

International Civil Aviation Organization



ICAO

WORKING PAPER (WP/19)

**ICAO Asia and Pacific (APAC)
Twenty-third Meeting of the Meteorological Information
Exchange Working Group (MET/IE WG/23)**

Bangkok, Thailand, 25 to 28 March 2025

Agenda Item 5: Meteorological information exchange in SWIM

BUSINESS FUNCTIONALITY OF APAC COMMON SWIM INFORMATION SERVICES

(Presented by SWIM TF Task Lead)

SUMMARY

This paper presents the updates on the work of ICAO APAC SWIM TF Task Team on Information Services to identify the business functionality to be supported by APAC Common SWIM Information Services for addressing the operational needs in APAC.

1. INTRODUCTION

1.1 The 2022 APAC SWIM survey recommended developing a list of the common set of SWIM information services for the APAC Region. SWIM TF Task Team on Information Services, in coordination with relevant subject matter experts, identified the types of information to be exchanged via APAC SWIM and proposed the necessary business functionality to be supported by APAC Common SWIM Information Services for addressing the operational needs in the APAC Region.

2. DISCUSSION

2.1 Exchanging aeronautical, flight, flow, meteorological, and surveillance information in a common digital format via APAC Common SWIM Information Services could bring the following potential operational benefits:

- Publish the changes in the status of flights, demands, airspace or MET constraints and other real-time updates to relevant stakeholders more efficiently
- Facilitate stakeholders to retrieve relevant tailored information automatically
- Allow operational users to have increased lead time to react in pre-departure (pre-tactical) and airborne (tactical) phases
- Increase users' situation awareness for better decision-making processes
- Enhance overall operational efficiency and reduce the impact to the ANSP, airspace users, passengers and other aviation stakeholders

2.2 A draft list of the business functionality of APAC Common SWIM Information Services was developed and presented in SWIM TF/8 in November 2023, including:

- APAC Common SWIM Flight Information Services
- APAC Common SWIM Aeronautical Information Services
- APAC Common SWIM Meteorological Information Services
- APAC Common SWIM Surveillance Information Services

2.3 To further refine the draft list of the initial set of APAC Common SWIM Information Services, an online voting was distributed to APAC States through State Letter to collect more comprehensive inputs and comments from related subject matter experts during November to December 2023. 59 responses from 18 States/Administrations, 2 airlines and the CRV provider were received through the survey. The survey results and comments received are summarised in [SWIM TF/9 – WP/16](#).

2.4 Based on the survey responses from States, the proposed initial set of APAC Common SWIM Information Services was updated and presented to SWIM TF/9 in May 2024 for further review and discussion. SWIM TF/9 recommended a three-level prioritization scheme for the listed information services. It was agreed that an initial set of APAC Common SWIM Information Services would be categorized into Priority (1), Priority (2), and Priority (3). The definitions for each priority level were discussed and incorporated into the APAC Common SWIM Information Services document:

- (1) Recommended for region-wide implementation for region-wide benefits
- (2) Recommended for implementation as much as practicable
- (3) Additional information services without common regional requirements and not included as a part of common regional information services

2.5 The list of recommended services was further reviewed and modified by SWIM TF/9. It was agreed that the SWIM TF Task Lead from Hong Kong China, along with relevant subject matter experts of SWIM TF, would present the updated version to the next meetings of AAITF, ATFM SG, FF-ICE Ad-hoc group, [MET/IE WG](#), SURSG, MET SG, AOP SG, and ATM SG. All comments received from these groups will be presented to SWIM TF/10.

2.6 SWIM TF/9 agreed that the information exchange model and its suitable version for each APAC Common SWIM Information service would be discussed and finalised by the relevant subject-matter-expert contributory bodies, i.e. AAITF for AIXM, ATFM SG and FF-ICE Ad-hoc Group for FIXM, and MET/IE WG for IWXXM.

