VATM

TỔNG CÔNG TY QUẢN LÝ BAY VIỆT NAM

# APAC SWIM WORKING SESSION

THÁNG 11/2024

VATM

# REPORT OUT FROM WORKING SESSION

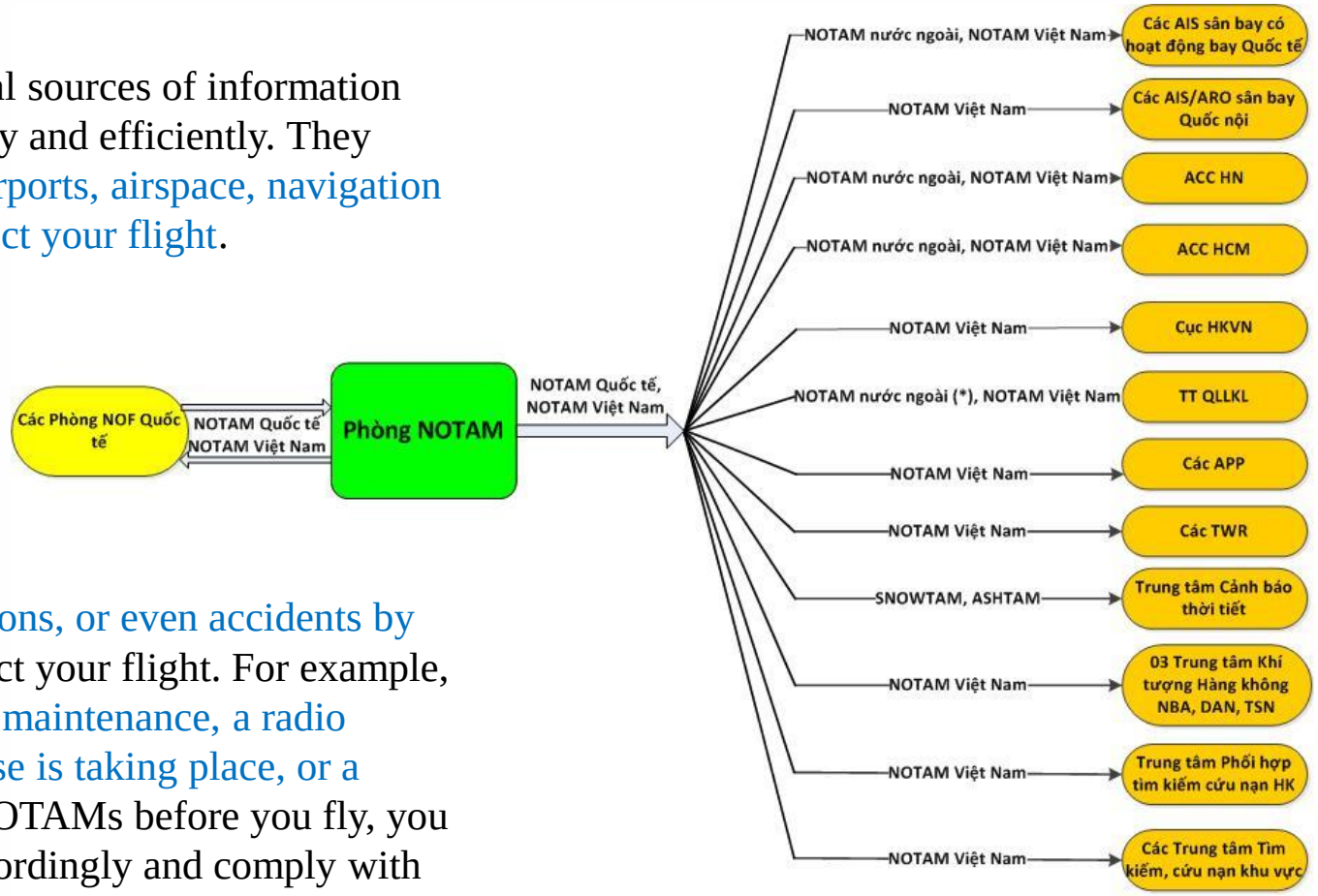
# VIETNAM TEAM

WE ARE TRYING TO **SWIM**

# Use Case - 01: NOTAM Distribution for Planning

# Use Case: NOTAM Distribution for Planning

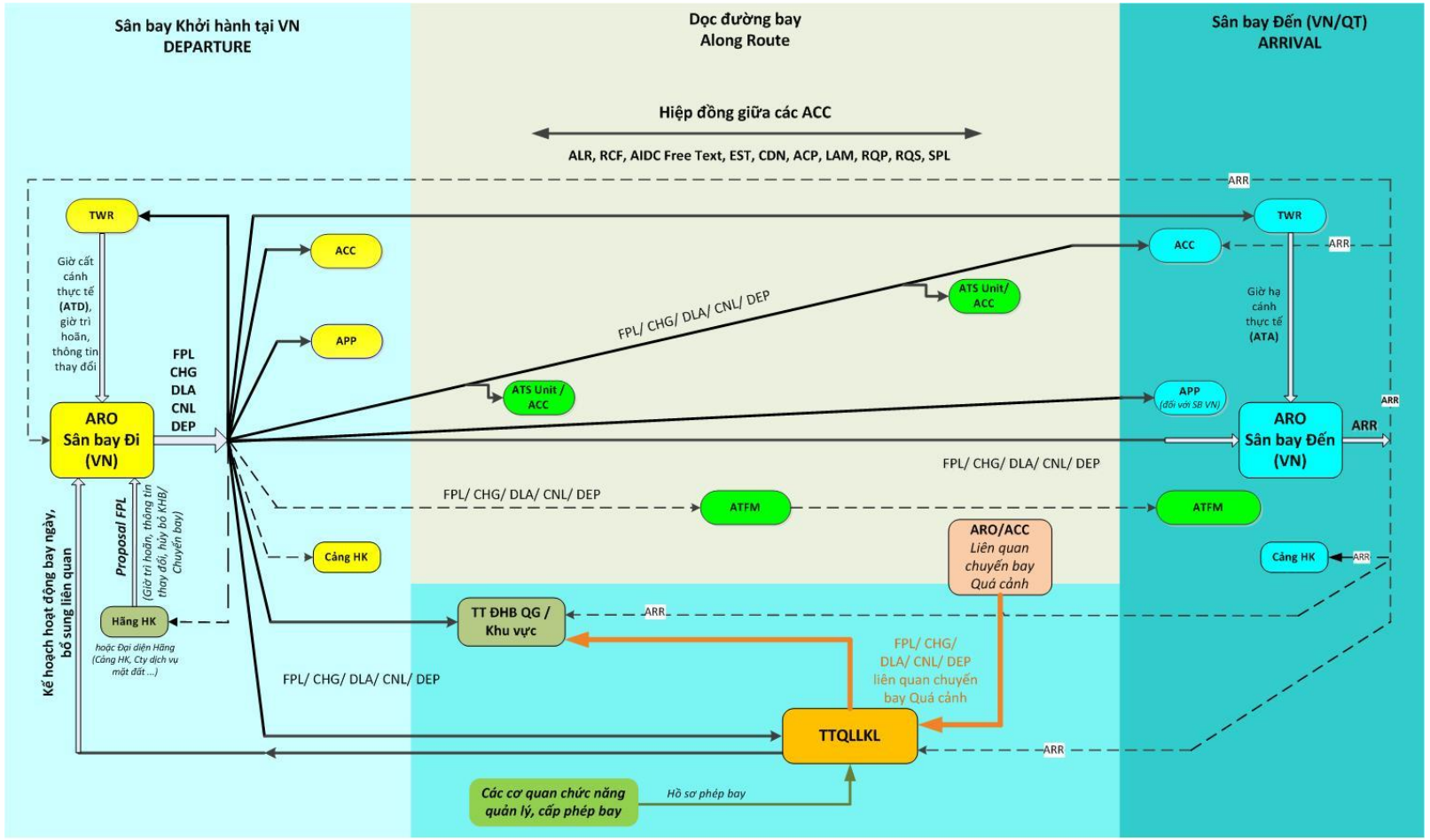
NOTAMs, or Notices to Airmen, are essential sources of information for pilots who want to plan their flights safely and efficiently. They contain important updates on the status of airports, airspace, navigation aids, hazards, and other factors that may affect your flight.




