Enabling Information Sharing thru Common Services

Flight Information Overview

Presented To: Air Transportation Information Exchange Conference

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Air Transportation Information Exchange Conference - (featuring AIXM, WXXM and FIXM)

August 30, 2011 - September 1, 2011
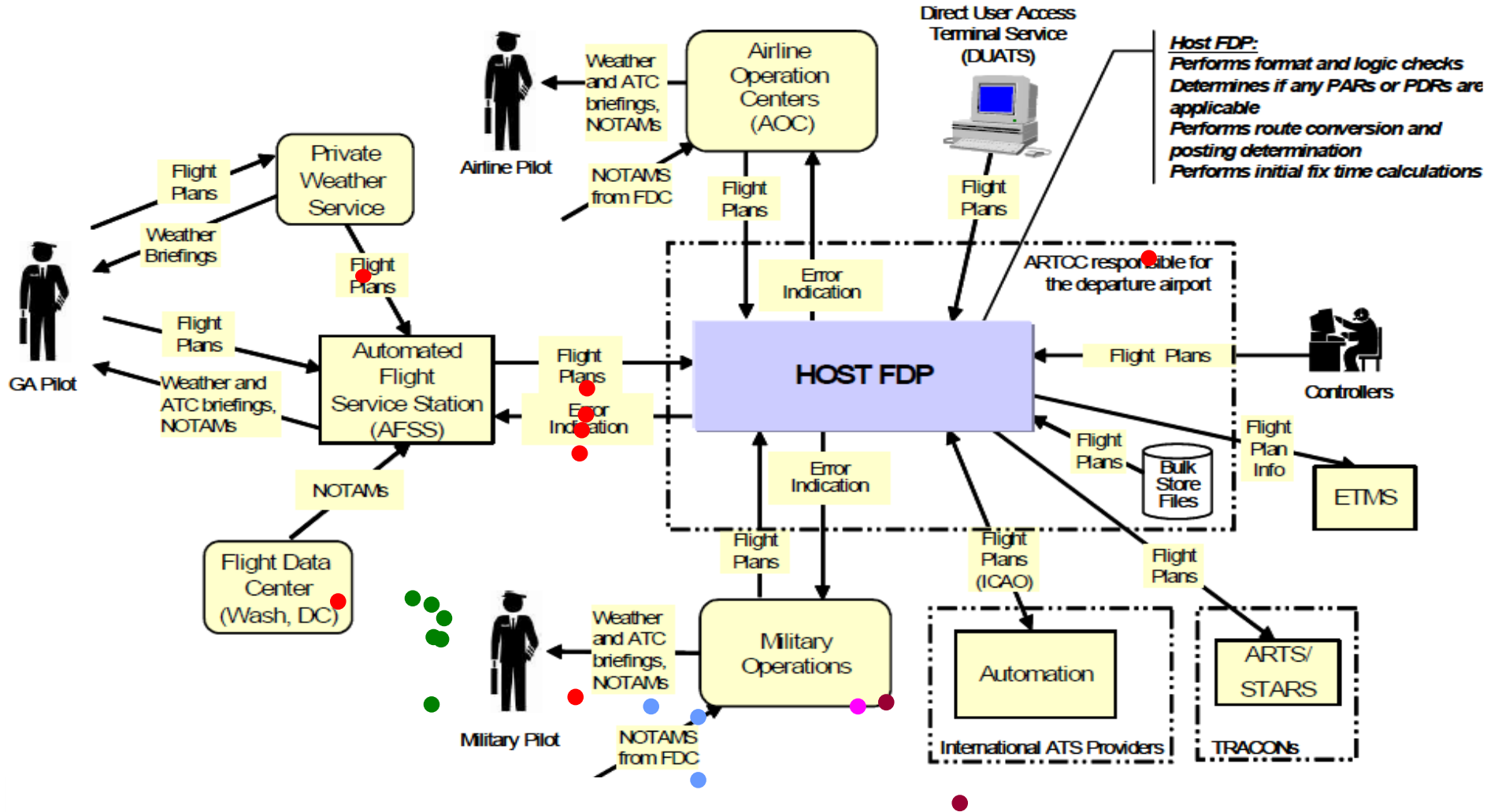NOAA Science Center & Auditorium
Silver Spring, Maryland

- Why do we need Flight Information Management?
- Flight Information Domain Description
- Mechanisms for Management
- Next Steps

Why We Need Information Management!

Information Domains

- As the need for information management has become more evident, discussions have been undertaken to describe the relevant "areas" or domains.

- Presently, the focus is on the 3 information domains presented at this conference (Aeronautical, Weather, Flight).

- Flight information is one of the domains that has been discussed in terms of Information Management.

