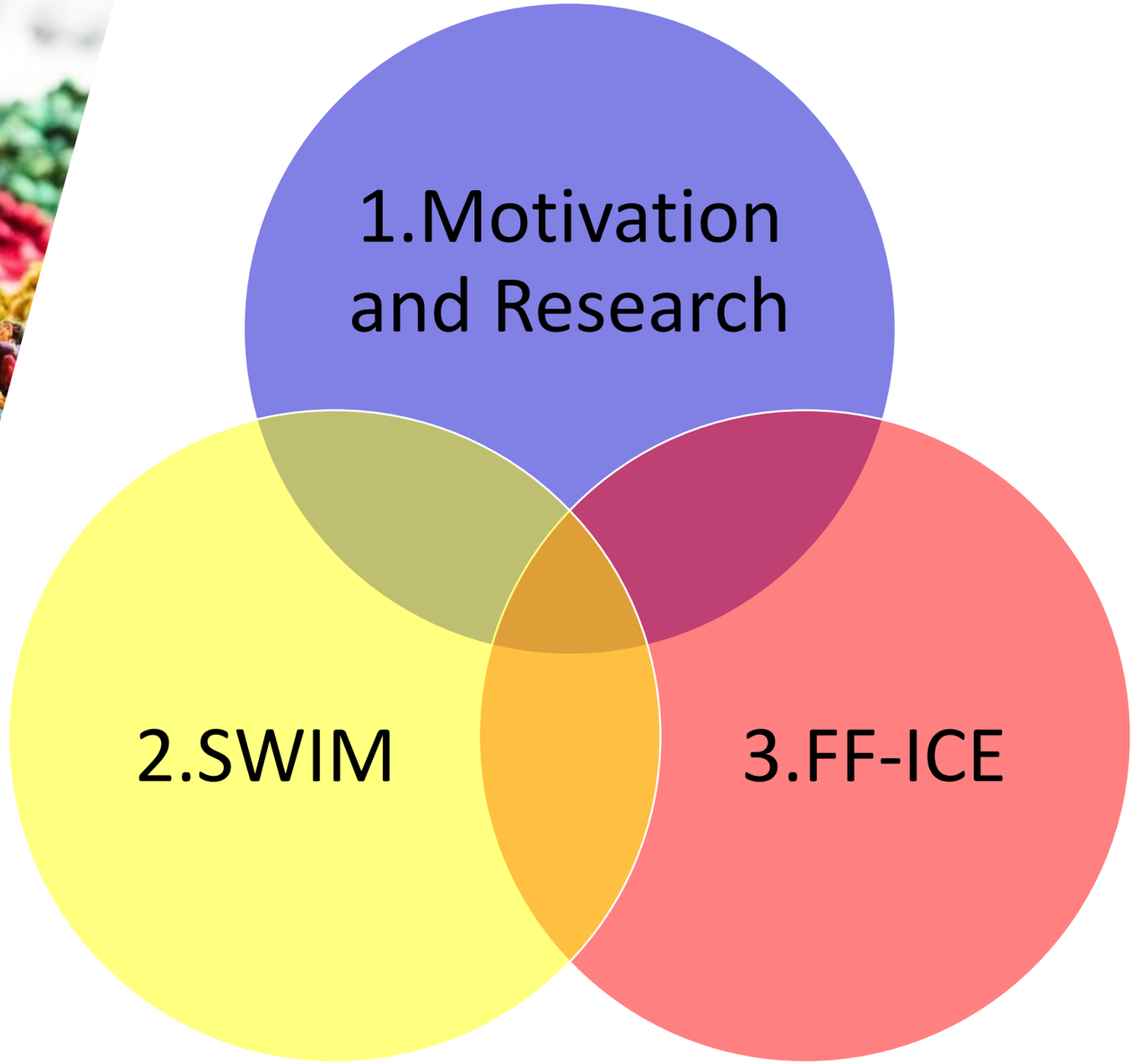
Ministry of Land, Infrastructure, Transport and Tourism
JAPAN CIVIL AVIATION BUREAU

