

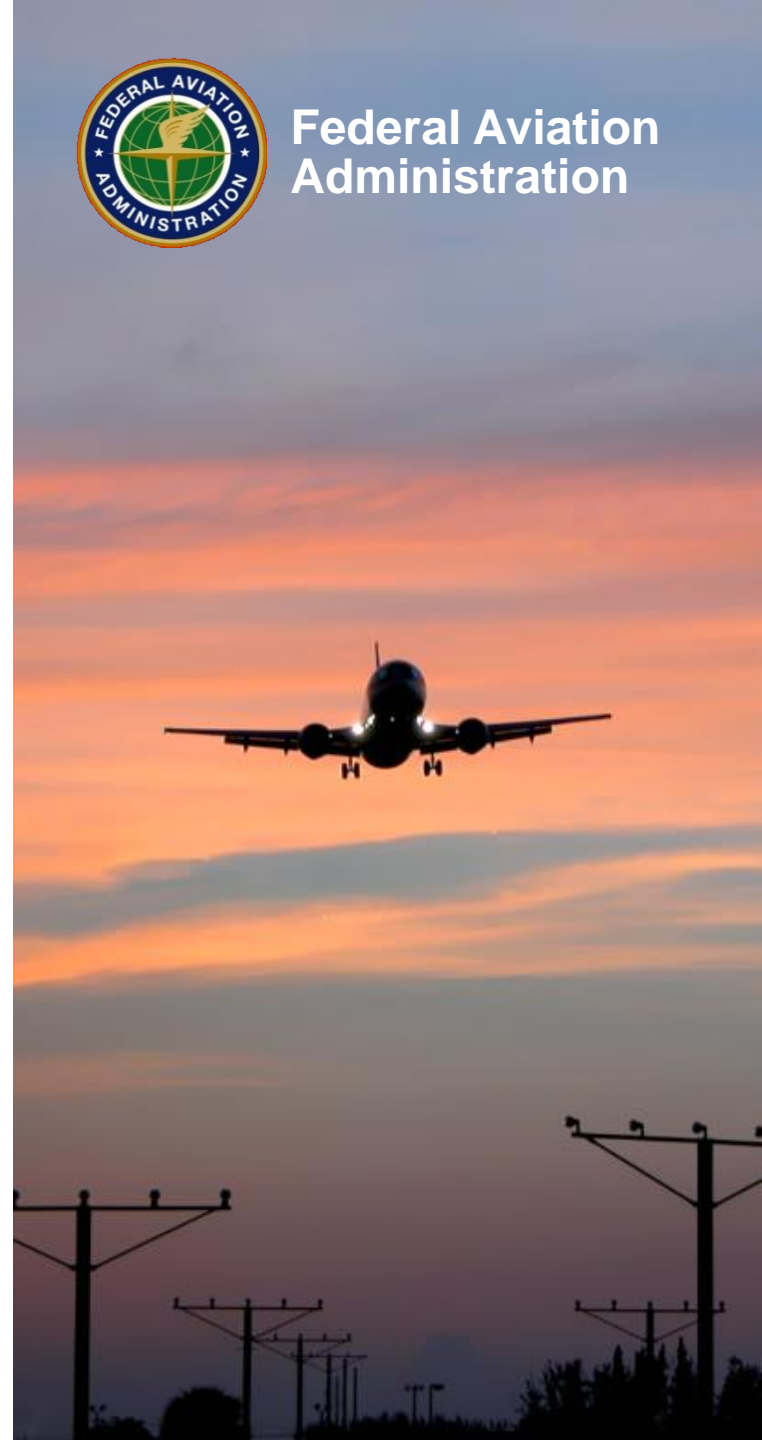
# SWIM Industry Collaboration Workshop #2

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

SWIM Stakeholders  
FAA SWIM Program  
February 8, 2018



Federal Aviation  
Administration



# Agenda

- **Review Current Tasking**
  - Provide OSD Status
  - SMES Use Case/Functional Description Review
  - Results of the prioritization survey
- **Aligning Terminology**
- **Review Use Case Initial Review Framework**
  - NAS Flight Information Service (TFMS)
- **Industry priorities: Initiatives & Metrics**
- **Lunch (1 hour)**
- **Review Additional Use Cases**
  - Time Based Metering Information Service (TBFM)
  - Traffic Flow Information Service (TFMS)
- **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, microburst, TAF, Precip, Airport Lighting (ITWS)
- **SWIM Operations Status Dashboard**
  - Team to provide feedback 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](mailto:SWIFT@FAA.GOV)**

# Update OSD Stakeholder Forum



# OSD Stakeholder Forum Update

- **Purpose**

- Provide a collaborative venue for stakeholder feedback on the OSD capability SWIM is currently working to implement.

- **Goal**

- Ensure the OSD design allows the users to effectively and efficiently utilize the system to meet their needs for situational awareness of the operational SWIM system and the information services provided through it.

- **First meeting held on 1/18/2018 1-3 EST**

- 24 Attendees from 14 different organizations

- Airlines for America
- American Airlines
- Delta
- IATA
- JetBlue
- LSTech
- Noblis
- Passur
- Red Cloud Services
- Rockwell Collins
- Saab Sensis
- SFO (Air),
- Southwest Airlines
- United

- **Agenda**

- Introduction
- OSD Background, Overview, and Planned Features
- Discussion on Challenges with SWIM Status Information
- Initial Feature Discussion: Up/Down Service and Node Status
- Concluding Remarks / Next Meeting / OSD Prototype Access Request

# OSD Stakeholder Forum Update (cont.)

- **Outcome of First Meeting**

- Historical data would be beneficial
- Would like to see lineage to non-SWIM source (legacy) system
- Idea: Live news feed of updates to outages/maintenance events
- Geographical view could provide use if correlates to other tools/events
- Latency information would be valuable; chart and alerts

- **Next Meeting**

- March 1, 2018 @ 1PM – 3PM EST - Virtual
- In-Person - Next SWIFT Meeting

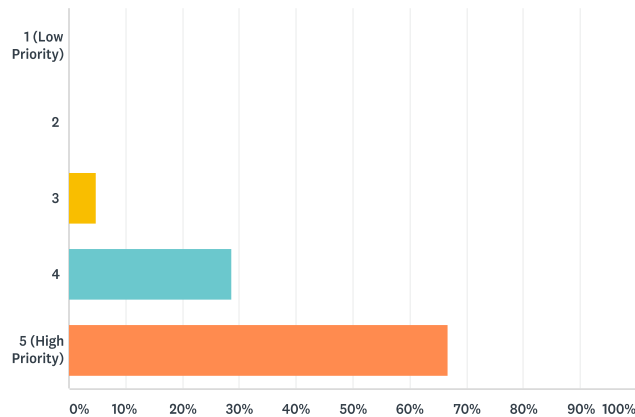
- **Contact Info**

- To join send request to [swift@faa.gov](mailto:swift@faa.gov)
- For additional inquires: [alexander.murray@noblis.org](mailto:alexander.murray@noblis.org)

# Industry Survey Results for Ops Context

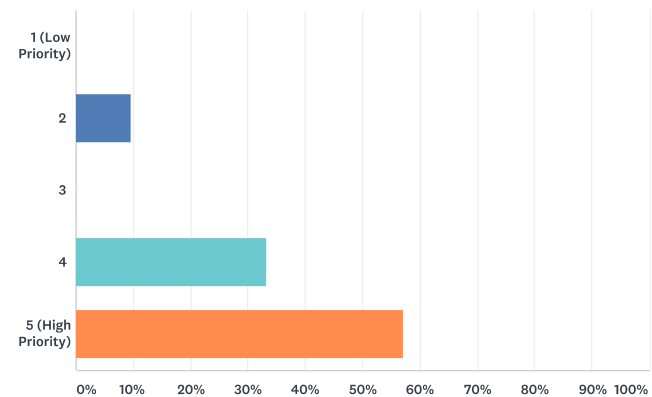
**Q11 Flight Data:** Provides flight plan, flight plan amendments, track, route, cancellation, departure, hold, arrival, departure times, and other flight related messages.

Answered: 21 Skipped: 0



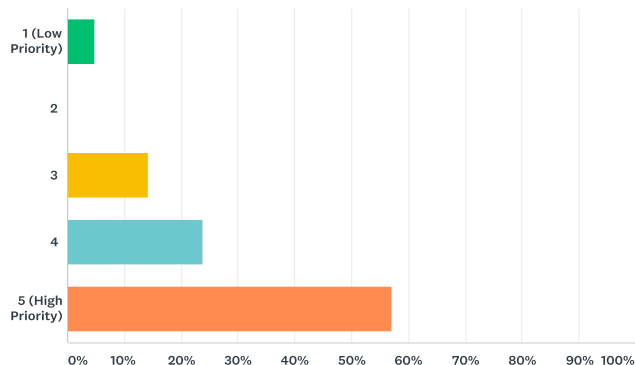
**Q9 Time Based Flow Management Service (TBFM):** Provides TBFM metering status, gate name, arrival airport information, airport configuration, arrival configuration, MRE information, arrival airport configuration information, etc.

Answered: 21 Skipped: 0



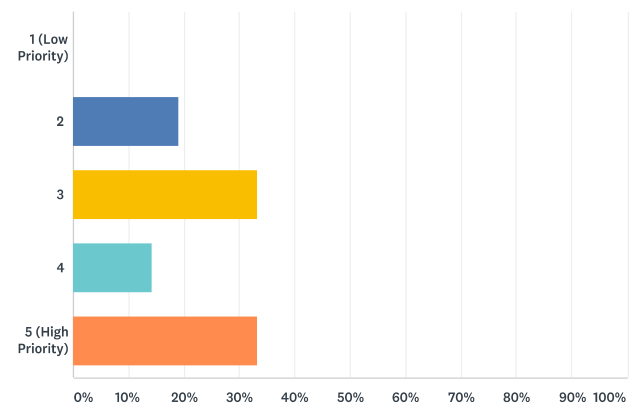
**Q2 TFMS Flow Information:** Provides Collaborative Trajectory Options Program, Flow Constraint Area / Flow Evaluation Area, Ground Delay Program / Unified Delay Program, Ground Stop, Reroutes, ATCSCC advisories, Airspace Flow Program, Airport Runway Configuration and rates, Airport Deicing status, Restrictions.