LUỒNG GỬI/NHẬN NOTAM ĐI/ĐẾN TỪ PHÒNG NOTAM

NOTAMs can help you avoid delays, diversions, or even accidents by alerting you to potential issues that may affect your flight. For example, you may find out that a runway is closed for maintenance, a radio frequency is out of service, a military exercise is taking place, or a parachute drop is scheduled. By checking NOTAMs before you fly, you can adjust your route, altitude, or timing accordingly and comply with any restrictions or procedures that apply.

# Use Cases: NOTAM Distribution for Planning



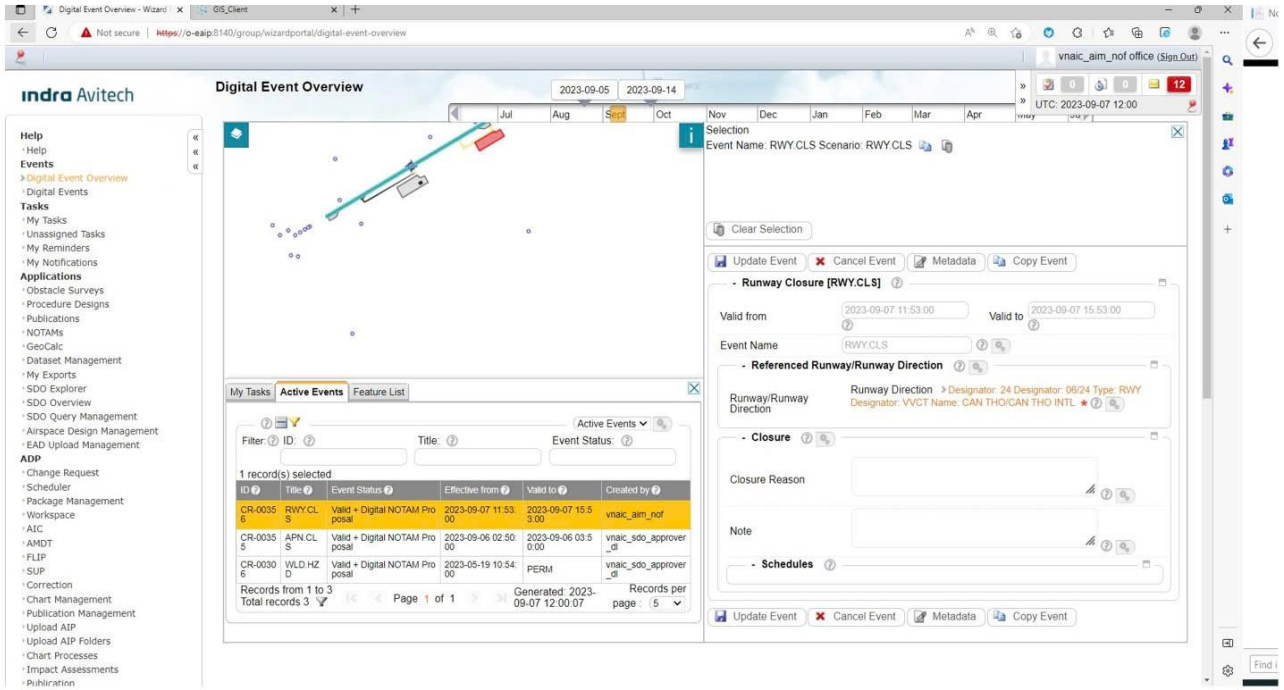

LƯU ĐỒ ĐIỆN VĂN KHÔNG LƯU

Điện văn GỬI/NHẬN tại các ARO
Theo qui định (ICAO)
Theo yêu cầu

# Mapping to Existing Information Exchange Models

ICAO NOTAM Msg → dNOTAM

```
                (A3511/24 NOTAMN
                Q)VVHN/QMRXX/IV/BO/A/000/999/2113N10548E005
                A)VVNB B)2411091800 C)2411112300
                D)DAILY 1800-2300
ICAO-NOTAM:     E)RWY 11L/29R NOT AVBL FOR TKOF AND LDG DUE TO MAINT
                RMKS:
                - THE WORKING AREA MARKED WITH SIGNBOARDS, LGTS AND SAFETY CONES
                OR VIS LESS THAN 2000M
                - PILOTS ARE REQ TO FLW ATC INSTRUCTIONS STRICTLY.)
NOTAM Source:AFTN: VVVVYNYX
```



# Service Design

- **NOTAM Distribution - Consumer**
  - Subscribe to all NOTAMs by topic
    - notams.subscribe.topic.bat/sh (ANSP Id)

      or

    - sdkperf_jmsamqp -cip=amqps://mr-connection-ylbu2o84pks.messaging.solace.cloud:5671 -cu=(ANSP Id)@apac-swim-sandbox -cp=jakarta -stl="Jakarta/1/ANSP/*/*/AER/NOTAM/>" –md
  - Consume all NOTAMs by queue
    - notams.consume.queue.bat/sh (ANSP Id)

      or

    - sdkperf_jmsamqp -cip=amqps://mr-connection-ylbu2o84pks.messaging.solace.cloud:5671 -cu=(ANSP Id)@apac-swim-sandbox -cp=jakarta -sql=(ANSP Id)_notams -md

- **NOTAM Distribution - Provider**
  - Publish NOTAMs
    - notams.publish.for.ansp.bat/sh (ANSP Id) (FIR) (ICAO Location) (QCode)

      or

    - sdkperf_jmsamqp -cip=amqps://mr-connection-ylbu2o84pks.messaging.solace.cloud:5671 -cu=(ANSP Id)@apac-swim-sandbox -cp=jakarta -ptl="Jakarta/1/ANSP/(ANSP Id)/0/AER/NOTAM/D-NOTAM/N/0/0/0/(FIR)/(ICAO Location)/(QCode) " –msa=10 –mr=1 –mn=1

solace.