CARATS
Collaborative Actions for Renovation of Air Traffic Systems

JCAB's journey to
SWIM and FF-ICE

Yukinobu Ryu
19 May 2025
ICAO APAC SWIM Seminar

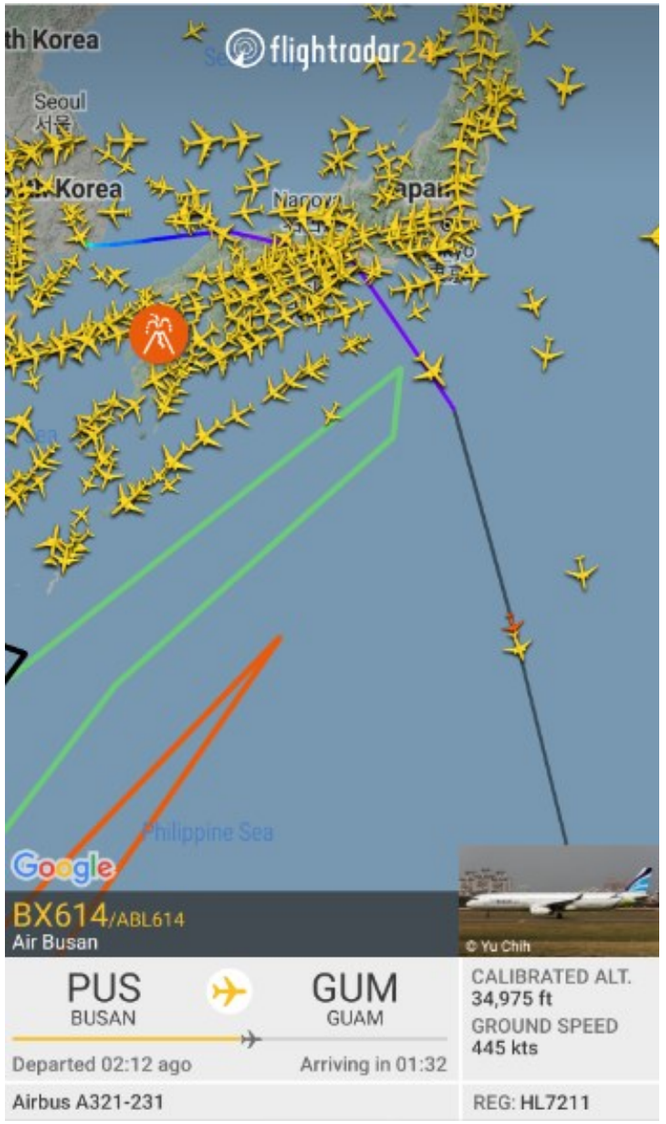
CONTENS



1.MOTIVATION AND RESEARCH

1.**MOTIVATION** AND RESEARCH ～ Background

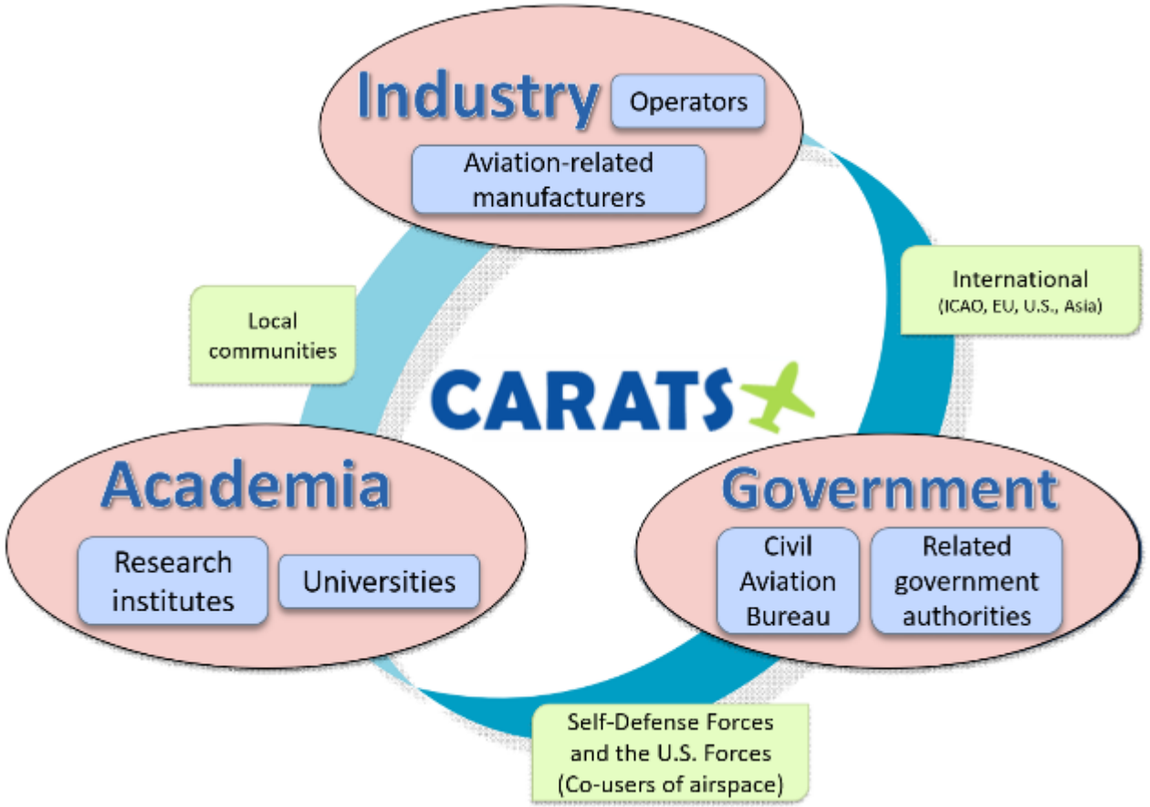
Long queues @ airport



Airspace complexity

Safety & Efficiency

1.**MOTIVATION** AND RESEARCH ～ CARATS



In developing the future air traffic system, there are expectations of meeting global challenges such as **climate change** as well as contributing to the Japanese **economic growth** policy by achieving **efficient air services** that fulfill diversifying operators' and users' needs and growing air traffic demands.

For this purpose, **the current air traffic system needs drastic change** and accordingly, a committee composed of stakeholders from **industry**, **government** and **academia** has been established, resulting in the development of CARATS (Collaborative Actions for Renovation of Air Traffic Systems) through **consideration of international trends and various perspectives**.

