International Civil Aviation Organization

Fourteenth Meeting of the Asia/Pacific Air Traffic Flow Management Steering Group (ATFM/SG/14)

Bangkok, Thailand, 22 – 26 April 2024

Agenda Item 4: Review of Current ATFM Operations and Problem Areas

NARAHG UPDATES

(Presented by China, Japan, and Republic of Korea)

SUMMARY

This paper presents the cooperation of NARAHG members in recently few years. Including ATFM data connection, electronic coordination of ATFM units and CTO based ATFM procedure design and trial plan.

1. INTRODUCTION

1.1 For enhancing cross-border ATFM common situation awareness, NARAHG jointly drafted the NARAHG CONOPS to guild the roadmap for all members. Although the NARAHG meeting had to be interrupted due to the impact of the epidemic, China, Japan and ROK continue to advance the process of seamless data docking in an orderly manner. The three countries have used video conferences to conduct multiple coordination and discussions. In June 2024, the NARAHG/10 meeting will be held in Qingdao China, all NARAHG members and stakeholders can make a good discussion for enhancing the flight safety and efficiency in northeast Asia region.

1.2 The data connection in NARAHG will be conducted via CRV network. After the first test succeeded from 2021 between China and Japan, the data transfer and receive trial keep running almost three years. It shows the feasibility of enlarge the scope of ATFM data gathering by decentralized ATFM systems. (Figure 1)

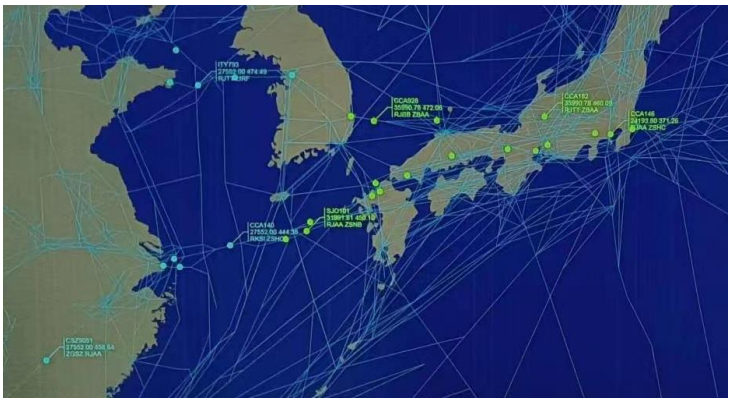

Figure 1 The cross-border flights data sharing in NARAHG via CRV network

1.3 By the end of June 2024, the CRACP (Cross Region ATFM Collaborative Platform) system will be shifted to CRV network and deployed in China and ROK ATFM units. Japan directly use ATFM system to dock with China and ROK. By then (Figure 2), all cross-border traffic management data from China and Japan will be transmitted through the CRV network. The accuracy inbound cross-border flights position and ETO at boundary will create a common situation awareness to all NARAHG ATFM units.

