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Status on SWIM Planning and Deployment

ASEAN and Asia/Pacific



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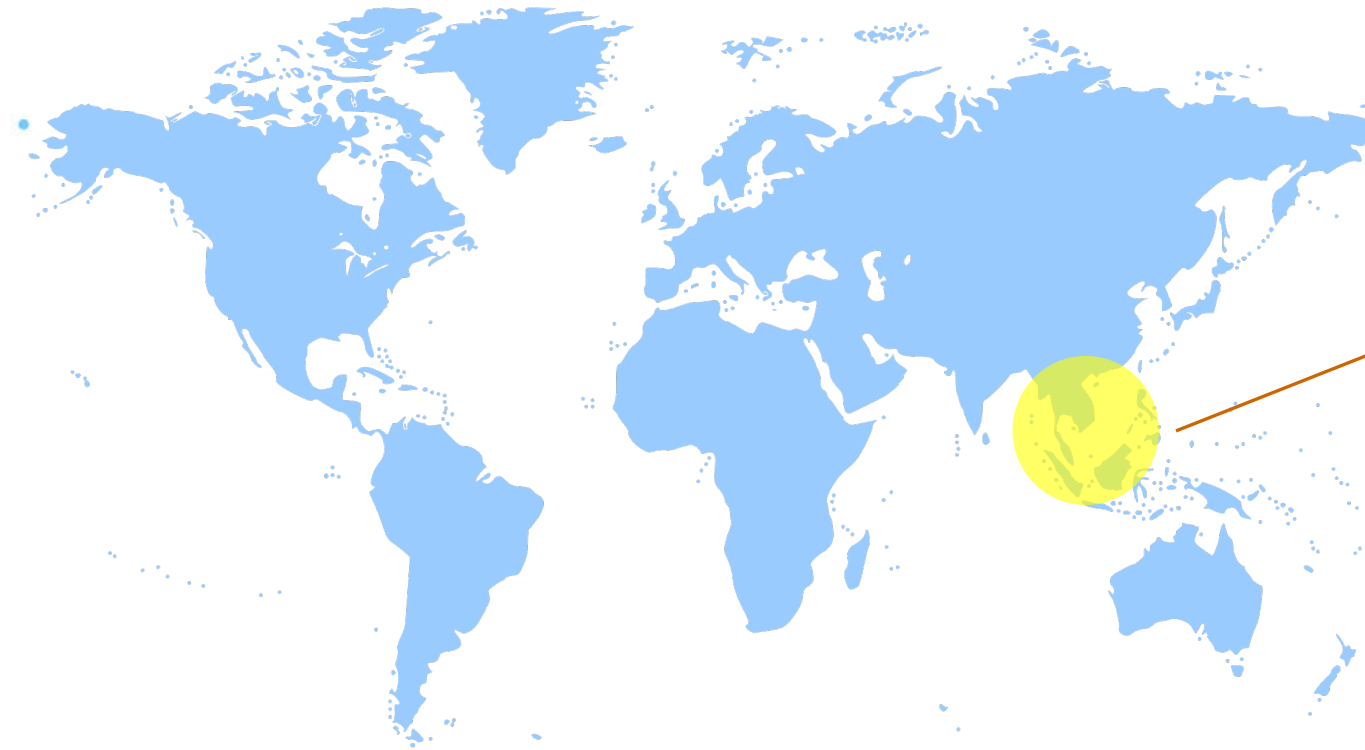
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ASEAN

Association of Southeast Asian Nations





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ASEAN ANS Master Plan

Seamless ASEAN Sky

- ASEAN Single Aviation Market
- ASEAN Transport Strategic Plan 2016-2025
- Review cycle: 2 years
- Performance-based approach
- 5 focus areas
 - Aerodrome
 - Terminal
 - En-route
 - Civil/Military cooperation
 - Information management





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ASEAN ANS Master Plan

Seamless ASEAN Sky

- 3 implementation priorities
 - Required harmonized ASEAN-wide
 - First-priority
 - Capability enhancement
- 3 implementation phases

	ASEAN Implementation Time Frame	ASEAN Target Completion Date
Phase I	1 Jan 2018 – 31 Dec 2020	31 Dec 2018
Phase II	1 Jan 2018 – 31 Dec 2022	31 Dec 2020
Phase III	1 Jan 2022 – 31 Dec 2025	31 Dec 2024



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ASEAN ANS Master Plan

Information Management

- Required-harmonized ASEAN-wide

Phase I	– Quality-assured aeronautical data and information
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Phase II	– Aeronautical information in AIXM v5.1 – CRV
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Phase III	– Aeronautical information in AIXM v5.1 – Digital-based NOTAM – CRV – SWIM information service provision – SWIM information service consumption
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+ SWIM Registry