1.MOTIVATION AND **RESEARCH** ～ Foundation

JCAB JAPAN CIVIL AVIATION BUREAU

R&D Requests

Outputs/Outcomes

ENRI ENRI

Cooperation

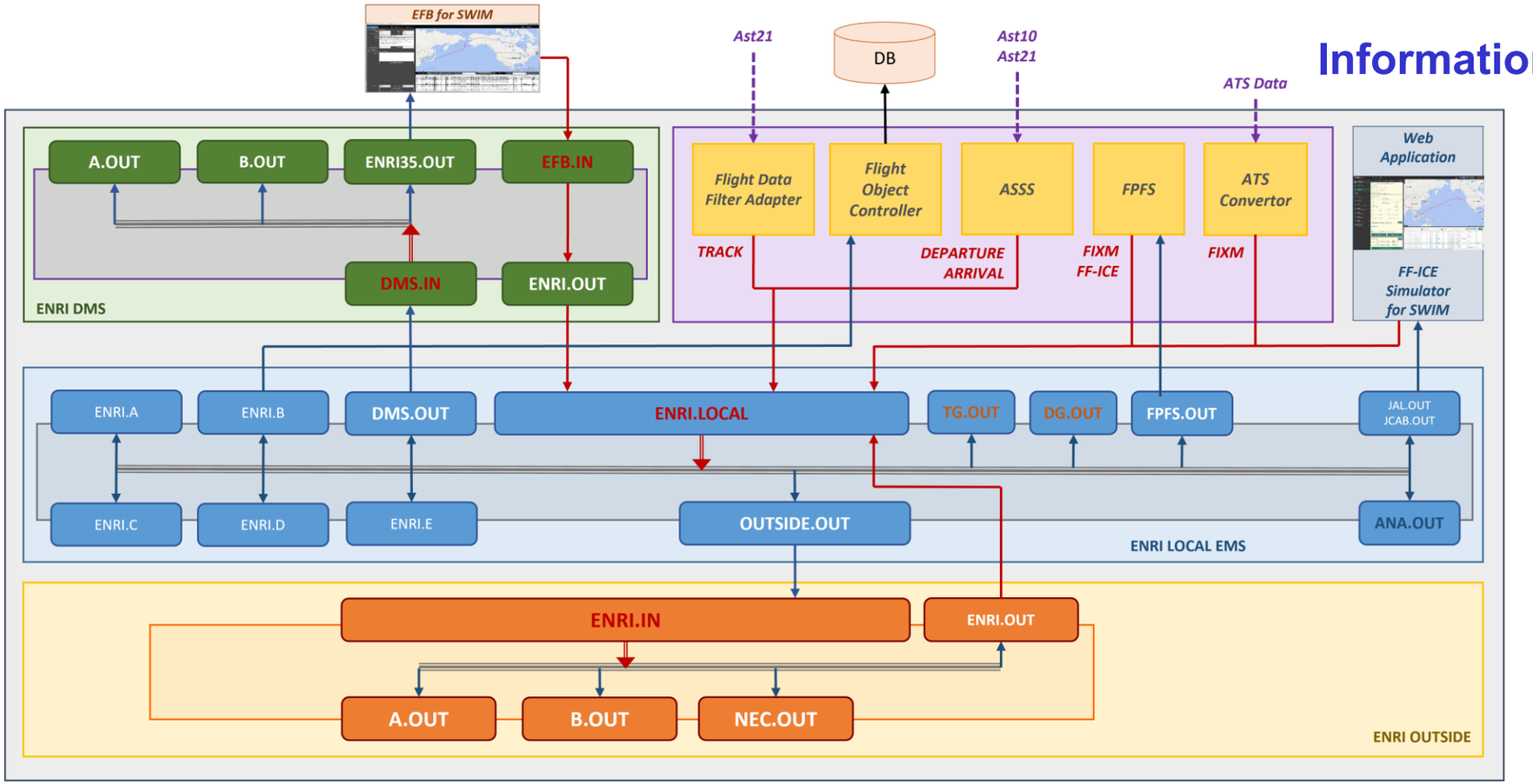
Venders

Information services

Airborne EMS

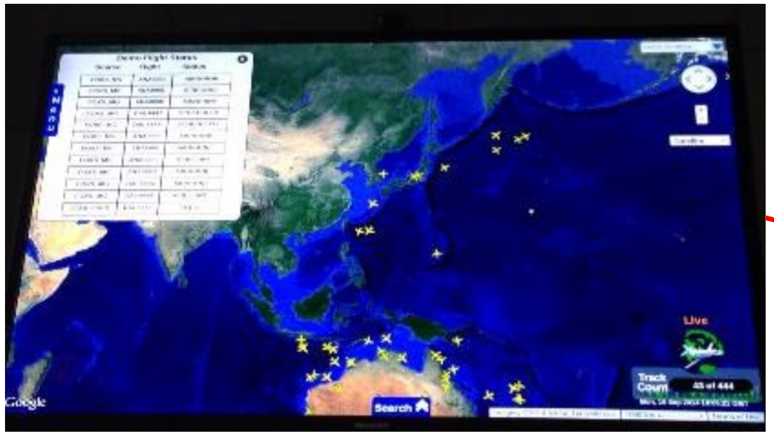
Internal EMS

External EMS

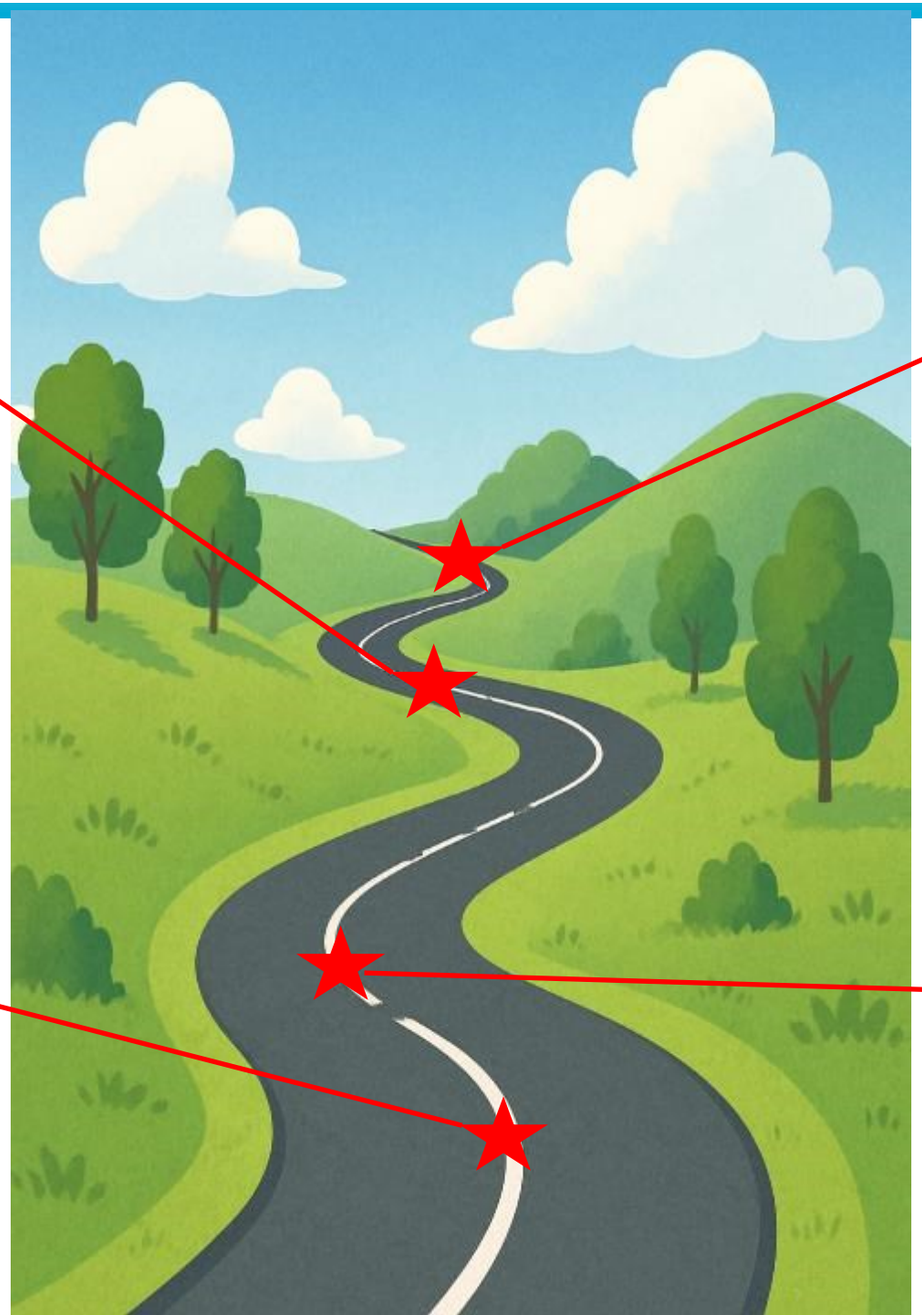


1.MOTIVATION AND **RESEARCH** ～ What we done

IIH&V (FF-ICE/R1) Demo
(2016-2018)



