MARIE-PT meeting 1

20 February 2012
14:19

(these notes apply purely to the data-exchange aspect of the MARIE-PT meeting)

[Jeremy Tandy] presented the work of WMO TT-AvXML & received broad acceptance. WMO TT-AvXML proposals were not assessed at a detail level.

[Neil Halsey]
- ICOA ATM (MET Information) requirements should be expressed in UML - current documents and tables are "not ideal"
- Question: where/how shall the ICAO ATM MET information UML be published?

ICAO note the move *from* PRODUCT-centric exchange to DATA-centric exchange … [JT: PointObservations (etc.) are data elements that are (currently) grouped into products like METAR/SPECI, TAF and SIGMET]

[Steve Albersheim] is keen to make sure that Aaron Braeckel's work is not discarded - "we're not here to repeat work that's already done"

WXXM scope is broader than Requirement for Annex 3 Amendment 76 - the concept of WXXM ICAO 'Core Constructs' (WXXM ICAO CC) to represent the Requirements scope for Amendment 76. Those elements outside the scope of Amendment 76 are termed WXXX Common Core Constructs (WXXM CCC). Ensure that both ICAO CC and CCC build on the same foundations (e.g. ISO/TC211 reference models + WMO Logical Data Model) [JT: ensure that the ICAO CC patterns are sufficiently EXTENSIBLE to (broadly) support the CCC]

The main unknown in development of the ICAO CC Logical Data Model is the _GAP_ between WXXM2.0 (currently nearing completion) and the model proposed by WMO TT-AvXML.

ACTION: at WMO TT-AvXML (meeting 2) [Brussels, 28-29 Feb] assess gap (e.g. differences in approach) between WXXM2.0 and WMO Logical Data Model & seek resolution / harmonisation where necessary.

[Dennis Hart] sees the WMO Logical Data Model moving to a 'foundation model' akin to the ISO/TC211 reference models. ICAO 'Manual on Digital Exchange of Aeronautical Meteorological Information' (DRAFT) [4.1 Scope] notes that "*This requires a modular approach for the logical data model which is provided by a strict adherence of next iterations of the logical data model to the declared foundation. The foundation provides the common ground for this modular thus a flexible WXXM ICAO CC.*" … clearly a 'foundation model' demands **strict adherence**.
[JT] notes that WMO standards can be issued with ISO reference numbers - which may help formalise the treatment of the WMO model as a 'foundation model'.

SUGESTED ACTION: Identify an entity from CCC and assess how it might be defined using entities from ICAO CC; ensure that CCC does not require a fundamental change to approach. Suggestion: AIRMET? (verify).

Is WMO responsible for publishing the GML schema for WXXM Common Core Constructs … or even EU or US extensions?
[JT] Given that the publication of the GML schema is an automated process (once tooling is configured appropriately) - does it need to be WMO that publishes the GML schema derived from ICAO Logical Data Model (ICAO CC)? Furthermore, we note that it is unrealistic to expect the automatic generation of GML schema from arbitrary Application Schema detailing national or regional extensions. WMO should not be responsible for generating GML schema for extensions; generation of GML schema by WMO shall be limited to the WMO Logical Data Model and ICAO CC Logical Data Model.
Proposal: the generation of the Physical Data Model (e.g. the GML schema) shall be retained by the Authority responsible for developing the Logical Data Model (e.g. the UML Application Schema). Thus WMO will be responsible to providing both UML Logical Data Model _AND_ GML schema that will underpin the ICAO MET information models (ICAO CC, WXXM CCC plus national / regional extensions). WMO GML schema will be _IMPORTED_ by ICAO CC GML schema and WXXM CCC GML schema as necessary. WMO will _NOT_ be required to publish the ICAO CC GML schema.

[ACTION: Jeremy - propose a draft for review (complete: see note at end of document)] Draft text to submit to Fred Branski (President of CBS) regarding perceived changes in management of OPMET Codes on behalf of WMO. These will be shared with members of WMO TT-AvXML before submission.

WMO Executive Council meets at end of June 2012 - this should be the forum where we discuss ceding of control of the OPMET Logical & Physical Data Model to ICAO _WITH THE PROVISO THAT ICAO IMPORTS METEOROLOGICAL DEFINITIONS FROM WMO_

This is a low-risk requirement: at worst WMO shall continue to retain the responsibility of publishing the ICAO CC GML schema!

Physical Data Model may be GML schema or BUFR Templates.

ASIDE (really just a reminder): WMO _MAY_ wish to create BUFR Templates (a specific Physical Data Model) for ICAO MET Information products … WMO would be responsible for this activity even if the generation of GML schema for ICAO CC is passed to ICAO.

[Steve Albersheim / Herbert Puempel] With delegation of Authority for the creation of (national / regional) extensions, a Requirement emerges to provide a single point of entry for discovery of these extensions - both UML Logical Data Model (e.g. Application Schema)* _AND_ Physical Data Model (e.g. GML Application Schema).

[Matt Peroutka] Notes that validation of GML instance documents will require access to the GML schema - this puts the GML schema as a resource that requires (extremely) high availability. Alternatively, caching of the GML schema may be an option. [JT: recommends adopting a cache-centric approach]

Need to ensure that the Aviation Metadata Profile is _CONSISTENT_ with the WMO Core Metadata Profile … we note that WAFC are registered as DCPCs on WIS so products will need to compliant with both Aviation and WIS metadata requirements.

