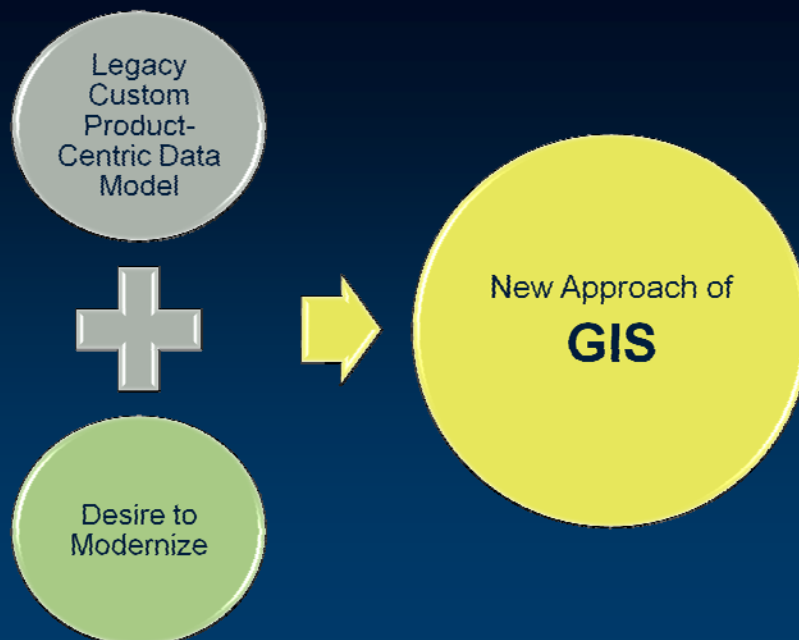


Implementation of an AIXM-based GIS Environment

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

Sean Grant and Mita Hajirakar



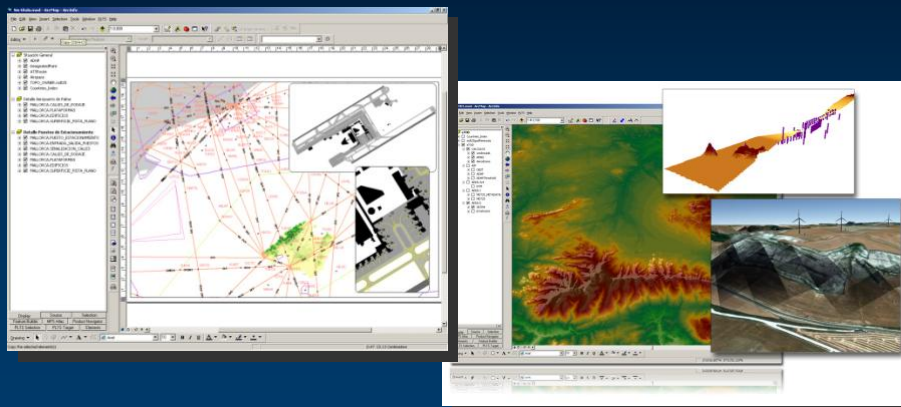
Starting point at Aena

- **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!

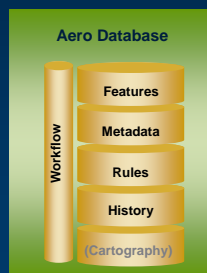
Aena's Vision

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

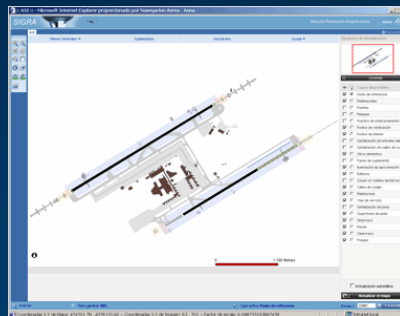


Benefits of Modernization

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

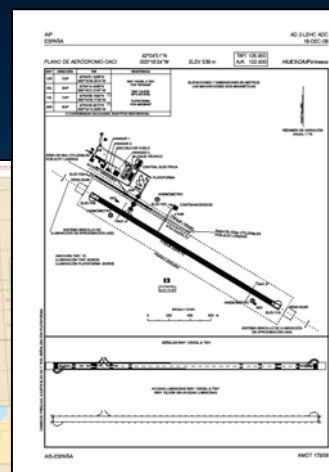
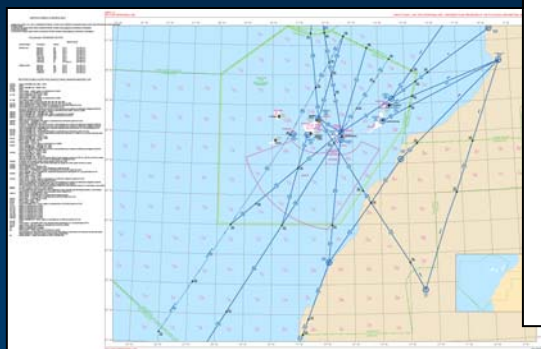