- First-priority
 - ASEAN-specific SWIM governance

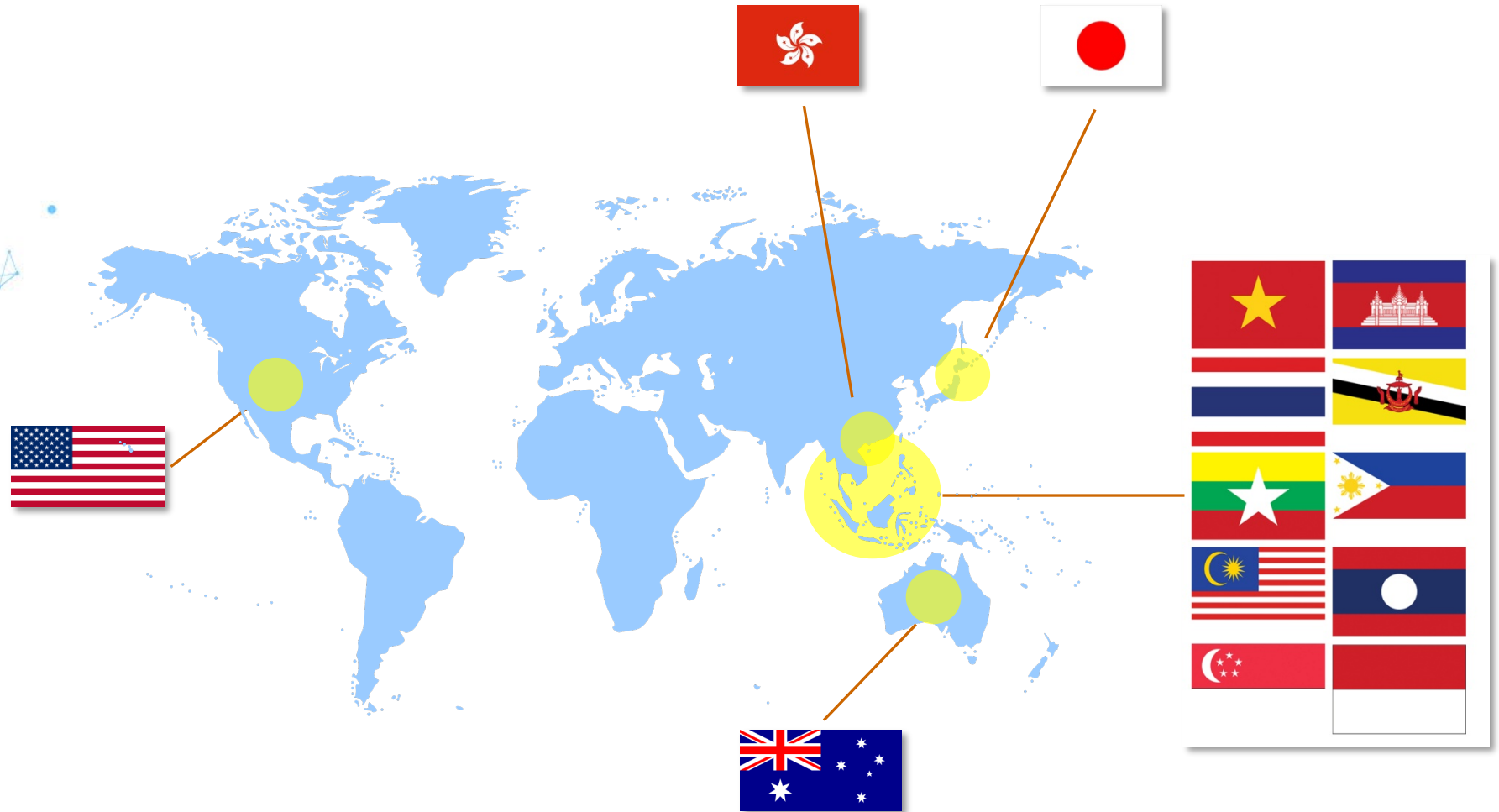


Scope



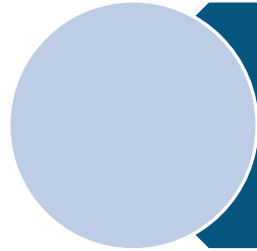
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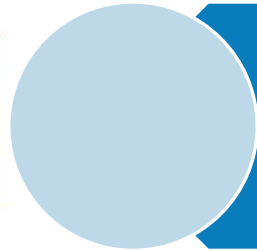




