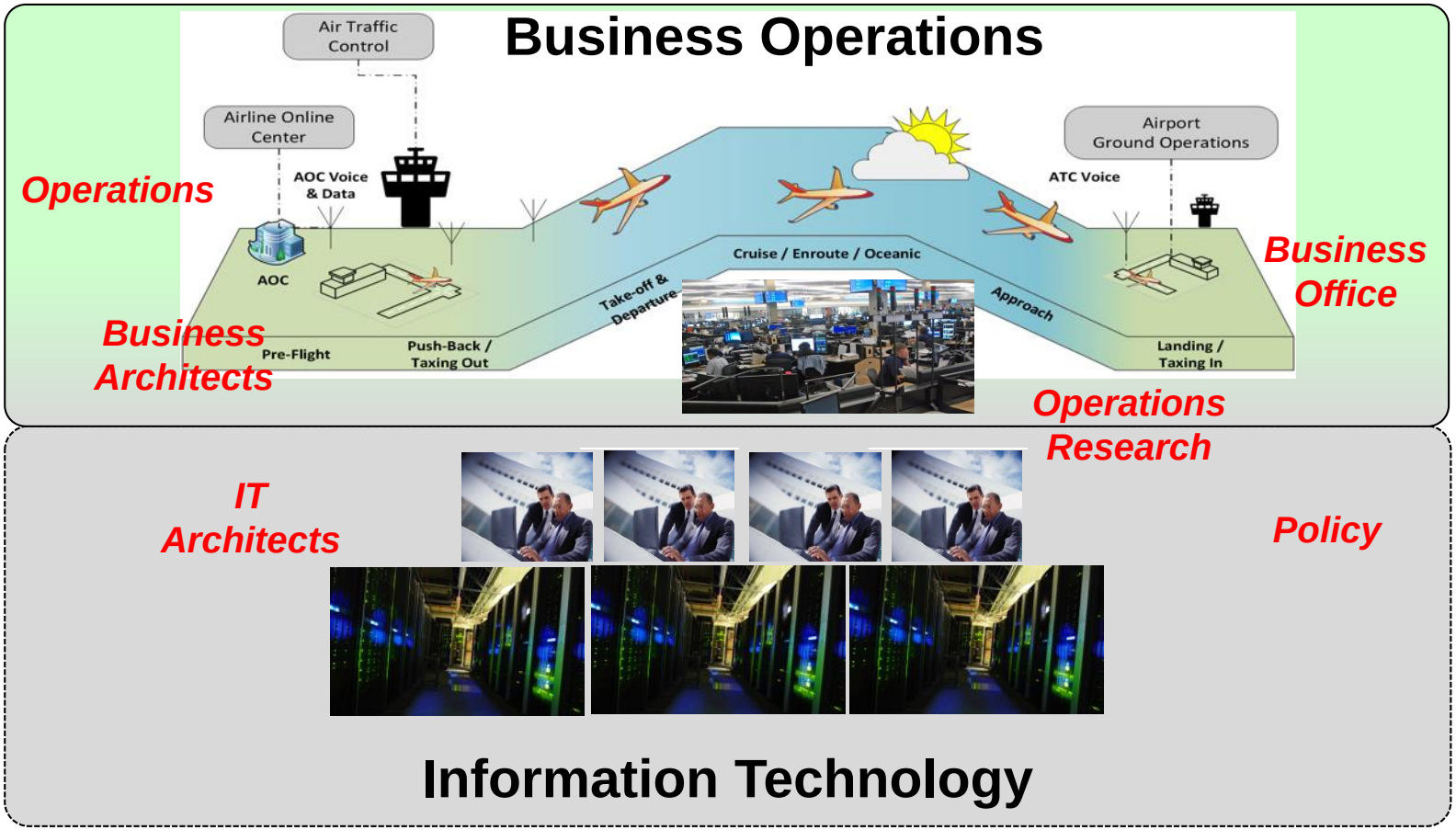


SWIM Data in Action



- Track and monitor aircraft
- Create better models for managing traffic flow
- Systematic updates to ETDs and ETAs
- Allow for replay functionality to evaluate/improve efficiency
- Better decision making for diverting flights
- Send surface elements to FAA to promote CDM

Technology: Enabling Operational Improvements



"State of the Industry" Exercise

Metric: Delta
- Service Outages

Initiative: Airline
- NE Corridor Flow
- Integrating Ops (acquisition)

- **Purpose**:
  - This allows us to collect information on key metrics and initiatives for each of the various members
- **Instructions:**
  - Identify key metrics and for initiatives where information is a critical factor
    - **(1) Operations → Green**
    - **(2) IT/Engineering → Yellow**
    - **(3) Ops Research → Orange**
    - **(4) Policy → Purple**
    - **(5) Other → Blue**
  - Attribution: able to identify by type ("airline," "supplier," or "researcher," etc.)
- **Desired Outcomes**:
  - Data pointing to key information elements of strategic interest to the group
  - These will be incorporated as real-life key metrics into use cases

