



CARATS

Collaborative Actions for Renovation of Air Traffic Systems

CARATS Long-term Vision for Air Traffic Systems



Ministry of Land Infrastructure
Transport and Tourism

JAPAN CIVIL AVIATION

JAPAN AIR NAVIGATION

SERVICE

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国土交通省

Ministry of Land, Infrastructure, Transport and Tourism

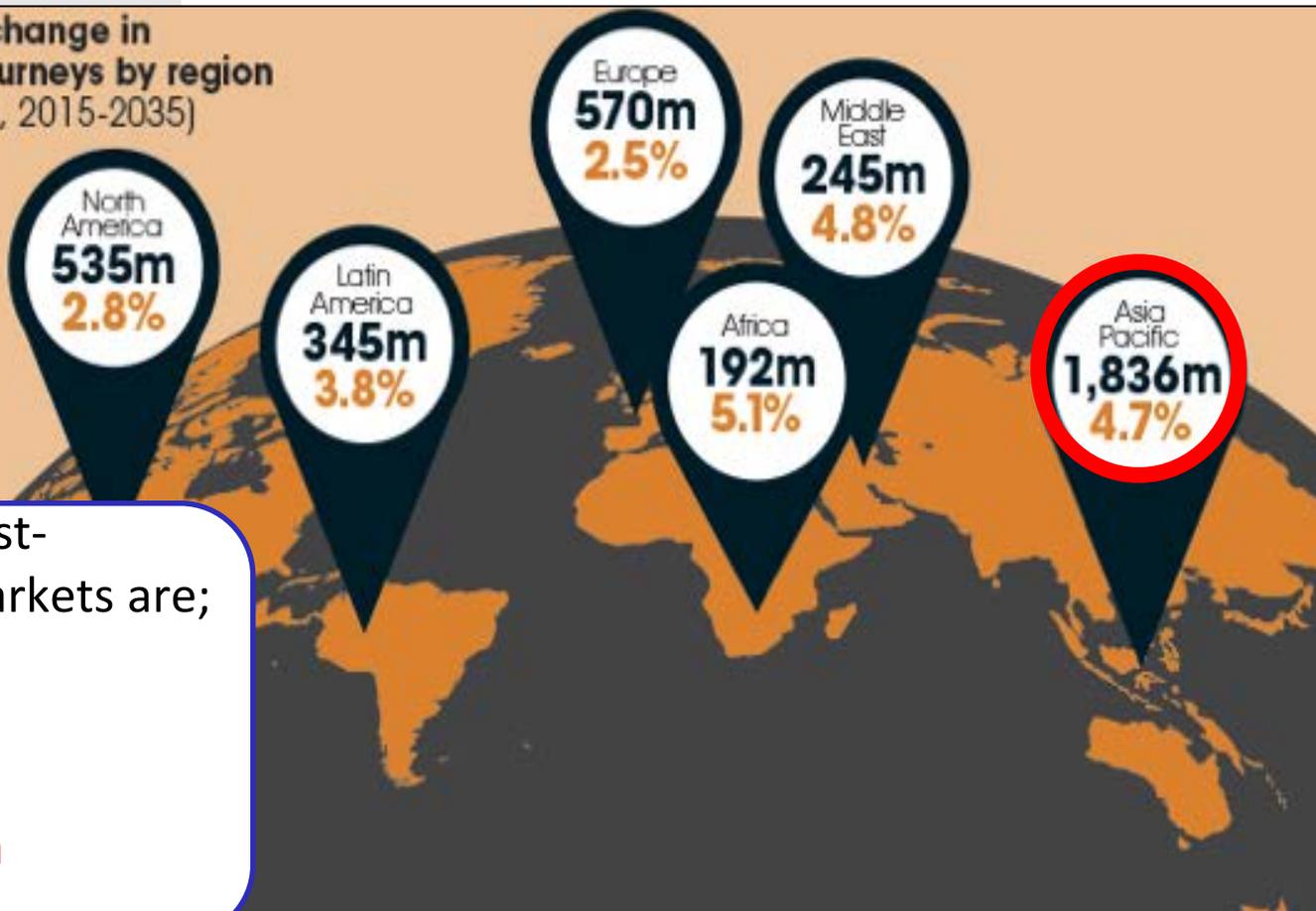
The growth of the world air traffic demand

By 2035, the total number of air passengers will be...

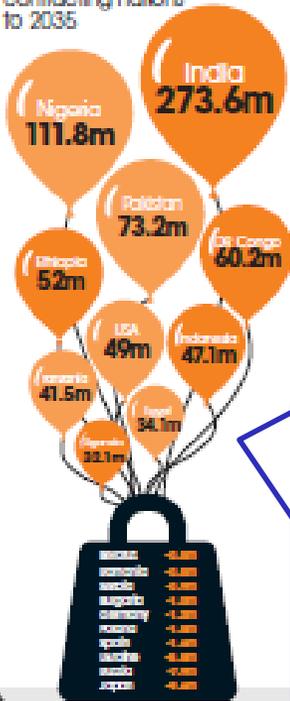
7,200,000,000

is the number of global air passengers predicted by 2035, nearly doubling 2016's 3.8 billion

Growth and change in passenger journeys by region (% and million, 2015-2035)



Population Change Top 10 growing and contracting nations to 2035



Top 5 fastest-growing markets are;