Mini Global 1/2 Demo
(2014-2016)



MR TBO Live Flight Demo
(2023)

CARATS Member for this Demonstration

ANA
JAL
JAPAN AIRLINES
Thank you!
NEC
ENRI
SWIM IN ASEAN

SWIM in ASEAN Demo
(2019)

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2.SWIM

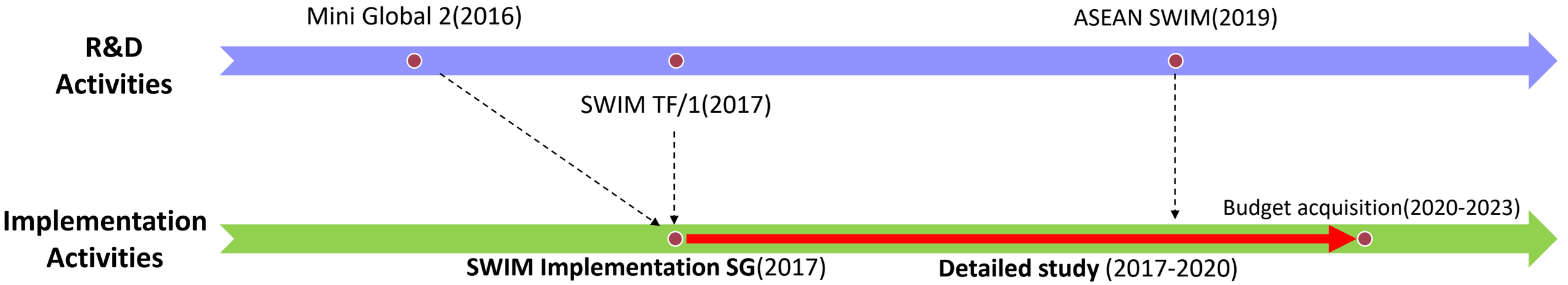
After a report on one SWIM demo…

I think I understand a little bit about the benefits of SWIM, BUT…

I don't think we can fully understand the people involved until we actually **start something**.

My boss (at the time)

2. SWIM ～ Preparation to “start something” （1）



SG Agreements:

- ✓ **First, the scope should be limited to the domestic (Local) SWIM and then expanded to the regional and global in turn.**
- ✓ **Establish an information service to free ATM stakeholders from information sharing through a point-to-point connection with the JCAB system.**
- ✓ **Initial Information Service Candidate**

Decisions:

- ✓ **“20” Initial Information Services**
  - **Upgrade existing JCAB system to be able to generate Information Services**
- ✓ **“MASS” (Messaging-system for ATM as Swim Service)**
  - **SWIM TI**
  - **On-premise (rather than cloud-based)**
  - **Procurement by JCAB**
- ✓ **Content that “does not” go into the implementation**

2. SWIM ～ Preparation to “start something”（2）

Governance Framework

a) defining roles, responsibilities and accountabilities of the various system-wide information management stakeholders including, but not limited to, originator, information service provider, information service consumer and regulator;

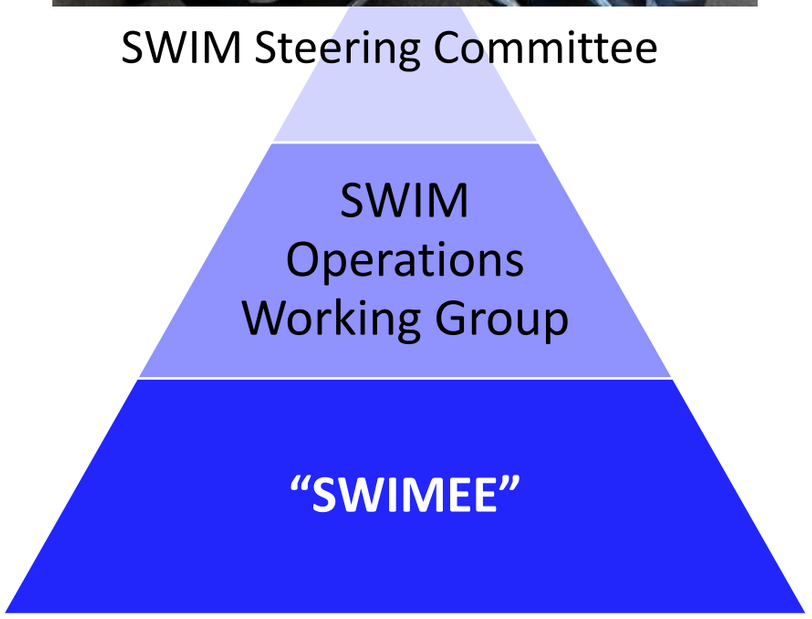
b) identifying, if necessary, the appropriate governance bodies responsible for coordinating the implementation within a State or region;

c) identifying and documenting the relevant standards and any additional standardization requirements; and

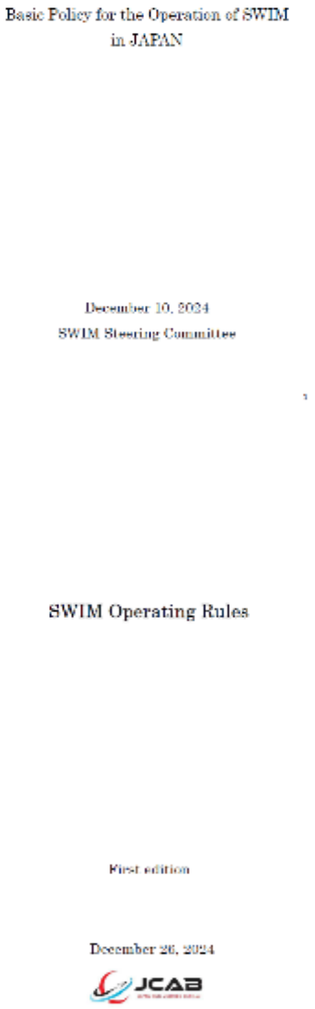
d) developing and maintaining policies, processes and guidance in support of system-wide information management implementation.