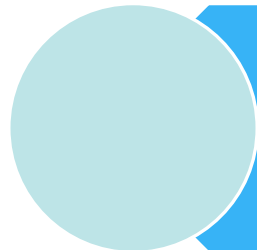
Purpose



To demonstrate the principles of SWIM



To show the potential benefits of SWIM



To demonstrate a model of SWIM implementation for ASEAN and APAC region

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Goal

- Demonstrate operational values of SWIM
- Generate greater discussion among participants on SWIM and SWIM implementation in the region
- Achieve broad participation by ASEAN and Asia/Pacific aviation community
- Construct a Global Enterprise Messaging Service (GEMS) network

**Gain consensus for ASEAN and Asia/Pacific
to move forward on SWIM**

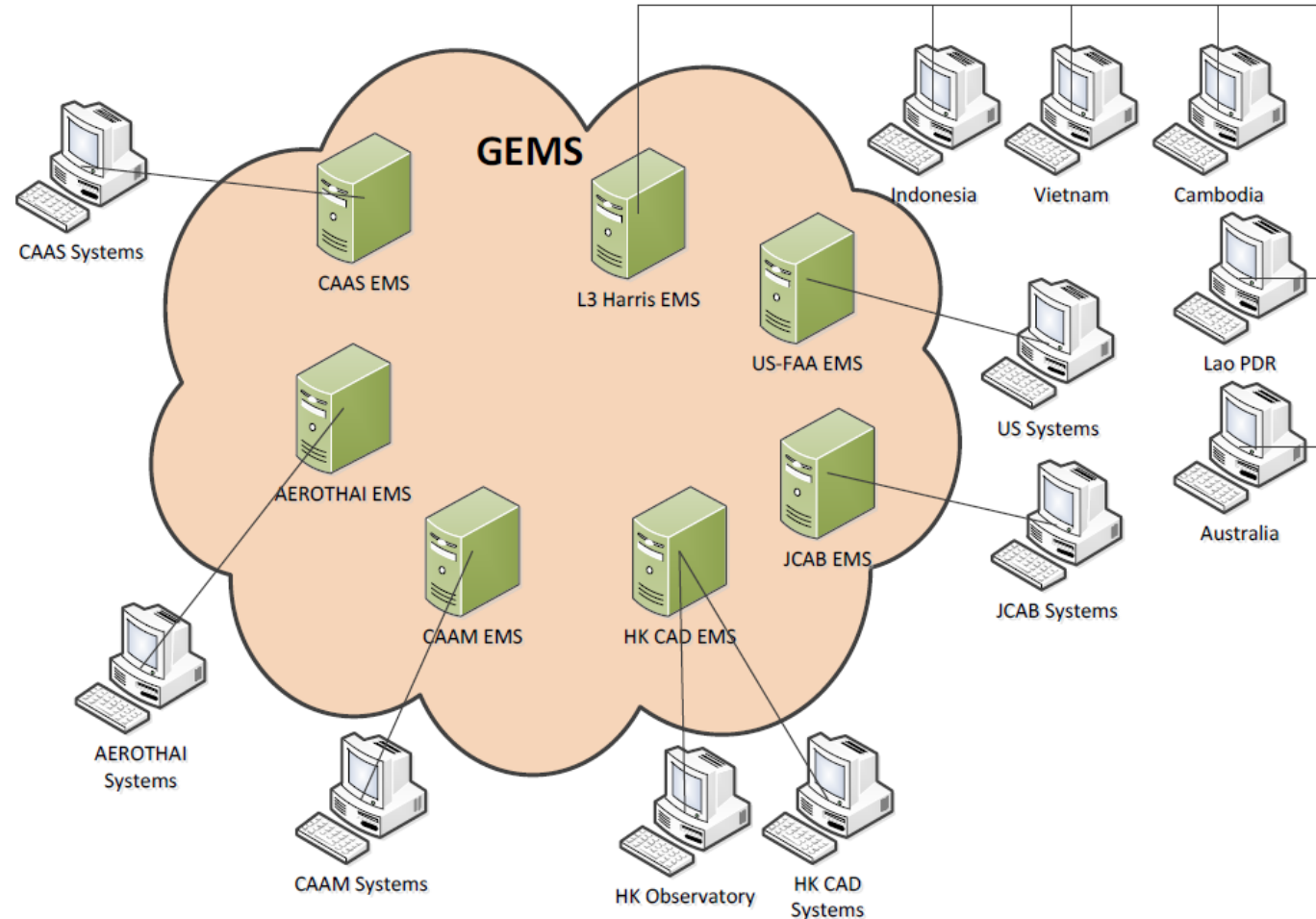


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High-level Technical Architecture