AICM-Based Model



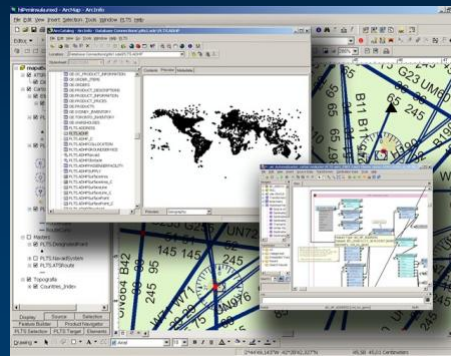
Benefits of Modernization

- 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



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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, Nav aids, Airspace and Airports
- One step closer to a fully compliant AIXM 5.x model

P_xact	X	Y	M
0	15.782	46.219	1.000
1	15.781	46.225	1.000
2	15.417	46.657	0.000
3	15.430	46.647	99.000
4	15.434	46.642	4.000
5	15.434	46.642	1.000
6	15.440	46.640	1.000

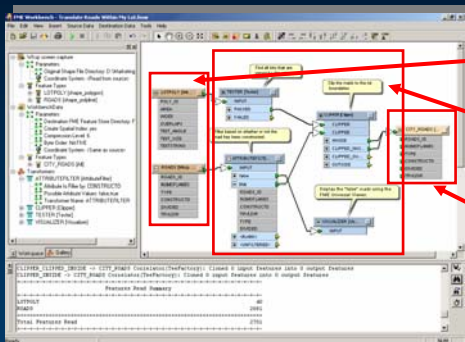
Finish Sketch

Code	Description
0	Custom
1	Marker
2	LocatorMarker
3	NDB
4	NDBDME
5	DME

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FME & ArcGIS Data Interoperability Extension

- The only complete spatial ETL solution



Step 1 - Extract
Select and add the source dataset(s)

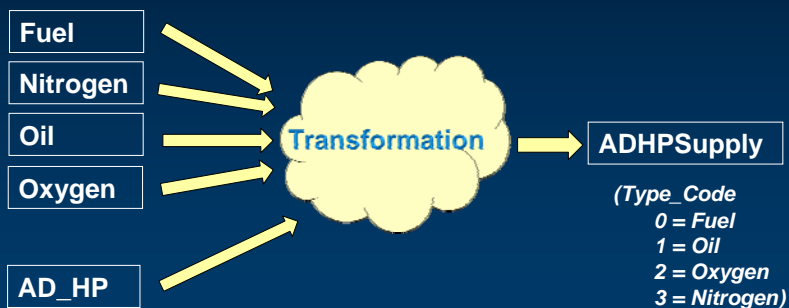
Step 2 - Transform
Add transformers to manipulate the data as it moves from source to destination

Step 3 - Load
Load the transformed data into a destination format and source

- Transform data in ArcGIS with *Spatial ETL Tool*

AIXM ↔ AIS Transformation

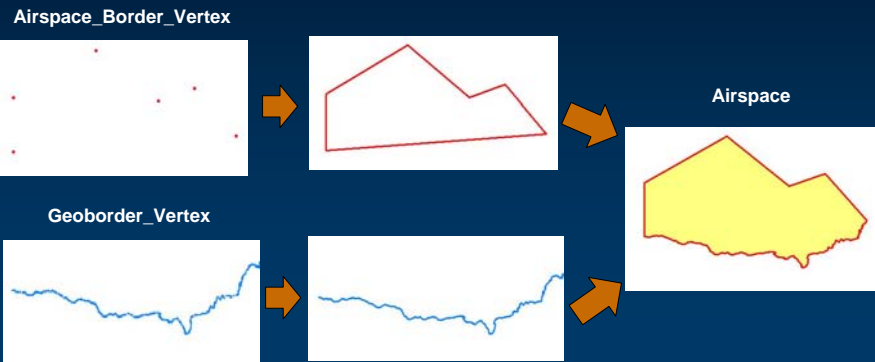
- Data Model Transformation
 - 116 AIXM XML layers to 69 PLTS AIS feature/relationship classes
 - Relationships verified during transformation
 - Example: Fuel must be available at one and only one AD_HP



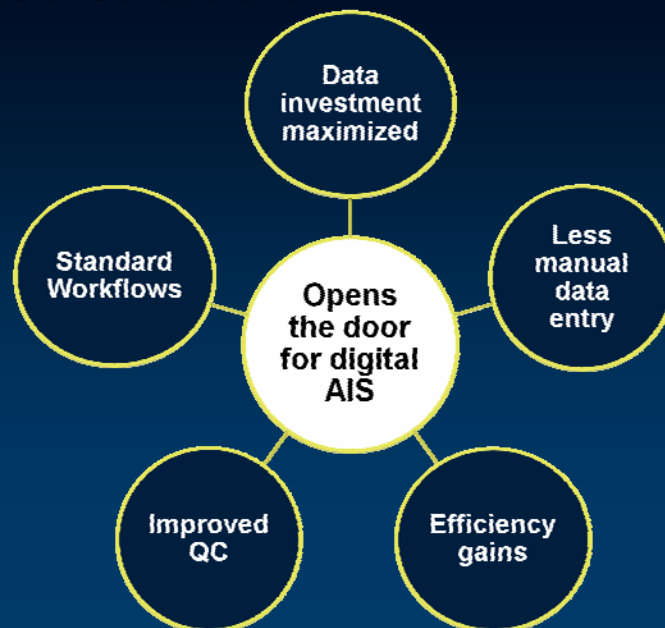
AIXM ↔ AIS Transformation

- **Geometry Transformation**

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



Results of Collaboration



Thank you!

Questions?

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