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APAC User Requirements for SWIM-Based MET Information Services Supporting ATFM

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(on behalf of the ICAO APAC MET/R WG Ad-hoc Group)

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Background:

- MET/R WG designated an ad hoc group to identify and document use cases and user requirements for SWIM-based MET information services supporting ATFM in the APAC region.

- The ad-hoc group consists of MET and ATFM subject matter experts.

- Key deliverables identified in the MET/R WG Workplan and as per the ATFM SG/13 WP02.

- Terms of Reference of the ad-hoc was adjusted based on the workplan above.

State / Administration / IO	Name	Position and/or Organisation	Expertise
Australia	Jesper Bronsvoort	Airservices Australia	ATFM
Australia	Ashwin Naidu	BOM	MET
CANSO	Stuart Ratcliffe	CANSO	ATFM
Hong Kong China	Marco Kok (Rapporteur)	HKO	MET/SWIM
Hong Kong China	(Mr) Anfernee Poon	Acting Senior Operations Officer (Strategic Planning) / HKCAD	ATFM
IATA	John Moore	IATA	ATFM/MET
Japan	ITOU Miho	JCAB	ATFM
Japan	IKEDA Michiko	JMA	MET
Pakistan	Fazal Ur Rehman	PCAA	ATFM
Pakistan	Syed Ali Baqadar Shah	PCAA	MET
Republic of Korea	Dong-won, LEE	Assistant of Director / KMA	MET
Republic of Korea	Jiwon, LEE	Assistant of Director / KMA	MET
Singapore	Zhang HuanBin	Head, ATM development/CAAS	ATFM
Singapore	Aw Ying Kit	Senior Engineer, ATM Systems /CAAS	ATFM
Singapore	Yeo Cheng Xun	MSS	MET
Thailand	Amornrat Jirattigalachote (Amo)	Strategic Planning Manager /AEROTHAI	ATFM/SWIM
Thailand	Dudsadee Sungthong	Strategic ATFM Team/AEROTHAI	ATFM
Vietnam	Mr. Nguyen Van Dung	VATM	MET/ATFM

Key Deliverables:

a) In coordination with other related sub groups, working groups, etc., identify:
   i. SWIM-based MET information affecting ATFM operations;
   ii. how often the current MET products be provided and the rules for updates to meet the ATFM needs; and
   iii. any other MET information required by ATFM and gaps to meet the needs of ATFM users.

b) Identify MET and ATFM data to be exchanged using SWIM-based Information Exchange Service; and

c) Based on the findings (above), develop APAC use cases and user requirements document for future SWIM-based MET information services supporting ATFM.

Terms of Reference

1. To document user requirements and use cases from ATFM in the APAC region to assist SWIM TF in the development of future SWIM-based MET information services specifically addressing the needs of ATFM in the APAC region;

2. To supplement the global concept described in the MET-SWIM Plan, prepared by the METP WG-MIE, and the MET requirements being developed by the METP Working Group on Meteorological Requirements and Development (WG-MRAD) in a global sense and IWXXM development by METP WG-MIE for effective exchange of MET information supporting AFTM operation;

3. To assist SWIM TF in identifying and developing the specifications of information services required to support ATFM operations based on user needs;