Service and Application



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Enterprise Messaging Service

Governance

Validation

Routing

Security

Information Service

Aeronautical information

Flight information

Meteorological information

ATFM Daily Plan information

Additional Service

GUFI service

Flight object management

Data transformation

Application

Data Governance Module

ATFM

Viewer



Standards Used



- Messaging
 - AMQP v1.0
 - Metadata
 - Current operational concept: ATS message-based
 - Transition
 - Future operational concept: FF-ICE
- In demonstration
 - Both pre-recorded and simulated data
 - Use cases involving aeronautical information, flight information, and weather information sharing among stakeholders
 - **AIXM V5.1, FIXM v4.1 with APAC Extension, IWXXM v2.0**

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Scenarios

Demonstrating SWIM and its benefits to
flight and ATM operations

Normal Flight Operations

- Gate-to-gate operations
- Airport CDM



*Enhanced flight information
exchange*

Restricted Flight Operations

- Military activity
- Weather hazard
- Conditional route (CDR)



*Cross-border ATFM, ASM, and
collaboration*

Current Operational Concept



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Scenarios

Demonstrating SWIM and its benefits to
flight and ATM operations

Normal Flight Operations

- Special Use Airspace
- Weather hazard



***FF-ICE/R1 Pre-Departure
Negotiation***

Future Operational Concept



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Lessons Learnt

- Seamless information exchange among stakeholders is critical
 - Common situational awareness
 - Predictability
 - Collaborative decision making
- Increasing need for SWIM is a fact
 - Improve current operations
 - Enable advance operations
- More distinct operational benefits can be achieved with increasing SWIM implementation
- Participation of AU's FOC system via G/G SWIM tangibly contributes to improved ATM system performance



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Lessons Learnt

- Interconnected-EMSs is a candidate model of SWIM implementation for ASEAN and Asia/Pacific region
 - Use of open standards, utilization of open-source messaging protocols
 - GEMS metadata
 - Defined format and possible values
 - Message routing
 - Standardized solution required to prevent message looping
 - Messages irregularly-continuously routed among GEMS providers
 - Relation between headers
 - Requiring defined relation between header defining message type and other related header
 - Required data elements of each message types



Lessons Learnt



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- Use of AIXM, FIXM, IWXXM plays an important role in achieving interoperability
 - Regional requirements - Extensions to XM Core
- Mediation is a key to bring diverse stakeholders with different technical capabilities on board
- Technical enhancement discussion without operational view is challenging
 - Clearly defined operational use cases
 - Clearly defined process



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- ICAO APAC-MID SWIM workshop
- Joint WP – Singapore, Thailand, and USA
- CNS SG/20 Decision – Establishment of SWIM TF



ICAO Asia/Pacific SWIM Task Force

- SWIM TF/2
 - APAC SWIM survey #1

2016

2017

2018

- SWIM TF/1
 - Structure
 - Work plan
- ICAO APAC-EUR-MID SWIM workshop
- Inauguration of SWIM in ASEAN Demo

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ICAO Asia/Pacific SWIM Task Force

- SWIM TF/4
 - Revised structure
 - SWIM in ASEAN Demo report
 - FF-ICE/R1 demo

2019

2020

2021

- SWIM TF/3
 - Philosophy and roadmap
 - Interoperable registry model
 - APAC FIXM v4.1 Extension
 - SWIM education video
 - Service/application test platform
- SWIM in ASEAN Demo

- ICAO APAC SWIM workshop
- SWIM TF/5
 - Revised TOR
 - APAC SWIM survey #2
 - Expansion of implementation philosophy
 - Security service on SWIM
 - FIXM v4.2 Extension
 - APAC service overview specification
 - Discovery service demo

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SWIM TF

Implementation planning

SWIM infrastructure

Technical architecture

Governance



ICAO Asia/Pacific SWIM Task Force

- Regional implementation philosophy and roadmap
- Regional SWIM infrastructure
- Security service
- Development and maintenance of regional information exchange models
- Registry and other related governance policies



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SWIM TF

Information services

Validation & Demonstration

Coordination & Promotion



ICAO Asia/Pacific SWIM Task Force

- Information services
- SWIM demonstration
- SWIM service and application validation
- Monitoring of Panels' work
- Regional coordination
- SWIM implementation education and promotion

Upcoming Activities



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Hong Kong China – Singapore – Thailand Joint Efforts

- Q1/2022
ATFM information exchange over SWIM trial
- Originally planned for 2020; new date – TBD
SWIM over CRV demonstration

2021/09/13

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Thank you