Topics

- DSS Vision – Rebecca Guy
- TFDM – Mike Huffman
  - Recent Activities
- TBFM Status – Bob Tyo
  - Recent Activities
- TFMS Status – Mark Novak
  - Release schedule
  - Data availability
  - Connectivity
- Q&A
NextGen is an ongoing transformation of the NAS.
- Incremental implementation of new technologies and procedures is vital to meeting future growth of aviation.

DSS facilitates NextGen vision through TFM – TFDM, TBFM and TFMS
- Ensures efficient flow of traffic and maximizes system throughput across the NAS
- Improves the quality of service to NAS users by accommodating user preferences
- Improves common situational awareness by real-time information sharing
Enable NextGen technologies in TFM operations

- Performance Based Navigation (PBN) – use of RNAV/RNP and Optimized Profile Descent (OPD) technologies in TBFM
- System Wide Information Management (SWIM) – TFM data exchange with external systems through SWIM
- System-wide solutions that are able to be tailored for individual aircraft –
  - Surface
  - Routes - Utilizing user preferences

Provide integrated, responsive and collaborative TFM solutions that maximize efficiency and reduce delay.

- **INTEGRATED:** Strategic and tactical TFM strategies are modeled and implemented as a single cohesive strategy.
- **RESPONSIVE:** Faster more effective responses to evolving conditions in the NAS.
- **COLLABORATIVE:** Data sharing among stakeholders facilitates solutions that impose no more controls on flights than needed, allowing flight operators to fly their preferred routes at preferred times.
Integrated TFM: 3Ts Working Together
DSS Accomplishments: TFDM

- Since March 2014:
  - Achieved Initial Investment Decision (IID) – March 2014
  - Conducted an Operational Evaluation Review (OER) at PHX – March 2014
  - Released Request for Information (RFI) #3 – April 2014
  - Finalized and received Joint Resources Council (JRC) approval on Early Implementation Strategy – May 2014
  - Completed Rescope of the entire program and received JRC approval – August 2014
  - Conducted Industry Outreach event – October 2014
  - Conducted an Operational Evaluation Review at LAS – October 2014
  - Released Draft Screening Information Request (SIR) and conducted vendor 1-on-1s – November 2014-through January 2015
  - Conducted an Operational Evaluation Review (OER) at SFO – March 2015
  - Completed Initial Operating Capability (IOC) at all 9 Surface Visualization Tool (SVT) sites (ATCSCC, SCT, NCT, PCT, SDF, C90, I90, A90, N90)
DSS Accomplishments: TBFM

Since March 2014:

- WP2 - Completed Information Sharing Software – March 2014 (3/13/14)
- WP2 - Implemented Information Sharing (internal) – April 2014 (4/24/14)
- WP2 - Completed Extended Metering via keysite of June 2014 (6/24/14)
  - Supported Ground Based Interval Management for Spacing (GIM-S) Acquisition Program Baseline(APB) milestone; Initial Operating Capability(IOC) of 9/22/14
- WP2 - Completed Integrated Departure Arrival Capability (IDAC), Convective Weather (Conv Wx) and Area Navigation (RNAV) SW Development in July 2014 (7/16/14)
- WP2 - Implemented Information Sharing (external) – July 2014 (7/24/14)
- WP2 - Completed IDAC Discovery Site Testing – September 2014 (9/25/14)
- WP2 – IDAC, Conv Wx and RNAV functionality in November 2014 (APB)
- WP3 – Final Investment Decision (FID) on track for April 2015
DSS Accomplishments: TFMS

Since March 2014:

- Collaborative Trajectory Options Program (CTOP) – March 2014
- Final Investment Decision (FID) Remote Site Tech Refresh – June 2014
- Route Availability Planning Tool (RAPT) in Chicago, NY, PHL, PCT – August 2014
- Released Draft Screening Information Request (SIR) - October 2014
  - Vendor comments will be posted NLT April 30 2015
- Traffic Flow Management (TFM) Data feed – November 2014
- Special Use Airspace (SUA) data in TFMS – November 2014
- Completed Release 11 OT&E – March 2015
- Continued to host TFMS monthly technical webinars
Terminal Flight Data Manager (TFDM) Program
Agenda

• TFDM Background & Schedule
• TFDM Program Overview
• TFDM Benefits
• Sites by Configuration
• Acronyms
Recent Joint Resources Council (JRC) decisions include:

