International Civil Aviation Organization

The Tenth Meeting of System Wide Information Management Task Force (SWIM TF/10)

Bangkok, Thailand, 20 – 23 May 2025

Agenda Item 8: State, Regional and Global SWIM Updates

PROGRESS UPDATE ON SWIM IMPLEMENTATION IN MALAYSIA

(Presented by MALAYSIA)

SUMMARY

This paper presents progress update on SWIM implementation in Malaysia. The new update incorporates information with regards to work and activities carried out in year 2024 up to Q1 of 2025. This paper will also highlight on future works involving SWIM implementation in the country which is relevant to APAC regional implementation plan. .

1. INTRODUCTION

1.1 **Malaysia's Early Commitment and Strategic Partnerships** - Malaysia began its SWIM development journey in 2016, led by the Civil Aviation Authority of Malaysia (CAAM). A key milestone was the appointment of Telekom Malaysia (TM) as the principal technology partner, working alongside international and local players. Malaysia's proactive participation in ICAO APAC SWIM Task Force meetings, SWIM Implementation Pioneer Group (SIPG) and demonstrations activities under ICAO such as SWIM ASEAN Demo and S3TIG further underlines its commitment to global interoperability standards.

1.2 **Foundation through SWIM Malaysia Roadmap** - The "SWIM Malaysia Roadmap," developed with support from IATA Consulting, has been pivotal in charting Malaysia's SWIM implementation strategy. This living document has guided national efforts toward aligning with ICAO's Aviation System Block Upgrades (ASBU) and SWIM global frameworks, ensuring Malaysia remains on course for full SWIM adoption.

1.3 **SWIM Technical Infrastructure (SWIM-TI) -** Malaysia has successfully built its SWIM Technical Infrastructure. Key achievements include the modernization of the national ATS ground communication network to an IP-based system, the establishment of Enterprise Messaging Systems (EMS) at two Tier-3 certified data centers, and readiness of network interfaces for future Common Regional Virtual Private Network (CRV) connection. This foundation positions Malaysia to support both legacy and future SWIM-compliant data flows. Improvement also has been made to the cybersecurity aspect of the infrastructure while ensuring authorized accessibility to its stakeholders.

1.4 **Development of Initial Information Services and Transition Strategy** - Malaysia has commenced the publication of SWIM information services, notably with MET Malaysia

data in IWXXM format. Other ATS services like flight plans (FPL2012) and NOTAM are made available through XML-encoded legacy formats as well as the raw Traditional Alphanumeric Code (TAC) bridging the transition toward full SWIM adoption. Malaysia is aligning with the APAC regional plan, where AMHS/AFTN and SWIM will co-exist up to 2035, facilitating a smooth transition period.

1.5 **Establishment of ATM Information Exchange Interoperability Framework (ATMIEIF)** - Malaysia has developed the ATM Information Exchange Interoperability Framework (ATMIEIF) to guide system developer and integrator in using the SWIM-TI. The ATMIEIF ensures that all new or upgraded systems can integrate seamlessly with Malaysia's SWIM-TI, reinforcing interoperability, efficiency, and compliance with international SWIM standards. It will also facilitates the transition process from legacy to SWIM by allowing older application system to operate in the modern eco-system. The framework diagram is shown in Figure 1.

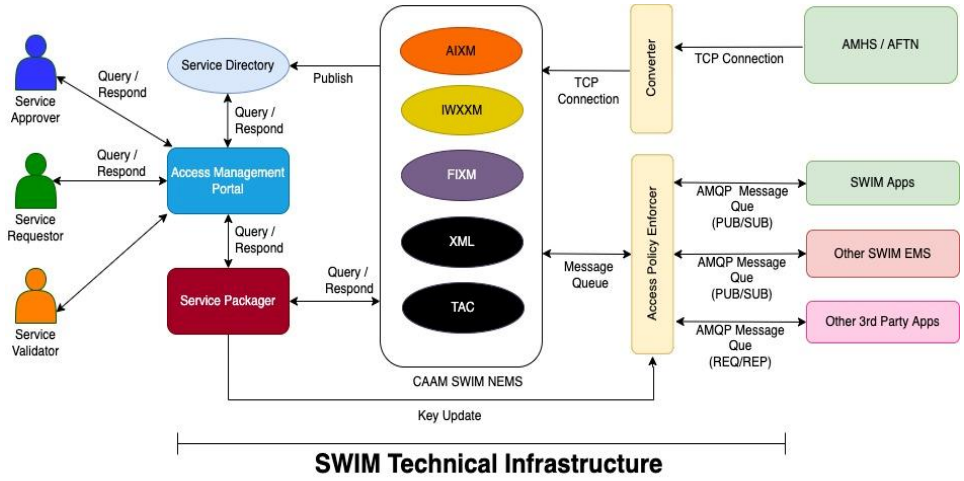

Figure 1. ATM Information Exchange Interoperability Framework

2. DISCUSSION

2.1 Deployment of SWIM-Enabled Operational Applications

In line with Malaysia's national strategy for progressive System Wide Information Management (SWIM) adoption, the Civil Aviation Authority of Malaysia (CAAM), in collaboration with Telekom Malaysia (TM) and other partners, has undertaken significant steps to operationalize SWIM-TI capabilities through the development and deployment of SWIM-enabled operational applications. This strategic initiative aims to ensure the seamless integration of information services into air traffic management operations, thereby enhancing system efficiency, reliability, and service continuity.

