

# Metadata Profile for AIXM

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## Action

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- Scott will draft the Requirements document first
- we organise a Webex with the authors of the document (those present at the first meeting)
- then the whole AVDWG

## Workflow

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The following workflow will be adopted in the creation of the Metadata Profile for AIXM:

- Gather sources - background on metadata standards.
- Gather Requirments for the profile
- Agree the Requirements
- Propose guidance on how to comply with the requiements

## 1 Metadata Lanscape

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The following sources have been identified as background on metadata:

### ISO Standards

- ISO 19115
- ISO 19115 Corrigendum - see here [notes from the discussion](#) in the AvDWG about the mandatory requirements
- ISO 19119
- ISO 19119 - Extensions of the service metadata model
- ISO 19139
- ISO 639-2 language codes
- ISO 8601 - dates and times

### European Implementing Rules

- INSPIRE Implementing Rule and supporting guide

### [Metadata Requirements document](#)

Proposed structure of the document:

- explain that if you need to use metadata, there are a number of fields imposed as mandatory by the metadata schema; these are analysed first;
- then analyse the specific requirements of various stakeholder groups: ICAO, ADQ, AMDB, etc.
- provide a UML schema that summarises the elements in ISO 19105 which satisfy these requirements.

### [Metadata implementation document](#)

#### **AMDB RTCA/EUROCAE**

This document also contains metadata requirements and as we want to enable publication of AMDB files from AIXM data sources,

#### **Existing Aviation Profiles**

- AIXM Metadata profile: [attach:MetadataProfileAIXM5.1Draft2010-03-26.doc](#)
- EAD implementation: [attach:metadataproposalv2.zip](#) and [attach:AIXMMetadataDesign.doc](#)
- eTOD: [attach:TODWG9-WP3eTODMetadata1.0.doc](#)
- "Aeronautical Metadata Profile based on Geographic International Standards", Madrid University, 2009.
- recent development by contractors for Eurocontrol SES: an ADQ profile, also called "aviation domain metadata proposal": [attach:MetadatamodelstrippedV10.pdf](#)

#### **Non Aviation**

- ANZLIC
- Content Standard for Digital Geospatial Metadata, NSDI
- MMI: <http://marinemetadata.org/semanticframework>

## **2 Gather requirements**

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### **Source for requirements**

#### **ICAO Annex 15 Amdt 36**

gives minimum:

1. the name of the organisation or entity performing the function -> lineage
2. the function performed. [That is: originating, transmitting or manipulating the data] -> inside lineage
3. the date and time of the operation. -> this is the date inside the lineage

element

Note that this include a list of values CI\_DateTYpeCode which has values:

- + creation = "origination"
- + publication = "provision"
- + revision = "manipulation"

### **ADQ Annex I Part C: Metadata**

Note: This is Europe only

Note: (which includes metedata about an attribute)

The metadata for the data set specifications defined in Part A and Part B shall include the following items, as a minimum:

- (a) the data originator of the data;
- (b) amendments made to the data;
- (c) the persons or organisations that have interacted with the data and when;
- (d) details of any validation and verification of the data that has been performed;
  - use the "DQ\_DataQuality" element, with the DQ\_Element child that allows to record
- (e) effective start date and time of the data;
- (f) for geospatial data:
  - the earth reference model used,
  - the coordinate system used;

Decision: do not use in the metadata, just specify in the GML; we do not want to duplicate the GML data; if required by a specific product, then the MD\_ReferenceSystem should be filled using the information about the CRS, collected from the GML encoded data underneath;

(g) for numerical data:

Note that we consider that as numerical data in AI:

- the statistical accuracy of the measurement or calculation technique used,
- the resolution: what this means?

We could use the DQ\_Element/DQ\_QuantitativeResult to capture:

- errorStatistics as confidence level
- valueUnit and value as resolution of the measuring device

If we adopt the ADQ definition, which means "number of digits". This is explicit in GML, as trailing zeros are not lost. This could be a problem in a database storage system where trailing zeros are removed. Therefore, such system should store the resolution of the incoming data values and re-store it when exporting AIXM/GML data.

It could also mean the resolution of the measuring device, in which case there is no easy to find solution in ISO 19105. The initial AIXM metadata profile by FAA proposed it as an extension. Possible to be captured as an extension of the MD profile, see the rules in Annex C. Or to be also considered. As accuracy in AIXM is at the property level -> see elevated point, then it would make sense to put the value in an AIXM extension at the same level; that would be data specific: distance, angle, angular distance (seconds);

It seems that in AMDB the hres is the resolution of the measuring device. To be checked with working group 44 how they are using this value and what they put in the AMDB files as hres/vres values.

Could be the resolution of the original measuring device that was used to measure the element/position; use the MD\_SpatialResolution/.../MD\_Distance (see INSPIRE)  
- the confidence level as required by the ICAO standards referred to in points 1 and 12 of Annex III and in other relevant ICAO standards;  
(h) details of any functions applied if data has been subject to conversion/transformation;  
(i) details of any limitations on the use of the data.

### **current AIXM profile**

At message level:

1. constraints: classification codes: restricted, confidential, top-secret.
2. constraints: access and use of the metadata. Legal constraints. Security constraints.

At feature level:

1. identification information. Who owns the feature
2. timestamp for when metadata was produced.

At timeslice level:

1. measure class - information about any measurements
2. measEquipClass - equipment used to capture the measurements
3. data integrity - degree of assurance that data has not been altered since origination
4. horizontal resolution
5. vertical resolution
6. citation, system name
7. digital certificate
8. contact information - address, phone.
9. process certification - DO200A, CHAIN compliant, ISO compliant.

### **Other Sources**

#### **eTOD**

Note: check if we have covered the eTOD in full; do not forget about resolution, accuracy, integrity, CRC value;

#### **Aviation DWG**

**FAA: metadata requirements for Airport GIS**

**ISO 19115 has a mandatory elements.**

## **Content Standard for Digital Geospatial Data (FGDC-STD-001-1998)**

This is under review and may add international elements

1. language
2. vertical extent
3. topic category

### **AirMat**

1. data status

### **NGA**

See comments at bottom of page.

## **Notes**

To do: document the requirements in the same way that they were documented in the Inspire IR (Part B)

Note: Metadata can indicate which source has generated that element; but how to define the rules by which the data is integrated (which is the authoritative source for each attribute, what order to apply for selecting the value if not present where expected, but present in lower authority sources? This is to be discussed later in detail, but to be mentioned in the current work

## **3 Agree requirements**

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How do we set about ratifying the requirements?  
Perhaps as input to the AIXM CCB.

## **4 Propose means of compliance**

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### **XML Schema solutions**

- document as in the Inspire Implementing Rules using 19139 (eventually with extensions)
- document as in the Inspire Implementing Rules using our own custom schema (as derived by Galdos from 19193 ?)

In both implementation solutions we might need to describe:

- metadata requirements for International data exchange (ICAO level)
- metadata requirements for data originators (these might be specific to each

Region/State and might require extensions to the ISO 19139 schema; for example, attachments if they are not supported by the ISO 19139 schema).

## **Core and Extension**

3 levels of metadata

1. Core. Minimum set
2. Complete. Still within scope of ISO 19115
3. Extended. Go beyond ISO 19115