# Operational Scenario (Operational Requirement)

- A new kind of Pre-Flight Information Bulleting (PIB), featuring graphical elements and other usability improvements is made possible by the Digital NOTAM data. This will be provided for the airports, improving the situational awareness at these airports.
- Based on digital data, the Aerodrome PIB will bring benefits to the flight crews, FOC/WOC, ARO, airport's self- briefing rooms, air traffic and ground controllers.

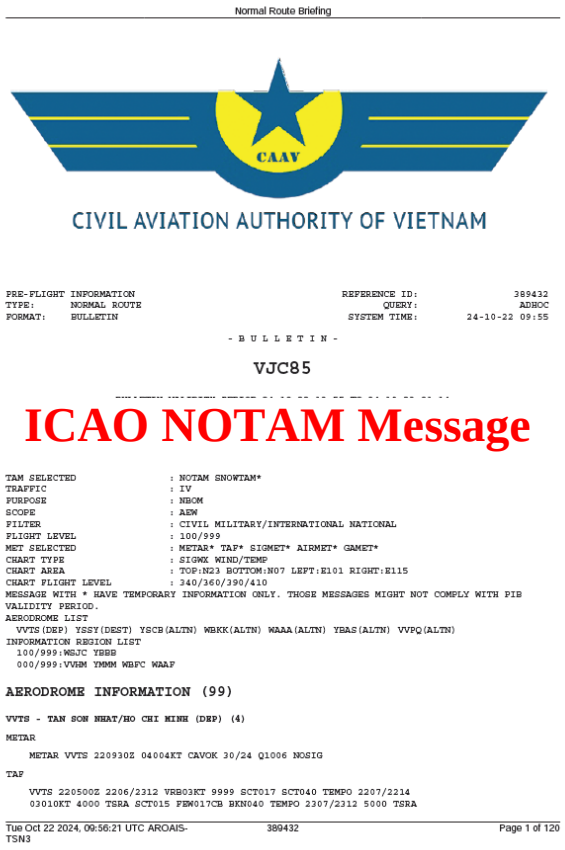
# Required Data Elements

- Generation PIB from digital aeronautical data including Digital NOTAM
- Graphical and interactive presentation of the information affected by Digital NOTAM
- Joint presentation of aeronautical and MET events (this shows a potential future benefit of integrated briefing, however outside the scope of digital NOTAM)

# Mapping to Existing Information Exchange Models

Current PIB which includes pages of valid non-machine-readable text NOTAM for each selected aerodrome :

Graphical Aerodrome PIB where Digital NOTAM events (on the right) are listed. NOTAM text is provided for the users and affected aerodrome feature is visualized on the aerodrome chart. Clicking on the NOTAM text the users can see highlighted updates of the aeronautical feature:


Normal Route Briefing

CIVIL AVIATION AUTHORITY OF VIETNAM

PRE-FLIGHT INFORMATION
TYPE: NORMAL ROUTE
FORMAT: BULLETIN
REFERENCE ID: 389432
QUERY: ADHOC
SYSTEM TIME: 24-10-22 09:55

- B U L L E T I N -

VJC85

**ICAO NOTAM Message**

```
TAM SELECTED              : NOTAM SNOWTAM*
TRAFFIC                   : IV
PURPOSE                   : NBOM
SCOPE                     : AEW
FILTER                    : CIVIL MILITARY/INTERNATIONAL NATIONAL
FLIGHT LEVEL              : 100/999
MET SELECTED              : METAR* TAF* SIGMET* AIRMET* GAMET*
CHART TYPE                : SIGWX WIND/TEMP
CHART AREA                : TOP:N23 BOTTOM:N07 LEFT:E101 RIGHT:E115
CHART FLIGHT LEVEL        : 340/360/390/410
MESSAGE WITH * HAVE TEMPORARY INFORMATION ONLY. THOSE MESSAGES MIGHT NOT COMPLY WITH PIB
VALIDITY PERIOD.
AERODROME LIST
  VVTS(DEP) YSSY(DEST) YSCB(ALTN) WBKK(ALTN) WAAA(ALTN) YBAS(ALTN) VVPQ(ALTN)
INFORMATION REGION LIST
  100/999:WSJC YBBB
  000/999:VVHM YMMM WBFC WAAF
```

**AERODROME INFORMATION (99)**

VVTS - TAN SON NHAT/HO CHI MINH (DEP) (4)

