

International Civil Aviation Organization



ICAO

WORKING PAPER

ICAO Asia and Pacific (APAC)
 Twenty-Sixth Meeting of the Meteorology Sub-Group
 (MET SG/26)

Online, 1 to 5 August 2022

Agenda Item 2: Review outcomes from previous meetings

SWIM ARCHITECTURE SUPPORT FOR MET INFORMATION SERVICES

(Presented by MET experts in SWIM TF)

SUMMARY

This paper provides an update on the outcomes of discussions on SWIM architecture for the efficient provision of MET information services in relevant meetings since MET SG/25.

1. INTRODUCTION

1.1 At SWIM TF/5 and subsequently at CNS SG/25 meetings in 2021, the Terms of Reference (ToR) of SWIM Task Force (TF) were modified to specify the SWIM architecture, and the implementation approach will principally occur over the Common aeronautical Virtual private network (CRV).

1.2 The meeting will recall that members of the MET community had raised concerns about the accessibility of MET Service Providers and airlines to the CRV and the cost implication of highly data intensive Meteorological SWIM services to operate over the CRV when SWIM services are limited to CRV. As a result, MET SG/25 formulated the following Draft Conclusion:

Draft Conclusion MET SG/25-07: SWIM architecture to enable the cost-effective and efficient provision and consumption of MET information services	
That, APAC SWIM TF ensures it defines a SWIM architecture, corresponding technical infrastructure requirements, and implementation approach that continues to enable the cost-effective and efficient provision and consumption of MET information services to all users to support aviation safety and air navigation capacity and efficiency, in consideration of use cases of highly data-intensive MET information services.	Expected impact: <input checked="" type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
Why: SWIM architecture, principally over CRV, might not provide a cost-effective and efficient solution for all use cases envisaged in ICAO's global plans, in particular after commencement of the provision of highly data-intensive quantitative and probabilistic MET information services and enable access from anywhere in the globe.	
When: Now	Status: Draft to be adopted by PIRG

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Who: <input checked="" type="checkbox"/> Sub groups <input type="checkbox"/> APAC States <input type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other: Ros

2. DISCUSSIONOutcomes from APANPIRG/32

2.1 APANPIRG/32 noted that the subject of an amendment to ToR of SWIM TF was also discussed during the same period at MET SG/25 and CNS SG/25. The meeting also noted concerns raised in MET SG/25 regarding the implications of the SWIM TF/5 decision to specify the SWIM architecture and implementation approach will occur principally over the CRV. APANPIRG/32 was informed that MET SG's draft conclusion would be captured in the ongoing review of SWIM/TF ToR and that action was underway by CNS SG and SWIM TF to address the MET SG/25 proposal effectively. As a result, APANPIRG concluded that there was no need to consider further Draft Conclusion MET SG/25-07.

Discussion on concerns raised by MET community in SWIM TF/6

2.2 MET SG nominated experts participated in SWIM TF/6 held in June 2022 and presented a paper "*Consideration of SWIM Architecture for Efficient Provision of MET Information Services*" (SWIM TF/6 WP/19) to discuss the concerns raised by the members of MET SG with regard to SWIM architecture for the efficient and cost-effective provision of MET information services.

2.3 The paper explained the concerns raised by members of the MET community on the accessibility of Meteorological Service Providers and airlines to CRV, that MET SWIM services typically contain less-sensitive data than some other SWIM services, concerns on the cost implication of highly data-intensive Meteorological SWIM services to operate over the CRV if SWIM services were limited to the CRV, and discussed the needs of efficient MET information service provision to be supported by SWIM architecture.

2.4 The paper discussed that while MET service providers and airlines currently do not have access to CRV, in future, MET service providers would need to provide SWIM services directly to both local and global users, such as ANSPs, other MET service providers, operators, app developers and pilots as they do today. Whether global MET service providers, airline operators and pilots should be included as parts of this CRV "Intranet" would require further discussion and confirmation.

2.5 It was added that a great number of MET services are less critical, such as 4-dimensional gridded data of forecast wind, temperature, turbulence or other significant weather, and image data of satellite, weather radar and various graphical products. Some States shared that they have divided types of SWIM services over closed network and secure public network based on criticality and classification of shared data which should be accommodated in APAC SWIM technical infrastructure.

2.6 The paper informed that MET-SWIM Plan being developed by ICAO Meteorological Panel Working Group on Meteorological Information Exchange (WG-MIE) defines many datasets to be provided in SWIM, including high spatial and temporal MET data. With evolving user requirements, exponential growth in data volume and variety is expected, and large numbers of users would access these MET SWIM services. The meteorological community requested that the SWIM/TF undertake activities related to the intent of CRV-based regional SWIM architecture.

2.7 Considering the operational needs of efficient MET information service provision mentioned above, a draft Conclusion titled *Activities to explore the use of the Internet for MET information services in Regional SWIM architecture* was proposed for SWIM TF/6 consideration.