(Source: PANS-IM 3.4)

SWIM Steering Committee



Approval


Basic Policy for the Operation of SWIM in JAPAN

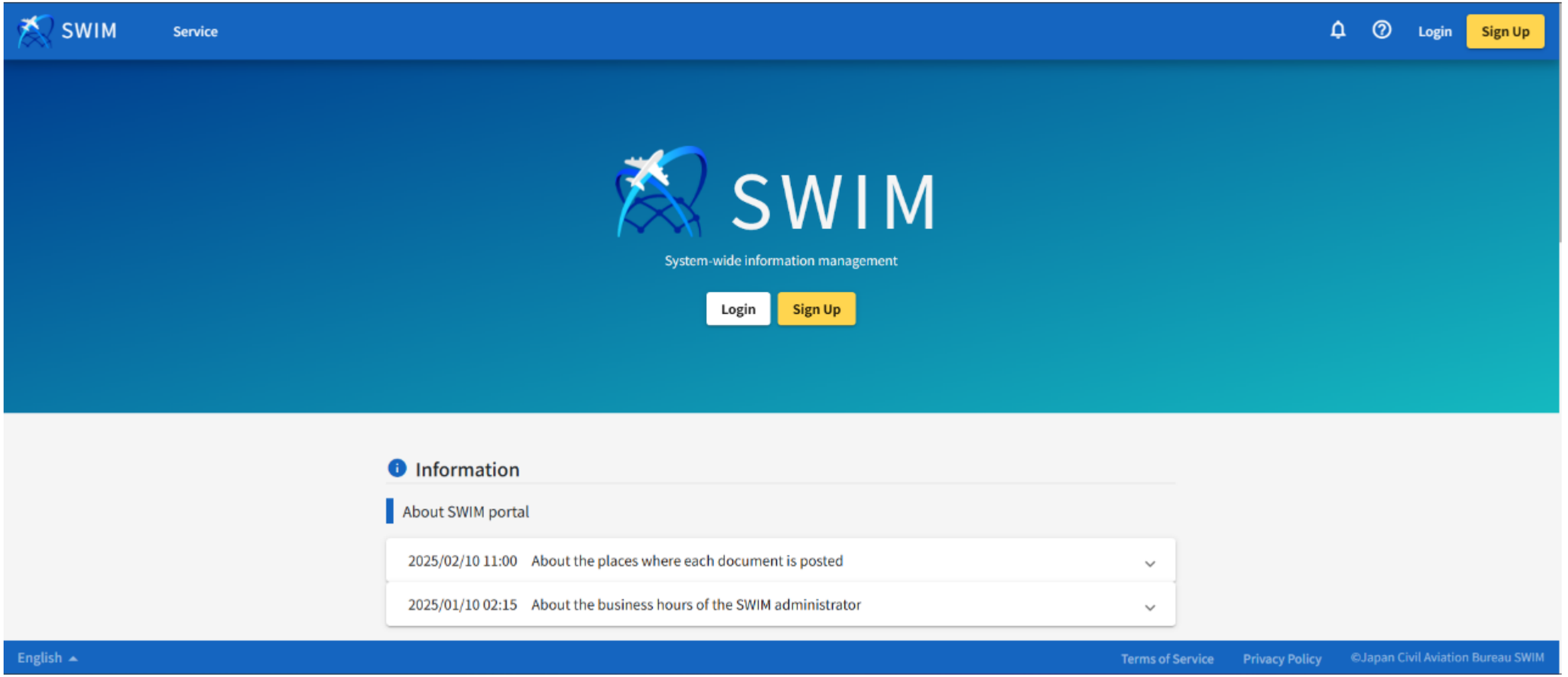
December 10, 2024
SWIM Steering Committee