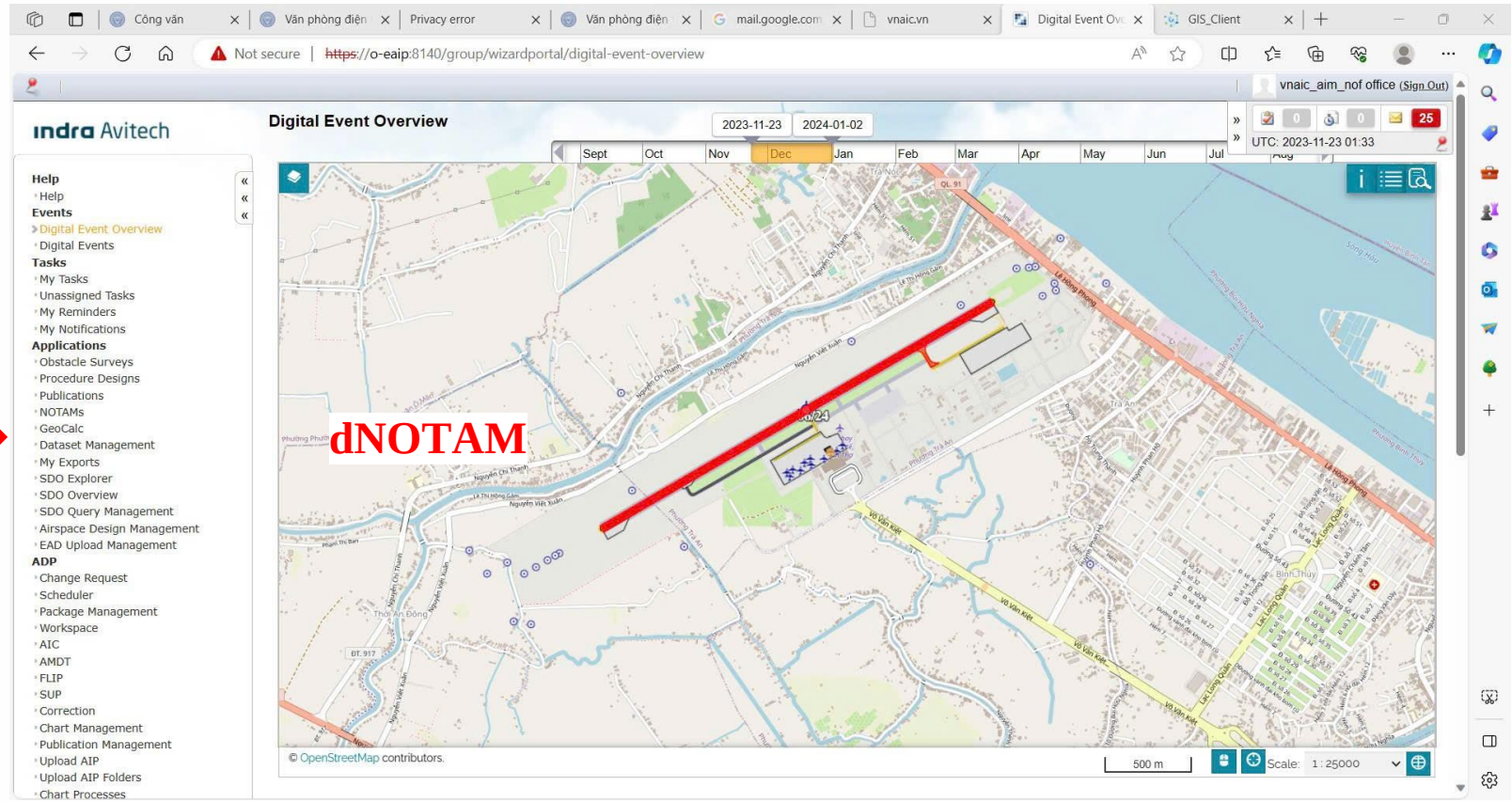
METAR

METAR VVTS 220930Z 04004KT CAVOK 30/24 Q1006 NOSIG

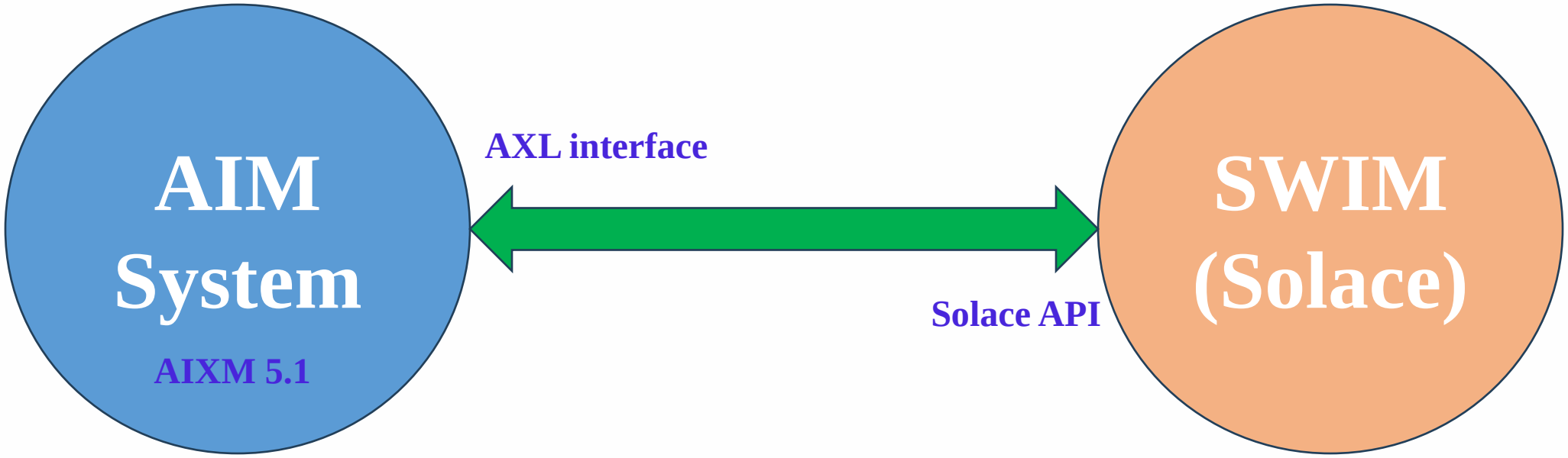
TAF

VVTS 220500Z 2206/2312 VRB03KT 9999 SCT017 SCT040 TEMPO 2207/2214
03010KT 4000 TSRA SCT015 FEW017CB BKN040 TEMPO 2307/2312 5000 TSRA

Tue Oct 22 2024, 09:56:21 UTC AROAIS-TSN3 389432 Page 1 of 120



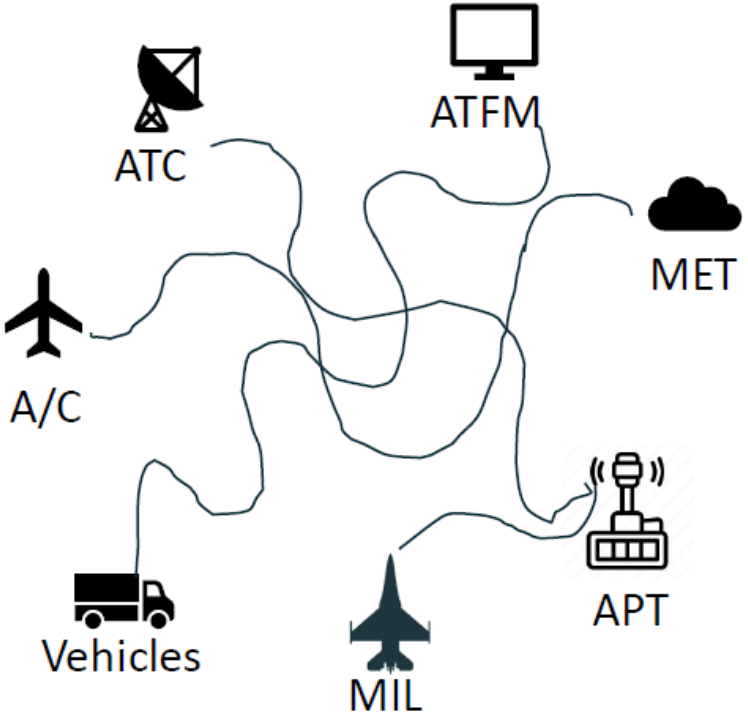
# Use Case - 03: How to connect AIM to SWIM ?



