International Civil Aviation Organization

The Ninth Meeting of System Wide Information Management Task Force (SWIM TF/9)

Bangkok, Thailand, 14 – 17 May 2024

Agenda Item 3: Outcomes of relevant meetings on SWIM-related matters

KEY SWIM RELATED ACTIVITIES BEING PROGRESSED BY METP

(Presented by Australia)

SUMMARY

This paper provides a summary of key activities being undertaken by ICAO METP of relevance to SWIM TF.

1. INTRODUCTION

1.1 The ICAO Air Navigation Commission (ANC) assigned Job Card METP.004, *Inclusion of aeronautical meteorological information in the SWIM-enabled environment and further development of the SWIM concept relating to meteorology*, to the ICAO Meteorological Panel (METP).

1.2 The ICAO METP tasked its Working Group on MET Information Exchange (WG-MIE) to carry out the goals set forth in Job Card METP.004.

1.3 The objective of the WG-MIE is to ensure the smooth transition to the provision of MET information in the ICAO Meteorological Information Exchange (IWXXM) format and into the System Wide Information Management (SWIM) environment. A major focus is to progress planning for the transition from traditional alphanumeric code (TAC) to IWXXM formats and progress the development of the architecture and policies associated with meteorological aspects of SWIM (MET-SWIM).

1.4 This paper provides an update on some of key activities of WG-MIE of relevance to the work of SWIM TF.

2. DISCUSSION

Amendments to ICAO Annex 3

2.1 The ANC has deferred the approval of the report and outcomes of the Fifth Meeting of the METP (METP/5) including proposed Amendment 81 to ICAO Annex 3, which has led to changes in amendments to ICAO Annex 3, timing of Sixth Meeting of METP/6 and associated activities of the WG-MIE. This has resulted in changes to amendment numbers, with the "likely" contents and timings as follows:

Updated Annex 3 Amendment Schedule			
Origin	Amendment No.	Original Expected Applicability	**NEW Expected Applicability**
IMP/2 – Enabling Information Services	Amendment 81	November 2024	**November 2024**
METP/5	Amendment 82	November 2024	**November 2025**
METP/6	Amendment 83	November 2026	**November 2027**
METP/7	Amendment 84	November 2029	**November 2030**

2.2 It is proposed that the global exchange of most text formatted meteorological products will be removed as an Annex 3 standard in 2030.

Enabling MET-SWIM Information Services

2.3 Whilst ICAO has determined that information services will be enabled through Amendment 81 to ICAO Annex 3 with applicability from Nov 2024, the first ICAO meteorological SWIM (MET-SWIM) services to be introduced to Annex are likely to be:

- aerodrome observation information service (from 2027)
- aerodrome forecast information service (from 2027)
- quantitative volcanic ash (QVA) concentration information service (from 2025).

2.4 Hazardous Weather Information Service (HWIS), which aims to provide phenomena based, globally consistent, en-route hazardous weather information to the customers, is expected to be introduced by 2030. HWIS will provide access to timely, high temporal and spatial frequency weather hazard information. This is expected to enable impact-based alerting services that will provide customers with tailored notifications of meteorological conditions that meet criteria that is operationally significant to their business. HWIS is expected to initially include thunderstorm, icing and turbulence phenomena.

2.5 MET-SWIM will support access to:

- Objects/features in IWXXM format via both request/reply and publish/subscribe messaging patterns
- Gridded data via the Open Geospatial Consortium Environmental Data Retrieval (OGC-EDR) Application Programming Interface.

2.6 There is some discussion about introducing a SWIM streaming service to support rapid update information (e.g. one-second and one-minute observations) but any decisions were deferred until a clearer requirement is developed.

Information Service Definition and Information Service Overview

2.7 The ICAO Information Management Panel (IMP) is responsible for leading the development of SWIM.

2.8 The IMP is developing the requirements for the Information Service Definition as part of their JobCard. An information service definition will be produced for each Annex 3 information service. An information service definition is not to be confused with an information service overview. An information service definition is produced by a community (METP). It places requirements on service providers. This results in a harmonised service implementation to the benefit of the service consumer.

2.9 An information service overview is produced by a service provider (State). It describes the running service using metadata fields specified in the Procedures for Air Navigation Services (PANS) – Information Management (PANS-IM) and helps the service consumer in deciding when and how to use the service. An information service overview may reference the information service definition to which it adheres.

2.10 Information service definitions for intended information services in the MET domain are likely to be included in the PANS-Meteorology (PANS-MET), although there is some debate as to whether these may be better in a guidance document.

