

Modernising MET Provision for the Future Needs of Airspace Users

ICAO MET/ATM Webinar

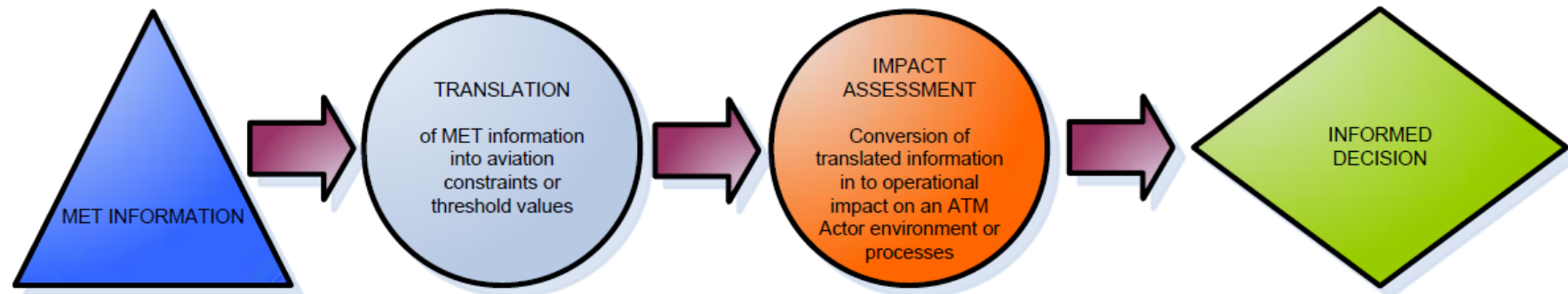
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MET informing ATM decisions



- MET info = observed or forecast weather parameters and phenomena in various formats
- MET translation = combining MET info with known operational to derive an ATM constraints or threshold value
- Impact Assessment = how will the MET phenomena actually impact actual ATM operations? Generically, ATM impact is how operational performance is altered due to the MET conditions.

Decision Making Horizons

MET information needs to be timely for decision-making

Require distinction between MET information services required for a planning decision, a near real-time decision or a real-time decision

Vital for establishing the most efficient, (development, industrialisation and deployment) information and its levels of quality, accuracy and latency

*Concept for the Integration of Meteorological Information for Air Traffic Management



Strategic horizon (planning)

Required information:

- Forecast conditions for destination
- Forecast and actual en-route conditions
- Alternate conditions
- Legacy - includes Area Forecasts, TAFs (Ultra Long-Range flights – 30H TAFs or 24H TAFs with 3-hour updates), wind forecasts, SIGMETs
- Future - access to SWIM MET data for FF-ICE/1 negotiations

Use:

- Flight Planning using most timely information
- Best trajectory including flight levels
- Expectations of access to preferred trajectory
- Fuel and payload decisions
- Alternate and in-flight diversion options



Pre-tactical horizon (near-real-time)

Required information:

- Arrival and en-route conditions
- Departure aerodrome conditions
- Departure path and en-route conditions
- Alternate conditions
- Legacy - includes TAFs, METARs, TTFs, ATIS, SIGMETs, pilot reports
- Future – direct access to data from source, Turbulence Aware, EFBs

Use:

- Confirming expected arrival and en-route conditions
- Adjusting best trajectory based on duty runway and Departure SID
- Expectation of access to preferred levels and likely 'ride' at those levels
- Final fuel and payload decisions
- Alternate and in-flight diversion options



Tactical horizon (real-time)

Required information:

- Arrival aerodrome conditions
- Changes to en-route conditions (FL wind updates, turbulence)
- Conditions on expected STAR and approach
- Legacy METARs, TTFs, ATIS, pilot reports
- Future – direct access to data from source, Turbulence Aware, EFBs

Use:

- 'Chase' best levels as conditions change
- Re-routing (DARP) for weather or other phenomena
- Adjusting for most optimised descent profile based on Arrival STAR and duty runway
- Final fuel and payload decisions
- Alternate and in-flight diversion options

