



ICAO

International Civil Aviation Organization

**The Ninth Meeting of the APANPIRG ATM Sub-Group
(ATM/SG/9)**

Video Teleconference, 01 – 05 November 2021

Agenda Item 5: ATM Systems (Modernisation, Seamless ATM, CNS, ATFM)

**THE LONG-TERM VISION FOR THE FUTURE AIR TRAFFIC SYSTEMS OF JAPAN
(CARATS)**

(Presented by Japan)

SUMMARY

This paper presents the information about status update of the long-term vision for the future air traffic systems of Japan, called “CARATS: Collaborative Actions for Renovation of Air Traffic Systems”. Japan is renovating CARATS through updating the roadmap, restructure of promotion system and is working on projects related to reduction of CO2 emission and digital transformation.

1. INTRODUCTION

1.1 The Global Air Navigation Plan (GANP) indicates comprehensive direction for the globally harmonized air navigation systems with safe, effective and efficient air traffic. GANP also provides the various measures and technology development, in form of time series block, as Aviation System Block Upgrades (ASBUs) and Technology Roadmaps. This will allow States and stakeholders to realize the safety, sustainable growth, increased efficiency and responsible environmental stewardship that global societies and economies demand.

2. DISCUSSION

The long-term vision for the future air traffic systems in Japan

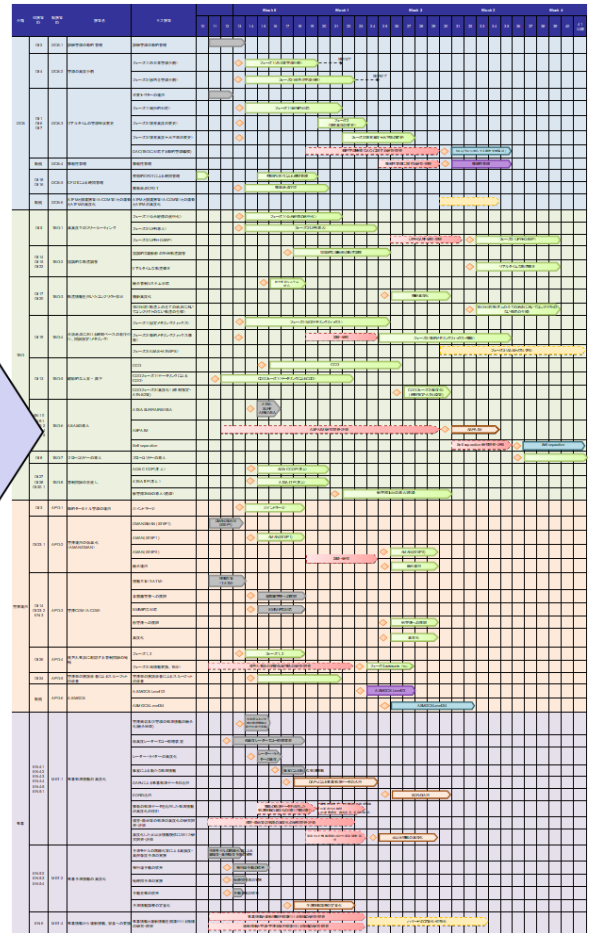
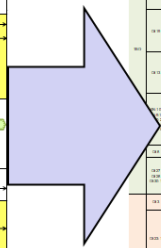
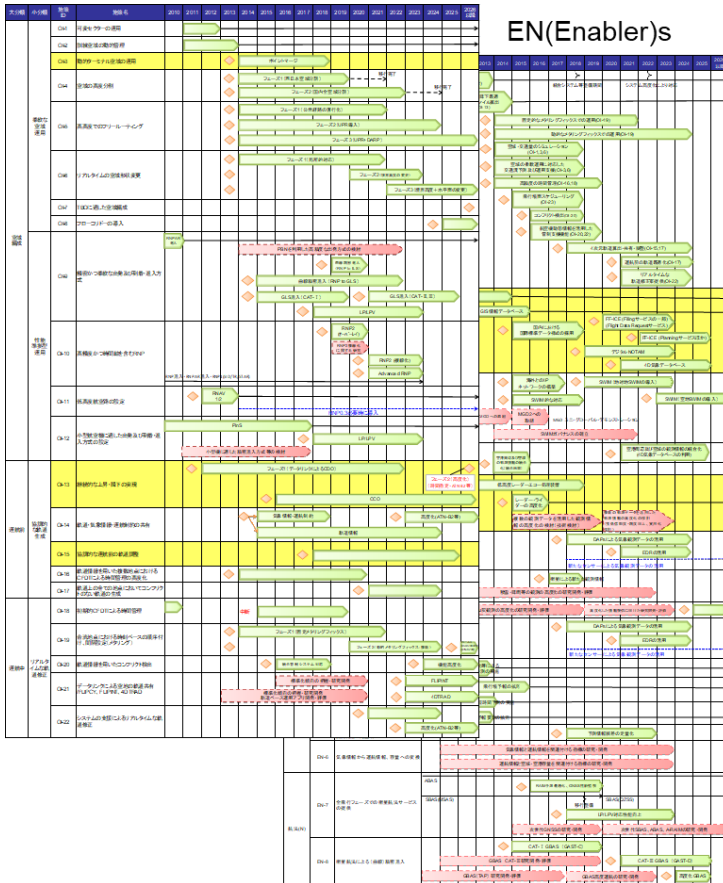
2.1 In Japan, in order to correspond appropriately to the growth in air traffic demand as well as the diversified needs of users, through the collaboration of industry, academia and government, the future of the air navigation services had been examined from various angles and also based on global trends. In 2010, "The long-term vision for the future air traffic systems (CARATS: Collaborative Actions for Renovation of Air Traffic Systems)" had been introduced and it sets various goals aiming for the skies of Japan in 2025, associated with measures called Operation Improvements and Enablers, which brings the realization of CARATS goal. CARATS identifies the following eight directions of renovation to achieve the goals, with having its core goal "Trajectory Based Operations (TBO)".