2.7 Regarding the suggestion to incorporate the initial set of APAC Common SWIM Information Services into the initial version of the APAC SWIM Implementation Guidance Document, it was decided to add such information to the Document after the details of this initial APAC Common SWIM Information Service list is matured.

2.8 The MET SG/28 meeting reviewed the proposed business functionality of APAC Common SWIM Information Services developed by the ICAO APAC SWIM TF Task Team. The MET SG/28 meeting noted the work presented in [MET SG/28 – WP/20](#) covered a comprehensive list of information services and provided corrections to the information services related to WAFS SIGWX forecasts. The meeting was informed that currently there is no plan for ICAO to implement special aircraft report as an information service.

2.9 MET/IE WG is invited to note the following items in the proposed initial set of APAC Common SWIM Meteorological Information Services, as reviewed and updated by MET SG/28 and provided in **APPENDIX**.

- Business functionality of the service
- Brief description of the service
- Type of information to be exchanged
- Information exchange model or message type
- Message exchange pattern
- Priority as recommended service in initial APAC Common SWIM Information Services

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) review the proposed initial set of APAC Common SWIM MET Information Services in **APPENDIX** and provide any inputs or comments; and
- c) discuss any relevant matters as appropriate.

**Proposed business functionality of APAC Common SWIM Information Services
(Updated by SWIM TF/9 and MET SG/28)**

*(Editorial note – changes arising from MET SG/28 are indicated with ~~striketrough~~ and **highlighted** text.)*

Notes. – Recommended services in initial APAC Common SWIM Information Service (IS) ((1)/(2)/(3)):

- (1) Recommended for region-wide implementation for region-wide benefits
- (2) Recommended for implementation as much as practicable
- (3) Additional information services without common regional requirements and not included as a part of common regional information services

Business functionality of the service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Recommended service in initial APAC Common SWIM IS (1) / (2) / (3)
APAC Common SWIM Aeronautical Information Services					
Airspace management service	Exchanges of airspace status information between ASM Support System and Air Traffic Control (ATC) System. The sharing of airspace availability and airspace structure in real-time will contribute to a more efficient execution of the flight as information impacting the trajectory will be exchanged.	Airspace availability, restricted area, danger area, search and rescue regions	AIXM	Pub/Sub	2
Airspace feature service	Provides the characteristics of the three-dimensional airspace, described as horizontal projection with vertical limits, and their relevance to air traffic.	FIR/UIR boundaries, waypoints, enroute ATS routes, SIDs and STARs, nav aids, procedures	AIXM	Pub/Sub or Req Reply	2
Aerodrome feature service	Provides current and/or planned airport layout features, such as aerodrome mapping data, runway, taxiway, passenger facilities.	Runways, movement areas, aerodrome services, nav aids, instrument landing systems, Aerodrome location, communication facilities (frequencies)	AIXM	Pub/Sub	2
Digital NOTAM distribution service	Provides aeronautical information in accordance with the Digital NOTAM Specification, such as runway closure.	Digital NOTAM	AIXM	Pub/Sub	2

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Business functionality of the service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Recommended service in initial APAC Common SWIM IS (1) / (2) / (3)
		(e.g. Special activity airspace (SAA) NOTAMs, or other types of NOTAMs)			
Runway Condition Report service	Provides runway surface conditions and contaminants (least to most slippery) that are directly correlated to aircraft take-off and landing performance.	Global Reporting Format (GRF) for runway surface conditions	AIXM	Pub/Sub or Req/Reply	2
ATIS distribution service	Provides continuous and automated broadcast of recorded aeronautical information in airport and terminal areas.	Current weather conditions, runway in use, available approaches, and other data relevant to arriving and departing aircraft, specific ATC procedures, and any airport construction activity that could affect taxi planning	TBD	Pub/Sub	2
Search and rescue service	Allows Rescue Coordination Centres (RCCs) to exchange information with neighbouring RCCs and ATS units for coordination during SAR operations.	Search and rescue regions, Registered aircraft operator details and contacts, ICAO Autonomous Distress Tracking (ADT) data, Location of Aircraft in Distress Repository (LADR) data, ICAO OPS CTRL database contact information, SAR Unit (SRU) location and capability data	TBD	Pub/Sub	3
APAC Common SWIM Flight Information Services					
GUFU service	GUFU (Globally Unique Flight Identifier) generation and provision	GUFU	FIXM	Req/Reply	1
ATFM/A-CDM integrated service	Allows exchanges of flight plans and A-CDM milestone parameters among different stakeholders (such as arrival/departure ATFM units, airlines and airport	CTOT, CTO, TTOT, TSAT, etc.	FIXM	Pub/Sub	1