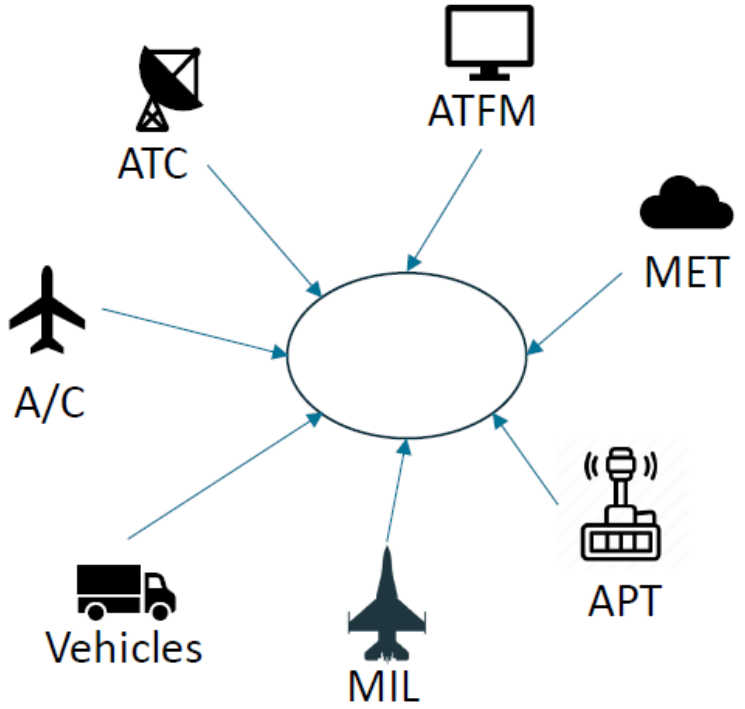
# SWIM in our understanding

The implementation of SWIM in Vietnam is part of an international initiative led by the International Civil Aviation Organization (ICAO) to facilitate seamless connectivity between aviation systems worldwide. The deployment process involves three main phases: **building digital infrastructure**, **testing integration with existing systems**, and workforce training. Currently, **Vietnam is in the second phase**, focusing on system integration and real-world testing at major airports like Noi Bai and Tan Son Nhat.

*The deployment of SWIM will*
*improve air traffic management capabilities, optimize flight routes, reduce delays, and enhance flight safety.*