- **March 2014**: Provided an Initial Investment Decision (IID)
- **May 2014**: Approved the TFDM Early Implementation Strategy
- **August 2014**: Approved a full program rescope
- **March 2016**: Planned Final Investment Decision (FID)

**Key TFDM acquisition activities are as follows:**

<table>
<thead>
<tr>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Checkmark] RFI #1 Release (12/11)</td>
<td>![Checkmark] RFI #2 Release (4/13)</td>
<td>![Checkmark] RFI #3 Release (4/14)</td>
<td>![Checkmark] Draft SIR Release (11/14)</td>
<td>![Checkmark] Vendor 1 on 1’s (1/15)</td>
</tr>
<tr>
<td>![Checkmark] Tech Eval Complete (9/15)</td>
<td>![Checkmark] Negotiations Complete (10/15)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please note TFDM information in this briefing may be subject to change until the FAA’s Final Investment Decision is complete.
TFDM Program Overview

Electronic Flight Data
- Electronic flight strips in the towers
- Systems interfaces with EFD
  - FDIO (Flight Plan data)
  - ASDE-X/ASSC – integration of surface surveillance
- STARS interface
- TDLS data exchange
- TFMS/TBFM data exchange via SWIM
- CDM data exchange with flight operations via SWIM

Traffic Flow Management
- Integration with TBFM and TFMS
- Improved surface demand predictions
- Enhanced Tactical Departure Scheduling (TDS)
- Runway balancing decision support capabilities
- Surface Situational Awareness capability in ATCTs, TRACONs, ARTCCs, & ATCSCC

Collaborative Decision-Making on the Surface
- Real time and forecasted flight data information sharing
- Flight specific schedule data exchange e.g. Gate, Earliest Off-Block Time, Target Movement Area Time
- Departure queue management (departure metering)
- Improved operations for flight prioritization

Systems Consolidation
- Departure Spacing Program (DSP) system replacement (requires EFD, Departure Scheduler, and TBFM/IDAC integration)
- Airport Resource Management Tool (ARMT) system replacement
- SMA system replacement
- EFSTS replacement

Please note TFDM information in this briefing may be subject to change until the FAA’s Final Investment Decision is complete.
TFDM Monetized Benefits Identified at IID

Airport Operators (27 Configuration A Airports)

Please note TFDM information in this briefing may be subject to change until the FAA’s Final Investment Decision is complete.

Estimated Lifecycle benefits at Configuration A Airports (Risk-Adjusted FY14 $M):

Please note TFDM information in this briefing may be subject to change until the FAA’s Final Investment Decision is complete.

Decision Support Systems Status

CDM Collaborative Decision Making

14
TFDM Benefits

Flight Operators

- Improved Predictability
- Less Taxi Time / Out Fuel Burn
- Improved Crew Utilization
- Increased Reliability of Connections

Airport Operators

- Reduced CO2 Footprint
- Improved Predictability
- Reduced Engine Noise

Air Traffic Control

- Better Information for Tactical Rerouting
- Fewer Aircraft in the Movement Area and Departure Queue (through departure metering)
- Better Sector Demand Loading Predictions
- Improved Surface Situational Awareness
- Improved Predictability
- Fewer Restrictions

Electronic Flight Data (EFD) in the ATCT enables real time data sharing. This is vital to maximize the efficiency of Collaborative Decision-Making on the Surface.

Passengers

- Improved Predictability
- Fewer Delays
- More Reliable Schedule Completion
- More Time Using Terminal Amenities
- Improved Passenger Satisfaction

Please note TFDM information in this briefing may be subject to change until the FAA’s Final Investment Decision is complete.
TFDM Monetized Benefit Outcome Definitions  
(Identified at IID)

**Flight Operators (Airlines), Airport Operators, ATC, & the Flying Public (Passengers)**

1. **Departure queue management** - Providing tools to improve pushback planning thereby shifting taxi delay from the taxi phase to the gate or non-movement area leading to reduced fuel burn and operating costs (63% of total monetized benefits)

2. **Increased opportunity for flight prioritization** - Improving coordination and data sharing between the ATC system and flight operators to give airlines more flexibility in prioritizing flights based on business needs (10% of total monetized benefits)

3. **Increased opportunity to take CFR delay at gate** - Improving coordination and data sharing between the ATC system and flight operators to shift CFR delay from the taxi phase to the gate (1% of total monetized benefits)

