International Civil Aviation Organization

WORKING PAPER

Twenty-fifth Meeting of the Meteorology Sub-group (MET SG/25)

Online, 18 – 22 October 2021

Agenda Item 5: Research, development and other initiatives

COST EFFICIENT SUPPORT OF METEOROLOGICAL SWIM SERVICES

(Presented by Australia)

SUMMARY

Many APAC Meteorological Service Providers are planning to offer SWIM services. At the recent SWIM/TF 5 meeting, its Terms of Reference was modified to specify the SWIM architecture and implementation approach will occur over the CRV. Currently Meteorological Service Providers & airlines do not have access to CRV. This paper discusses the need of Meteorological Service Providers to provide SWIM services directly to users for volume intensive and non-sensitive MET information and recommends a draft METSG Conclusion seeking SWIM TF consider safe, efficient and economical implementation and provision of meteorological SWIM services.

1. INTRODUCTION

1.1 The ICAO APANPIRG System Wide Information Management Task Force (SWIM TF) was established by the 20th Meeting of the Communications, Navigation and Surveillance Sub-Group of APANPIRG (CNS SG/20).

1.2 The Fifth Meeting of the APAC SWIM Task Force (SWIM TF/5) was held from 9 – 11 August 2021. The meeting was conducted via video teleconferencing, using Microsoft Teams.

1.3 The meeting was attended by 173 participants from 21 States/Administrations, 4 International Organizations and 1 service provider. Only a very small percentage of people attending represent meteorological service providers.

1.4 The meeting revised the SWIM/TF Terms of Reference (ToR), considering the progresses made since the establishment of SWIM TF, the update of ICAO global and regional air navigation plans, and the revised task groups adopted at SWIM TF/4.

2. DISCUSSION

Global Context to SWIM Services

2.1 The ICAO Meteorological Panel (METP) has recently released new versions of the MET-SWIM Plan, *Plan for Aeronautical Meteorological (MET) Information in System-Wide Information Management (SWIM)*, and MET-SWIM Roadmap, *Roadmap for Aeronautical Meteorological (MET) Information in System-Wide Information Management (SWIM)* which define future meteorological SWIM services and implementation timelines.

Review of the SWIM/TF Terms of Reference

2.2 At SWIM/TF 5, the SWIM TF Co-Chair and Secretariat presented WP03 - *Review of ToR, Work Plan, and Outstanding Action Items*. This 42-page paper presented the current SWIM TF's work plan, the updated Action List, and the proposal for amendment to the SWIM TF's ToR, to reflect the latest work status achieved and the revise task groups under the SWIM TF as well as the update of ICAO global and regional air navigation plans.

2.3 This included a major rewrite of the ToR, including the following new task:

> c) Define a high-level Asia/Pacific regional SWIM architecture, the corresponding SWIM technical infrastructure requirements, and the implementation approach to construct such architecture over CRV to ensure interoperability among regional SWIM participants and backward compatibility with non-SWIM capable entities;

2.4 This new paragraph specifies that the Asia/Pacific regional SWIM infrastructure and architecture be limited to the CRV.

2.5 Australia recognises the value of the CRV and the rational that safety critical SWIM services may be restricted to users on the CRV. However a great number of meteorological services are less critical and highly data intensive, such as 3-dimensional gridded data of forecast wind, temperature, turbulence or other significant weather, and image data of satellite and weather radar. The use of CRV for these meteorological services will result in much higher costs and is inconsistent with SWIM architectures in other regions and requires further consideration.

2.6 Furthermore, the current CRV Operations Procedures do not support Meteorological Service Providers (MSPs) or airlines connecting to the CRV.

2.7 Given the aforementioned concerns with the proposed TOR, at SWIM TF/5 Australia proposed to remove "over CRV" text from task c) of the ToR, as SWIM should not be limited to communications via the CRV.

2.8 Some States were not supportive of removing the reference to the use of CRV and stated that 3rd Meeting of SWIM TF (SWIM TF/3), agreed that APAC SWIM communications will occur over the CRV.

2.9 Australia is not suggesting that CRV should not be used, but rather, promoting that APAC SWIM services should support both the CRV and secure communication over the internet (where applicable) as defined in ICAO Annex 3 – *Meteorological Services for International Aviation* and ICAO Doc 9855 - *Guidelines on the Use of the Public Internet for Aeronautical Applications*).