The Evolution of the SWIFT

SWIM integrated into gateway
RTCA Task Force 5 Airport Surface Data

SWIM became a central point to access multiple categories of aviation data

Initiated outreach to internal and external stakeholders

Building on NextGen Concept, started putting data in operational context

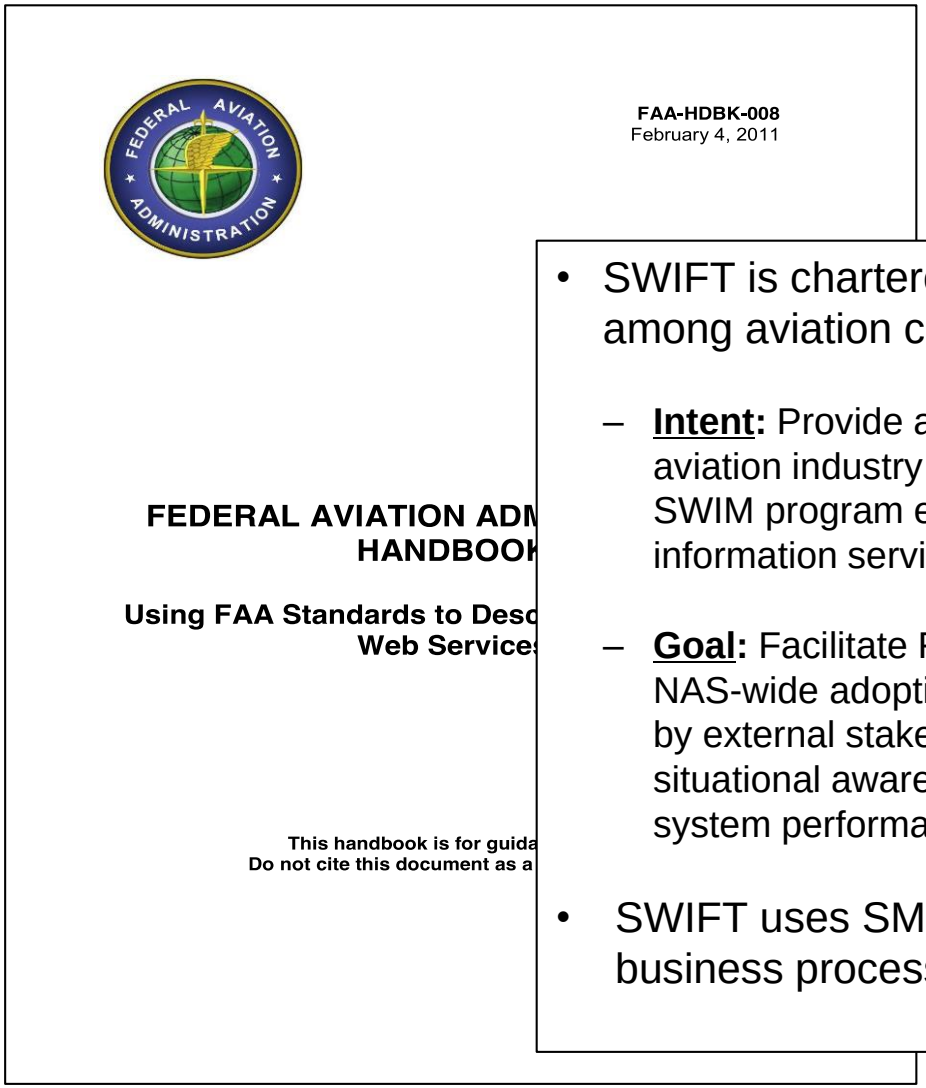
SWIFT

Collaborative team to enable operational improvements

Objectives for Today's Workshop

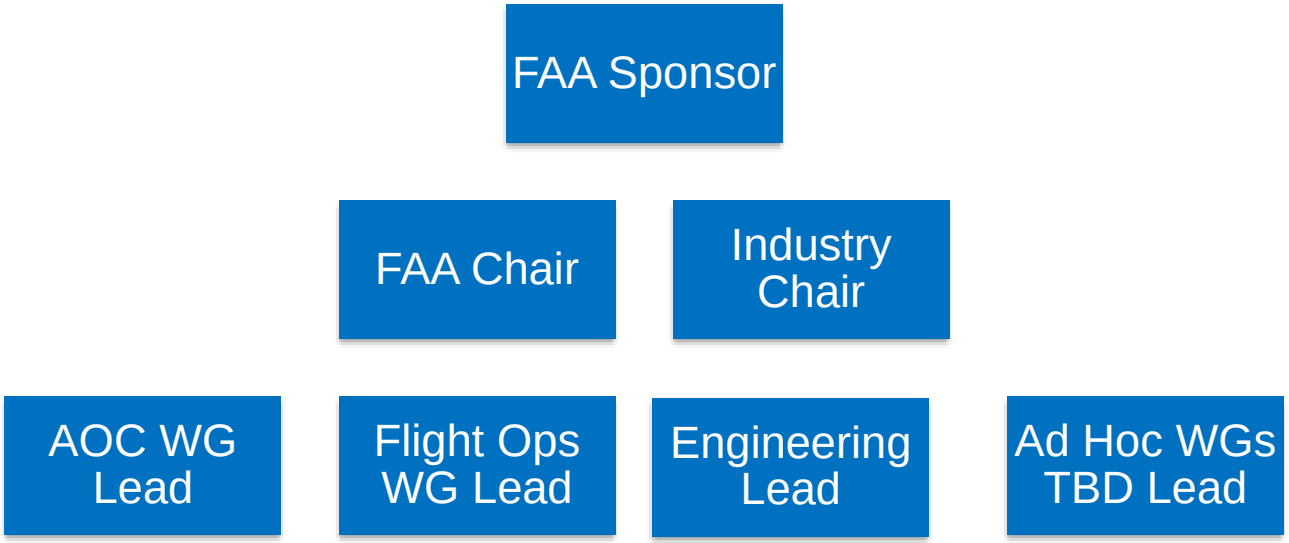
- **Introducing the SWIM Industry-FAA Team – SWIFT**
- **FAA future concept for SWIM collaboration**
- **"Listening Session"**
  - Want to know and understand what is important to each of you
  - Seeking individual input from NAS stakeholders and industry members
- **Provide information to assist private sector planning**
  - For your planning, FAA wants to provide a sense of what to expect
  - Seeking to empower you with information that can guide your decisions, investments, and strategies
- **Request additional input from individual organizations willing and interested in providing feedback**

SWIM Industry-FAA Charter



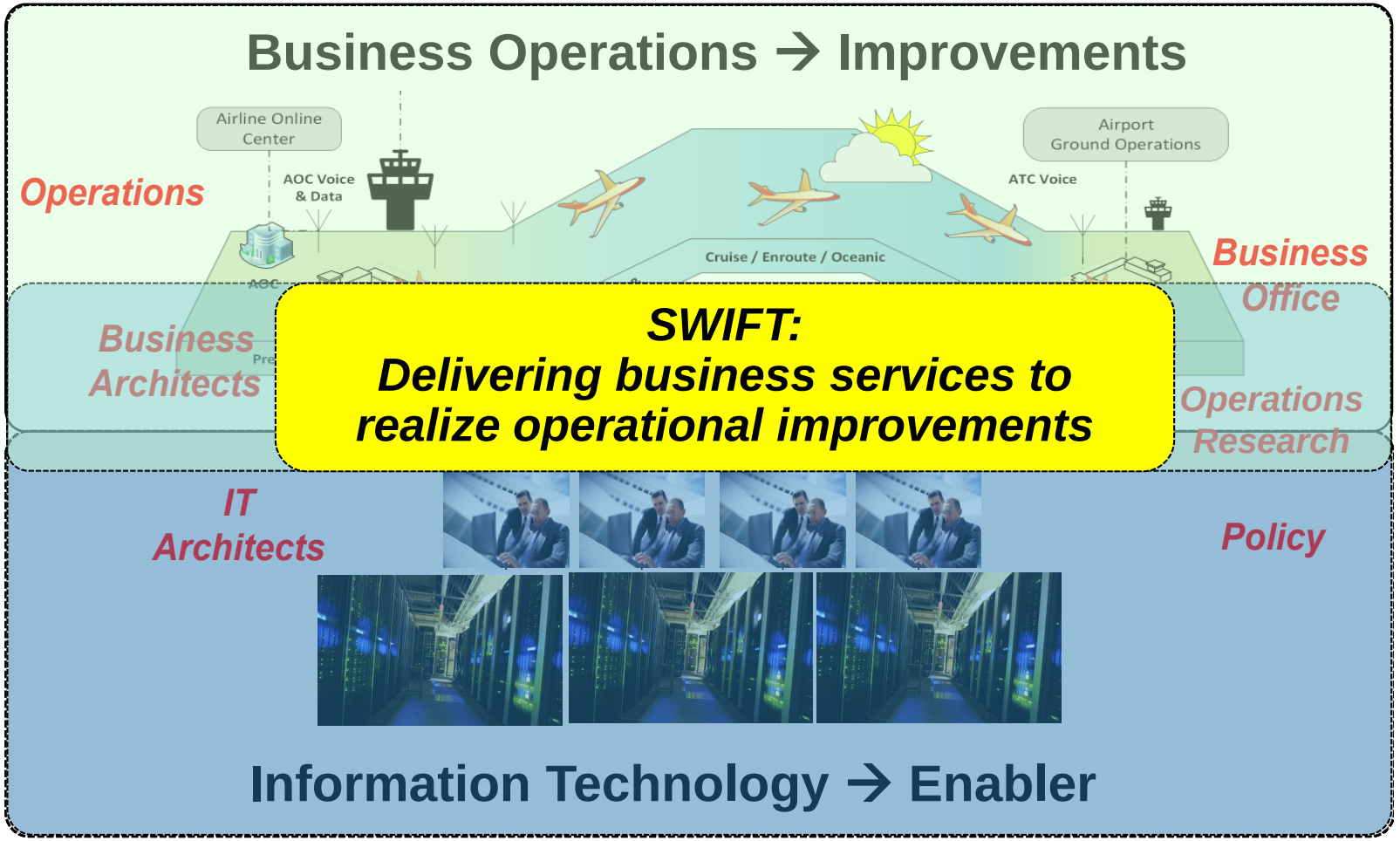
- SWIFT is chartered to improve information exchange among aviation community stakeholders using SWIM
  - **Intent:** Provide a collaborative environment between aviation industry subject matter experts (SMEs) and FAA SWIM program experts to identify how to best employ SWIM information services.
  - **Goal:** Facilitate FAA and industry collaboration to accelerate NAS-wide adoption of SWIM data and information services by external stakeholder operations leading to enhanced situational awareness, improved decision making, greater system performance, and improved system predictability.
- SWIFT uses SMEs in NAS operations, aviation business process, and information technology

SWIFT Leadership Model



- **Tasking:**
  - Team members, co-chairs to identify, define, and prioritize industry needs/concerns
  - FAA Sponsor and co-chairs to review, finalize, and approve SWIFT tasking
- **Place and Time of Meetings** Meetings: Bi-monthly
  - Ad-hoc meetings (by telcon), as needed to support objectives
  - More Information: SWIFT Collaboration Site

Technology: Enabling Operational Improvements



Session 2:

The Future SWIM Concept for Stakeholder Engagement

SWIM = EMPOWERMENT

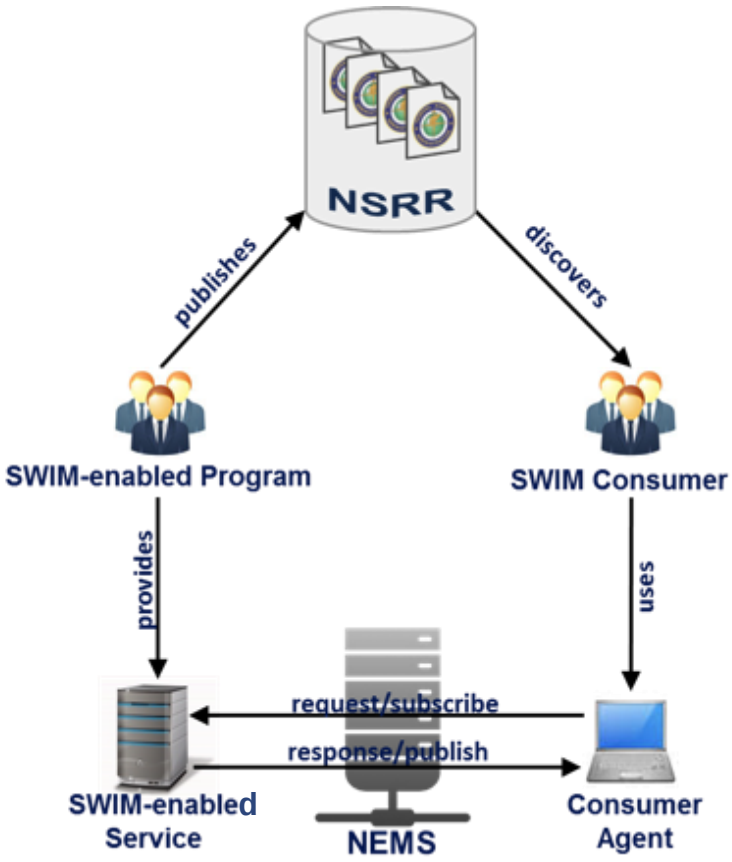
SWIM offers information that aviation stakeholders need to improve their operational decision-making…

Technology is simply the enabler

NAS Services Registry Repository (NSRR)

- SWIM Governance is a framework for establishing interoperability among SWIM users through consistent application of policies, guidelines, standards, tools and organizational activities

- Key capabilities for Service Discovery:
  - **Redesigned Site:** Find new capabilities, get on SWIM faster, configure service notifications
  - **Information Finder:** Based on the type of information user wishes to obtain
  - **Find Services:** Locate services of interest
  - **Find Documents:** Retrieve one or more documents associated with a service
  - **Advanced Search:** Allows quick access to services by experienced users



Current Documentation Targeted to Technologists

NAS-JMSDD-4307-003 Rev A
Janury 19, 2017

U.S. Department of Transportation
Federal Aviation Administration

JAVA Messaging Service Description Document

SWIM Terminal Data Distribution System (STDDS)

Surface Movement Event Service (SMES)

Service Interface

6.1 Bindings

6.1.1 ActiveMQ Binding

All STDDS SMES messages are bound to the NEMS JMS interface through ActiveMQ.