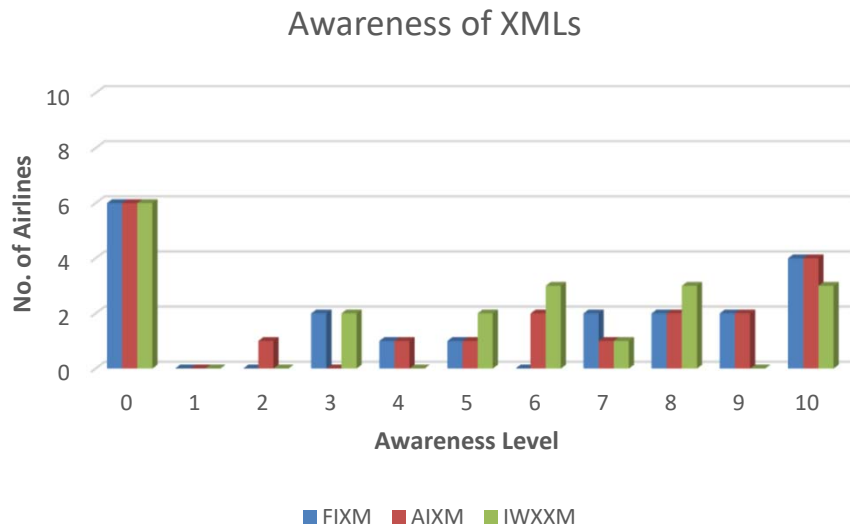


MET in SWIM



- SWIM is about sharing information for the benefit of ATM
- Imminent sharing of MET data using IWXXM
- Generation of data in various versions of IWXXM format at source
- A recent survey gathered information from 22 airlines in ASPAC on multiple equipage and capability topics including SWIM
- The survey looked for baseline information as at end of 2022

MET in SWIM

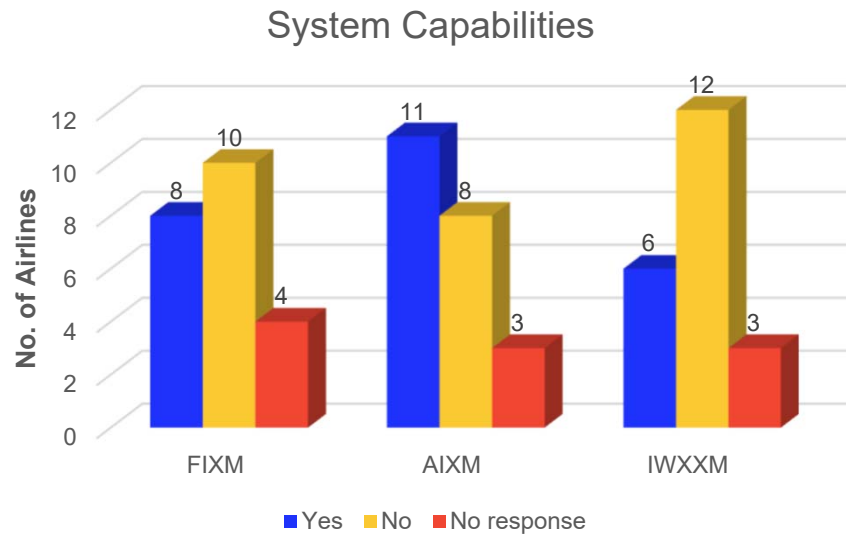


Survey results re IWXXM capabilities:

- Overall, the progress of airlines to become SWIM enabled is broadly spread but moreso on the lower scale of awareness.
- Indicate your airline's level of awareness of the following SWIM data exchange models (10 being highest)



MET in SWIM



Survey results re IWXXM capabilities:

- Indicate if your Flight Planning systems are capable of receiving and/or sharing information in any of the above formats?



MET in SWIM



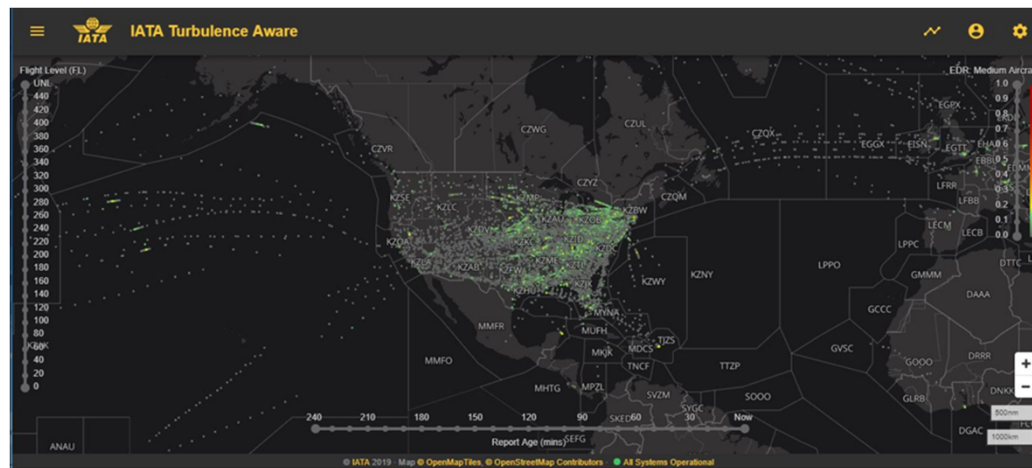
Survey results re IWXXM capabilities:

- Would your airline be willing to join SWIM trials with ANSPs and MET Service Providers, and if yes, when?



