Terminal Flight Data Manager (TFDM)

System Description
FAA Terminal Program Industry Day Briefing

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Terminal Flight Data Manager

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• System Description
• Core System Overview
• Interdependencies
• Notional Architecture
• Questions
TFDM Description

TFDM will provide efficiencies in the airport surface and terminal airspace by providing new integrated surface traffic control and management capabilities, including:

| **S-CDM** | Surface collaborative decision making (S-CDM), including departure scheduler, departure metering, and other airport decision tools |
| **EFD** | Electronic Flight Data and Electronic Flight Strips in the Tower |
| **TFM** | Enhanced Air Traffic Control Tower (ATCT) Traffic Flow Management |
| **Systems Consolidation** | Replacement or subsumption of multiple systems in the National Airspace System (NAS) |
TFDM Core System *(Current)*

- Electronic flight strips
- ERAM data exchange via FDIO
- ASDE-X/ASSC – integration of surface surveillance and aircraft state, local flight data exchange, and safety logic notifications
- STARS data exchange
- PDC/DCL Integration
- TFMS/TBFM data exchange
- S-CDM data exchange with flight operations systems (FOSs)

- Integration with TBFM and TFMS
- Surface trajectory modeling
- Improved demand predictions
- Enhanced Tactical Departure Scheduling (TBFM)
- Airport configuration/runway balancing planning
- SSA capability in ATCTs, TRACONs, ARTCCs, & ATCSCC

- Real time and forecasted flight data information sharing
- Flight specific schedule data exchange e.g. Gate, EOBT, TMATs
- Departure metering (virtual departure queue management/flight operation substitutions)
- Enhanced flight operators decision-making ability to prioritize aircraft departures
- Surface resource use predictions

- EFSTS replacement at 77 sites
- Departure Spacing Program (DSP) system replacement (requires EFD, Departure Scheduler, and TBFM/IDAC integration)
- Airport Resource Management Tool (ARMT) system replacement
- SMA system (in Atlanta) replacement
- TDLS PDC/DCL display replacement
**TFDM Core: System & Operational View**

**TFDM Capabilities**

(allocated to new and existing platforms)

- **Electronic Flight Data (EFD) Mgt**
  - Electronic Flight Strip Mgt
  - Flight data integration with ASDE-X, ASSC, TDLS, STARS, and airport resource data
  - Tower Resource Mgt

**TFDM Interfaces**

- ERAM via FDIO and/or Direct
- ASDE-X/ASSC
- STARS
- Tower DataLink Service (TDLS)
- NAS Information Display System (NIDS)
- Fight Data Pub Services (FDPS)
- SWIM Terminal Data Distribution System (STDDS)
- Traffic Flow Mgt System (TFMS) including NTML
- Time-Based Flow Mgt (TBFM)
- Flight Operator Systems (FOSs) includes FOCS, Airport Authorities, Ramp Towers, & De-Icing Ops
- FTI GPS Time Source
- Remote Monitor & Logging System (RMLS)
- CountOps and OpsNet
- Tower Simulation System (TSS)

**ATCT Displays**

- **Local Control (LC)**
  - FDD
  - IDS
  - SSD
  - STARS TDW

- **Ground Control (GC)**
  - FDD
  - IDS
  - SSD
  - STARS TDW

- **Clearance Delivery (CD)/Flight Data (FD)**
  - Gate Hold/Ground Metering (GH/GM)
  - FDD
  - IDS
  - SSD
  - D-ATIS

- **Front Line Manager (FLM)**
  - FDD
  - SMD
  - FMD
  - IDS

- **Traffic Mgt Coordinator (TMC)**
  - TBFD/TMA/EDC/IDAC
  - SMD
  - SSA*
  - TFMS TSD

**User Display Acronyms**

- EDC – En Route Departure Capability Display
- FDD – Flight Data Display with PDC/DCL
- FMD – Front Line Manager Display
- IDAC – Integrated Dept/Arrival Capability Display
- IDS – Information Display System
- SMD – Surface Management Display
- SSA* - Surface Situational Awareness Capabilities
- SSD – Surface Surveillance Display (ASDEX, etc.)
- TDW – Tower Display Workstation
- TMA – Traffic Management Advisor Display
- TSD – Tactical Situation Display
- TRACON – FDD**
- Non-TFDM ATC Displays