2.10 Given the tight meeting schedule and general support for the revised TOR, the meeting decided to retain "over CRV" terminology and invited Australia to submit a working paper to SWIM TF/6 to provide details of its concerns related to this terminology for further consideration.

Potential Impacts of the new SWIM TF TOR

2.11 Without change, this revised ToR will result in APAC SWIM Architecture and Governance requiring the highly data intensive Meteorological SWIM services to operate over the CRV, with very significant operational costs, and this also may prevent Meteorological Service Providers from providing SWIM services.

2.12 This will severely restrict and delay the provision of new high temporal and spatial resolution meteorological information being made available to the aviation industry and is inconsistent with the intent of the ICAO SWIM Plan and the implementation of SWIM services within other regions.

2.13 SWIM is intended to be a flexible capability allowing efficient and secure communications between SWIM users and service providers anywhere in the world.

2.14 SWIM subscribers should be able to access to SWIM services securely using internet as they safely do today for many services. This is the case in the FAA SWIM implementation and other SWIM services being developed by the ICAO World Area Forecast System (WAFS) Providers, Hong Kong Observatory, Australian Bureau of Meteorology and in other regions. This will keep the implementation costs low for both the providers and users of SWIM services. Requiring all SWIM communications to occur over the CRV will require significantly (magnitudes) larger capacity for most CRV links and far higher costs for all stakeholders.

2.15 Realising the potential confusion Meteorological Service Providers and consumers may have in moving from existing modes of information provision to those over SWIM, there is a current activity under ICAO METP Working Group on Meteorological Information Exchange (WG-MIE) Work Stream 2 (MET-SWIM Plan) to identify and understand the future MET-SWIM architecture. Confining the choice of network layer to CRV in APAC at this time may run the risk of changing again within a short period of time.

2.16 Australia (and some other countries) are planning to present a paper at SWIM TF/6, formally raising concerns with any restriction to limit SWIM services to the CRV. We seek your support in promoting with your SWIM TF members the need of the Meteorological Service Providers to provide less critical, highly data intensive data and the technical and financial constraints on meteorological services over SWIM imposed by using only CRVs would require further study.

Contributing Factors to the current situation

2.17 Historically SWIM TF meetings have been held face to face over 4 or 5 full days (~30 hours of actual meeting time). SWIM TF/5 virtual meeting was held over 10 hours, across only 3 days. This compressed meeting schedule did not allow sufficient time to adequately discuss the impacts of this change to the TOR.

2.18 The vast majority of the SWIM TF members come from a communications, navigation or surveillance background. Moreover, the meteorological community is very underrepresented on the SWIM TF. It is strongly recommended that meteorological community increase their participation on the SWIM TF.

Draft Conclusion

2.19 In view of the discussion above, the meeting may wish to consider the following Draft Conclusion:

Draft Conclusion MET SG/25-XX: *Safe, efficient and economical provision of Meteorological SWIM services*	
What: That, the SWIM TF review its terms of reference to ensure that it supports safe, efficient and economical implementation and provision of Meteorological SWIM Services to the global users of these services.	
Why: The most recent draft Terms of Reference of the SWIM TF specifies that the SWIM architecture and implementation approach will occur over the CRV. Requiring all meteorological services to occur over CRV is inconsistent with ICAO documentation, will result in implementation delays and high operational costs for these less critical and highly data intensive meteorological services.	
Expected impact: ☐ Political / Global ☒ Inter-regional ☒ Economic ☐ Environmental ☒ Ops/Technical	
Follow-up: ☐Required from States	
When: 2022	**Status:** Adopted by Subgroup
Who: ☒Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other:	

3. ACTION BY THE MEETING

3.1 The meeting is invited to

a) note the information in this paper;
b) consider nominating additional meteorological experts to participate in the SWIM TF;
c) consider supporting the need to raise the awareness regarding the needs of Meteorological Service Providers to provide SWIM services for voluminous, data intensive, less-sensitive MET information;
d) consider the draft conclusion in paragraph 2.18; and
e) discuss other actions to address the concerns raised in this paper.

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