

ICAO APAC/MID ATFM-FF-ICE Seminar 2025

Dubai, UAE, 23 – 26 February 2025

Progress and Current Status of JCAB's ATFM Operations

Air Traffic Control Division JCAB
TAKAHIRO SHIBUTANI

ICAO

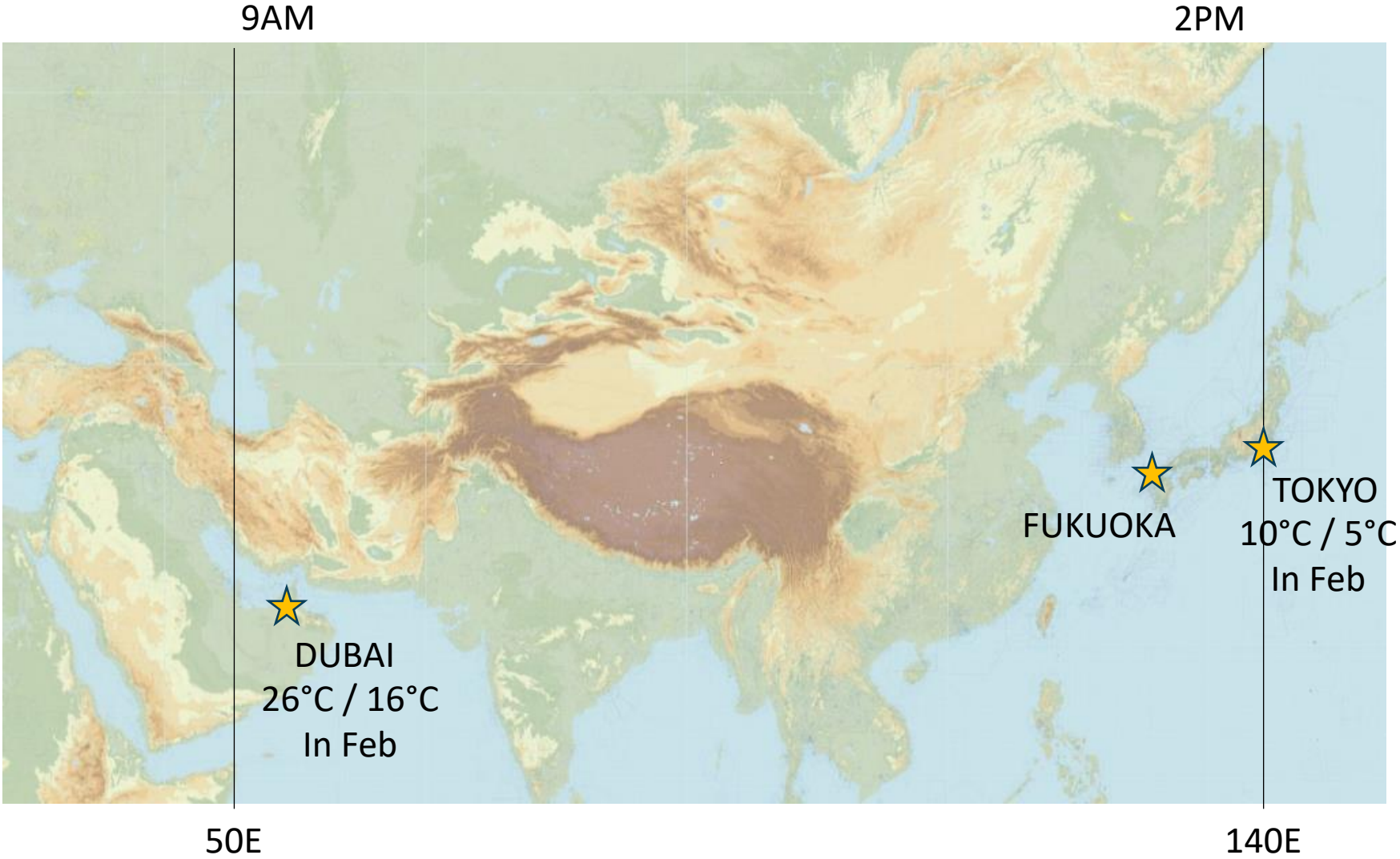


国土交通省

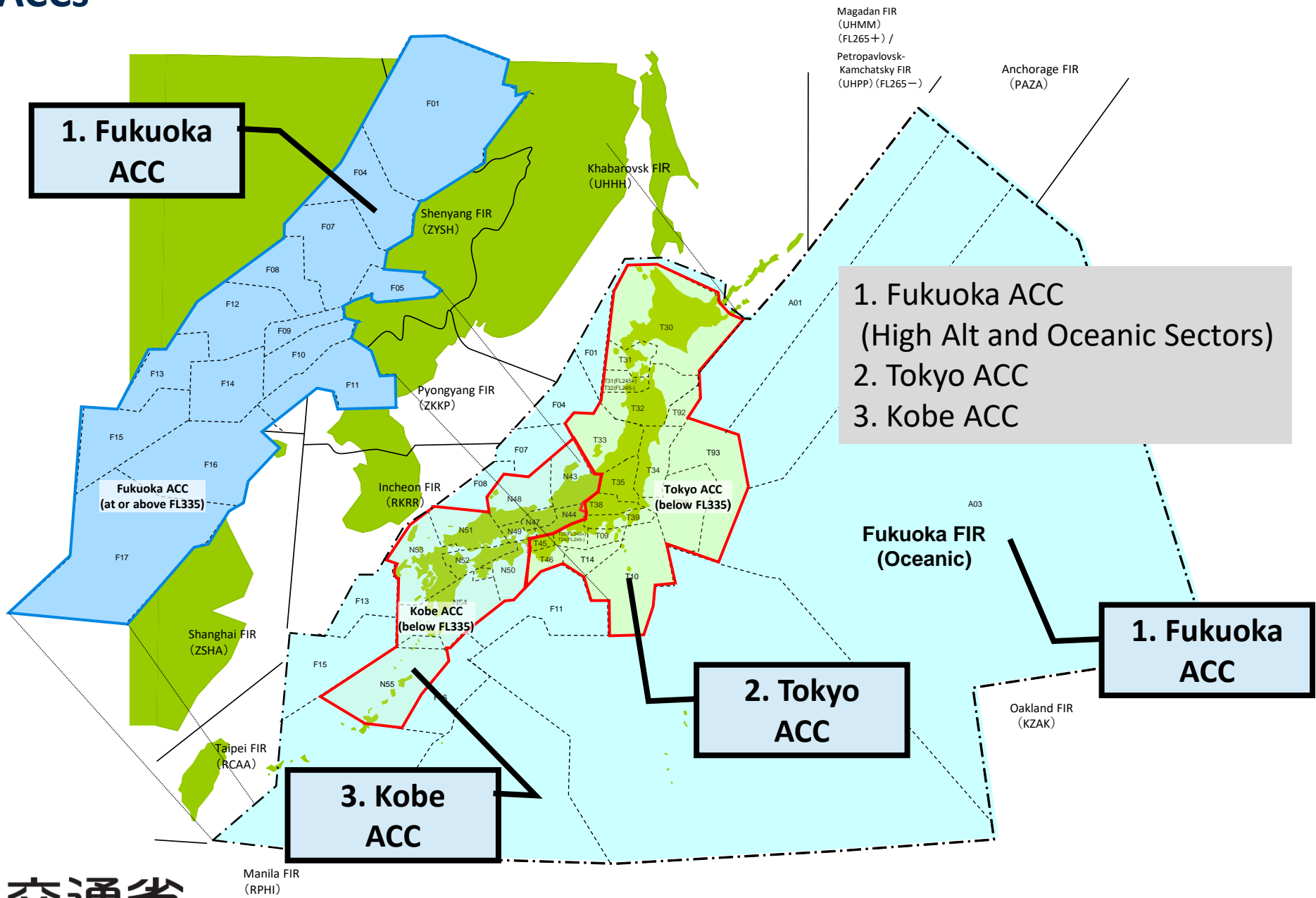
Overview

- Outline of Fukuoka FIR (RJJJ)
- ATM center and TMU (branch of ATMC)
- JCABs CDM

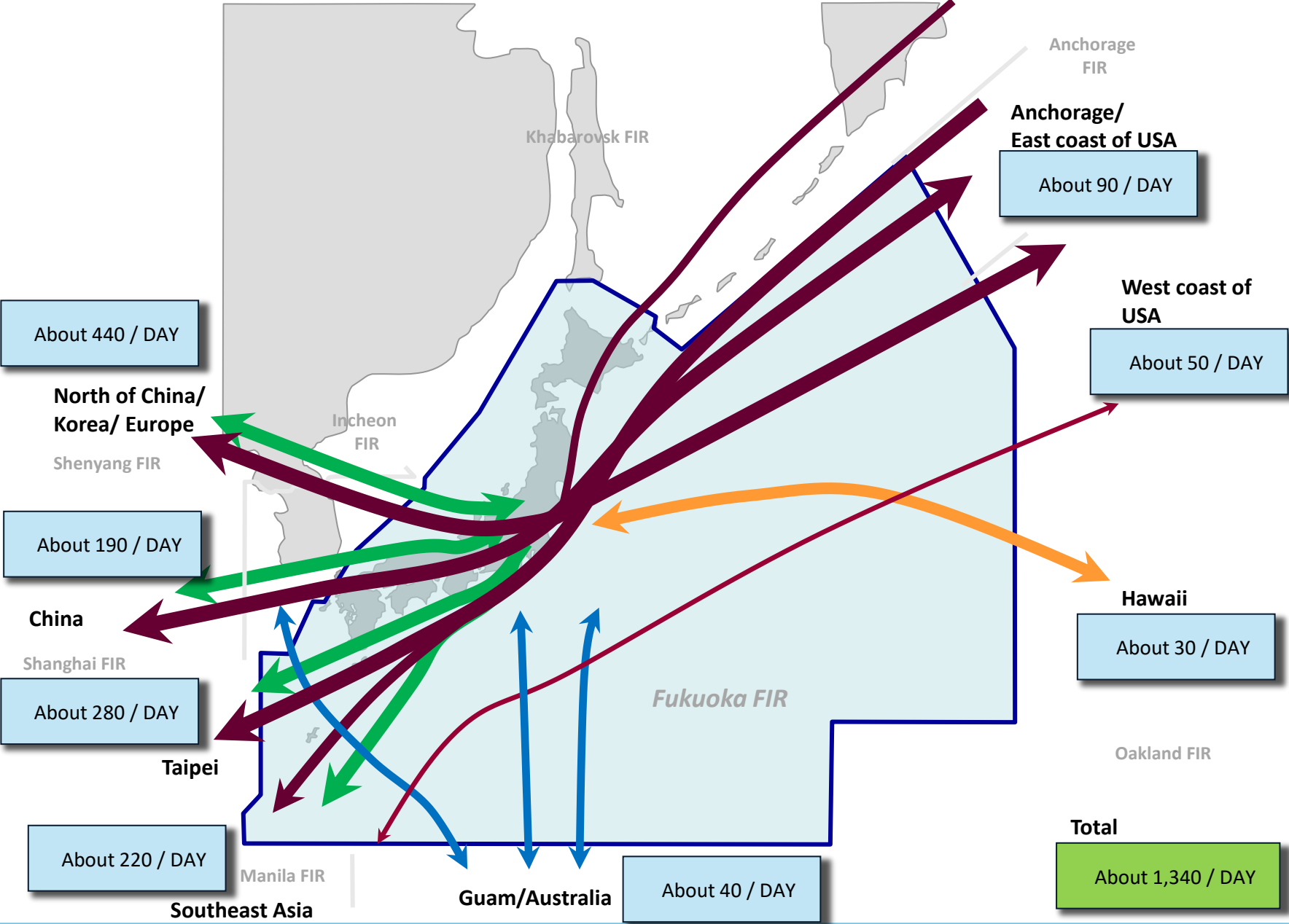
DUBAI, TOKYO, FUKUOKA Positional Relationship