Turbulence Aware

- A single platform for turbulence data for airline pilots and operations centres
- Access standardised, real-time and detailed turbulence information
- Pooled data from multiple airlines around the globe
- Enhances safety and optimizes fuel consumption



Electronic Flight Bags (EFBs)

Tablet or Laptop

- Aircraft attached
- Power and data connection
- navAero hardware
- Charting / Library / Performance

Aircraft Interface Device

- Aircraft data feed

Wi-Fi Connection

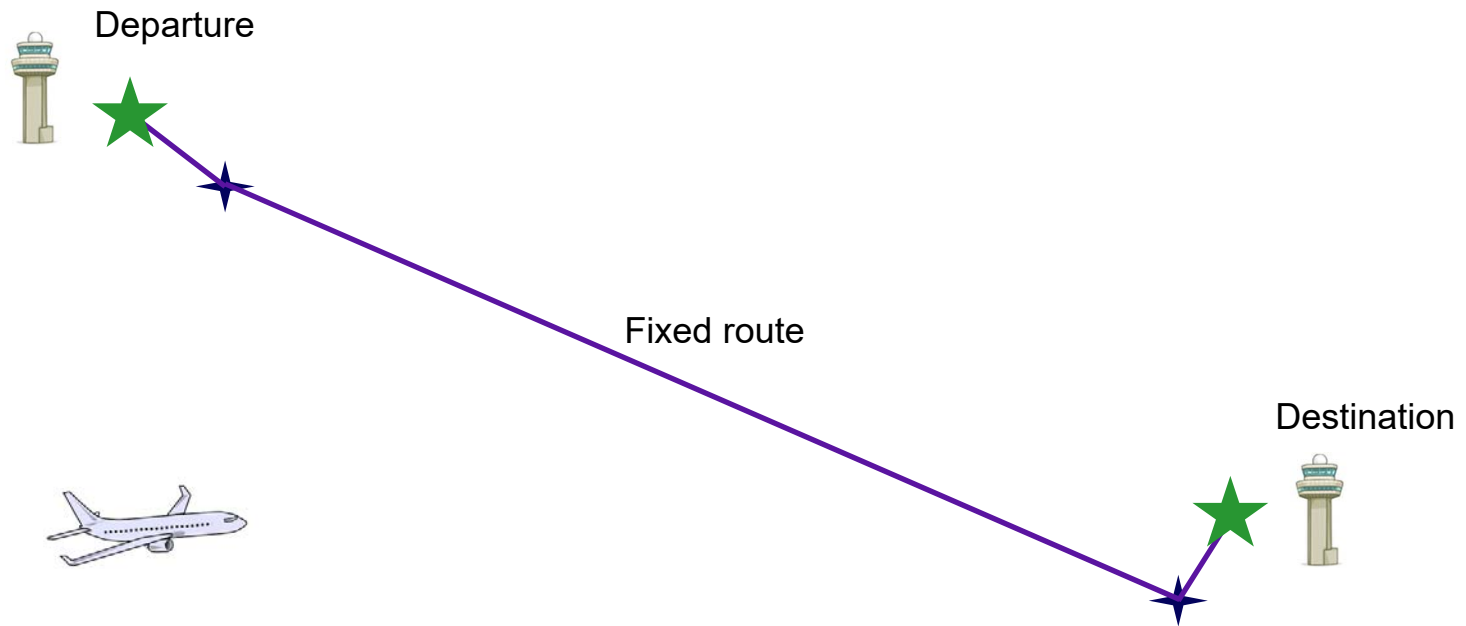
- Dedicated network
- Key – the EFB is central (As an EFB app - users are able to download filter and display)

- With passenger Wi-Fi the EFB's have a dedicated network, which is isolated from the passengers use.
- On some fleets with an EFB app users can
 - Calculate automatically
 - Downlink automatically
 - Visible to crew
- EFB allows for download filter and display of turbulence data