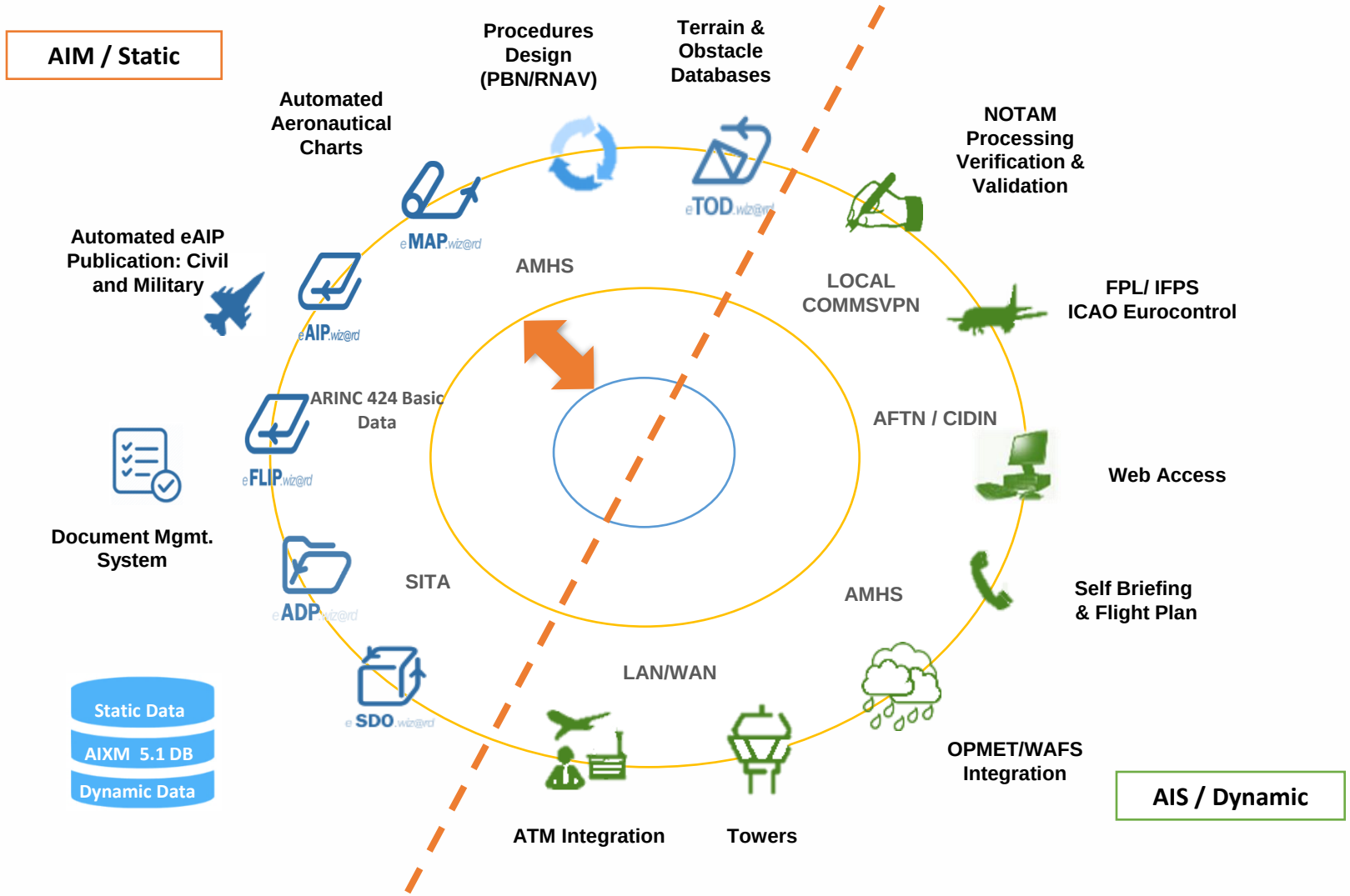



Information Sharing Today




Information Sharing Tomorrow

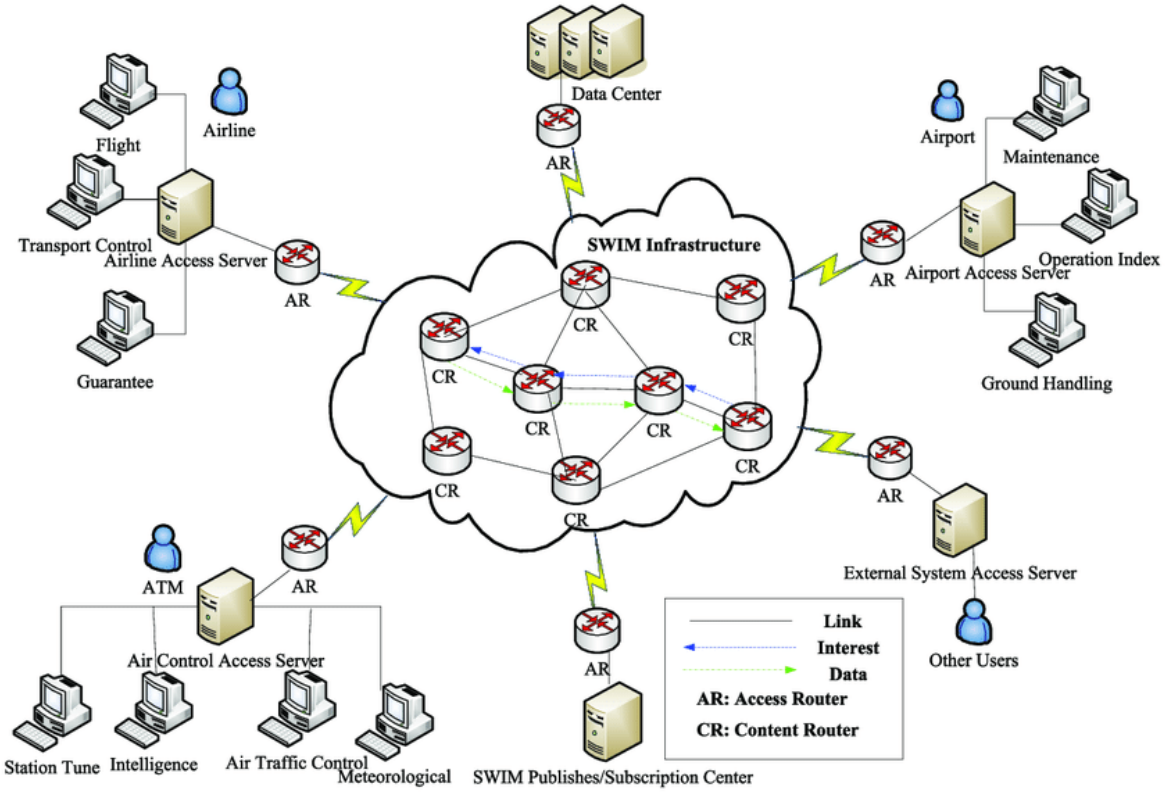
VATM

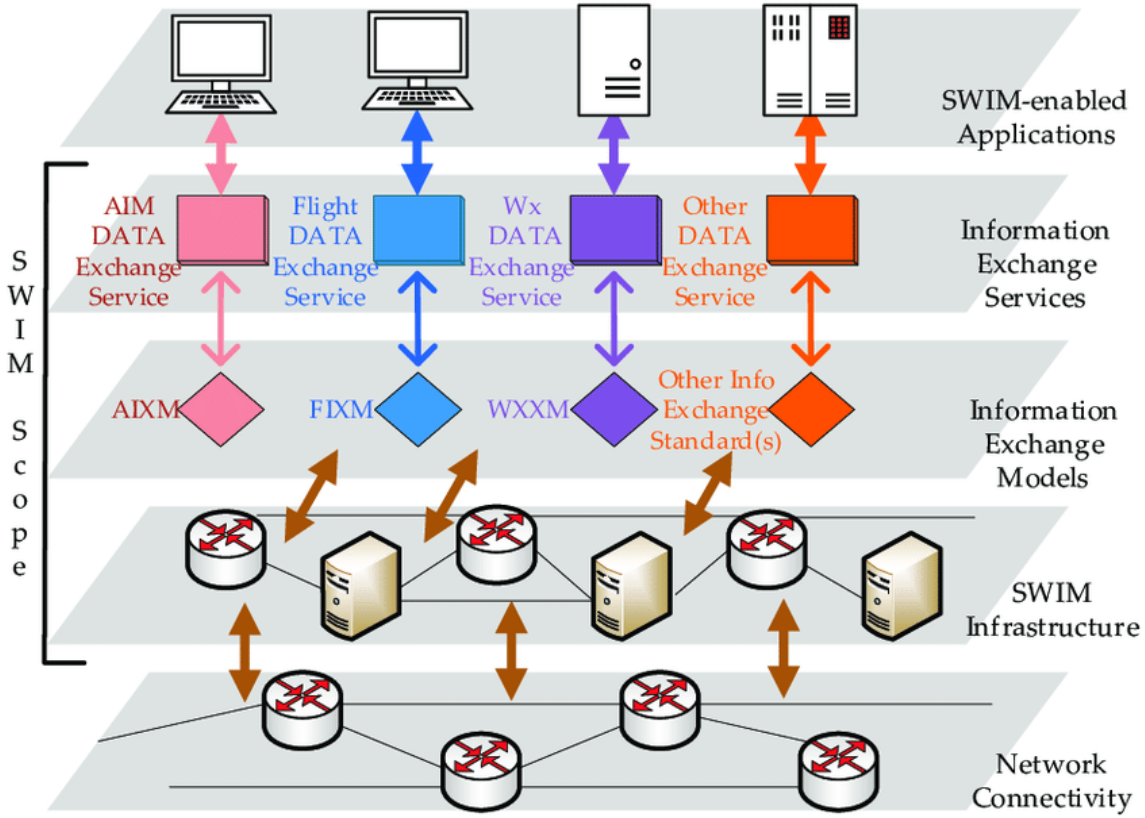

AIM / Static
Procedures Design (PBN/RNAV)
Terrain & Obstacle Databases
Automated Aeronautical Charts
NOTAM Processing Verification & Validation
Automated eAIP Publication: Civil and Military
eMAP.wiz@rd
eTOD.wiz@rd
AMHS
LOCAL COMMSVPN
FPL/ IFPS ICAO Eurocontrol
eAIP.wiz@rd
ARINC 424 Basic Data
AFTN / CIDIN
eFLIP.wiz@rd
Web Access
Document Mgmt. System
SITA
AMHS
Self Briefing & Flight Plan
eADP.wiz@rd
LAN/WAN
eSDO.wiz@rd
Static Data
AIXM 5.1 DB
Dynamic Data
OPMET/WAFS Integration
AIS / Dynamic
ATM Integration
Towers