6.1.1.1 Data format

All STDDS SMES data is published to NEMS in XML format.

6.1.1.2 Message Protocol

The message protocol for the STDDS SMES is JMS.

6.1.1.3 Transport Protocol

The transport protocol is Transmission Control Protocol (TCP).

6.2 End Points

The TCP/IP addresses are not included in this document for security reasons. Please refer to NEMS On-Ramping forms and section 4.1.1 Point of Contact for more details.

Service Profile

Service Profile	
Name	STDDS Surface Movement Event Service
Description	The Surface Movement Event Service publishes derived surface movement events for all aircraft monitored at towers associated with a STDDS TRACON. The service also publishes track positions for all aircraft and vehicles collected from towers associated with a STDDS TRACON. Track positions originate from ASDE-X/ASSC System Track Reports (CAT11), Multilaterated (MLAT) Plot Reports (CAT10), or Automatic Dependent Surveillance-Broadcast (ADS-B) Plot Reports (CAT10). In addition, the service publishes safety logic alert reports and safety logic hold bar messages.
Namespace	urn:us:gov:dot:faa:atm:terminal:entities:v3-0:smes
Version	3.0
Service category	FAA-STD-066 category 1.3.1.2.1, Air Traffic Command and Control Information Exchange Service
Lifecycle stage	Production
Service criticality	Essential

Messages Published

Table 4 : ASDEXMessage Header

Data Element	Description	Cardinality	Type
msgType	Defines the type of message	1	string
version	Version number of STDDS schema	1	string
timestamp	UTC date and time of message generation	1	dateTime
tracon	FAA location identifier (three alphanumeric characters) of the producer STDDS installation	1	string
airport	ICAO code of the source airport	1	string
sendTo	Authorization flag; permissible value: all, authorized, or filtered.	1	string

The following table lists the data elements in the payload of an ASDEXMessage.

Deleted elements will be tagged with an r="1" attribute and the last known value will be included in cases where a value is needed for XML validity.

Table 5 : ASDEXMessage Data Elements

Data Element	Description	Cardinality	Type
airport	ICAO code of the source airport	1	string
positionReport	List of CAT11 position reports	0…50	positionReportType
adsbReport	List of CAT10 ADS-B reports	0…50	adsbReportType
mlatReport	List of CAT10 MLAT reports	0…50	mlatReportType

Implementation

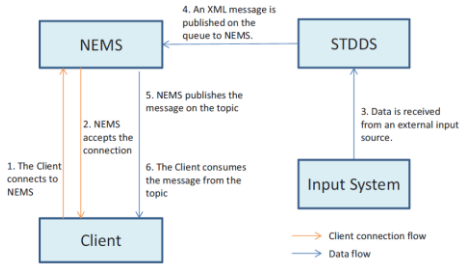
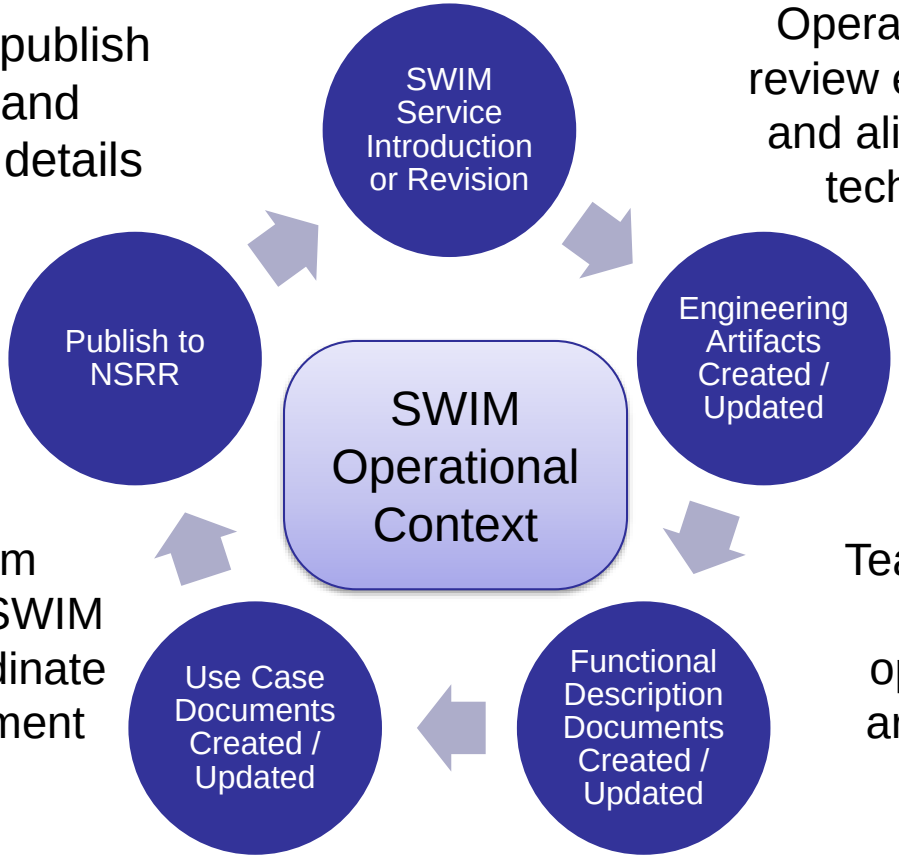


Figure 1 - Subscribe Flow

On-going “Data Dictionary” Process

SWIM Producers publish a new service and provide technical details

Operations and IT SMEs review engineering artifacts and align to business and technical processes



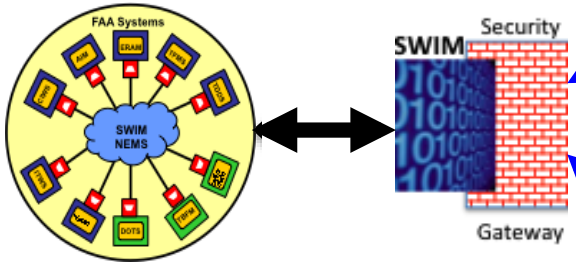
FAA SWIM Team coordination with SWIM Producers to coordinate lifecycle management

Team reviews service and develops operational context artifacts to illustrate service utility in operations

Documentation reviewed by SWIFT Team and released for distribution

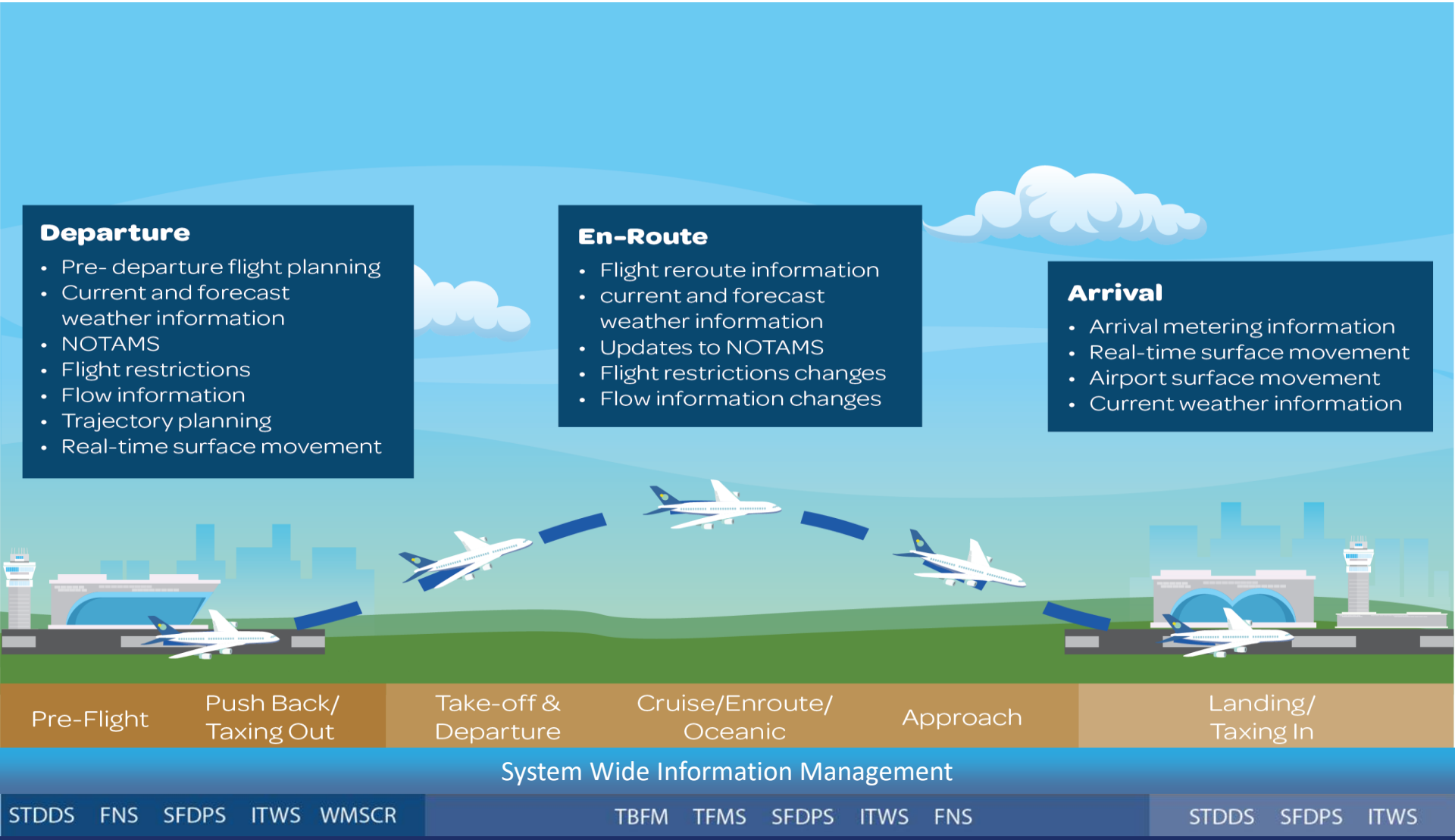
SWIM Information Exchange Model

- **SWIM is integrated with the Enterprise Security Gateway**
- **Aviation operation partners can access and integrate data services into their operation**