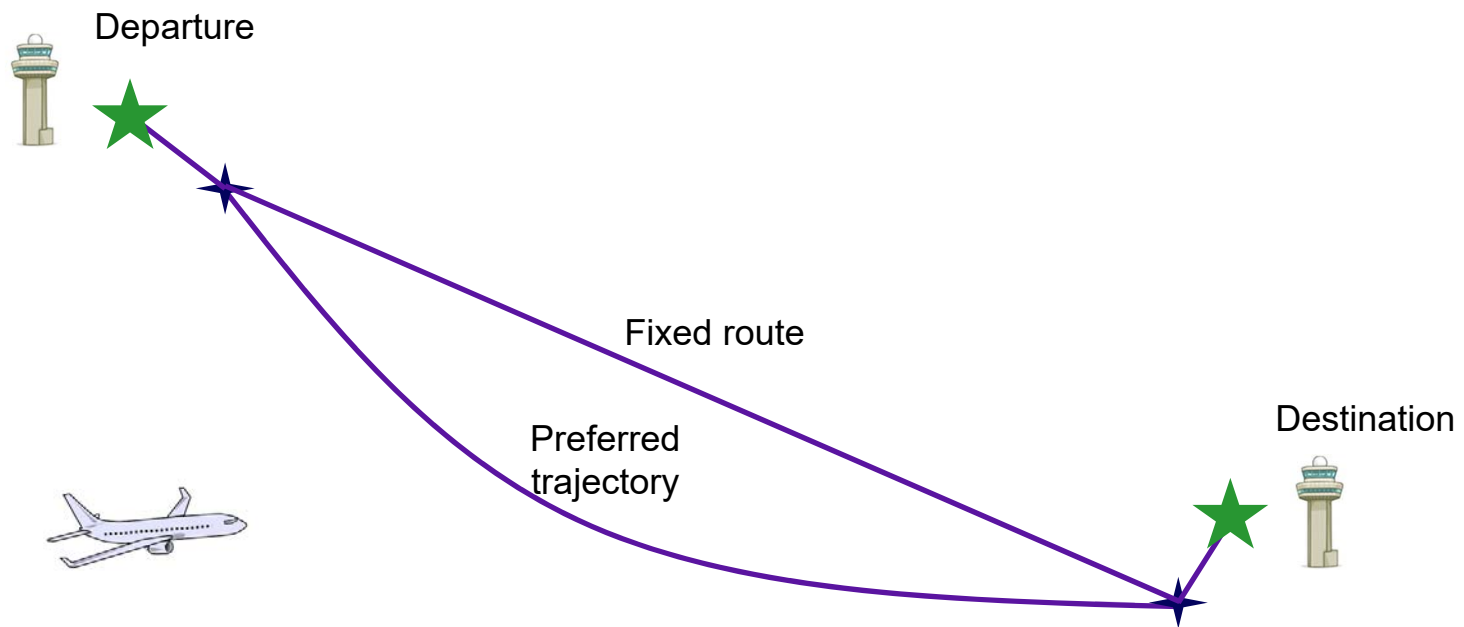
Operations in SWIM



Operations in SWIM

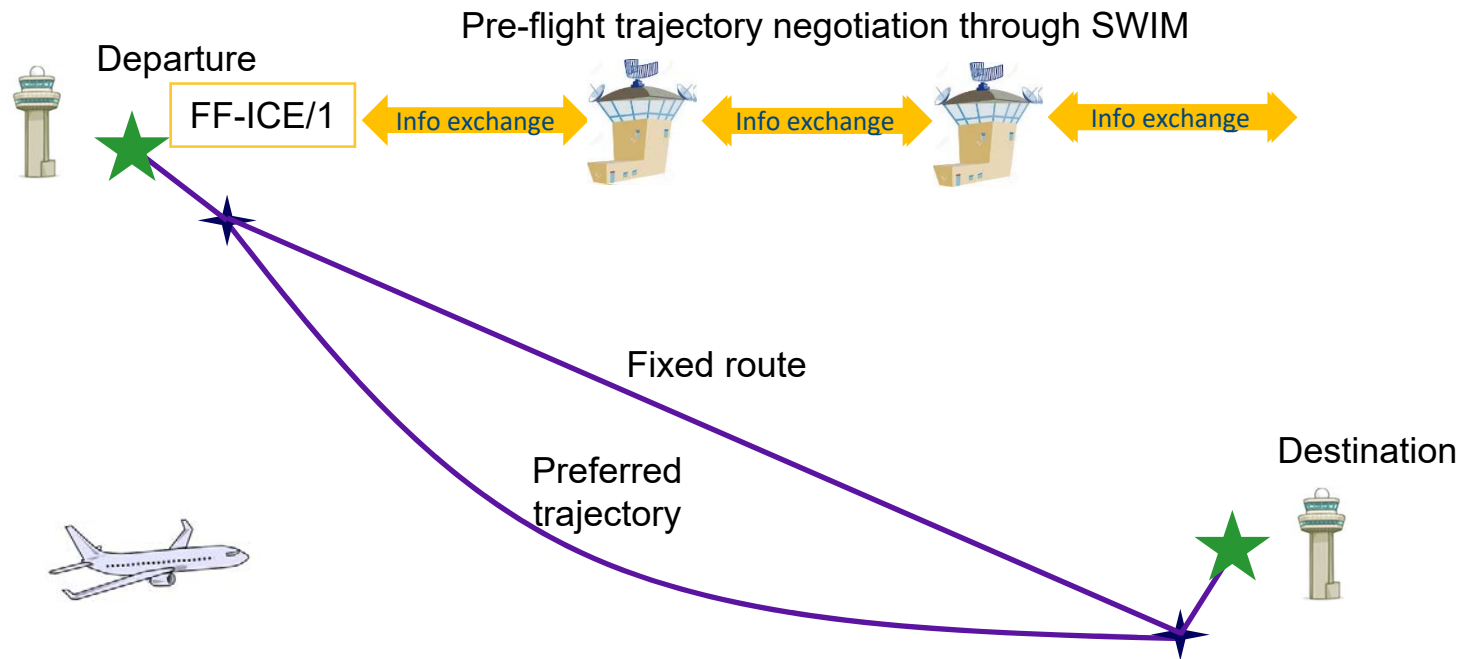


Operations in SWIM