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Business functionality of the service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Recommended service in initial APAC Common SWIM IS (1) / (2) / (3)
	operators) to connect A-CDM process to ATFM operations.				
FF-ICE filing service	Provides a means to submit, update or cancel flight plans through a SWIM-based interface using FIXM.	Flight plan for registration, update or cancellation	FIXM	Req/Reply	1
FF-ICE data publication service	Provides harmonised sharing of flight plan information in a global standard supporting common situation awareness.	Flight plan for publication	FIXM	Pub/Sub	2
FF-ICE trial service	Allows operators to test the effect of a potential change in a flight plan prior to committing to the change.	Proposed changes in a flight plan	FIXM	Req/Reply	2
FF-ICE flight data request service	Allows an operator to request the current status of a flight plan, or an ANSP can request an operator to submit the latest version of their flight plan.	Current status of a flight plan	FIXM	Req/Reply	1
FF-ICE notification service	Provides notification of a change in flight state, such as Departure (DEP) and Arrival (ARR) Air Traffic Service (ATS) messages.	ARR, DEP messages	FIXM	Pub/Sub	1
FF-ICE planning service	Allows operators to submit flight plans for early Air Traffic Flow Management (ATFM) planning and to obtain feedback regarding restrictions/constraints affecting the flight.	Flight plan for early ATFM planning	FIXM	Req/Reply	2
Traffic flow status service	Provides users with notification of any traffic flow management measures which are in affect and how they may affect their aircraft.	Demand and constraints, Miles-in-Trail (MIT), Minutes-in-Trail (MINIT), ATFM daily plan, Ground Delay Program (GDP)	TBD	Pub/Sub	2

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APAC Common SWIM Meteorological Information Services					
FOR AERODROME					
METAR/SPECI information service	Provides of IWXXM-formatted METAR/SPECI product specified in ICAO Annex 3.	Provision of the existing product in Annex 3. Information service will be enabled through Amendment 81 to Annex 3 as recommended practice with applicability from Nov 2024.	IWXXM	Pub/Sub Req/Reply	1
TAF information service	Provides of IWXXM-formatted TAF product specified in ICAO Annex 3.		IWXXM	Pub/Sub Req/Reply	1
Aerodrome observation information service	Provides continuous observations of weather parameters at an aerodrome. Advanced meteorological SWIM (MET-SWIM) service being developed by MET Panel.	To be introduced as recommended practice in Annex 3 (Amd 83) in Nov 2027 tentatively	IWXXM	Pub/Sub or Req/Reply	2
Aerodrome forecast information service	Provides information of the expected meteorological conditions, including probability, at an airport during a specified period. Advanced meteorological SWIM (MET-SWIM) service being developed by MET Panel.	(Note: Level of standardisation needs to be considered, as different aerodrome information services may be required for different use cases.)	IWXXM	Pub/Sub or Req/Reply	2
FOR ENROUTE					
SIGMET information service	Provides of IWXXM-formatted SIGMET product specified in ICAO Annex 3.		IWXXM	Pub/Sub Req/Reply	1
AIRMET information service	Provides of IWXXM-formatted AIRMET product specified in ICAO Annex 3.		IWXXM	Pub/Sub Req/Reply	1
Tropical Cyclone Advisory information service	Provides of IWXXM-formatted Tropical Cyclone Advisory product specified in ICAO Annex 3. (Designated provider: States with Tropical Cyclone Advisory Centre)		IWXXM	Pub/Sub Req/Reply	1

