Traffic Flow Management System (TFMS)

Presented to: Industry Forum

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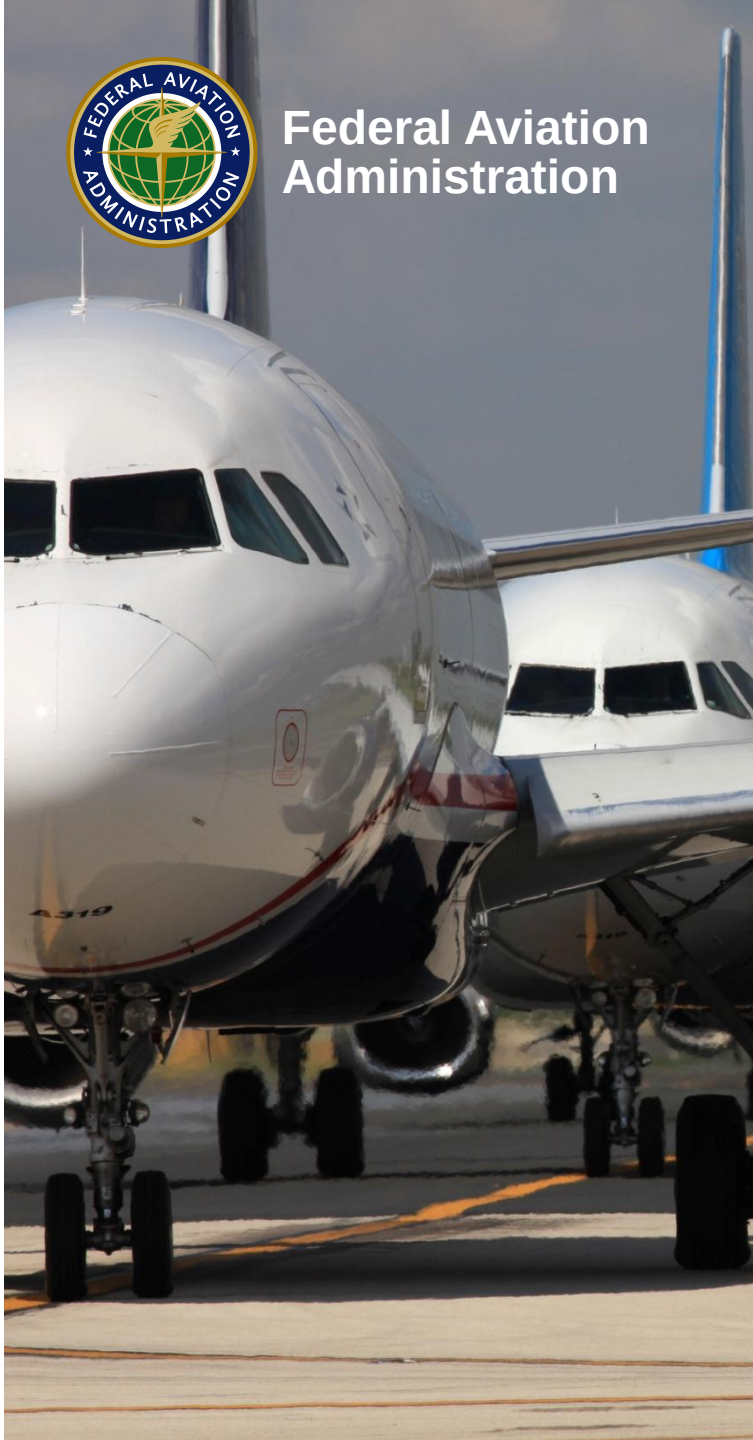
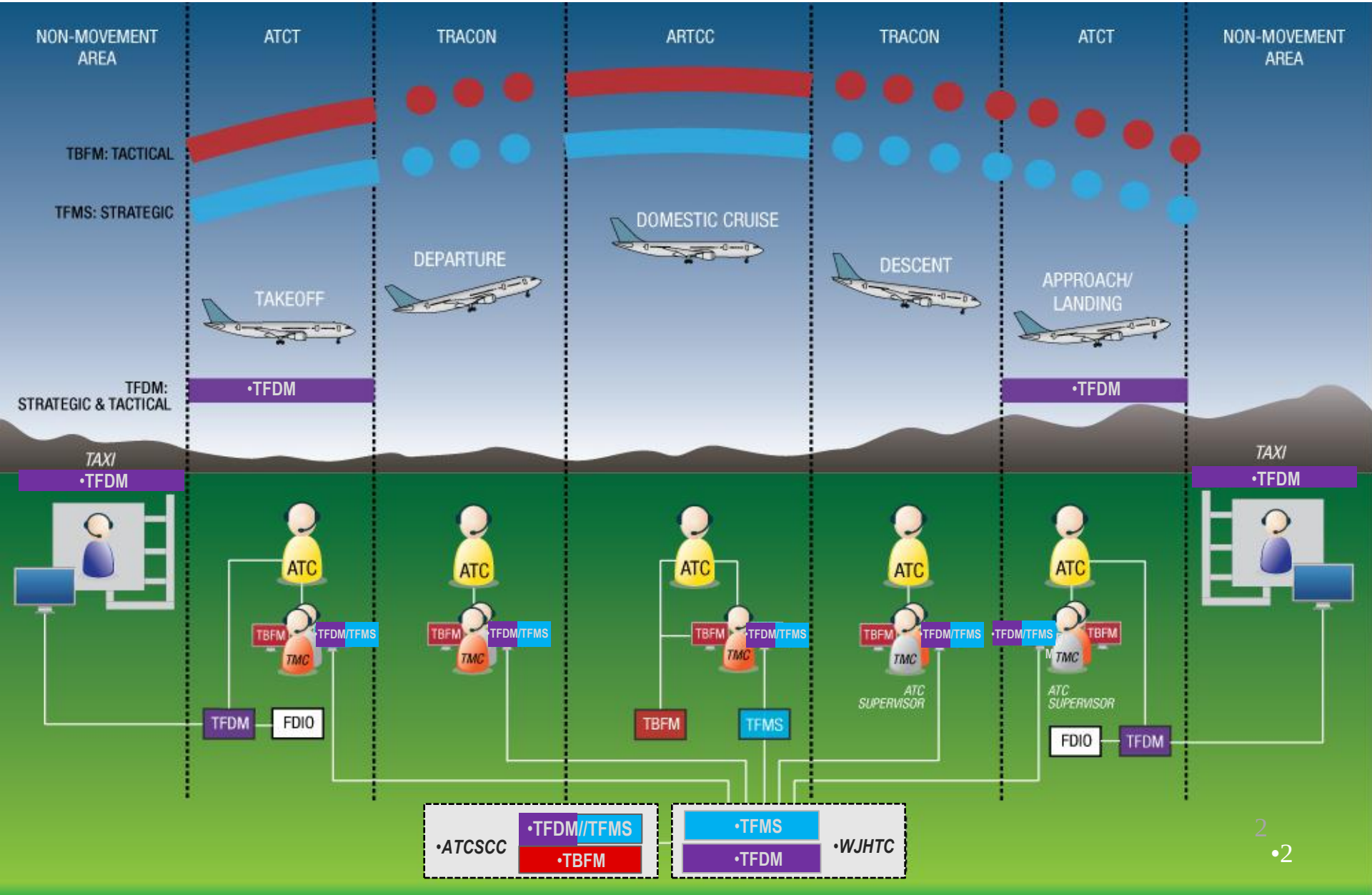
Date: April 23, 2014