1. China
2. US
3. India
4. Indonesia
5. Vietnam

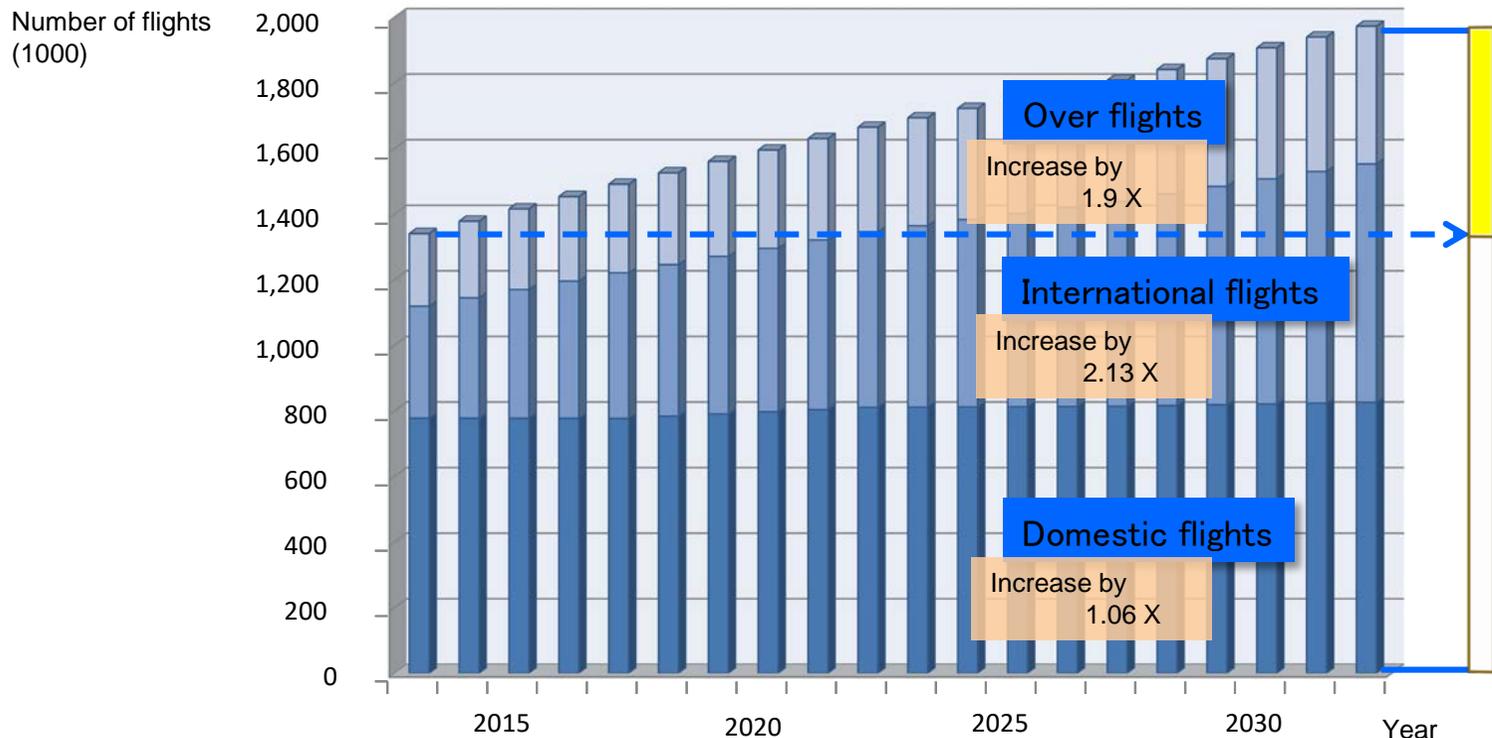
To find out more, go to www.icao.org/passenger-forecast

Necessary reforms based on the envisioned skies 15 years from now

Meet the growth in global air traffic demand

- ◆ Economic growth in Asian countries
- ◆ Progress of globalization

Number of aircraft predicted to fly across the Japanese airspace



We want to minimize flight time !

