

Enabling Information Sharing thru Common Services

Aeronautical Common Services

Presented To:

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Date: August 31, 2011



Federal Aviation
Administration

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

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

Introduction



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- The Aeronautical Common Service (ACS) is intended to be the authoritative source of aeronautical information in the FAA
- How do we use technology – standards and software – to solve information management problems?



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Agenda



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- What is the ACS?
- How is it implemented?
- Screenshots



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Where are we now?

We are not yet
digitally managing
our aeronautical
information

- Not as efficient as we could be

We have numerous,
stove-piped systems
that don't
communicate

- Significant investments to make small changes or add a new interface

We can't easily
answer complex
questions because
the information isn't
readily and
universally available

- "What are all the events affecting a flight?"



Concerns with Managing Aeronautical Information

Managing a large model

- AIXM has ~150 features
- Has the advantage of covering the breadth of most

Rationalizing many inputs

- SAA definitions and SAA schedules are not represented in a common manner

Legacy and new systems need to interoperate

- Cannot dismiss the need to keep operational systems active



The Upshot is...

The people who need the information aren't getting it and can't act on it quickly

Users cannot route around SUAs that are actually available

The people providing the data are not providing it digitally and have to provide it multiple times to multiple systems

NOTAM processing, from creation to distribution is a long, manual process

And the managers of the data Have conflicting data models about the same features – or even conflicting models

Connecting two systems is costly and time-consuming

How are we moving forward?



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Change both process and technology

Apply standards and technology to reduce the bar to entry to producers, consumers and implementers

Build the Aeronautical Common Service – A single authoritative source of aeronautical information



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What will the ACS do?

- Improve workflows to reduce manual labor
 - E.g., the DoD will enter a mission request in a single system which sends it to the FAA

Improve our business processes



- Getting SAA schedules, definitions, airport geometry from different sources
- Adapt the data into a common format

Resolve and rationalize multiple inputs of data



- Use aeronautical information taxonomy to map to WFS requests that can be used to query based on tailored information requests

Support complex information requests



ACS & Operations



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SAA Information

- Capture SAA schedule requests from the DoD
- Support workflow for SAA definitions
- Distributing SAA information in and out of the FAA

Airport Information

- Capturing airport survey and definition information from multiple sources
- Addressing overlap of airport information sources through workflow

Adapted Sources

- Connect to existing systems and “on-ramp” them onto the SWIM network



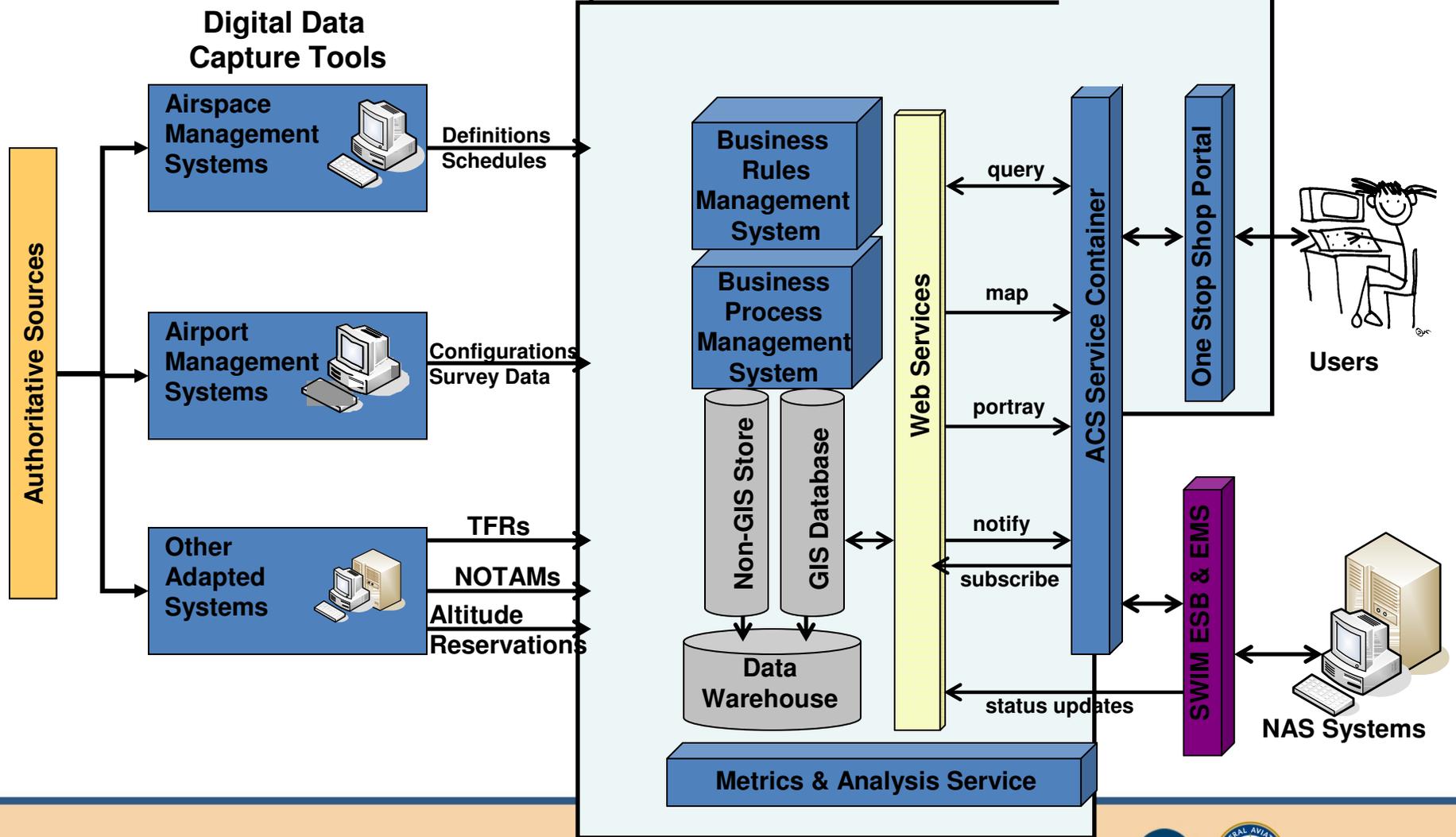
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Aeronautical Common Service