# SWIM in our understanding

## What is SWIM Technical Infrastructure?

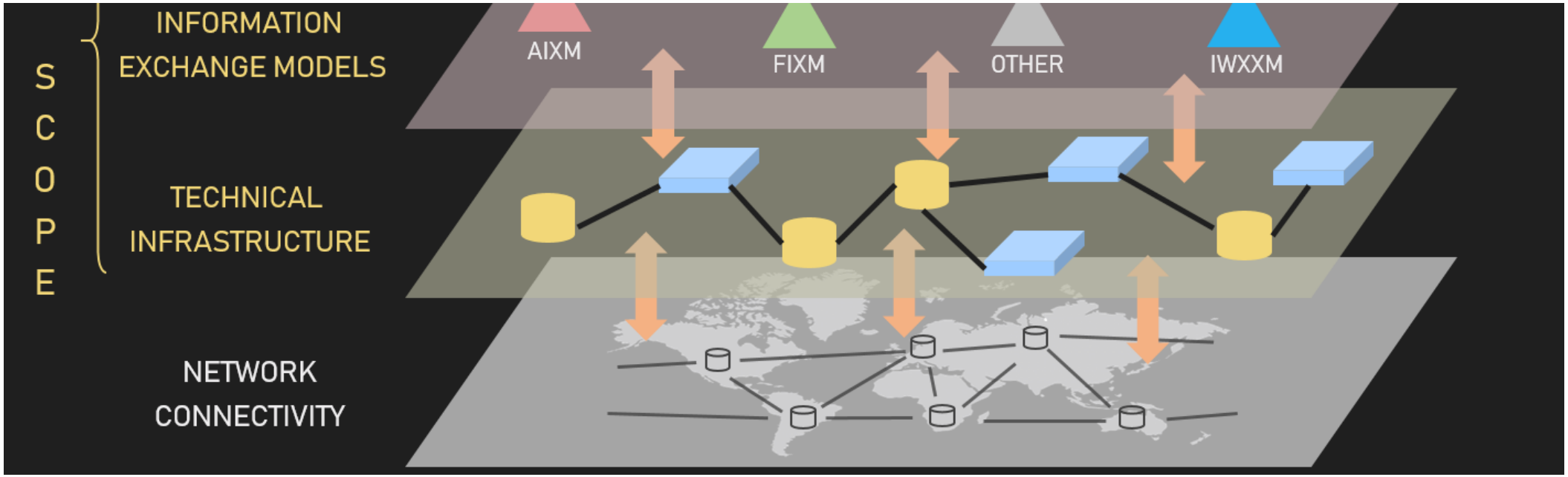
Information Centric Network



# SWIM in our understanding

## What is SWIM Technical Infrastructure?



The **SWIM Technical Infrastructure** is a foundational digital system that enables seamless information exchange across all aviation stakeholders. It is designed to manage and distribute real-time, accurate information between air traffic controllers, airlines, airports, and other aviation entities, improving operational efficiency, safety, and decision-making. This infrastructure is built on **three primary components**:

**Information Sharing Network**

- SWIM uses **a secure, high-speed network to connect different aviation systems**. This ensures continuous, reliable data flow, helping each entity access up-to-date information on flights, weather, airspace, and airport statuses

**Data Standards and Formats**

- SWIM relies on **universal data standards** and **formats** to maintain compatibility between various national and international systems. By standardizing information, SWIM ensures all systems can "speak the same language," making data exchange seamless and reducing the risk of errors

**Interoperable Services and Applications**

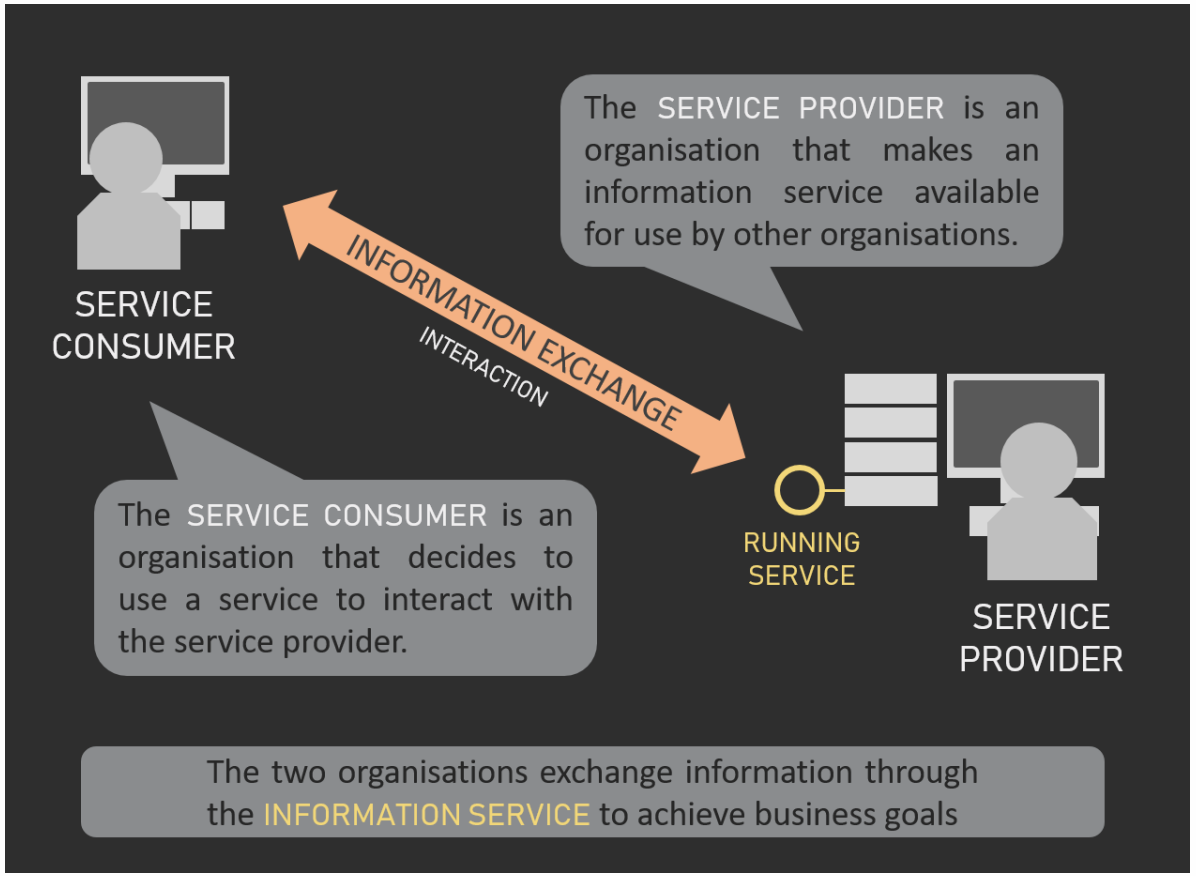
- SWIM includes applications for real-time data processing and exchange, such as flight plan updates, real-time tracking, and predictive analytics. These tools enable more precise management of air traffic, minimize delays, and enhance overall safety.