Answered: 21 Skipped: 0

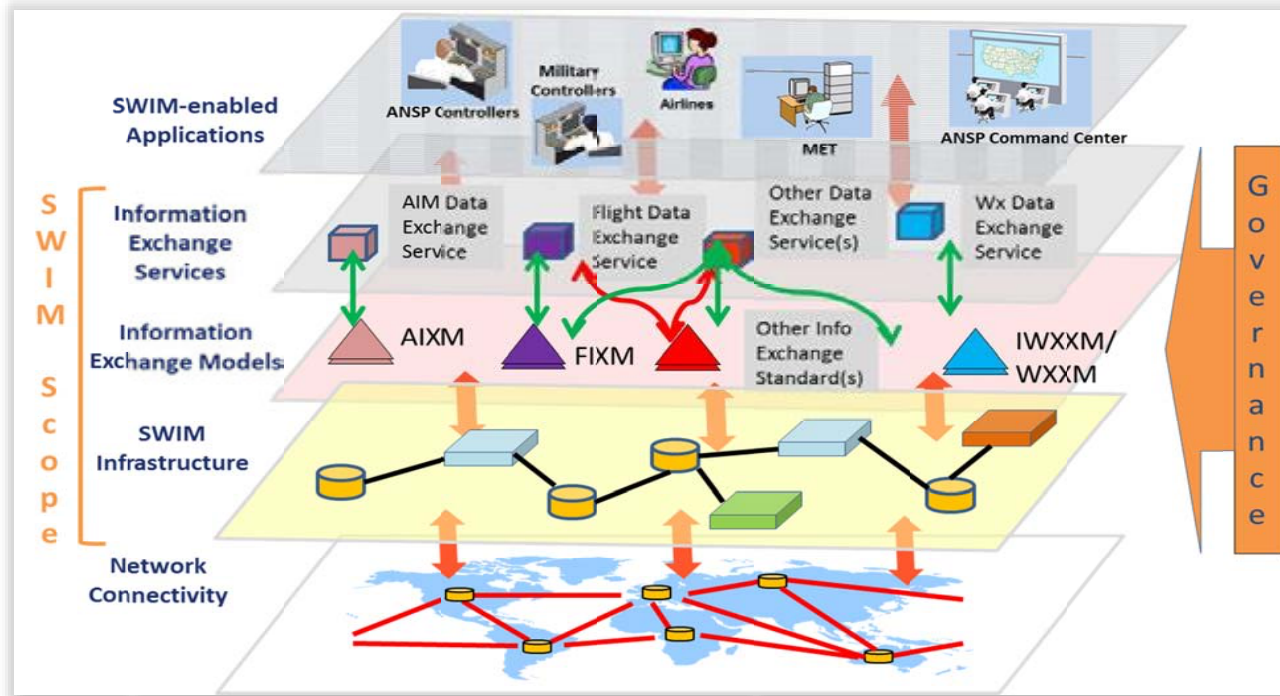


**Q10 SWIM En-route Flight Data Publication Service (SFDPS):** Airspace Data: Provides route, sector, altimeter setting, and special activities airspace information.

Answered: 21 Skipped: 0



# SWIM in a Nutshell

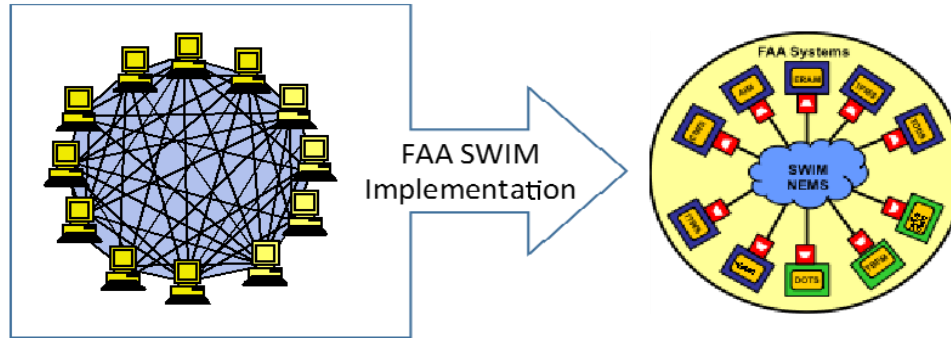


- SWIM is an information management model that applies service-oriented architecture (SOA) to aviation, releasing data available from ATM systems
- SWIM consists of standards, governance & infrastructure enabling ATM information management between users, using interoperable services.
- Primary service design characteristic of service-orientation is reusability

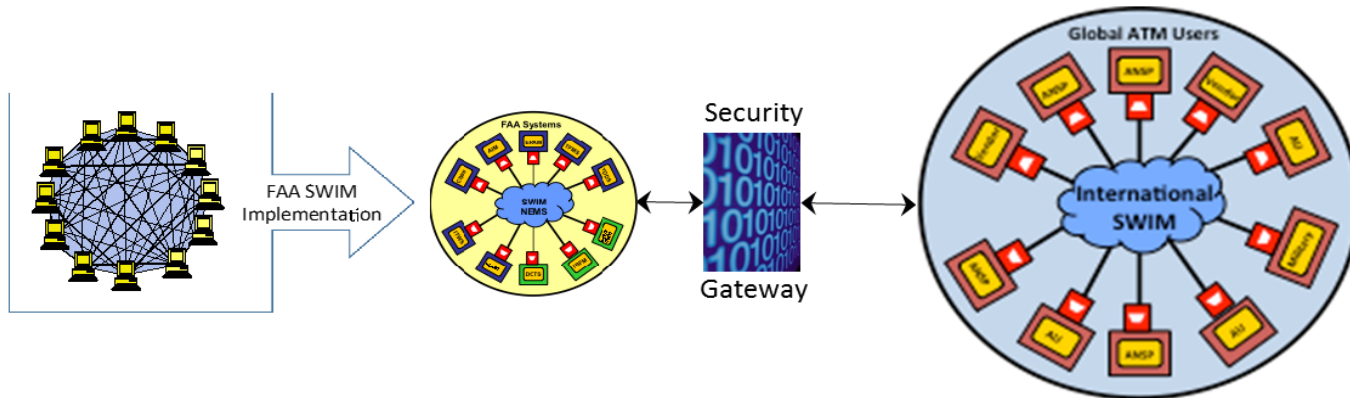


# SWIM: Provide Once, Consume Many

Enterprise SWIM Approach:  
Simplify information exchange within FAA Enterprise



SWIM simplifies global exchange through standards



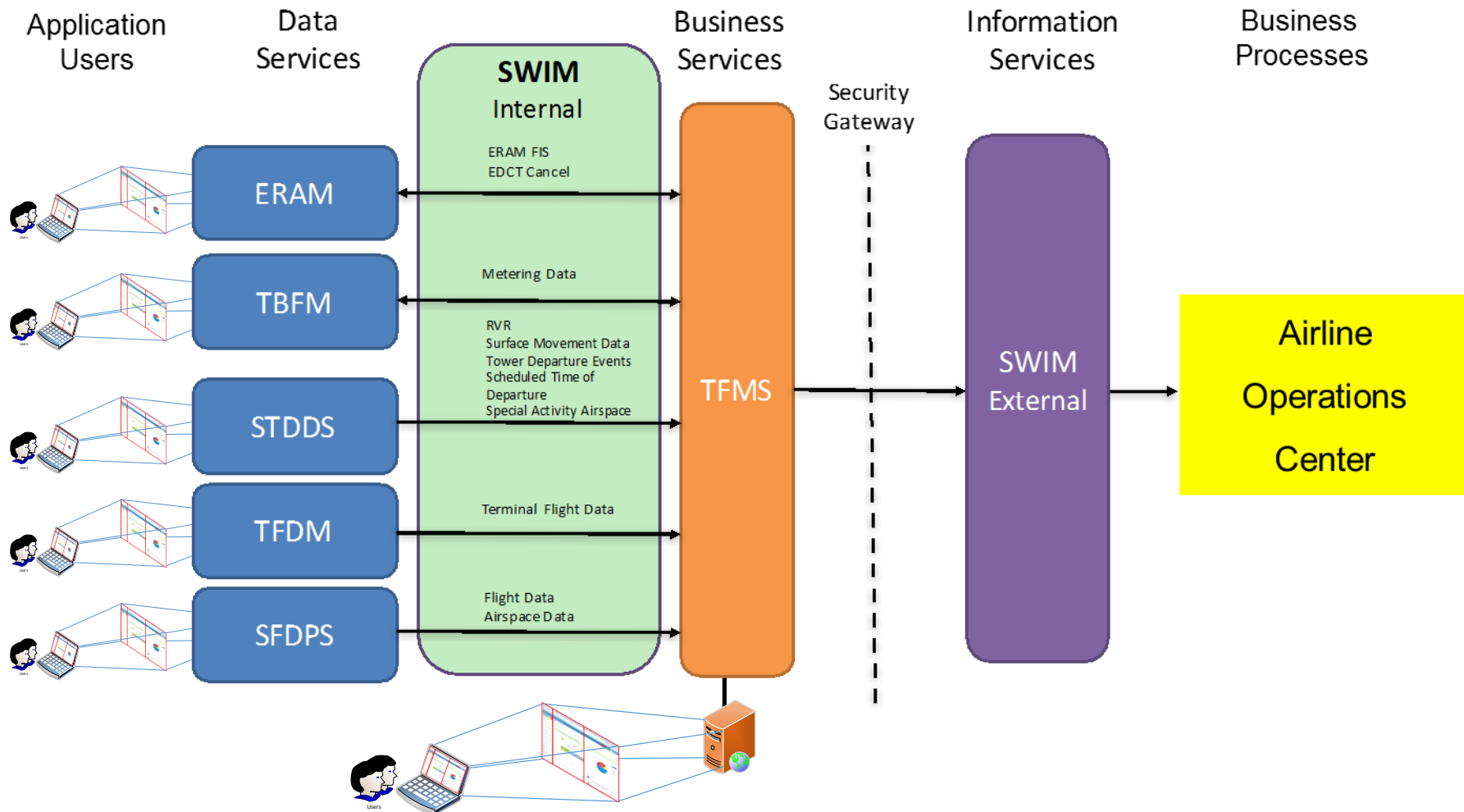
# Relevant Definitions

- **Service**
  - A mechanism to enable access to one or more capabilities, where the access is provided using a prescribed interface
- **Data Service**
  - A service which provides access to source data
- **Business Service**
  - Functionality delivered to business/operational decision-makers
  - Provides the capabilities that execute business processes
- **Information Service**
  - A service which provides tailored access to data or information defined by a set of user configurable rules

\*Source: <https://www.faa.gov/nextgen/programs/swim/vocabulary/#toc>



# Aligning Common Terminology



# Traffic Flow Management Service (TFMS) Flight Information

## Initial Review: Use Case Framework

# Decomposition of TFMS Flight Data Elements

## Traffic Flow Management Service – Flight Information

### Flight

- Flight Plan Data
- Departure and Arrival time notifications
- Flight cancellations
- Boundary crossings
- Track position reports
- NCSM information

### International

- Filed flight plan
- Flight plan amendment
- Flight arrival notification
- Flight departure notification
- Flight plan cancellation
- Departure delay notification
- Flight track position report
- Oceanic track position report
- Notification that no additional reports will be received for a flight