- **Industry solution providers can access data services to offer:**
  - New product features and capabilities
  - Enhanced information services

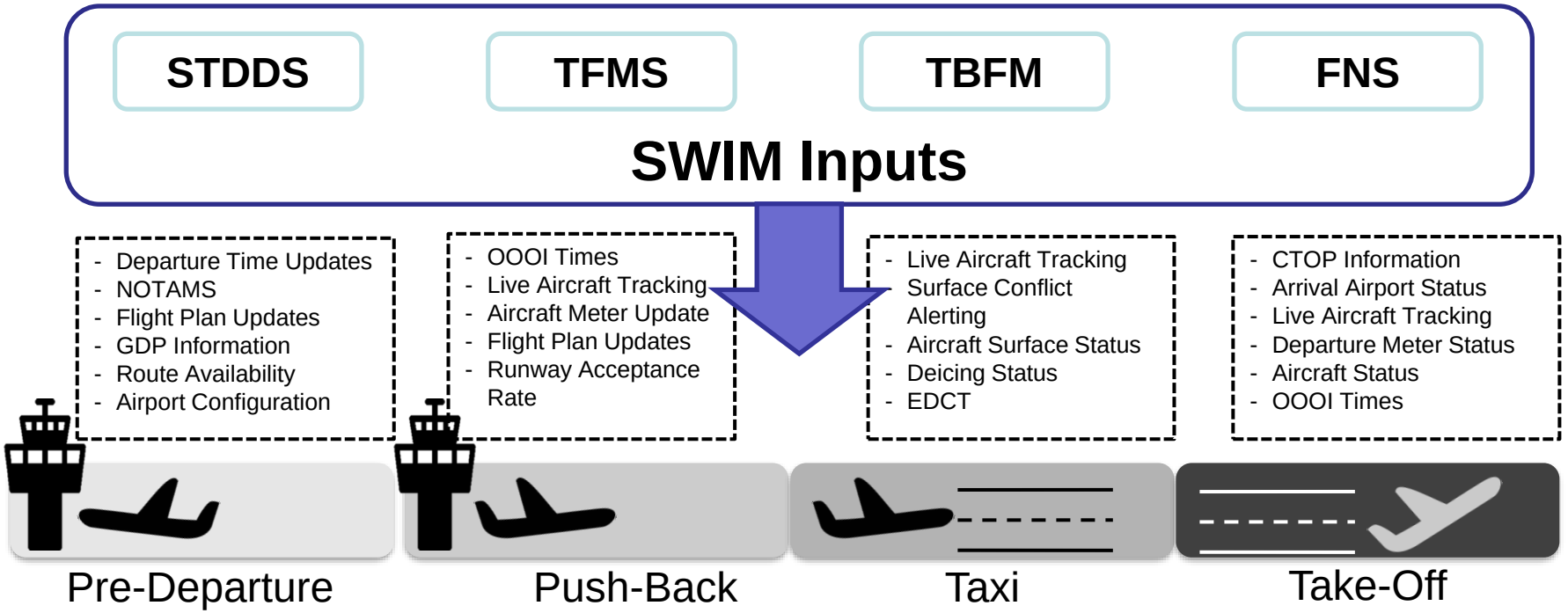
SWIM Services By Phase of Flight



Current Use of SWIM Data by Airlines

Producer	Business Service	Use Case
FNS	NDS	NOTAMS for North America
SFDPS	Flight Data Publication	Flight status update tracking
SFDPS	Flight Data Publication	Ingest of flight reroute information
STDDS	SMES	Monitor the efficiency of airline scheduling
STDDS	SMES	Record and replay operations to determine reason for delays (both movement and non-movement areas)
STDDS	APDS	Used by NOC supervisors to determine when a flight must be diverted to an alternate station
STDDS	SMES	Display all surface traffic at major hub airport, provide view in areas where ground controllers do not have direct line of sight
TBFM	MIS	Reception of Expected Departure Clearance Time (EDCT) for fleet aircraft
TFMS	NTML	Ingest of National Traffic Management Log data
TFMS	ASDI	Track flight times (Arrivals / Departures), flight reroutes, triggering of turbulence plots messages for any turbulence in the path of the flight that is not included in the flight plan via ACARS
TFMS	ASDI	Display flight position superimposed on weather graphics
TFMS	EDCT	Inform the NOC which flights are involved in ATV Delay Programs, update estimate departure and arrival times for affected flights
TFMS	EDCT	Send flight crews wheels up times
TFMS	EDCT	Track aircraft delays
TFMS	R13	Ingest of NAS restrictions pertinent to fleet

Airport Departure / Delay Management

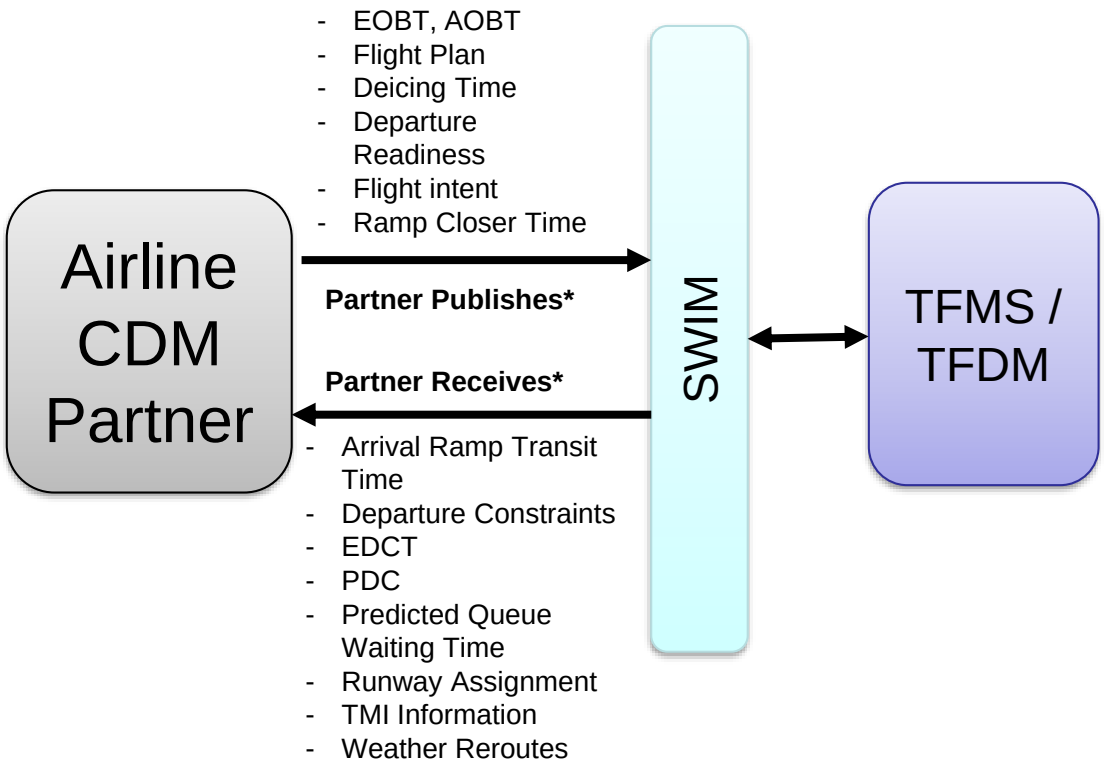


Benefits

- Improvement in flight planning predictability
- More efficient use of gate and ramp resources
- Enhanced accuracy of EDCT prediction
- Enhanced traffic flow modeling and management
- Increased flight time accuracy
- Notification of flights that are involved in ATC Delay Programs
- Provides NOC supervisors with enhanced information for making decision on flight diversion

Benefits for SWIM CDM Publishers

Airlines participating in CDM can influence the TMIs managed by TFMS by publishing data into SWIM



*Not a comprehensive list

Benefits

- More accurate TMI start and end times
- Improved Go/No-Go decisions for ground stops
- Reduction in number of TMI revisions
- Reduction in Time-Out delays and cancellations
- Improved EDCT compliance
- More Accurate MAP values
- Reduction in departure MITs
- Improved taxi delays
- Better route selection

BREAK

SURFACE MANAGEMENT EVENT SERVICE (SMES)

EXAMPLE USE CASE 1: DEPARTURE DELAY

SMES Data Description (JMSDD)