Terms of Reference

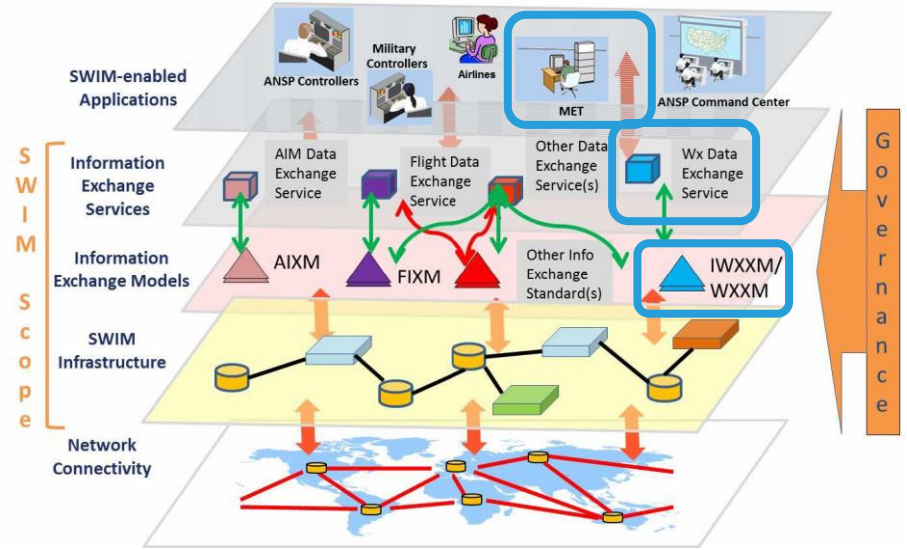
4. To identify MET and ATFM data to be exchanged using SWIM-based Information Exchange Services in the region to enable the effective MET/ATM integration and to provide the baseline for further development of the regional SWIM data catalogue and service catalogue; and

5. To identify other granular MET-related requirements from ATFM perspective such as update frequency and forecast lead time of MET information to better support the development of future MET Information Exchange Services in the Region.

SWIM-based MET Information Services and Examples of use cases to support ATFM

SWIM-based MET information services

- Requested information is consumed by SWIM-enabled Applications via Information Exchange Services to meet end-users' needs.



SWIM Global Interoperability Framework

ICAO Manual on SWIM (Doc 10039)

SWIM-based MET information services

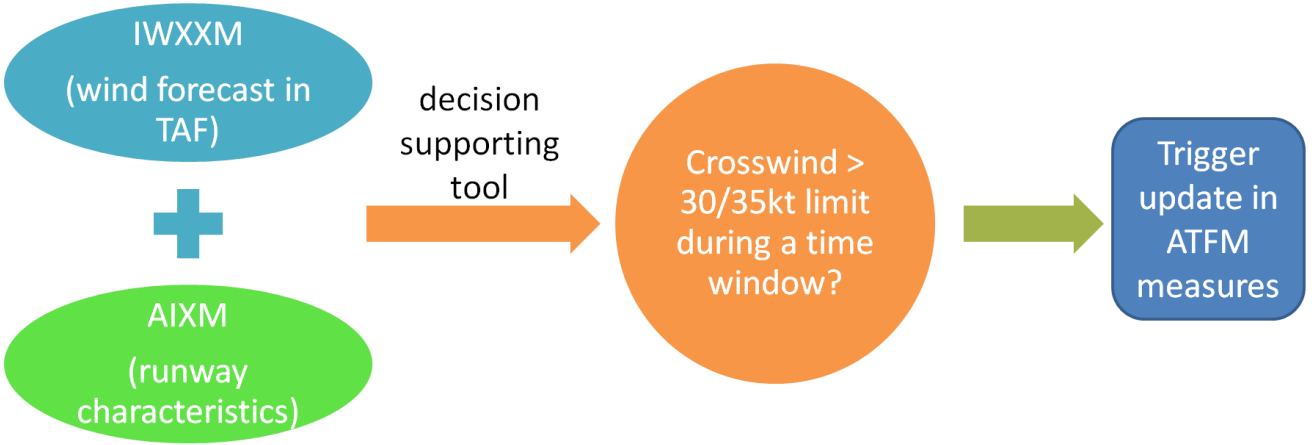
- capable to geospatially and/or temporally filter a data set to provide the users' system only the tailored information required by the user

Sample data to be exchanged via SWIM-based MET Information Services to support ATFM operations

Sample MET data catalogue	Sample ATFM data catalogue
Aerodrome • Surface wind and gust • Headwind • Windshear • Turbulence • Crosswind • QNH • Temperature and dew point • RVR • Visibility • Cloud amount and type • Lightning • Radar data • Wake vortex • Weather phenomenon and intensity Enroute • Wind • Temperature • CB clouds / deep convection area • Icing • Clear air turbulence • Tropopause height • SIGMET phenomenon and intensity • Volcanic ash cloud • Tropical cyclone • Satellite data	• Departure aerodrome • Destination aerodrome • Flight identification • Planned route/trajectory • Estimated Off-Block Time (EOBT) • Estimated Take-Off Time (ETOT) • Estimated Landing Time (ELDT) • Estimated Elapsed Time (EET) • Calculated Take-Off Time (CTOT) • Calculated Landing Time (CLDT) • Target Off-Block Time (TOBT) • Target Start Up Approval Time (TSAT) • Target Take-Off Time (TTOT) • Actual Off-Block Time (AOBT) • Estimated Time Over (ETO) • Calculated Time Over (CTO) • Actual Time Over (ATO)