2.11 Draft versions of Europe's initial MET-SWIM service definitions are available: https://ext.eurocontrol.int/swim_confluence/display/MSS/Meteorological+SWIM+Services

MET-SWIM Documentation

2.12 WG-MIE is currently developing a draft version 3.0 of the *MET-SWIM Roadmap*, including revised transition capabilities and implementation schedules.

2.13 WG-MIE has decided that the *Plan for Meteorology in SWIM* (MET-SWIM Plan) should be deprecated, and the contents of the current version (Version 2.3) should be brought into a new *Guidelines for MET-SWIM Implementation* (MET-SWIM Guidelines) document. This Guidelines for MET-SWIM Implementation document will also contain:

- Advantages and disadvantages for the use of ‘messaging’ versus ‘web service’ and examples of when ‘messaging’ can be combined with ‘web service’
- Use of the Advanced Message Queuing Protocol (AMQP)
- Use cases for accessing objects, gridded data, and images
- Use of the OGC EDR API.

2.14 The METP is planning to release the MET-SWIM Guidelines in Q2, 2025.

Transition from traditional OPMET exchange to MET-SWIM

2.15 WG-MIE has also been looking at how we transition from traditional OPMET exchange over the Aeronautical Fixed Services (AFS) to the future SWIM services and agreed that many existing OPMET exchange functions, such as Regional OPMET Centres (ROCs), Regional OPMET Databanks (RODBs) and Inter-regional OPMET Gateways (IROGs), won't exist in a SWIM environment. Instead, these services will be offered by some SWIM information service providers and won't likely be roles allocated by ICAO to States.

2.16 The term “OPMET” will not have any definite relevance in MET-SWIM, so over the coming years, where possible, the term should be removed from all existing documents.

Notification of changes to IWXXM

2.17 WG-MIE and WMO Task Team on Aviation Data (TT-AvData) are working together to establish a formal communications process, aligned with AIRAC cycles, for future versions and releases of IWXXM to ensure that there is improved awareness of new IWXXM releases.

2.18 The notifications procedures will need support notification of changes to core IWXXM and State extensions. It was noted that systems may also need to change when States implement changes to their extensions to the core IWXXM schema.

2.19 The group agreed to the following policies regarding new versions of IWXXM which will be incorporated into a future version of the IWXXM Guidelines document:

- New versions of IWXXM shall only be implemented in Aeronautical Information Regulation and Control (AIRAC) dates.
- New versions of IWXXM should only be implemented on the 6th or 12th (preferred) AIRAC cycle of the year. Where more timely updates are required, the 3rd or 9th AIRAC cycles could be considered.
- A minimum of 12 months lead time** should be provided for major changes of non-time critical/safety nature.
- A minimum of 6 months lead time** should be provided for minor changes of non-time critical/safety nature.

** Note: From the publishing of the revised IWXXM schema.

2.20 World Meteorological Organization (WMO) have been requested to setup a subscription service to notify users (ANSPs, MSPs, airlines) of changes to IWXXM.

2.21 The group discussed how much notice is provided once a schema is published, and clarified the current process wherein WMO begins development work on schema as soon as METP endorses an Annex 3 amendment proposal. WMO aims to publish schema at the same time the Annex 3 Amendment becomes applicable. Additionally, the policies would be applied to all users of the *Guidelines for the Implementation of IWXXM Exchange* (IWXXM Guidelines), noting that nothing can be mandated through guidance documents.

Updates to the IWXXM Guidelines

2.22 Version 5 of the *Guidelines for the Implementation of IWXXM Exchange* (IWXXM Guidelines) has been finalized and is available on ICAO APAC e-documents website.

2.23 The following items are being considered for inclusion in Version 6 of the IWXXM Guidelines:

- Guidance on how Regional OPMET Data Banks (RODBs) should provide MET information when available in different IWXXM versions
- Service level of IWXXM schema website (schemas.wmo.int)
- Guidance on the direction of polygons in IWXXM
- Policy on the deprecation of IWXXM elements
- Procedures for use of global extension repository
- Guidance for States who wish to issue single location reports
- Procedures for notification of changes to core IWXXM and extensions

- Documentation on the change management process for IWXXM development.

Other General Outcomes

2.24 The establishment of a formal change control board (CCB) for IWXXM is not necessary given the existing collaboration between WG-MIE and WMO TT-AvData.

2.25 WG-MIE is seeking input from the new ICAO Trust Framework Panel (TFP) with regards to use of the public internet for MET-SWIM services.

2.26 There is a need for ICAO to host a repository of IWXXM schema extensions.

2.27 The lack of globally accessible IWXXM is preventing users from migrating to IWXXM. Increased focus needs to be given to States to assist and promote the implement of IWXXM, including intra- and redundant inter- regional AMHS circuits.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper; and

b) discuss any relevant matter as appropriate

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