SWIM Operating Rules

First edition

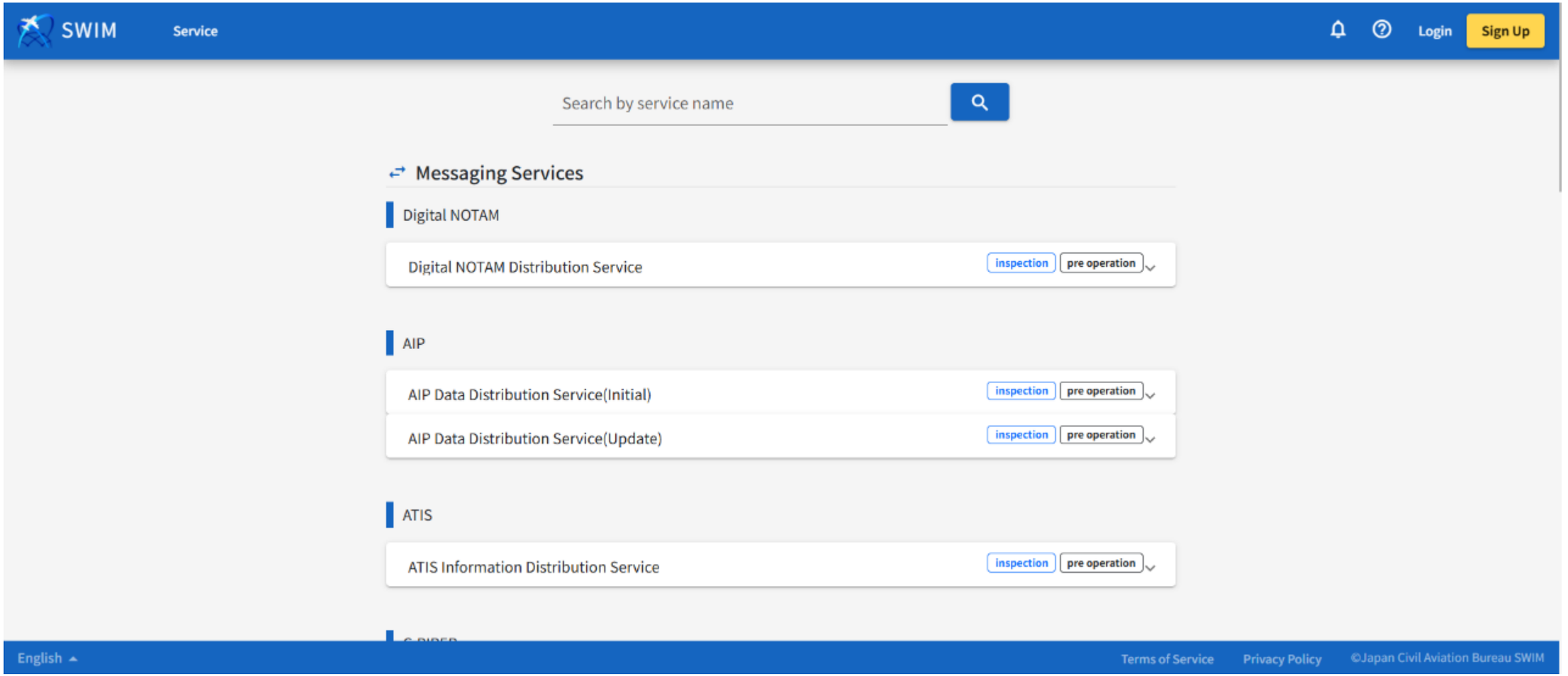
December 26, 2024
JCAB

2. SWIM ～ Current status (Launch of SWIM Portal site)



https://top.swim.mlit.go.jp/swim

2. SWIM ～ Current status (Information Services)



2. SWIM ～ Current status (Communication with stakeholders)

"SWIMEE"

SWIM Education and **E**nhancement team

SWIMEE 1ST meeting, 7th March 2024@MLTIT
(Attendees - F2F: 37 , Online: 273)

SWIMEE consists by ;

- ✓ Airspace User / Airport Operator
- ✓ ATM Support Industries
- ✓ Academia & Institute
- ✓ Government, etc

SWIMEE aims to ;

- ✓ deepen understanding of the SWIM
- ✓ promote the use of SWIM
- ✓ contribute to the realization of value for SWIM stakeholders through the coordination and collaboration and,
- ✓ continuously improve the SWIM

2. SWIM ～ Lessons learned & Next steps

Lessons learned ;

1. A comparison of the information provided by the SWIM with the existing information provided should identify areas that need to be changed/unchanged.

2. Ongoing educational activities are needed.

3. Early team formation and involvement
   ex: Management, Service design, Technical Infrastructure, Governance, Education

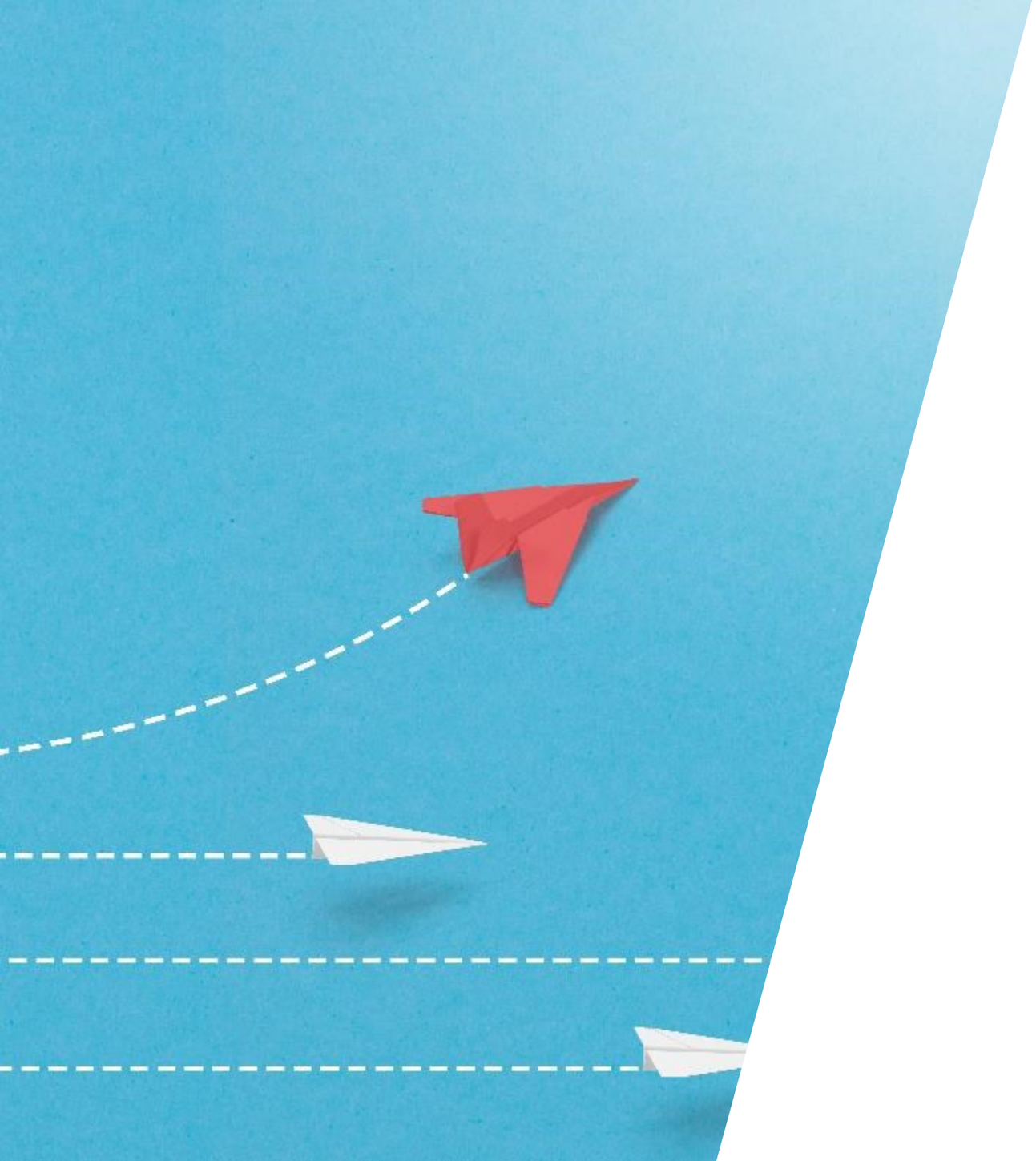
4. What is lacking is supplemented from other sources.

