FAA Surface CDM

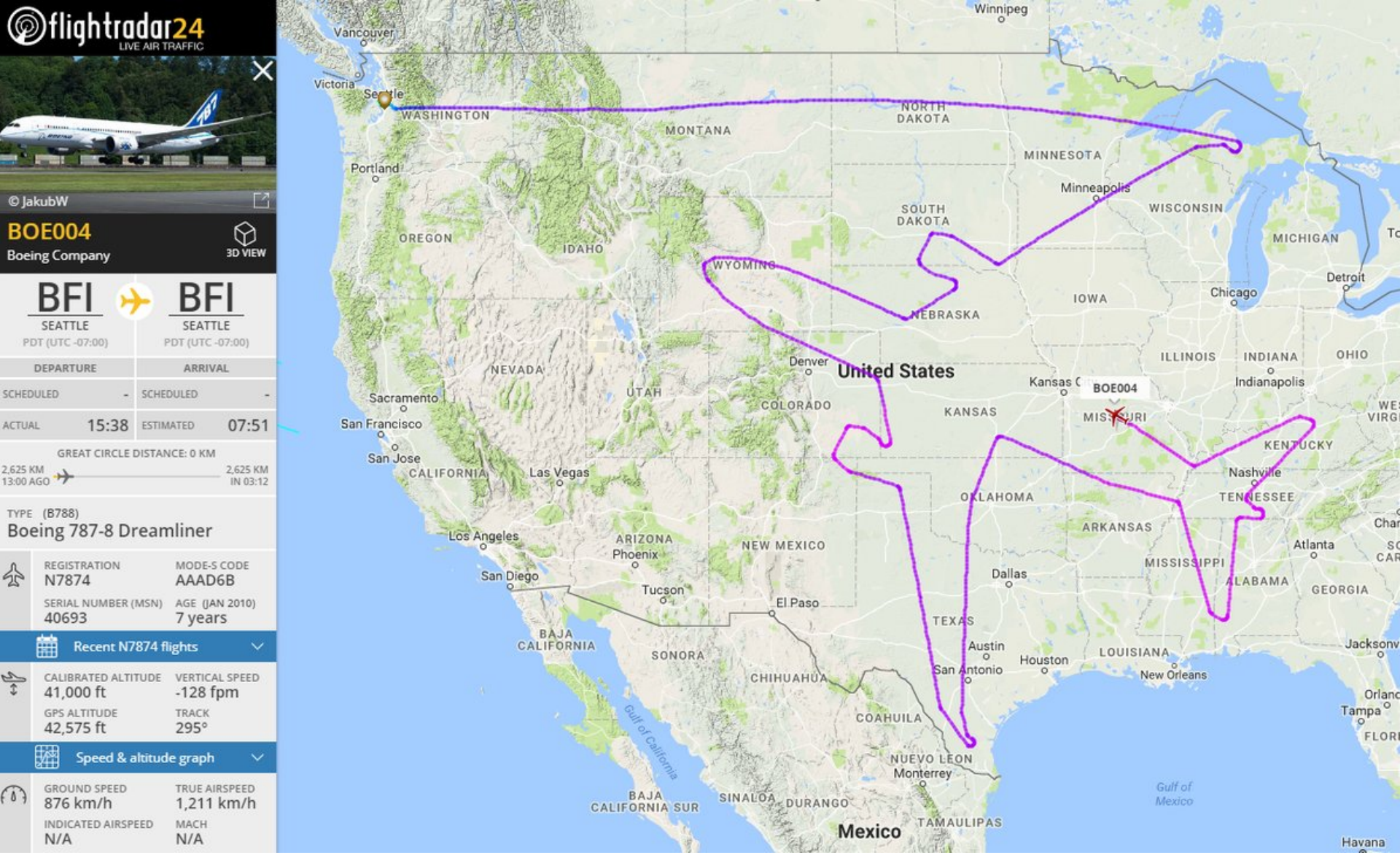
Date:
September 25-27, 2017