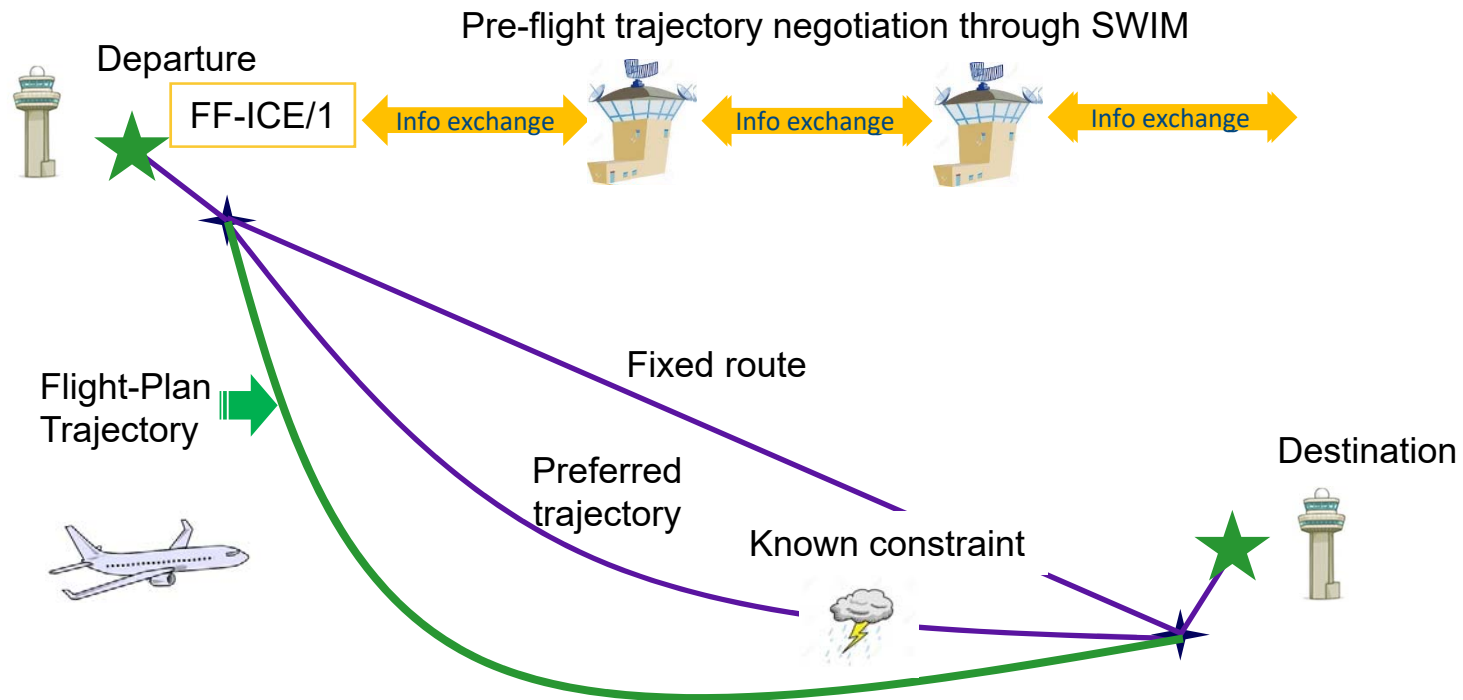
- Accurate and relevant information at the right time permits best design trajectories