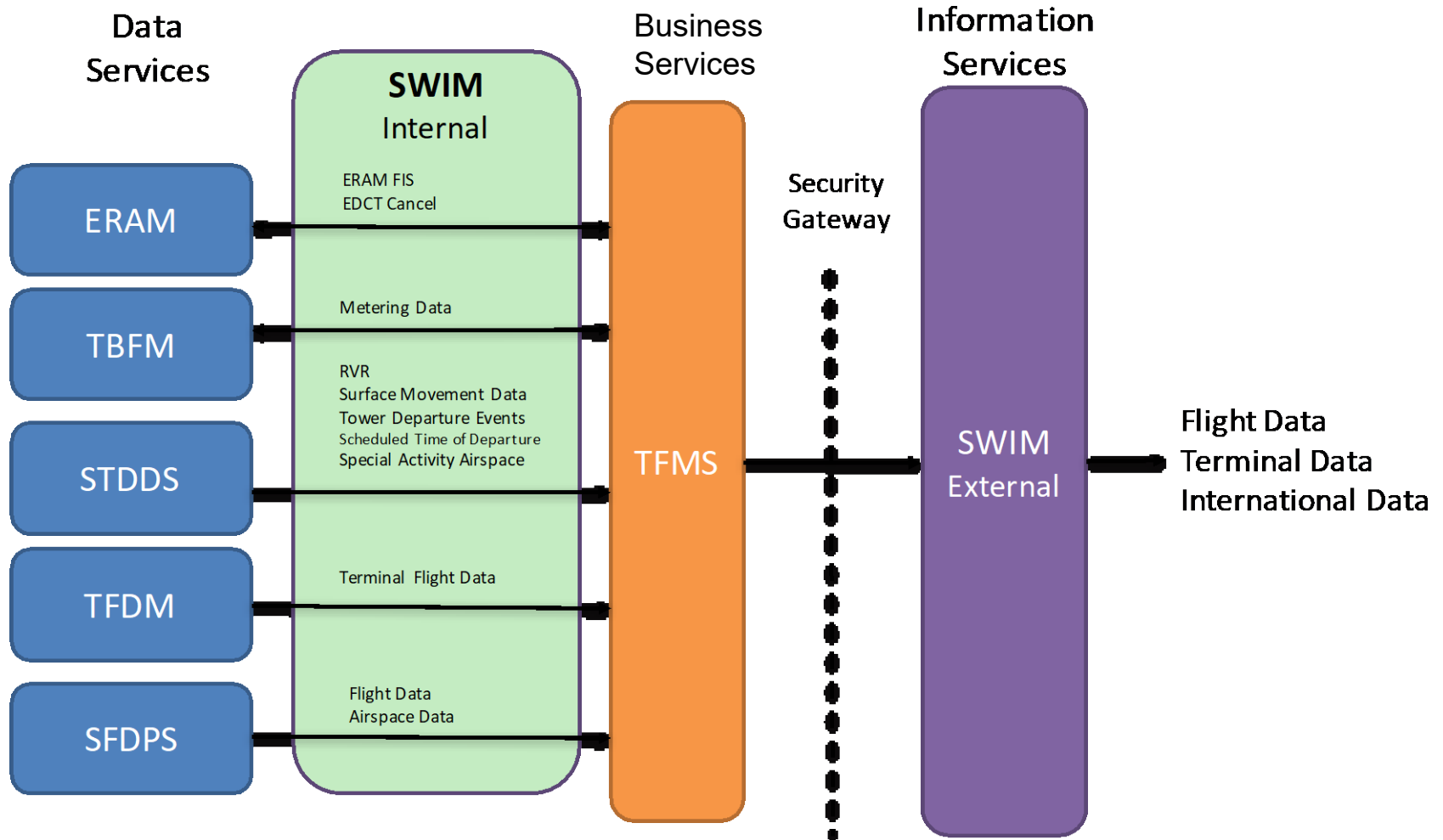
### Terminal

- Target times for movement area entry
- Off-block time
- Take-off time
- Projected wheels-up time

# *Relevant Definition*

- **Service**
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# Sourcing Traffic Flow Flight Information Service

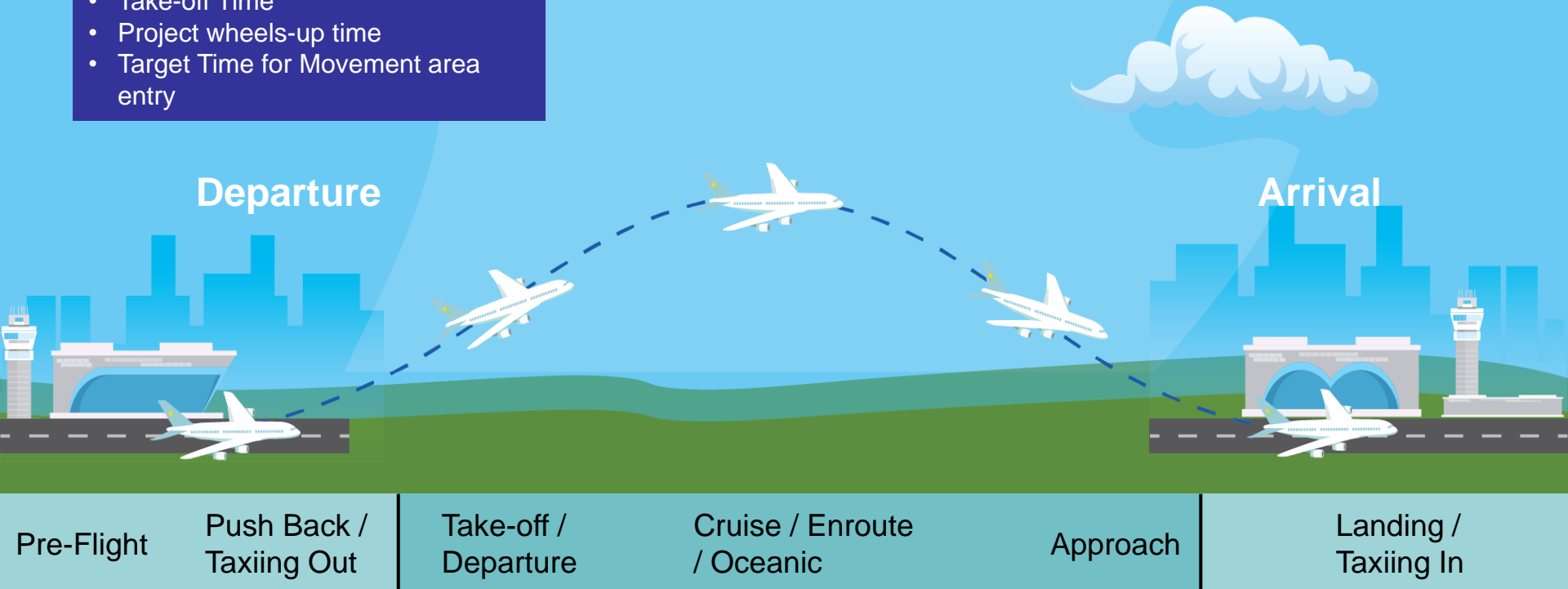


# Decomposition of TFMS Flight Data by Phase of Flight

- Flight Plan Data
- Departure Notification
- Cancellation of filed flight plan
- Notification of Departure Delay
- Off-block Time
- Take-off Time
- Project wheels-up time
- Target Time for Movement area entry

- Boundary Crossings
- Flight Track Position Reports
- Oceanic Track Position Reports
- Amendment to Flight Plan

- Flight Track Position Report
- Notification of Arrival of a Flight
- Arrival Time
- Notification that no additional reports will be received for a flight



Departure

Arrival

Pre-Flight

Push Back /  
Taxiing Out

Take-off /  
Departure

Cruise / Enroute  
/ Oceanic

Approach

Landing /  
Taxiing In

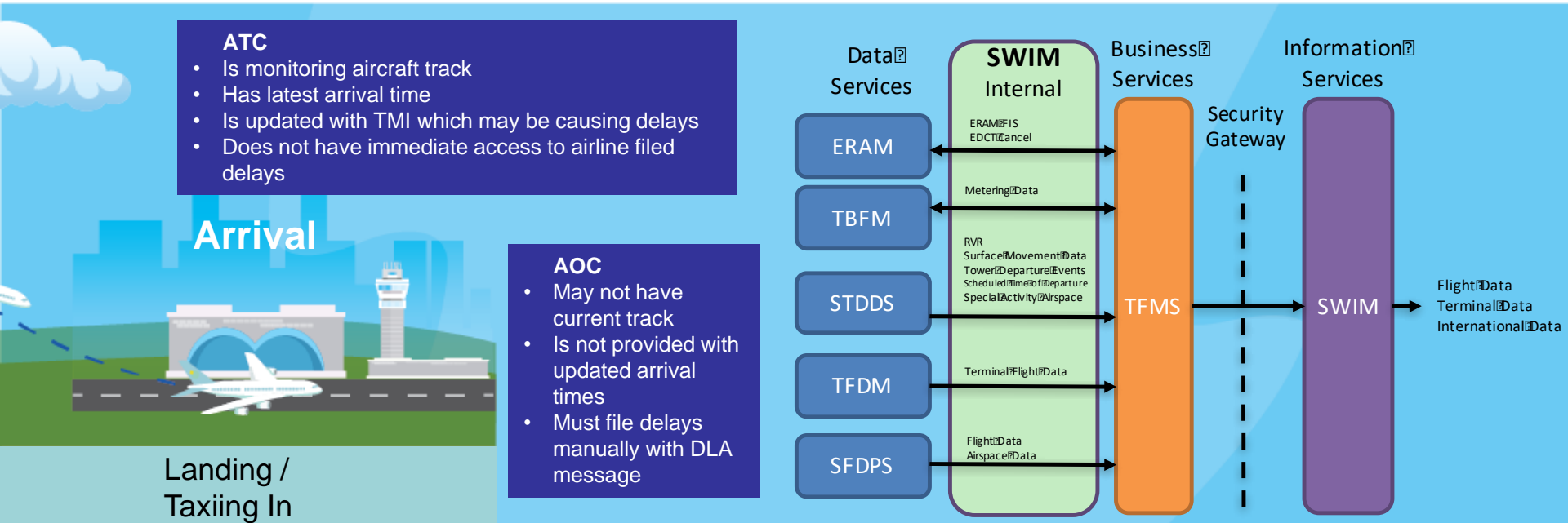
**System Wide Information Management**





# Current State: NAS Operations

1. Flight information received by combination of airline schedule data & filed flight plans
2. Information is supplemented by departure and arrival messages, position reports etc.
3. Information usually not updated until after the fact, creates a lack of awareness throughout the system, resulting in trajectories which are not always current
4. Airspace User is unsure of the actual departure and arrival time which negatively impact gate assignments, passenger connections, crew and aircraft rotations
5. Airspace User, airport and ATC planning is negatively affected due to lack of accurate position reports and times



# Problem Statement

- Aircraft departs on Time

- ATC is receiving live updates on aircraft while AOC experiences a delay in obtaining current information
- Updated arrival times are continually created based on factors affecting flight

- Aircraft arrives per time predicted by ATC

Departure

Arrival

ATC Perspective

- Aircraft departs on Time

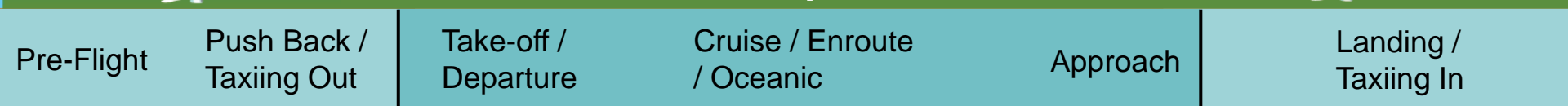
- AOC receives delayed information from ATC and may not be aware of updated arrival times

- Aircraft arrives as later than planned
- AOC works to reallocate ground resources to handle late aircraft
- Backup on taxiway due to unplanned congestion in non movement area causes delay on ground

Departure

Arrival

AOC Perspective



# Traffic Flow Flight Information Service

## Flight Data

### Service Description

- Flight Data is comprised of data from a variety of systems but the main contributor of input data is the Enroute Computer System and International Data Providers. TFMS has a consolidated view of the entire system and adds value to that information such that the resulting output is an accurate reflection of the state of the NAS in terms of traffic flow management. Flight Data is sent as it is updated, when there is a commanded change, or when there is a computed change.

