

SWIM | Building an operational system

- Intro to Snowflake Software
- The Flight Object Manager
- SWIM Compliance
- SWIM Operational
- Challenges and Learnings

VISION

To accelerate innovation in the aviation Industry by making the world's aviation data accessible & easy to use

MISSION

To clean, fuse, and organize the world's aviation data using our trusted information management platform to make it easy for our customers to build valuable, operational applications

LAMINAR DATA PLATFORM | FOR DATA ACCESS, MANAGEMENT & INSIGHTS

LAMINAR DATA PLATFORM

Global Data Sources

- Schedules
- Flight Status
- Flight Plans
- Surveillance (Position)
- Aeronautical Information
- Airport CDM (Europe)
- Traffic Flow Regulations (Europe)
- NOTAMS
- Weather (Metars, TAFS, SIGMETS, Turbulence)
- User's Data

Processing

- Transform
- Fuse
- Clean
- Validate
- Distribute
- Store
- Manage

Common Software Components

Deployment Models

Solutions (Private Cloud)

Your Data | We Run It

APIs

↑ ↓

Hub APIs (Public Cloud)

Our Data | We Run It

APIs

↓ ↑

Appliance (On-Premise)

Your Data | You Run It

APIs

CUSTOMERS & END-USERS

Applications



Operational



COTS BI / SQL / Python

Analytics

End-User Applications

End Users

- Execs
- Ops
- Other
- Airlines
- Two
- AOC
- Mobile
- Airports
- Execs
- TFM
- ATCOs
- ANSPs
- Drone Platforms
- Others

Common Gate-to-Gate Flight View



Consolidation of data to create a unified and authoritative Flight Object view improves decision making by ensuring ATM stakeholders get a common and best-in-class flight view.

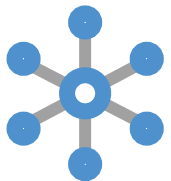
Enhance Situational Awareness

Avoid ATM system constraints through contextualizing flights with relevant information, for example NOTAMs.