4. **Improved off-time compliance related to controlled departure times** - Providing more accurate predictions of event and taxi times to allow better compliance with the current controlled departure times (EDCT, CFR) (15% of total monetized benefits)

5. Improved reroute and shared fix coordination - Providing surface SA displays in TRACON and ARTCC to better coordinate reroutes and shared resource planning, reduces costs to maintain any current Surface SA displays (0.6% of total monetized benefits)

**FAA & Taxpayers**

1. **System consolidation** - Consolidating legacy ATCT systems to reduce supportability costs (10% of total monetized benefits)

2. **Elimination of paper flight strips** - Removing paper strips and supporting infrastructure (printers etc.) to reduce costs (0.3% of total monetized benefits)
**Planned Sites by Configuration**

**Configuration A (Full Capability, including CDM, TFM, and EFD/S) – 27 Sites**

- BOS – Logan Int’l Airport
- DEN – Denver Int’l Airport
- DFW – Dallas/Fort Worth Int’l Airport
- EWR – Newark Liberty Int’l Airport
- IAH – George Bush Int’l Airport
- JFK – John F. Kennedy Int’l Airport
- LGA – LaGuardia Airport
- SEA – Seattle-Tacoma Int’l Airport
- ATL – Hartsfield-Jackson Atlanta Int’l Airport
- BWI – Baltimore/Washington Int’l Thurgood Marshall Airport
- CLT – Charlotte Douglas Int’l Airport
- DCA – Ronald Regan Washington Int’l Airport
- DTW – Detroit Metropolitan Wayne County Airport

- FLL – Fort Lauderdale/Hollywood Int’l Airport
- IAD – Washington Dulles Int’l Airport
- LAX – Los Angeles Int’l Airport
- MCO – Orlando Int’l Airport
- MDW – Midway Int’l Airport
- MIA – Miami Int’l Airport
- MSP – Minneapolis-Saint Paul/Int’l Airport
- ORD – O’Hare Int’l Airport
- PHL – Philadelphia Int’l Airport
- PHX – Phoenix Sky Harbor Int’l Airport
- LAS – McCarron Int’l Airport
- SAN – San Diego Int’l Airport
- SLC – Salt Lake City Int’l Airport
- SFO – San Francisco Int’l Airport

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Please note TFDM information in this briefing may be subject to change until the FAA’s Final Investment Decision is complete.
Planned Sites by Configuration

Configuration B (Primarily Electronic Flight Data/Strips) – 62 Sites

Please note TFDM information in this briefing may be subject to change until the FAA’s Final Investment Decision is complete.
Prior to the implementation of TFDM capabilities, the Program Office is managing the implementation of the following:

- **TFMS Enabled Data Exchange for additional data elements**
- **Deployment of Surface Visualization Tool at 9 sites (ATCSCC, SCT, NCT, PCT, SDF, C90, I90, A90, N90); the current capability will be subsumed by TFDM/TFMS (Complete)**
- **Sustainment of the PHX AEFS prototype and deployment of additional AEFS prototypes at approximately 4 sites (CLE, LAS, SFO, CLT)**
- **Limited Tech Refresh of the EFSTS system**

Note: Early Implementation will mitigate schedule and technical risks to TFDM deployment by enabling testing, data collection, and assessments to enhance the TFDM System capabilities through early discovery and realization of early benefits.
Terminal Flight Data Manager (TFDM) Program
Time Based Flow Management (TBFM)
Vision Statement

The vision for TBFM is the expanded use of time based metering to enable gate-to-gate improvements in both fuel and throughput efficiencies by: applying spacing only where needed, allowing for the routine use of Performance Based Operations (PBO) to capitalize on advanced aircraft Flight Management System (FMS) capabilities, and adding more predictability to the ATC system.
IDAC, RNAV (IOC at ZLA/LAX/BUR)

Extended Metering/GIM-S (IOC at ZAB/PHX)

Info Sharing (ZTL - Delta)

GIM-S Implementation and Site Adaptation (5 FY15 targets)

IDAC Implementation (ZID, ZDC, ZOB, and ZBW)

WP3 FID

Terminal Spacing and Sequencing Design and Development (IOC at ZAB/PHX in 2018)
Information Sharing

• Provides additional information on metering operations to NAS users
  – SWIM-compliant approach providing metering information to NAS systems (TFMS) and external users

