



## AIXM Integration

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### An AIM Solution using AIXM 4.5 as Integrating Link

**COMSOFT**  
is making the link



# COMSOFT: Location



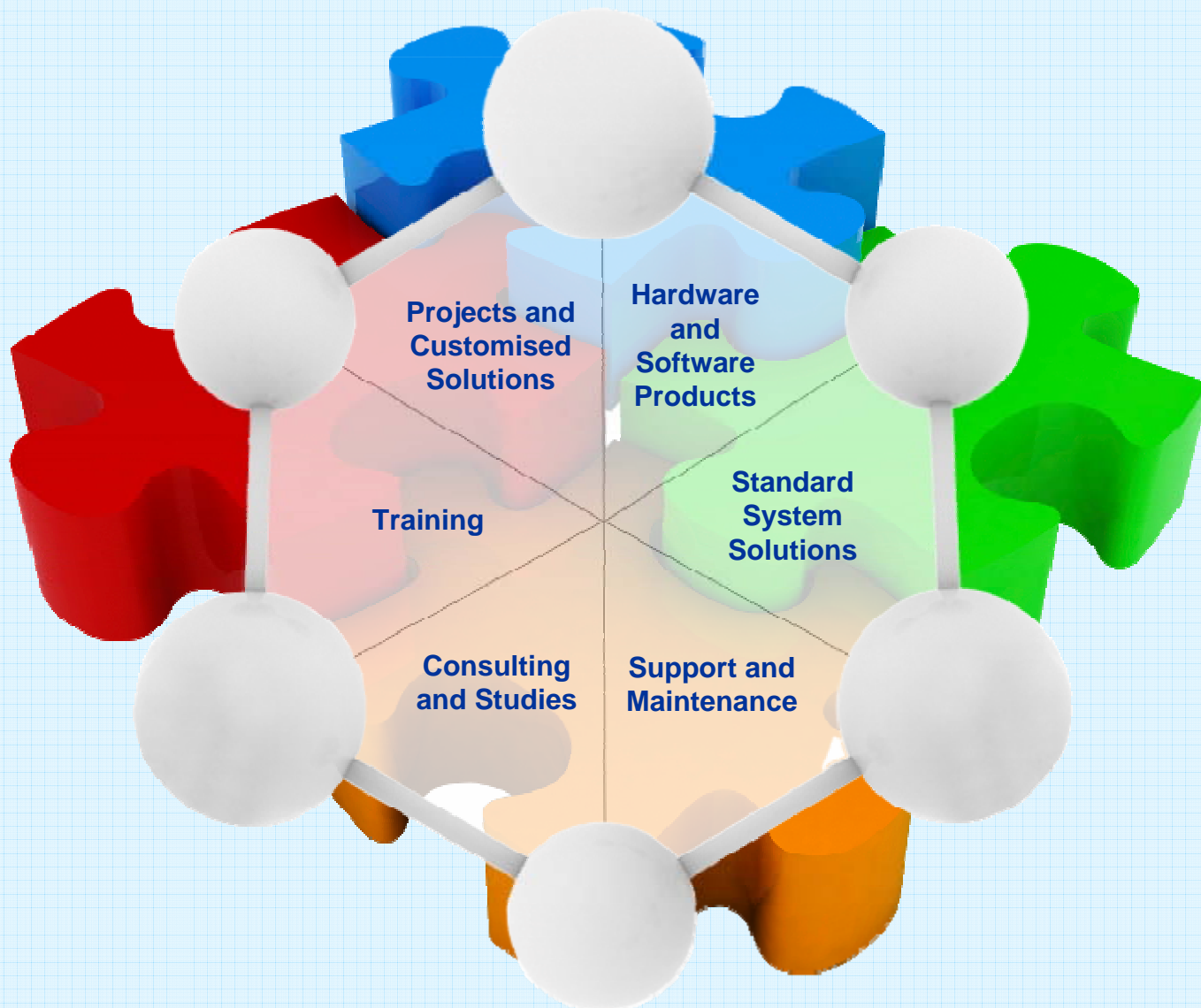
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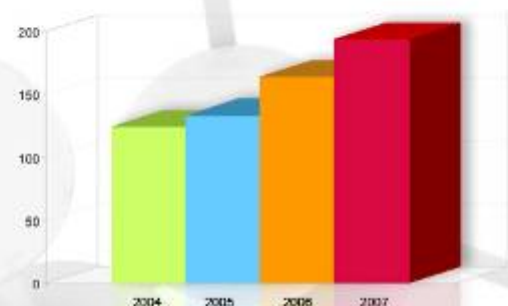
# COMSOFT: Scope of Performance