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Business functionality of the service	Brief description of the service	Type of information to be exchanged	Information exchange model / Message type	Message exchange pattern	Recommended service in initial APAC Common SWIM IS (1) / (2) / (3)
Volcanic Ash Advisory information service	Provides of IWXXM-formatted Volcanic Ash Advisory product specified in ICAO Annex 3. (Designated provider: States with Volcanic Ash Advisory Centre)		IWXXM	Pub/Sub Req/Reply	1
Space Weather Advisory information service	Provides of IWXXM-formatted Space Weather Advisory product specified in ICAO Annex 3. (Designated provider: States with Space Weather Advisory Centre)		IWXXM	Pub/Sub Req/Reply	1
Volcano Observatory Notice for Aviation (VONA) information service	Provides of IWXXM-formatted VONA specified in ICAO Annex 3. Provision of VONA will become the is expected to become a recommended practice in Annex 3 in 2025. (Designated provider: States with designated State Volcano Observatory)		IWXXM	Pub/Sub Req/Reply	2
Quantitative volcanic ash (QVA) concentration information service	Provides detailed information of volcanic ash in the atmosphere, including probabilities of ash concentration thresholds over space and time. Advanced meteorological SWIM (MET-SWIM) service being developed by MET Panel. (Designated provider: States with VAAC Volcanic Ash Advisory Centre (VAAC))	QVA grids grid point forecasts including probabilities, QVA objects. To-Expected to be introduced as a recommended practice in Annex 3 (Amd 82) in Nov 2025 tentatively for VAACs in a position to do so from Nov 2025, and for all VAACs from Nov 2026.	Gridded data (e.g. NetCDF), IWXXM	Pub/Sub or Req/Reply	1
WAFc (World Area Forecast Centres) grid point forecast	Provides global gridded weather forecasts. (Designated provider: WAFcs (UK and US))	Global gridded forecasts of upper winds, upper-air temperatures and humidity, flight level and temperature of tropopause, and direction, speed and flight level of maximum wind	Gridded data in GRIB	Pub/Sub or Req/Reply	1

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WAFC significant weather (SIGWX) forecast	Provides global WAFC SIGWX data sets with coverage expressed in polygons or gridded data. (Designated provider: WAFCs (UK and US))	Significant weather forecast such as tropical cyclone, severe squall lines, turbulence, icing, etc.	IWXXM, gridded data	Pub/Sub or Req/Reply	1
Special Air Report (ARS)	Provides reports of special observations made by aircraft when they encounter special weather phenomena, such as moderate/severe turbulence or icing. (Note: Currently there is plan to implement this information service)	Special aircraft observations of weather phenomena as specified in Annex 3, including turbulence, icing, mountain wave, thunderstorms, duststorm, sandstorm, volcanic cloud, volcanic activity / eruption	TBD	Pub/Sub or Req/Reply	2
MET derived from Mode S DAPs	Provides upper air winds and temperatures derived from Mode S Downlinked Aircraft Parameters (DAPs) (e.g. true airspeed, ground speed, magnetic heading, true track angle) and facilitates exchange of derived winds and temperatures among MET service providers.	Upper air winds and temperatures derived from Mode S DAPs	TBD	Pub/Sub or Req/Reply	3
Satellite image service	Provides satellite observational information.	Satellite derived MET information (e.g. significant convection)	Gridded format (e.g. NetCDF) and image format	Req/Reply	2
Weather radar image service	Provides two- or three-dimensional radar observational information.	Weather radar reflectivity to visualise the intensity of convection	Gridded format (e.g. NetCDF) and image format	Req/Reply	2
APAC Common SWIM Surveillance Information Services					
Surveillance data sharing service	Provides three-dimensional position, time and identification of aircraft and other data as appropriate.	Position, altitude, ground speed, track angle, call sign, Mode S address, data quality, Mode S DAP	ASTERIX Cat 21 (payload in JSON or RAW format)	Pub/Sub	2