• Benefits (Non-NAS Consumers/Airlines)
  • Better predict arrival/departure times of aircraft
    • Insight into scheduled wheels-up times (scheduled departure time) once TBFM schedules a departure
    • Enhance situational awareness to improve airport/gate utilization

• Benefits (NAS Consumers)
  • Improve coordination between multiple FAA Systems to maximize efficiency
  • Conduct analysis of TBFM TMIs

• Key Milestones
  • April 2014 - ZTL started publishing data to SWIM; Volpe consuming.
  • July 2014 – MOA signed between FAA and Delta; Delta consuming.
  • Mar 2015 – Planned Enhancement; Filter Data for increased usability.
Information Sharing

- Supports RTCA Task Force 5 Operational Capability 46 and 47 (Improved CATM and Integrated System Wide Approach)
  - TBFM publishing the following categories of information:
    - Aircraft Information
      - Includes flight plan information, MRE information, ETAs, STAs, etc.
    - Configuration Information
      - Arrival Airport Configuration, Acceptance Rates, etc.
    - Metering Status Information
      - TMA Metering Status Group, Interface Status Group, etc.
What is GIM-S?

• Ground-Based Interval Management – Spacing (GIM-S) comprises a set of ground functions to support operations to:
  
  o Increase opportunities for Optimized Profile Descents (OPDs) by preconditioning the spacing and sequencing of the arrival stream
  o Minimize the use of vectoring for problem resolutions
  o Improve trajectory modeler performance with ADS-B data
  o Provide speed advisories to assist in the delivery of aircraft to a Meter Point/Meter Fix

• Functionality allocated across multiple platforms, creating this NextGen capability
Architecture

Scheduling and Sequencing

Trajectory Modeling

Problem Prediction and Resolution

Meter Lists and Constraints

Speed Advisories

ADS-B Surveillance

Speed Advisory Acceptance

HADDS/EDDS

Speed Clearances

Acceptance/Rejection

Display Processing

ERAM

Speed Advisories

ATC Response

CDM Collaborative Decision Making

27
Release 4.2; Extended Metering and Speed Advisory in support of GIM-S.

• GIM-S IOC concluded 9.2.14; GIM-S in use at ZAB.

• ZAB discontinues use of metering during high wind events
  • Three-phase fix (June-Nov phasing)
    • Reducing age of wind data from 2→1 hr,
    • correcting wind direction (parallax data),
    • standardizing interpolation methodology

ZAB; “Benefits of GIM-S during normal conditions greater than issues during wind events.”
Release 4.2; Extended Metering and Speed Advisory in support of GIM-S.

FY15 Activity Targets; 3Q-4Q

- Phoenix International Airport (PHX)
  - ZDV → ZAB (PHX) (New ACM Arrangement)
- Los Angeles International Airport (LAX)
  - ZOA → ZLA (LAX) (Coupled Scheduling)
- Denver International Airport (DEN)
  - Speed Advisory within current metering
  - Incorporate XM within ZDV airspace
  - Expand ACM to ZLC
- Minneapolis – St. Paul International Airport (MSP)
- George Bush Intercontinental/Houston Airport (IAH)
Release 4.3; IDAC (100,000 ft view)

- Automates the process of monitoring departure demand and identifying departure slots.
- Coordinates the departure times between airports and provides situational awareness to Air Traffic Control Towers (ATCT) so that they can select from available departure times.

The results of these enhancements are more efficient departure flows and less delay.
Release 4.3; IDAC (50,000 ft view)

- IDAC deploying HW to 15 new towers as well as existing towers

- Provides a new User Interface for ATCTs/ARTCC for departure management called the Integrated Departure Scheduler (IDS)
Release 4.3; IDAC and RNAV/RNP

- Last release for Work Package 2 APB Milestone.
- Successfully keysited at ZLA, LAX, BUR Nov 2015.
- Rolling out to ZID starting April 2015
- Rolling out to ZOB, ZBW, and ZDC in Fall 2015.
National Training

- Air Traffic Control – on line course complete and available; 90 minute overview
  - Subject Matter Expert (SME) – TMC/STMC
  - Course Validated with National Release in March 2015
  - Seven (7) day classroom training at FAAAC.
    - 100 students targeted in FY15
    - 250 students each in FY16 and FY17
    - All TMC/STMC’s to receive training.

http://we.tl/loFPpAT071 or https://employees.faa.gov/tv/?mediaid=1037
TBFM Work Package 3
Definition of Program