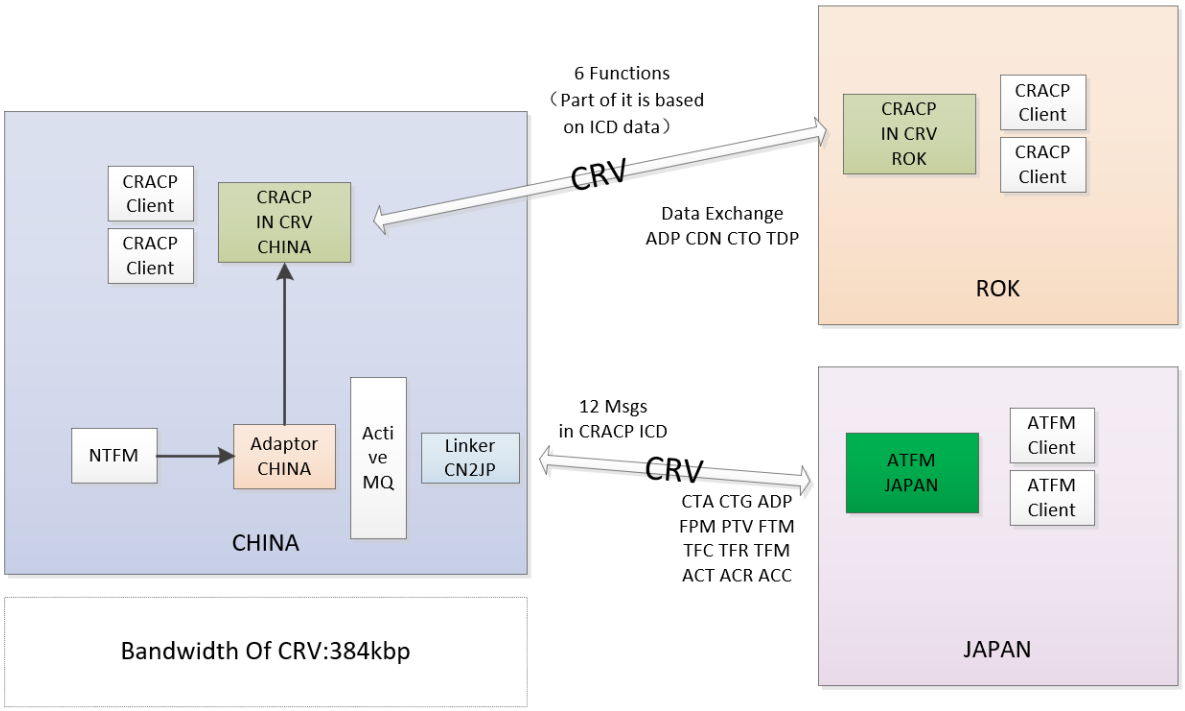

Figure 2 The CRV network connection structure

1.4 Based on this data docking, the CTO based ATFM measure can be implemented to instead traditional MINIT. According to the structure of traffic streams at SADLI, the convergence traffic flow from Japan and ROK will often cause the traffic to ZSPD exceeding the capacity when the airspace impacted by weather etc. The traditional MINIT will always increase the separation to at least twice due to the integrated CTOT allocation cannot be implemented in individual systems from different three ATFM units. NARAHG will start CTO based ATFM measure trial after the data docking achieved after discussion by NARAHG meeting.

1.5 By the experience from daily operation, we recognize that the misunderstanding is easier happen in ATFM communication than ATC control. It will often mix with different logic for different requirements. Especially in non-English-speaking countries, there are more examples of misunderstanding in this kind of communication. NARAHG designed the CDN (Coordination) function in CRACP system, and a one-week CDN trial had been made between Shanghai ATCC and Fukuoka ATMC in 2018 (Figure 3). The CDN function was designed based on ‘5W’ (Who, What, When, Where, Why) which recommended by ICAO Doc.9971. From April 8th to 29th 2024, a new CDN trial will be started between Shanghai ATCC and Daegu ATCC for functional verification of CRACP new version.