*In summary, SWIM's technical infrastructure **transforms data into a shared resource** across the aviation industry, creating a cohesive network that strengthens decision-making and operational capabilities worldwide.*

# SWIM in our understanding

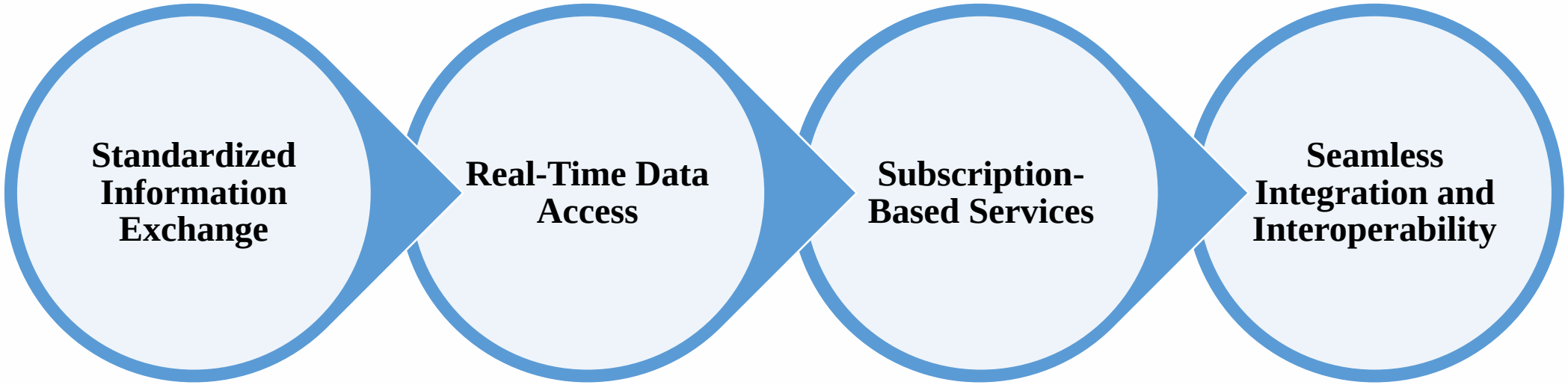
## What is SWIM Information Service?

**Information services** are **the means** by which organisations **exchange information**, or **make their information available**, in line with their business objectives. **Service consumers** interact efficiently with **service providers** via **service interfaces**. The service interface is **one of the three** components identified by ICAO, together with the **service overview** and the **information service payload**. To allow a **service consumer** to make efficient use of a service, the service description must cover the **needs of business, operational and technical experts**.



# What is SWIM Information Service?

The SWIM Information Service **is a key component** within the **SWIM ecosystem**, designed to **streamline the flow and accessibility of critical data across all aviation stakeholders**, including air traffic controllers, airlines, airports, and meteorological services. It provides **a structured way** to **share real-time information** essential for efficient and safe airspace management. **Key features** of the SWIM Information Service include:




- SWIM ensures that information is shared in a **standardized, interoperable format**, enabling different systems and stakeholders worldwide to access and interpret data consistently. This includes **data on flight status, weather conditions, airspace restrictions, and airport operations.**
- SWIM Information Services allow aviation stakeholders to **access live, up-to-the-minute information.** This real-time data-sharing capability **supports timely decision-making**, helping to improve flight scheduling, reduce delays, and optimize routes for efficiency and safety
- SWIM Information Services often **use a subscription model**, where stakeholders subscribe **to specific types of data** based on their operational needs. For example, airlines might subscribe to real-time weather updates, while airports might focus on flight scheduling data. This targeted approach ensures each entity gets the information they need, reducing information overload.
- Through SWIM, the information service **integrates seamlessly** with existing systems, enhancing collaboration among international aviation systems. This **improves cross-border coordination** and paves the way for a globally connected aviation network

The implementation of SWIM in Vietnam is part of an international initiative led by the International Civil Aviation Organization (ICAO) to facilitate seamless connectivity between aviation systems worldwide. The deployment process involves three main phases: **building digital infrastructure**, **testing integration with existing systems**, and workforce training. Currently, **Vietnam is in the second phase**, focusing on system integration and real-world testing at major airports like Noi Bai and Tan Son Nhat.

*The deployment of SWIM will*
*improve air traffic management capabilities, optimize flight routes, reduce delays, and enhance flight safety.*

# Next steps for Vietnam

**1.Building Information Technology (IT) Infrastructure:**
SWIM implementation requires a modern, synchronized IT infrastructure. We have to invest in high-speed, secure data transmission networks and prepare safe data centers and storage systems to handle the large amounts of information needed in aviation.

We are having a projet to invest a back-bone network (ATN)

**2.Data Standardization and Compatibility:**
SWIM requires data formats and protocols to be standardized according to international standards to ensure compatibility. Vietnam need to adjust and upgrade existing systems to meet these standards, ensuring connectivity with other global aviation systems.

We have AIXM 5.1, IWXXM already.

**3. Training Specialized Personnel:**
Staff must be thoroughly trained in SWIM operations and management. The training program should include knowledge in information management, cybersecurity, and related operational procedures.

**4. System Testing and Evaluation:**
Before full implementation, SWIM should be tested in real-world environments. These tests will help identify and resolve potential issues, ensuring the system operates smoothly when officially deployed.

**5.International Collaboration:**
SWIM deployment is part of an international program by ICAO. Therefore, Vietnam need collaborate with ICAO and other international organizations to gain experience, acquire technology, and share data with neighboring countries.

**6. Developing Supportive Policies and Regulations:**
Clear policies and regulations are essential to support SWIM deployment and operations. These policies should focus on information security, data sharing, and the responsibilities of participating parties.

*The implementation of SWIM in Vietnam is part of an international initiative led by the International Civil Aviation Organization (ICAO) to facilitate seamless connectivity between aviation systems worldwide. The deployment process involves three main phases:* ***building digital infrastructure****,* ***testing integration with existing systems****, and workforce training. Currently,* ***Vietnam is in the second phase****, focusing on system integration and real-world testing.*

# Gaps/ Issues

The biggest challenge currently is the awareness gap between those providing and those using information and data. Few individuals have had access to concepts related to the SWIM program, so most remain somewhat passive in the face of technological changes and shifts in methods for utilizing and delivering services. For example, transitioning from AIS to AIM or from the Send/Receive to Retrieve method requires a restructuring of operational organizations and service delivery processes, yet many people are not fully prepared for this change.

Another difficulty lies in the lack of synchronized engagement from relevant agencies, which hinders research, investment, and the planning of a cohesive implementation strategy—from infrastructure and data standardization to workflow development.

Within our organization, we also face challenges in determining the right time and priorities for investments, as well as assigning the appropriate resources. Meanwhile, globally, and particularly in Asia, there are no clear standards for organizing connections and data-sharing practices, and SWIM-related commercial products are not yet widely available.

# How can SWIM TF help better?

**Guidance on Standards and Best Practices**: develops and promotes international standards, protocols, and best practices for SWIM implementation.

**Training and Capacity Building**: organizes training programs and workshops aimed at enhancing the knowledge and skills of personnel involved in SWIM operations.

**Operational Testing and Feedback**: support for testing SWIM in real-world scenarios

**Technical Assistance and Resources**: offers expert technical support, including guidance on system architecture, software integration, data management, and cybersecurity protocols.

**Facilitating International Collaboration**: continue acts as a bridge for international cooperation, allowing countries to share information, resources, and lessons learned during their SWIM deployments.

**Policy and Regulatory Support**: advises on developing policies and regulations that align with international standards and facilitate SWIM deployment.

*Organizing similar workshops in Vietnam is something we also aspire to. It would provide an opportunity for our leaders, as well as representatives from various sectors, to gather, exchange ideas, share insights, and understand the current status of SWIM implementation in the region. This would help our departments gain a comprehensive perspective on the roadmap towards SWIM.*

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# Thank you