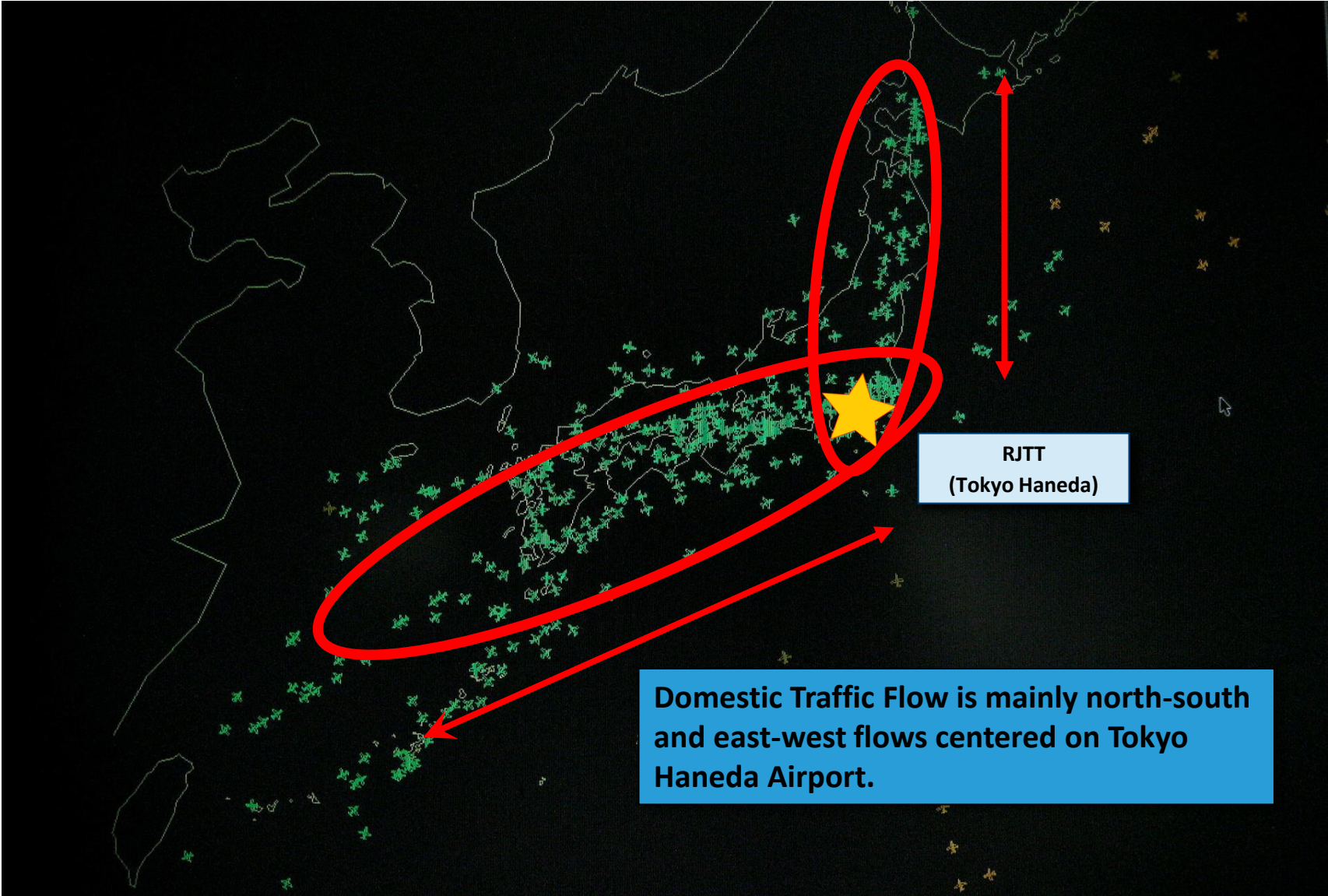
Fukuoka FIR and ACCs



International Traffic flow (Aug 2023)



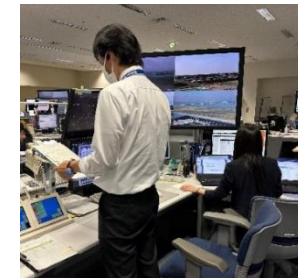
Domestic Traffic flow



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(Air Traffic Flow Management Center)
- In 2003: ATM operational concept was recognized as a foundational concept for introducing CNS/ATM at the 11th ICAO ANC.
- In 2005: JCAB extended ATFMC to
ATMC (Air Traffic Management Center)

Role of Air Traffic Management Center (ATMC)

8



Air traffic management and control services

◆Air Traffic Flow Management (ATFM)

ATFM balances traffic demand with airspace/airport capacity by routing management and flow control with minimum impact on the flights while communicating with relevant participants.

- Routing management
- Flow control
- CDM



◆Airspace Management (ASM)

- Airspace/Airway designing
- Civil - Military coordination for flexible use of airspace
- Pacific Organized Track System

ASM increases airspace capacity and improves efficient use of airspace to accommodate user needs by designing efficient route-networks, optimizing airspace configurations and making flexible use of airspace.

Role of TMU (Traffic Management Unit)

- Monitor traffic volume and situation
 - *high density ACC and Airports
- Coordination with TMU in other facilities
- Coordination with ATMC
- Conduct flow control initiatives

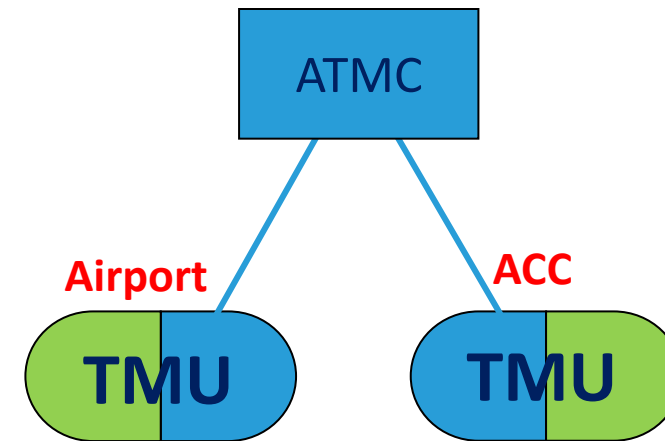
ALTITUDE RESTRICTIONS / REROUTES

MILES-IN-TRAIL

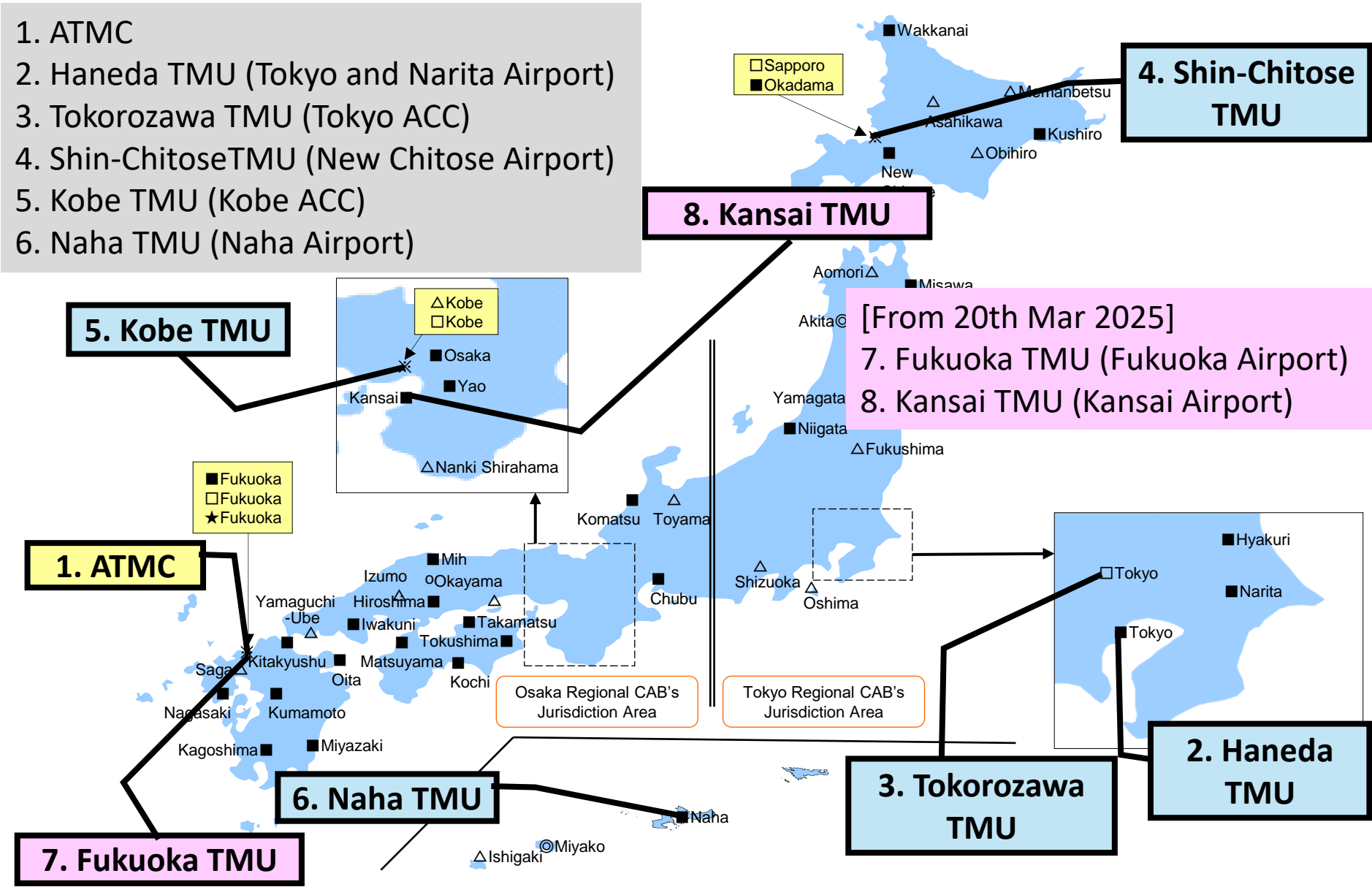
SPEED CONTROL

AIRBORNE HOLDING

GROUND STOP



Location of ATMC and TMUs



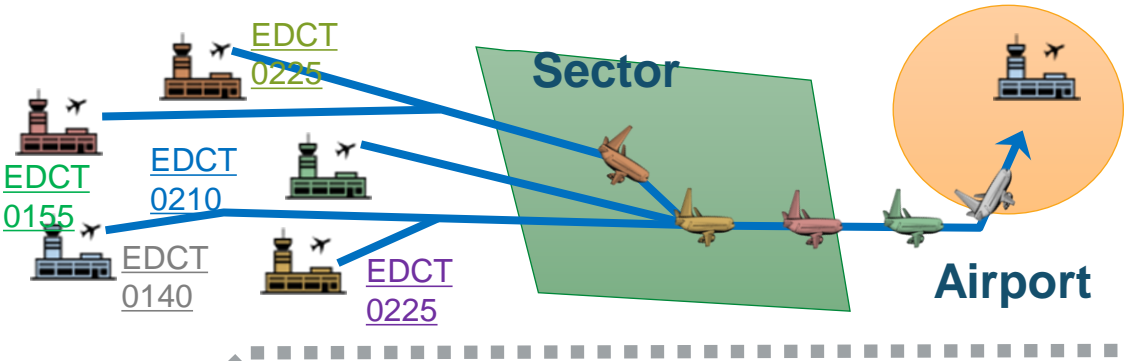
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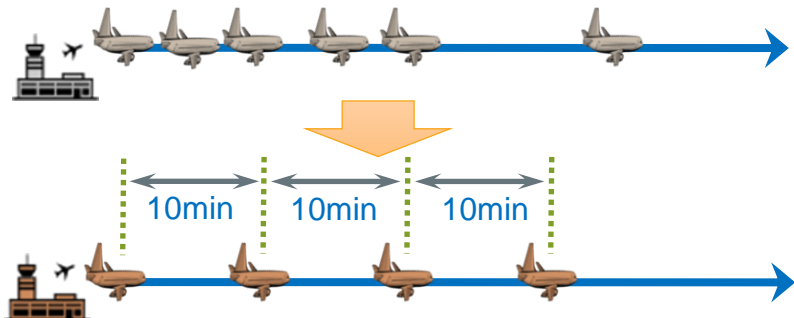
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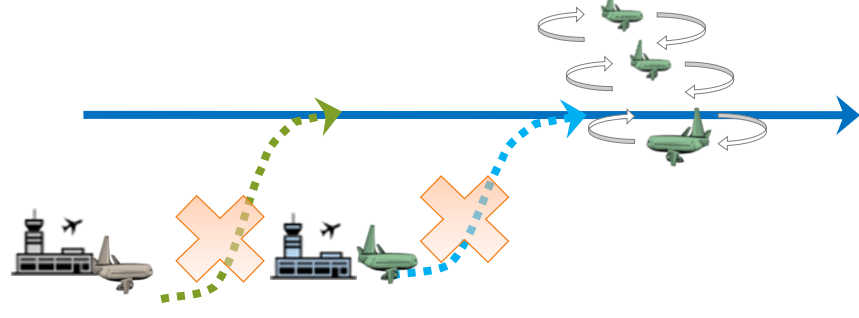
Departure Interval

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Ground Stop

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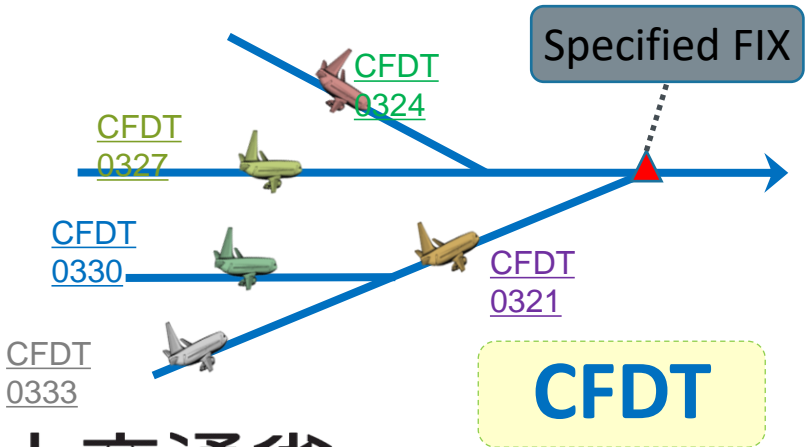
ATFM Measures