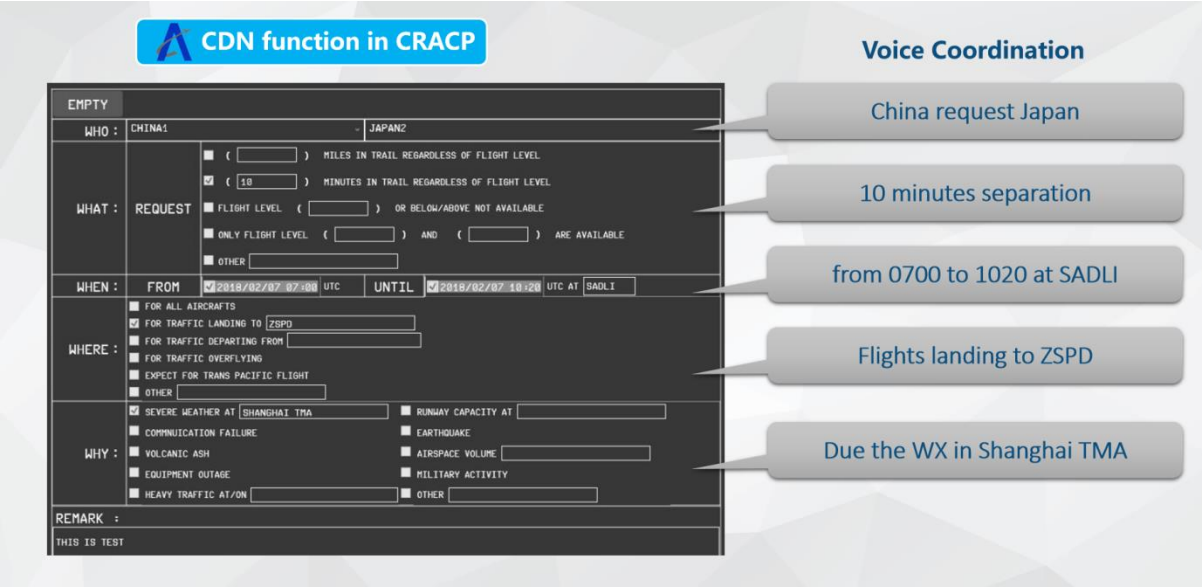

Figure 3 The CDN function test of ATFM coordination

2. DISCUSSION

Establish ATFM seamless connection in Northeast Asia Region

2.1 ATFM should monitor further than ATC. It is determined based on the attributes of ATFM work. Traditional real-time data monitoring often depends on the surveillance range of each country's radar system. Benefit from the data sharing of the cross-border ATFM system, it has become possible for ATFM units to process operational information beyond line of sight in real time.

2.2 Seamless connection based on data interactive sharing allows ATFM units using different systems to monitor a larger range in real time and exchange data conveniently like using a central integrated ATFM system.

2.3 In real operation, especially in crowded airways, on congested air routes, maximum efficiency may be achieved by calculating CTO based on ETO that reflects the latest conditions. However, if the CTOT, which is based on the CTO of an aircraft that has not taken off, is frequently changed, it will cause confusion in operations, so it is necessary to discuss the appropriate timing of determining the CTO and the compliance window during the trial. Because the accuracy data can reduce the workload of CTOT coordination.

2.4 Unifying the coordinated terminology and procedures for ATFM on a larger scale will greatly promote seamless ATM connections in the future. NARAHG will strictly adopt the data structures and standards recommended by ICAO for subsequent operational upgrades. Although the FIXM version currently used is not the latest version, it does not affect use at all. It is worth mentioning that system upgrades in various countries require financial support. Frequent updates and upgrades are not easy to achieve consensus among countries at the policy and implementation levels.

CTO based ATFM procedure design and trial plan

2.5 The CTO based ATFM procedure is preliminary drafting for coming NARAHG test. It is different from current MINIT. It is a bit like the TBFM (Time Based Flow Management) procedure which used in USA by FAA.

2.6 When the downstream ATFM unit find the unbalance between capacity and traffic flow in airport(s) or airway(s), they can use the sharing data to evaluate is it can be solved by only modify the domestic flights. In case of it cannot be solved, the cross-border ATFM coordination will be initiated.

2.7 Before coordination, the initiator should conduct an assessment that anticipates the use of multiple measures and provide them for joint decision-making by relevant units during coordination. For example: CTO is calculated uniformly for incoming flights from Japan and ROK, or CTO is calculated separately for Japan and ROK. Based on the delay duration and flight distribution, relevant ATFM units can optimize and come up with an approved optimal solution.

2.8 When the restriction plan is determined, the initiator can use the system to trigger the specified ATFM measures, and the system will automatically release the modified CTO to the upstream, which will continue to pass it to the upstream or directly calculate the CTOT.

2.9 By this way, ATFM measures can be reduced to a minimum, thereby reducing flight delays. However, there are higher requirements for the systems of adjacent units and the execution of coordination procedures.

2.10 NARAHG will continue to optimize the CTO based ATFM procedure through trial operations and hopes that ICAO ATFM/SG meeting, Asia-Pacific countries and regions will provide valuable opinions and suggestions.

CDN trial between ATFM units

2.11 Electronical coordination is a new concept of operation for minimizing misunderstandings as much as possible while complex speech coordination between non-native English-speaking countries.

2.12 Benefit from digital platform, rapid and transparent coordination of information helps establish a more efficient collaborative culture between relevant ATFM units. The POA will be also easy to be implemented as required.

2.13 As the experiment progresses, we will continuously optimize the relevant coordination procedures and strictly follow the "5W" of the ICAO Doc 9971.

2.14 We suggest that the ATFM/SG meeting provide more guidance and timely develop relevant regional frameworks and standards, so that more regions can share relevant information.

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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