# COMSOFT Staff

- Over 250 employees
- Our staff is constantly growing
- Large majority of our employees is holding advanced technical degrees
- Well-balanced mixture of young graduates and senior professionals with long-time experience
- Intercultural competence by international composition of staff
- Technologically up-to-date by permanent professional training







# Company Introduction ESRI

- As a Company
  - International network
  - Partnerships and alliances
  - Stable and reliable
  
- Proven Technology
  - Focus on GIS user community
  - Scalable and interoperable
  - Leverages shared components
  
- Industry Standards
  - ISO 9000 Certified
  - ICAO
  - AIXM / AICM





# Task: An Integrated AIM Solution





# System Components

- ESRI Aeronautical Solution
- CADAS-ATS (FPL, RPL Handling, Active Flight DB)
- CADAS-IMS (NOTAM DB, MET DB, Briefing)
- GroupVerve AIS (eAIP)



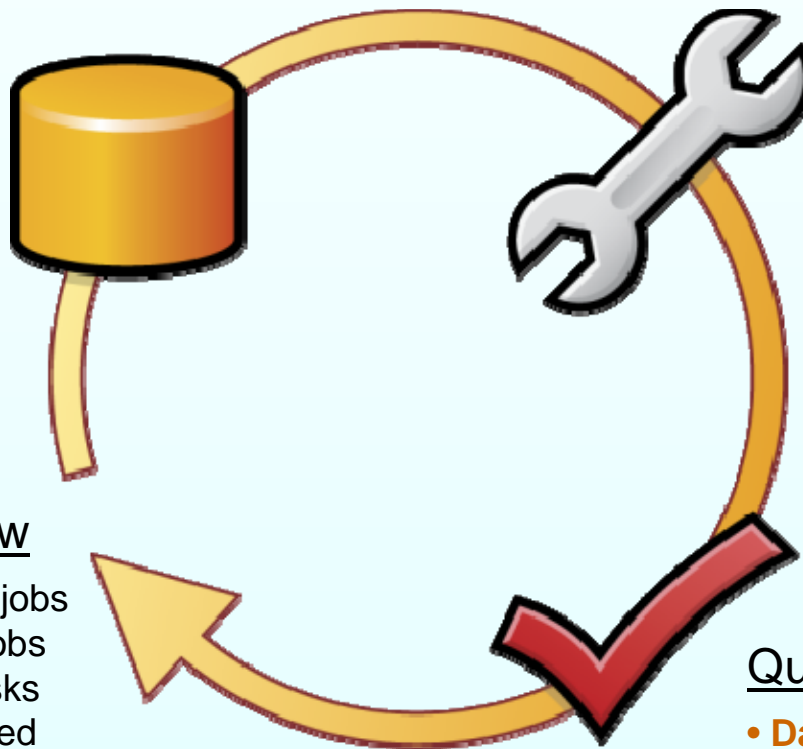


# ESRI Aeronautical Solution

*Data-centric, end-to-end production system*

## Centralized Data

- **Database-driven charting**
- Automatic product updates
- Business rules



## Tools and Data Exchange

- **AIXM 4.5**
- Product management
- Create and edit data
- Detailed cartography