Flow control initiatives ②

In-Flight

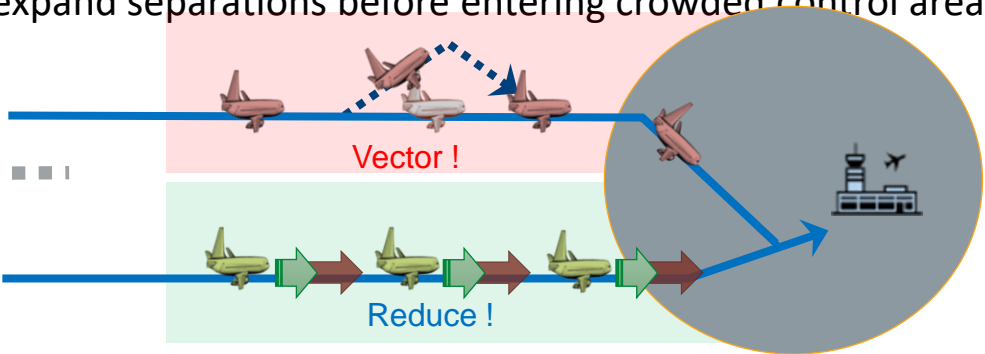
Specifying CFDT for Arrival Spacing Program

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Expanded Miles in-trail

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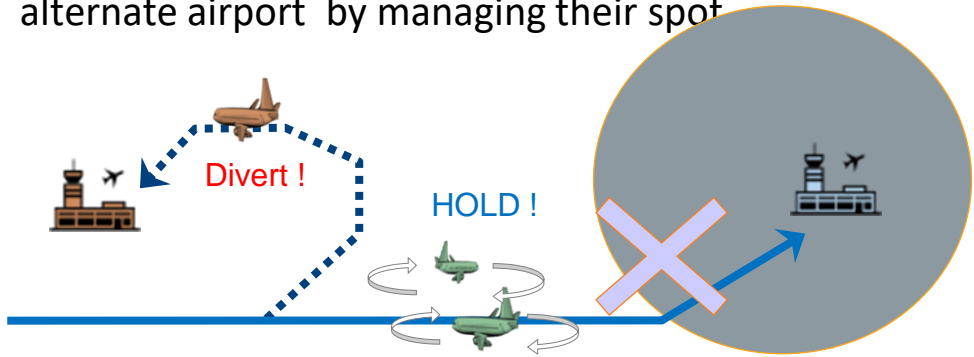


Speed Adjustment

To reduce and align aircraft speed at entry fix.

Entry Suspension

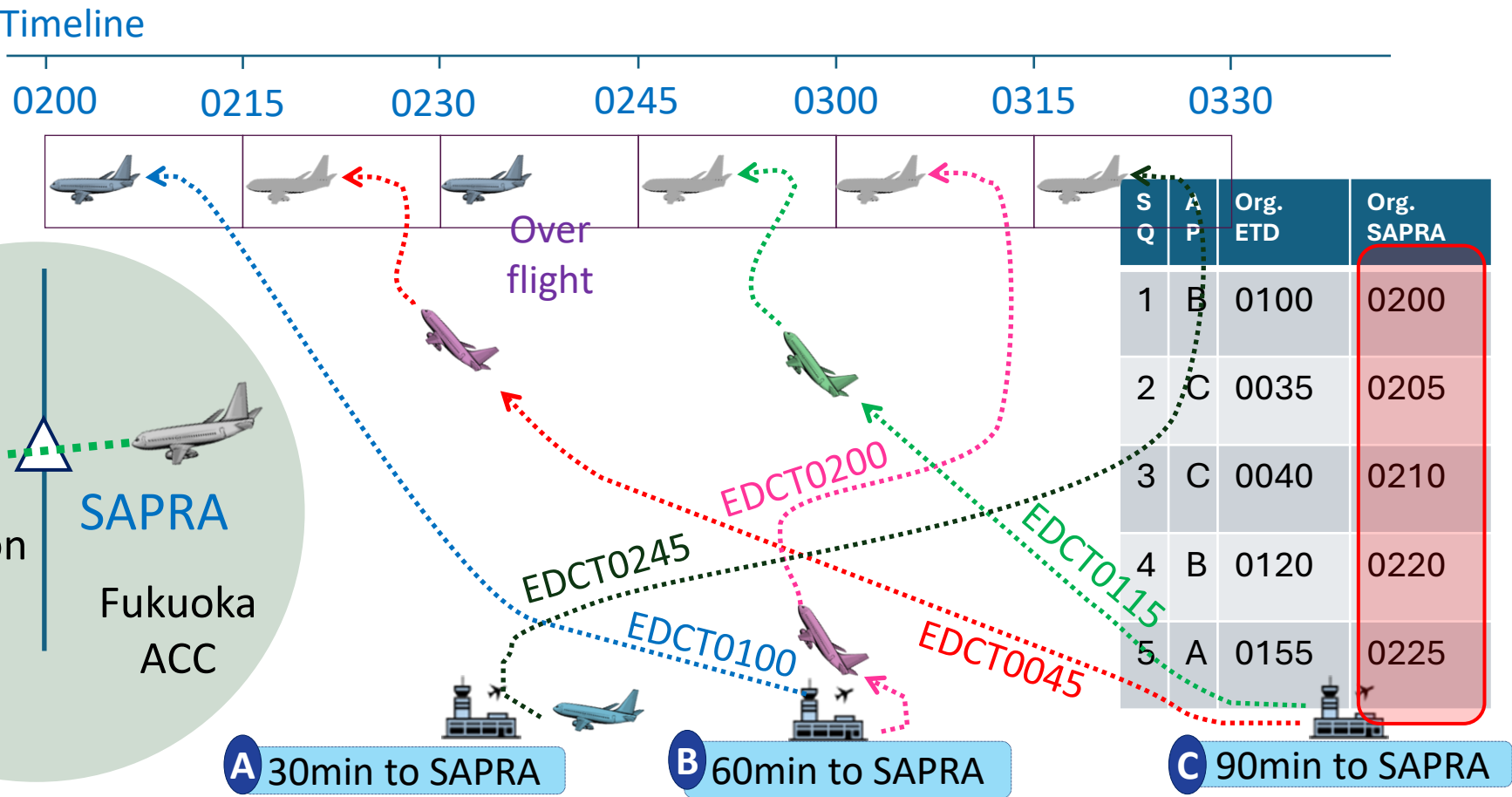
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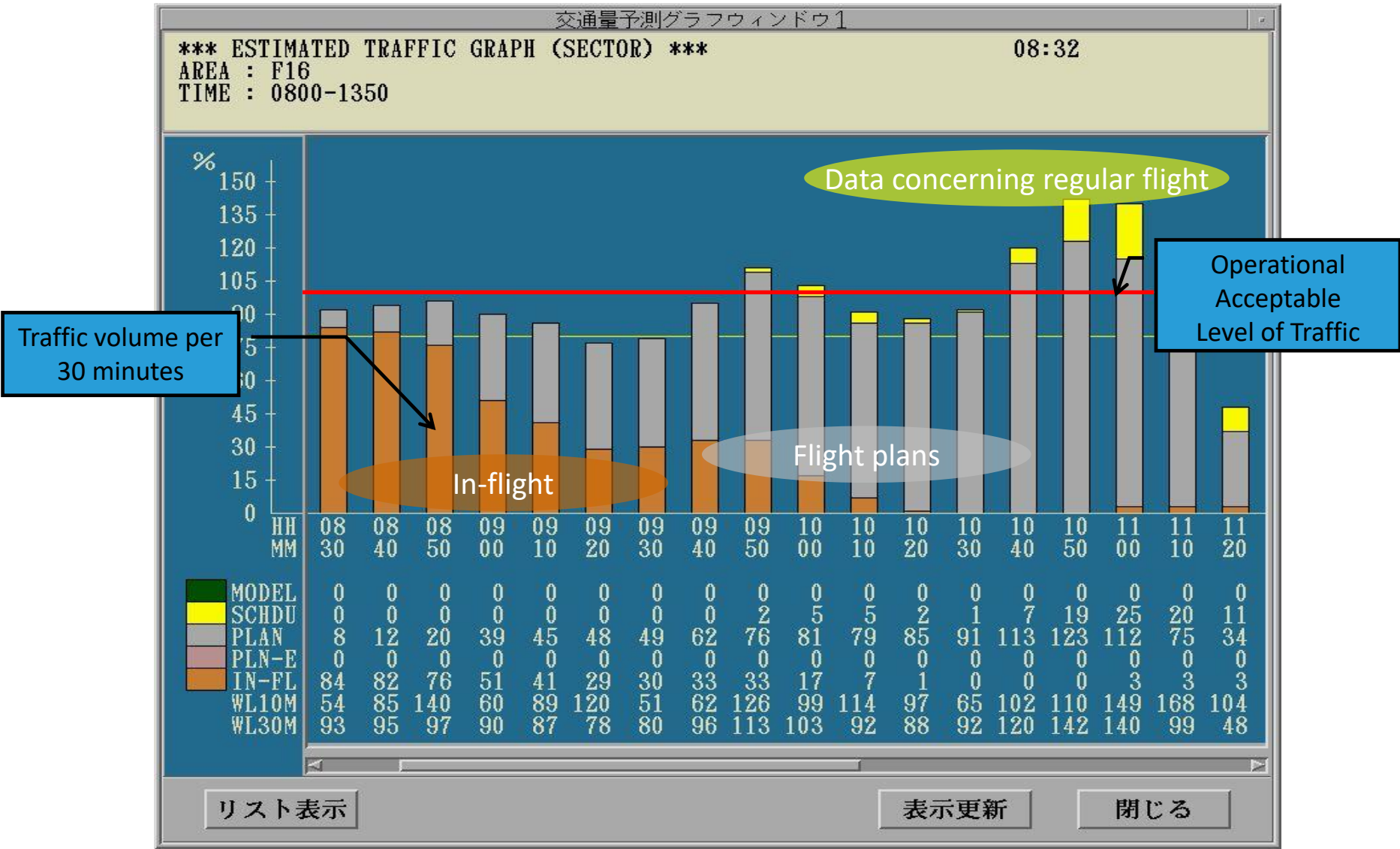
Separation management of FIR boundary

In case of airway G585 between Incheon and Fukuoka

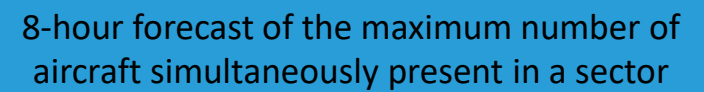
Incheon ACC requires **15min interval** regardless altitude from 0200z. (at 2340z)



Workload Monitoring (Sample Screen)



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- JCABs Collaborative Decision Making

- CDM counterparts at ATM center

- * Weather specialists (ATMetC)