5. Working in parallel, healthy growth of SWIM

Next steps ;

- ✓ Full QMS implementation
- ✓ Improvement of information services
- ✓ Reinforcement of backup system

- ✓ Compliance with APAC SWIM
  - APAC SWIM COMMON INFORMATION SERVICES (incl. FF-ICE services)
  - Introduction of EMS
  - Interconnected SWIM Registry
  - APAC SWIM Governance



2.FF-ICE

2. FF-ICE ～ Keys to the cessation of the 2012 FPL

Recommendation 3.2/2 – Transition to flight and flow – information for a collaborative environment services and cessation of ICAO 2012 flight plan by 2034

That States:

a) in support of the 2034 global cessation of the ICAO 2012 flight plan, commence the development of a national plan to transition to flight and flow – information for a collaborative environment services along with industry stakeholders;
b) include plans for the implementation of both minimum and optional flight and flow – information for a collaborative environment services in the national air navigation plans;
c) share experience and resources for the implementation of flight and flow – information for a collaborative environment services;
d) and planning and implementation regional groups, consider establishing regional focus groups for coordinating the planning and implementation of flight and flow – information for a collaborative environment services and providing necessary support throughout the transition period; and
e) support and contribute to the work of their respective planning and implementation regional group and their sub-groups to develop a regional plan to transition to flight and flow – information for a collaborative environment services on the basis of the 2034 global cessation of the ICAO 2012 flight plan;

that ICAO:

f) amend relevant ICAO provisions and guidance material to enable the 2034 global cessation of the ICAO flight plan and associated air traffic services messages;
g) through planning and implementation regional groups, provide guidance and support for the development of regional plans to transition to flight and flow – information for a collaborative environment to enable the 2034 global cessation of the ICAO 2012 flight plan;
h) support inter-regional collaboration for a harmonized implementation of and transition to flight and flow – information for a collaborative environment services;
i) monitor and support the progress of flight and flow – information for a collaborative environment services implementation and transition plan developments of States; and
j) conduct a periodic assessment and report on the readiness of the global air traffic management community for the 2034 global cessation of the ICAO 2012 flight plan.

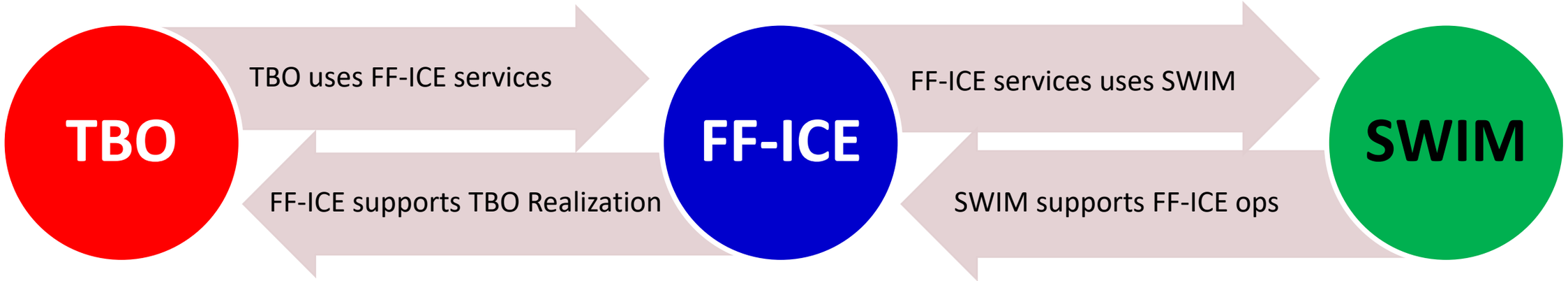
Still 9 years left !

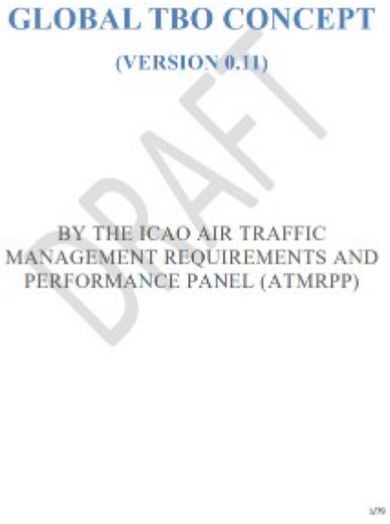
/

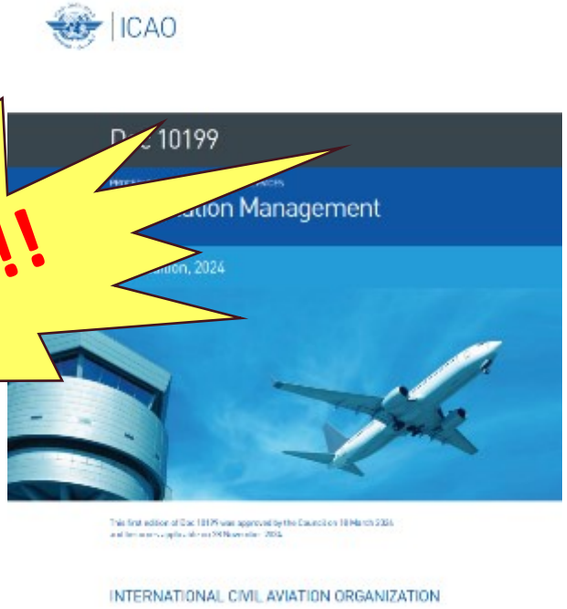
Only 9 years!

Which is your understanding?

2. FF-ICE ～ TBO/FF-ICE/SWIM relationship



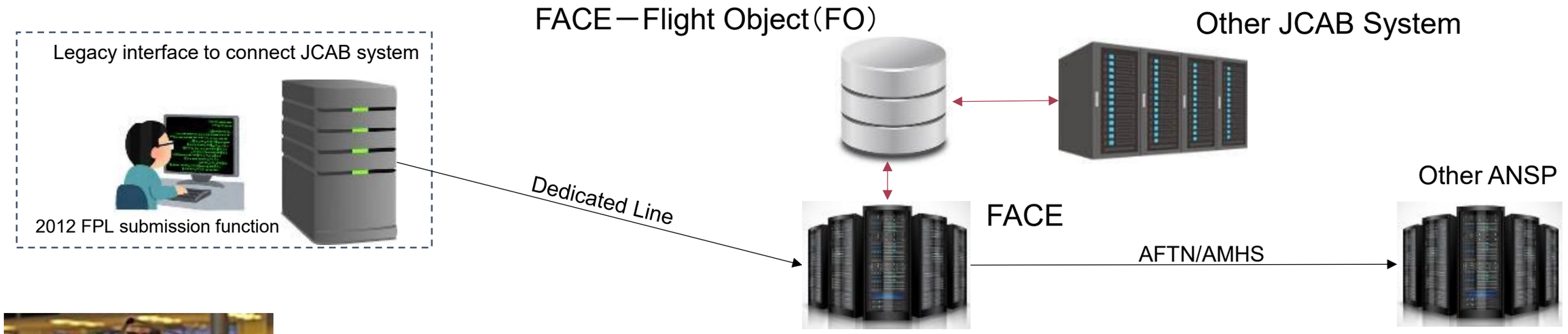




Already **applicable!!**

FF-ICE/2012 FPL message flow in Japan (Hi level Image)

As-is



Airspace User

FF-ICE/2012 FPL message flow in Japan (Hi level Image)

To-be

FACE－Flight Object（FO）

Other JCAB System

FACE

Japan SWIM

MASS

Routing??