Standards and ACS



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AIXM

- Use the model to form a unified view of AI
- Relying heavily on semantics of AIXM: temporality, Xlinks, UUIDs

GML

- Metadata to identify sources of information
- Still need to address size of metadata and resolution across multiple sources of information about the same feature

OGC

- WFS-T allows for complex filtering and supports visualization easily

SWIM

- FAA-defined SOA standards interoperate well with all the above standards
- Relying on SWIM capabilities to facilitate communication across networks



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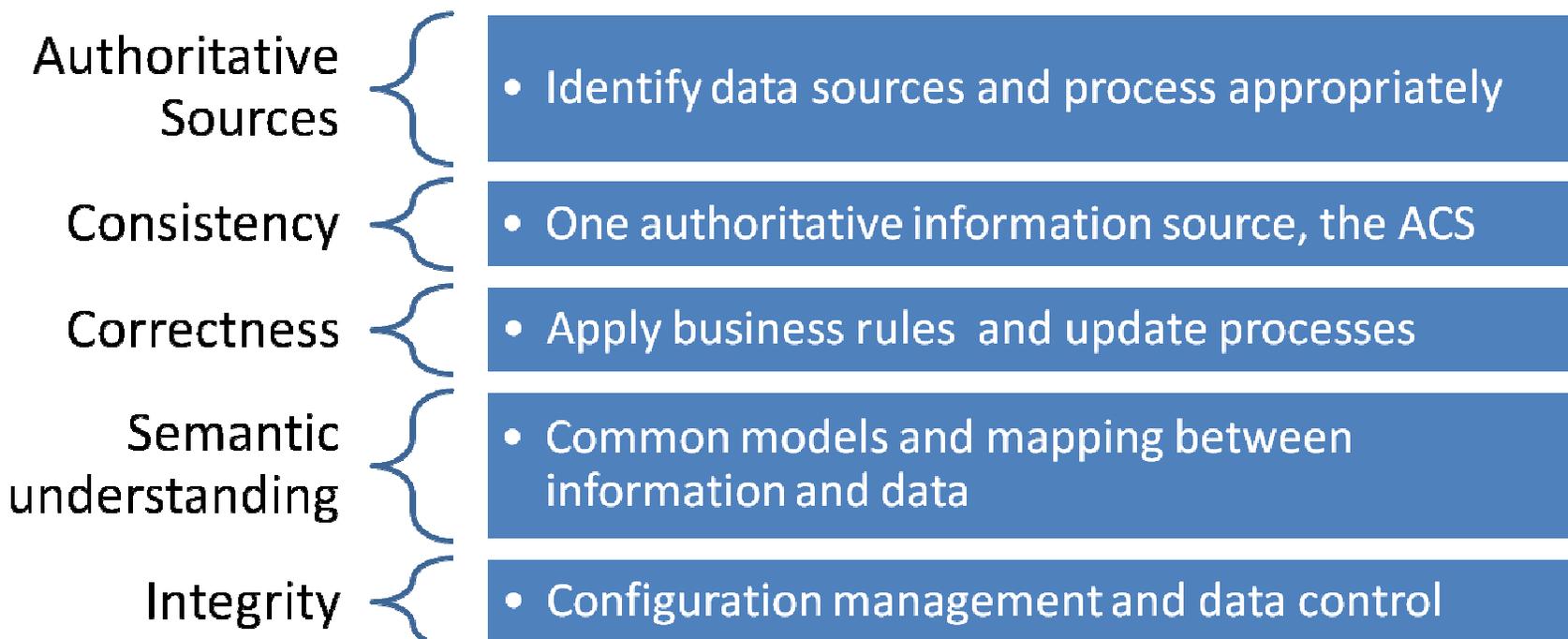


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How does this move us to IM?