Operations in SWIM



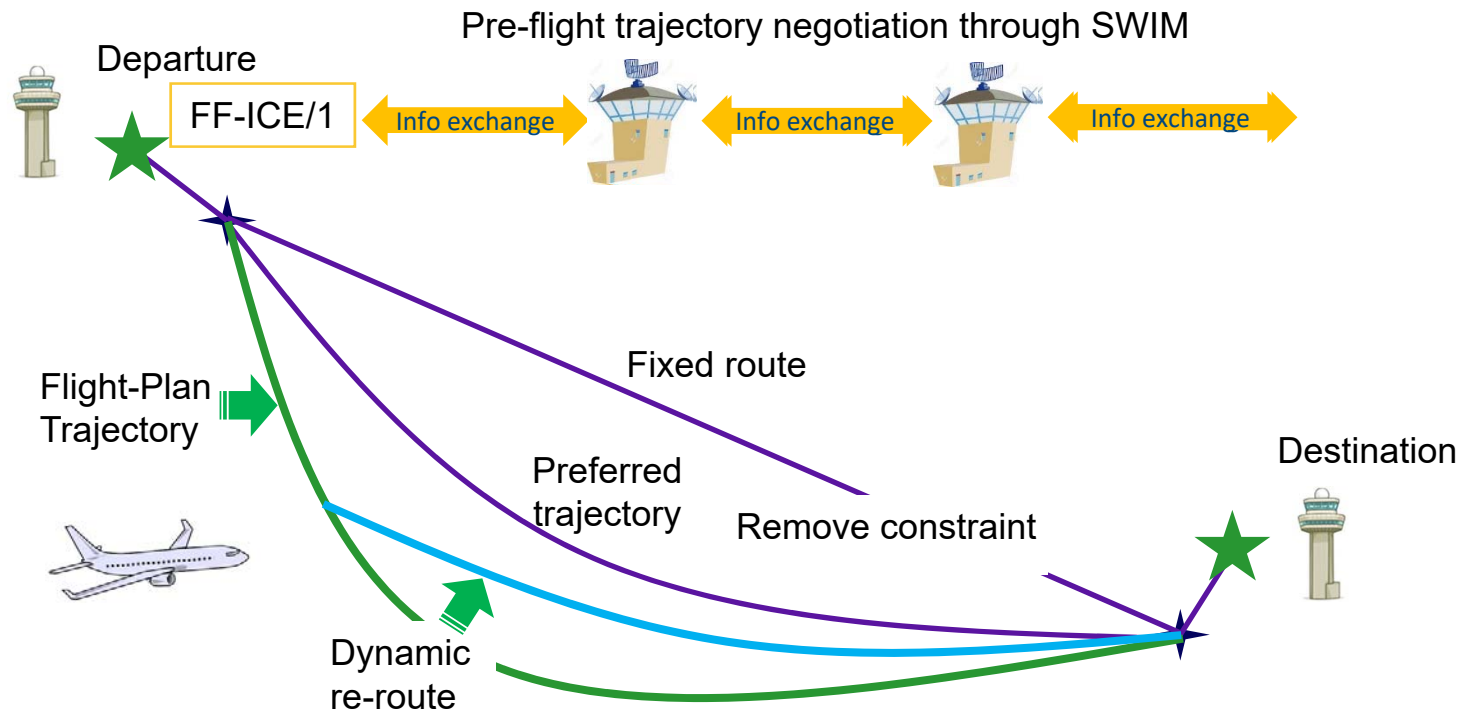
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- Proposed flight plans can be negotiated pre-flight

Operations in SWIM



- Accurate and relevant information at the right time permits best design trajectories
- Proposed flight plans can be negotiated pre-flight
- Better information management also supports efficient in-flight changes