## Workflow

- Manage jobs
- Assign jobs
- Keep tasks organized

## Quality Control

- **Data validation**
- Multi-user environment
- History



# CADAS-ATS

- Flight planning and management
- Interactive forms for FPL and related messages
- Active Flight Database
- Repetitive Flight Plans
- Interactive forms for Project NOTAMs
- Interactive forms for MET messages

The screenshot displays two overlapping windows from the COMSOFT software. The background window is titled 'Send - FPL - ICAO Flight Plan' and contains a form for creating flight plan messages. The foreground window is titled 'Send - DEP - Departure' and is used for creating departure messages. Both windows feature a menu bar (File, View, Edit, Help) and a toolbar with icons for Send+Close, Load, Store, and Print. The 'Send - DEP - Departure' window is filled with data for a specific flight.

**Send - DEP - Departure Form Data:**

- Prio: FF
- Addressees: EHAAAAAX
- Filing Time: [Empty]
- Originator: EDDFYNYX
- Bell: [Empty]
- 7/Aircraft ID: ACA839
- SSR: [Empty]
- 13/Departure: EHAM
- Time: 0945
- 16/Destination: CYYZ
- Date of Flight: 001029
- Filed By: AIS.UKAEDDFAIS
- Group: AIS
- User: UKAEDDFAIS

**Send - FPL - ICAO Flight Plan Form Data:**

- Prio: FF
- Addressees: LQSAZPX LQSAZGX L...
- Filing Time: [Empty]
- Originator: EDDFYNYX
- Bell: [Empty]
- 7/Aircraft ID: DLH5355
- SSR: SSE
- 8/Flight Rules: I
- Type: [Empty]
- 9/Number: [Empty]
- Type: [Empty]
- 10/Equipment: SEGIRWY
- 13/Departure: LQSA
- Time: [Empty]
- 15/Speed: N0403
- Altitude: [Empty]
- Route: DCT BOSNA UL6C
- 16/Destination: EDDM
- Total EE: [Empty]
- 18/Other: EET/LQSB0010 L...  
RMK/RVR/200 DC
- Activate supplementary inform...
- 19/Endurance: [Empty]
- F: [Empty]
- Survival Equipment: S [ ] P [ ]
- Dinghies: D [ ] Number: [Empty]
- Colour and Markings: [Empty]
- Remark: N [ ]
- Pilot: [Empty]
- Filed By: AIS.UKAEDDFAIS
- Group: AIS
- User: UKAEDDFAIS



# CADAS-IMS

- NOF
- MET office
- Document server
- Briefing
- eAIP library
- GRIB and BUFR processing & conversion

CADAS IMS Information Management & Services

Logged in as: oper Logout

Home
Create
Retrieve
NOTAM Summary
Operator's Queue
Data Administration
Administration

**New NOTAM**

**AFTN Header**

Priority indicators: GG

Addressees: BARHEPLA

Date and time of filing: 071000

Originator's indicator: CADASIHS

**Message Series, Number and Identifier**

Series and number/year Type

NOTAM containing new information: NOTAM II

**Qualifiers**

FIR	NOTAM Code	Traffic Purpose	Scope	Lower Limit	Upper Limit	Coordinates, Radius
Q) EDDF / Q FA	LC	/ IV /	NBO /	A /	0 /	999 / 5002M 00834E 10
A) EDDF Identification of ICAO location indicator						

**Period of Validity**

B) 0904060000 From (date-time group) C) 0904082359 To (PERM or date-time group)

D) Time Schedule (if applicable)

**Text of NOTAM: Plain-Language Entry (using ICAO Abbreviations)**

AD CLSD DUE TO WTR CONDITIONS

E)

F) Lower Limit G) Upper Limit

Submit Clear Auto Addressees

Save Template Load Template

**System Status**

Number of items in the personal queue: 0

No unread items in the queue

**Map**

**Mouse Position**  
45° 58'37.31" N  
008° 36'13.22" E

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## eAIP

- ICAO and EUROCONTROL compliant eAIP
- Bi-lingual
- AIP Supplements
- AIP Amendments
- Non-AIRAC AIP Amendments