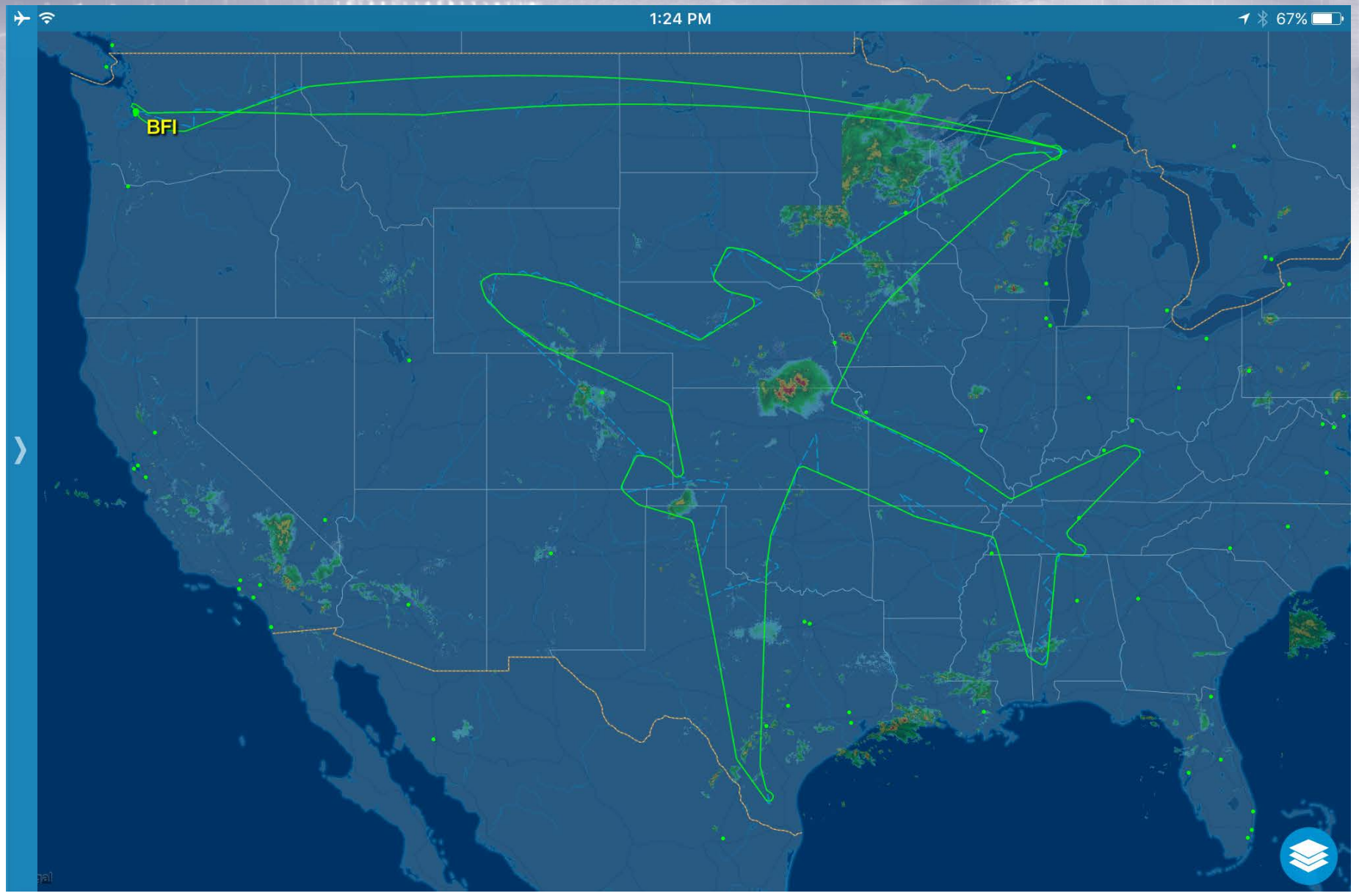
Collaborative Decision Making and Airport Operations