Departure airport

Inclement Weather

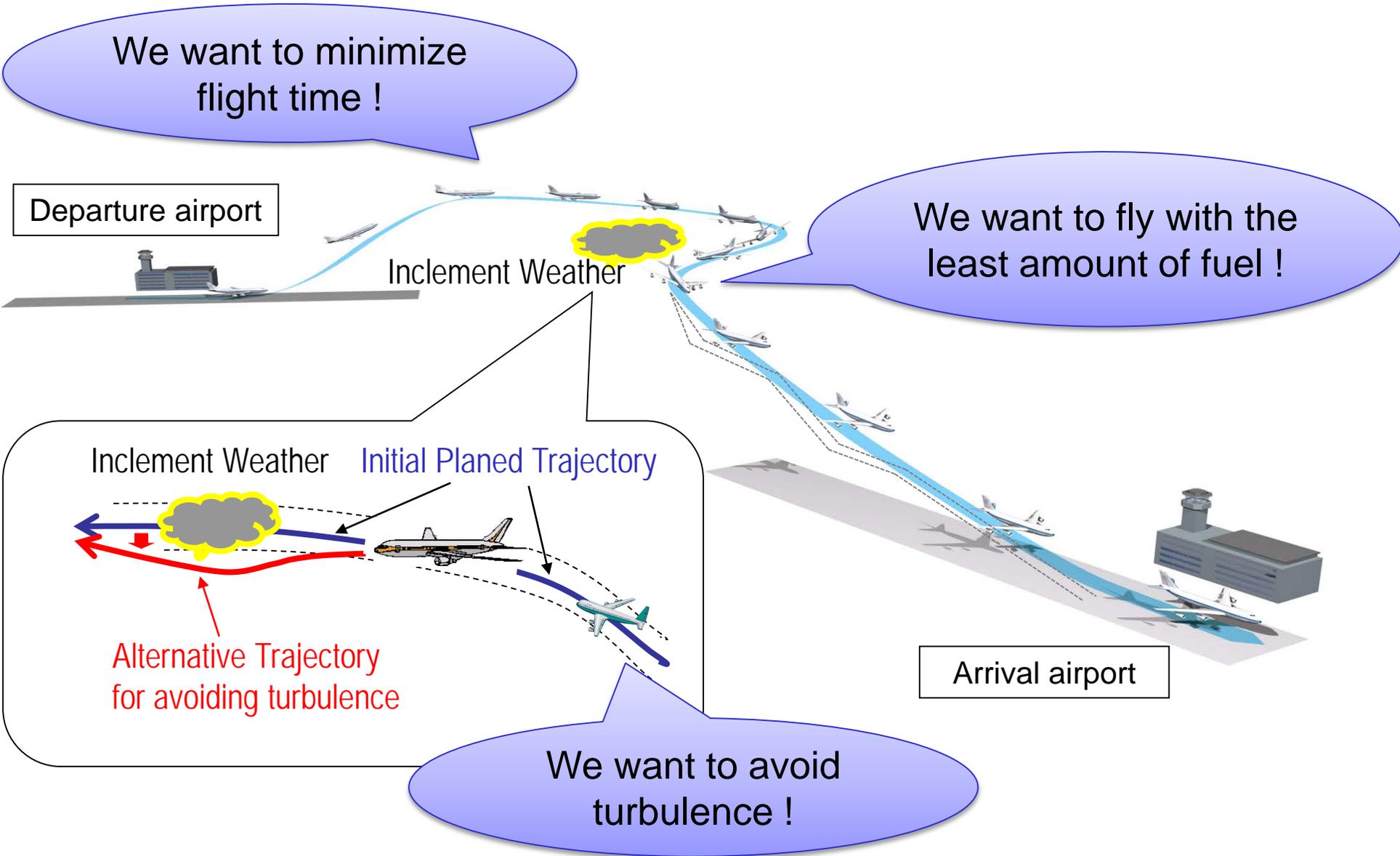
We want to fly with the least amount of fuel !

Inclement Weather Initial Planned Trajectory

Alternative Trajectory for avoiding turbulence

We want to avoid turbulence !

Arrival airport



Ensuring international interoperability – global harmonization

Based on the concept of the ICAO's GANP, regional authorities have formulated their air navigation plans.

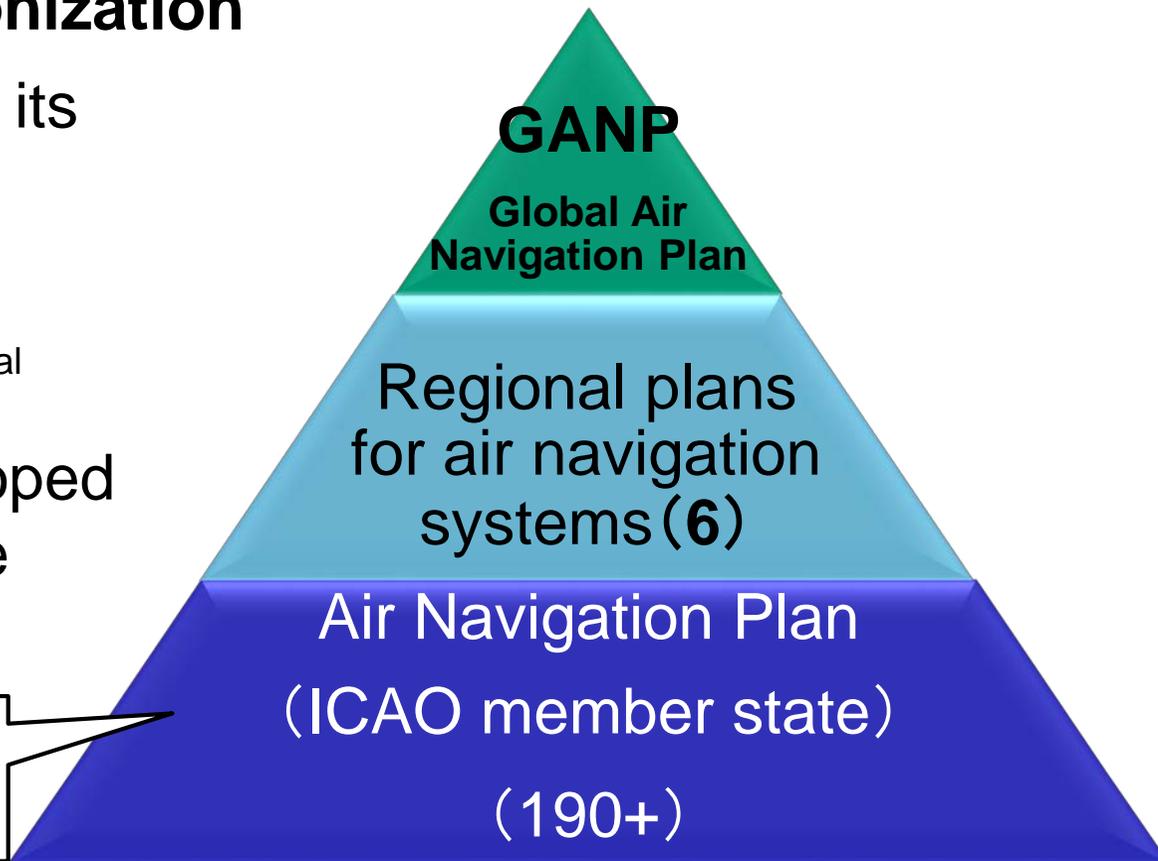
➔ Promote global harmonization

➔ **Each region** has developed its regional plan in accordance with **the GANP**