- * Military liaison officers

- CDM Members

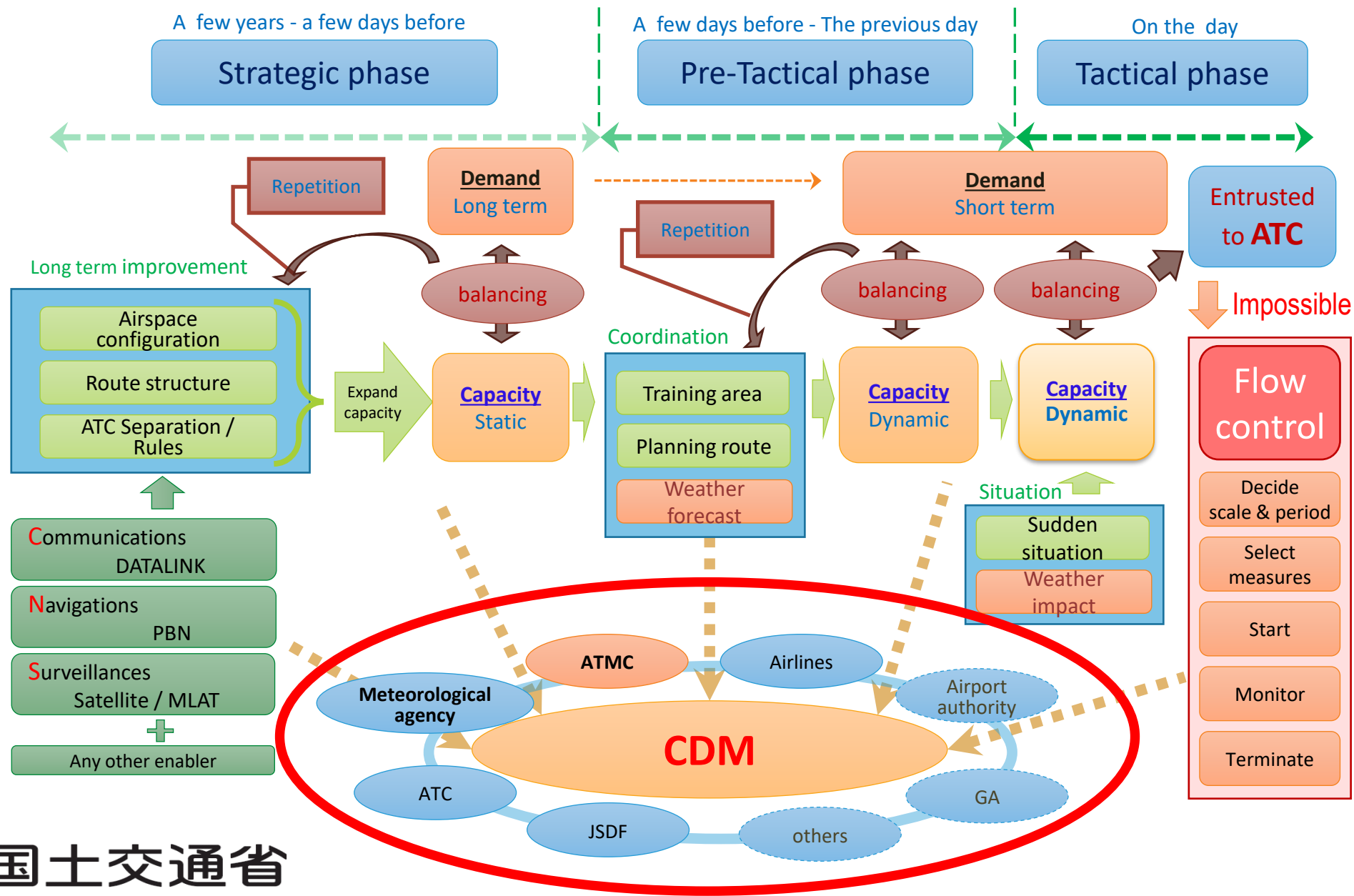
- * ATMC

- * ATMetC

- * Air Traffic Controller

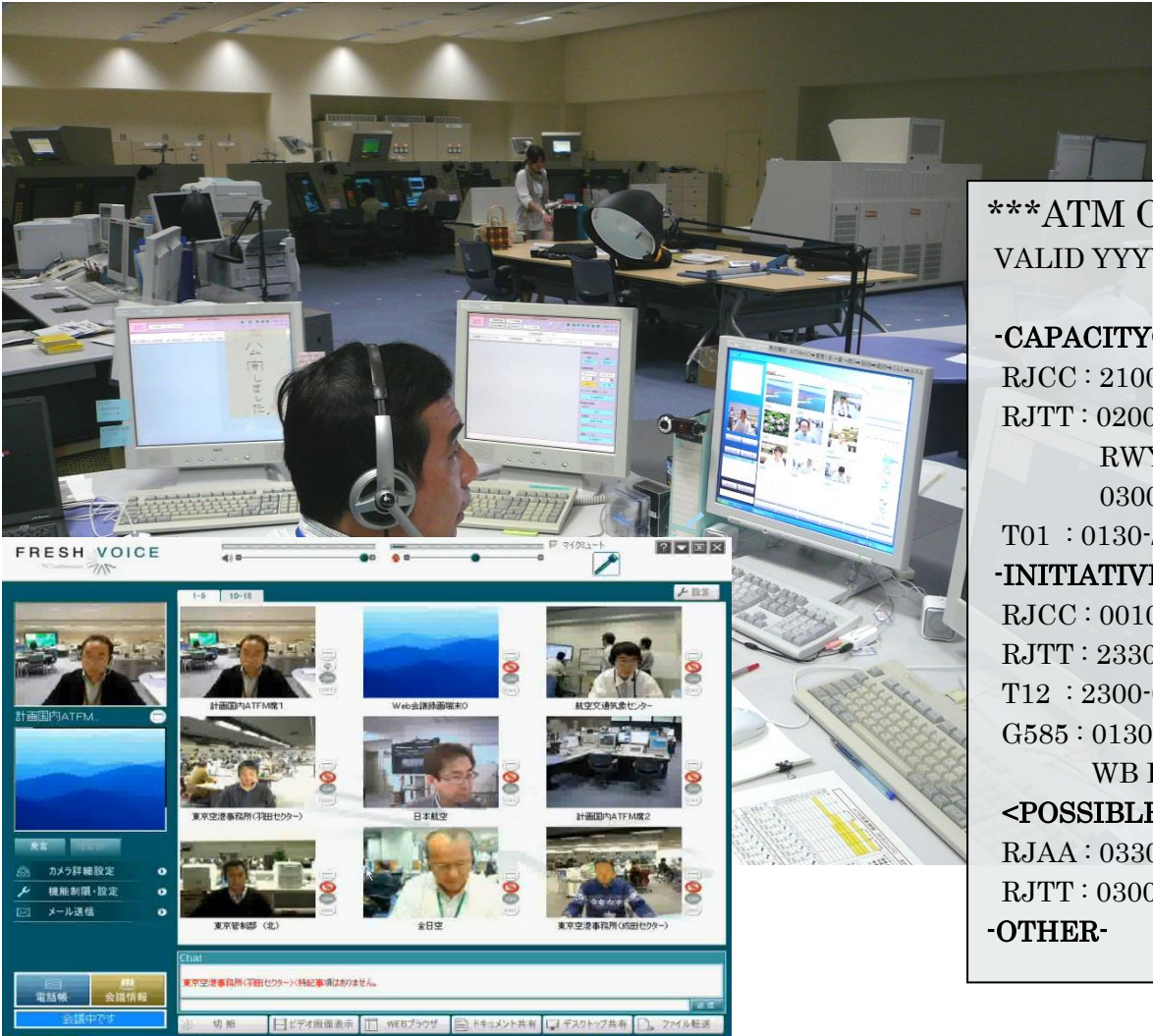
- * Airline Operators

CDM process for ATM in Japan



*α: whenever required

【 OP: ATFM daily plan 】



ATM OPERATIONS PLAN
VALID YYYY/MMDD/2345 THRU 0545

-CAPACITY(CAPA) & CONSTRAINTS-
RJCC : 2100-0300 CAPA=04-06Δ LOW VIS
RJTT : 0200-0300 CAPA=10
RWY 34L/16R CLSD (0200-0245 CONST)
0300-//// CAPA=14 FLTCK (ILS RWY22)
T01 : 0130-//// CAPA=92-97 DEV (CB)

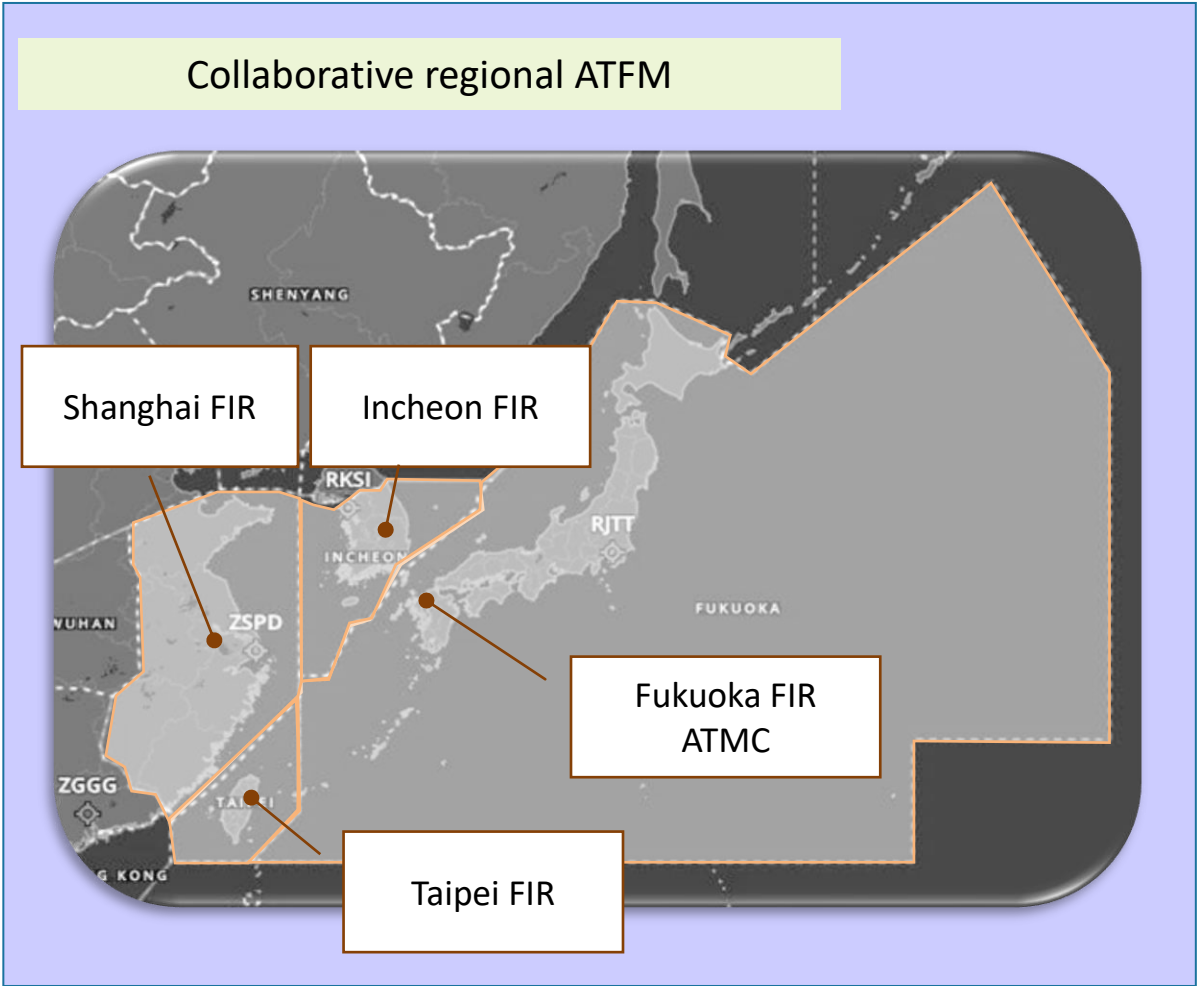
-INITIATIVE-
RJCC : 0010-0150 5MINIT DEP FM RJTT
RJTT : 2330-0140 EDCT
T12 : 2300-0005 3MINIT DEP FM RJAA/RJTT
G585 : 0130-UFN 8MINIT @ SAPRA RGDLS OF ALT
WB FOR MONGOLIA, RUSSIA, EUROPE

<POSSIBLE>
RJAA : 0330-0500 15MIT, 250KT @ MAMAS
RJTT : 0300-//// EDCT

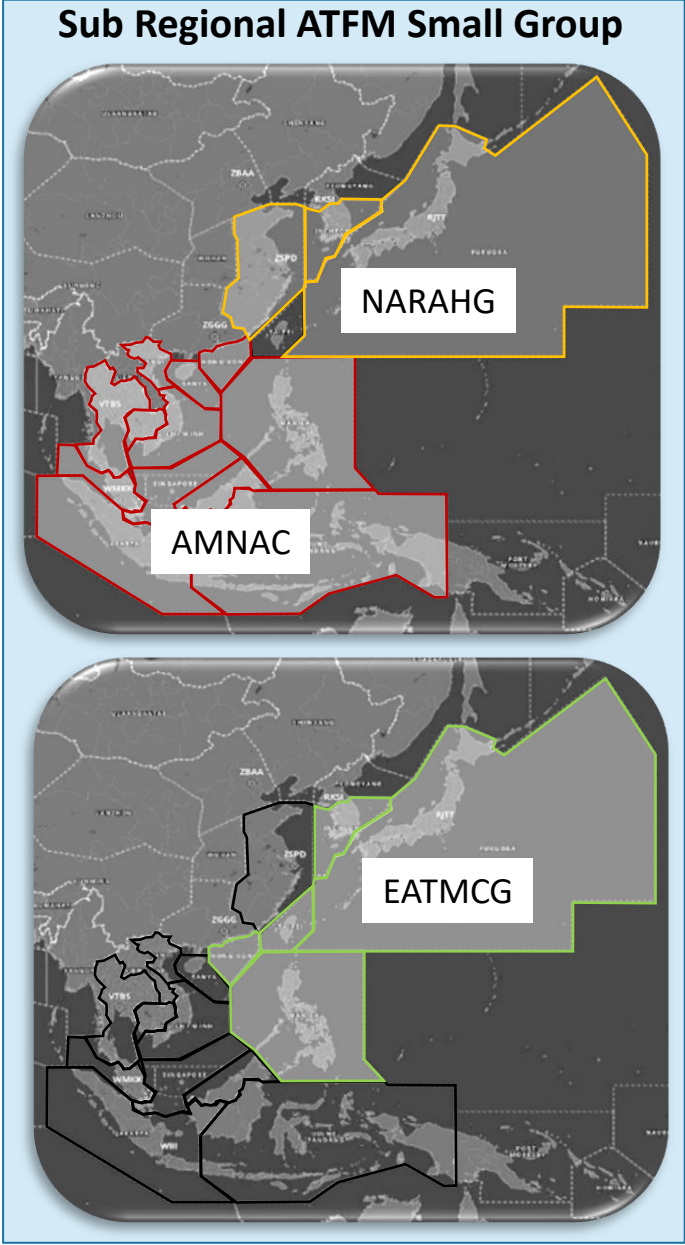
-OTHER-

Participants: ATMC, ATC facilities, Airlines, Meteorological agency

Collaborative regional ATFM



JCAB has been participating these sub regional small groups to discuss about collaborative regional ATFM framework



Summarize

- 30yrs+ of history in Japan
- Importance of Collaborative Decision Making
 - * Military, Weather Specialist, Airline and more
- 3 Phases of CDM Process
 - * Strategic/ Pre-tactical/ Tactical
 - ...and Statistical Review/ Feed back

Thank you!