Presented to:
Third A-CDM Implementation Seminar/Workshop

Presented by:
Greg Byus, Manager, CDM and International Operations

FAA
Air Traffic Organization


flightradar24
LIVE AIR TRAFFIC
© JakubW
BOE004
Boeing Company
3D VIEW
BFI
SEATTLE
PDT (UTC -07:00)
BFI
SEATTLE
PDT (UTC -07:00)
DEPARTURE
ARRIVAL
SCHEDULED -
SCHEDULED -
ACTUAL 15:38
ESTIMATED 07:51
GREAT CIRCLE DISTANCE: 0 KM
2,625 KM
13:00 AGO
2,625 KM
IN 03:12
TYPE (B788)
Boeing 787-8 Dreamliner
REGISTRATION
N7874
MODE-S CODE
AAAD6B
SERIAL NUMBER (MSN)
40693
AGE (JAN 2010)
7 years
Recent N7874 flights
CALIBRATED ALTITUDE
41,000 ft
VERTICAL SPEED
-128 fpm
GPS ALTITUDE
42,575 ft
TRACK
295°
Speed & altitude graph
GROUND SPEED
876 km/h
TRUE AIRSPEED
1,211 km/h
INDICATED AIRSPEED
N/A
MACH
N/A
Vancouver
Victoria
Seattle
Portland
WASHINGTON
OREGON
IDAHO
MONTANA
NORTH DAKOTA
MINNESOTA
Minneapolis
SOUTH DAKOTA
WISCONSIN
MICHIGAN
Detroit
Chicago
WYOMING
IOWA
NEBRASKA
NEVADA
UTAH
COLORADO
Denver
United States
ILLINOIS
INDIANA
OHIO
Indianapolis
Kansas City
BOE004
KANSAS
MISSOURI
KENTUCKY
Nashville
TENNESSEE
Sacramento
San Francisco
San Jose
CALIFORNIA
Las Vegas
OKLAHOMA
ARKANSAS
Los Angeles
ARIZONA
Phoenix
NEW MEXICO
Atlanta
MISSISSIPPI
ALABAMA
GEORGIA
San Diego
Tucson
El Paso
Dallas
TEXAS
BAJA CALIFORNIA
SONORA
CHIHUAHUA
Austin
San Antonio
Houston
LOUISIANA
New Orleans
Tampa
COAHUILA
NUEVO LEON
Monterrey
Gulf of California
BAJA CALIFORNIA SUR
SINALOA
DURANGO
TAMAULIPAS
Mexico
Gulf of Mexico
Havana


1:24 PM
67%
BFI

Surface-CDM Concept

- Builds upon, and leverages CDM philosophy.
- Provides the basis for more efficient surface flows at U.S. airports while increasing safety.
- Decreases uncertainty in demand and increases predictability.
- Data exchange dependent.
- Leverages NextGen technologies / principals.
- Drives collaborative culture.

Surface-CDM Foundation

Required components:

- Access to airport aircraft surface surveillance data.
- Electronic Flight Data Automation.
- Accurate and timely operational data.
- Ability to share operational data among the FAA, airport operators, flight operators, pilots, and other stakeholders.

Initial Surface-CDM Data Elements

Actual In-Block Time (AIBT)	Flight Cancellation
Actual Landing Time (ALDT)	Flight Intent
Actual Off-Block Time (AOBT)	Gate Assignment (Arrival and Departure)
Actual Take-Off Time (ATOT)	Initial Off-Block Time (IOBT)
Aircraft Tail / Registration Number	Target Movement Area entry Time (TMAT)
Earliest Off-Block Time (EOBT)	