### Service Interface: Publish/Subscribe via JMS

Message Name	Description
Track Information	Track Information messages are used to provide a position update for the identified flight. In cases where the track position causes a route re-conformance (trajectory modeling) additional route data is provided. The messages are transmitted as received by TFMS on a cyclic basis.
Flight Plan Amendment Information	The flightPlanAmendment message provides revised flight plan data as the result of a flight plan being successfully amended.
Arrival Information	Arrival Information Message is used to provide arrival date and time information for all eligible arriving flights.
Departure Information	The Departure information messages is transmitted for all eligible initially activated flight plans.
Flight Plan Information	The Flight Plan Information Message is used to provide flight plan data for all eligible flight plans.
Flight Plan Cancellation	Flight Plan Cancellation messages are used to provide cancellation data for all eligible flight plans when a cancel message is received from the Host/ERAM or IADE interface or an operator action associated with the schedule database that causes previously Schedule Activated flights inserted into the NCSM to be canceled.
Boundary Crossing Update	Boundary Crossing Update is used to provide TFMM with current flight plan information on active eligible flights that are inbound from one ARTCC to another ARTCC facility.
Oceanic Report	Oceanic Report Type provides flight information for transoceanic flights and is generated when an Oceanic Position Report is received via NADIN.
NCSM Flight Create	NCSM Flight Create message is used to provide create data when CDM a flight create message is received.
NCSM Flight Modify	NCSM Flight Modify message is used to provide modify data when CDM a flight modify message is received.
NCSM Flight Route	NCSM Flight Route message is used to provide route data for events that cause the flight route to be updated. The events are associated with CTOP or Reroute TMIs. They are also used to update the route information when the weekly adaptation data update is performed.
NCSM Flight Times	"NCSM Flight Times message is used to provide updates of flight time data when departure or arrival times change due lateness in departure, a TBFM issued Scheduled Time of Departure, or STDDS surface movement events.."
NCSM Flight Schedule Activate	NCSM FlightScheduleActivate message is used to provide data flight data whenever an operator command or automatic timer causes a flight in the schedule database to be inserted into the NCSM. The timer is a five minute timer that causes flight's to be entered into the NCSM for demand prediction purpose 24 hours prior to their departure time.
NCSM Flight Control	NCSM Flight Control message is used to provide control data for messages/events that cause EDCT to be issued.
NCSM Flight Sectors	NCSM Flight Sectors message is used to provide updated sector crossing data an Airspace Assignment message is received..

# New Reality Based on New Information Service

- Aircraft pushes back
- AOC receives notification of aircraft pushback
- AOC receives departure times

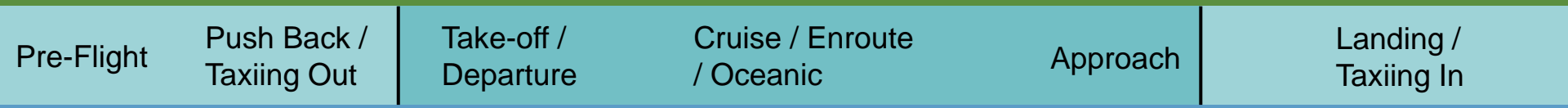
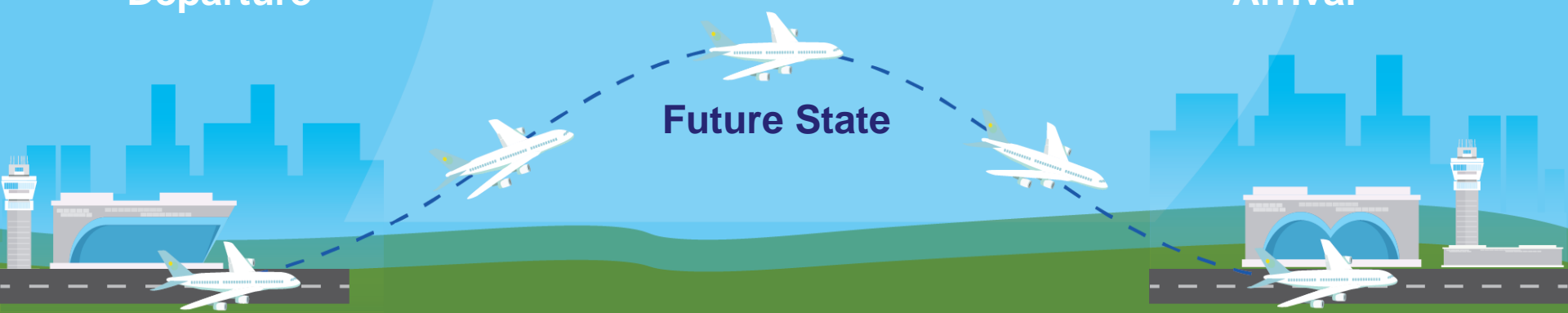
- AOC receives continuously updated schedule route and aircraft position data
- Delay information is communicated live as it happens

- AOC is able to reallocate ground resources as needed based on accurate flight information
- Airport staff are able to better plan for identified delays
- Surface congestion is minimized

Departure

Arrival

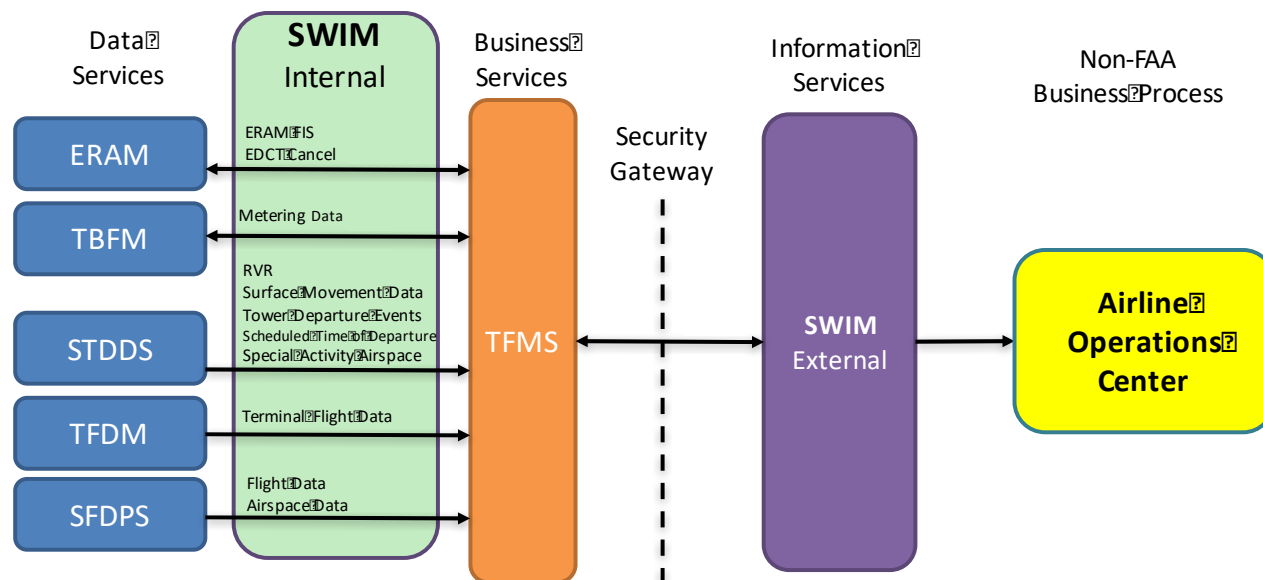
Future State



**System Wide Information Management**

# Future State: Future NAS Operations

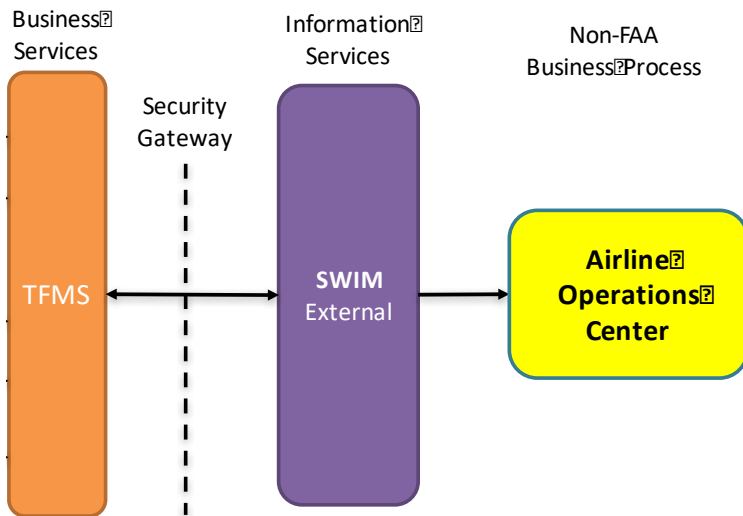
1. Once flight pushes, information continually shared so all users have same updated data
2. Airline schedules & flight plan information will be continuously updated via SWIM with current schedule, route and aircraft position data and sent to Airspace Users/ airports
3. Collaboration with ATC will be improved because Airspace Users, Airport and ANSP all have the same accurate picture to manage resources
4. As changes occur during flight, updates continue to be shared with Airspace Users & airports
5. Airspace Users planning for gate usage, fleet management, crew resources is improved with precise arrival data
6. Airport planning will improve with current operations picture for traffic using airport



# ***Benefits of Improved Traffic Flow Flight Information***

- **Sharing flight information data with all stakeholders will allow Airspace Users and airports to know precisely when aircraft will depart/arrive, enabling:**
  - Improved decision making concerning aircraft fuel efficiency
  - Improved diversion management
  - Improved gate management
  - Improved flight crew management
  - Improved ground crew management
  - Improved delay management
  - Improved fleet management
  - Improved customer experience
  - Improved TFM system performance
  - Improved airport effectiveness

# Many Objectives, One Mission: Flight Information Data Driven Real-time Decisions & Post-Ops Analysis



- **Air Traffic Control:**
  - Responsible for safe and efficient use of airspace, maximizing airspace use and runway efficiency
  - Success is defined by maximum use of runways and airspace, effective strategic planning, and minimal use of tactical interventions that add delay to flights
- **Airline Flight Ops:**
  - Responsible for ensuring regulatory compliance, ensuring on-time operations, managing gate and crew resources, maintaining flight schedules, fleet management, and applying the airline business model
  - Success is defined by predictable operations, on-time operations, adherence to schedules, effective gate, crew, and fleet management.
- **Airports:**
  - Provide a safe environment for flight and surface operations, provide ramp control, ensure airport resources are available (runways, taxiways, etc.) at times that meet Airspace Users and ANSP needs

# Next Steps

- **Use input provided through discussion to develop**
  - Detailed Use Case document
  - Detailed Operational Functional Description
- **Send documents out for review and comment to SWIFT**
  - Looking for input on utility of documentation, relatibility of problem statement to core aviation operations & additional considerations
  - Instructions from comments and submission deadlines will be dispositioned
- **Publish Use Cases and Operational Functional Description documents to the NSRR**



# Industry Initiatives & Metrics Discussion



# Feedback From “Sticky Exercise”

- **Metrics:**
  - Better customer service
  - Track miles
  - Block time, Enroute time
  - Gate occupancy
  - Surface telemetry (particularly aircraft position)
- **Initiatives:**
  - Understanding data (TFM)
  - Improved access to real time data (SAA)
  - Balance in the terminal environment (arrival & departures)
  - A-CDM/Surface management (includes gate/apron & IROP management)
  - Key data points: EDCT, Re-routes, TMI’s
  - Improve safety
  - Post flight analysis
- **Other:**
  - Selling reason & business case for connecting to SWIM
  - Establishing an enterprise solution