✔ Continuation of TBFM to meet shortfalls not included in WP2:

• Terminal Sequencing and Spacing (TSS)
  • 104128-24 – Time-Based Metering in the Terminal Environment
  • NAC Tier 1a priority
  • RTCA Task Force Recommendation

• Integrated Departure/Arrival Capability (IDAC)
  • 104117-11 – Integrated Departure/Arrival Capability
Enhancement Details

• Terminal Sequencing and Spacing (TSS) - Extend the metering capability into the terminal area by providing tools to terminal ATC and TMU for time-based merging, sequencing and spacing.
  – 5 airports (IAH, LAX, PHX, ATL, SEA)
  – Enables better runway delivery/ accuracy/ consistency necessary for Performance Based Navigation (PBN) and end-to-end metering.
  – Enables Flight Interval Management (FIM).

• Integrated Departure/Arrival Capability (IDAC) - Expand the deployment of the Integrated Departure Arrival Capability (IDAC), begun under TBFM WP2
  – Additional 5 ARTCCs (ZAB, ZJX, ZME, ZOA, ZTL) and associated towers.
Time Based Flow Management (TBFM)
Traffic Flow Management System (TFMS)
**TFMS Release Summary**

- **R10 Information Exchange**
- **R11 PreDeparture ReRouting (PDRR)**
  - Airborne ReRouting (ABRR) / Active Diversion
- **Data Center Tech Refresh**
- **R12 Remote Site Phase II**
- **Release 13 – More Data!**
- **Field Site Tech Refresh**

- Beginning backend fly.faa.gov and OIS redesign effort
- Add flights to TSD-C
TFM Data (Nov 2014) – New Data via SWIM

- Flow Constrained Area (FCA) / Flow Evaluation Area (FEA)
- Ground Delay Program (GDP) / Unified Delay Program (UDP)
- Airspace Flow Program (AFP)
- Collaborative Trajectory Options Program (CTOP)
- ATCSCC Advisories
- Ground Stop (GS)
- Reroutes
- Airport runway configuration and rates
- Airport deicing
- Restrictions
- Route Availability Planning Tool (RAPT) time-line data
- TFMS no longer RVR provider (now on SWIM)
Retirement of Legacy Feeds

• Current legacy feeds to be retired (Nov 2015) (Initial notice of retirement sent January 2014)

• What will be decommissioned:
  – ASDI - Aircraft Situation Display to Industry
  – TFMDI - TFM Data to Industry
  – TFMDG - TFM Data to Government
  – FTM_Connect (Research)
  – TFMS RVR feed

• Additional TFMDData changes:
  – Data not delayed
  – Security audits not required
  – Policy being developed for International data
Release 11 - Route Amendment

Reroutes can be done via Automation (TFMS to ERAM)

- Can be done Pre-Departure (PDRR)
  - Accepted and automatically applied
- Can be done Airborne (ABRR)
  - Sent to controller for implementation
- When: Working with ERAM on turn on date

Decision Support Systems Status
Introduces the concept of >Protected Segments<

A Protected Segment is the portion of the route that a controller is expected to leave the aircraft on.

- Protected Segments are enclosed in Chevrons >…<
- Protected Segments are depicted in Blue
- Reroute Monitor only checks the Protected Segment for conformance
- Protected Segments will “inhibit automatic route adaptation” by ERAM
Diverted Flight List

- Stand alone application on TFMS workstation
- Displays flights that divert destination
- Displays summary counts
- Deployed at ATCSCC
- National deployment with R11

Demo in Break Out Session Tomorrow
TFMS Release 12 - November 2015

• Implement new reporting tool
  ❖ Provides users ability create, tailor/filter, save and export
  ❖ Changes available to CDM Community via TSD thin-client in Release 13

• FSM and NTML to SGD thin client (FAA Only)
  ❖ Small Facilities will now have access to full set of TFMS tools
TFMDATA Enhancements Release 13 – Spring 2016

• Terminal Flight Data Manager (TFDM) Interface
  – Ingest initial surface data elements for early implementation via SWIM
  – Improve TFMS departure modeling
  – Distribute new messages via TFMDATA

• Remaining ADL fields added

• International Data Provider (IDP) interface
  – Replace current legacy interfaces using SWIM/NEMS message exchange

• Replace legacy email / advisory delivery
  – Provide advisory and general message data from various TFMS apps in fully formed XML
FAA committed to adopt International Data Exchange standards:

