FAA SAA Dissemination Pilot

Presentation at Aviation DWG
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Outline

• Introduction
• Architecture
• AIXM SAA Extension
• Lessons Learned
Introduction

• Sponsor: FAA

• Period of performance:
  – mid December 2010 – mid June 2011

• Pilot goal: improve dissemination of SAA data
  – automated
  – interoperable

• in support of Next Generation Air Transportation System (NextGen) activities
What is Special Activity Airspace (SAA)?

- Activities within this airspace may pose a hazard or increased flight risk to non-participants.

- Rules and/or restrictions may be placed upon both participants and/or non-participants with regard to that specific airspace.

- Airspace status is published or broadcast to increase situational awareness for non-participants.

- Establishment of the airspace is coordinated between user and controlling agency.
The Challenge - Designing

• Current SUA design and approval
  – One system used for design
  – Paper charts used for approval
  – Another system/format used for SUA storage
  – Yet another used for display (charting)

• Need
  – Single system for design, review, and approval.
  – Single format (AIXM) for all users and consumers
The Challenge - Scheduling

• No standardized means for submitting daily Special Activity Airspace schedules to FAA
  – Schedules arrive at FAA in several formats and across several different platforms

• Need
  – Automated, and efficient means for DoD-FAA coordination on SAA scheduling
  – Effective method for dissemination of schedules to non-participating stakeholders
Pilot Scope

• goal:
  – extend the SAA SWIM Services to enable the dissemination of SAA information (including updates) to National Airspace System (NAS) stakeholders and other external users via OGC Web Services
    • Build on SAA SWIM Services leveraging the WFS, FPS, Event Service and AIXM
    • towards end-to-end automated information flow from the US Department of Defense (DoD) - originators of SAA activation requests - to airlines and other NAS stakeholders.

• out of scope – but possible in future activities:
  – Creation or edit of SAA features,
  – Process for proposing / approving / uploading / synchronizing / propagating SAA schedule changes, reservations, etc,
  – Interaction with or support for any other SWIM service.
Use Cases

Static Repository (NASR)

Operational Repository (SAMS)

Interoperability Layer

SAA User

subscribe/un-subscribe

query

SAA information

SAA update notification
## Pilot Participants

<table>
<thead>
<tr>
<th>Organization</th>
<th>Deliverables</th>
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</thead>
<tbody>
<tr>
<td>Boeing/Jeppesen</td>
<td>Aviation Client</td>
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<td>Concept Solutions</td>
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<td>Galdos-Envitia</td>
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<td>Institute of Geoinformatics – U of Muenster</td>
<td>Event Service/Adapter</td>
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<tr>
<td>Luciad</td>
<td>Web Feature Service/ Feature Portrayal Service / Aviation Client</td>
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<tr>
<td>Lufthansa Systems FlightNav</td>
<td>Aviation Client</td>
</tr>
<tr>
<td>Snowflake</td>
<td>Web Feature Service/ Event Service Adapter</td>
</tr>
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</table>
Architecture – Current Picture

Static Repository (NASR) – Subscriber file

Subscriber file diff

simulated events (manually triggered)

schedule feed

Operational Repository (SAMS)

WFS

Style Registry

FPS

Event Service Adapter

Event Service

Clients

using subscriber file or WFS to enrich events (as needed)

replaced to some extent by WFS watching schedule feed
Future Architecture

Static Repository (NASR)

Operational Repository (SAMS)

Style Registry

FPS

WFS (SR/OR)

Event Service Adapter

Event Service

Clients
AIXM SAA Extension

• Extended the core AIXM model to include:
  – New elements on existing features/objects:
    • Airspace, AirspaceActivation, AirspaceLayer, Timesheet, …
  – New relationships:
    • RadioCommunicationChannelAllocation (relates airspaces and radio channels), …
  – New features/objects:
    • SaaGroup, SaaMessage, ConditionalAirspaceExclusion, AircraftGroup, AircraftDetail …

• AIXM 5.0 SAA → AIXM 5.1 SAA

• For detailed information, contact: Kevin Lew
Current Status

- first half of Pilot almost completed
- component development phase #1 finished
- integration test phase started
- halfway through demo development
- documentation starts now
Lessons Learned

• recommendations/changes to GML:
  – ArcByCenterPoint interpretation

• clarification of Filter Encoding 2.0 operators