Traffic Flow Management System (TFMS)

Presented to: Industry Forum
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Introduction
Operational Interdependencies of Decision Support Programs
What is TFMS?

Traffic Situation Display

Flight Schedule Monitor

National Traffic Management Log

Operational Info System

Enhanced Status Info System

20+ user/data interfaces

Playbook

Departure Spacing Program

fly.faa.gov
TFMS Architecture Summary

- **Centralized data processing**
  - TFM Production Center (TPC) at WJH Technical Center
    - Centralized help desk, system management and test labs
    - Disaster Recovery Center (DRC) in Northern VA
- **88 FAA field sites – 900+ workstations**
- **Custom applications running on commercial hardware and software**
- **30+ interfaces with NAS subsystems and stakeholders**
  - Military, industry, public and international
- **Classified as Mission Efficiency Critical**
  - Designed for 99.9% service availability
TFMS Release Development Summary

- R8 RAPT – Chicago
- R9 CTOP
- R10 Information Exchange
- R11 Airborne ReRouting (ABRR)
- Data Center Tech Refresh
- R12 Remote Site Phase II
- Release 13 – scope not yet final
- Field HW Tech Refresh (pending invest decision)
TFMS Development Collaboration

• **Collaborative Decision Making (CDM)**
  – A joint government and industry initiative
  – Workgroups

• **TFM Deployment Team**
  – FAA & Flight Operator

• **Industry Forums**

• **Monthly Technical Webinars**
Collaborative Trajectory Options Program

- A more collaborative approach to mitigating constraint impacts
- Participating operators have more influence with how this new Traffic Management Initiative (TMI) affects individual flights
  - Provide Trajectory Option Set (TOS)
  - Weighted preferences support operator’s business model
- FAA can model and manage up to 4 Flow Constrained Areas (FCA) in one CTOP

Benefits of TOS use without CTOP

- Operator submission improves prediction and planning
## CTOP Trajectory Option Set (TOS)

### Flight ID

<table>
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<tr>
<th>ACID</th>
<th>ORIG</th>
<th>DEST</th>
<th>IGTD</th>
<th>TYPE</th>
<th>ERTD</th>
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<td>ATL</td>
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### Trajectory Option Set

<table>
<thead>
<tr>
<th>RTC</th>
<th>RMNT</th>
<th>TVST</th>
<th>TVET</th>
<th>Route</th>
<th>ALT</th>
<th>SPEED</th>
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<td>TRM PKE DRK J6 IRW FSM MEM ERLIN9</td>
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<td>1745</td>
<td>2200</td>
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<td>310</td>
<td>430</td>
</tr>
</tbody>
</table>

**IGTD** – Initial Gate Time of Departure  
**ERTD** – Earliest Runway Time of Departure  
**RTC** – Relative Trajectory Cost  
**RMNT** - Required Minimum Notification Time  
**TVST** – Trajectory Valid Start Time  
**TVET** - Trajectory Valid End Time

Values provided by Flight Operators
How to know a CTOP is running

- The Command Center issues the CTOP
- The CTOP can be viewed at www.fly.faa.gov/ois

For more info, see http://tfmlearning.faa.gov/CTOP.html
CTOP Collaboration Summary

FAA and Industry worked together on concept and implementation
- **2003 - 2010** Concept worked by Collaborative Decision Making (CDM)
- **2010 - 2014** Design, deployment, procedures and training worked with FAA and Industry

Information Exchanges
- **2010 - 2014** CDM General Sessions -- briefed status and fielded questions from industry
- **2010 - 2013** FAA hosted several Industry Forums on CTOP
- **2011 - 2014** Monthly technical webinars with industry and software vendors
- **Feb 2014** Technical workshop sessions in Atlanta

Joint FAA / Industry Testing
- **May 2013 - Feb 2014** Conducted end-to-end testing sessions