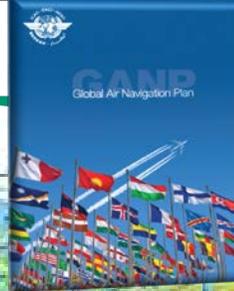
(JAPAN belongs to APANPIRG (ASIA/PAC Air Navigation Planning and Implementation Regional Group),)

➔ **Member states** have developed national plans in accordance with **the Regional Plan**

While taking account of the Global and Regional Plans, Member States have decided their own priorities.



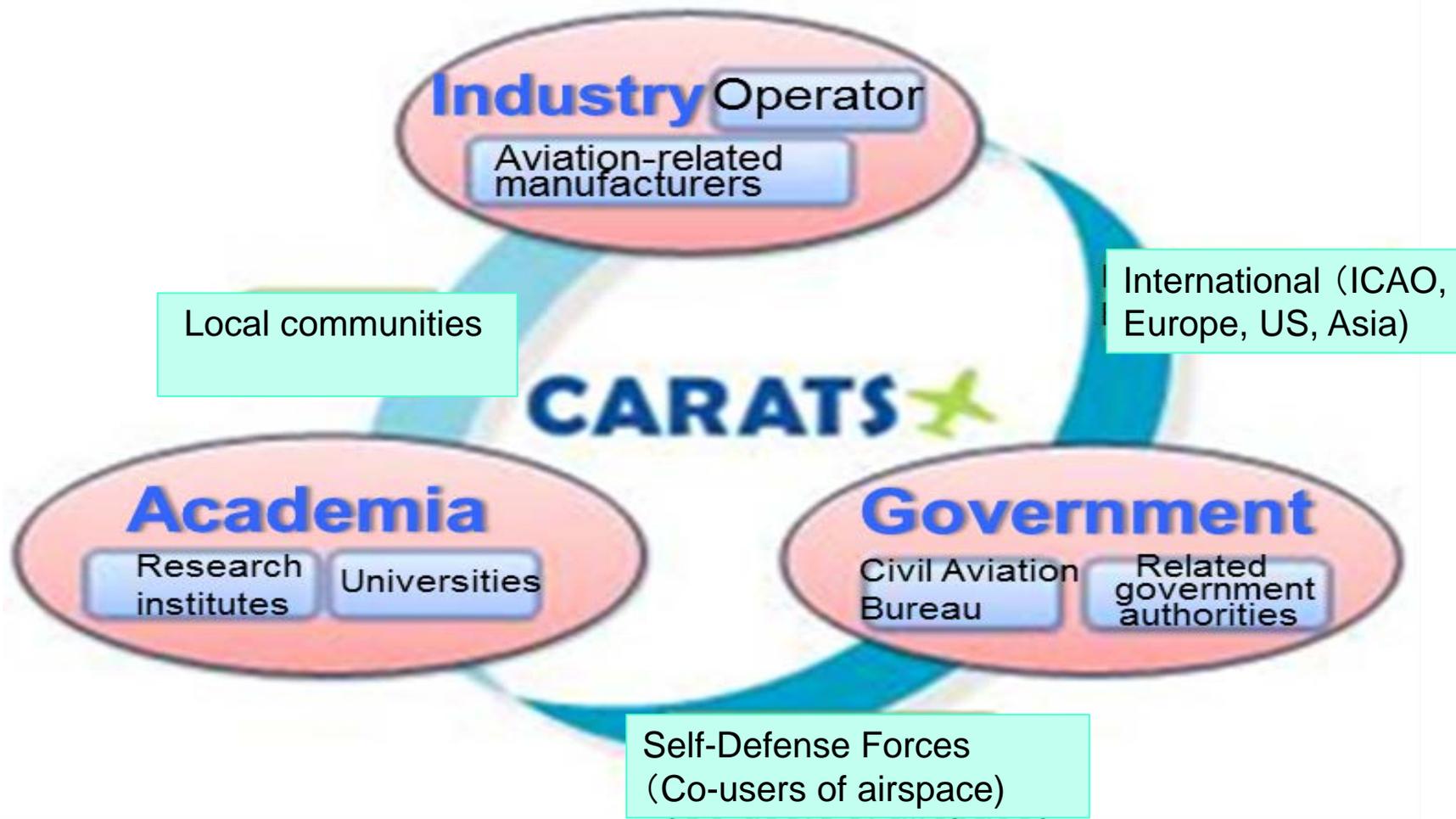
Collaboration with the U.S., the European Union and other countries



Global Air Navigation Plan (GANP)



Collaboration with the stakeholders for development and implementation of CARATS measures