- Flight Information is an extensible and dynamic collection of flight specific data elements describing an individual flight from planning through operation.

Infrastructure

People

Safety

Information Domain

Exchange Model

Aeronautical

An information domain that identifies and describes the infrastructure (e.g., facility, system, airspace), aviation services, and operational rules that ensure stakeholders can operate safely and efficiently within the national airspace system. It describes the definitions, schedules for, configuration and state of the infrastructure, aviation services, and operational rules of the NAS operational environment. This information is produced from aeronautical data provided by other functions and external entities, as well as that derived internally. Aeronautical Information is a dynamic, shared information resource supporting most of the pre-operational, operational, and post-operational processes used in air traffic management.

Establishes the aeronautical information standard and enables its dissemination, using XML structures, to support enterprise-wide information exchange standards.

(AIXM)

Weather

An information domain that identifies and describes the observation, processing, interpretation, forecasting, distribution and storage of aviation weather information and associated products and services to support all phases of flight. WXXM shall support and facilitate system-wide interoperability and will assure the quality and integrity of the delivered information.

Establishes the weather information standard and enables its dissemination, using XML structures, to support enterprise-wide information exchange standards.

(WXXM)

Flight

An information domain that identifies and describes an extensible and dynamic collection of flight-specific data elements describing an individual flight from planning through operation, including preferences and constraints; where appropriate, aeronautical information is leveraged.

Establishes the flight information standard and enables its dissemination, using XML structures, to support enterprise-wide information exchange standards.

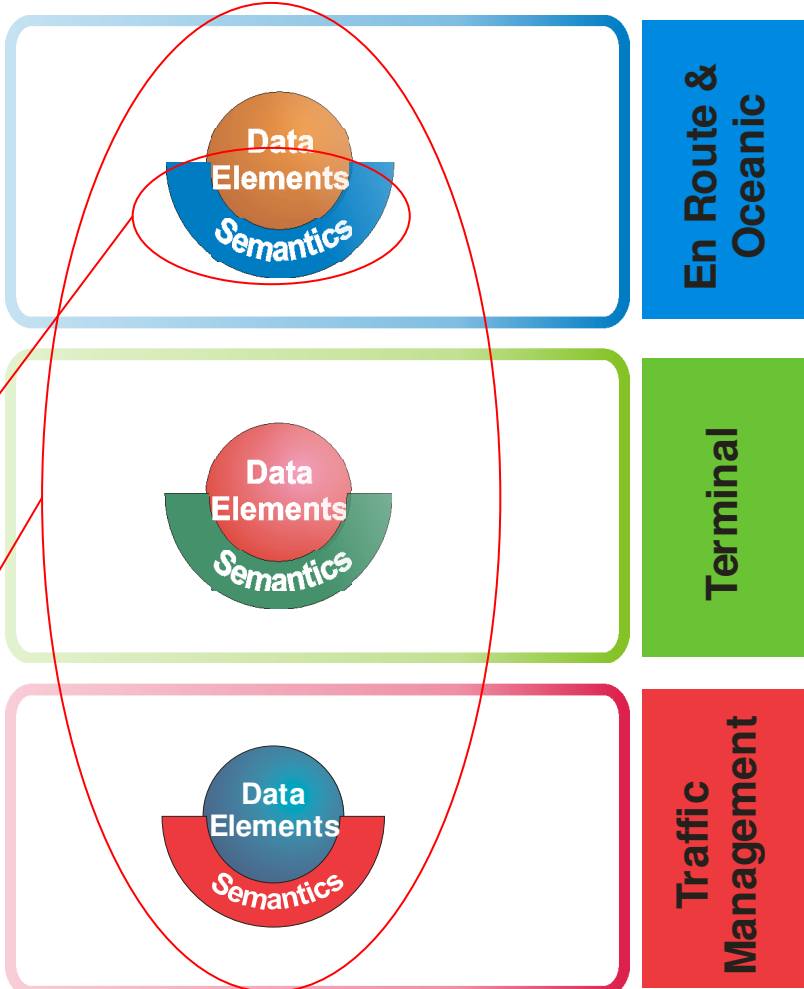(FIXM)

Security

Environment

Traffic

Etc.

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Flight Information should be:

- **Universal**
  - Flight Data Elements must be unique and unambiguous across systems and with global ATM partners
  - Knowledge and information associated with the data must be captured and available to the entire NAS, possibly through a formal ontology.

- **Flexible**
  - The repository for the flight information (the harmonized and semantically complete set of Flight Data Elements) must allow addition of new Data Elements easily.

- **Discoverable**
  - Flight Information consumers must be able to seamlessly discover and integrate new Data Elements.