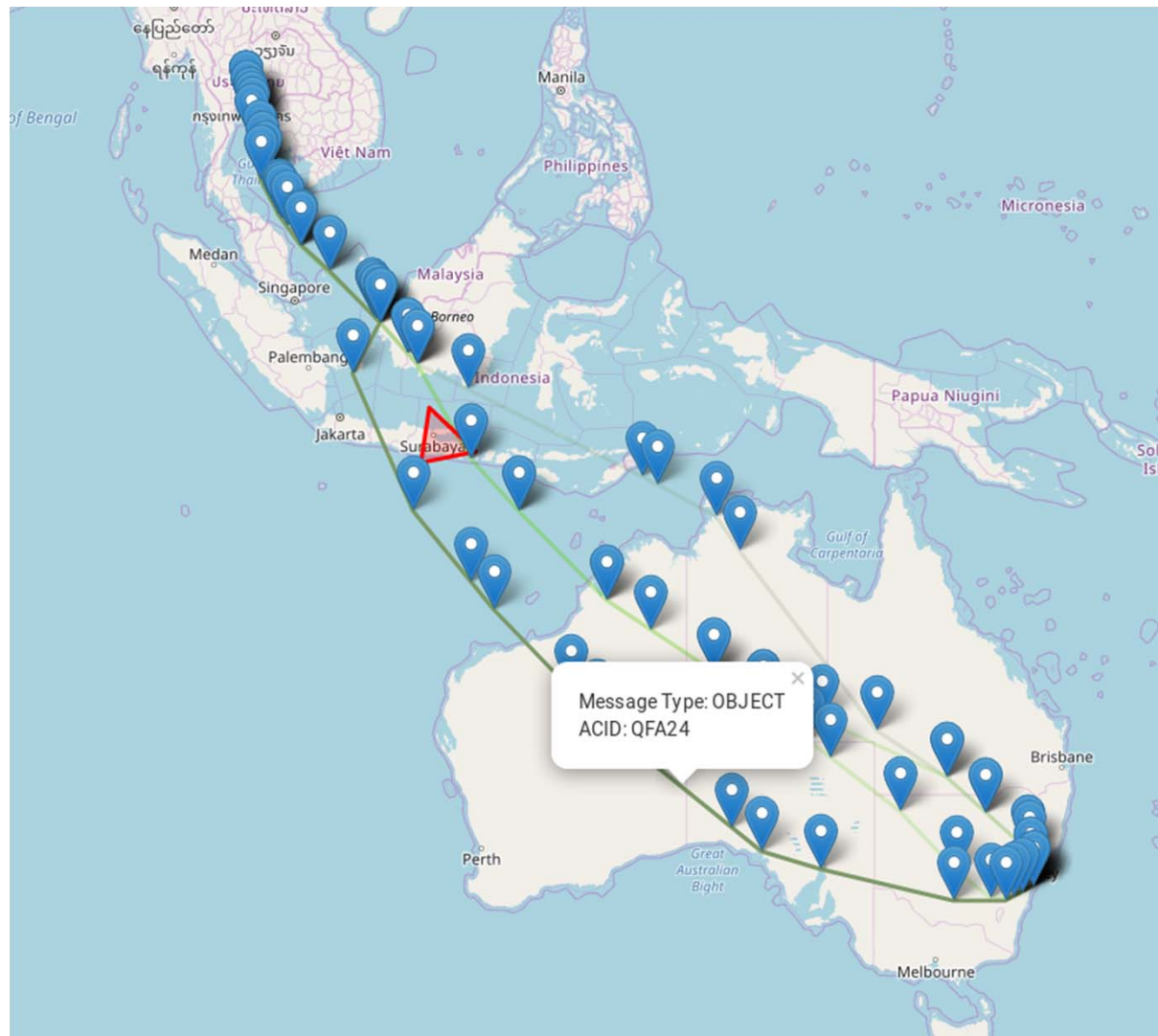
Operations in SWIM

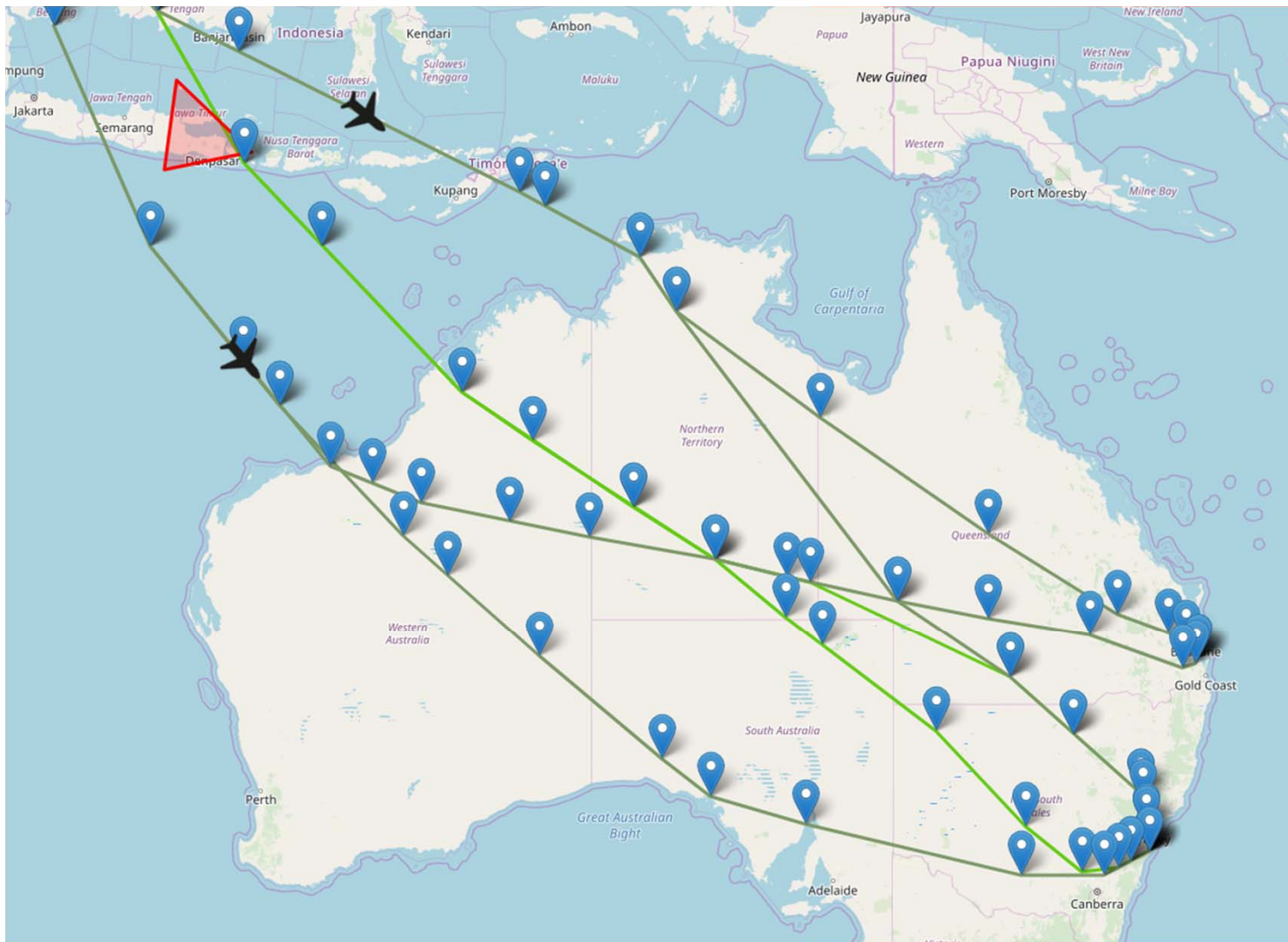


- Accurate and relevant information at the right time permits best design trajectories
- Proposed flight plans can be negotiated pre-flight
- Better information management also supports efficient in-flight changes
- Improved information management can provide a range of ATM benefits

SWIM in ASEAN

- 2 x flights VTBS (Bangkok, BKK) to YSSY (Sydney, SYD)
- Volcanic Ash warning issued whilst still in SIN airspace
- Both aircraft use the information to plan diversion routes using updated en-route winds (DARP = dynamic airborne re-route)





SWIM in ASEAN

- AMD TAF YSSY, heavy fog
- Both flights divert to YBBN
- Most recent wind forecasts permit DARPs



MET Benefits Summary

- Accurate and timely MET information supports optimum decision-making
- Timing horizons are important for identifying the most appropriate MET information
- New technologies for receiving MET data either from service providers or from source will be valuable
- Flights can be planned for most preferred business trajectory based on latest known and forecast conditions
- Flights are better able to take action well prior to disruptions in airspace volumes or at airports
- Better flight planning and management of disruptions and delays means higher predictability and wider scope of opportunities for enhanced fuel management

Thank-you

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