Aim of



Meet Growing Demand
in Air Traffic

Double the air traffic
control capacity

Improve
Safety
Five times safer

Improve
User-friendliness
Improve service level
by 10%

Punctuality

Speedy
service

Low cancellation
rates

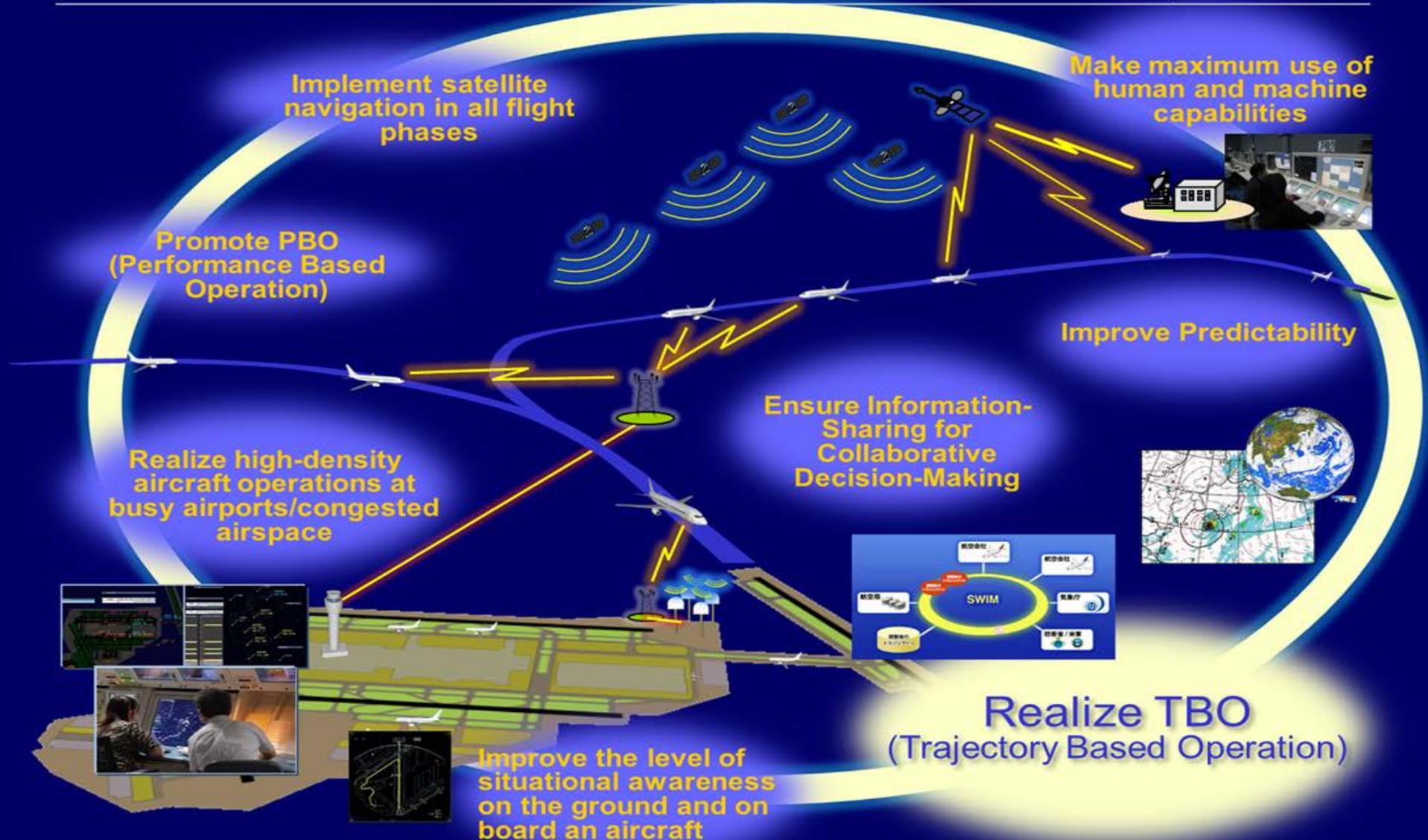
Improve
Operational Efficiency
Reduce fuel
consumption by 10%