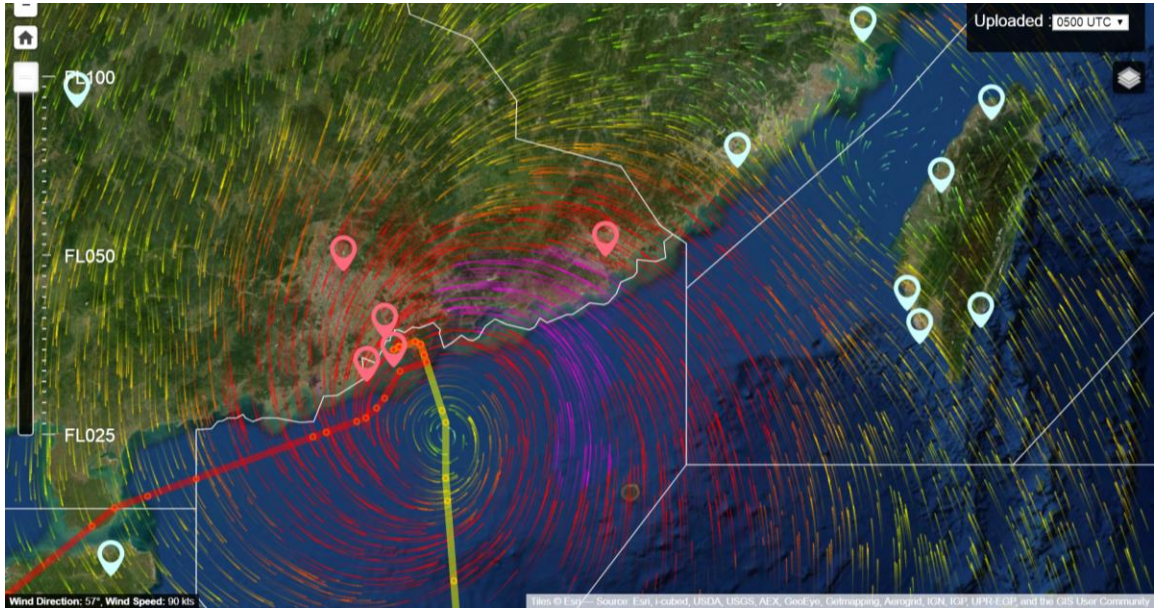
Use case example 1

- Integration of MET information in IWXXM with aerodrome information in AIXM to assess the crosswind at destination within a requested time period



Use case example 1 – Ground Delay Program

- SWIM-enabled MET-ATM graphical display – Landing weather thresholds of aerodromes
- for ATC and airline to monitor the landing condition at alternate aerodromes