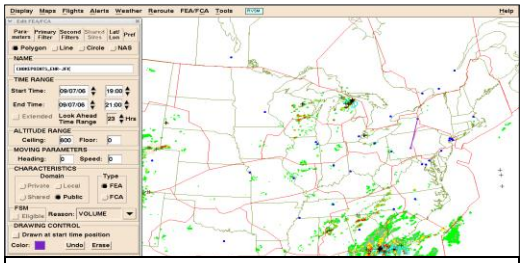
Introduction

Operational Interdependencies of Decision Support Programs

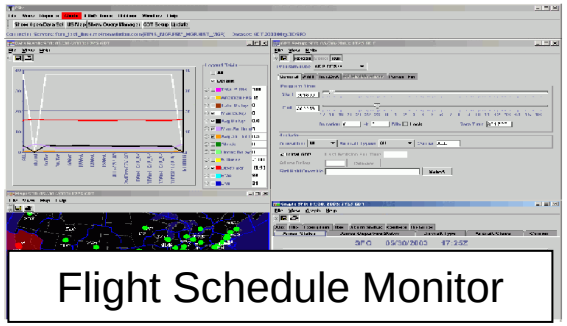



IMPROVING
TOGETHER

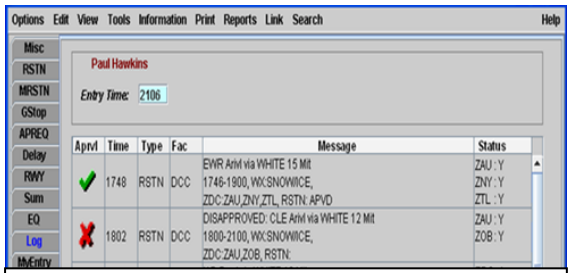
What is TFMS?