APO (Airport Operations), **MET** (Meteorological Information),
INF (Information Management), **NAV** (Navigation),
SUR (Surveillance), **COM** (Communication)

- ✓ Restructure working groups, sub-groups and ad-hocs so that they correspond to current key issues.

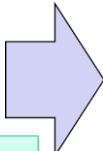
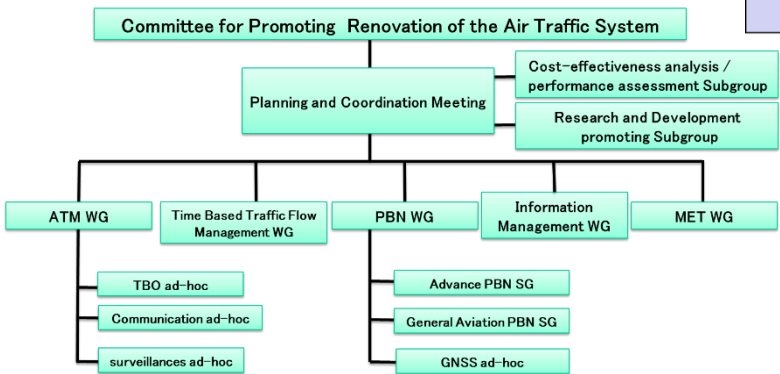
CARATS Roadmap Renovation

