



*International Civil Aviation Organization*

**WORKING PAPER**

**TWENTIETH MEETING OF THE METEOROLOGY SUB-GROUP  
(MET SG/20) OF THE ASIA/PACIFIC AIR NAVIGATION PLANNING  
AND IMPLEMENTATION REGIONAL GROUP (APANPIRG)**

*Bangkok, Thailand, 6 – 9 June 2016*

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**Agenda Item 6: Research, development and implementation issues in the MET field**

**6.5 Governance and training (incl. quality management, cost recovery,  
qualification and competencies of meteorological personnel)**

**CAPACITY BUILDING AND AWARENESS RAISING ACTIVITIES ON IWXXM  
IMPLEMENTATION FOR DIFFERENT STAKEHOLDERS IN APAC**

(Presented by Hong Kong, China)

**SUMMARY**

This paper presents the need of capacity building and awareness raising activities in APAC on implementing IWXXM for OPMET exchange.

**1. INTRODUCTION**

1.1 The second meeting of the ICAO METP WG-MIE in May 2016 proposed, for METP's consideration, the exchange of OPMET in IWXXM format to become a standard in Amendment 78 to Annex 3 and be applicable in 2020. The survey conducted in late 2015 in Asia Pacific (APAC) region, however, showed that many States lacks preparedness and understanding on the plans for the implementation of IWXXM and AMHS.

1.2 To address APANPIRG/26 Conclusion 26/56 – *Capacity building workshop to facilitate planning and implementation of digital exchange of aeronautical meteorological information*, an ICAO inter-regional "Workshop on implementing IWXXM for exchange of OPMET data" was organized in Paris, France from 31 May to 2 Jun 2016. Only experts from 4 APAC RODBs (Brisbane, Bangkok, Singapore and Tokyo) were invited to attend the workshop. This paper discusses the need to provide capacity building and awareness raising activities to the broader community in Asia and Pacific Region.

**2. DISCUSSION**

2.1 WMO Commission for Basic Systems set up a Task Team on Aviation XML (TT-AvXML) to develop an XML representation of aviation information. At its fourth meeting (September 2015, Hong Kong), TT-AvXML identified four categories of roles that would be

impacted by the implementation of IWXXM and require capacity building related to the migration to IWXXM. Areas of development that would be needed to support each role are summarized below.

#### Aviation MET Service management, high and intermediate

2.2 The awareness of management of MET service providers would need to be raised so that they would understand the move to XML was mandatory and would require investment. They would also need to know what changes would be needed in their services to comply with the requirements. They would be required to ensure that plans are developed, funded and implemented to change the working practices and IT systems that support the production, exchange and use of MET information in IWXXM. Awareness training for senior managers on the need to take action on the following topics:

- a) Regulatory environment and timescales (including SWIM);
- b) Impacts on technology infrastructures;
- c) Impacts on internal processes;
- d) Implications of non-compliance.

#### Technical teams developing, procuring and maintaining software to prepare and use XML

2.3 Technical teams of data producers, which could be MET service providers, airports operators or others, would need to know their role in preparing the IWXXM messages, and the implications of schema verification on delivery of IWXXM messages, such as invalid messages not being passed to end users. This role has the greatest need for detailed knowledge on how to use IWXXM to represent information. Topics should include:

- a) A high level introduction to UML (Unified Modelling Language), GML (Geography Mark-Up Language), SWIM and their relationship to IWXXM;
- b) WMO and ICAO XML models and supporting schematron and tools;
- c) Use of the WMO code registry and local implementation of the registry;
- d) Sources of reference information (manuals, web sites, etc.);
- e) Sources of aeronautical metadata & update procedure to be in place (source of metadata);
- f) Implications of not complying with regulations.

#### Technical teams managing the exchange and storage of information, and the use of information in the production chain (Message Switch Systems, RODBs, Regional Operating Centres)

2.4 This role would not generally be using the contents of OPMET messages, but they would be managing the flow and storage of these messages. They would need to understand the implications of changes in the message formats, message headings and file names. Topics should include:

- a) High level view of XML, SWIM;
- b) Implications of changes in the message formats, message headings and file names;
- c) Implications for storage and communications systems (including the requirement on the use of Extended AMHS);
- d) Requirements for tools to support user applications.

Users of meteorological information for aviation

2.5 A significant difference between IWXXM and the traditional alphanumeric codes is that IWXXM is not easily interpreted by humans, and messages in IWXXM are not suitable to be represented directly in products. End users will need to know how to interpret the output of the various systems which receive IWXXM-formatted MET information. This need for training would extend to flight crew as well as meteorological staff. Topics would focus on differences from working with the Traditional Alphanumeric Codes, including:

- a) Context of SWIM;
- b) Greater reliance on technology for preparing and visualizing reports;
- c) Differences in information content;
- d) Implications of stricter validation of information.

**3. CONCLUSION**

3.1 In addition to experts from RODBs, the capacity building activities may need to involve more diverse roles inside and outside meteorological services, such as the high-level decision makers and project managers of the service providers concerned, airline operators and other users of aeronautical meteorological information in the APAC Region.

3.2 As it would not be possible to arrange capacity building activities directly to all the people involved, the approach has to provide for cascaded training so that trainees would be able to pass on their knowledge to their colleagues. The following proposed modes of capacity building activities could be considered.

- a) Conduct side meetings or briefing sessions at planned regional meetings of ICAO or WMO for aviation MET service management;
- b) Hold regional training workshops organized by ICAO or in association with other WMO training activities to “train the trainer”;
- c) Deliver remote training by ICAO and WMO experts to a broader community of technical teams; and
- d) Develop self-training packages and education materials for end users.

3.3 To support the implementation of IWXXM in APAC, Hong Kong, China is planning to host a capacity building workshop under WMO Voluntary Cooperation Programme (VCP) in 2017.

**4. ACTION BY THE MEETING**

4.1 The meeting is invited to:

- a) note the information contained in this paper (in particular items listed in paragraph 3.2); and
- b) discuss any relevant matters as appropriate.

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