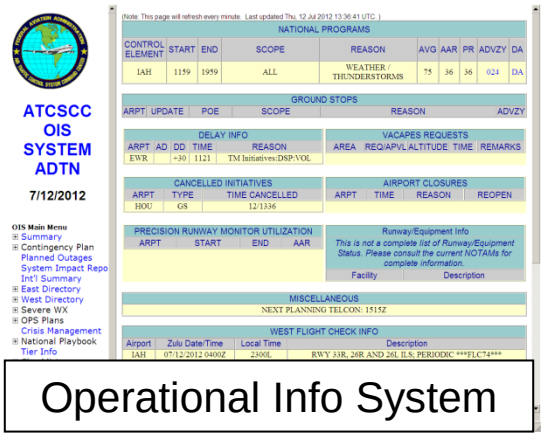
Traffic Situation Display



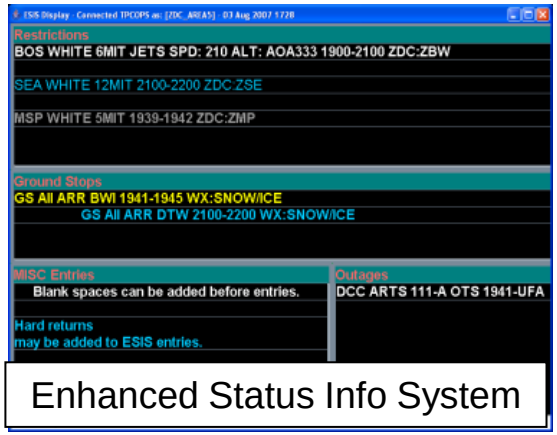
Flight Schedule Monitor



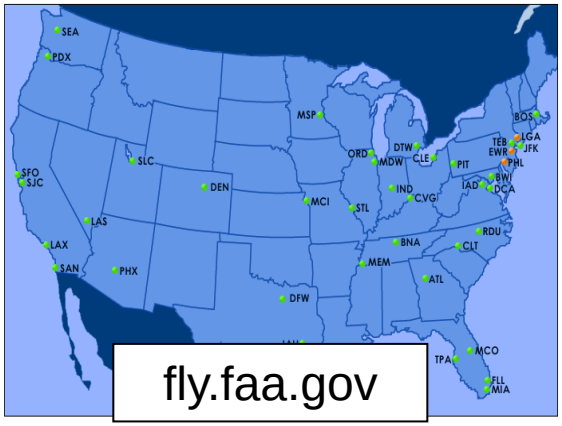
National Traffic Management Log



Operational Info System

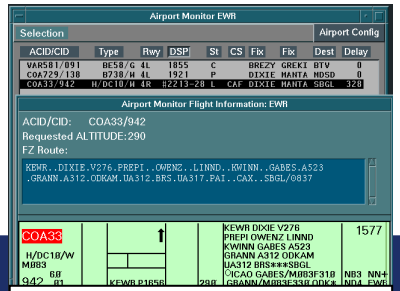


Enhanced Status Info System



fly.faa.gov

Playbook



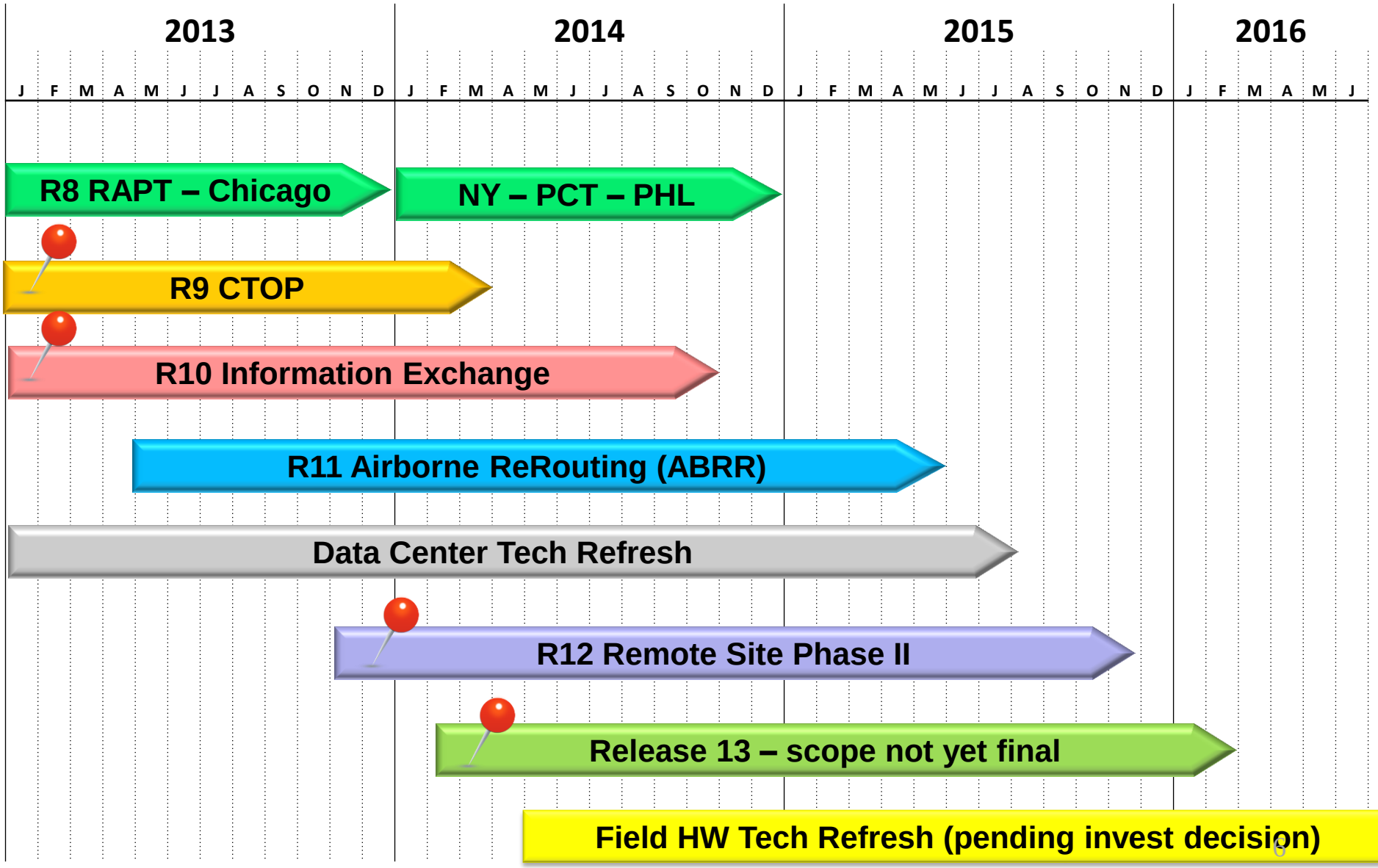
Departure Spacing Program

20+ user/data interfaces

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



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**
  - Mail list sign up at http://cdm.fly.faa.gov under CDM Info Exploder List

Release 9 Deployed March 22, 2014

- **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

ACID	ORIG	DEST	IGTD	TYPE	ERTD
ABC123	LAX	ATL	05/1945	LJ60	05/1945

Trajectory Option Set

RTC	RMNT	TVST	TVET	Route	ALT	SPEED
0				TRM PKE DRK J6 IRW FSM MEM ERLIN9	350	435
30			2045	TRM PKE DRK J134 LBL SGF BNA RMG4	350	435
50		2045		TRM PKE DRK J134 BUM FAM BNA RMG4	350	430
60		1945	2145	TRM BLH J169 TFD J50 SSO J4 EWM J66 ABI J4 MEI LGC2	350	425
70	45	1745	2200	TRM BLH J169 TFD ELP J2 JCT J86 IAH J2 LCH J590 GCV LGC2	310	430