# **Time Based Metering Information Service (by TBFM): Initial Review: Use Case Framework**



# Decomposition of TBFM Data Elements

## Time Based Flow Metering

### Aircraft Info

- Flight Plan Info
- ETAs
- STAs
- Scheduling Info
- MRE Assignments

### Configuration Info

- Arr Airport Config Info
- Acceptance Rate
  - Airport
  - TRACON
  - Meter Point
  - Runway
- Super Stream Class Config

### Adaption Info

- TRACON Name Group
- MRE Names
- Gate Names
- Airport / Runway Config Names

### Synchronization

- System Sync Start
- Periodic Sync Start
- Periodic Sync End

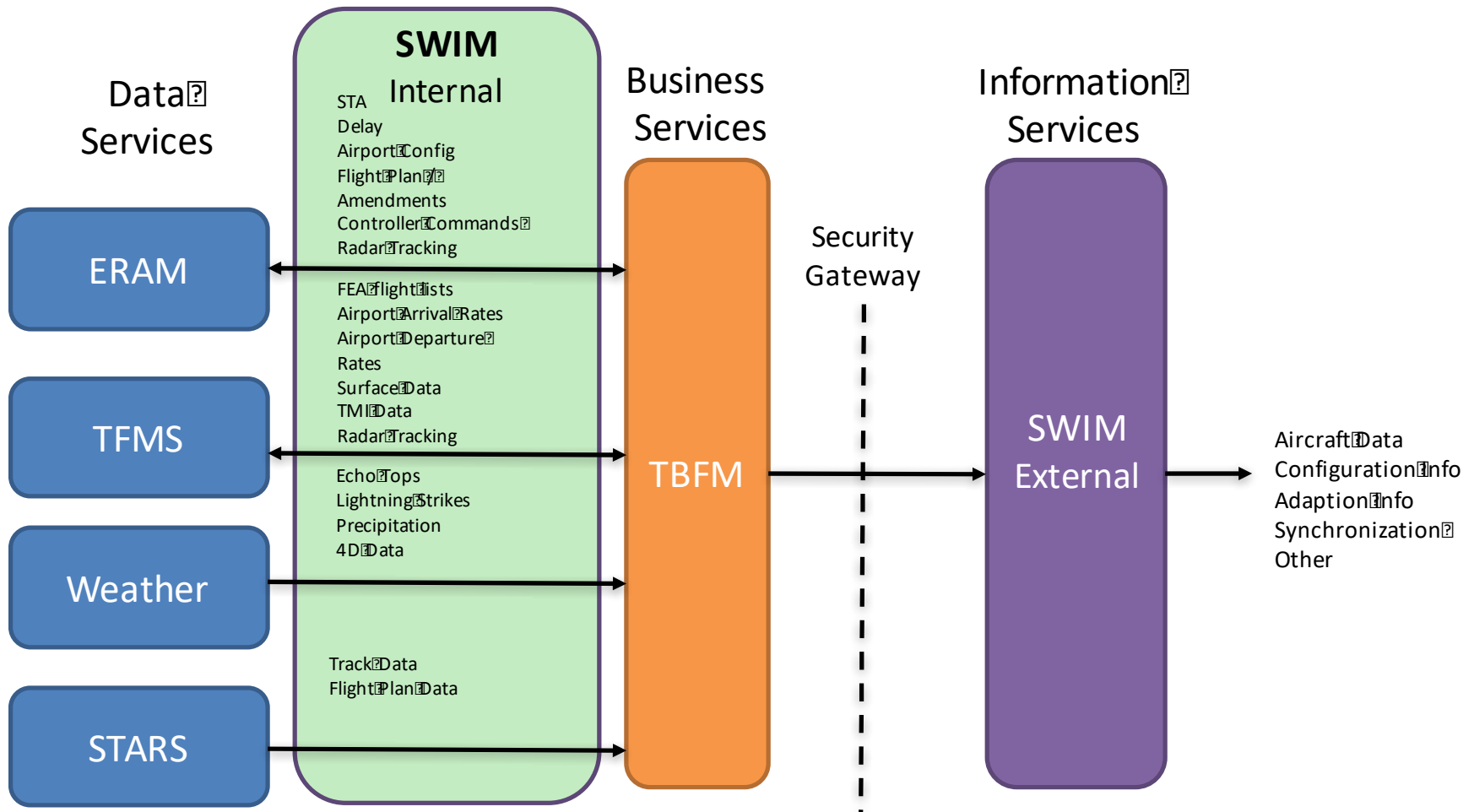
### Other

- TBFM Metering Status
- TBFM Interface Status
- Data Quality
- Address Qualifier

# *Relevant Definitions*

- **Service**
  - A mechanism to enable access to one or more capabilities, where the access is provided using a prescribed interface
- **Data Service**
  - A service which provides access to source data
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  - Business function or capability offered as a service
  - Functionality delivered to business/operational decision-makers
- **Information Service**
  - A service which provides tailored access to data or information defined by a set of user configurable rules

# Sourcing Time Based Metering Information



# Decomposition of TBFM Data by Phase of Flight

- Flight Plan Info
- ETAs
- STAs
- Scheduling Info
- MRE Assignments

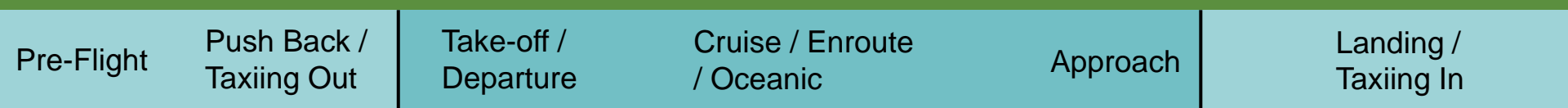
- Arr Airport Config Info
- Acceptance Rate
  - Airport
  - TRACON
  - Meter Point
  - Runway
- Super Stream Class Config

- TRACON Name Group
- MRE Names
- Gate Names
- Airport/Runway Config Names

Departure

Arrival

Aircraft Phase of Flight



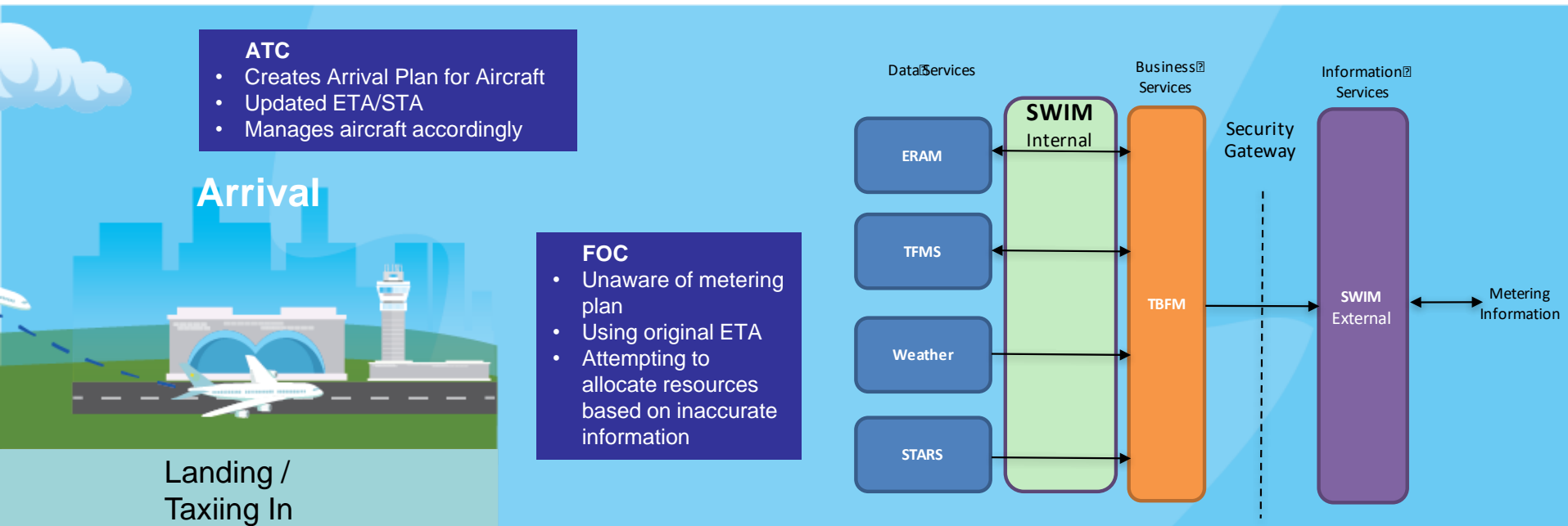
Pre-Flight	Push Back / Taxiing Out	Take-off / Departure	Cruise / Enroute / Oceanic	Approach	Landing / Taxiing In
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System Wide Information Management



# Current State: NAS Operations

1. Aircraft departs for constrained airport
2. Ninety minutes from destination TBFM creates an arrival plan for the aircraft
3. Arrival plan includes the ETA and STA at metering fix and runway
4. The STA at the runway is the time when the aircraft is scheduled to land
5. Controllers manage flights to meet these times
6. FOC unaware of STA: does not know when aircraft will arrive, negatively affecting gate assignments, passenger connections, crew and aircraft rotations decisions
7. FOC planning negatively affected due to lack of accurate arrival time data (STA)





# Problem Statement

- Aircraft Departs on Time

- En-route Traffic demand exceeds capacity at destination airport
- Controllers enact a TMI to begin metering aircraft prior to arriving at destination airport
- Aircraft is slowed down and the arrival time is pushed back
- A new STA is issued for the aircraft and shared with down stream controllers

- Aircraft arrives as planned per the updated STA
- Backup on taxiway due to unplanned congestion in non-movement area causes delay on ground

Departure

Arrival

ATC Perspective

- Aircraft Departs on Time

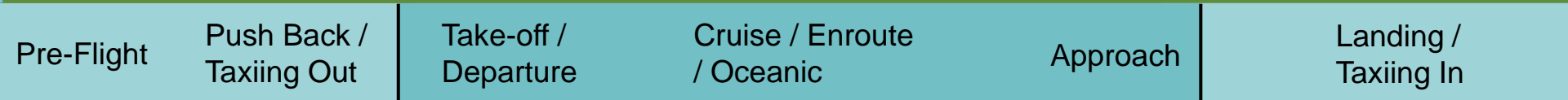
- Aircraft is slowed down and the arrival time is pushed back
- ADC notices the slowdown but does not know what the new arrival time will be

- Aircraft arrives later than planned
- ADC works to reallocate ground resources to handle late aircraft
- Backup on taxiway due to unplanned congestion in non-movement area causes delay on ground

Departure

Arrival

AOC Perspective



# Time Based Metering Information Service

## Service Description

- The TBFM Metering Information Service publishes metering information to allow the TBFM system, FAA systems (e.g. TFMS), and industry to collaborate, share TBFM data and be informed of TBFM STAs that are in effect during metering events.