FLIGHT
OBJECT
MANAGER

Interoperability & Harmonization

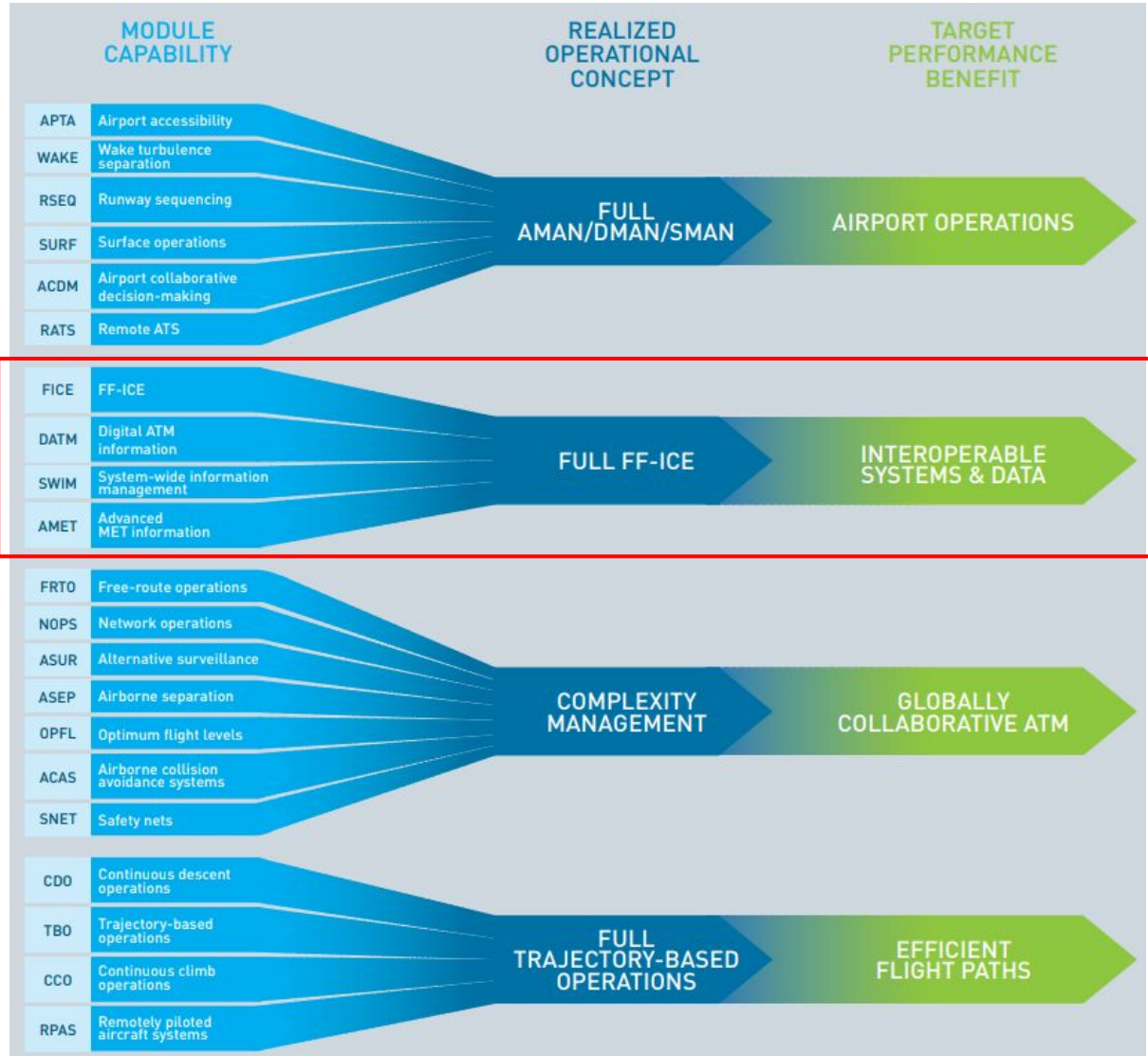


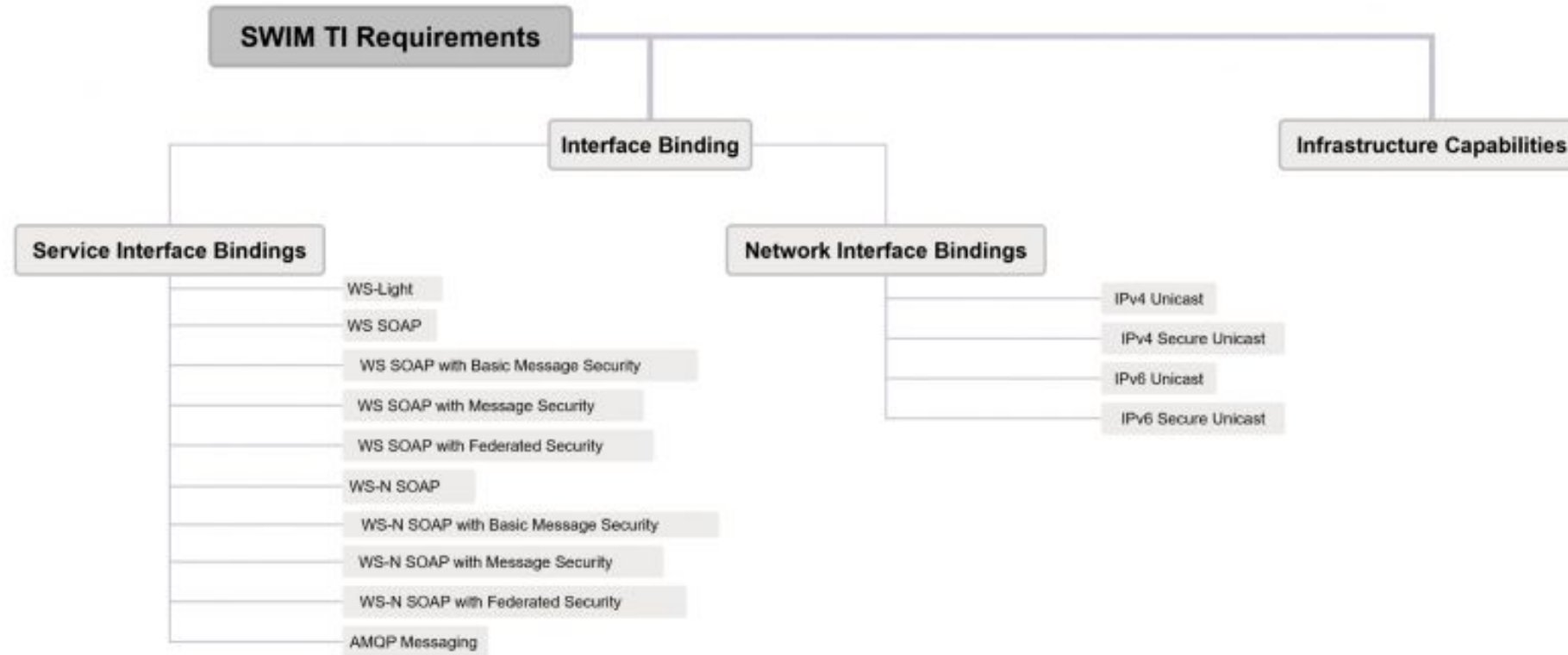
Provision of commonly understood, quality information delivered to the right stakeholders at the right time via standardized interfaces means no costly integration with custom interfaces.