C:\eAIP\Publisher\samples\Operations\2004-06-10-AIRAC\enAIP\EC-ENR-3.6-en-GB.xml

File Select Edit Search View Tools XHTML Window Options Help

e:ENR-3.6::table::tbody::tr::td::#text

EC-eAIP-en-GB.xml EC-GEN-1.2-en-GB.xml EC-GEN-0.1-en-GB.xml EC-ENR-3.6-en-GB.xml

### ENR 3.6 - En-route holding

HLDG D/FIX/WPT Coordinates	INBD TR (*MAG)	Direction of PTN	MAX IAS (KT)	MNM-MAX HLDG LVL FL/FT (MSL)	TIME (MIN) or ABBR-DIST OUBD	Controlling u and Frequen
1	2	3	4	5	6	7
BOORSPIJK/BOR  Boorspijk VOR/ABBR-DME	090	Right	230	3-500-FT-FL-140	1	Amswell  ABBR-ACC  120.300
	090	Right	240	FL-150-FL-200	1½	
	090	Right	265	FL-210-FL-340	1½	
522206N 0322230W	090	Right	Mach 0.83	FL-350-FL-460	1½	
JUSTINEJUS  Justine VOR	329	Left	230	3-500-FT-FL-140	1	Amswell  ABBR-ACC  120.300
511648N 0310930W						