Improve
Efficiency in ANS
Increase efficiency
more than 50%

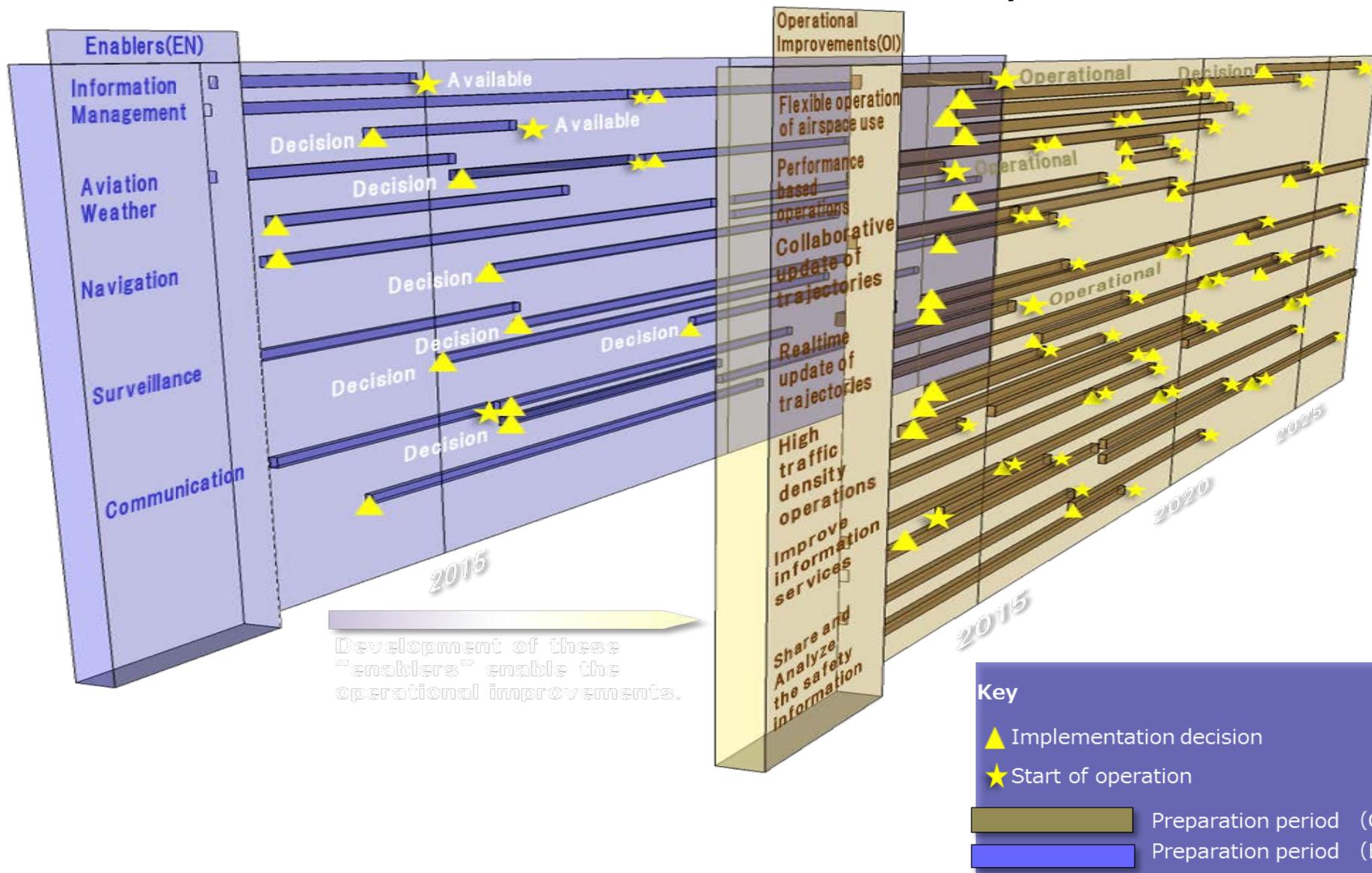
Environmental
Concerns
Reduce CO₂
emissions by
10%