## Service Interface

- Publish/Subscribe via JMS

## Message Sets

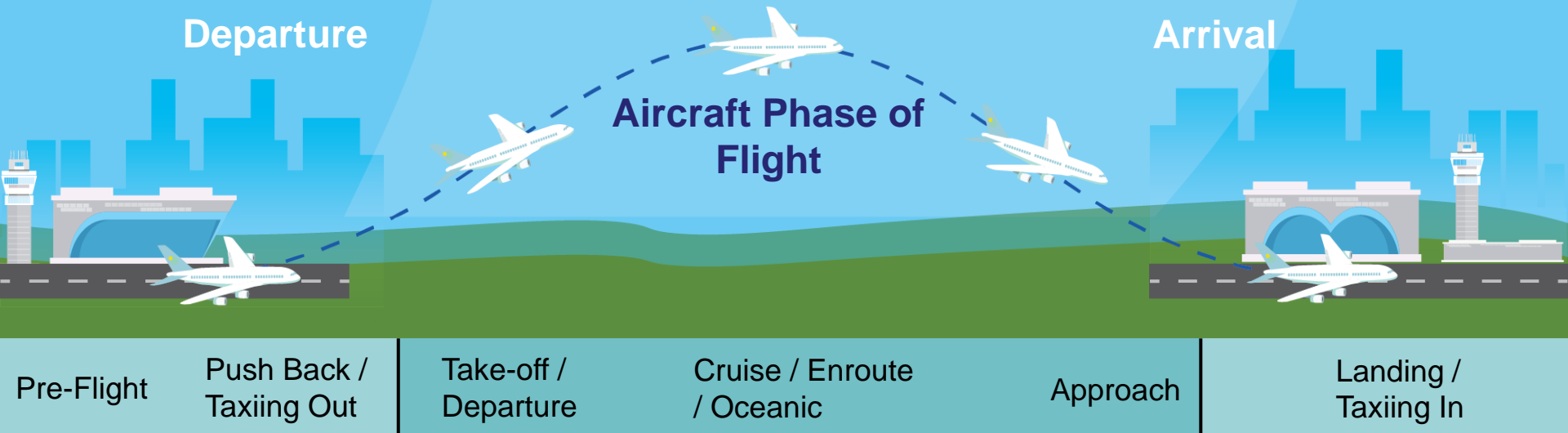
Message Name	Description	Supported Properties
<b>Aircraft Information</b>	Provides metering information about an aircraft; specifically: flight plan (relevant subset), STAs, ETAs, Meter Reference Elements (MREs) Assignments, and scheduling group information	Data Group, ARTCC
<b>Configuration Information</b>	Provides metering information about the configuration of the system; specifically: airport configurations, airport acceptance rates, TRACON acceptance rates, gate acceptance rates, Meter Point acceptance rates, runway acceptance rates, super stream class configurations, and satellite airport configurations	
<b>Other Information</b>	Provides metering information about the status of metering and the status of system interfaces	
<b>Adaptation Information</b>	Provides information about applicable system adaptation to include TRACON names, gate names, configuration names, Meter Reference Point names, and stream class names	
<b>Sync</b>	Sent only to indicate an impending refresh of all TBFM data, either as a result of system startup or a periodic synchronization event.	

# New Reality Based on New Information Service

- Aircraft Departs on time

- En-route traffic demands exceeds capacity at destination airport
- Controllers enact a TMI to begin metering aircraft prior to arriving at destination airport
- Aircraft is slowed down and the arrival time is pushed back
- A new STA is issued for the aircraft and shared with down stream controllers AND AOC

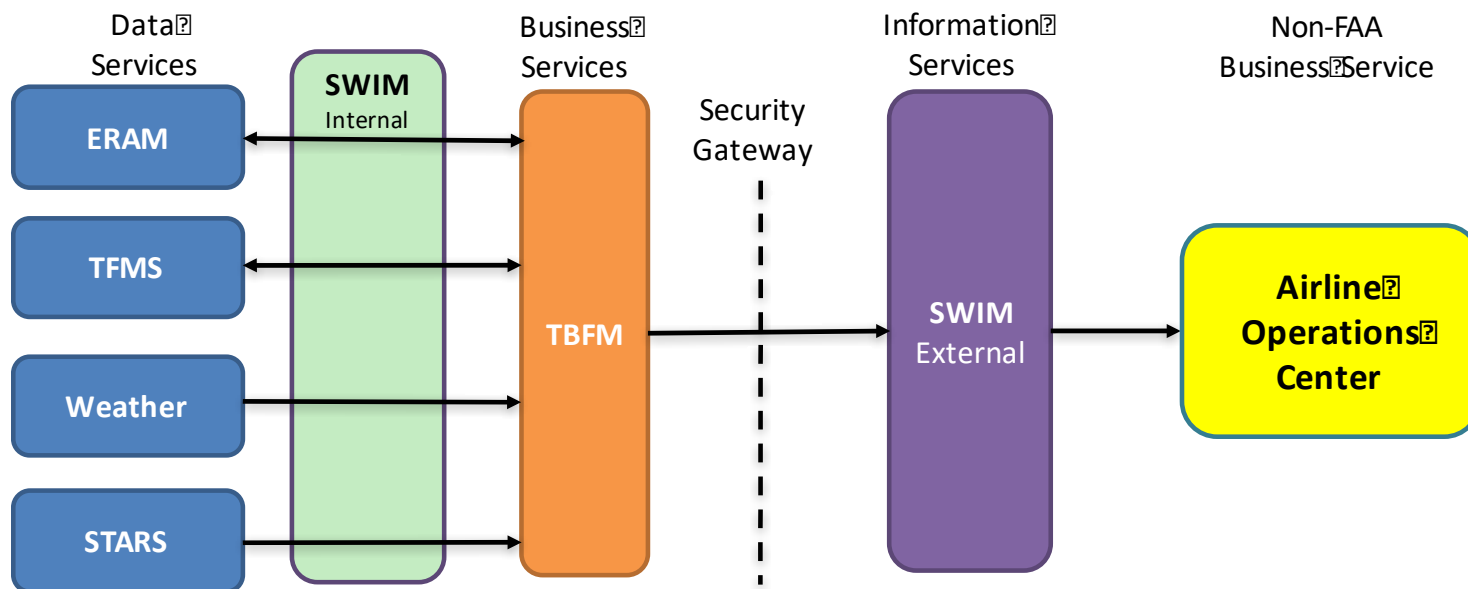
- Aircraft arrives as later then planned
- AOC has already reallocated ground resources to based on updated STA information
- Airport surface experiences little to no delay



## System Wide Information Management

# Future State: Future NAS Operations

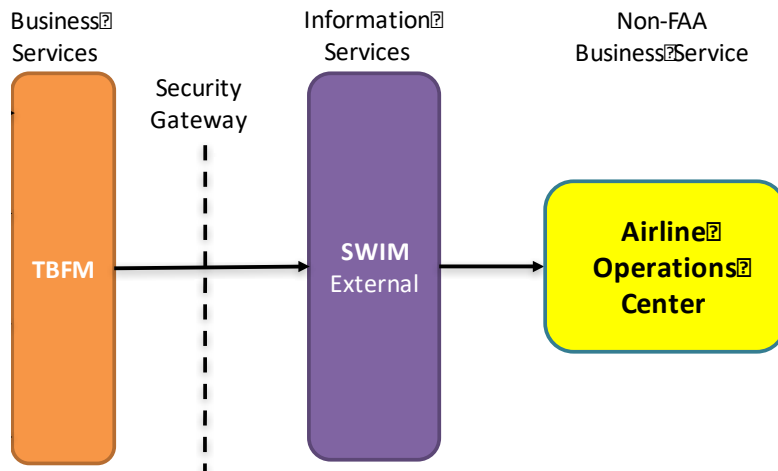
1. Aircraft departs for constrained airport
2. Ninety minutes from destination TBFM creates an arrival plan for the aircraft
3. Arrival plan includes ETA, STA at metering fix & runway
4. SWIM shares ETA and STA with FOC via SWIM
5. As STA is updated during flight, updates continue to be shared with FOC
6. FOC constantly aware of most recent STA for each flight
7. FOC planning for gate usage, fleet management, crew resources improved with precise arrival data



# *Benefits of Improved Metering Information*

- **Sharing STA data with Airspace Users will enable FOCs to know precisely when aircraft will arrive, enabling:**
  - Better decision making concerning aircraft fuel state and diversion management
  - Improved gate management
  - Improved crew management
  - Improved ground crew management
  - Improved delay planning
  - Improved fleet management
  - Improved customer experience

# Many Objectives, One Mission: Metering Data Driven Real-time Decisions & Post-Ops Analysis



## – Air Traffic Control:

- Responsible for safe and efficient use of airspace and for maximizing runway efficiency
- Success is defined by maximum use of runways, effective strategic planning, and minimal use of tactical interventions that add delay to flights

## – Airline Flight Ops:

- Responsible for safely managing traffic regulatory compliance, on-time operations, managing gate resources, crew resources, flight schedules, gate operations, fleet management.
- Success is defined by predictable operations, on-time operations, adherence to schedules, effective gate, crew, and fleet management

# Next Steps

- **Use input provided through discussion to develop**
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# Traffic Flow Management Service (TFMS) Flow Information:

