The First Meeting of the ATFM Information Requirement Small Working Group (ATFM/IR/SWG/1)

Beijing, China, 29th -31st, August, 2018

Agenda Item 4: SWG Work Progress Update/Review of TOR

ATFM/IR/SWG TOR REVIEW

(Presented by ICAO APAC RSO)

SUMMARY

This paper presents the background of the formation of the ATFM Information Requirement Small Working Group (ATFM/IR/SWG), summarizes the progressions having been made since the ATFM/IR/SWG was established, proposes a way of reviewing the TOR of the ATFM/IR/SWG and working scope expansion for further considerations.

1. INTRODUCTION

1.1 In 2015, the Asia Pacific Regional ATFM Network was starting to take its shape: *The Asia/Pacific Air Traffic Flow Management Concept of Operation (CONOPS)* had been developed, evolving from a concept in an ATFM operational trial conducted by Hong Kong, Singapore and Thailand; the *Regional Framework for Collaborative ATFM* (*the Framework*) v0.4 was completed at the ATFM/SG/5, and the Northeast Asia Regional ATFM Harmonization Group (NARAHG) just completed its first meeting in the second half of 2014 and commenced the execution of an ATFM Project between China, Japan and Republic of Korea;

1.2 The interoperability is the goal of the global ATM development, so as to the regional ATFM initiatives. With an unique characteristic of the ATFM network development in the Asia & Pacific Region where the sub-regional ATFM projects had been being executed in parallel with the development of the regional implementation plan and guidance materials, it was recognized that the divergences in ATFM system specifications, standards, functionalities and operations would easily occur.

1.3 Timely and reliable information exchange among the regional ATFM "Node" is a fundamental component to support the interoperability of the entire regional distributed multi-nodal ATFM network, and to ensure the operational efficiency and effectiveness of the whole ATFM Network. In line with a proposal raised by China at the 5th Meeting of ICAO ATFM/SG held in Bangkok in 2015, a decision was made to establish a small working group with the tasks of drafting two documents, one was the Operational Requirements document for the exchange of, and interaction with, ATFM information, another one was the technical Interface Control Document (ICD). The Terms of Reference (TOR) was developed accordingly (*Decision ATFM/SG/5-1*). This small working group was then named as the Information Requirement Small Working Group – ATFM/IR/SWG;

1.4 From 2015 to 2018, significant progressions were achieved in ATFM development. The Multi-Nodal ATFM Ops Trial Project has completed its Phase I trial and commenced the Phase II. The NARAHG Project launched its Cross Region ATFM Collaborative Platform (CRACP – *Cross Regional Data Exchange Platform (ATFM/SG/5-WP17); Cross-Region ATFM Collaborative Platform (ATFM/SG/8-WP15)*) with installations and tests amongst the joining States. The Collaborative MIT/MINIT Conversion Program

(CMCP) was conducted by China and Thailand to address the issues of the unpredictable delays in South China Sea area, the outcome of this Program were satisfactory to the partners. The extension of this Program applying to other air routes in the area was planned. The ATFM Daily Plan (ADP) as well as other ATFM related information were defined by the technical working groups in the Projects, and have been exchanged through various means. The ICDs were also developed by the technical working groups in the Projects respectively. Most importantly, the FIXM Extension with 12 additional agreed attributes were developed for IR/SWG by Technical Sub-Group of the Distributed Multi-Nodal ATFM Ops Trial Project, upon approval by the FIXM Change Control Board (CCB), this Extension and the FIXM Core will be used as regional ATFM information exchange model.

1.5 On ICAO side, *the Framework* were discussed, amended and refined at the ATFM/SG meetings, eventually got approval by ATM/SG/5 in 2017 as one of several important plans that are subsidiary to the Seamless ATM Plan in the region. The Common Aeronautical Virtual Private Network (CRV) Project completed its service bidding and acquisition process, laying a foundation for the regional aeronautical data communication over IP-based network, and the SWIM/TF was also formed in 2017 to conduct analysis for SWIM implementation in APAC region; The establishment of the Aerodrome Collaborative Decision Making (A-CDM) Task Force (APA-CDM/TF) with its 2 meetings in April and November 2017 opened another front for standardization on information exchange between A-CDM system and ATFM network;

1.6 Taking the importance of the ATFM implementation harmonization into consideration, the ICAO APAC RSO raised a proposal in 2018 at the 8th Meeting of ICAO ATFM/SG held in Delhi, to merge the work in ATFM/IR/SWG into a new small working group to manage the harmonized implementation of various ATFM projects in the region, with the objectives of ensuring regional ATFM network interoperability. The meeting discussed this proposal and agreed that ICAO APAC RSO would consider and facilitate the ongoing work of the ATFM/IR/SWG, and may consider, at next or subsequent meetings of the ATFM/IR/SWG, recommending an expansion of the scope of work and TOR to include the proposed harmonization support role;

2. DISCUSSION

A Proposed Way of Reviewing the TOR

2.1 The review of the ATFM/IR/SWG TOR which was developed some 3 years ago would be the first step for planning the subsequent work being carried out by the ATFM/IR/SWG;

2.2 To facilitate the TOR review, it was recommended to break down the TOR into single items, and to check the status of the work progressions corresponding to each item so that the basis will be formed for the necessary renewing of the TOR scope; It was also recommended that this TOR review would align with the regional ATFM performance objectives specified in the Performance Improvement Plan in *the Framework*;