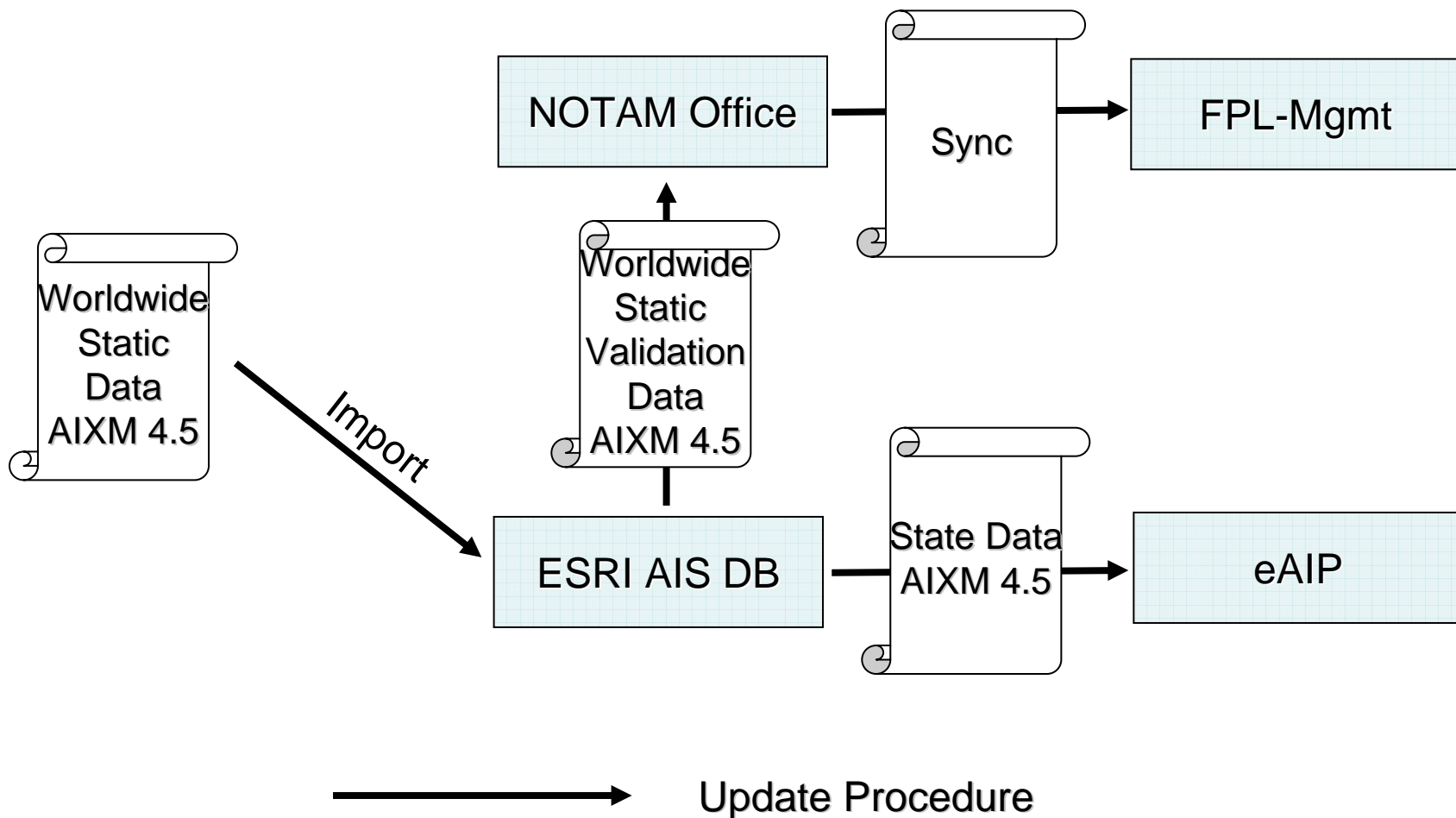
Attribute Value

Remarks	-
Updated	No
Updated-ref	-
abbr	-
align	-
axis	-
char	-
charoff	-
class	rowsep-1
colspan	1
headers	-
id	-
rowspan	4
scope	-
title	-
valign	-
xml:lang	-

js:Sub-section



# AIXM 4.5 Data-Workflows







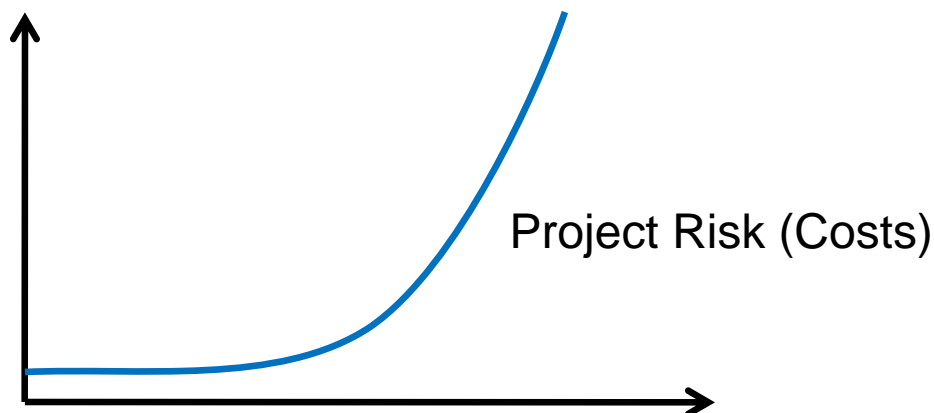
# AIXM Challenges

- Import of worldwide data
  - Huge data amount
  - Great variety of data characteristics (quality)
  
- Separation of state and worldwide data using one data source
  - Worldwide static validation data is needed for NTM and FPL
  - State data is needed for eAIP
  - Both based on the same data source
  
- AIXM 4.5 MID attribute



# The MID Challenge

```
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <xsd:annotation>
    <xsd:documentation>Version: 4.5-r2</xsd:documentation>
  </xsd:annotation>
  <xsd:include schemaLocation="AIXM-DataTypes.xsd"/>
  <xsd:attribute name="mid" type="xsd:string">
    <xsd:annotation>
      <xsd:documentation>Optional, could be used to
        exchange generated UID values</xsd:documentation>
    </xsd:annotation>
  </xsd:attribute>
</xsd:schema>
```



