International Civil Aviation Organization

THE ELEVENTH MEETING OF SYSTEM WIDE INFORMATION MANAGEMENT TASK FORCE (SWIM TF/11)

Bangkok, Thailand, 25 – 29 May 2026

Agenda Item 4: Updates on progress and issues under the SWIM TF Task groups structure
f) Validation and demonstration
– Task 8: SWIM Services and Application Validation

ESTABLISHMENT OF A SWIM TEST ENVIRONMENT FOR APAC SWIM

(Presented by Japan)

SUMMARY

This working paper presents potential options for the establishment of an evaluation environment within APAC SWIM, including an analysis of their respective advantages and disadvantages, in order to support decision-making by States concerning regional implementation.

1. INTRODUCTION

1.1 The ICAO Asia and Pacific (APAC) Region aims to achieve the implementation of Asia-Pacific SWIM (APAC SWIM) by 2030. The APAC SWIM infrastructure is envisaged to comprise Gateway Enterprise Messaging Services (GEMS) provided by several States, as well as Edge EMS (EEMS) implemented by individual APAC States.

1.2 Furthermore, APAC Common Information Services are expected to be delivered by Air Navigation Service Providers (ANSPs) across multiple States through this infrastructure. Users of APAC SWIM, including information service providers and consumers, shall connect to an EEMS to exchange information.

1.3 As outlined above, SWIM operations are dependent upon user systems (applications), such as those operated by airlines, which consume information services primarily provided by national ANSPs via the platform. In this context, it is essential that both service providers and service consumers undertake appropriate validation and evaluation activities.

2. DISCUSSION

2.1 Relevant Requirements, Guidance, and Existing Practices

2.1.1 Requirements and Guidance

"Information service providers shall ensure that the information service is validated. This validation shall include the parameters provided in the quality of service metadata field of the information service overview to assist information service consumers with the initial evaluation of the information service." (PANS-IM, Doc 10199, A part of Information service overview requirements)

"In addition to service validation information provided by the information service provider, it is the responsibility of the information service consumer to ensure that the consumer's systems and technical infrastructure also meet the QoS required for the operational needs of the information service. End-to-end validation of the information service may be required to confirm that the information service provides, with the addition of the information service consumer systems, the stated QoS." (Doc 10203 4.6.13)

2.1.2 Case Study: United Stats (FAA)

2.1.2.1 The Federal Aviation Administration (FAA), through its SWIM Cloud Distribution System (SCDS), provides access to operational data for external stakeholders—including research organizations, aviation-related entities, and the public—for non-operational purposes.

2.1.2.2 SCDS is implemented as a cloud-based platform, thereby obviating the need for conventional VPN connectivity and facilitating broader access. The system also provides performance metrics, such as data throughput and message loss rates, alongside standardized technical specifications and developer guidance.

2.1.3 Case Study: EUROCONTROL

2.1.3.1 In the European Region, a SWIM Sandbox environment has been established to support the testing, validation, and development of SWIM-based services by aviation stakeholders.

2.1.3.2 This environment is made available as part of the "Simulations" services provided through the European SWIM Registry.

2.1.4 Case Study: Japan (JCAB)

2.1.4.1 In Japan, the System Development Evaluation and Crisis Management Center (SDECC) performs evaluation of systems and services provided by the Japan Civil Aviation Bureau (JCAB) in its capacity as an ANSP.

2.1.4.2 SDECC maintains system environments equivalent to operational systems, including MASS (SWIM infrastructure) and FACE (service provision systems), which also serve as contingency systems.

2.1.4.3 For preliminary evaluations, user equipment is deployed within SDECC to enable integrated validation. In addition, the development of a SWIM Sandbox environment is planned for FY2026, which will facilitate testing of data exchanges via the Internet.

2.2 Proposal for Building a Testing Environment for APAC SWIM: Advantages and Disadvantages

2.2.1 The establishment of an evaluation environment has been discussed in various fora, including the SIPG Meetings and the CRV-SWIM Workshops; however, no consensus has yet been reached.

2.2.2 In light of the anticipated commencement of certain APAC SWIM Common Information Services via APAC SWIM TI by 2030, it is considered essential that an evaluation environment be established in advance and utilized for validation purposes.

2.2.3 Taking into account constraints related to time and resources, further consideration of the options recommended by CANSO is deemed appropriate.

Option 1: Continuation of the SIPG Test Environment (CRV-based)	Option 2: Internet-Based SWIM Sandbox Environment
Advantages • Closely replicates the operational (live) environment **Disadvantages** • Participation may be limited due to resource constraints • Connectivity challenges may arise for certain States • Bandwidth testing requires CRV provisioning, incurring additional costs • No established framework for connectivity via the Internet **Risks** None	**Advantages** • Facilitates simpler, faster, and more cost-effective connectivity • Supports accelerated implementation, testing, and capacity-building • Enables flexible bandwidth testing • May function as an interim Edge EMS • Particularly suitable for MET information services **Disadvantages** • Does not fully replicate the operational CRV environment • Potential concerns regarding data sensitivity **Risks** • May require policy adjustments in certain States • Potential implications in terms of operational costs

2.2.4 In particular, Option 1, namely the regional SWIM testing environment based on CRV, is aligned with ongoing SIPG initiatives to interconnect national environments. Maintaining this approach during the initial phase of APAC SWIM implementation may therefore be advantageous.

2.2.5 However, as APAC SWIM evolves and demand for service validation increases, constraints related to CRV capacity may emerge. It is therefore recommended that the evaluation environment be subject to periodic review and adjustment as necessary.

2.2.6 In addition, consideration should be given to the cost burden associated with the establishment and maintenance of the test environment. In this regard, the CRV network model—based on cost-sharing among APAC member States—may serve as a useful reference.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper;

b) provide views on the options presented in Section 2; and

c) discuss any relevant matter as appropriate

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