



ICAO

International Civil Aviation Organization

The Fifth Meeting of System Wide Information Management Task Force (SWIM TF/5)

Video Tele-conference, 9 – 11 August 2021.

Agenda Item 9: State, Regional and Global SWIM Updates

THAILAND'S SWIM IMPLEMENTATION ROADMAP

(Presented by Thailand)

SUMMARY

This paper presents an overview of Thailand's SWIM implementation roadmap and lessons learnt during the planning process.

1. INTRODUCTION

1.1 In March 2018, Thailand's National Airspace Policy was approved by the Cabinet of Thailand, outlining a framework to make the best use of airspace in Bangkok Flight Information Region for all related stakeholders. Following this adoption, Thailand's National Airspace and Air Navigation Master Plan (NANP) was developed with the aim to materialize the objectives set in the Policy and, importantly, to provide a national strategic direction for Thailand's airspace and air navigation system enhancement. During the NANP development process, ICAO Global Air Navigation Plan, particularly Aviation System Block Upgrades, ICAO Asia/Pacific Seamless ANS Plan, and Declaration of Asia Pacific Ministerial Conference on Civil Aviation (Beijing Declaration) as well as ASEAN ANS Master Plan were also taken into account to ensure the alignment and harmonization of NANP and global/regional priorities. NANP was then endorsed by Thailand's Civil Aviation Board in August 2019, setting a common development foundation for all stakeholders in Thai aviation industry.

1.2 The current version of NANP is divided into 3 phases, i.e. short term (2020-2022), medium term (2023-2027), and long term (2028-2037). To achieve a performance-based air navigation system supporting Trajectory Based Operation (TBO) by 2037, 6 major development areas are identified in NANP, including (i) Airspace Organization and Management, (ii) Air Traffic Management (ATM), (iii) Communications, Navigation, and Surveillance, (iv) Information Management, (v) Aerodrome, and (vi) Aeronautical Meteorological Services.

2. DISCUSSION

2.1 To push forward the information management-related development, especially SWIM, specified in NANP, Thailand's Information Management Technical Working Group (IM TWG), which comprises members from various aviation stakeholders such as regulator, Air Navigation Service Provider (ANSP), aeronautical meteorological service provider, aeronautical information service provider, airport operator, etc., was established in September 2020. One of the very first tasks of IM TWG was to devise Thailand's SWIM implementation roadmap and the corresponding detailed implementation plans. Appendix A shows the high-level version of roadmap aforementioned.

2.2 As SWIM is considered an enabler for future ATM operational concepts, details of SWIM implementation roadmap and the corresponding implementation plans are being reviewed and analyzed

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to identify the gap in terms of scope, dependency, and timeline in relation to other implementation plans of NANP's another 4 major development areas mentioned in §1.2. It is thus expected that timeline shown in Appendix A may be adjusted to better suit the expected implementation timeframe of some operational improvement programs.

2.3 Similar to the Philosophy and Roadmap for APAC SWIM Implementation endorsed at SWIM TF/3 and consequently adopted by CNS SG/23 in 2019, it is planned that SWIM in Thailand will be rolled out stepwise in the form of feedback loop. It was confirmed during detailing the SWIM-component implementation plans that the early involvement of operational experts in SWIM planning and development is of paramount importance in securing the commitments of all involved stakeholders. Particularly, with the realization of SWIM operational benefits by such experts, the commitments of all involved stakeholders can be secured. Furthermore, it was learnt that some aspects of SWIM governance should be identified at the start of SWIM technical infrastructure and information service development stage, e.g. version of information exchange models to be used, to ensure the interoperability and the access rights among SWIM users.