Directions of the Reforms to Meet the Goals

CARATS – Collaborative Actions for Renovation of Air Traffic Systems

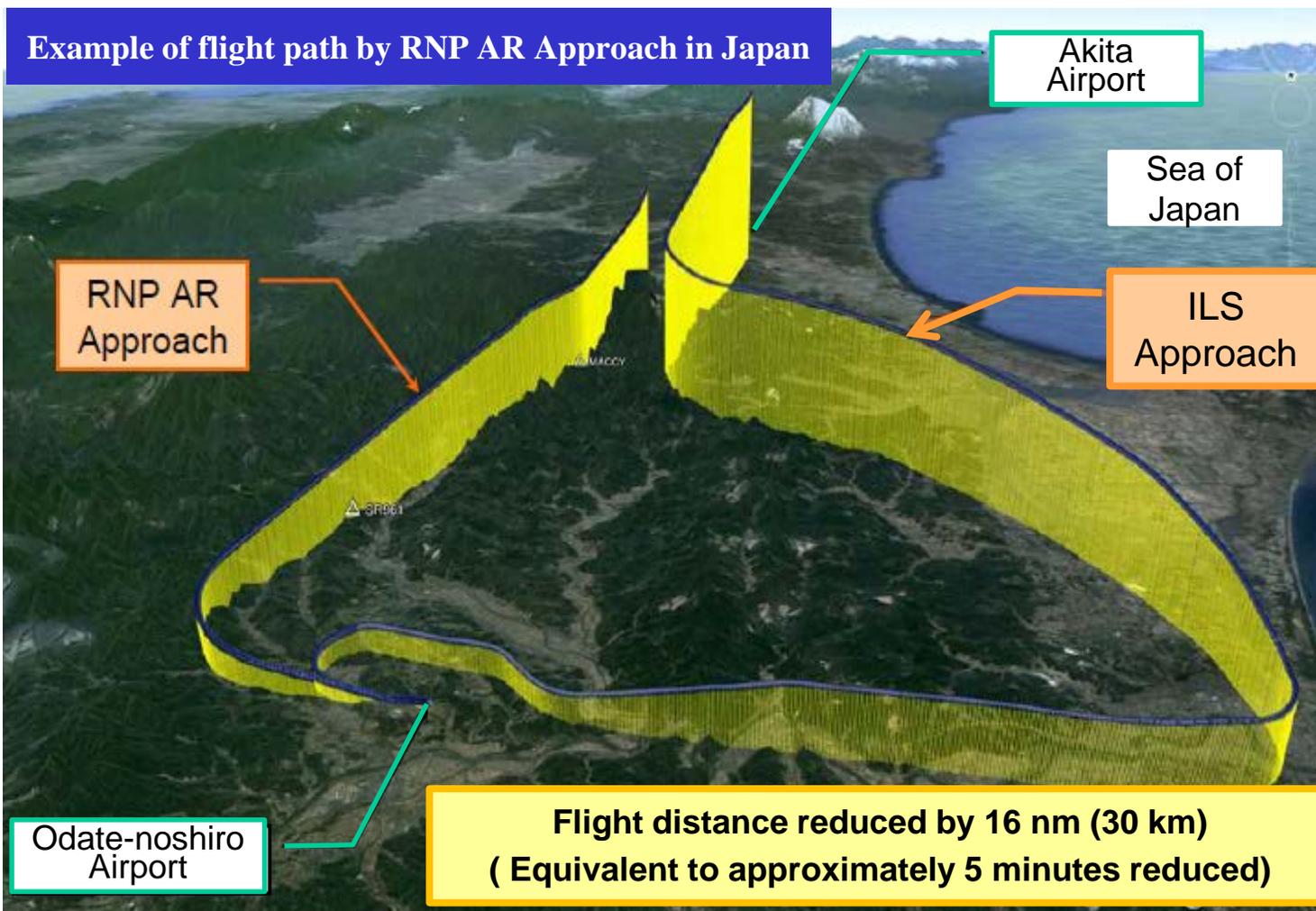


CARATS measures (Roadmap)

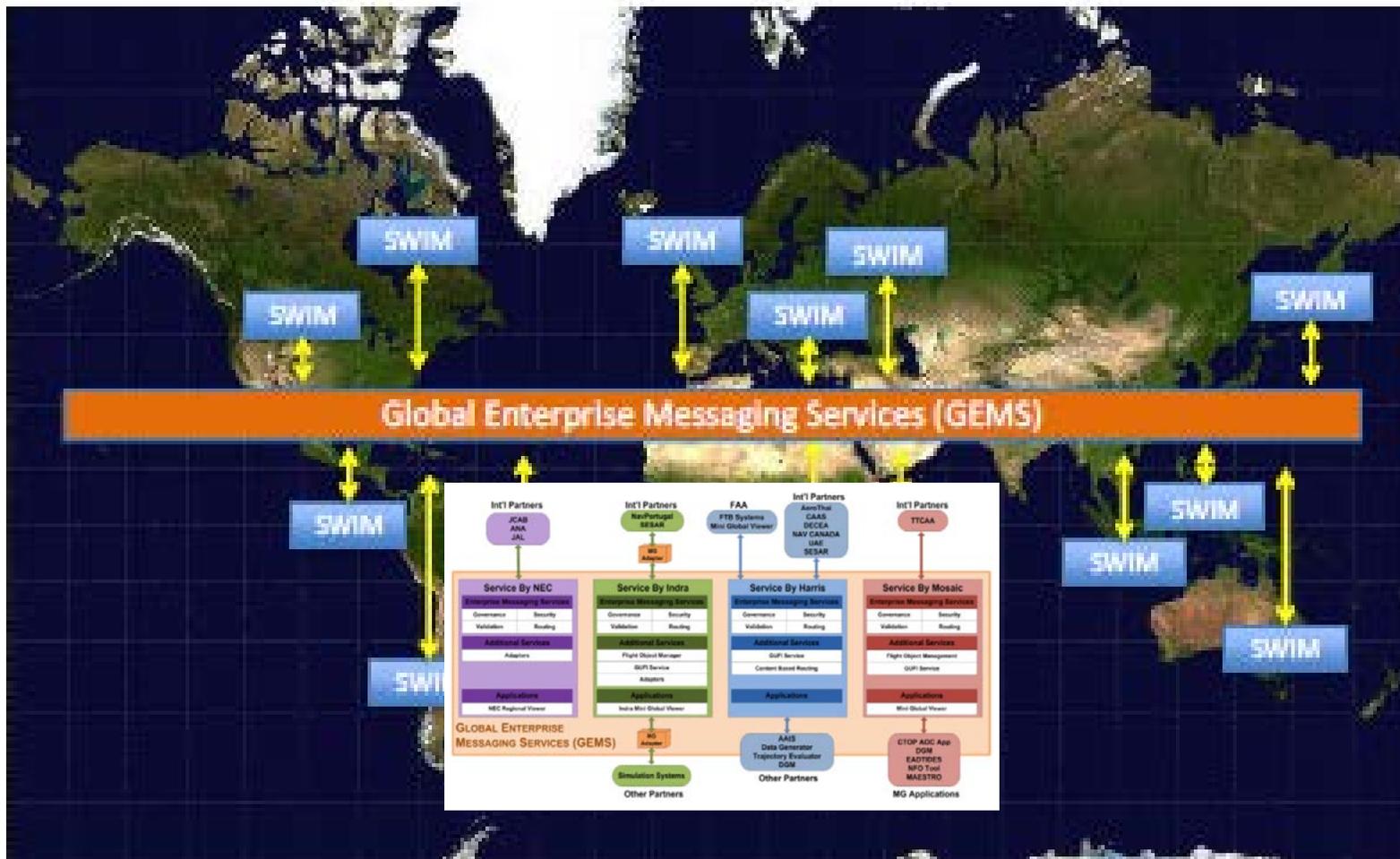


An example of the practices of CARATS : RNP AR Approach

- ◆ Introduce precise and flexible approach procedures for departing and arriving aircraft



