



ICAO

*International Civil Aviation Organization*

**Twenty Fifth Meeting of the Communications/  
Navigation and Surveillance Sub-group (CNS SG/25) of  
APANPIRG**

Video Tele-Conference, 18 – 22 October 2021

**Agenda Item 3:** Aeronautical Fixed Service (AFS)

3.4. Review Report of the Fifth Meeting of System Wide Information Management Task Force (SWIM TF/5) including

**PROOF OF CONCEPT FOR EXCHANGING AERONAUTICAL, FLIGHT AND WEATHER DATA THROUGH SWIM PLATFORM**

(Presented by India)

**SUMMARY**

This paper presents the plan and progress of the Proof of Concept (POC) undertaken by India to prepare a roadmap for the ground to ground SWIM implementation. The main objective of this initiative is to globally exchange aviation related data with various stakeholders through SWIM.

**1. INTRODUCTION**

1.1 The project focuses on building SWIM Technical Infrastructure, generating digital datasets for Digital NOTAM, OPMET & Flight related ATS messages.

1.2 The project will help Airspace Users (AUs) & other stakeholders for publishing and consuming of data through SWIM Platform, integrating multiple IT systems of stakeholders to enable the collaborative decision making and increase the overall operational efficiency.

**2. DISCUSSION**

2.1 SWIM architecture plan is enclosed as **Annexure 1** and comprises of the following components:

- **Core SWIM Infrastructure:** Provides necessary software infrastructure to enable the digital communication among stakeholders through request/response & publish/subscribe message exchange patterns.
- **Digital Information Models:** FIXM, AIXM, iWXXM: XML based digital Information Models to represent the Flight, Aeronautical & Weather data.
- **Digital Services:** It is based on Service Oriented Architecture (SOA) and includes Flight Information Services (FIS), Aeronautical Information Services (AIS), and Weather Information Services (WXS). These services provide interfaces for data producers & consumers to publish and receive data in digital format.

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- **Message Converters:** Converts AFTN/ AMHS messages into SWIM data formats and vice-versa.
- **End User WEB UI Applications (HMI):** Web UI based applications for processing Flight Plan, MET & NOTAM services. Users interact with the system using the GUI controls provided by these applications.
- **Test Bench:** Test Bench contains simulators & test data to validate the system functionality through demonstration of identified use cases.
- **SWIM Regional Adapter:** In order to facilitate the communication between India and global partners on SWIM platform a region-specific adapter will be developed to harmonize the differences in specific implementations.

**2.2 Timeline and Deliverables of the project:**

2.2.1 The timeline of the project is one year and is expected to be completed by March, 2022. The project is divided into four Milestones with the following deliverables:

**Milestone 1 deliverables:** Architecture & Design Document & Test Bench Creation.

**Milestone 2 deliverables:** SWIM Infrastructure

**Milestone 3 deliverables:** SWIM Message Converters & SWIM Message Gateway Service

**Milestone 4 deliverables:** SWIM Information Services

**2.3 Proposed Outcomes of the project:**

- Encode and publish Digital NOTAMs based on AIXM format.
- Support FF-ICE scenarios where Flight plans, FF-ICE workflows and subsequent flight data updates are published in FIXM format.
- Supplying OPMET data in iWXXM3.0 format.
- Interface with global ANSP's data through SWIM.

**2.4 Support desired for validation :**

2.4.1 India proposes to interface its SWIM system with Global SWIM systems such as EUROCONTROL, ASEAN, FAA and other SWIM system to consume and publish the aeronautical data.

2.4.2 The following datasets are planned to be consumed through developed SWIM regional adapter.

- DNOTAM data in AIXM 5.1.1 format
- Flight Plan data in FIXM 4.2 format
- OPMET data in iWXXM 3.0 format

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) Request States already engaged in developing SWIM to facilitate interface with India's SWIM for testing and validation of final outcomes; and
- c) discuss any relevant matter as appropriate.

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Annexure 1

**SWIM ARCHITECTURE**