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Sharing insights from Japan's experience with ATFM

JAPAN CIVIL AVIATION BUREAU

TAKAYUKI HARADA

FEBRUARY 2025

Contents

- **Start with**
- **Effectiveness of ATFM**
- **Human Emotional Considerations in ATFM/CDM**
- **Regional ATFM**
- **ATFM next step**

1. Start with

- Doc9971-Manual on Collaborative Air Traffic Flow Management
- That has since been revised and is now in its third edition, 2018.
- Insights from many experiences were inserted.
- Doc9971 is a very well-performed document.
- Thanks ICAO and colleagues involved in the editing who led this work.
- All you need to do is reading this document, however...
- Since Japan also has 30 years of history for ATFM, Japan shares insights from our experiences.

2-1. Effectiveness of ATFM

- Haneda is the busiest airport in Japan with many airlines wishing to fly to.
- With four runways, as basic operations, two runways are used for arrivals. Currently, runway capacity is 62 aircrafts/hour for arrivals, and almost all of these slots are utilized.
- The one reason why all slots are utilized is because ATMC monitors daily traffic forecasts and runway capacities which related meteorological conditions and various kinds of airport constraints.
- ATFM is an important function of ATM as it enables control/regulation of the flow of traffic to/from the airport even when airline schedules are disrupted for a variety of reasons.

2-2. Effectiveness of ATFM

- Without the support of ATFM, there is a risk in using the full handling capacity of the airport. It depends on how we think about margins.
- Prior to the introduction of ATFM, used firebreaks for scheduled slot, which temporarily reduce traffic volume in case something goes wrong.
- This would be a waste of runway capacity. This was one of the old ways.
- In addition, once the number of aircraft on airborne holding increased, it was difficult to predict when it would end.
- In such a chaotic situation, ATC tends to create enough margins to ensure safety: margins for TWR, TMA, and ACC respectively.

2-3. Effectiveness of ATFM

- ATFM is essential for high-density air traffic flow. It is especially essential to maximize the use of existing runway capacity.
- To minimize margins in both normal and disruptive situations is a major advantage of ATFM.
- ATFM is one way to guarantee safety even if something goes wrong with the situation and can be linked to airport crisis management.
- Most importantly, **it contributes to safety**.
- And it contributes to CO2 emissions reduction too.

3-1. Human Emotional Considerations in ATFM/CDM

- Doc9971 is an excellent document and beautiful. In reality, it encountered many difficulties. It was human emotion.
- Management is the job of distributing unbalanced tasks.
- ATFM balances demand and capacity, which means that difficult situations are resolved with the cooperation of other stakeholders.
- Cooperation results in delays or detours, which aircraft operators and pilots do not want. Those who are given more work or delay are unhappy.
- Only those who have had only one reduced task will thank you.
- This is why those of us involved in ATFM have a tough time.



3-2. Human Emotional Considerations in ATFM/CDM

- In general, managers have a tough job.
- The same is true when it comes to ATFM implementation.
- ATFM manager must manage conflicting opinions from all stakeholders with complaints.
 - airlines -No delay
 - Pilots -No delay, No detour, No altitude restriction
 - Airport managers -No long use of aircraft stand
 - ATC -No Miles In Trail, No free of ATFM



3-3. Human Emotional Considerations in ATFM/CDM



- More the situation worsens, the more the emotional side of human tends to come out.
- Communication skills are also important to explain a situation logically and gain consensus.
- In order to make rational decisions and obtain the agreement of all stakeholders.
- It needs:
 - A system that can share the correct situation in real for all stakeholders
 - Share the situation with data
 - A scheme to share post annalistic reports with data



3-4. Human Emotional Considerations in ATFM/CDM

- Personnel engaged in ATFM need to have a lot of knowledge about aircraft operations and air traffic control, as well as ability for quick situational awareness and a strong decision-making.
- Since coordination with many stakeholders is necessary, **communication skills are important**, whether the means of communication is voice or e-mail.



4-1. Regional ATFM

- Doc 9971 mentions that ATFM is effective when there are more than 70% of aircraft to be controlled. To meet this, it is likely that it is not efficient to conduct ATFM in only one FIR. Therefore, it states that regional ATFM is preferred.
- Japan implemented ATFM for only domestic flight when it started, This is because of the high ratio of domestic flights in Fukuoka FIR.
- Since Tokyo/Narita(RJAA) was an airport that mainly handled international flights, ATFM for only domestic flights was not effective.



4-2. Regional ATFM

- Many airports in the Middle East and Asian region have international flights, the establishment of regional ATFM is desirable from the beginning.
- Currently, Japan is also working on regional ATFM, but a multilateral effort include some difficulties.
- It is a challenge, but there are things to be done for this goal.



4-3. Regional ATFM

- Establishing an organization like EUROCONTROL in Europe would be politically and financially difficult in other regions.
- However, we believe that with the information sharing mechanisms we now have in place, such as SWIM, plus current technology, we can have a virtual ATFM center or even a multinodal ATFM.
- Communication with neighboring states is important.
- Sharing information about ATFM at regional meetings like this one.
- **Creating a coordination group to discuss ATFM would be a first step.**



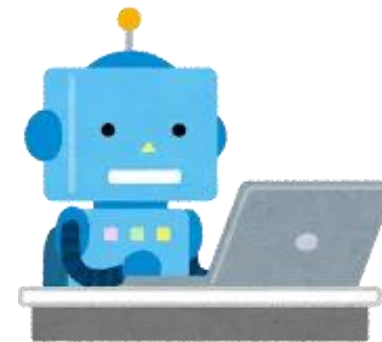
5-1. ATFM NEXT STEP

- The strategic part of the airport and ACC capacity assessment will take time. In many cases, fast-time or real-time simulators are used.
- The tactical part of that capacity assessment and determination is based on a variety of information gathering, including today's weather.
- In Japan, the ATFM officer collects information that affects capacity, and although there are some guiding documents, the final decisions are made by humans.
- Weather information related to airspace and airport operations is also being partially digitized.



5-2. ATFM NEXT STEP

- Many experiential factors are also taken into account for ATFM process.
- The process is extremely compatible with AI.
- Monitoring of changing situations/elements and providing information to stakeholders, etc., will all be made easier with AI.
- Cooperation with industry is critical
- There is great potential for AI to handle many parts of ATFM in the future.
- **AI will contribute significantly to the realization of regional ATFM.**



6. Conclusion



- ATFM is essential for high-density air traffic flow, and it contributes to safety and environment.
- Dialogue/conversation is necessary to achieve CDM/ATFM with many stakeholders who have different objectives and roles.
- Regional ATFM is the key to effective ATFM. To achieve this, a forum is needed to synchronize the awareness of all parties involved.
- Challenges in implementing AI in ATFM with industry.



Thank you



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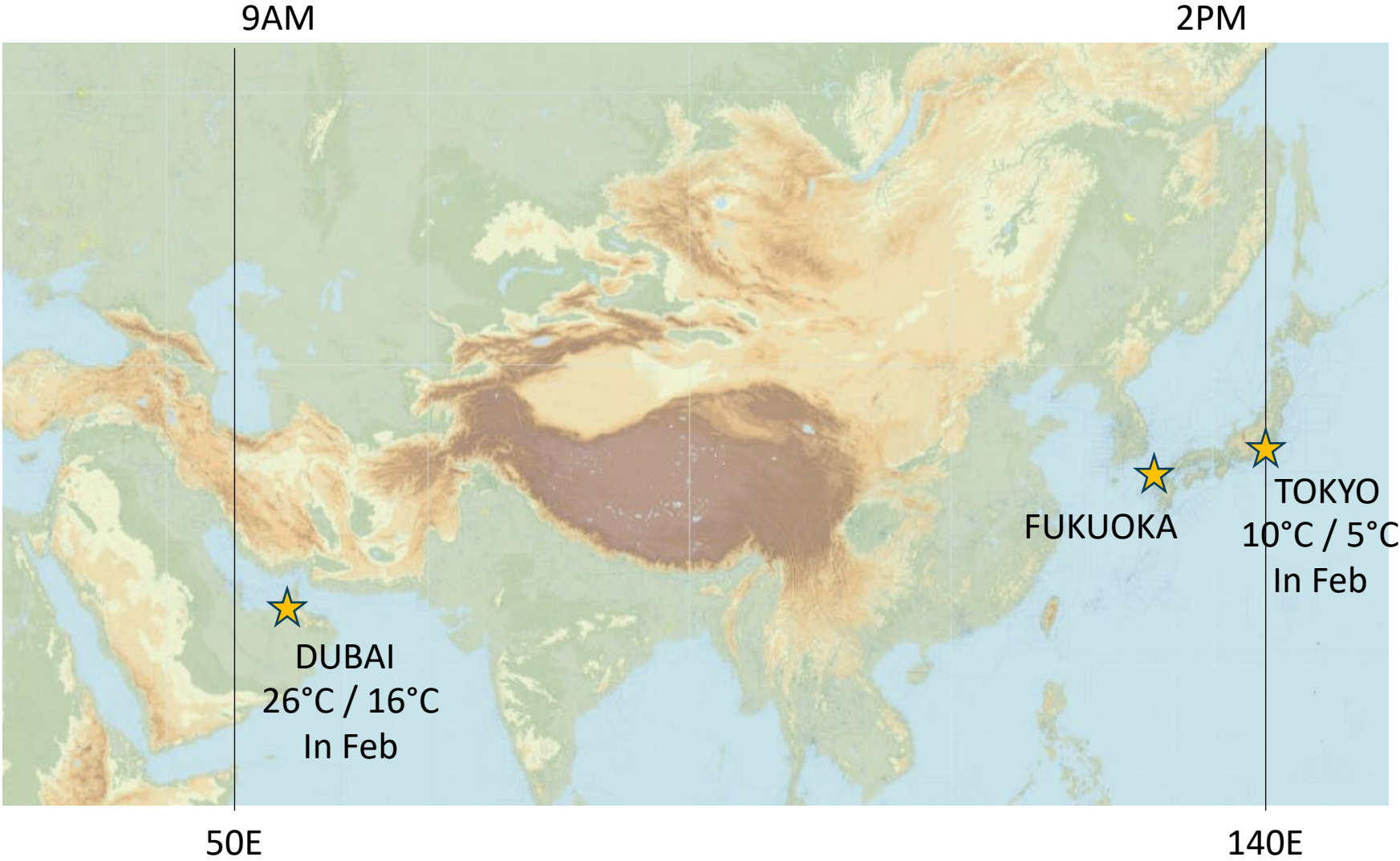


