



# ICAO

*International Civil Aviation Organization*

**The Seventh Meeting of System Wide Information Management Task Force (SWIM TF/7)**

*Bangkok, Thailand, 09 – 12 May 2023*

Agenda Item 3: Updates on the assigned tasks by task leads/contributors including progress report and issues

### **Proposal of Regional Interoperable SWIM Registry**

(Presented by ROK/KAC, USA/FAA, China/ATMB, and Japan/ENRI)

#### **SUMMARY**

This paper proposes the SWIM Discovery Service (SDS) specification as the regional specification to enable regional interoperable SWIM registry.

## **1. INTRODUCTION**

1.1 Service discovery has been a major point of interest for Asia-Pacific (APAC) System Wide Information Management (SWIM) professionals since the beginning of the SWIM Taskforce (TF). For that, since 2017, ICAO APAC SWIM TF has been working on the SWIM governance task, and it covers not only the SWIM registry but also service discovery.

1.2 At the SWIM TF/3 in 2019, "Draft Conclusion SWIMTF/3/3: Interoperable Registry Model for SWIM Registry in APAC Region " had adopted. The interoperable registry model, which consists of independent registries that exchange metadata between each other, was adopted for the APAC SWIM registry. See [Final Report for SWIM TF/3](#).

1.3 Further efforts have been made in the governance task to enable the capability of exchange service description (i.e., metadata) using SWIM Discovery Service (SDS). The first version of the SDS implementation specification and Service Description Model for JavaScript Object Notation (JSON) (SDM-J) were developed by the FAA SWIM program. See [SWIM Discovery Service \(SDS\) Implementation Specification, Version 1.0.0](#).

1.4 At the SWIM TF/5 in 2021, ROK and USA conducted a demonstration using respective SDS instances developed by ROK and USA (see [SWIM Discovery Service Demonstration and Lessons Learned](#)). In 2023, Japan and China joined the collaboration and developed their own registries and SDS instances. In other ICAO regions, Brazil also is considering a development of an SDS instance.

1.5 To facilitate the collaboration in the SDS community, a common repository was created in the Github (see [faa-swim/swim-discovery-service](#)) in 2022. Virtual teleconference was held in 2022 to discuss development of the second version of the SDS specification.

1.6 The development of the second version of the SDS specification is in progress to provide additional capability (e.g., caching or nested environment), and in addition, the third version of the

Service Description Conceptual Model (SDCM), which reflects the governance needs in the global aspect, is currently under review.

## **2. DISCUSSION**

2.1 Governance is an integral component of any SWIM implementation. Regardless of the topology (e.g., federated or centralized) of SWIM to be implemented in the region or local level, governance establishes policies, guidelines, standardization, and strategies for SWIM service and information.

2.2 A common service description model is one of the deliverables of governance; by using the model, a service provider could develop their service description. SWIM registry has an important role in enabling the stakeholders to discover SWIM service satisfying their needs by reading metadata or service description published in the SWIM registry. However, the SWIM registry in the SWIM ConOps (Doc.10039) only describes basic capabilities of a single instance of the SWIM registry.

2.3 An implementation of SWIM services is being actively planned in the different groups. (e.g., SWIM Surveillance Sharing, Trial Implementation Group (S3TIG) for surveillance, and the World Meteorological Organization (WMO)) However, fewer efforts are devoted to exchanging governance-related information over the region.

2.4 Though the implementation of a SWIM service will certainly boost up the information exchange, but without proper governance in place, it can lead to the problems as follows:

- Lack of understanding of service and information delivered;
- Loss of sovereignty and control of information when it is transferred to a third party; and
- Increased management costs due to lack of information or understanding when there is a change in a SWIM service or information delivered;

2.5 To facilitate information exchange in the interoperable service-driven environment without the problems mentioned above, there should be a regional framework enabling metadata exchange to facilitate the discoverability and understanding of a SWIM service or information delivered.

2.6 As part of the governance task, a significant amount of work has been accomplished in enabling interactions between SWIM registries (or SDS instances), and more work is underway under the governance task.

2.7 This development has been conducted in compliance with “Bottom-Up Philosophy” which is the fundamental SWIM implementation philosophy in the APAC region. That follows spiral steps as follows : 1) capture need in the task level, 2) develop specification, 3) develop prototype or operational instance, 4) conduct a test, 5) release specification and instance, 6) repeat the steps from 1) to 5) to improve the specification based on the input collected in the step 3) and 4).

2.8 Therefore, as the first version of the SDS specification proved its maturity and benefit, the governance task wishes to propose that the meeting direct the SWIM TF to deliberate on this matter and consider adopting the SDS specification (including SDM-J) as the regional specification.

<b>Draft Decision SWIM TF/7/xx</b>	
SWIM TF adopts the SDS specification to enable interoperable SWIM registry in the APAC region	
<b>What:</b> A SWIM registry to be implemented by the states or stakeholders uses the SDS specification if a SWIM registry requires an interoperability.	<b>Expected impact:</b> <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
<b>Why:</b> The SDS specification proved its maturity and benefit and showed the feasibility of an interoperable SWIM registry in the APAC region. And the specification is also maintained and controlled by the eligible governance body	<b>Follow-up:</b> <input type="checkbox"/> Required from States
<b>When:</b> 12-May-23	<b>Status:</b> Draft to be adopted by PIRG
<b>Who:</b> <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: XXXX	

**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

-----