- **Aeronautical Information Exchange Model (AIXM)**
  - Covers, airports, routes, TMIs, NAVAIDs, airspace sectors
  - [http://www.AIXM.aero](http://www.AIXM.aero)

- **Flight Information Exchange Model (FIXM)**
  - Evolving data format for flight specific life-cycle info
  - [http://www.FIXM.aero](http://www.FIXM.aero)
Data Mediation

- TFMS R10’s TFMDaData Service created in native TFMS XML format
- TFMS R13’s new TFMDaData Service Enhancements (for TFDM and IDP) to be AIXM and FIXM compliant
- How do I keep up with evolving standards
Mediation Service

• Initial mediator translates from R10 to AIXM/FIXM format

• When will it be available?
  — September 2015

• SWIM requesting testers (Jim Robb’s email)
TFMData: How Do I Get Connected? Step 1

• Register for an account on the NAS Service Registry Repository (NSRR)
  – access detailed information on the TFMD ata service, such as the Web Service Description Document (WSDD).

TFMData: How Do I Get Connected? Step 2

Register for an account on the Access Agreement Portal and request access to the TFMData service.

https://data.faa.gov

(May need to use Chrome)

– Data will not be delayed
– Audits will no longer be required
TFMData: How Do I Get Connected? Step 3

• Send an email with a request to be transitioned from ASDI to the new TFMData service.
  – You will be contacted by one of the FAA’s External Consumer On-Ramping team members who will coordinate a kick-off meeting to discuss next steps.

Data-To-Industry@faa.gov
How Do I Get More Info?

• Monthly TFMS Tech Telcon
  – Second Thursday of every month
  – Agenda topics accepted in advance
  – Next TELCON April 9th, 2015 1:00 PM
    • Register ahead of time to receive the bridge number and passcode.
      https://www4.gotomeeting.com/register/803358471
    • Send questions or advance TELCON topics to
      Chris.Burdick@faa.gov and/or Thomas.CTR.Paccione@faa.gov
Traffic Flow Management System (TFMS)
BACKUP
TFDM Monetized Benefits Identified at IID

Flight Operators

Estimated Lifecycle user benefits by Top 40 Airlines at Configuration A Airports (Risk-Adjusted FY14 $M):

PVT = Passenger Value of Time
ADOC = Aircraft Direct Operating Costs

Please note TFDM information in this briefing may be subject to change until the FAA’s Final Investment Decision is complete.
SWIM On-Ramping Process

1. Processing of required paperwork and formulate requirements
   - Complete the R&D Domain Connectivity Form
   - Get access to the NSRR / Identify data products
   - Develop on-ramping form
   - Complete the FAA NAS Data Release Process

2. Development and testing of Consumer interface in the R&D Domain
   - Establish connectivity to the R&D Domain
   - Develop Consumer interface
   - Test with the Enterprise Messaging Service (EMS)

3. Interoperability testing in the FTI National Test Bed (FNTB)
   - Establish connectivity to the FNTB domain
   - Develop and execute test plan

4. Cutover of Consumer interface to Production NEMS
   - Establish connectivity to the NESG
   - Establish connectivity with the NEMS
   - Meet NAS Data Release Board (NDRB) requirements

5. Start consuming NAS data

Note: Existing NEMS users may skip to the FNTB stage.
Advanced Transformation and Mediation Services
High Level Architecture

Transformed, Governed, Standardized Content

Legacy Data

XML Data

External Consumers/Producers

External Consumers/Producers

External Consumers/Producers

External Consumers/Producers

Flight & Flow Information Producers

Weather Information Producers

Aeronautical Information Producers

Flight & Flow Information Producers

Weather Information Producers

Aeronautical Information Producers

Aeronautical Information Producers

Internal NAS Consumers/Producers

Internal NAS Consumers/Producers

Internal NAS Consumers/Producers

Advanced Transformation and Mediation Services

Transformation Infrastructure

Security Gateway (NESG)

SWIM NAS Enterprise Messaging Service (NEMS)
## Basic Surface Data Elements in TFMS Release 13