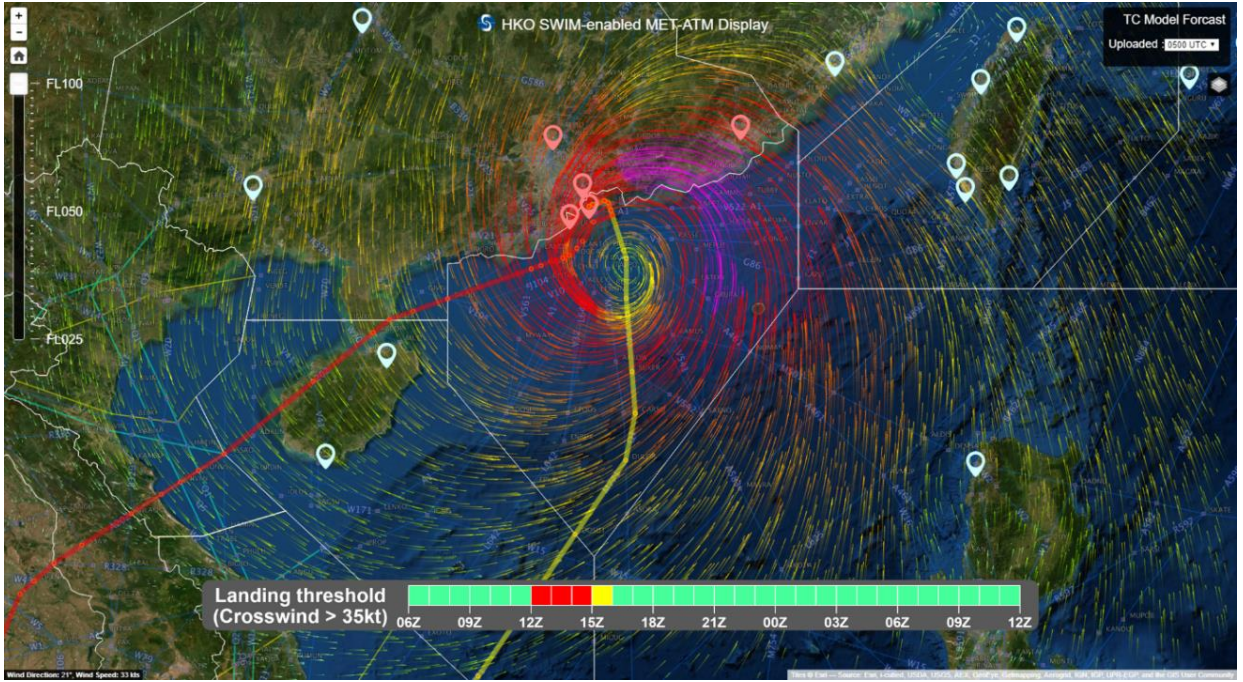


Based on user-specified operation thresholds

- Visibility
- Cloud base
- Wind gust
- Crosswind

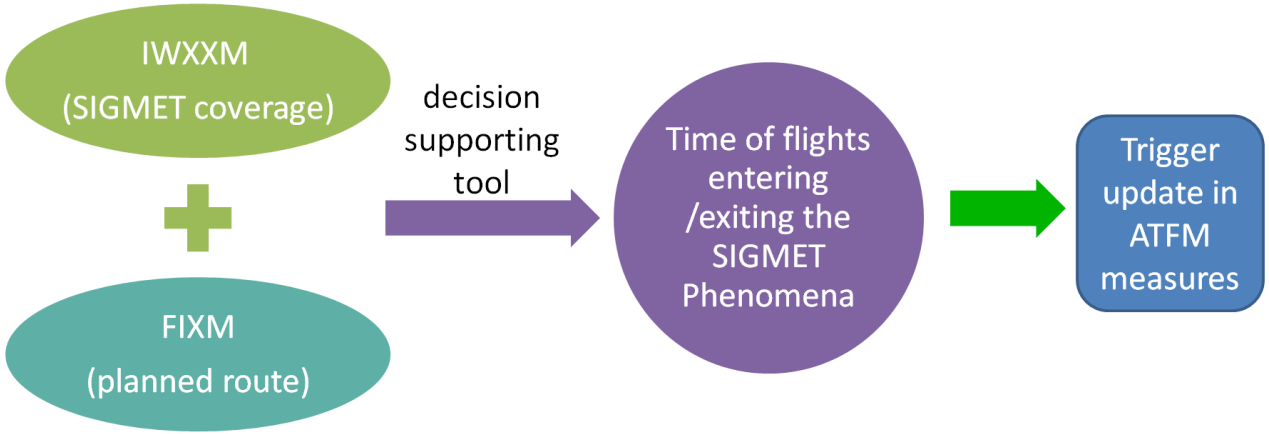
Use case example 1 – Ground Delay Program

- Based on weather elements extracted in digital TAF (received in IWXXM format)
- To support ATC's decision-making on when the airport arrival rate should be reduced and resumed normal