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

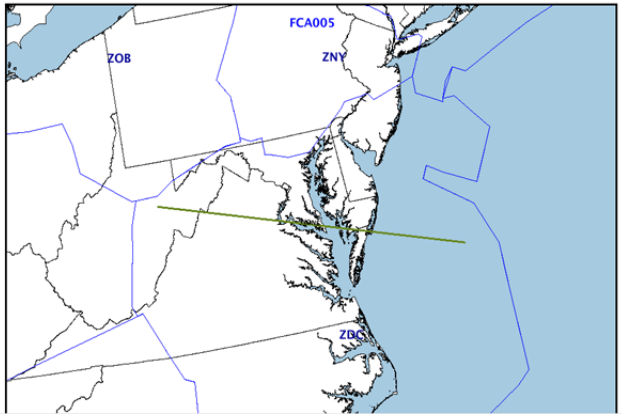
Note: This page will refresh every minute. Last updated Wed, 01 Aug 2012 15:37:00 UTC.)

NATIONAL PROGRAMS									Edit
PROGRAM NAME	START	END	SCOPE	REASON	AVG	AAR	PR	ADVZY	DA
CTP001	1543	1359	ALL	WEATHER / FOG	974	--	20	005	DA
CTP002	1723	1359	ALL	WEATHER / VISIBILITY	524	--	60	009	DA
FCA003	1335	2330	See Control Element...	OTHER / OTHER	22	--	5	001	DA
ATL	2140	1544	(Distance) - 1100 miles	EQUIPMENT / OUTAGE	501	20	20	008	DA
DCA	2134	0244	1stTier						

Web Server 6.1 Administration Server | OIS | AFP Details | OIS | Summary

(Note: This page will refresh every minute. Last updated Wed, 01 Aug 2012 16:18:12 UTC.)

CTOP DETAILS	
CTOP NAME	CTP005
SCOPE	ZAB ZSE ZFW ZKC ZME ZTL ZOA ZLC ZLA ZAU ZMP ZDV ZID ZMA ZHU ZJX ZBW ZOB ZDC ZNY
CTOP START/END	1722/0400
FCA START/END	1700/0400
ALT. FLOOR/CEILING	0/600
FILTER SUMMARY	



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

Release 10 October 2014

- **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 TFMData (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**
- **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

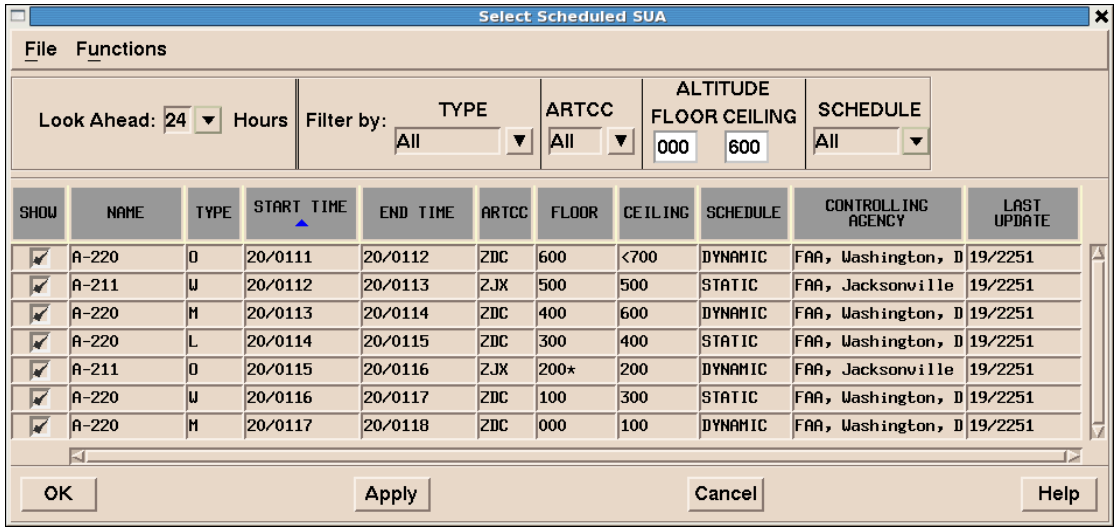
- **Ingest Schedule Time of Departure (STD) and cancelations**
- **Update TFMS demand prediction**
- **Displayable as “TMA-RT” fields in dynamic and flight history lists on TSD and FSM apps**
- **ADL specification update – new ETD prefix “M”**
  - Under R10 documents at http://cdm.fly.faa.gov/de.html