2.4 With highly diverse background among the IM TWG members, the SWIM knowledge sharing to set a common understanding about SWIM became a prerequisite. Taking an opportunity where traffic volume was low due to the COVID-19 pandemic, the SWIM knowledge sharing activity and FF-ICE (Flight and Flow Information for a Collaborative Environment) tabletop exercise within AEROTHAI, Thailand's Air Navigation Service Provider, was held in July and October 2020, respectively. The objectives of these activities were to create a better understanding about SWIM and FF-ICE as well as to collect the operational requirements to support the development of SWIM-enabled applications. The knowledge sharing activity was conducted using both instructor-centered and learner-centered approaches. Additionally, several interactive group works were included during the whole course of the session to provide an opportunity for learners to not only exchange their perspectives towards SWIM based on their field experiences but also generate discussion on how SWIM can better support their operations. Originally, target group of these activities was only Aeronautical Information Management Personnel and Flight Data Management Personnel. However, it turned out in the end that interested Flow Management Personnel, Air Traffic Controllers, and regulator also participated. Thanks to the advance of online meeting platform, the knowledge sharing session was also broadcasted live for AEROTHAI's personal working in provincial centers and recorded for self-learning afterwards. Upon the establishment of the IM TWG, this record was then utilized to provide a basic SWIM knowledge to all the members. Appendix B presents the outline of the topics covered at the session aforementioned.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) consider utilizing Thailand's SWIM implementation roadmap and SWIM knowledge sharing outline as inputs for the tasks to be conducted by Task 1 Implementation Planning and Task 11 SWIM Implementation Education and Promotion groups, respectively; and
- c) discuss any relevant matter as appropriate.

Appendix A

High-level SWIM Implementation Roadmap of Thailand

ID	Milestone	Target Implementation Timeframe
Short Term (2020-2022)		
<i>Standardized Information Exchange Models</i>		
IM-ST-01-01	Aeronautical information in AIXM <ul style="list-style-type: none"> - AIP dataset - Terrain dataset - Obstacle dataset - AMDB dataset - IFP dataset 	2022
IM-ST-01-02	Flight information in FIXM, Phase 1 (including FIXM Extension development, if required)	2022
IM-ST-01-03	MET information in IWXXM	2020
<i>Information Exchange Services</i>		
IM-ST-02-01	Aeronautical information exchange service, Phase 1	2022
IM-ST-02-02	Flight information exchange service, Phase 1	2022
IM-ST-02-03	Weather information exchange service, Phase 1	*
IM-ST-02-04	SWIM service registry, Phase 1	*
<i>SWIM Infrastructure</i>		
IM-ST-03-01	SWIM technical infrastructure, Phase 1	2022
<i>SWIM Governance</i>		
IM-ST-04-01	SWIM Policies	2022
IM-ST-04-02	SWIM governance bodies	2022
IM-ST-04-03	SWIM information service validation rules	2022
Medium Term (2023-2027)		
<i>Information Services to Support FF-ICE Release 1 Operation</i>		
IM-MT-01-01	Flight information in FIXM, Phase 2	Phase 2.1 – 2023 Phase 2.2 – 2027
IM-MT-01-02	Aeronautical information exchange service, Phase 2	*
IM-MT-01-03	Flight information exchange service, Phase 2	Phase 2.1 – 2024 Phase 2.2 – 2027
IM-MT-01-04	Weather information exchange service, Phase 2	*
IM-MT-01-05	SWIM service registry, Phase 2	*
<i>SWIM Infrastructure</i>		
IM-MT-02-01	SWIM technical infrastructure, Phase 2	*
IM-MT-02-02	SWIM technical specification	*
<i>SWIM Governance</i>		
IM-MT-03-01	SWIM guidance materials	*
<i>SWIM-enabled Applications</i>		
IM-MT-04-01	Digital NOTAM	*
IM-MT-04-02	FF-ICE Release 1 services	(Prototype – 2022) 2027
IM-MT-04-03	MET/ATM integration over SWIM	*
IM-MT-04-04	ASM/ATFM integration over SWIM	*
IM-MT-04-05	ATFM/A-CDM integration over SWIM	*

*under review

Appendix B**SWIM Knowledge Sharing Outline**

Module	Topic
1	SWIM Concept <ul style="list-style-type: none">- Need for SWIM- SWIM benefits- SWIM definition and scope
2	SWIM Principles <ul style="list-style-type: none">- SWIM and service orientation
3	SWIM Layers <ul style="list-style-type: none">- SWIM Global Interoperable Framework- SWIM stakeholders- Performance improvement via SWIM
4	SWIM Components <ul style="list-style-type: none">- SWIM information- SWIM information service- SWIM service validation- SWIM service registry- Information service lifecycle- SWIM technical infrastructure- SWIM governance
5	Transition to SWIM <ul style="list-style-type: none">- SWIM implementation
6	SWIM in ICAO Plan <ul style="list-style-type: none">- ASBU modules and elements related to SWIM