[ACTION: Jeremy / IPET-MDI] compare OGC Aviation Metadata Profile vs. WMO Core Metadata Profile … add to IPET-MDI action plan.

[ACTION: WMO TT-AvXML + SESAR/NextGEN modelling team (2012-05-01)] develop first iteration of ICAO CC + WMO Logical Data Model for METAR/SPECI, TAF & SIGMET. Need to assess the _GAP_ between WXXM2.0 and candidate WMO Logical Data Model & work conjointly to ensure that both 'halves' of the Logical Data Model are coherent. MARIE-PT shall apply 'domain expertise' to validate whether the ICAO CC Logical Data Model meets the Annex 3 Requirements - inheriting the WMO Packages and Classes as appropriate. The WMO Logical Data Model does not require explicit validation against the Annex 3 Requirements … it is

validated by proxy where the ICAO CC Logical Data Model imports Packages from WMO. Requires 'training' to educate MARIE-PT members sufficiently to help them understand the model - e.g. technical experts may brief MARIE-PT members on a regional basis … obviating the need to have a single meeting for ALL participants.

Validation of the ICAO CC Logical Data Model will require 'training' (early May). Proposal: WebEx in 3 different time-zones / locale (North America | Europe | South-east Asia) … 'experts' to deliver the training will be drawn from the WMO / NextGen / SESAR modeling team (Aaron Braeckel | [EUROCONTROL] | BL Choy). Objective of the training is to walk people through the models so that the domain experts are able to assess whether the UML model contains all the attributes required by Annex 3 (e.g. 'is the content correct?'). Domain experts will NOT be asked to critique the _STRUCTURE_ of the model!

[JT: because the ICAO CC Logical Data Model is _VERY_ modular, I think we will need Object diagrams to describe example INSTANCES]

[Clarification] target delivery date for GML schema: _END_ July 2012

Deployment of GML schemas for the Amendment 76 release (e.g. first iteration) will be a 'single entity' (containing both ICAO CC and WMO packages) in the WXXM namespace. Dennis Hart will manage the publication of this Resource. Subsequent iterations will look to deploy the GML schemas via WMO and ICAO respectively.

Proposed text for President of CBS (Fred Branski) … share text @ WMO TT-AvXML and ask Enrico Fucile as Chair to submit text

ICAO seeks to harmonise data exchange technology around GML/XML - including OPMET. Amendment 76 to Annex 3 / WMO No. 49 (2013) shall permit states in a position to do so to bilaterally exchange OPMET data via GML/XML. ICAO has commissioned WMO to develop a GML Schema for TAF, METAR/SPECI and SIGMET products by July 2012. Following best practices, the GML Schema will be derived from a Logical Data Model - referred to as ICAO Common Constructs (ICAO CC). It will comprise of aviation-specific elements and generic weather elements.

The ICAO CC Logical Data Model will form a sub-component of the broader Air Traffic Management initiative and shall be owned and maintained by ICAO. Following agreement at WMO TT-AvXML meeting 1, it was agreed that WMO shall own and maintain the Logical Data Model describing the generic weather elements and that the ICAO CC Logical Data Model shall import elements from the WMO Logical Data Model as necessary. WMO TT-AvXML is currently engaged in developing the WMO Logical Data Model by derivation from the BUFR Code-Forms.

The conversion of Logical Data Model to GML schema is anticipated to be a fully automated process. Current agreement between ICAO and WMO cites WMO as the responsible party for deriving the GML schema for both ICAO CC and WMO Logical Data Models. WMO will not be responsible for deriving GML schema for regional / national extensions to ICAO CC.

Given that the publication of the GML schema is a fully automated process there is no apparent value associated with ownership of this step in the process; it could easily be undertaken by ICAO or WMO. The important activity is the development and maintenance of the Logical Data Model that defines the content of each data product.

Following discussion between representatives of WMO CAeM, WMO TT-AvXML and the ICAO Meteorological Aeronautical Requirements and Information Exchange Project Team (MARIE-PT) we propose that the responsibility to automatically generate the GML schema shall be retained by the Authority responsible for developing the Logical Data Model. Thus WMO shall retain responsibility for providing both Logical Data Model and GML schema for the generic weather components that will underpin the ICAO CC Logical Data Model. Under ICAO governance, the ICAO CC Logical Data Model shall import elements from the WMO Logical Data Model. ICAO shall be responsible for automatic generation of the ICAO CC GML schema. The ICAO CC GML schema shall import elements from the WMO GML schema to reflect the relationship between the Logical Data Models.

The crucial point to note is that the process outlined above allows the Logical Data Model (e.g. the description of information content) to be managed as a separate entity to the Physical Data Model (e.g. the GML schema). This is in contrast to current WMO Code-forms that tightly-couple the information content and the physical encoding. The proposal outlined above retains WMO control over the meteorological information content where WMO provides significant domain expertise. Critically, the proposal constrains ICAO to delegate management of the meteorological elements to WMO in accordance with the Working Arrangements between WMO and ICAO which are set for review in the 2-3 year timescale as they only refer to 'Codes'. ICAO is then able to compose the meteorological elements into products that meet their business needs.

We request the President of CBS to submit this proposal for endorsement by WMO Executive Council.