IMP – Architecture

Update &
ICAO AIRM Sneak Peek

Presented to: ATIEC 2016
By: Paul Bosman
Date: September 20, 2016
Architecture Activities

- Resource Naming
- AIRM
- SARPs Inventory
- AIXM CCB

SARPs

Guidance

WG Services

WG Governance
• **Findings**
  – Many different verbs used for +- same thing
  – Suggestions for ‘ICAO – Guide to drafting of SARPs & PANS
  – First idea of all existing ‘information service’ related provisions
  – Ontology -> Semantic technology
ICAO - ATM Information Reference Model

- ICAO AIRM is not
  - A database
  - An application
  - An exchange model

- ICAO AIRM is
  + Reference material (say building blocks) for all these
  + Based on ICAO SARPs

- Progressive build-up
  - Alpha – Nov 2016, Beta – Nov 2017, V1 – Nov 2018
Do we need something like ‘urn:icao’ / … ?

- Recommendations [meta-data on the format of the data]
  - Register the XMs and their versions as MIME-types at IANA
  - Encourage the effective use meta-data on each message to indicate the format of the payload
AIXM CCB reporting

- XMs are getting more and more popular
- Price of fame 😊
- Some reported issues
  - AIXM specific - Vendor related interoperability
  - XM generic – Overlap / Duplication
  - Need for more business rules

Formalising XM – ICAO relationship

FIXM via ATMRPP, iWXXM via METP, AIXM via IMP

Your first port of call : XM CCB
SWIM SARPs

Definitions = Controlled Vocabulary = Terminology

Governance
- How to publish Information Services Usage & Principles
- An ICAO registry? General registry provisions?

Information
- SWIM information shall be AIRM referenceable
- If/When information is exchanged via SWIM services, the information shall be exchanged via global interoperable models
- Global interoperable models shall/should adhere to following characteristics ...

Services
- SWIM exchanges shall be done via information services
- Minimum list of ICAO prescribed services?

Technical Infrastructure
- Performance based COTS / Open standards … approach
- Techno profiles at max as guidance or a XM-style industry driven approach?
Current planned topics

- Governance/Information/Services/Technical Infrastructure
+ 
- Metadata/Quality
- Registries

TBD : Detailed Integration with ICAO SWIM Concept
Manual 10039
ICAO AIRM Sneak Peek

Business Requirements
• Terms
• SARPS
• PANS
• Guidance

Free text, diagrams

ICAO AIRM

Structured, addressable, unified

Publications
Technical Artefacts
• Data Dictionary
• Data Catalogues
• Information Exchange Models

Integrated
And here it is !!!

Its all about reference:
- Business terms
- Relationships
- Data types
Aircraft

Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

Source: ICAO Annex 1;
Status: Approved
Abbreviations: ACFT
urn: urn:x-icao:airm:v001:Information Context Model:Terms:Aircraft

Aircraft - category

Classification of aircraft according to specified basic character: aeroplane, helicopter, glider, free balloon.

Source: ICAO Annex 1;
Status: Approved
Aircraft

Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

Aircraft intent

Information on planned future aircraft behaviour, which can be obtained from the aircraft systems (avionics). It is associated with the commanded trajectory and will enhance airborne functions. The aircraft intent data correspond either to aircraft trajectory data that directly relate to the future aircraft trajectory as programmed inside the avionics, or the aircraft control parameters as managed by the automatic flight control system. These aircraft control parameters could either be entered by the flight crew or automatically derived by the flight management system.

Trajectory or profile

This is a description of the movement of an aircraft, both in the air and on the ground, including position, time and, at least via calculation, speed and acceleration.
<table>
<thead>
<tr>
<th>Name</th>
<th>Definition</th>
<th>Link</th>
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<tbody>
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<td>[Aircraft]</td>
</tr>
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### Attributes

- **aircraftRegistration**: `CharacterString` - A unique, 7-letter identifier, identifies a registration of the Aircraft Nationality or Common Mark and an additional alphanumeric string assigned by the state of registry or common mark registering authority.
- **icaoAircraftCategory**: `CodeAircraftTypeType` - Classification of aircraft according to specified basic characteristics, e.g. aeroplane, helicopter, glider, free balloon.
- **militaryAircraftCallsign**: `CharacterString` - The aircraft callsign for a military aircraft.
- **passengersInterpretation**: `CodeValueInterpretationType` - Indicates whether the Aircraft Characteristic concerns aircraft with larger or smaller number of passengers.
- **selectiveCallingCode**: `CharacterString` - SELCAL code, for aircraft so equipped.
Benefits

The IMP promise: Information exchange design providing interoperable, consistent and reliable data leading to a positive effect on safety and cost effectiveness.

How
• More consistent formalised expression of IM related ICAO concepts, SARPs and Guidance
• Provide unified/harmonised content to unambiguously refer to & re-use
• Enabling system architects and developers to build system/service solutions in a more cost-effective fashion
• Seamless ATM information interoperability, quality & reliability
• Allow for further evolution of exchange models in a more consistent and non-ambiguous way
Conclusions

- ICAO Information Architecture is now happening
- ICAO SWIM SARPS, Manual & AIRM considered ambitious yet realistic
- All support welcomed!

http://www.icao.int/airnavigation/IMP/Pages/default.aspx

paul.bosman@eurocontrol.int