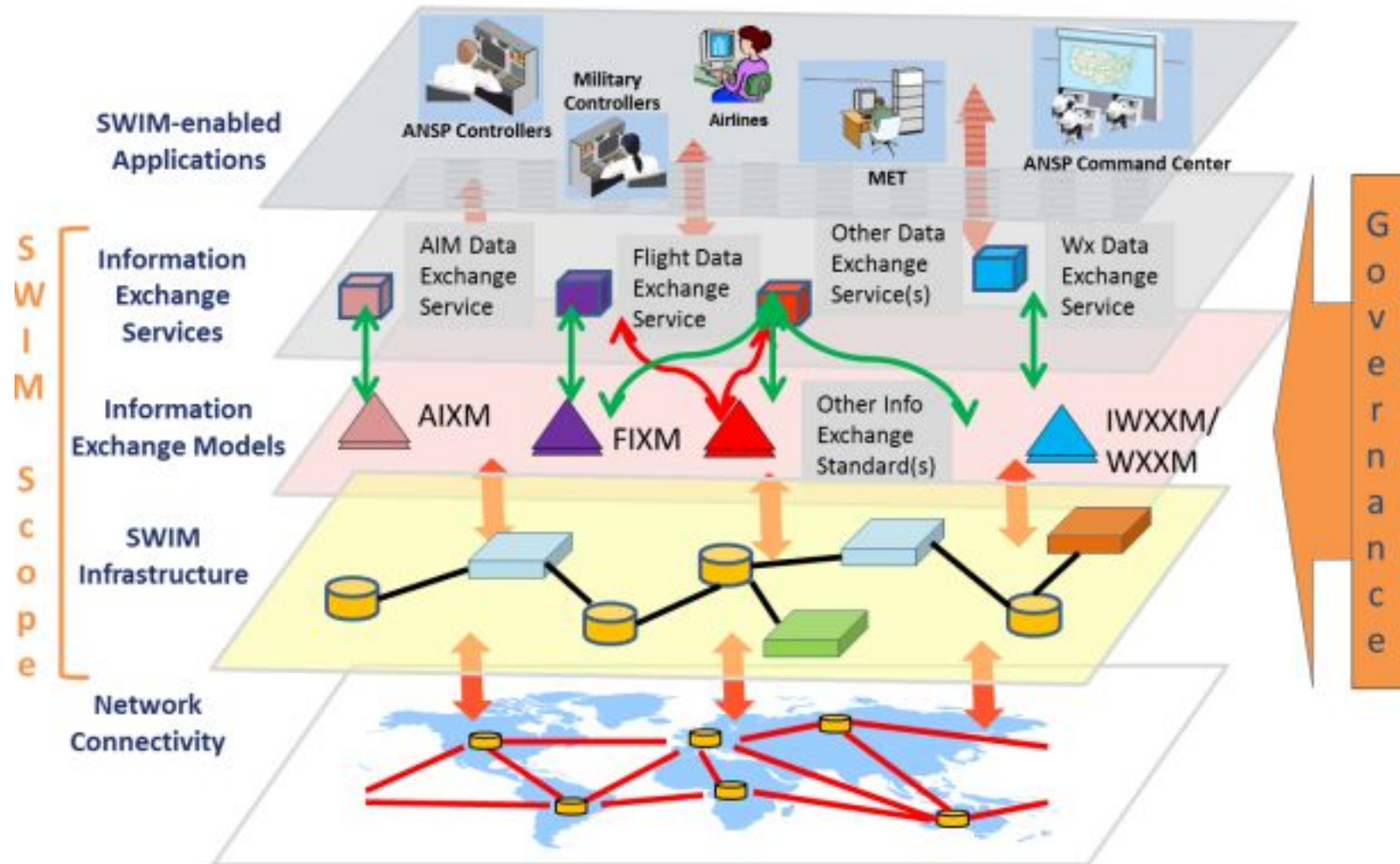
Modular Functionality

The modular design of the FOM means it is adaptable to the operational environment and is scalable to meet specific user needs.











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ASSOCIATION
OF SOUTHEAST
ASIAN NATIONS