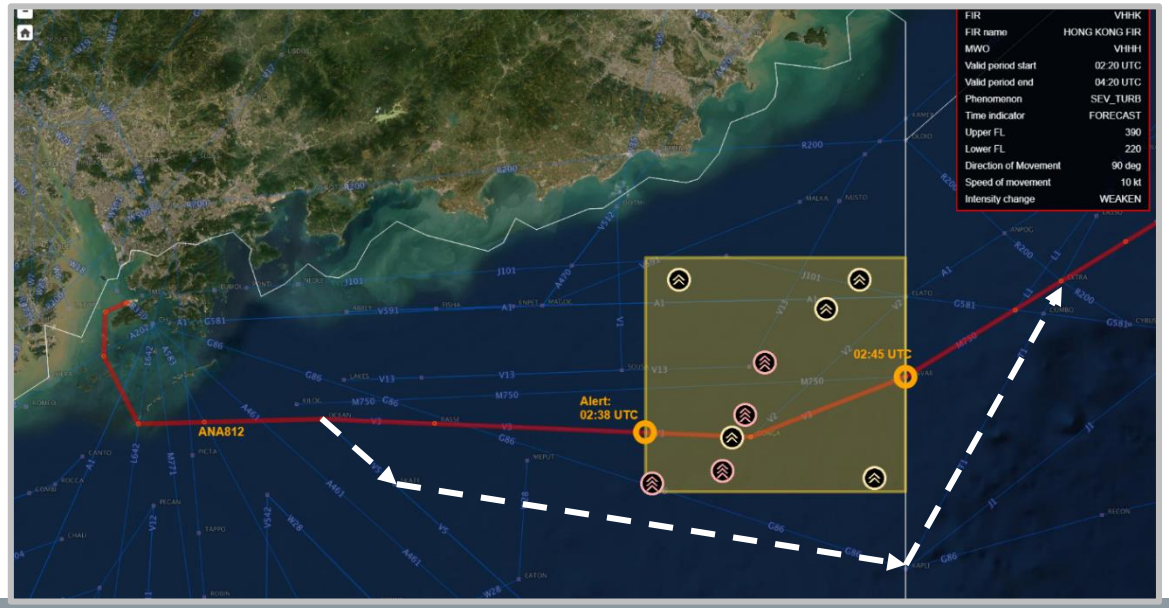
Use case example 2

- Integration of MET information in IWXXM with flight information in (FIXM) to assess the number of flights crossing areas of significant weather phenomena mentioned in SIGMET reports (such as CBs and associated SEV TURB and SEV ICE) within a requested time period