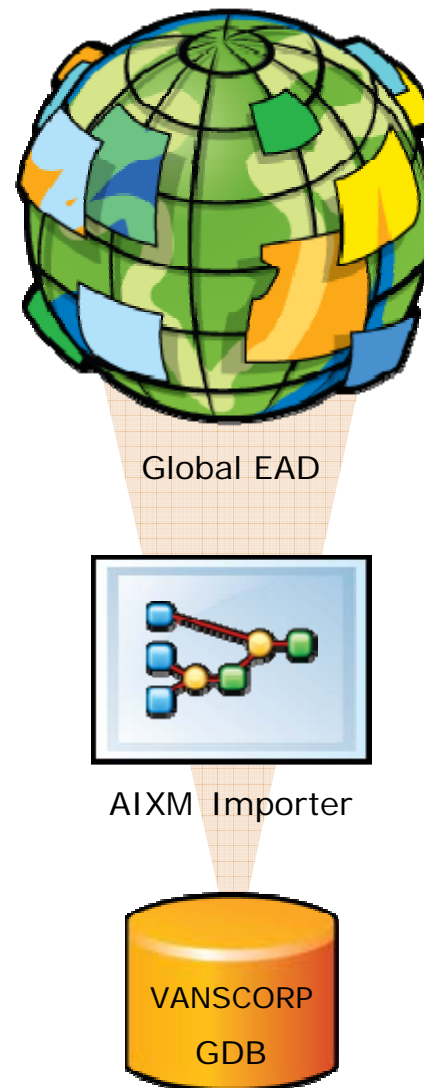




# Challenges: Data Ingest

## *Global EAD, high-volume complex data*

- Data Challenges
  - Worldwide coverage
  - High volume
  - Complex
  - Quality
  
- Resource Challenges
  - Hardware
  - Software
  - Load wait time

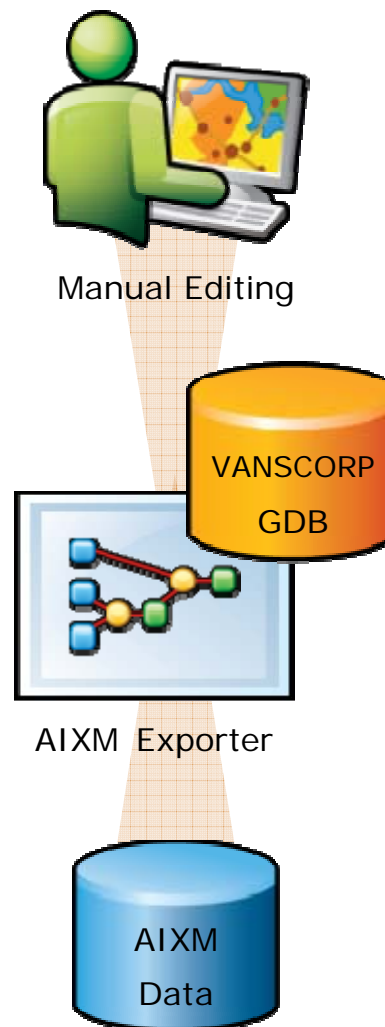




# Challenges: Manual Edits

## *AIXM compliant data adjustments*

- Manual Data Editing
  - User-friendly
  - Does not require AIXM-compliant keys
- Export Challenges
  - Hardware configuration
  - Software adjustments
  - Wait time





## Lessons Learned and Outlook

- Detailed and comprehensive data format specification is crucial
  - Optional attributes like the MID attribute can easily break the link and increase projects costs considerably
- Quality of source data important
- AIXM has proven to be an integrating link between applications
- Increases flexibility in system design
- Ideal for turnkey solutions

AIXM 5 and open interfaces like WFS will further improve system modularity and will lead to even more economic solutions

if we do not sacrifice a strict specification for sake of easy adoption



# Thank You!



## Highlights

- One central Aeronautical database using ESRI ArcGIS server
  - AIP and Charts generated from the same data
  - Updates apply to both, automated by workflow
- Master database provides other applications with adequate data
  - No manual adaptation/correction needed
  - Static Validation data for NTM and FPL applications come from one consolidated data source
- Data creation, manipulation and publication workflow is integrated into AIS workflows.
- Data Replication to three slave databases at sub-sites