The latest development of the ICAO Meteorological Information Exchange Model (IWXXM)

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What has changed since the last AFI IWXXM workshop in Sep 2020

- A new version of IWXXM meeting new requirements of Amendments 79 and 80 to ICAO Annex 3 has been prepared and is now being considered for approval by WMO
- A new IWXXM versioning scheme has been adopted
- ICAO METP/5 held in Jun 2021 discussed future direction of IWXXM development
- TT-AvData has taken forward new IWXXM development concept and workflow

What is IWXXM? (A Recap)

- A data format for reporting aviation weather information in machine readable XML/GML form
- Covers 7 TAC products (and 1 BUFR product in upcoming version in Nov 2021):

  METAR/SPECI, TAF, AIRMET, SIGMET, Tropical Cyclone Advisory, Volcanic Ash Advisory, Space Weather Advisory, WAFC SIGWX Forecast
- Original TAC/BUFR contents are enriched in their IWXXM counterparts with metadata (e.g. projection) and extension
- XML Schema and Schematron enforces report integrity and reporting requirements in ICAO Annex 3

* Please refer to the IWXXM presentation in AFI IWXXM Workshop 2020 for details of the above concepts

More on upcoming version

- Targeted applicable date: 15 Nov 2021
- Highlights of changes:
  - Bug fixes and documentation changes
  - Changes in representation to align with changes in the TAC template of their counterparts
  - Introduction of the WAFS Significant Weather Forecast (actual provision will commence in 2023)
- For details please see the release note at http://schemas.wmo.int/iwxxm/2021-2RC2/ReleaseNotes-IWXXM.txt

More on the upcoming version

- New versioning scheme: IWXXM Version 2021-2
- The intention is to delink the version number of IWXXM and its packages (e.g. METAR/SPECI, TAF, etc.)

ICAO Annex 3	IWXXM	METAR/ SPECI	TAF	SIGMET	AIRMET	TCA	VAA	SWA	WAFS SIGWX F/C	VONA	QVA
Amendment 76	1.1	1.1	1.1	1.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Amendment 77	2.1	2.1	2.1	2.1	2.1	2.1	2.1	N/A	N/A	N/A	N/A
Amendment 78	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	N/A	N/A	N/A
Amendment 79/80	2021-2	3.1	3.0	4.0	3.1	3.1	3.1	3.0	1.0	N/A	N/A
Amendment 81 (Predicted)	2023-2	3.1	3.0	4.0	3.1	3.1	4.0	4.0	1.0	1.0	1.0

METP/5 outcomes in relation to IWXXM

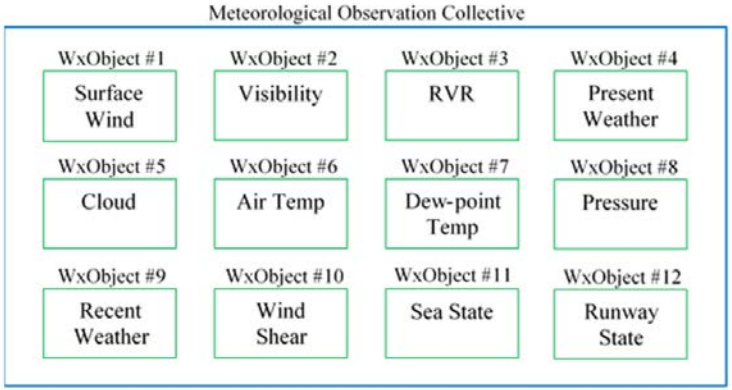
- Proposed Amendment 81 to ICAO Annex 3 (Nov 2023)
  - Introduction of TAC and IWXXM forms of VONA (Volcano Observatory Notice to Aviation)
  - Consequential change to VAA with the introduction of VONA
  - Introduction of QVA (Quantitative Volcanic Ash) forecast which is solely on IWXXM
  - Refine the representation of SWA
- Create the capacity, to enable States that wish to do so, to provide additional information in IWXXM form:
  - METAR/SPECI: Remove the constraint to the number of runways when reporting RVR
  - METAR/SPECI: Allow the inclusion of tenths of a degree in temperature and dew point temperature
  - All related reports: Clarify the limitation to the number of coordinates in a polygon applies to TAC only

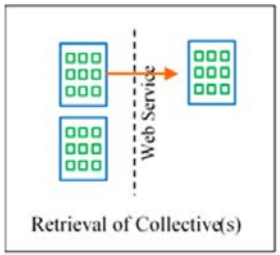
METP/5 outcomes in relation to IWXXM

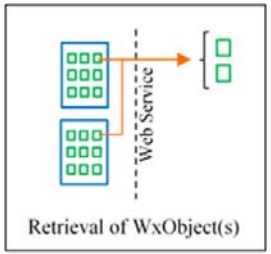
- The need for a global repository for IWXXM Schema Extensions to provide adequate information to aeronautical users
- Development of the Aerodrome Observation in IWXXM that would incorporate the existing information requirements contained in METAR/SPECI, LOCAL ROUTINE/LOCAL SPECIAL reports and any new requirements from stakeholders and at the same time carry none of the TAC constraints
- Instigate an active collaboration between identified stakeholders with the aim of developing a community designed solution for non-mandatory guidance for visualisation of some digital meteorological information

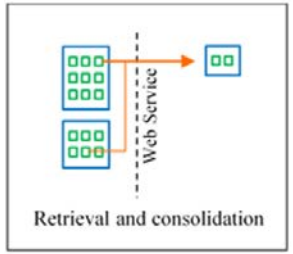
New IWXXM development concept and workflow

- A new approach was taken for the development of IWXXM: Weather Object (WxObject) can take advantage of the SWIM environment for more effective exchange of meteorological information









New IWXXM development concept and workflow

- TT-AvData realized that the existing development workflow (i.e. IWXXM development work will only commence after the approval of an amendment to Annex 3) will make IWXXM significantly lag behind its associated Annex 3 amendment.
- This is increasingly undesirable when IWXXM is becoming more important in information exchange
- Starting from Amendment 81 TT-AvData will initiate development work as soon as METP endorse the proposed changes for ANC's consideration. Hopefully the consultation and approval processes of IWXXM could be in sync with those for corresponding Annex 3 amendment

Takeaway

- IWXXM is here and evolving
- IWXXM carries more information than its TAC/BUFR counterparts and the gap is getting larger (e.g. number of RVR reports in METAR/SPECI)
- “IWXXM only” information is emerging (e.g. QVA)
- New initiatives (like Aerodrome Observation in IWXXM) are being developed to meet multiple requirements, satisfy different use cases and get rid of the constraints in TAC. They may supersede a number of TAC products especially under the SWIM environment

ICAO

THANK YOU