## Initial Review: Use Case Framework



# Decomposition of TFMS – Flow Information

## Traffic Flow Management Service – Flow Information

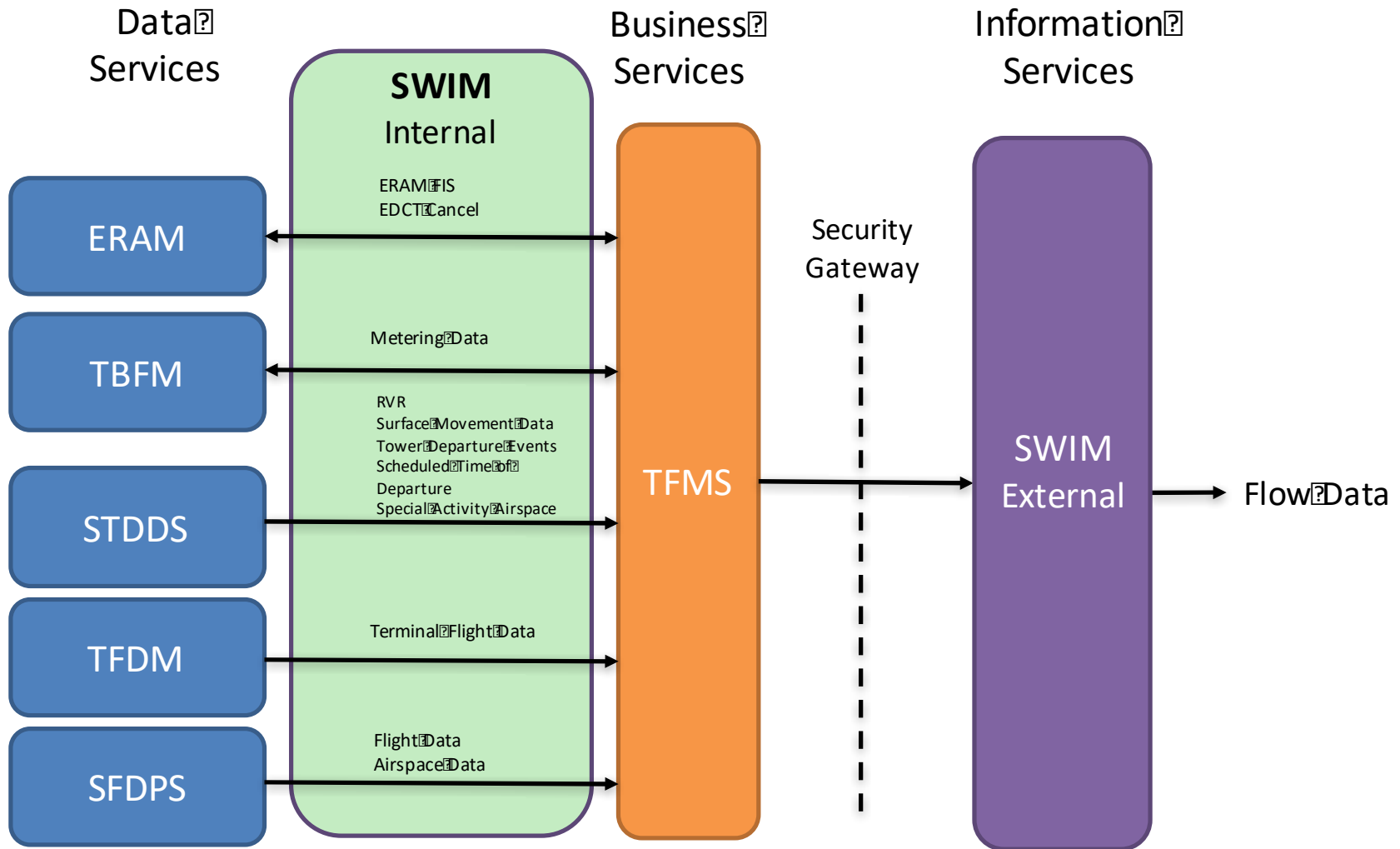
### Flow

- Airspace Flow Program (AFP)
- Air Traffic Control System Command Center (ATCSCC) Advisories
- Collaborative CTOP
- FCA/FEA
- Ground Delay Program (GDP)/ Unified Delay Program (UDP)
- Ground Stop (GS)
- Reroutes
- Airport Runway Configuration and rates
- Airport Deicing status
- Restrictions
- RAPT Timeline data
- AFP, GDP, Blanket, Compression, or GS
- FADT
- CDM GDP related updates
- FOS CTOP related updates
- Monitored Airport and TMI flight list updates

# *Relevant Definitions*

- **Service**
  - A mechanism to enable access to one or more capabilities, where the access is provided using a prescribed interface
- **Data Service**
  - A service which provides access to source data
- **Business Service**
  - Business function or capability offered as a service
  - Functionality delivered to business/operational decision-makers
- **Information Service**
  - A service which provides tailored access to data or information defined by a set of user configurable rules

# Sourcing Traffic Flow Information Service

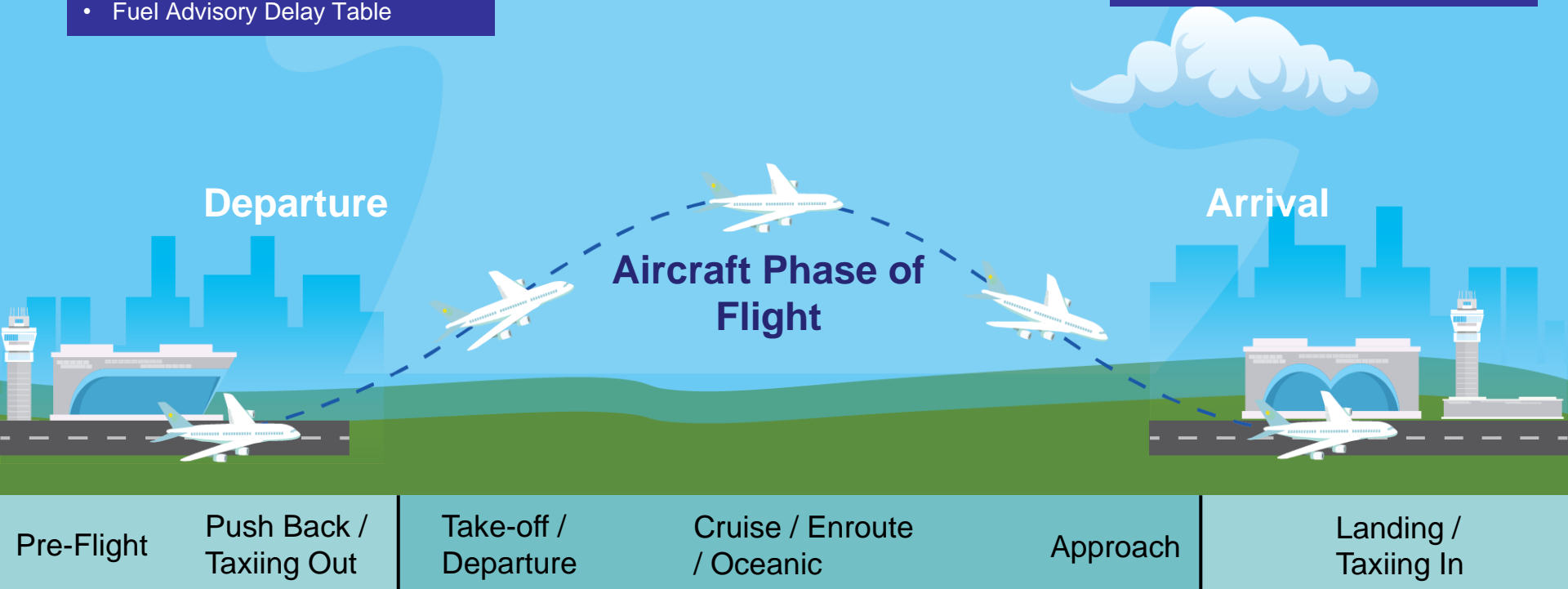


# Decomposition of Traffic Flow Information

- Ground delay Program
- Unified Delay Program
- Ground Stop
- Airport Deicing Status
- Route Availability Planning Tool Updates
- Fuel Advisory Delay Table

- Airspace Flow Program
- ATCSCC Advisories
- Collaborative CTOP
- FCA/FEA Reroutes

- Airport Runway Config and rates
- Monitored Airport and TMI Flight List
- Ground Delay Program
- Unified Delay Program
- Ground Stop



## System Wide Information Management

# Current State: NAS Operations

1. TFMS initiatives are dynamic and are created, changed or cancelled as conditions dictate.
2. Each TFMS initiative has an impact on when flights can depart, routes to be flown, or delays to be expected.
3. AUs can mitigate these impacts when TFMs Flow data is well understood and timely
4. Incomplete/untimely TFMS Flow data creates difficulty maintaining schedules, meeting business needs, maintaining regulatory compliance, and communicating with Customer Service personnel and airline customers about impact of delays.
5. Impacts extend to cargo operations and passengers.

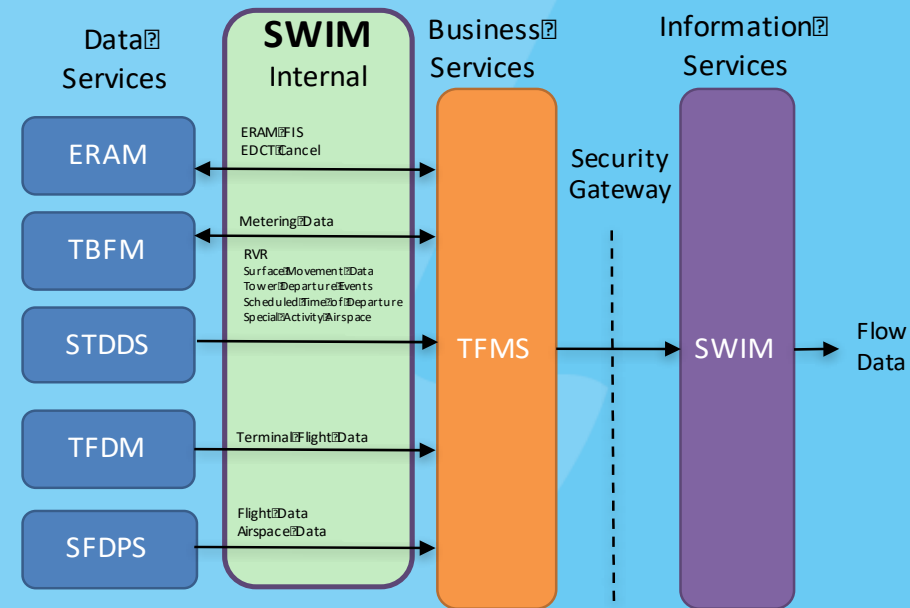
## ATC

- Has high-level view of airspace and airport capacity
- Creates TMI and determines which aircraft will be affected
- Receives inputs from systems
- Tracking all phases of flight
- Has advanced notification of TMI

## AOC

- Does not have high-level view of airspace and airport capacity
- No advanced warning of TMI activation
- Must be reactive to delay, due to lack of advanced warning

Landing /  
Taxiing In



# Problem Statement

- Has visibility into airport deicing status and route availability
- Initiates GDP/UDP/GS when needed
- Determines which aircraft will be affected based on airspace capacity

- Has visibility into AFP, ATCSCC Advisories, FCA/FEA, and reroutes
- Access to high-level capacity information

- Has visibility into Airport Runway Config and rates, GDP, UDP, and GS
- Advanced notification of TMI implementation

## Departure

## Arrival



### ATC Perspective

- Receives notification of TMI after initiation
- Lacks views into deicing capacity
- Must be reactive to delays
- Limited ability to control which aircraft are affected by GDPs

- Can be rerouted without prior notice
- Limited view into AFP and ATCSCC advisories

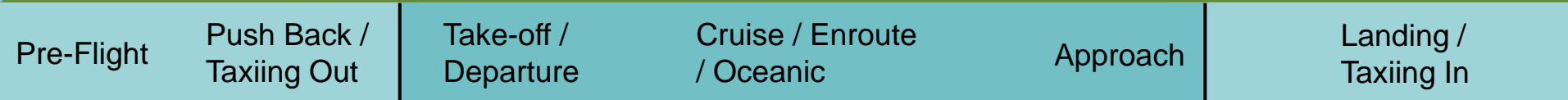
- Limited visibility into Airport Runway Config and rates
- Must reactively reallocate ground resources based on update aircraft arrival times.

## Departure

## Arrival



### AOC Perspective



# Traffic Flow Information Service

## Service Description

- Flow Information is data that describes the TFM initiatives that are created, updated, or deleted from the system. Flow Information is created by TFM users; the information is used by TFMS to monitor capacity, to assist in controlling capacity of the system, or to describe characteristics of the system. Flow information provides a shared state of TFMS with authorized users in support of situational awareness and potentially to be used by CDM users in their own automation and research activities. Users consuming Flow Information have the ability to construct a dataset (or database) consistent with TFMS.

## Service Interface: Publish/Subscribe via JMS

Message Name	Description
AFP Advisory	Initial/Update Airspace Flow Program Message.
AFP Cancel	Cancel Airspace Flow Program Message.
AFP Compression	Initial/Update GDP/UDP Compression Message.
Airport Config Message	The airport configuration report.
CDM Update Data	TMI related data messages.
CTOP Cancel	Cancel Message.
CTOP Definition	Initial/Update CTOP Message.
Deicing Message	Deicing report.
ERAM Amendment Status Update	Details of the flights last ERAM amendment request.
FADT Broadcast	FADT Broadcast - R13 preferred way of communicating creations, updates, cancellations of AFP,GDP, and GS programs.
FEA/FCA	Initial/Update/Cancel FEA/FCA Message.
FOS Data	FOS Flow Information output.
FEA/FCA Secondary Filters Delete	Initial/Update FEA/FCA secondary filters delete.
FEA/FCA Secondary Filters Update	Initial/Update FEA/FCA secondary filters update.
GDP Advisory	Initial/Update GDP/UDP Message.
GDP Blanket	Initial/Update GDP/UDP Blanket Message.