Table 3 : List of Messages

Name	Definition	MsgType
ASDEXMessage	Sent upon the receipt of a System Track message, a Status message, an ADS-B Plot Report, or a MLAT Plot Report from ASDE-X or ASSC. The MsgType indicates the type of message as follows: AT – PositionReport AY – SystemStatus AD - adsbReport ML - mlatReport	AT, AY, AD, or ML
SafetyLogicAlertReport	Sent upon the receipt of a Safety Logic Alert Report from ASDE-X or ASSC.	SA
SafetyLogicHoldBarMessage	Sent periodically (nominally every 60 seconds) and upon change of any published fields received from ASDE-X or ASSC.	SH
SurfaceMovementEventMessage	Provides surface movement events derived from ASDE-X or ASSC position data.	SE

Documentation Addressing Ops Community

Research
- Gather engineering artifacts from FAA NSRR
- Obtain contextual / background information for FAA SWIM data
- Generate mapping of data elements

Writing
- Functional Description Document (Systems Engineering / Operations Specialists)
- Use Case Document written by SMEs (input from SWIFT)

Review
- Operations SME and Systems Engineering team cross review
- Document is circulated with SWIFT Team for comment

Publication
- Publish via NSRR in documents or reference section
- Advertise existence during outreach activities

Decomposing Surface Movement Event Service

Airport Surface Position Report

Flight ID	Flight Info	Position	Movement	Status
• AC Address • AC ID • AC Type • Mode 3/A Code	• Target Type • Wake Cat • Dep / Arr Runway	• Cart Coordinate • Latitude • Longitude • Altitude • Flight Level	• Speed • Heading • Velocity • Acceleration	• High Source • Ground Status • Data Quality • Address Qualifier

SMES Functional Description Document

- **Intended to provide readers an understanding of:**
  - What data is available
  - The context of the data available
  - The structure of the data available

- **The document is broken down into four sections:**
  1. Introduction
     - Defines the scope of the document
  2. Overview of Service Environment
     - Describes the environment in which the service works
     - Defines how the service is used by the FAA
  3. Overview of Service Functionality
     - Describes general functional of service
     - Lists both inputs into service and outputs of service into SWIM
     - Provides high level breakdown of data model and organization
  4. Breakdown of Service Data
     - Lists all available data elements from the service
     - Defines locations of data element in overall data model
     - Provides description of each data element

SMES Use Case Document

- **Provides:**
  - Overview of how the SMES Information Service can be used to improve operations of major stakeholders (airlines, airports, controllers, etc.)
  - Detailed scenarios describing Use Cases in which the SMES data can be used by all identified stakeholders to enhance operations

- **The document is broken down into six sections:**
  1. **Overview of the Use Case**
     - Provides an overview of the operations that can benefit from the SMES data
     - Breakdown of the actors involved in the Use Case and their responsibilities
  2. **The Current State**
     - Highlights how the SMES data is currently being used in operations
  3. **Problem Statement**
     - Identifies inefficiencies of current operations as they relate to the use (or lack thereof) of SMES data
  4. **Perspectives**
     - Breakdown of the current major and minor actors involved in the Use Case and their responsibilities for each phases of the Use Case
     - Provides insight into the operational constraints of each actor and how they measure the success of their operations
  5. **Future State / Metrics**
     - Provides a detailed Future State Use Case that provides an alternate scenario in which all actors are utilizing the SMES Data
     - Breaks down the Future State Use Case into functional steps, highlighting the actions taken at each step, the actors involved in each step, and any new functionality required to support the Future State Use Case
     - Identifies Key Performance Indicators (KPIs), which can be used to measure the success of the Future State Use Case
  6. **Benefits / Conclusion**
     - Provides an overview of the intended benefits of the Future State Use Case
     - Identifies specific operational improvements, which can be obtained through the holistic use of SMES data

FAA SWIM Services Use Case Intro

- SMES available in SWIM provides aircraft position reports for airport surfaces
  - Provides live, one second updates of aircraft on airport surface at major airports
  - Surveillance coverage of both movement and non-movement areas
  - Position data taken from multiple sources and conflated into a single stream
- This Use Case highlights how SMES can improve management of aircraft from push-back to departure
  - Provides all parties in airport surface operations a common visual of aircraft position
  - Increased transparency between airline preferences and ATC decisions
  - Enhanced prediction of impacts of weather constraints and other delay events
- Currently, the organizations involved in the process of planning, managing, and deconflicting airport departures all consult different sources of information
  - Varying level of information used by actors causing lack of common picture
  - Multiple tools used throughout the industry that are not synchronized
  - Misalignment of metrics and priorities used to make operational decisions by each party

Departure Delay - Current

- Currently, Airport Ops, Airspace Users, and FAA each have a different operational "picture"
- When operating with different operational pictures, less efficient processes result
- Every aircraft movement creates a new input, or impact, to the next entity in operations

Aircraft push-back becomes an input to airport operations (e.g., deicing).

Aircraft departing non-movement areas are an input to surface management for taxi to runway

Each taxiing departure is an input to departure management

Airport

FAA

Airline

Airport Surface Data Source

None

Airport Surface Sensor Data (ASDE-X)

3rd party dataset

Departure Interruption – Current State

1 Pre-Departure Planning

AOC plans to depart gate and runway at specific time

2 Departure Interruption

Aircraft delay due to weather (e.g., icing conditions require deicing)

3 Aircraft Push-back

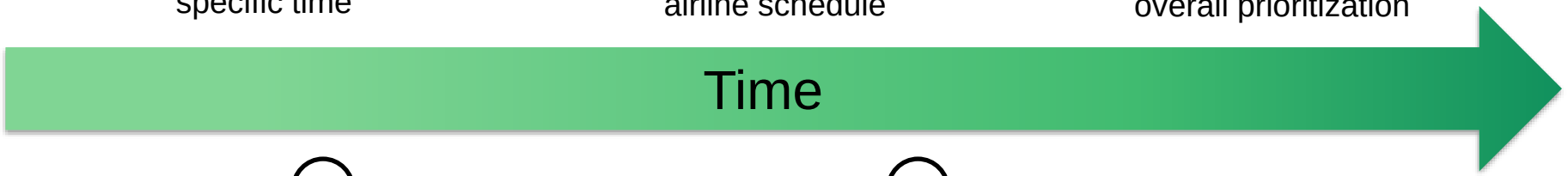
Aircraft pushed back on time according to airline schedule

4 Queue for Runway

Aircraft position in departure queue based on deicing exit, not departure priority

5 Depart Airport

Aircraft departure now out of order and lacks overall prioritization



Due to weather delay and lack of scheduling of deicing, airport movement area experiences gridlock and disrupts airline schedules and hinders ATC surface management

Brainstorming: User Roles and Responsibilities

- **Airport Management**
  - Objective
  - Performance is measured by:
- **Deicing Provider**
  - Objective
  - Performance is measured by:
- **Airspace User**
  - Objective
  - Performance is measured by:
- **Air Traffic Control**
  - Objective
  - Performance is measured by:

User Roles and Responsibilities

- **Airport Management**
  - Provide safest environment for airport operations while having least impact on operations
  - Performance is measured by:
    - Runway availability, condition, closure rate, and duration
- **Deicing Provider**
  - Have staff and equipment for deicing maximum number of aircraft in least amount of time
  - Performance is measured by:
    - Aircraft deice time and delay
- **Airspace User**
  - Minimize impact of event and maintain operations as close to planned as possible
  - Performance is measured by:
    - Number of Arrivals / Departures per hour
    - Average delays (arrival, departure, gate delay, gate and deicing pad returns)
- **Air Traffic Control**
  - Mitigate impact of event to maintain operations as close to planned as possible
  - Performance is measured by:
    - Arrival / Departure rates, throughput, delays
    - Number of airborne holding, diversions, flight cancellations

Departure Delay - Future

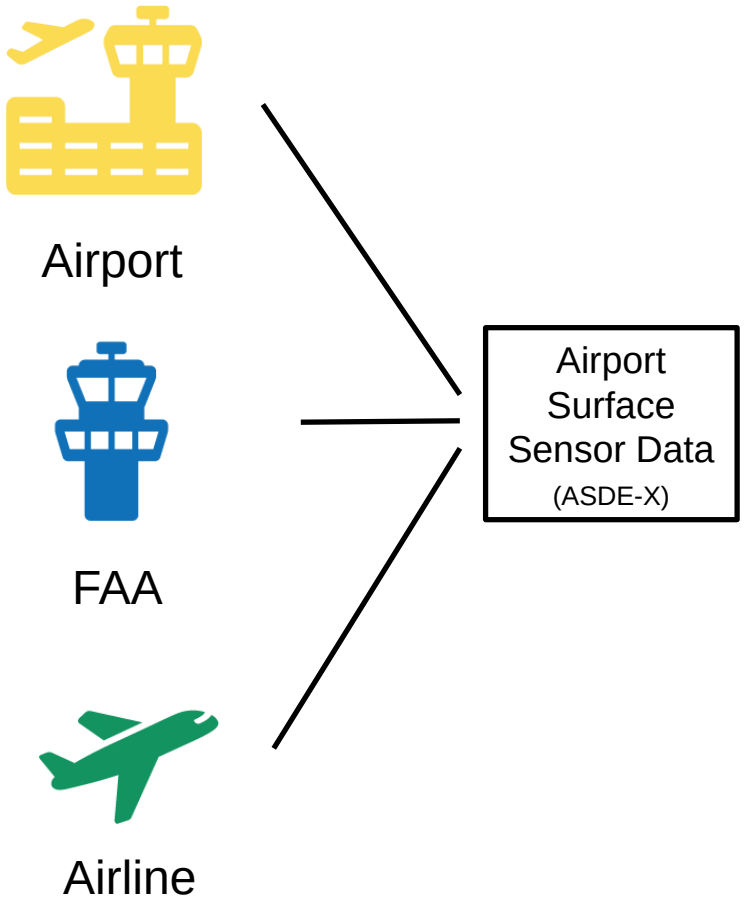
- New Situation:
  - All actors have access to real-time airport surface data
  - Using surface data to more efficiently coordinate efforts between stakeholders