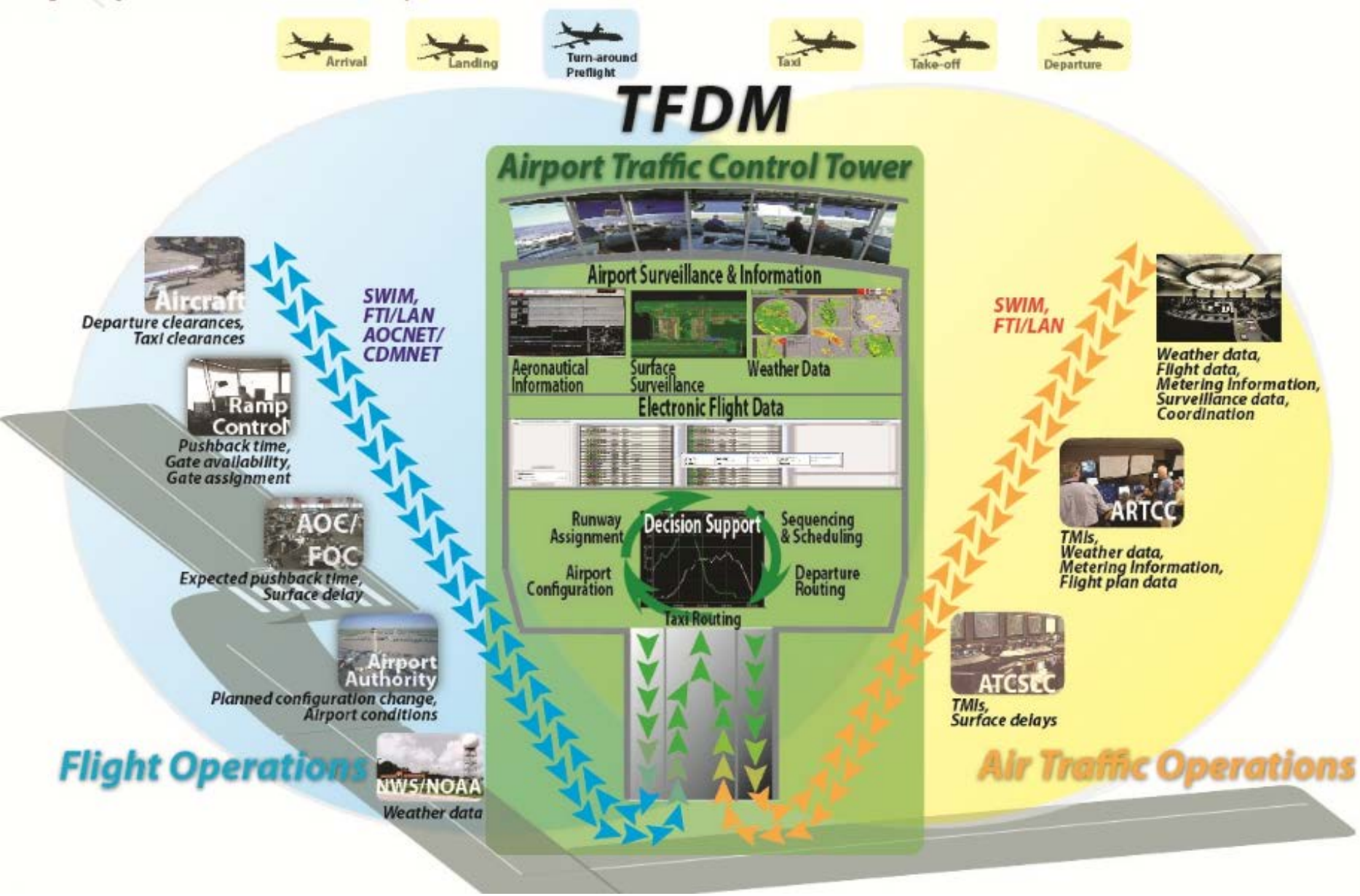
Surface-CDM Differences from A-CDM

- “Incoming leg” information not used in calculations
- Metered time begins at the Taxi entry point (TMAT)
- Substitutions will be allowed with S-CDM
- Departure slot will be the property of the airline
- Each airline will be allowed to swap their own flights
- Departure slots for cancelled flights will be used in substitution or made available for others
- Airport operators included in ConOps but not prerequisite to implementation of Surface-CDM at an airport