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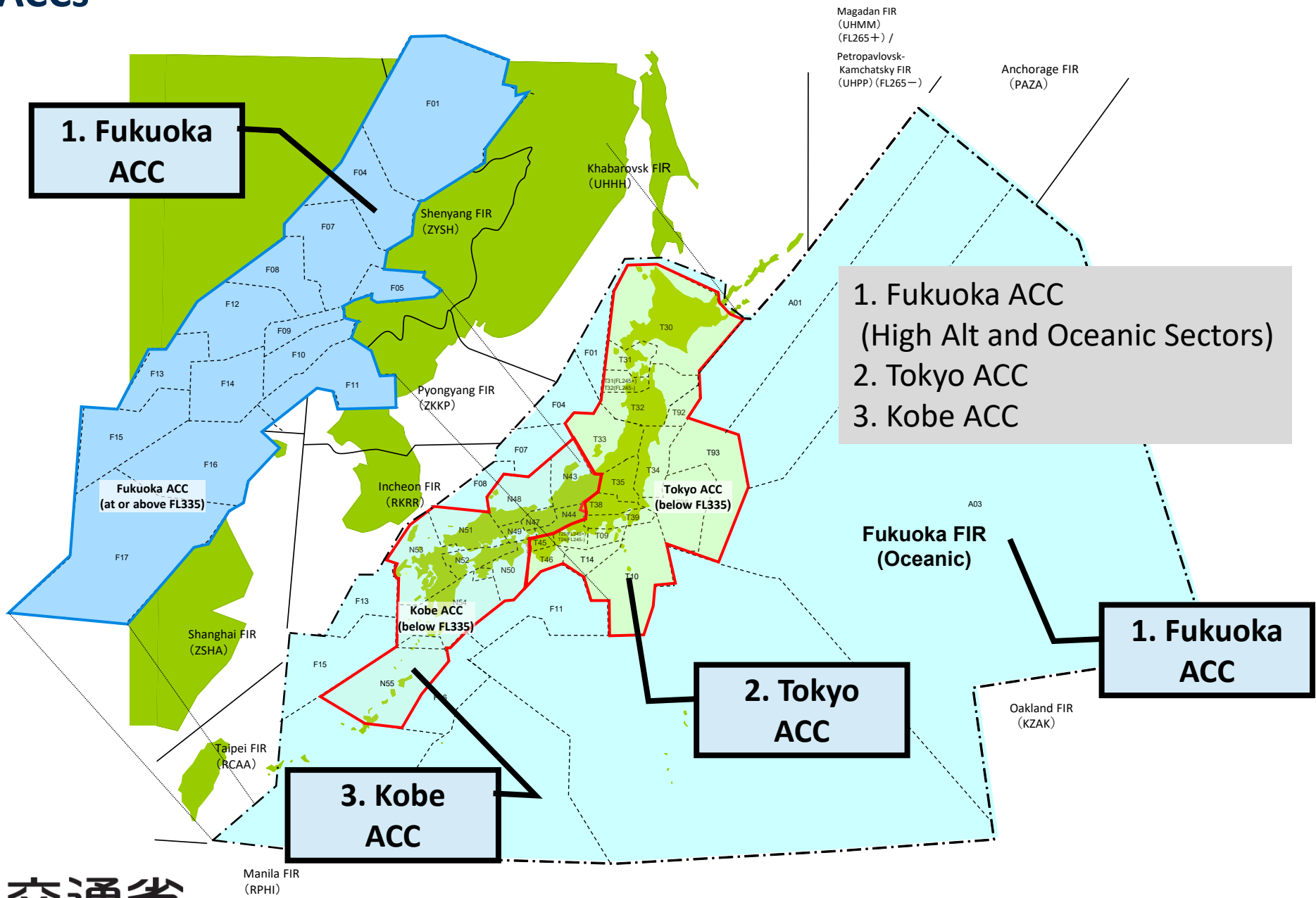
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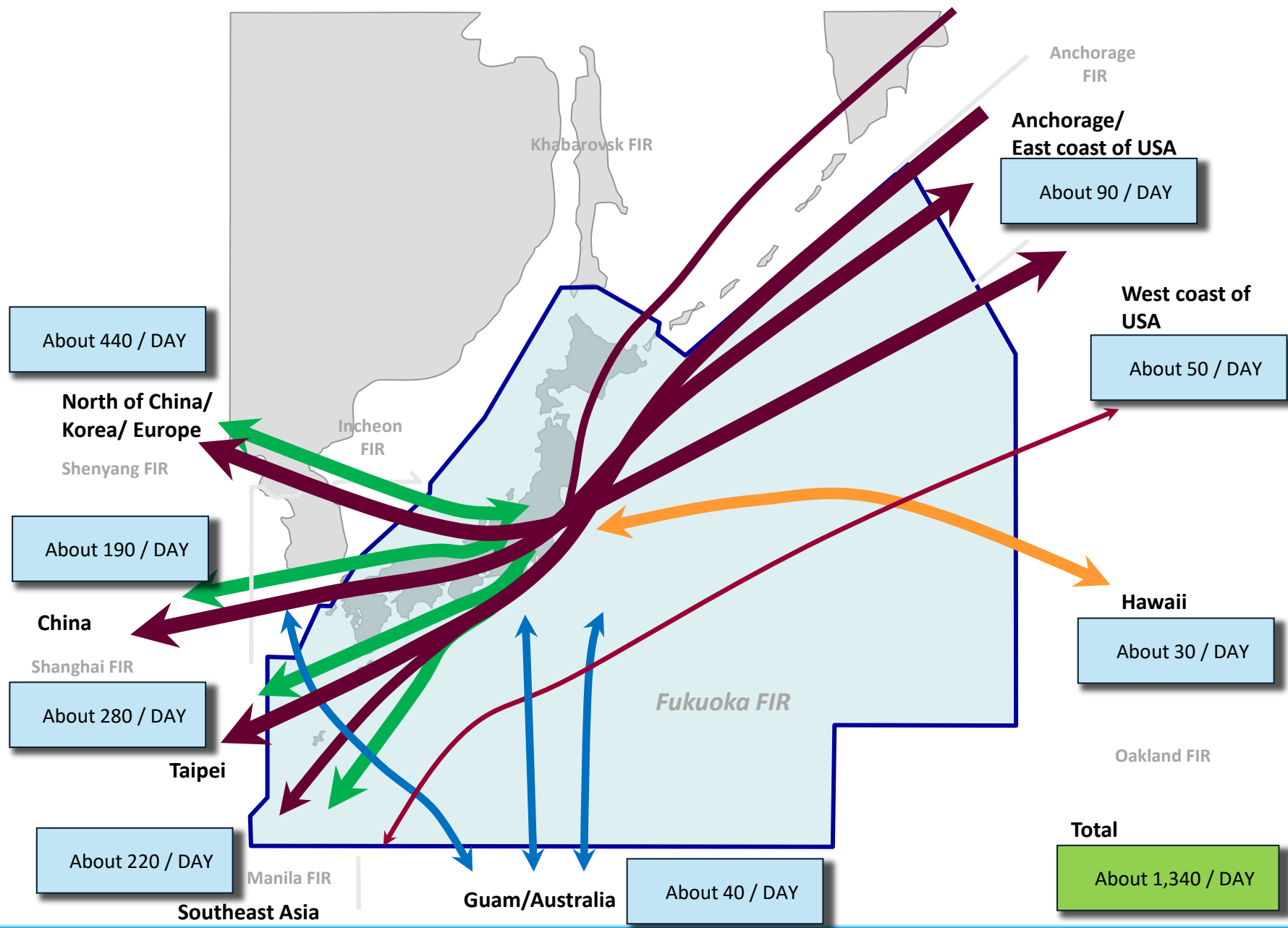
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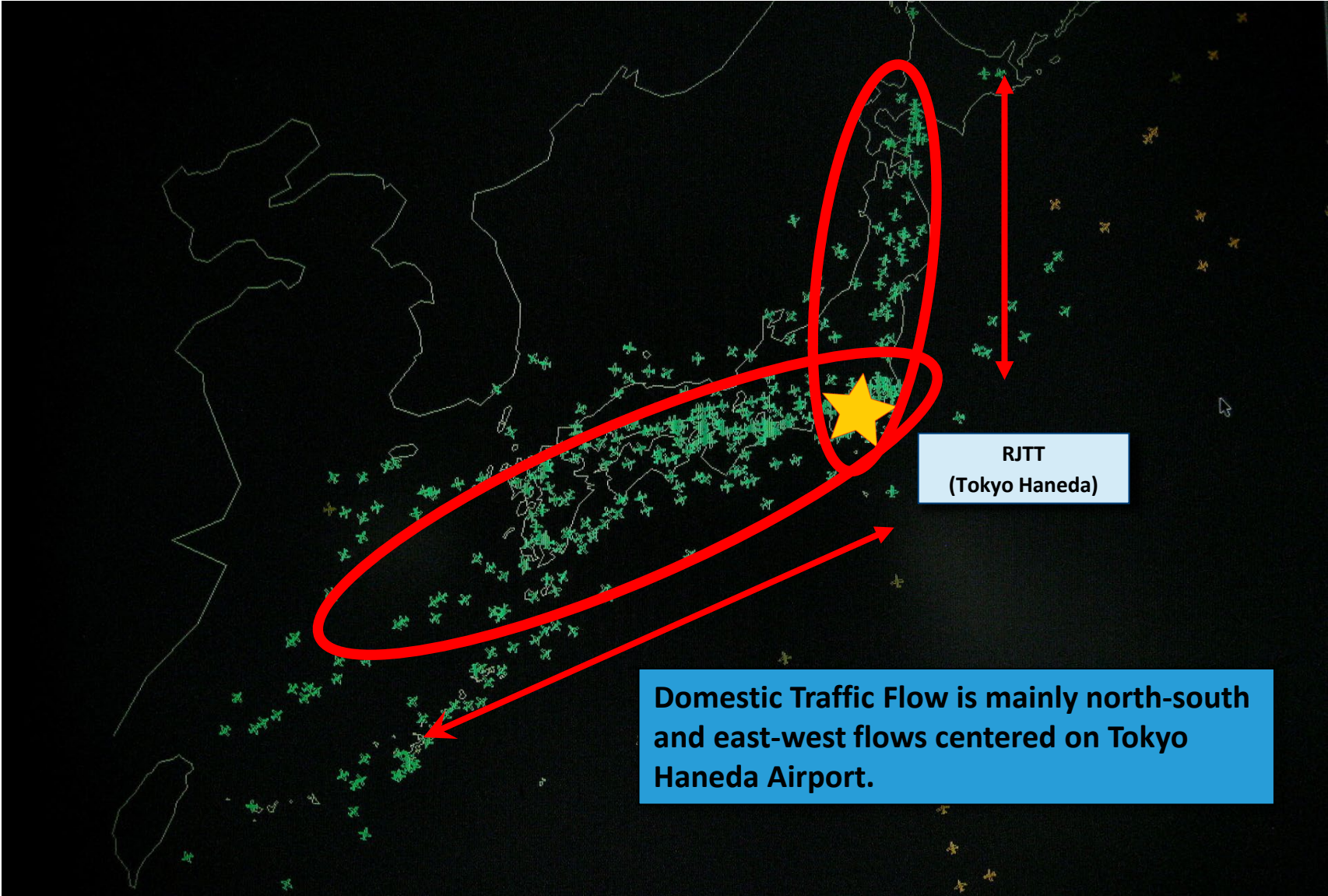
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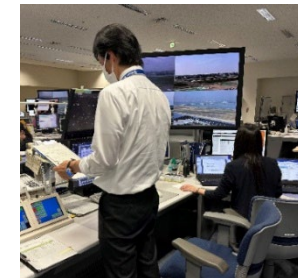
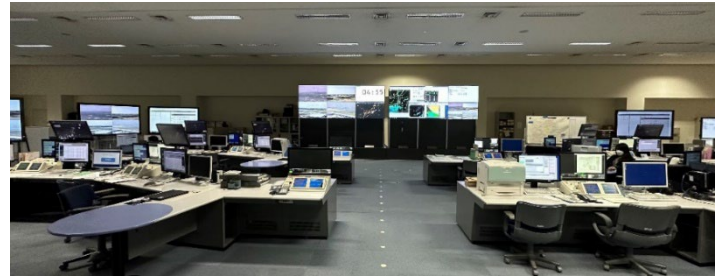
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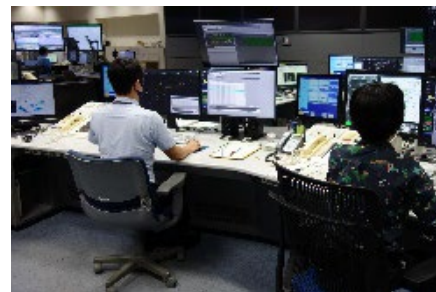


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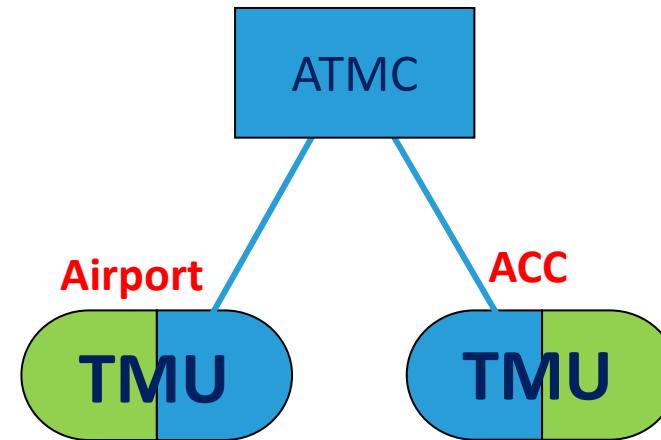
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10

-
4. Shin-Chitose
TMU

[From 20th Mar 2025]
7. Fukuoka TMU (Fukuoka Airport)
8. Kansai TMU (Kansai Airport)