Airline, Airport, and Controllers see congestion on airport surface

Airport receives feedback on highest priority aircraft

Controllers meter aircraft according to Airline request

Airlines receive more accurate prediction of impacts to departure time



Departure Interruption – Future State

1 Pre-Departure Planning

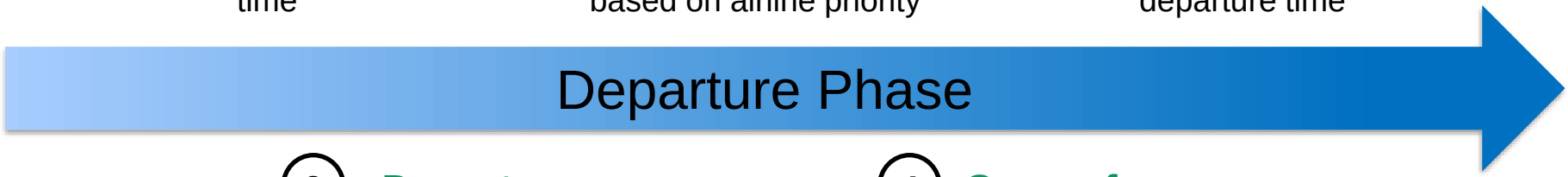
AOC plans to depart gate and runway at specific time

3 Aircraft Push-back

Aircraft pushed back when aircraft is scheduled for deicing based on airline priority

5 Depart Airport

Aircraft departure is now on time per revised departure time



2 Departure Interruption

Aircraft delay due to weather (e.g., icing conditions require deicing)

4 Queue for Runway

Aircraft position in departure queue is now coordinated and position is based on airline priority

Airline is able to work with stakeholders to better manage departure delays and reduces ramp wait time and passenger uncertainty

Surface Data – Benefits / Outcomes

Operations Improvements

- Common operational picture increases coordination with Airport, Airline, FAA
- Reduction in impact of unplanned events
- Optimized use of ramp space and other airport surface

Improved Prediction

- Higher accuracy in estimated gate push-back, deicing, and departure times
- Increased accuracy of constraint impact on departure time
- Improved transparency of entire surface picture

Greater Efficiency

- Reduction in ramp loitering times
- Reduction in crew time / passenger wait time requirement conflicts
- Effective coordination of stakeholder resources

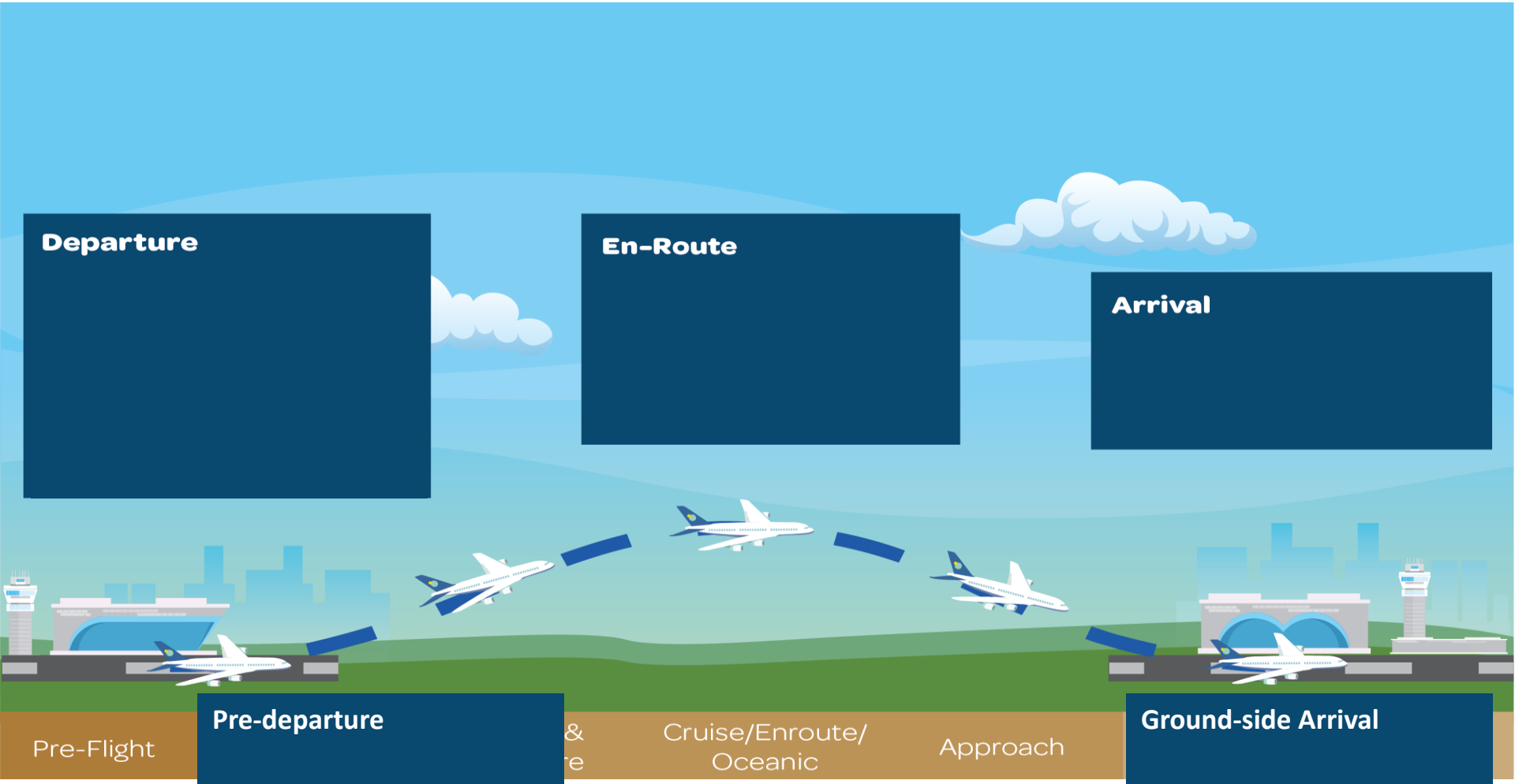
FEEDBACK ???

Actions: Prioritizing Services

- **SWIM Operational Context Project**
  - Team to provide feedback on the current SMES documentation
    - Looking for inputs from each individual member
  - Seeking inputs on the prioritization of the planned documents
    1. Flight, Flow, TFMS Status (TFMS)
    2. Metering status, Gate Name, Arrival Airport Information, etc. (TBFM)
    3. Surface, Airport Data, Terminal Automation, Infrastructure Monitoring (STDDS)
    4. Publishes flight plan, track, other related messages (SFDPS)
    5. NOTAMS (FNS)
    6. Weather products, microbust, TAF, Precip, Airport Lighting (ITWS)

SESSION 3

What problems are you trying to solve?



SWIM Services

Traffic Flow Management Service (TFMS)

- TFMS Flight Information

  Provides Flight Plan data initial and subsequent amendments, departure and arrival time notifications, flight cancellations, boundary crossings, track position reports, NAS Common Situation Model (NCSM), restrictions

- TFMS Flow Information

  Provides Collaborative Trajectory Options Program, Flow Constraint Area / Flow Evaluation Area, Ground Delay Program / Unified Delay Program, Ground Stop, Reroutes, ATCSCC advisories, Airspace Flow Program, Airport Runway Configuration and rates, Airport Deicing status, Restrictions

- TFMS Status

  Provides status of all of the data flows that directly or indirectly contribute to all of the JMS messages received and / or transmitted to SWIM via NEMS.

Federal NOTAM System (FNS)

- Provides digital NOTAM messages in Aeronautical Information Exchange Model (AIXM) format
- Available as either a Web Service or JMS Service

SWIM Services (continued)

Integrated Terminal Weather Service (ITWS)

- Provides variety of weather products: Microburst, TAF, Precip., Airport Lighting, etc.