2.1.1 e-Flight Plan System (e-FPL)

The e-Flight Plan System (e-FPL) represents Malaysia's first SWIM-enabled operational application designed to modernize the flight plan submission process for operators within Lumpur and Kinabalu Flight Information Regions (FIRs). Developed as a web-based interface, the e-FPL system provides a digital platform for the preparation, validation, and submission of flight plans, integrating advanced functionalities as follows:

- **Validation Mechanisms** - The e-FPL system incorporates both syntactic and semantic validation engines. Submissions are dynamically checked against operational rulesets, ensuring

compliance with ICAO-defined standards and reducing potential errors that could affect downstream operational processes.

- **Utilization of SWIM Information Services -** The validation and processing functions of e-FPL are enhanced through real-time data access to SWIM-published services, including meteorological information (MET) and aeronautical datasets. This facilitates a more accurate, up-to-date validation environment.

- **Transition Strategy to Future Concepts -** While currently operating based on FPL2012 format to maintain compatibility with existing global infrastructure, the e-FPL system has been designed to be Flight and Flow Information for a Collaborative Environment (FF-ICE) ready. This ensures a minimal rework pathway towards full adoption of future flight planning frameworks under ICAO's Global Air Navigation Plan.

- **Multiple FPL Distribution Channels** - Once validated and approved, flight plans are distributed via the SWIM-TI Enterprise Messaging System (EMS) infrastructure, alongside the existing Aeronautical Message Handling System/Aeronautical Fixed Telecommunication Network (AMHS/AFTN) networks. This dual distribution enable the possibility of other application developer to test out information service through the EMS and at the same time maintain the status-quo of the distribution method of FPL.

2.1.2 Computerized Automatic Terminal Information Service (CATIS)

Complementing the e-FPL system, the Computerized ATIS (CATIS) solution has been deployed at selected airports in Malaysia, offering an automated method of generating and disseminating terminal information for departing and arriving aircraft. The CATIS system demonstrates a significant technological advancement with the following key features:

- **Native Consumption of SWIM Data -** The CATIS system is architected to directly consume meteorological data in IWXXM format, transmitted via Advanced Message Queuing Protocol (AMQP) queues within the SWIM EMS. This bypasses the need for traditional AMHS/AFTN circuits, demonstrating an operationalized use of SWIM principles.

- **Enhanced Data Integrity and Timeliness -** By accessing meteorological data directly from SWIM sources, CATIS ensures higher data fidelity, timeliness, and reduced processing latency compared to legacy systems reliant on multiple data conversion steps.

- **Operational Resilience -** The integration with SWIM-TI introduces a more resilient architecture, minimizing single points of failure associated with older communications frameworks and increasing the availability of critical information services for aerodrome operations.

2.2 Strategic Objective of Application Deployment

The deployment of the e-FPL and CATIS systems serves as a critical enabler to operationalize Malaysia's SWIM-TI. The objectives pursued through these initiatives are multi-faceted:

- **Demonstration of Practical SWIM Utilization -** Both systems serve as proofs of concept for the real-world application of SWIM information services within national airspace operations.

- **Skill and Competency Building -** Operational experience gained through the deployment and management of SWIM-based applications enables CAAM, TM, and national aviation

stakeholders to develop and refine the necessary competencies in SWIM service development, management, and governance.

- **Foundation for Future Expansion -** The successful deployment establishes a foundational layer upon which more complex SWIM services can be developed, including trajectory-based operations, digital NOTAMs, and collaborative decision-making services.

2.3 Alignment with ICAO APAC Transition Goals

Malaysia's approach to SWIM operationalization is fully aligned with the objectives set forth by the ICAO Asia and Pacific (APAC) Office, particularly the updated SWIM Implementation Roadmap (Version 2, issued 2024) which include a **Dual-System Operation Strategy** that is by maintaining operational compatibility with both legacy AMHS/AFTN systems and modern SWIM services, Malaysia supports the ICAO APAC strategy of phased coexistence until 2035, thereby reducing transition risks.

3 ACTION BY THE MEETING

3.3 The meeting is invited to:

a) note the information contained in this paper; and

b) discuss any relevant matter as appropriate

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