Data Element Semantics =

- \+ **Description (e.g., XXX)**
- \+ **Format (e.g., XML)**
- \+ **Representation (e.g., units of measure)**
- \+ **Relationships (e.g., who produced it)**
- \+ **Other Characteristics (e.g., performance, quality, criticality)**

Flight Data = Σ(Data Elements + Data Element Semantics)

En Route & Oceanic

Terminal

Traffic Management

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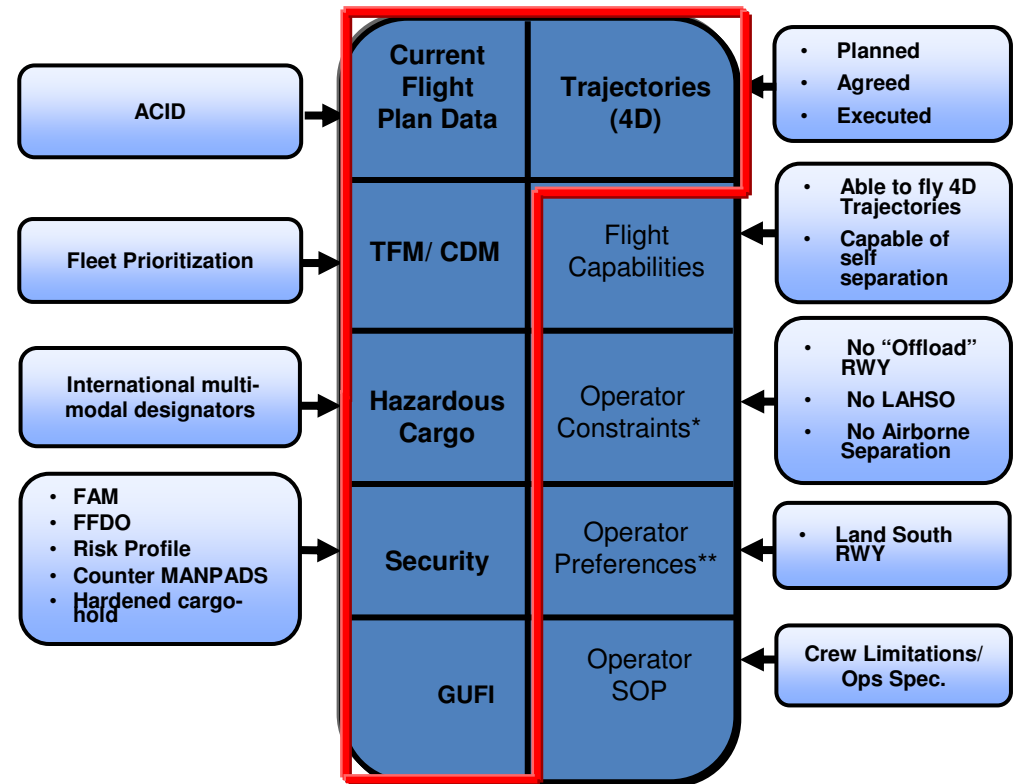
FIXM	The Flight Information eXchange Model (FIXM) will be a common data standard utilized by the International community. It will standardize current and future data elements to increase interoperability and data exchange between systems that require Flight Data. FIXM will include formatting attributes for data such as aircraft identifiers and paramaters; current flight plan information; operator preferences, constraints and SOPs; flight capabilities, preferences and constraints; security information; etc.
FO	The Flight Object (FO) will be an extensible and dynamic collection of data elements that describes an individual flight. It is the single common reference for all system information about that flight. Can be described as the "container" of the specific data whose formatting attributes are defined in FIXM.
FOXS	The Flight Object eXchange Service (FOXS) will be the technical or application infrastructure required to exchange standardized Flight Data. It is envisioned to be used for overall management of the Flight Object, potentially including areas such as Flight Object services, read/write privileges, security and encryption, performance, etc. As the system and performance requirements are identified, the design of the system will be determined. The concept of FOXS is not intended to necessarily infer creation of a single centralized Flight Object "system", but rather FOXS may be a collection of functions distributed amongst multiple NAS and international systems.