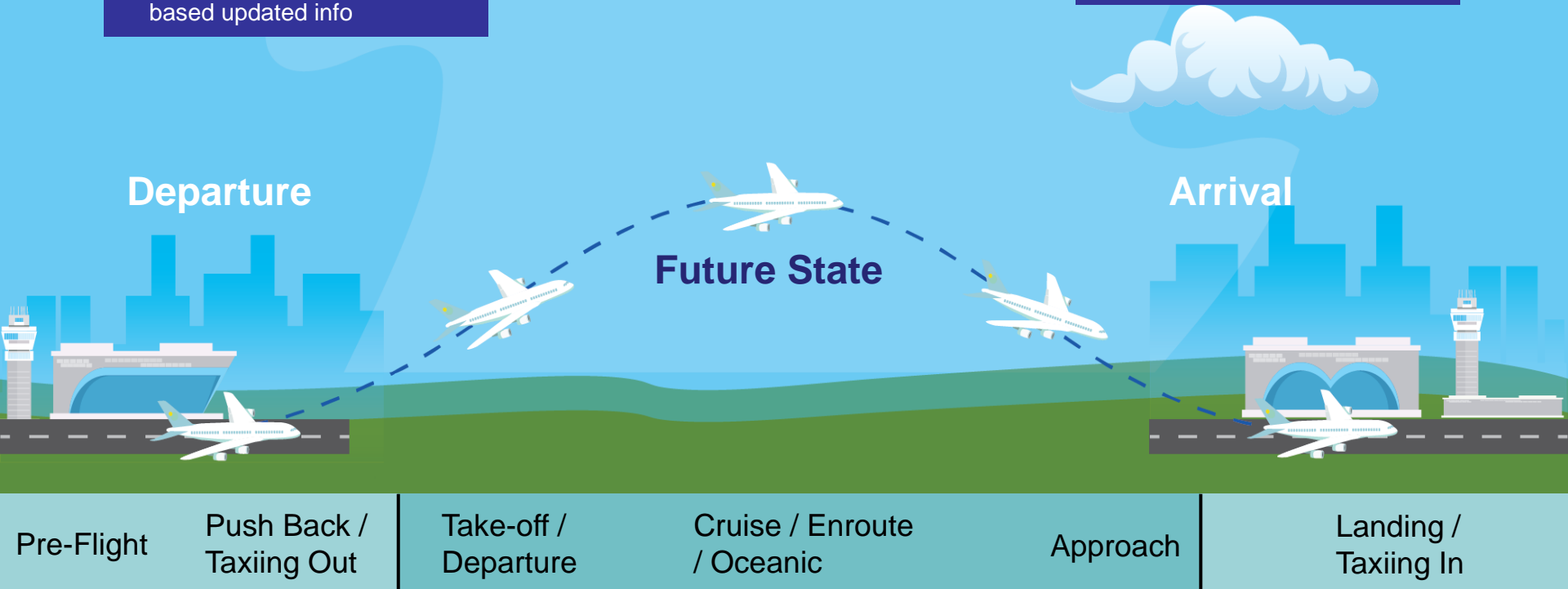
Message Name	Description
GDP Cancel	Cancel GDP/UDP Message.
GDP Compression	Initial/Update GDP/UDP Compression Message.
General Advisory	General Advisory Message.
GS Advisory	Initial/Update GS Message.
GS Cancel	Cancel GS Message.
AFP/GDP Update	Air Flow Program (AFP) or Ground Delay Program (GDP) TMI parameter create/update.
Blanket Update	AFP/GDP Blanket parameters create or update for TMI.
Compression Update	AFP/GDP Compression parameter update or create TMI.
Delete	Parameter delete for Fuel Advisory Delay TMI.
GS Update	Ground Stop (GS) TMI parameter create/update.
RAPT Timeline Message	The RAPT Timeline data.
Reroute	Initial/Update/Cancel Reroute Message.
Restriction Message	The restriction report.
TMI Flight Data List	General flight data for flights associated with any TMI or monitored airports.

# New Reality Based on New Information Service

- AOC receives timely information on:
  - Potential TMLs
  - GDPs
  - Airport Deicing Status
  - Route Availability
- AOC responds proactively to reorganize ground resources based updated info

- AOC receives updates on reroutes, ATCSCC advisories, and FCA/FEA
- Reroutes and delays are communicated immediately

- AOC is able to reallocate ground resources based on accurate flight and delay information
- Airport staff are able to better plan for identified delays
- Surface congestion is minimized

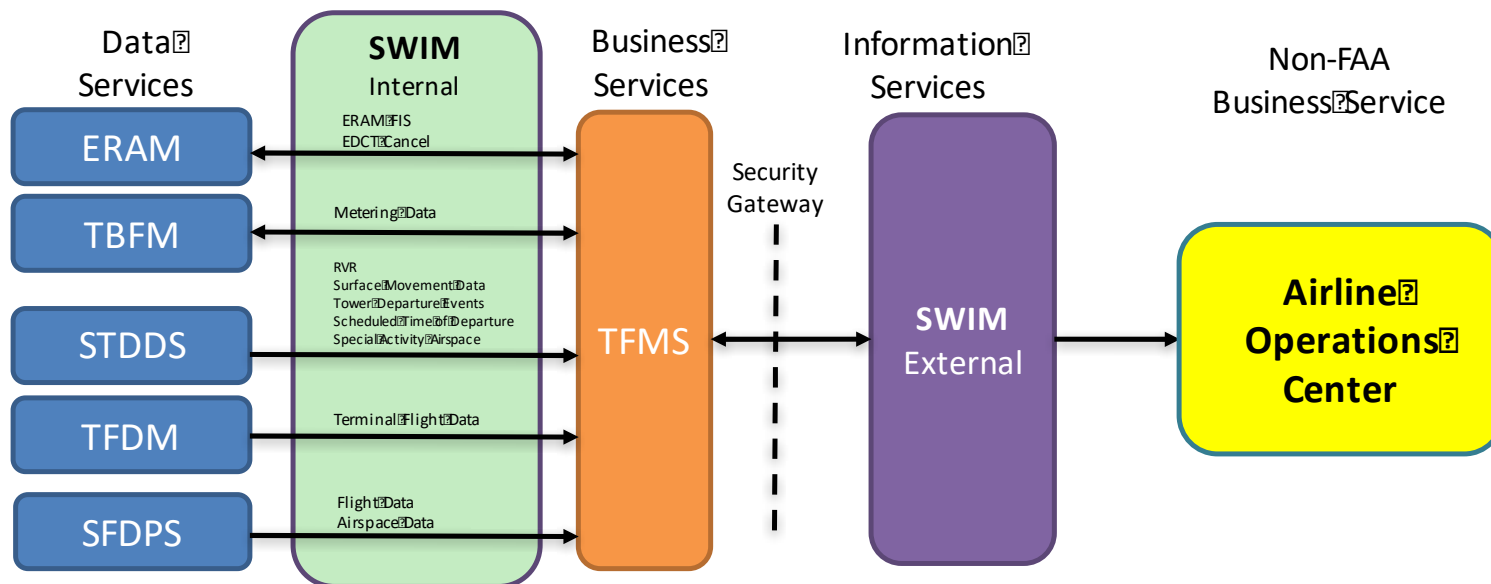


## System Wide Information Management



# Future State: Future NAS Operations

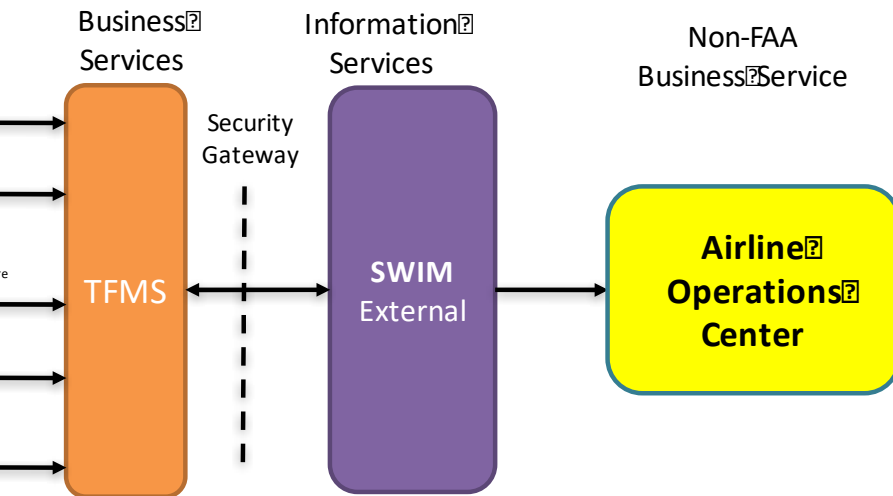
1. An Airspace User has access via SWIM to the TFMS Flow data include regular updates
2. With timely information, Airspace Users can formulate earlier actions to mitigate impacts of TFMS initiatives
3. ATC will have more accurate picture of actual traffic to and manage constraints and resulting TMI's
4. As information changes, updates provided to present current picture along with future projections
5. Planning and collaboration will improve with increased certainty
6. Gate usage, fleet management, crew resource management and customer experience will benefit
7. TFMS Flow data can be reformatted and shared with passengers to improve customer experience



# *Benefits of Improved Traffic Flow Information*

- **Improved access to timely and accurate TFMS information enables Airspace Users and the ANSP to make earlier decisions concerning resource management and business plans.**
- **This will result in:**
  - More accurate TMI creation and management
  - Better reroute decisions
  - Better decision making concerning aircraft fuel state and diversion management
  - Improved gate management
  - Improved crew management
  - Improved ground crew management
  - Improved delay planning
  - Improved fleet management
  - Improved customer experience by reformatting and sharing TFMS Flow data with passengers in easily consumable format.

# Many Objectives, One Mission: Flow Information Data Driven Real-time Decisions & Post-Ops Analysis



- **Air Traffic Control:**

- Responsible for safe and efficient use of airspace, maximizing airspace use and runway efficiency
- Success is defined by maximum use of runways and airspace, effective strategic planning, and minimal use of tactical interventions that add delay to flights

- **Airline Flight Ops:**

- Responsible for ensuring regulatory compliance, ensuring on-time operations, managing gate and crew resources, maintaining flight schedules, fleet management, and applying the airline's business model.
- Success is defined by predictable operations, on-time operations, adherence to schedules, effective gate, crew, and fleet management.

# Next Steps

- **Use input provided through discussion to develop**
  - Detailed Use Case document
  - Detailed Operational Functional Description
- **Send documents out for review and comment to SWIFT**
  - Looking for input on utility of documentation, relatability of problem statement to core aviation operations & additional considerations
  - Instructions from comments and submission deadlines will be dispositioned
- **Publish Use Cases and Operational Functional Description documents to the NSRR**

# Summary & Next Steps

- **Next Steps:**
  - Leverage feedback into use case & Ops functional description
  - Develop use case & operation functional documentation
  - Send out material for additional review
  - Create a Use Case review work group
- **Announcements:**
  - TFMData Webinar
- **Topics for next meeting:**
  - Future Services Roadmap
  - Review of Industry Issues from SWIFT #1
  - Airline Case Study
- **Next meeting: April 5, 2018 in Washington DC**