SWIM Terminal Data Distribution Service (STDDS)

- Surface Movement Event Service (SMES)

  Sends derived surface movement events for all aircraft monitored at select towers

- Airport Data Service (ADPS)

  Publishes runway visibility and aircraft touchdown trends

- Infrastructure System Monitor and Control (ISMC)

  Sends status information for external systems associated with an STDDS site

- Terminal Automation Information (TAIS)

  Publishes operational live data: flight plan, track, SISO, alert, IMC, traffic count, performance monitoring

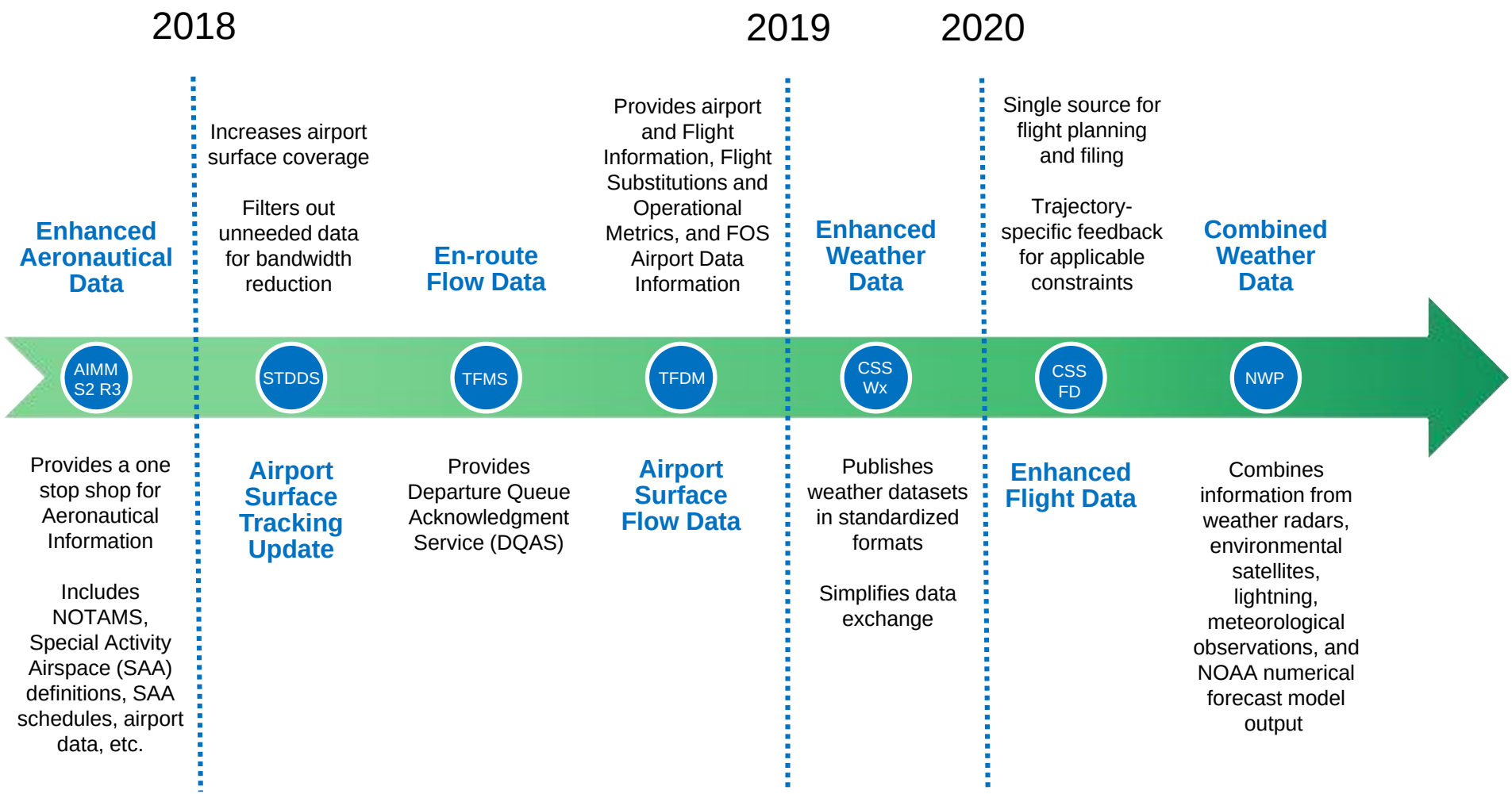
Time Based Flow Management (TBFM)

- Publishes: TBFM metering status, gate name, arrival airport information, airport configuration, arrival configuration, MRE information, arrival airport configuration information, etc.

SWIM Enroute Flight Data Publication Service (SFDPS)

- Publishes flight plan, track, and other flight-related messages

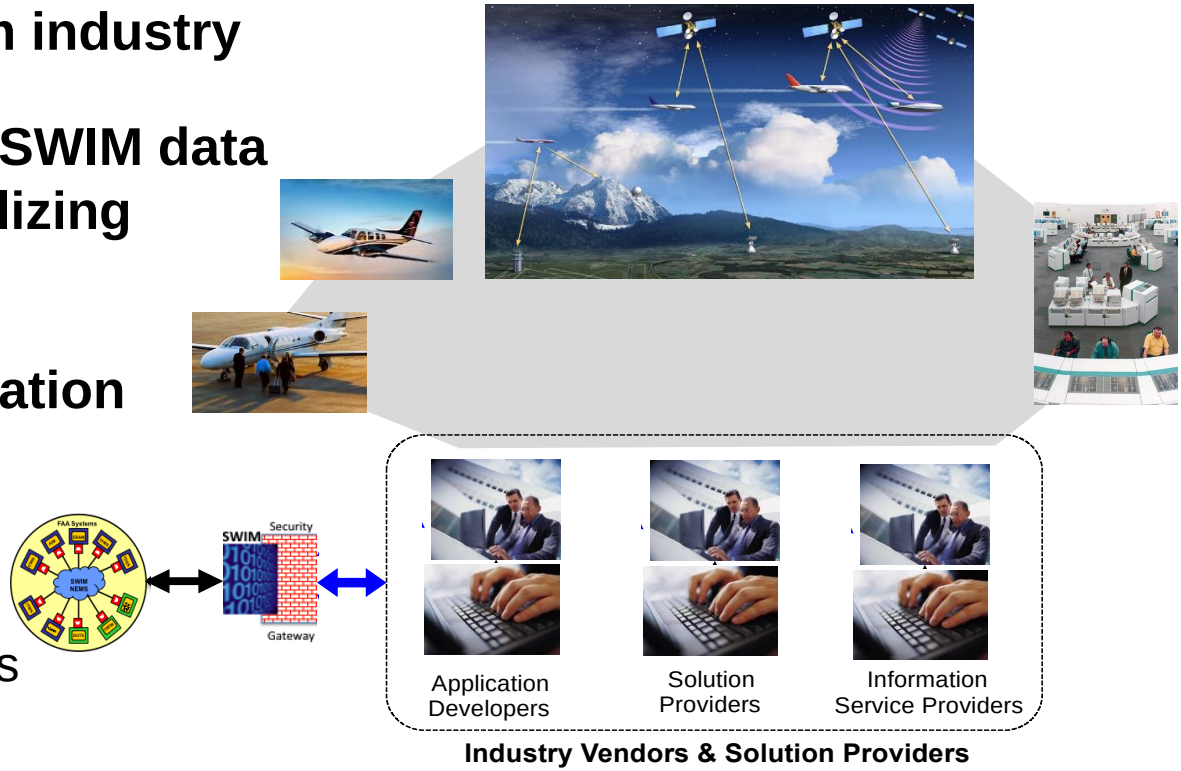
New SWIM Information Services Roadmap



Innovating through Industry Engagement

FAA provides information as business services; industry creates the solutions

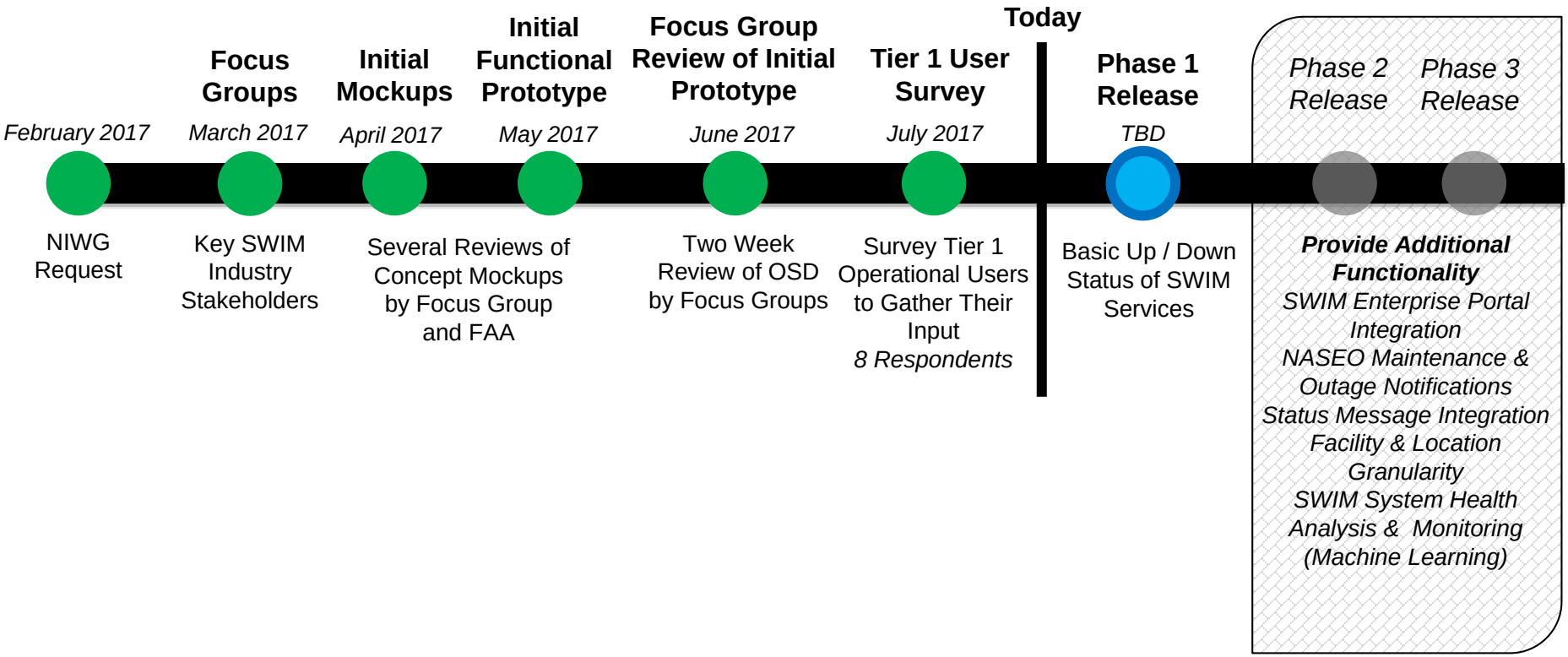
- **Today's aviation challenges will require innovations from industry**
- **Solutions that integrate SWIM data are a cornerstone to realizing NextGen benefits**
- **Dissemination of information services will result in:**
  - Improved Applications
  - Enhanced Solutions
  - New Information Services