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FIXM will be the international standard used in the *Flight Object*…

- *Aircraft identifiers and parameters*

- *Current Flight Plan information (filed, cleared, flown)*

- *Operator preferences, constraints (limitations), SOPs*

- *Flight capabilities, preferences, constraints*
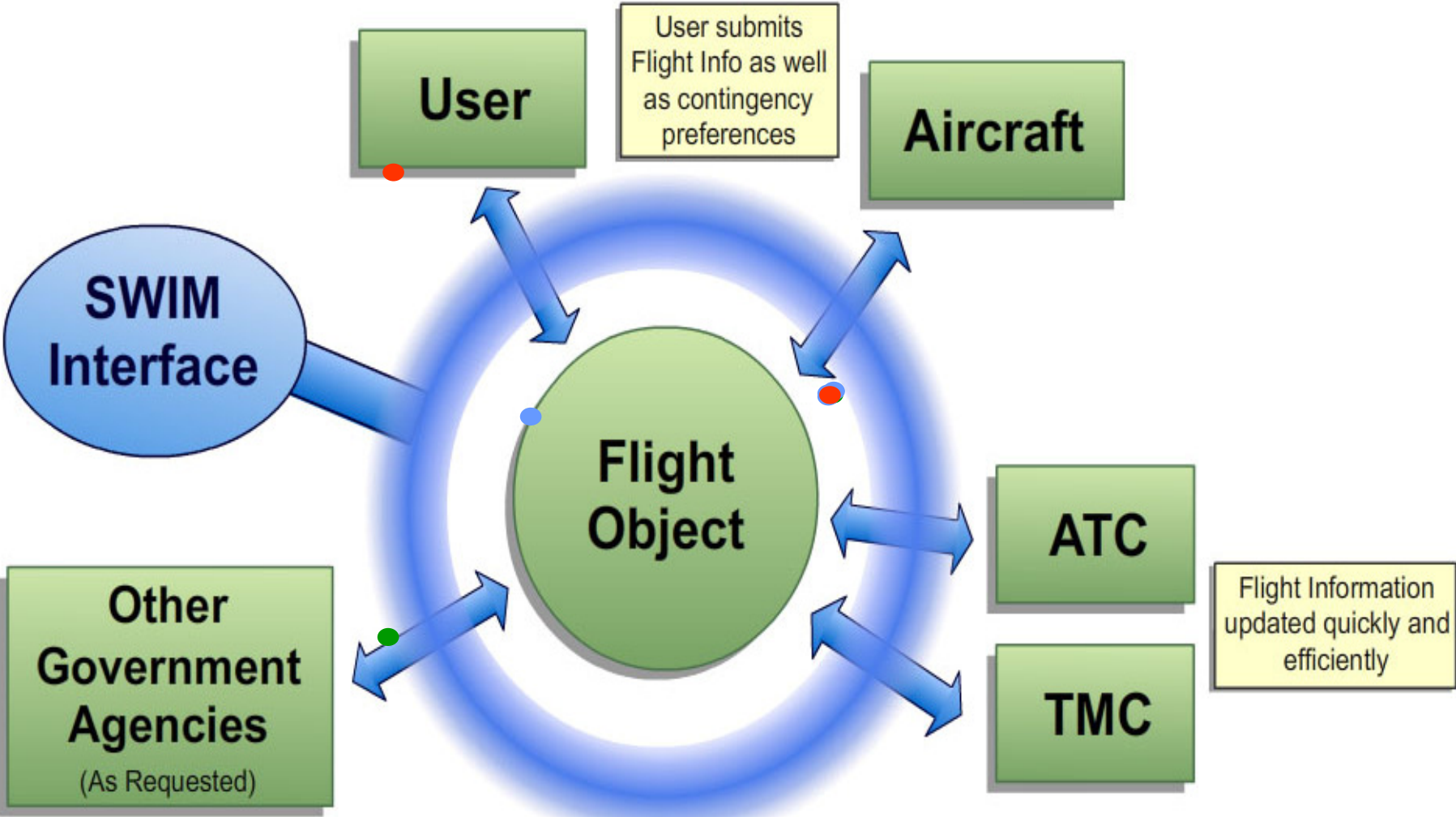
- *Security information*

ACID	

Current Flight Plan Data	Trajectories (4D)
TFM/ CDM	Flight Capabilities
Hazardous Cargo	Operator Constraints*
Security	Operator Preferences**
GUFI	Operator SOP

- Planned
- Agreed
- Executed

- Able to fly 4D Trajectories
- Capable of self separation

- No "Offload" RWY
- No LAHSO
- No Airborne Separation

- Land South RWY

Crew Limitations/ Ops Spec.

Fleet Prioritization

International multi-modal designators

- FAM
- FFDO
- Risk Profile
- Counter MANPADS
- Hardened cargo-hold

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Flight Information Exchange Tomorrow

Developing FIXM through International Collaboration…

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- The *"FIXM Forum"* is currently being formed as a technical engineering oriented team with a primary focus on the detailed development of FIXM.
  - Initial kickoff meeting planned for February 2012
- Technical development will be guided by the ICAO Flight & Flow Information for a Collaborative Environment (FF-ICE) document.
  - Document to be published by ICAO in 2012
- Currently finalizing plans for international demonstrations, evaluation models, etc.

International Partners Include:

Federal Aviation Administration

For more information please visit:

http://www.fixm.aero

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