TERMINAL FLIGHT DATA MANAGER (TFDM)

NEXGEN	New Airspace System for FAA that incorporates technology, systems and programs in order to create greater efficiency and safety in the system
CDM	Collaborative Decision Making – Supports NEXGEN and the initiatives listed below. Includes the FAA, Airlines, and other Stakeholders

- Advanced Electronic Flight Strips
- Traffic Flow Management
- Collaborative Decision Making for the Surface
- Systems Consolidation


Arrival
Landing
Turn-around
Preflight
Taxi
Take-off
Departure
TFDM
Airport Traffic Control Tower
Airport Surveillance & Information
Aeronautical Information
Surface Surveillance
Weather Data
Electronic Flight Data
Runway Assignment
Decision Support
Sequencing & Scheduling
Airport Configuration
Departure Routing
Taxi Routing
Aircraft
Departure clearances,
Taxi clearances
SWIM,
FTI/LAN
AOCNET/
CDMNET
Ramp Control
Pushback time,
Gate availability,
Gate assignment
AOC/ FOC
Expected pushback time,
Surface delay
Airport Authority
Planned configuration change,
Airport conditions
NWS/NOAA
Weather data
Flight Operations
SWIM,
FTI/LAN
Weather data,
Flight data,
Metering Information,
Surveillance data,
Coordination
ARTCC
TMIs,
Weather data,
Metering Information,
Flight plan data
ATCSCC
TMIs,
Surface delays
Air Traffic Operations

TFDM Can Help Ease Congestion During Peak Traffic Hours By Issuing Surface Metering.

TFDM	**Terminal Flight Data Manager – supported by CDM**
SMP	**Surface Metering Program**
SMP Addresses	• **Long departure queues** • **Increased fuel usage/cost** • **Negative impacts to the customer** • **Increased pollution** • **Inefficiency for air traffic control.**

How Does the System Work

1	Designed in an airport specific fashion. It is customized to each airports desire for queue length and customized for specific runways. The system will issue times when aircraft are expected to taxi.
2	The implementation of taxi times will only occur when needed. At each selected airport this will only occur a few hours a day. The average delay on taxi times in modeling was 8 minutes.
3	The system is running constantly, looking a few hours ahead (2.5 but adjustable if necessary) to determine if a program is needed.
4	The program uses a variety of sources to determine information. The program will be integrated with other air traffic control systems so that it can take many factors into consideration.

How Does the System Work

5	**Aircraft participating in delay and recovery programs for other airports are automatically exempted from the metering.**
6	**The two most important elements in the system are; EOBT (Earliest Off Block Time) and TMAT (Target Movement Area Time)**
7	**EOBT – More precise information in the scheduling of departures. Airlines will provide several automated systems that will determine/update EOBT's. It is essential for airlines to notify the system through EOBT if an aircraft will be delayed or cancelled.**
8	**The result of the information is TMAT. Aircraft are expected to enter the taxiway/movement area +/- 5 minutes of their assigned TMAT.**

Collaborative Decision Making (CDM) is essential to the success of Surface Management. The Airlines, Airport and Air Traffic Control must all work together for the system to be effective.

TFDM Benefits To The System

- Streamlines the sequence of aircraft scheduled to depart, while accounting for aircraft scheduled to arrive, to maximize airport efficiency and reduce delays.
- Optimizes the experience for flying public, Air Traffic Control (ATC), and the airline industry.
- Modernizes Air Traffic Control Tower (ATCT) equipment and provides electronic flight strips to controllers.
- Uses surface surveillance and flow-management capabilities in its predictive modeling for improved departure management, ground movement, and flight coordination.

Questions?

Thank You!