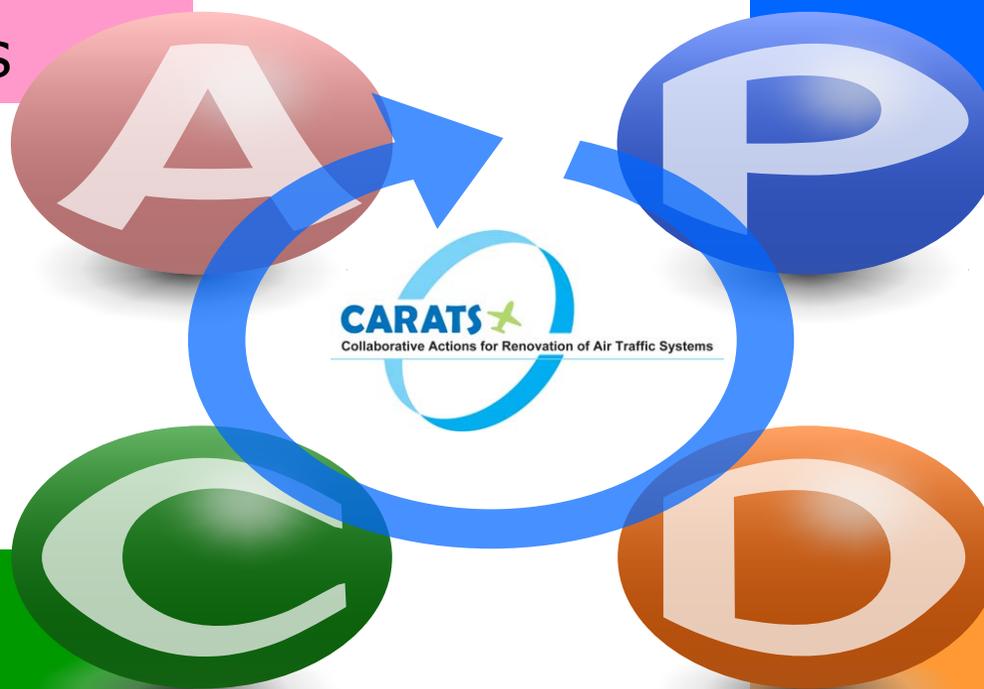
- ◆ the Implementation of SWIM (System Wide Information Management)
-Mini Global Demonstration-



Implementation of Measures and Continuous Improvement Process

Improvements
measures
based on
evaluation results

Creation/revision of
Roadmaps/Measures

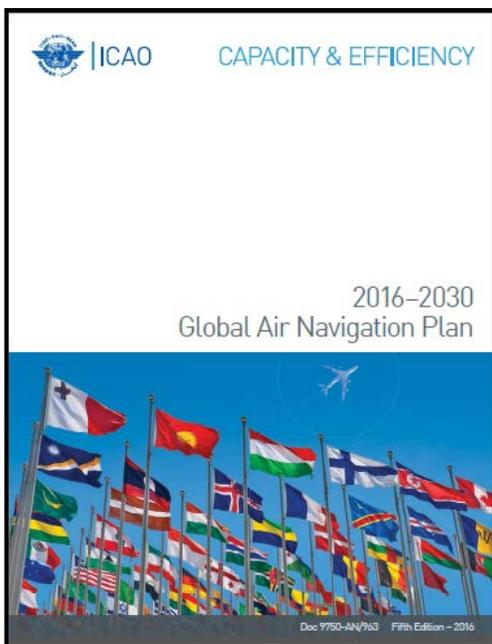


Monitoring and
evaluation of
implementation/Execu
tion

Implementation
/Execution of Measures

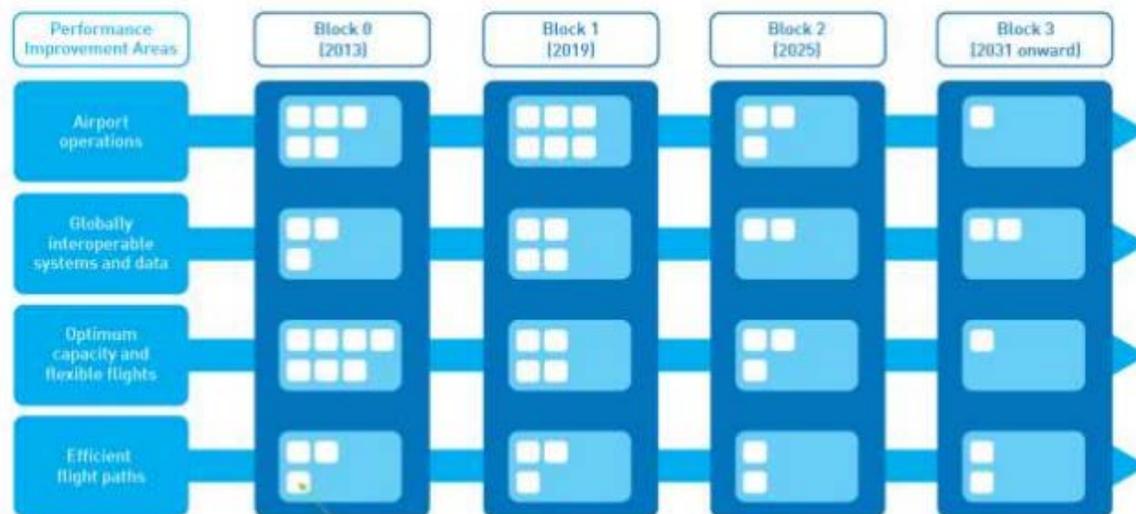
Consideration of the minimum path in GANP

◆ The 5th edition of GANP recommend States to use Key Performance Indicators (KPIs) and describes the minimum path more explicitly than current 4th edition.



5th Edition - 2016

GANP Fifth Edition Aviation System Block Upgrade Methodology



It is important to consider the coordination with the Air Navigation Plans of other Member States in introducing the concept of GANP.

Thank you.