OI(Operational improvement)s

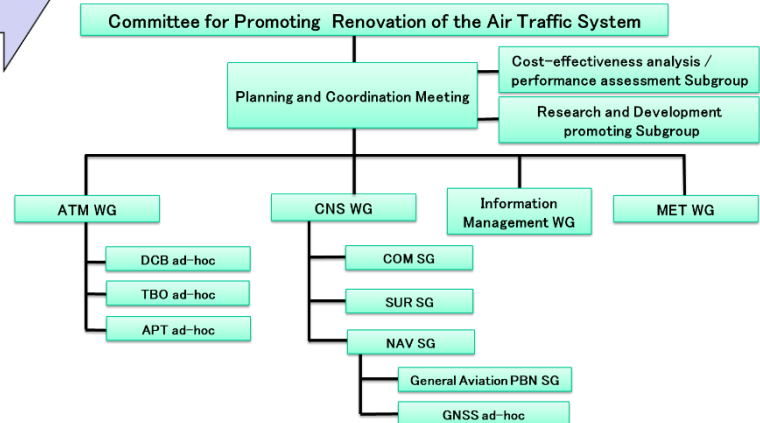


Restructure of working groups

BEFORE



AFTER



New Phase of CARATS and its aim

2.5 CARATS KPIs and increasing needs for reduction of CO2 emission by air traffic

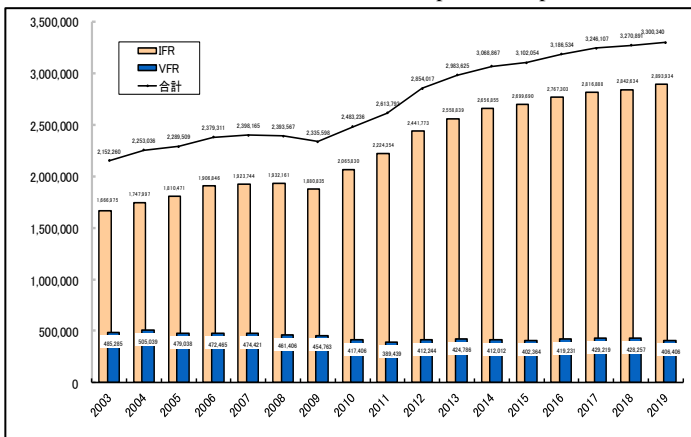
2.6 Since its foundation, CARATS sets various KPIs, and some of them relates to environmental issues, or simply CO2 emissions by air traffic. Refer following summary and especially ones with red lines.

CARATS KPI summary

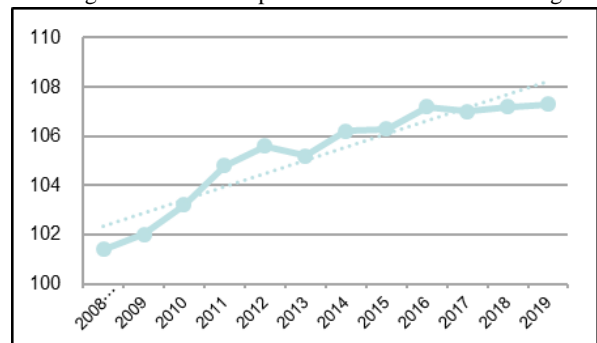
Enhancing safety	✓ Number of accident and serious incident due to air navigation service
Coping with the increase in air traffic volume	✓ Peak hour throughput in congested airspace
Improving user convenience	✓ Departure & arrival punctuality ✓ Cancellation rate by weather ✓ <u>Gate to gate operational time on major city pairs</u>
Increasing operational efficiency	✓ <u>Fuel consumption per distance</u>
Improving productivity of air traffic services	✓ Number of flight plan per ATCOs ✓ Number of flight plan per acquisition cost
Addressing environmental issues	✓ <u>CO2 emission per flight distance</u>

2.7 The traffic volume in Japanese airspace had been kept increasing successfully as desired by public demand. Yet, despite the efforts been put in CARATS, those KPIs relating CO2 emissions had shown unpleasant results.

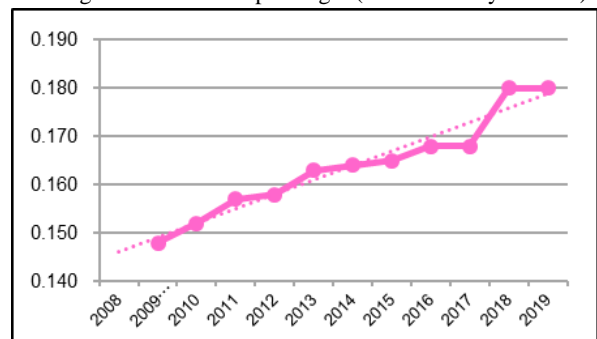
Number of Aircraft Controlled in Japanese Airports