NextGEN

SESAR

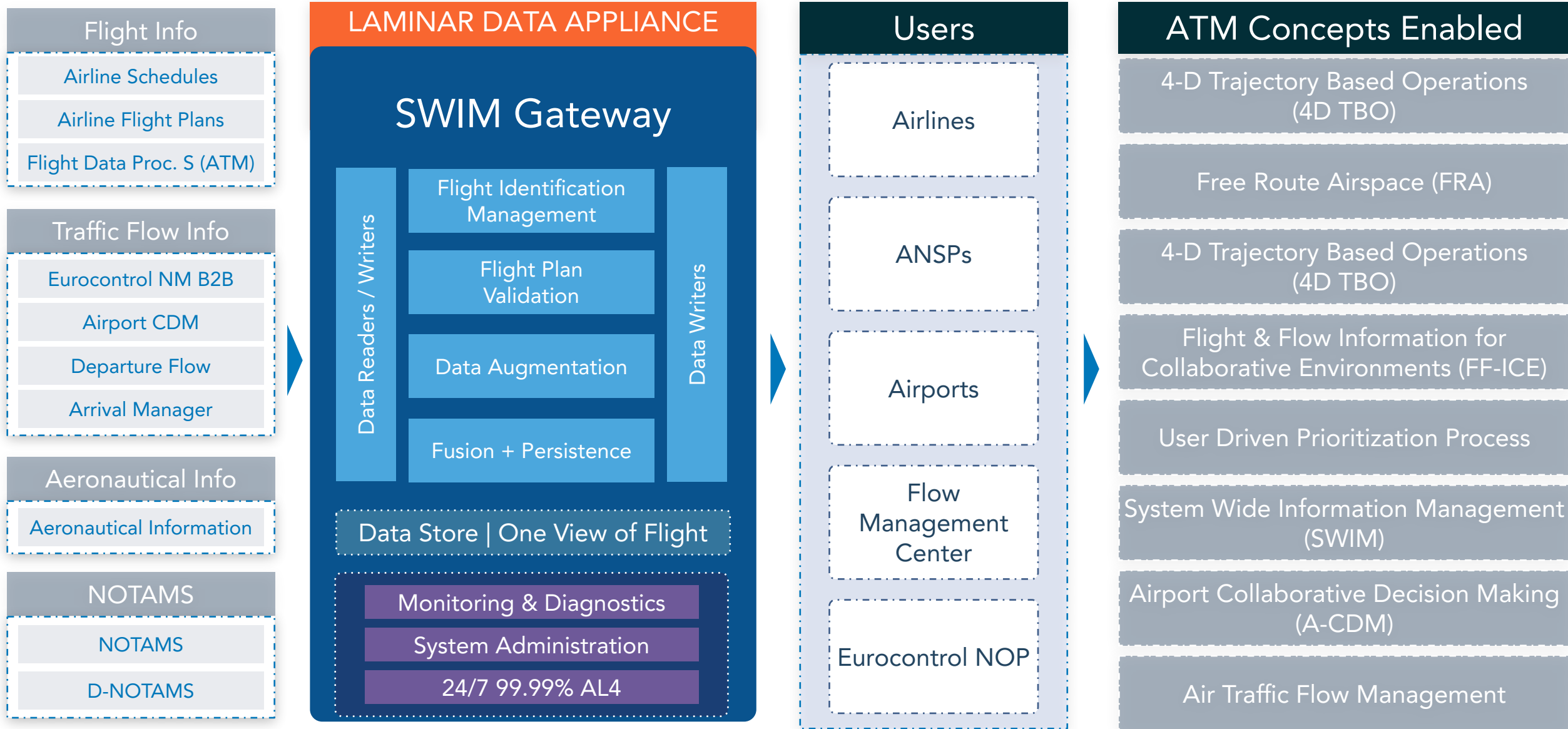


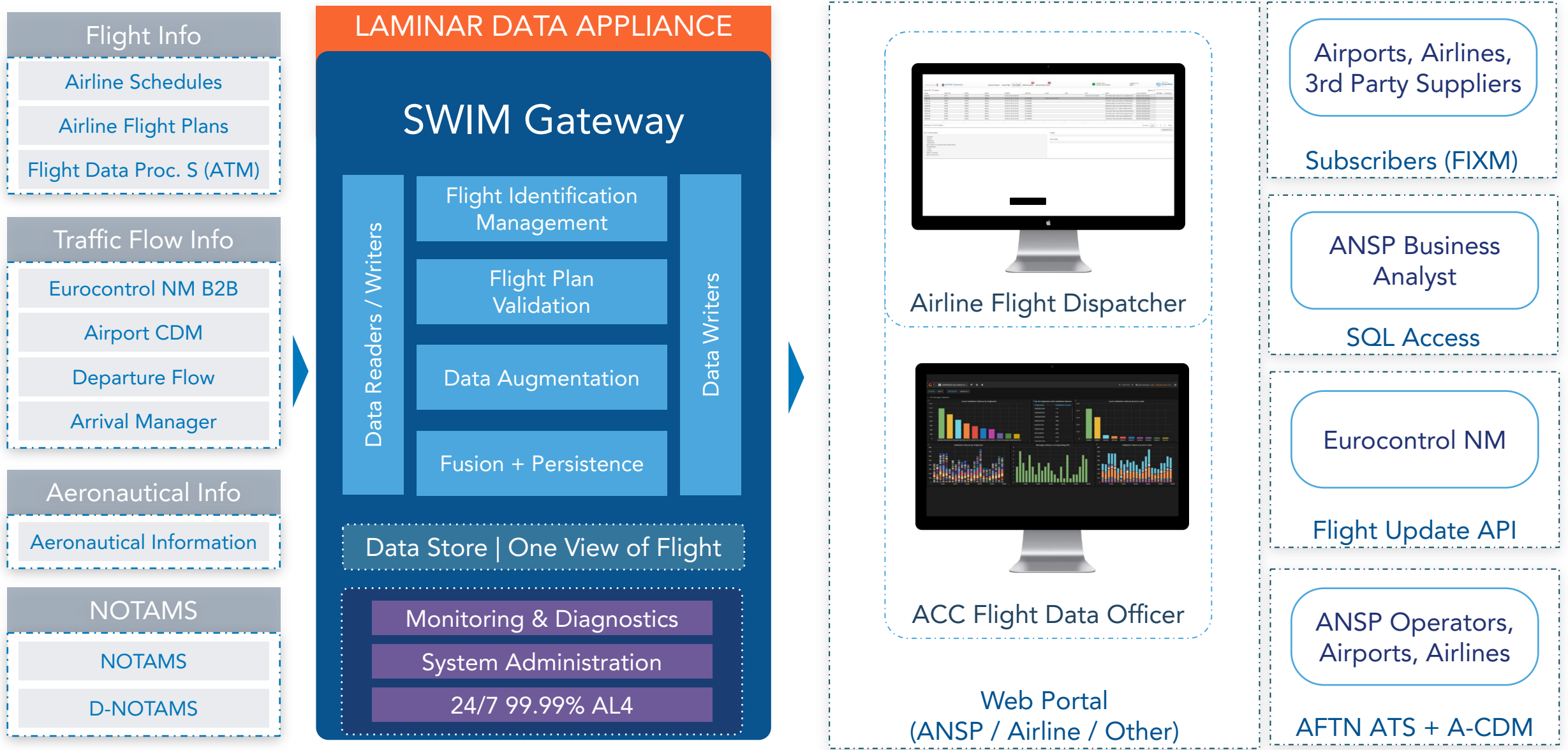
ASSOCIATION OF SOUTHEAST ASIAN NATIONS

- Improve regional data sharing for key Europe-ME-Asia hub
- GCAA driving forward adoption of SWIM in the region
- Single view of flight for all stakeholders
- Incorporation of local and long-range flight data
- Main objectives:
 - Improve efficiency, locally and for related stakeholders
 - Improve quality of data
- Operational since mid-2018, on-boarding first SWIM consumer in mid-2019