2.8 ICAO Secretariat informed that CRV OG/09 held from 25 January-27 January 2022 has already considered the addition of other service providers such as MET and airlines to join the CRV. A specialised group has been created that is devising terms and conditions along with standard operating procedures to join the CRV by other service providers than ANSPs. After devising of necessary procedure, SWIM TF and MET SG will be informed.

2.9 The SWIM TF meeting noted that the MET information services have already been considered as a part of SWIM TF’s work and regional SWIM architecture since its establishment and supported further work to consider the use of the Internet for meteorological information services when designing the regional SWIM architecture.

2.10 The Secretariat advised that the proposed draft conclusion cannot be considered as a draft conclusion as per APANPIRG Procedural Manual. However, it can be considered as a draft decision with some modifications. There was some discussion about whether it should simply be considered a Decision by SWIM TF, but in the end, the following draft decision was endorsed by the meeting for consideration by CNS SG/26 to be held in September 2022:

Draft Decision SWIM TF/06/01 - The Use of the Internet for MET Information Services in Regional SWIM architecture	
What: That, the use of Internet for meteorological information services will be considered in designing the regional SWIM architecture.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
Why: To support cost-effective and efficient meteorological information services for exchange of less-sensitive meteorological information in SWIM.	Follow-up: <input type="checkbox"/> Required from States
When: 20-May-22	Status: Draft to be adopted by Subgroup
Who: <input checked="" type="checkbox"/> Sub groups <input type="checkbox"/> APAC States <input type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input checked="" type="checkbox"/> Other: SWIM TF	

2.11 The meeting agreed on an action item that Task 2 Group - Regional SWIM Infrastructure to include the use of Internet for meteorological information services in designing the regional SWIM architecture.

2.12 The meeting also discussed the need of participation of MET experts in SWIM TF and requested member states to nominate MET experts to contribute and participate in various tasks of SWIM TF.

Discussions on SWIM Technical Infrastructure Interface Binding in SWIM TF/6

2.13 SWIM TF Task 2 Group - Regional SWIM Infrastructure presented a paper in SWIM TF/6 titled “*SWIM-TI Interface Binding to Achieve Interoperability*” (SWIM TF/6 WP/09) to introduce an interface binding approach for SWIM Technical Infrastructure to achieve both operational interoperability and applicational flexibility by considering the CRV based regional SWIM implementation. Task 2 lead clarified the infrastructure bindings of SWIM TI, which is a possible approach for CRV-based regional SWIM implementation to satisfy the information exchange between different infrastructure systems both in a same network segment and different network segments, can be considered as a preferred solution.

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2.14 The Draft Decision titled *Infrastructure Bindings of SWIM TI in APAC Region* was proposed for the meeting consideration. The meeting agreed to accept the proposed action as a recommendation rather than a draft decision and requested Task 2 to further detail infrastructure bindings of SWIM TI in APAC Region and also to study the details of both user-based access and SWIM-based access options for actual use-cases, including MET use cases, to identify potential issues to be solved.

Update on SWIM TF's Terms of Reference

2.15 The SWIM TF's Terms of Reference were discussed in various SWIM TF Task Leads meeting after CNS SG/25 and MET SG/25. Considering the progress made to deliberate the concerns raised in CNS SG/25 and MET SG/25, SWIM TF's ToR amended in SWIM TF Task Leads meetings was presented to the SWIM TF/6 meeting for further review. The SWIM TF/6 meeting reviewed and updated the draft ToR and endorsed **Draft Decision SWIMTF/06/07 – Revised SWIM TF Terms of Reference** for CNS SG/26 adoption. The draft ToR regarding regional SWIM architecture was updated as follows:

- c) ~~Define~~ Propose a high-level Asia/Pacific regional SWIM architecture, the corresponding SWIM technical infrastructure requirements, and the implementation approach to construct such architecture principally over CRV and other IP based networks to ensure interoperability among regional SWIM ~~participants and~~ participants, to support transition for non-SWIM capable entities;

Outcomes of ACSICG/9 Meeting

2.16 The SWIM TF also discussed the relevant outcomes on the Ninth Meeting of the Aeronautical Communication Services Implementation Coordination Group (ACSICG/9) held from 19 to 21 April 2022.

2.17 The SWIM TF meeting noted the outcomes referred to a process for non-aviation service providers, such as Meteorological Service providers, joining the CRV required detailed deliberations at a subsequent specialised meeting.

2.18 The MET experts at SWIM TF/5 raised concerns that ICAO records documented MET service providers as non-aviation service providers. The SWIM TF meeting requested CRV Operations Group (CRV OG) to deliberate the concern and finalise appropriate name for CRV users/subscribers other than ANSPs.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) monitor the outcomes of CNS SG/26 related to Draft Decision SWIM TF/06/01 - *The Use of the Internet for MET Information Services in Regional SWIM architecture*; and
- c) encourage states to nominate MET experts to participate in SWIM TF to contribute to the ongoing discussion on SWIM architecture for MET information services and various tasks of SWIM TF as appropriate.