Implementation of an AIXM-based GIS Environment

A look at the collaborative integration of AIXM by ESRI, Safe Software and Aena

Sean Grant and Mita Hajirakar

Diagram:
- Legacy Custom Product-Centric Data Model
- Desire to Modernize
- New Approach of GIS
Starting point at Aena

- Aeronautical database was a custom data model
  - Legacy system - not standards based
  - Difficult to connect and share data
- EAD data input a major task
- Manual data exchange prone to errors
- Product centric, CAD-based environment
  - No centralized aeronautical data management
  - Edits made in multiple places (data, charts, etc)
  - Non-automated QC process

Labor Intensive.....Low Productivity!

Aena’s Vision

Modernize current system to a GIS-based approach to managing aeronautical data and products
Benefits of Modernization

- Centralized data management
- Foundation for new Information Services
  - Web distribution of data and charts via Aena Intranet
  - Ability to perform data analysis

Benefits of Modernization

- Database Driven charting
  - Approach / Departure Charts
  - Enroute Charts
  - Visual Charts
Building the Central Geodatabase

• Used ESRI AIS data model (AIXM 4.5 compliant) as initial data model
  • Took advantage of automated data loading functionality
  • Extendable to suit needs
  • FME AIXM reader/writer from Safe Software crucial to loading process

Working with the AIS Data Model

• Geodatabase management made easy
  – Geodatabase subtyping
  – Measure (M-value)

• Extensibility of AIS model for eTOD support
  – Expanded domain support for Obstacles, Navaids, Airspace and Airports

• One step closer to a fully compliant AIXM 5.x model
FME & ArcGIS Data Interoperability Extension

- The only complete spatial ETL solution

Transform data in ArcGIS with Spatial ETL Tool

AIXM ↔ AIS Transformation

- Data Model Transformation
  
  - 116 AIXM XML layers to 69 PLTS AIS feature/relationship classes
  - Relationships verified during transformation
    
    - Example: Fuel must be available at one and only one AD_HP

ADHPSupply

(Type_Code

0 = Fuel
1 = Oil
2 = Oxygen
3 = Nitrogen)
AIXM ↔ AIS Transformation

- Geometry Transformation
  - AIXM 4.5 non-spatial model to AIS spatial model
  - Example: Airspace transformation

Example: Airspace transformation

Results of Collaboration

- Data investment maximized
- Standard Workflows
- Improved QC
- Efficiency gains
- Less manual data entry
- Opens the door for digital AIS
Thank you!

Questions?

Sean Grant
sgrant@esri.com

Mita Hajirakar
Mita.Hajirakar@safe.com