Average Gate to Gate Operation Time of Domestic Flight



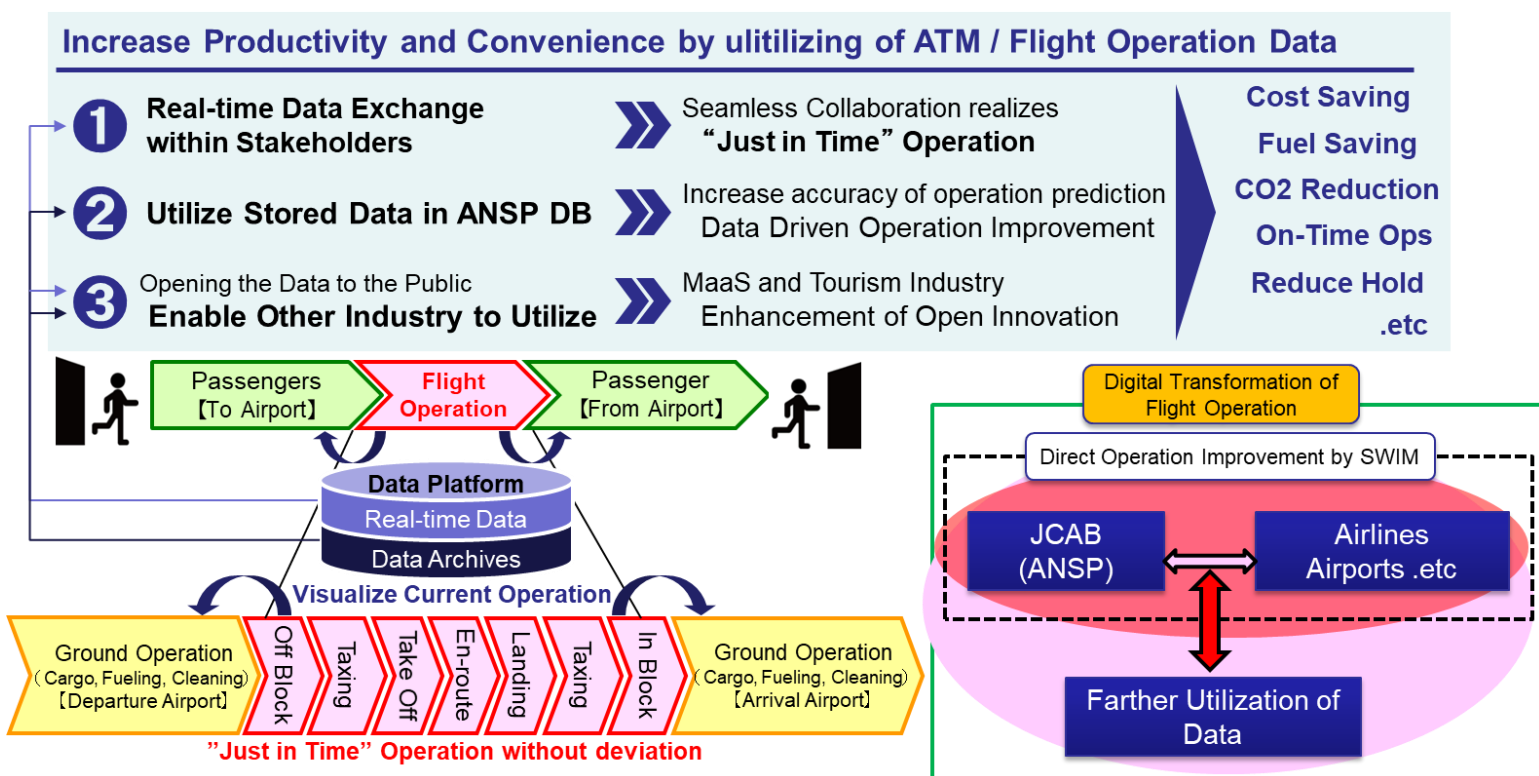
Average CO2 Emission per Flight (777-200 Tokyo-Osaka)



- ✓ CARATS promotion team is currently discussing followings to tackle this issue.
- ✓ Refurbish CARATS KPIs especially those relating CO2 emissions.
- ✓ Enhance CARATS measures especially those contribute for reduction of CO2 emission.

Digital Transformation through SWIM

2.8 One of the key projects within CARATS is implementation of SWIM in 2024. CARATS is focusing its effort to accomplish this mission and at same time, seeking for more ways to maximize SWIM’s potential and bring benefits to every stakeholders even beyond aviation industry.



- ✓ CARATS and its spin-off project is currently conducting follow activities.
- ✓ Hosting several conference involving many stakeholders from inside and outside of aviation industry.
- ✓ Discuss and share visions and ambitions among every stakeholders seeking for maximum use of operations data and realizing each industries goal.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss any relevant matters as appropriate.

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