Training
- **Jan 2014** Website shared by FAA and industry
- **Feb 2014** Command Center classroom sessions
• **Collaborative Information Exchange (CIX)**
  - Via NAS Enterprise Messaging Service (NEMS)
  - System-Wide Information Management (SWIM) compliant interfaces
  - Publish TFMData Service
  - Subscribe to TBFM Control Times
  - Subscribe to RVR
  - Subscribe to Special Use Airspace
Release 10 TFMDATA

• **Flight Data**
  – ASDI
  – FTM_Connect deltas

• **Flow Information**
  – All TMI definitions
    • Reroutes, GS, GDP/UDP, AFP, CTOP
  – FEA/FCA definitions
  – ATCSCC advisories
  – Restrictions
  – Airport configuration and rates
  – Airport Deicing status
  – RAPT timeline forecast data
Release 10 TFMDData (cont.)

- Available via NEMS to internal and external clients
  - Subscription-based via JMS interface in XML
  - Supports message routing, filtering, and message delay per client access rights
  - To learn more and subscribe
    - Access Web Service Description Document (WSDD) via the NAS Service Registry / Repository (NSRR)
    - [www.faa.gov/nextgen/swim](http://www.faa.gov/nextgen/swim)

- **FAA to discontinue legacy data feeds by Nov 2015**
  - ASDI, TFMDG, TFMDI, FTM_Connect
  - Notice sent January 2014

- **Monthly TFM Technical Telecon – 2nd Thursday**
  - POC: Christopher Burdick, chris.burdick@faa.gov
Release 10 TBFM Control Times

• Ingest Schedule Time of Departure (STD) and cancelations

• Update TFMS demand prediction

• Displayable as “TMA-RT” fields in dynamic and flight history lists on TSD and FSM apps

• ADL specification update – new ETD prefix “M”
Release 10 RVR Changes

- TFMS will ingest terminal SWIM RVR feed

- **TFMS will end collection and distribution of RVR data in Nov 2015**

- External clients must subscribe to the SWIM/NEMS service
  - [www.faa.gov/nextgen/swim](http://www.faa.gov/nextgen/swim)
R10 Special Use Airspace (SUA)

- Ingest and display SUA **planned** active schedules
  - Subscribe to AIM SWIM service
  - Text lists and graphical display on TSD
- Can create FEAs or FCAs directly from SUA schedule

**Will not indicate if SUA is actually “hot” or not**
Time to Talk FIXM / AIXM

• FAA commitment to adopt international standards
  – Working on migration plan with the Operational Concepts, Validation & Requirements Directorate (AJV-7)

• Aeronautical Information Exchange (AIXM)
  – Currently covers, airports, routes, 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
Possible Migration Strategy

Translation Service

Baseline Upgraded

Baseline Interface

New / Revised Standard

Working toward having a process defined by 2015
Release 12 November 2015

• **Implement new COTS-based reporting**
  – Provides users ability create, tailor/filter, save and export
  – Changes available to CDM Community via TSD thin-client
  – Thirteen (13) templates expected for initial capability

• **Replace legacy email / advisory delivery**
  – Use modern messaging protocols
  – Provide advisory and general message data from various TFMS apps in fully formed XML
  – Will require industry change
Release 13 Candidates

• **TFMData Enhancements**
  – International Data Provider (IDP) interface
    • Goal is to replace current interfaces using SWIM/NEMS message exchange
  – Foreign TFMS Application Interface
    • Sunset software export
    • Capability to enter FCA/FEA’s and TMIs
      – Reroutes, AFP, GS, and GDP/UDPs
  – Add Aggregate Demand List (ADL) deltas
    • To support FSM application
    • Enable retirement of old and inefficient method
• Terminal Flight Data Manager (TFDM) Interface
  – Ingest select surface data elements for early implementation
    • Improve departure modeling
    • Distribute new messages via TFMDATA
    • New dynamic flight lists in TSD (and thin-client) for departure airports and fixes
Questions & Answers