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Airport features



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One Stop Shop - Mozilla Firefox
http://acs.cgitech.com/OneStopShop/main.jsp

ACS One Stop Shop :: This site demonstrates the capabilities of Aeronautical Common Services (ACS).
Zoom to Airport: [input] 20K Ft 300K Ft Basemap Brightness: Low Medium High | Refresh Page | Logout

Feature Search
Common Custom Results Saved
Features returned: 142 | Download Results | Save Query

Feature	Description
aixm:AirportHeliport	DCA - RONALD REAGAN WA
aixm:Apron	NORTH HANGAR APRON
aixm:Apron	ENGINE RUN-UP/HOLD APRON
aixm:Apron	SOUTH HANGAR APRON
aixm:Apron	COMMUTER AIRLINES OPERA
aixm:Apron	CLOSED OPERATIONAL APRON
aixm:Apron	GENERAL AVIATION PARKING
aixm:Apron	ENGINE RUN-UP/HOLD APRON
aixm:Apron	COMMERCIAL AIRLINES OPER
aixm:Apron	ENGINE RUN-UP/HOLD APRON

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Base Layer
 US Sectionals
 Terminal Area Charts
 OpenStreetMap
 MapQuest-OSM Tiles
 MapQuest Open Aerial Tiles
 ArcGIS Street
 ArcGIS Topos
 ArcGIS Satellite
 No Base Map

Overlays
 Feature Search Results
 Geometry
 AIM-DB Features
 Runway Configurations
 Controlled Airspace (Airport)
 Controlled Airspace (Other)
 SAA Airspaces

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SAA Airspace schedules



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 http://acs.cgtech.com/OneStopShop/main.jsp

ACS Demonstration System | One Stop Shop

ACS One Stop Shop :: This site demonstrates the capabilities of Aeronautical Common Services (ACS).
 Zoom to Airport: 20K Ft 300K Ft | Basemap Brightness: Low Medium High | Refresh Page | Logout

Feature Search
 Common Custom Results Saved
 Features returned: 1008 | Download Results | Save Query

Feature	Description
aixm:Airspace	A-381 GULF COAST, GULF O
aixm:Airspace	A-639A ACADEMY, CO (A639)
aixm:Airspace	A-680 OLF COUPEVILLE, WA
aixm:Airspace	BEAUFORT 3 MOA, SC (MBEA)
aixm:Airspace	BIRMINGHAM 2 MOA, AL (MBI)
aixm:Airspace	BISHOP MOA, CA (MBISHOP)
aixm:Airspace	BRADY LOW MOA, TX (MBRA)
aixm:Airspace	CHEYENNE LOW MOA, CO (MCHE)
aixm:Airspace	EGLIN A EAST MOA, FL (MEGA)
aixm:Airspace	ISABELLA MOA, CA (MISABE)
aixm:Airspace	JACKAL LOW MOA, AZ (MJJA)
aixm:Airspace	KINGSVILLE 2 MOA, TX (MKIN)
aixm:Airspace	MISTY 2 MOA, NY (MMISTY2)
aixm:Airspace	ONTONAGON MOA, MI (MONT)

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Airspace Layers



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One Stop Shop - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://acs.cgitech.com/OneStopShop/main.jsp

ACS Demonstration System One Stop Shop

ACS One Stop Shop :: This site demonstrates the capabilities of Aeronautical Common Services (ACS).

Zoom to Airport: [input] 20K Ft 300K Ft Basemap Brightness: Low Medium High Refresh Page Logout

Feature Search

Common Custom Results Saved

Clear and reset map: Go

Features associated with an airport: [input] autocomplete field

Feature by gmlIdentifier: [input] Go

Base Layer

- US Sectionals
- Terminal Area Charts
- OpenStreetMap
- MapQuest-OSM Tiles
- MapQuest Open Aerial Tiles
- ArcGIS Street
- ArcGIS Topos
- ArcGIS Satellite
- No Base Map

Overlays

- Feature Search Results
- Geometry
- AIM-DB Features
- Runway Configurations
- Controlled Airspace (Airport)
- Controlled Airspace (Other)
- SAA Airspaces

50 km 20 mi

-78.52476, 39.56970

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Next Steps



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Build the ACS

Map aeronautical information categories into
AIXM

Improve the standards so that they are widely
understood – discovery should lead quickly to use



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Summary / Conclusion



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- We are moving towards a more holistic, mature information management capability
- The ACS is the next step in that evolution



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Questions & Answers / Feedback



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