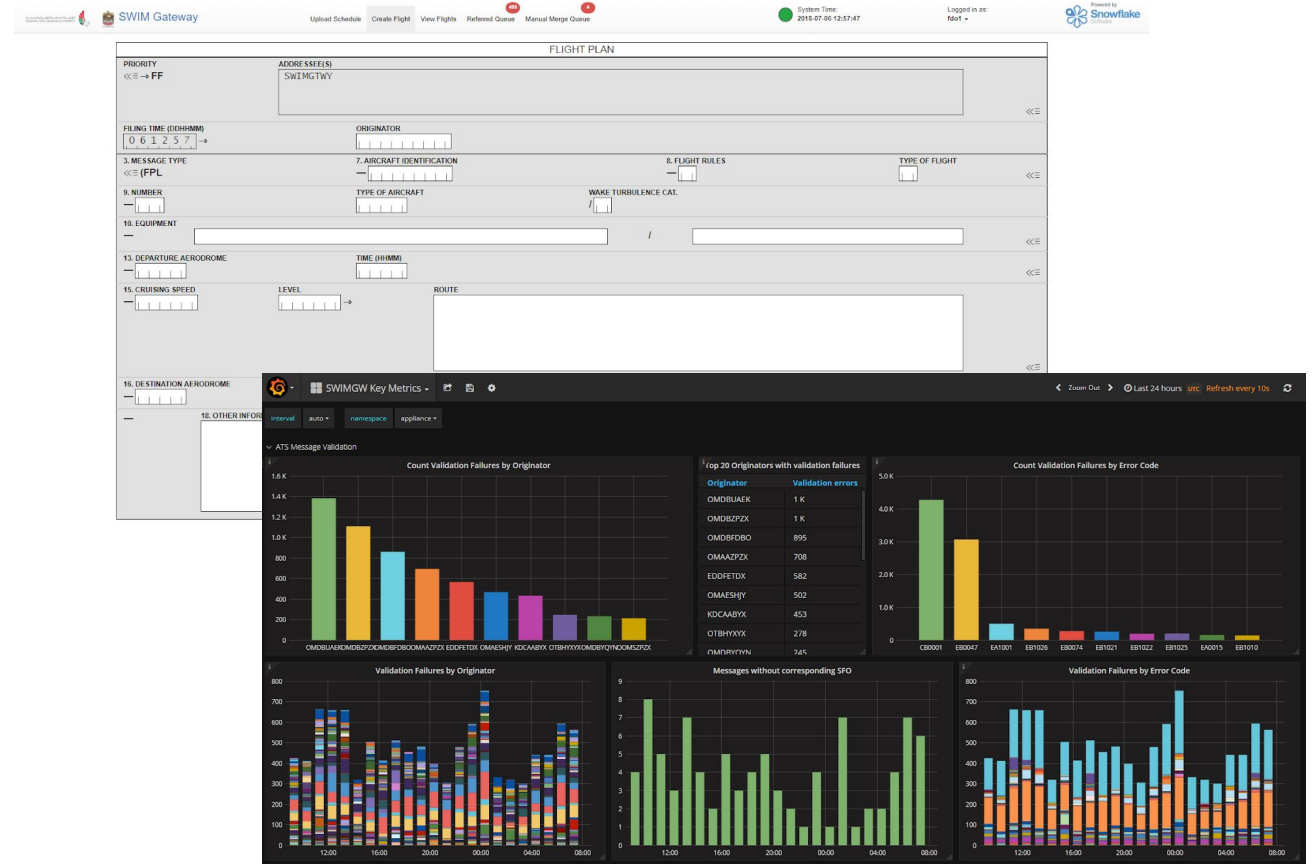
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With a vision for achieving an innovative, safe, secure and sustainable civil aviation system, GCAA turned to Snowflake Software.

Snowflake Software's FOM has placed the GCAA in the global arena of seamless ATM and at the forefront of implementing SWIM services across the UAE.