1. ATMC

■ Fukuoka
 □ Fukuoka
 ★ Fukuoka

7. Fukuoka TMU

6. Naha TMU

3. Tokorozawa TMU

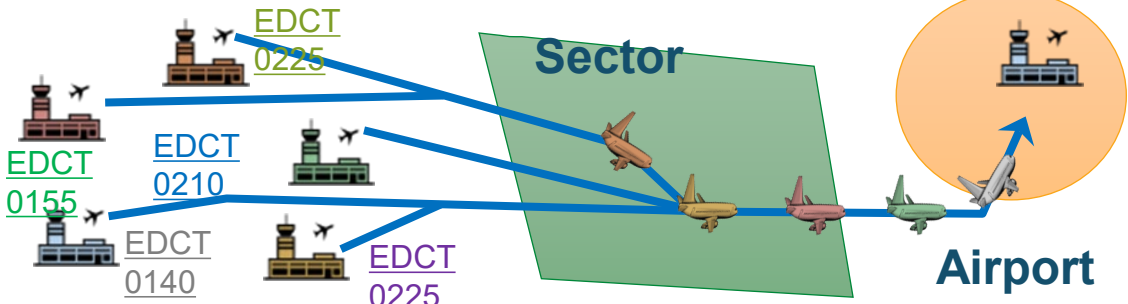
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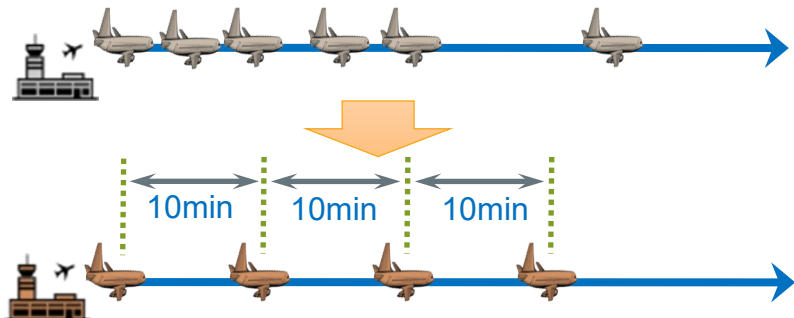
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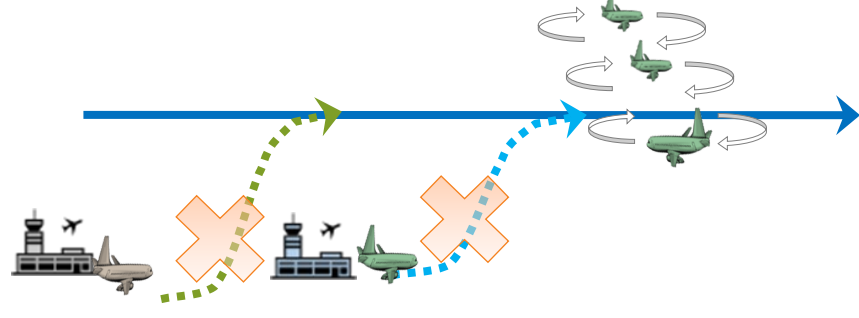
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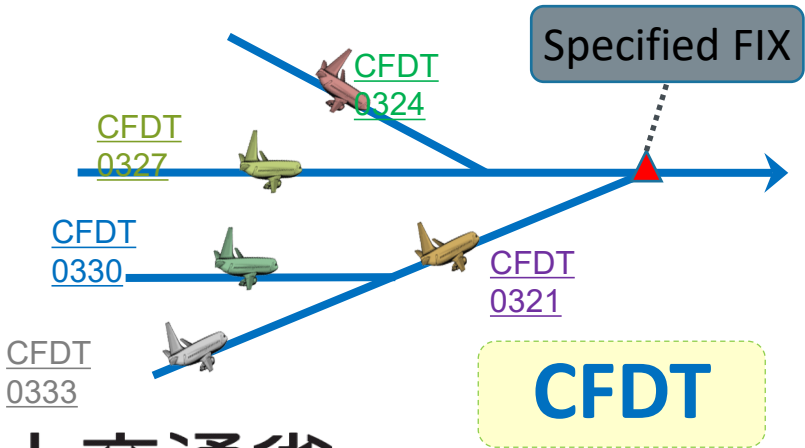
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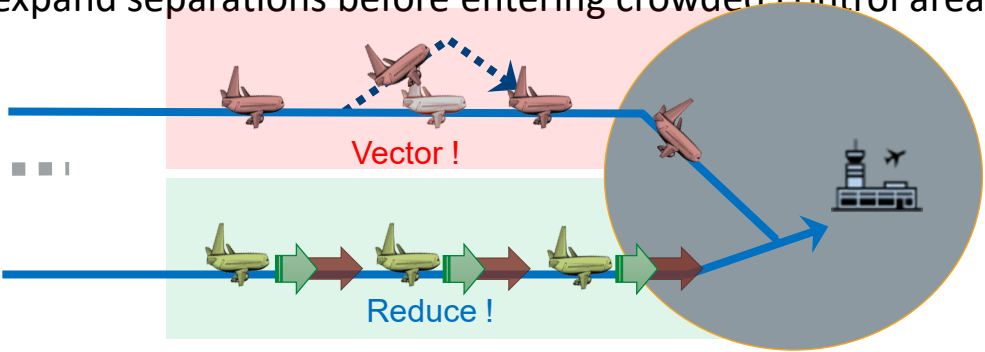
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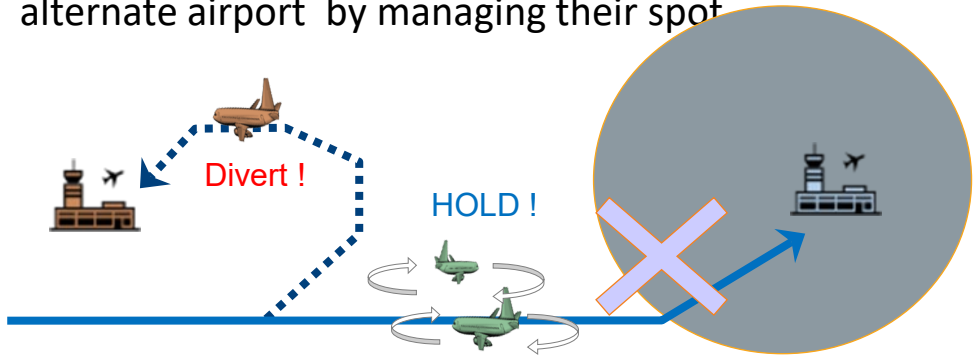