Other SWIM

FF-ICE capable ATM Service Provider（eASP）

Airspace User

Point

The system checks the flight plan against the information that constrains the flight and provides feedback to the AU on whether the plan is acceptable or not.

IPsecVPN、Internet VPN

“FF-ICE capable” FPL submission function（NEW）

3rd Party Apps & Services

Point

AU can utilize a wealth of industry services to create optimal flight plans that fit the airspace and other conditions.

Point

Not only Fukuoka FIRs but also FF-ICE capable FIRs can be matched/responded to with flight path constraints.

Mix Mode Operations

FF-ICE/2012 FPL message flow in Japan (Hi level Image)

FACE－Flight Object（FO）

Other JCAB System

Legacy interface to connect JCAB system

2012 FPL submission function

Dedicated Line

FACE

AFTN/AMHS

Non FF-ICE capable
ATM Service Provider
（aASP）

Japan
SWIM

MASS

Routing??

Airspace User

Point

The system checks the flight plan against the information that constrains the flight and provides feedback to the AU on whether the plan is acceptable or not.

Point

When flying in FF-ICE non-capable areas (FIRs), the FF-ICE message is translated into the 2012 FPL format by JCAB before being sent to the relevant authorities by AFTN/AMHS.

IPsecVPN、
Internet VPN

**"FF-ICE capable"
FPL submission function
（NEW）**

3rd Party Apps
& Services

Point

AU can utilize a wealth of industry services to create optimal flight plans that fit the airspace and other conditions.

Point

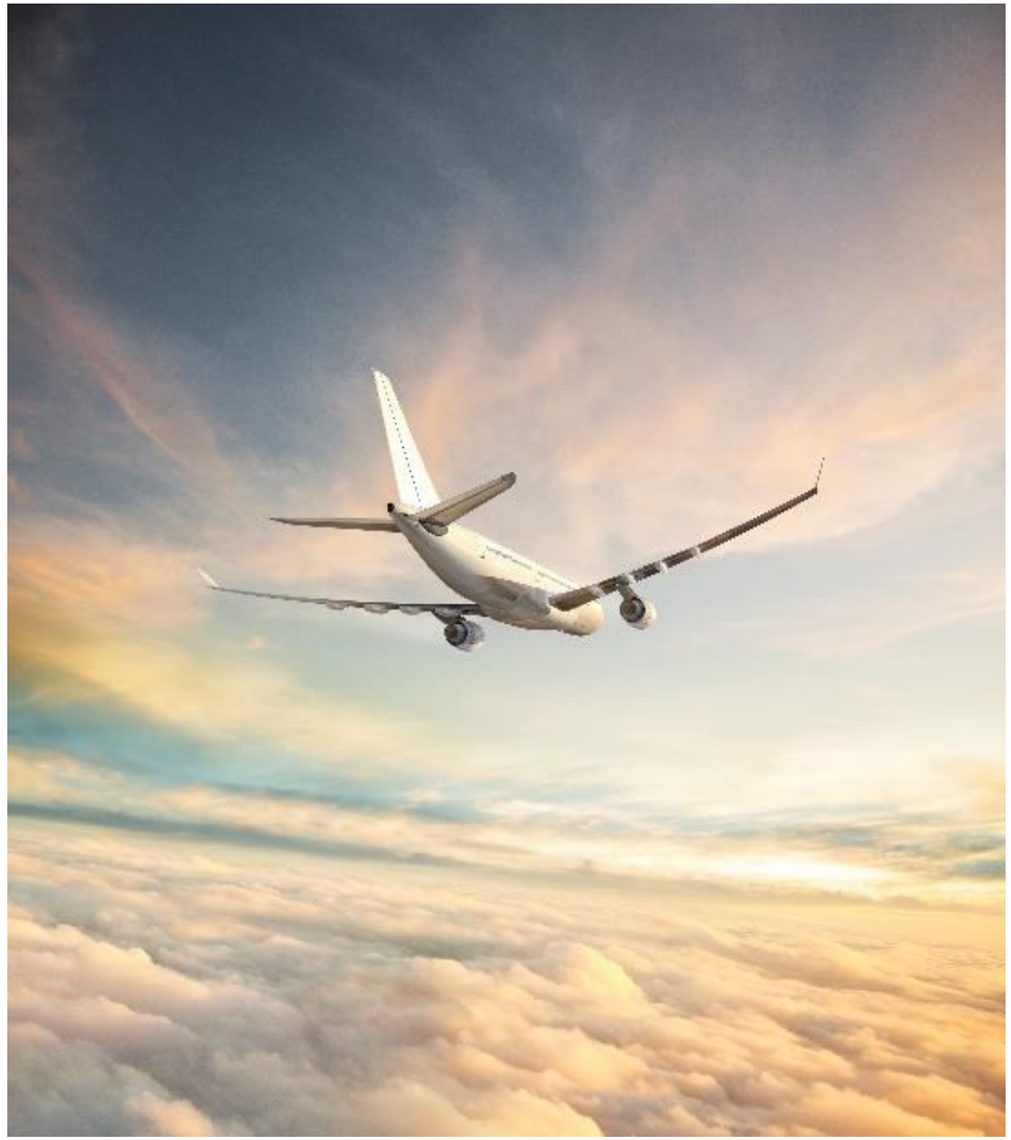
Not only Fukuoka FIRs but also FF-ICE capable FIRs can be matched/responded to with flight path constraints.

Other
SWIM

FF-ICE capable
ATM Service Provider
（eASP）

2. FF-ICE ～ JCAB status

- ✓ We are committed and progressing harmonizing with APAC Seamless ANS Plan.
  - Discussing within APAC FF-ICE ad-hoc group
  - Demonstrating within APAC TBO Pathfinder project
- ✓ We are also planning to upgrade our information service to implement initial FF-ICE/R1 mandatory service (Filing service and Flight data request service) by 2028.



Questions

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Thank you