The FOM provides centralised flight information management for sharing consolidated and authoritative flight information across the UAE FIR and its neighbours. This has empowered effective decision making by the GCAA and their airline and airport stakeholders through the provision of high-quality flight information in real-time through open interfaces.



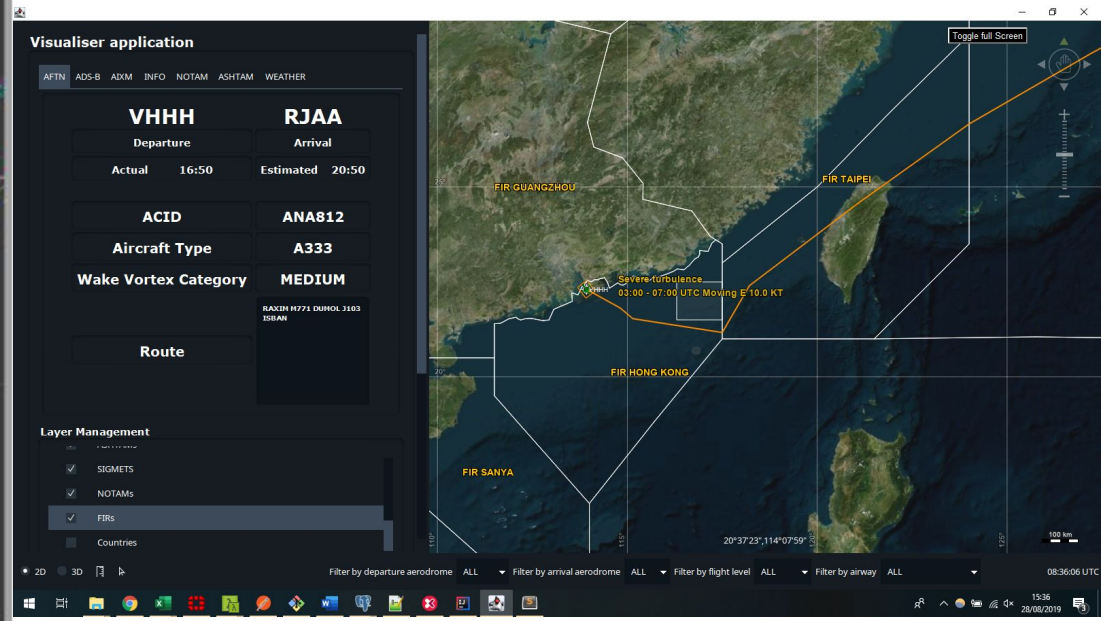


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- ICAO led initiative
- A trial of SWIM across a large number of nations in Asia-Pacific (not restricted to ASEAN, includes e.g. FAA)
- No single regional curator exists e.g. FAA, EUROCONTROL
- Trialling sharing of data between nations for some key scenarios
 - AFTM Ground Delay Program (GDP): Bangkok to Hong Kong and Singapore to Hong Kong.
 - Tactical Rerouting due to significant weather: (Hong Kong to Tokyo)
- Completed final trial demonstrations in November 2019





- Breaking SWIM out of safety critical systems
 - Faster to change
 - Single source of truth
 - Cheaper to deliver
- Need for Request/Response + Publish Subscribe
 - Current state + event-driven updates
- GUFIs Management
 - Goal is FF-ICE GUFIs concept
 - Proprietary systems have proprietary identifiers
 - First identifier allocated is not a sufficiently complete strategy
- Non-standard GEMS headers in ASEAN Trial address a need outside of XML spec

- Ease of use of SWIM Standards
 - JSON vs. XML - growing preference for e.g. GeoJSON
 - Extensions e.g. APAC extension for FIXM, forward reference extension for AIXM
- Pace of standards development
- Sharing design drivers for standardisation
 - How is the modelling driven by the operational goals?
- Implementation of SWIM does not guarantee exchange interfaces are compatible
 - For example: Different YP Service Interface Bindings
 - No guarantee the implementation is compatible
 - AMQP is a good bet on compatibility, as there is little choice on the spec - but security can still differ
- Future thinking: U-SWIM for UTM

THANK
YOU

PLEASE VISIT OUR EXHIBITOR STAND