**TFDM Internal & External Interfaces**

- Traffic Flow Data Mgt (TFD)
- Surface Scheduling & Metering (SSM)
- Airport Resource Mgt (ARM)
- Surface Situational Awareness (SSA)
- Modeling & What-If Simulation (MWS)
- Operational Measurement, Reporting, Analyses (MRA)
- System Administration Support (SAS) & Monitor and Control (M&C)

**TFDM S-CDM Capabilities**

- TFDM EFD Capabilities
- TFDM TFM Capabilities
- TFDM General Capabilities

**Key**

- TFDM S-CDM Capabilities
- TFDM EFD Capabilities
- TFDM TFM Capabilities
- TFDM General Capabilities
- Non-TFDM ATC Displays
TFDM Interdependencies

Major Internal Interfaces

TFDM Local
• ASDE-X/ASSC
• FDIO PC-RCU
• ERAM (if no TDLS)
• NIDS
• STARS
• TDLS
• TFDM Central (via SWIM)

TFDM Central
• FDPS (via SWIM)
• STDDS (RVR, ASDE-X, STARS via SWIM)
• TFDM Local (via SWIM)

Both TFDM Local and Central
• TBFM (via SWIM) [includes IDAC integration]
• TFMS (via SWIM)
• FTI Time Source
• RMLS

Non-System Interdependency

• CDM Community
• Policies, Procedure, and Process (P3) development
• Flying Public Outreach
• Training Development

Facilities Affected

• ATCTs (79)
• TRACONs (22)
• ARTCCs (17)
• ATCSCC
• WJHTC
• DRC
• MMAC

External Interfaces

Flight Operator Systems (FOSs) (via SWIM)
• Flight Operations Centers (FOCs)
• Airport Authorities
• Ramp Towers and De-Icing Operations
TFDM Notional Architecture

**Tower Cab**
- LC/GC/FD-CD/GH-GM/FLM Displays
- FDD
- FMD/SMD
- DATIS
- TDW Area Surv
- SMD
- TMU

**Tower Base**
- TFDM Local Processing
- Surface Surv
- FDD
- FMD/SMD
- DATIS
- TDW Area Surv
- SMD
- TMU

**TRACON**
- STARS
- TFDM Allocations

**ARTCC**
- Time Based Flow Management (TFBM)
- TFDM Allocations

**WJHTC**
- ERAM
- TFDM Allocations

**ATCSCC**
- SWIM
- NEMS
- (Includes FDPS)

**SLC/ATL**
- TFDM Central Processing
- TFDM Allocations

**TFMS Hub**
- Traffic Flow Management System (TFMS)
- TFDM Allocations

**TFDM Local Processing**
- Tower Data Link Service (TDL)

**Communications Lines**
- New LAN Connections
- New FTI WAN Connection
- New FTI SWIM Connection
- Enhanced TFMS WAN Connects
- Existing LAN Connection
- Existing FTI WAN Connection
- Existing/Planned FTI SWIM
- Existing SWIM Backbone

**Acronyms**
- FDD – Flight Data Display w/PDC-DCL
- FMD – Front Line Manager Display
- SMD – Surface Management Display
- SSA – Surface Situational Awareness
- TDW – Terminal Display Workstation
- TMA – Traffic Management Advisor
- TMU – Traffic Management Unit
- TSD – Tactical Situation Display

**Non-TFDM FAA Systems and Displays**
- Non-FAA Systems

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- Non-TFDM FAA Systems

**TFDM Allocated to TFMS Displays**
- TFDM Allocated to TFMS Displays

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**TFDM Local Processing**
- Tower Data Link Service (TDL)

**Flight Operator Systems (FOCs) and Data Link Service Providers (DLSPs)**
- Flight Operations Centers (FOCs) and Data Link Service Providers (DLSPs)