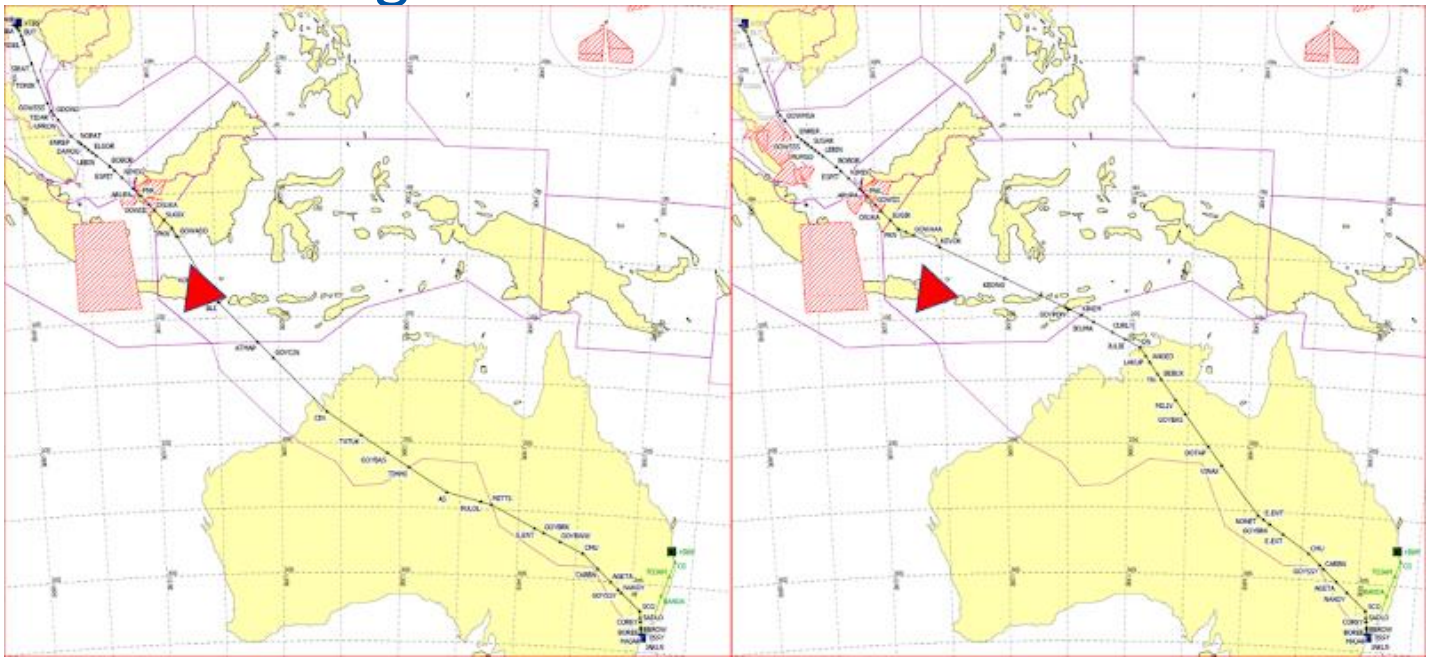


Use case example 2 – Airborne rerouting

- FPL and SIGMET exchanged in SWIM format
  - integrate flight and MET information in the automatic decision-supporting tool
  - better support the timely tactical decision making by the ATC and FOC

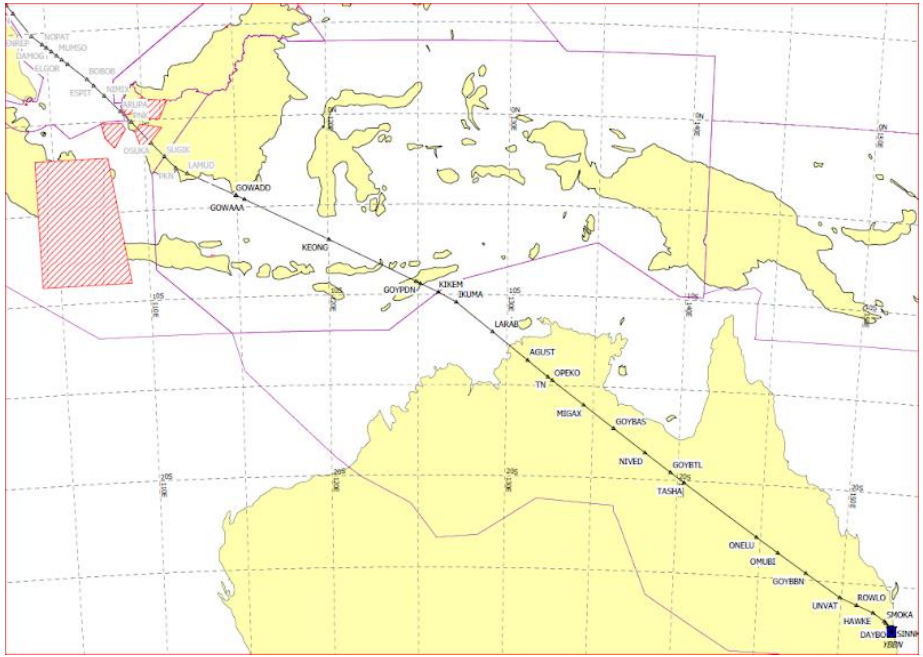


New use case example 3 – Volcanic ash avoidance and diversion due to fog



Route diversion for volcanic ash avoidance

Use case example 3 – Volcanic ash avoidance and diversion due to fog



Early flight diversion from Sydney to Brisbane due to fog

Action by the Meeting

- Review the document, including the use cases and provide an update or inputs prior to MET/R WG/12.

- What are your possible new use cases using the MET elements to be exchanged over SWIM.

- Support MET/R WG in achieving the key deliverables as identified in the Work Plan.

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THANK YOU