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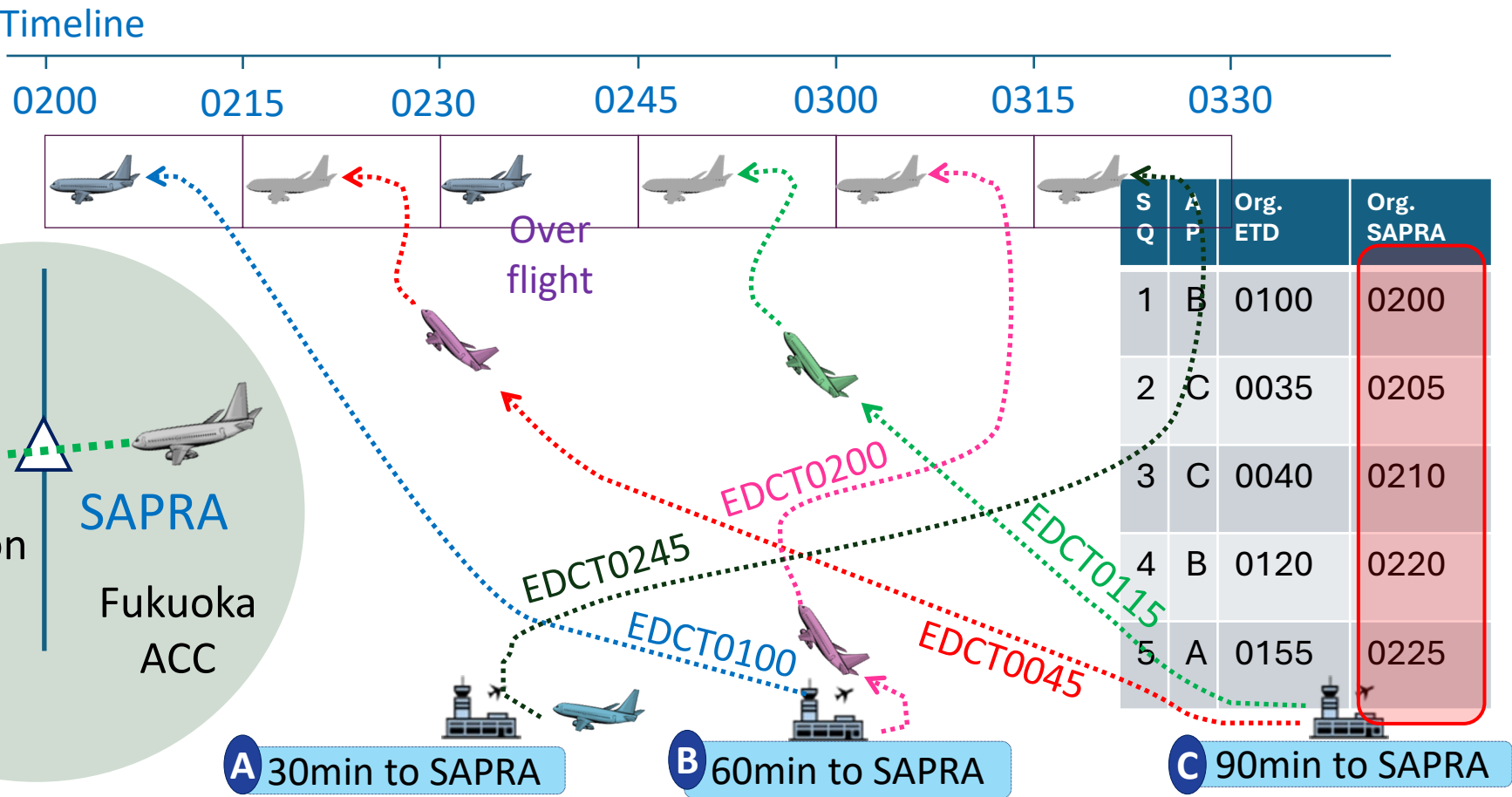
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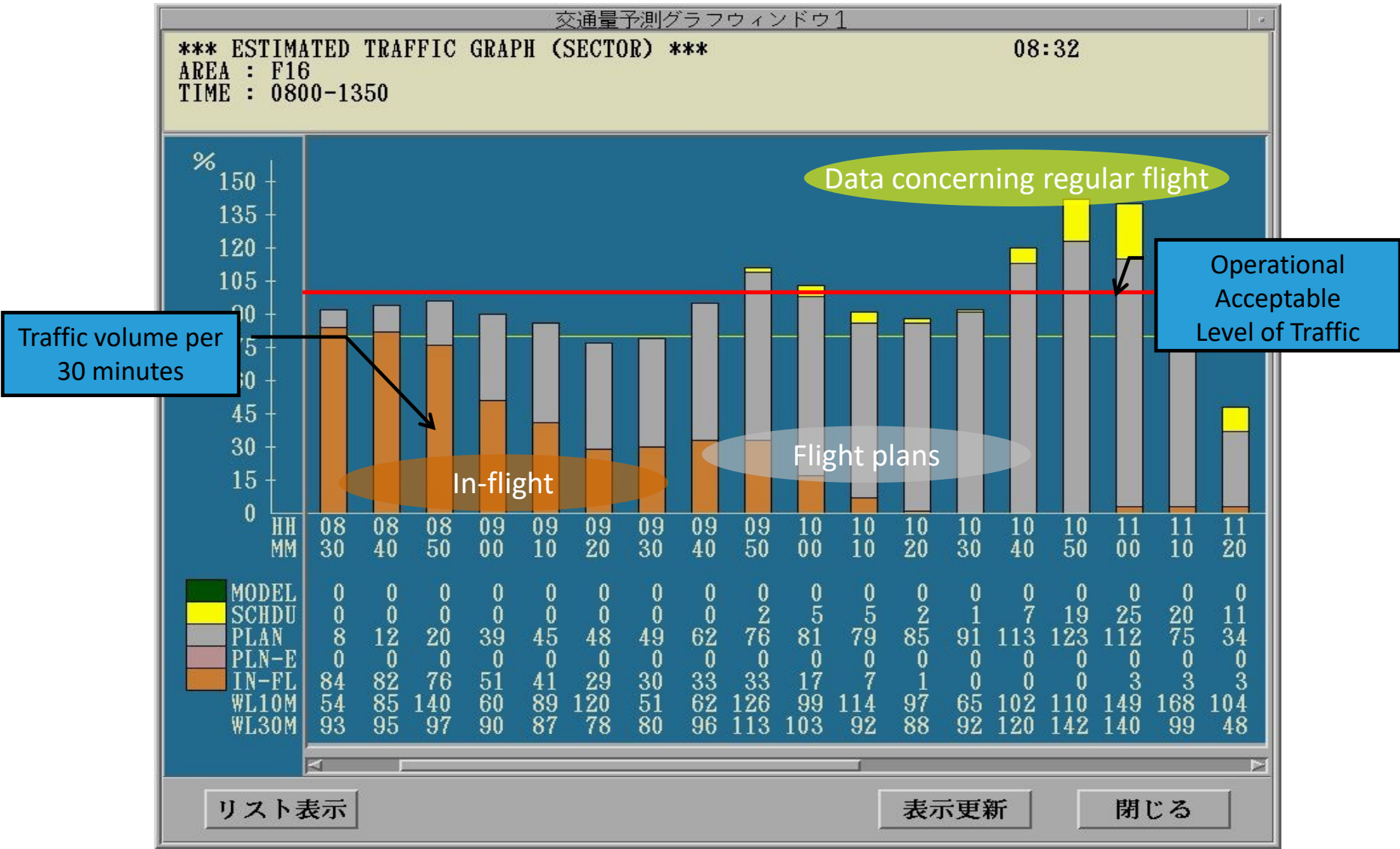
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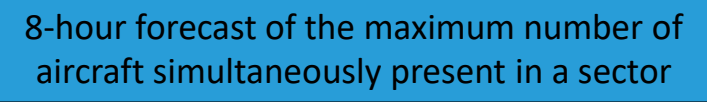
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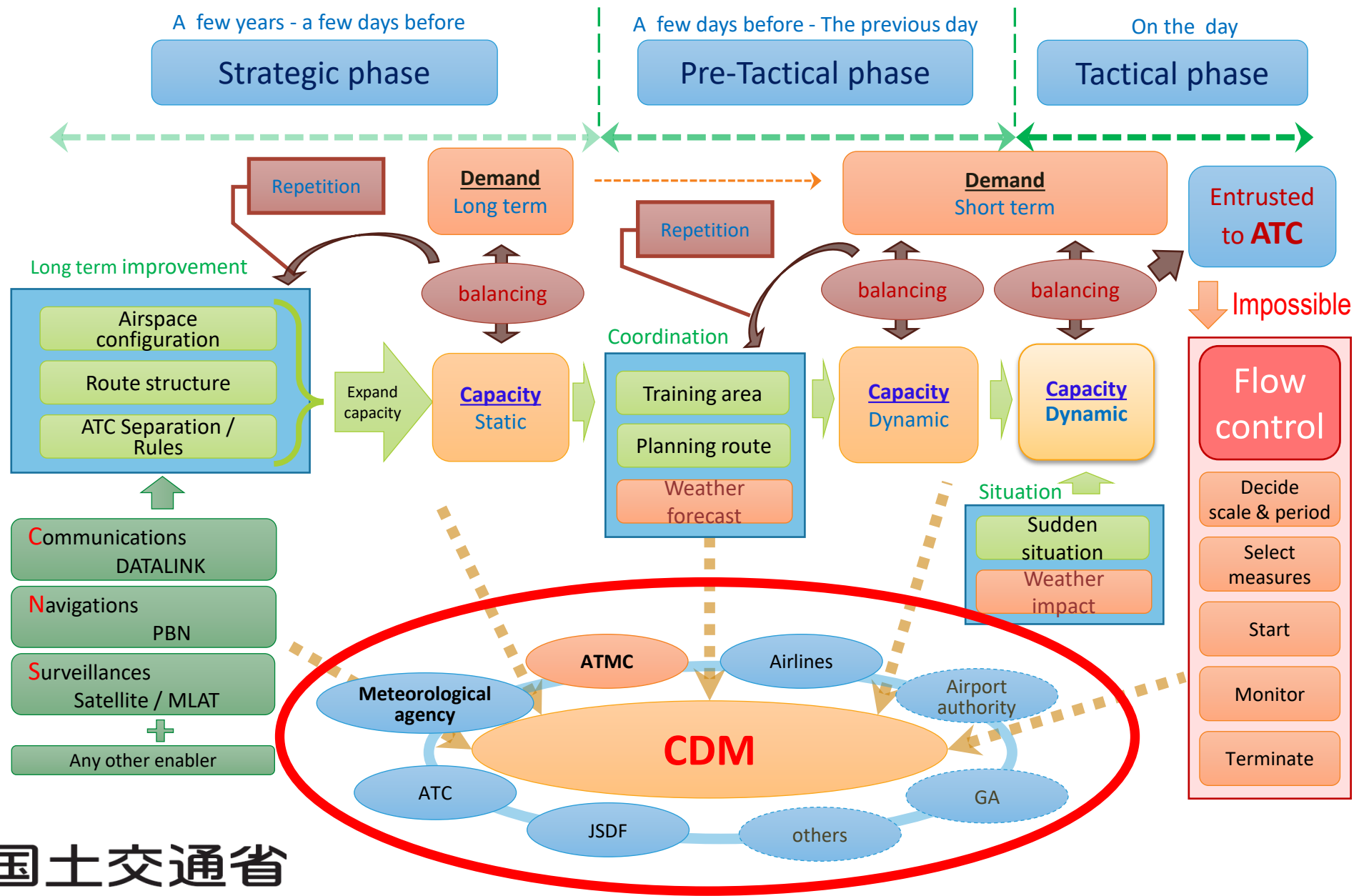
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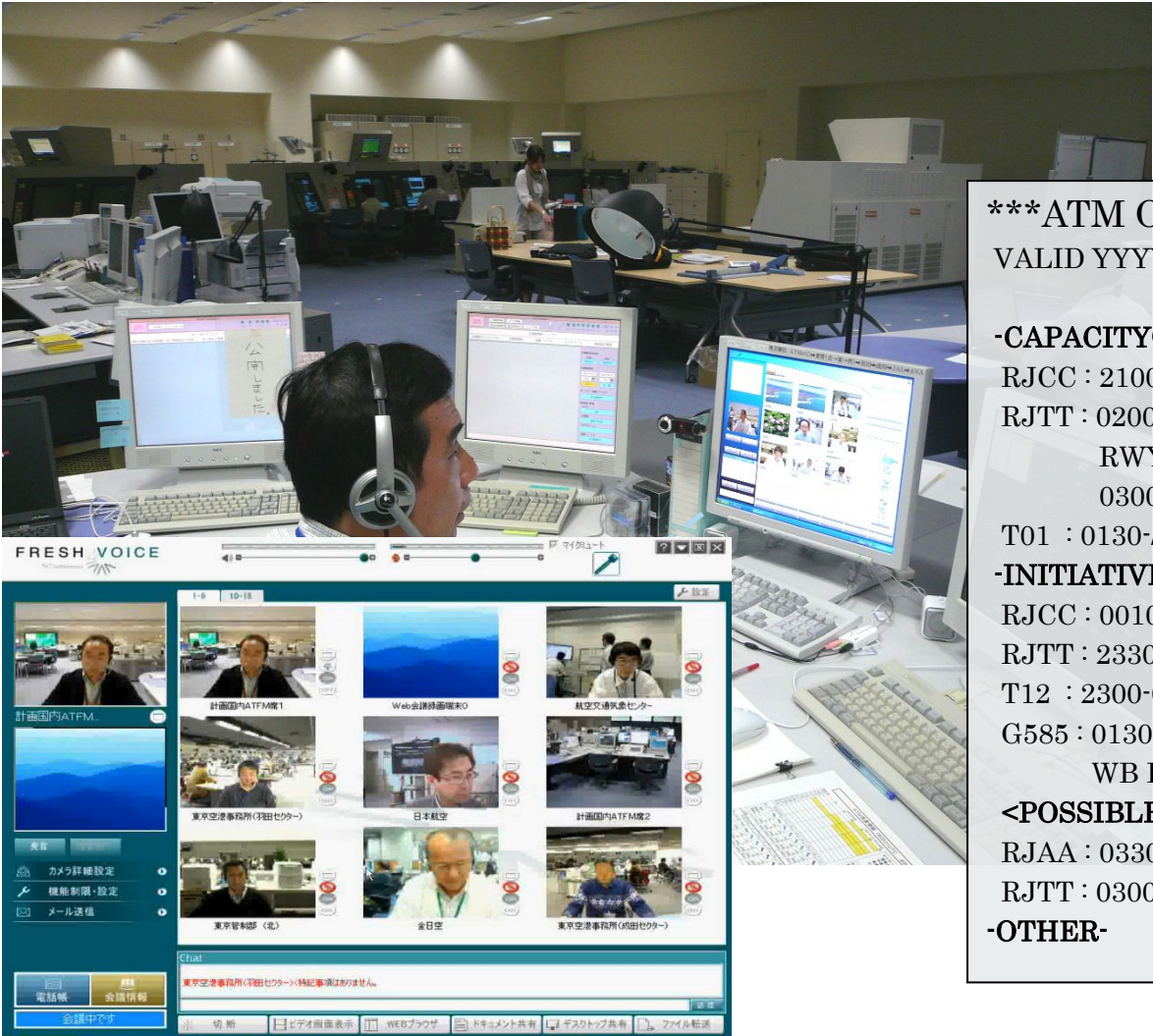
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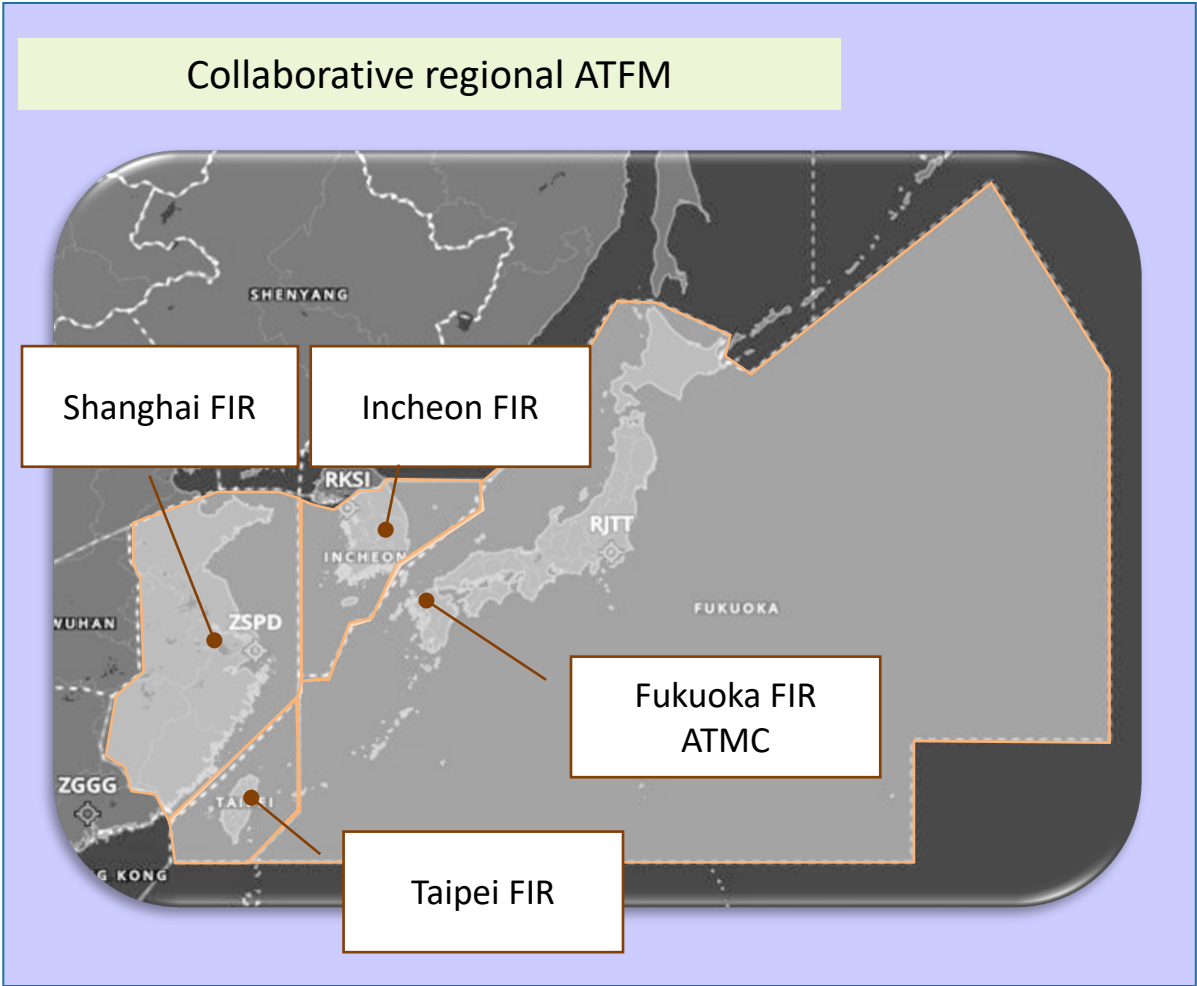
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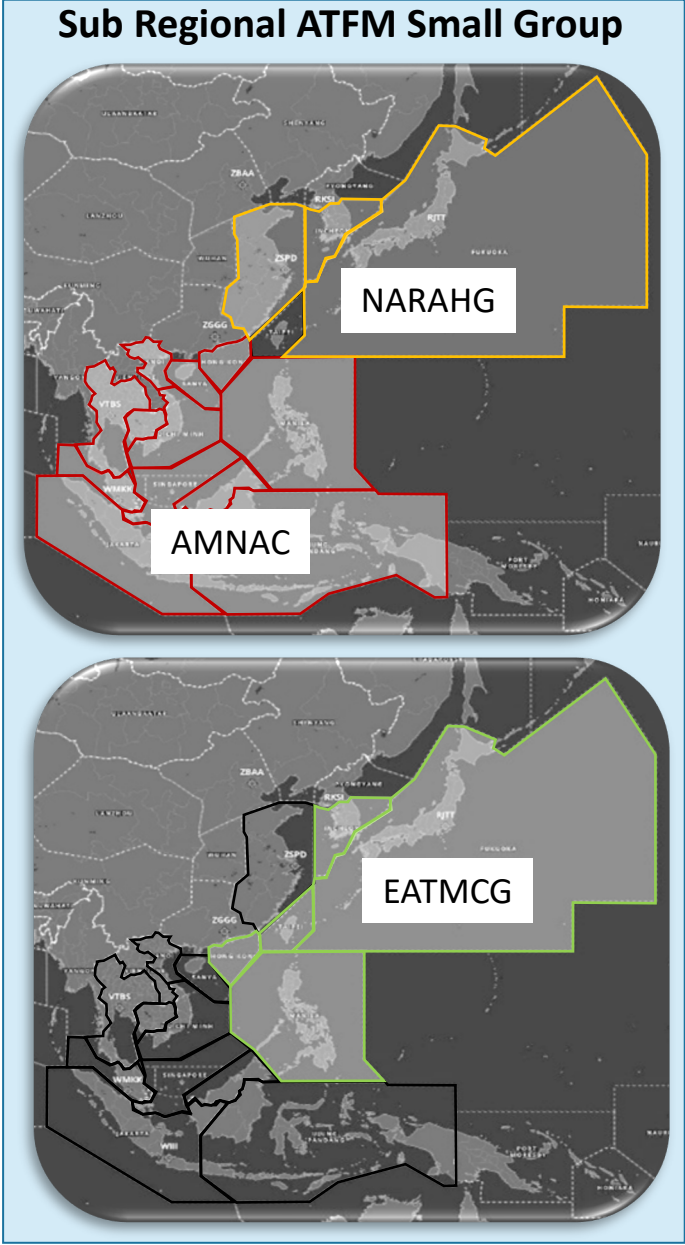
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