* http://www.airtrafficmanagement.net/2012/05/space-race/

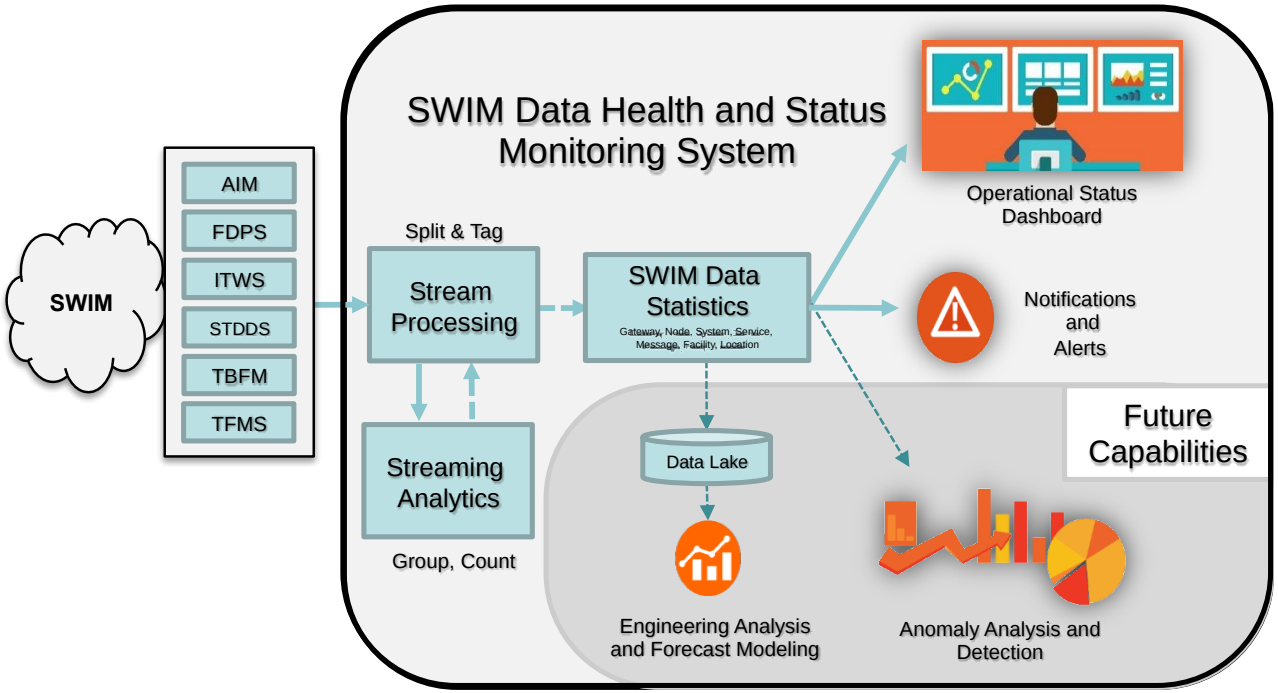
SWIM OPERATIONAL STATUS DASHBOARD (OSD) PROTOTYPE

Notional OSD Rollout



SWIM Operational Status Dashboard (OSD)

Provides External SWIM community with status of data availability at the NESG

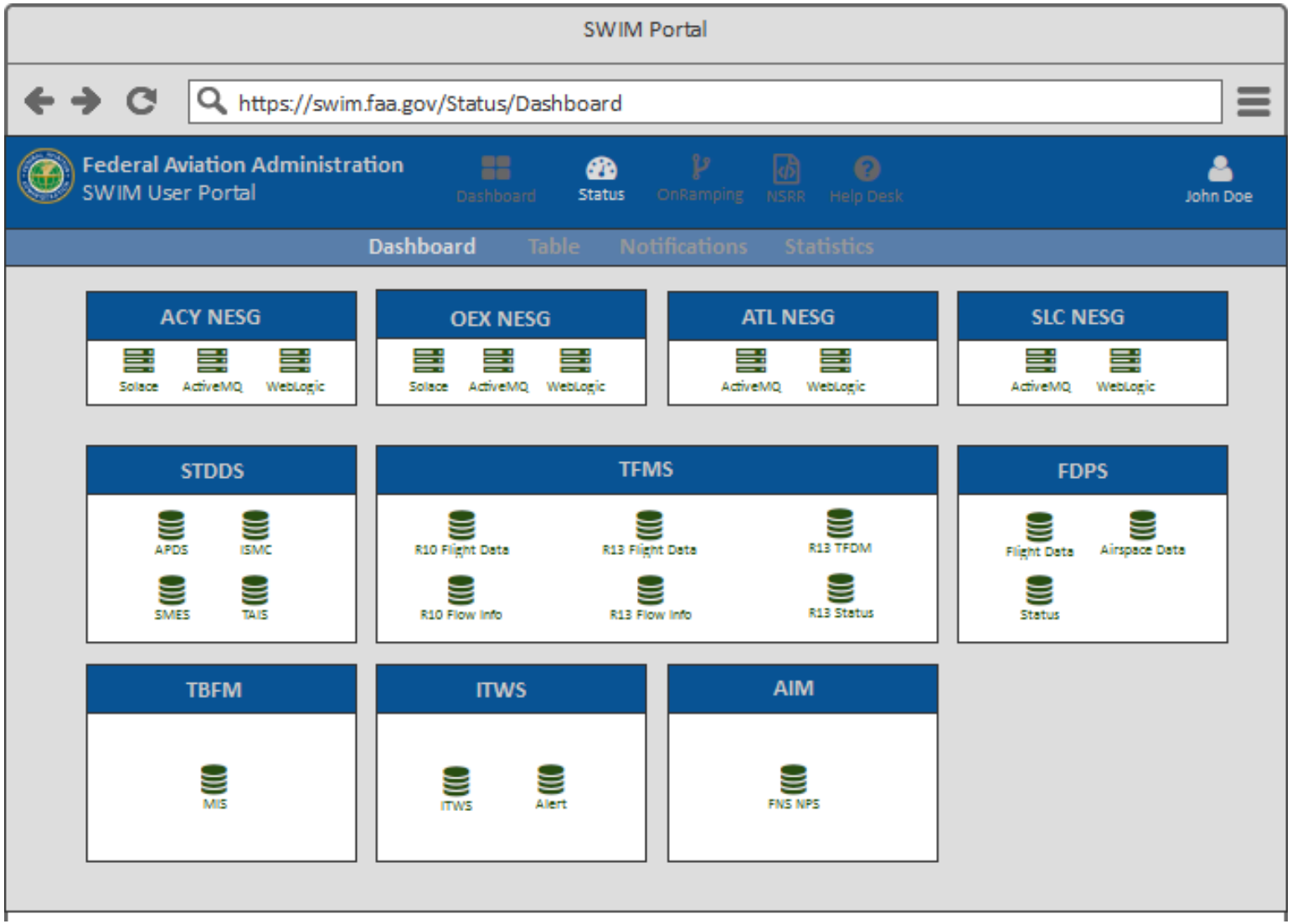


Derived Status
Consume, Sample, and Identify

Message Count Granularity
15 Seconds for each SWIM Service

Facility and Location Granularity
Gateway ---------- *ACY*
Node ---------- *SOLACE*
System ---------- *STDDS*
Service ---------- *SMES*
Message ---------- *AY*
Facility ---------- *A80*
Location ---------- *ATL*

OSD Dashboard



How can you help?

Recommend staff to join the OSD Working Group

Regularly contribute and participate in Working Group meetings

Prototype Demonstration:

- Operational Status Dashboard Protoype Link

"We are impressed with the dashboard, and we are looking forward to seeing a more granular level of status, down to the facility / location, in the next phase."
– **American Airlines**

"Our internal monitoring informed us of an SFDPS outage (for us that would be our Solace connection to OEX). I **quickly** brought up the OSD and it **confirmed** it! In this instance, it is **useful** because it told us not to bother to switch to ACY, as it is also out."
– **Saab Sensis**

Next Steps

Actions and Expectations

- **SWIM Operational Context Project**
  - Team to provide feedback on the current SMES documentation
  - Seeking inputs on the prioritization of the planned documents
    1. Flight, Flow, TFMS Status (TFMS)
    2. Metering status, Gate Name, Arrival Airport Information, etc. (TBFM)
    3. Surface, Airport Data, Terminal Automation, Infrastructure Monitoring (STDDS)
    4. Publishes flight plan, track, other related messages (SFDPS)
    5. NOTAMS (FNS)
    6. Weather products, Microbust, TAF, Precip, Airport Lighting (ITWS)
- **SWIM Operations Status Dashboard**
  - Team to provide feedback on Operational Status Dashboard
  - Identify a Work Group that would provide feedback on prototype
- **Next Meeting: First Week of February 2018**
  - **Additional information forthcoming from SWIFT@FAA.GOV**