### Flight Data Provided by Flight Operators

<table>
<thead>
<tr>
<th>Data Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual Off-Block Time (AOBT)</td>
<td>The actual time at which a flight has sent a ‘block out’ message from the gate or parking location. This information will be used to help determine the accuracy of flight operators' Earliest Off Block Time (EOBT).</td>
</tr>
<tr>
<td>Actual Takeoff Time (ATOT)</td>
<td>The time at which a flight lifts off from the runway as reported by the CDM Participant via a CDM message. If the CDM participant sends more than one value, the most recently submitted time is contained in this field. Otherwise, the value is null. This time stops the DOT3 time for departing flights.</td>
</tr>
<tr>
<td>Actual Landing Time (ALDT)</td>
<td>The Actual time the flight has landed on the runway. Sharing arrival information provides essential information to facilitate gate conflict and demand/capacity imbalance predictions. This element is the DOT3 arriving aircraft time trigger.</td>
</tr>
<tr>
<td>Actual In-Block Time (AIBT)</td>
<td>The Actual time the flight has blocked in at the gate. Sharing arrival information provides essential information to facilitate gate conflict and demand/capacity imbalance predictions for both gate and departure predictions on availability.</td>
</tr>
<tr>
<td>Aircraft Tail/Registration #</td>
<td>A unique, alphanumeric string that identifies a civil aircraft and consists of the Aircraft Nationality or Common Mark and an additional alphanumeric string assigned by the state of registry or common mark registering authority. “Aircraft Registration Mark” in FIXM Core.</td>
</tr>
<tr>
<td>Earliest Off-Block Time (EOBT)</td>
<td>Time when the flight operator plans for an aircraft to push back from its assigned gate. The system can forecast surface demand vs. capacity based on flight operator’s best estimation of push back time. The fidelity of EOBT is required for proper surface predictions and process.</td>
</tr>
<tr>
<td>Flight Cancellation</td>
<td>Message that indicates a flight has been cancelled. Identifies a cancelled flight to ensure that resources are not engaged and/or fully utilized.</td>
</tr>
<tr>
<td>Flight Intent</td>
<td>The Flight Intent would be limited to Flight Operator plan to push back early during a DMP and hold in the AMA.</td>
</tr>
<tr>
<td>Gate Assignment</td>
<td>Airport Gate that is assigned to a flight. Gate information will lead to more accurate ramp transit time (RTT) calculations and therefore more accurate ETD.</td>
</tr>
<tr>
<td>Initial Off-Block Time (IOBT)</td>
<td>The initial off-block that a flight provided. Used to save the original Off-Block time of the flight. Useful for flight data matching.</td>
</tr>
<tr>
<td>Earliest Runway Time of Departure (ERTD)</td>
<td>The flight operator estimate of runway departure time not including any traffic management initiatives.</td>
</tr>
</tbody>
</table>

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**Decision Support Systems Status**
Surface Data Exchange Evolution

**Initial FOC Data Elements**
- Actual Off-Block Time (AOBT)
- Actual Takeoff Time (ATOT)
- Actual Landing Time (ALDT)
- Actual In-Block Time (AIBT)
- Aircraft Tail/Registration #
- Earliest Off-Block Time (EOBT)
- Flight Cancellation
- Flight Intent
- Gate Assignment
- Initial Off-Block Time (IOBT)
- Earliest Runway Time of Departure (ERTD)

**Additional Flight Intent Data**
- Gate Return Intent
- Intended Departure Spot
- Intended Arrival Spot
- Intent to Hold in the Airport Movement Area During Arrival
- Intent to Hold in the Airport Movement Area During Departure
- Intent to Hold in the Airport non-Movement Area During Arrival
- Intent to Hold in the Airport non-Movement Area During Departure
- Intended Deicing Location
- Intent for a Flight to be Deiced

**Additional Gate Data**
- Arrival Stand Assignment
- Arrival Stand Availability
- Departure Stand Assignment

**Other Additional Data**
- Departure Readiness Status
- List of Acceptable Departure Runways
- List of Unacceptable Departure Runways
- TMAT Marked For Substitution Indication
- TMAT Relinquish Indication

**FAA Provided Data**
- Placeholder 1, Target Movement Area Entry Time [TMAT] in TFDM ConOps
- Placeholder 2, Target Off-Block Time [TOBT] in TFDM ConOps
- Placeholder 3, Target Take-Off Time [TTOT] in TFDM ConOps
- Placeholder 4, Projected Wheels Up Time [PWUT]

**TFMS Data Placeholders to Enable Future TFDM**

**TFMS and TFDM Program Timeline**
- TFDM FID: MAR 2016
- TFMS R13: May 2016
- TFDM IOC: FY 2019
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