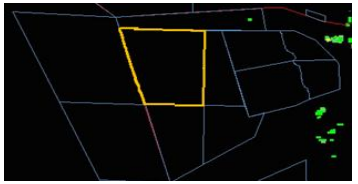
Release 10 RVR Changes

- **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**

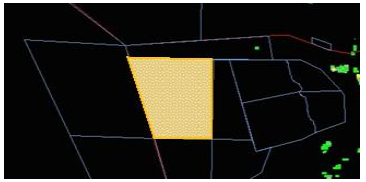
R10 Special Use Airspace (SUA)

- **Ingest and display SUA <u>planned</u> active schedules**
  - Subscribe to AIM SWIM service
  - Text lists and graphical display on TSD





15 min before Scheduled



During Scheduled

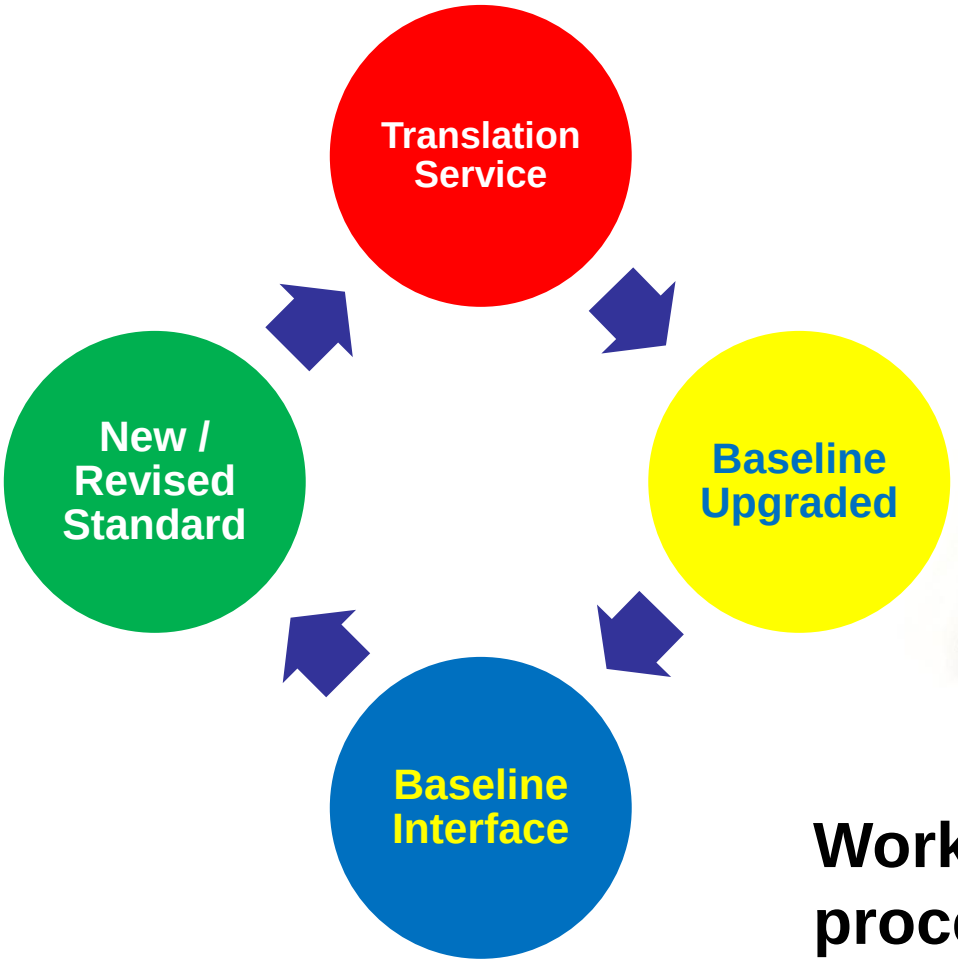
  - Can create FEAs or FCAs directly from SUA schedule

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

Possible Migration Strategy



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

Release 13 Candidates (cont.)

- **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