2.3 A matrix was developed with TOR break-down and the necessary information RSO collected by so far, this matrix would be a starting point for further information collection, analysis and discussions;

2.4 The ATFM/IR/SWG TOR is attached as Attachment A of this paper, the TOR breakdown with necessary information is attached as Attachment B, and Attachment C contains regional ATFM performance objectives;

The Objective Renewal

2.5 Two objectives were stipulated in the TOR of the ATFM/IR/SWG: a) to develop an operational requirement document; b) to develop an ICD;

2.6 The Distributed Multi-Nodal ATFM Ops Trial Group had proposed a pathway for the information exchange in regional ATFM network, it was suggested that the implementation of ATFM support system linkage will target to use SWIM-based technology over the IP-based data communication network provided by Common Regional VPN (CRV) by December 2020, while the AFTN network with ADEXP format was proposed as an interim mean for ATFM information exchange in the absence of the SWIM capability;

2.7 The NARAHG developed the CRACP as an information exchange platform over the internet in the Stage 1 of the Project, the application software installed and operated in each of the user's terminal over this platform is identical, so that the data exchange model and the ICD developed would mainly be used for the information exchange between user's terminals, no proposal or plan was acknowledged by so far for the interconnection with the "nodes" other than the ones in the CRACP system;

2.8 Taking the aforementioned situation into account, along with the tasks that SWIM/TF and APA-CDM/TF are carrying on, it was proposed to discuss the objective renewal for the IR/SWG;

2.9 Furthermore, the performance objectives contained in *the Framework* would also be taken into consideration as a guidance in renewing the objective. In Phase II of the Regional ATFM Capability, it was expected to achieve, *inter alia*, an ATFM information distribution capability in the regional ATFM network with the information of ADP, slot allocation /amendment /cancellation/suspension and slot compliance be exchanged by utilizing FIXM model;

The Scope Expansion

2.9 Comparing the IR/SWG TOR with the IH/SWG TOR proposed by ICAO APAC RSO at ATFM/SG/8, it would be noted that a few items in IH/SWG TOR would be outstanding:

2.9.1 The common operation procedures and common network level CDM process;

2.9.2 The interim methods of ATFM information exchange in the absence of FIXM capability between States including the systems and methods of information exchange and storage, and user interfaces;

2.9.3 Any necessary proposal for amendment (PfAs);

2.10 It was therefore recommended to discuss the necessity of including these items into the working scope expansion;

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.

…….

Attachment A

The Terms of Reference

The ATFM Information Requirement Small Working Group

Recognizing that:

The Draft Regional Framework for Collaborative ATFM will be presented to APANPIRG/26 for endorsement, and

The ongoing development of the Regional ATFM Concept and the understanding of operational requirements for information distribution are dependent on experience to be gained in trial programs and operational deployment:

1. The ATFM/IR/SWG, reporting to ATFM/SG, will develop a draft operational requirements document detailing:
   a) Items of ATFM information, such as ADP, ATFM measures and compliance information to be distributed and dynamically updated to each of the following stakeholders domains:
      i. ATFMU
      ii. ATSU(ACC/APP/TWR)
      iii. Airspace User, and
      iv. Airport Operator
   b) Access levels and authorizations for stakeholders
   c) Items of ATFM information that authorized users may add or amend, including but not limited to:
      i. ADP
      ii. ATFM measures
      iii. Collaborative ATFM interaction
      iv. Cancellation, suspension and de-suspension of ATFM measures
      v. Compliance monitoring information such as ATOT and ATO
   d) Network and/or node administrator arrangements
   e) Required reliability and availability of the distributed multi-nodal network and its interfaces
   f) Notification parameters guidance for ATFM measure implementation
2. ATFM/IR/SWG will, in cooperation with the ACS ICG, develop an interface control document (ICD) for cross-border ATFM described in the Regional Framework for Collaborative ATFM and the Regional ATFM Concept

Attachment B

A Matrix for TOR Review

No.	TOR Items	Progressions		To Do List
		Multi-Nodal Ops Trial	NARAHG	
1	**DRAFT OPERATIONAL REQUIREMENTS**			
1.1	**Items of ATFM information such as**	***ATFM/SG/8-WP/08*** Annex A contains the type of information used in MN	***ATFM/SG/7-IP/07:*** 2.9 - ATFM Operation information template endorsed and be used from 1st May 2017; ***ATFM/SG/8-IP/04*** 1.7 China Japan and ROK developed more than 12 type messages list for data exchange by system (please refer to section 2.11)	Identification of a common set information between the Projects ;
	ADP	***ATFM/SG/6-WP/09*** 2.6 … In the current setting, ATFM Daily Plan (ADP) and CTOT information are distributed mainly via e-mail and web service...	***ATFM/SG/7-IP/07:*** 2.8 - ADP template endorsed, be used from 1st May,2017 ***ATFM/SG/8 - IP/04*** ***Attachment A*** 1.1.3.4 ADP elements	
	ATFM measures	***2nd MN Core Team Meeting Summary*** 2.2 - (2): …since late 2017, Sanya ATFMU has been issuing CTOTs to eastbound flights departing from Thailand and using A1/A202, with	***ATFM/SG/7-WP/25*** 2.3 - Memo Form (containing ATFM Measure information)	

No.	TOR Items	Progressions		To Do List
		Multi-Nodal Ops Trial	**NARAHG**	
		CTOT distributed to Bangkok ATFMU via AFTN.		
	Compliance Information			On-going development of the *ATFM Post-Operation Analysis Framework* section 5 - *ATFM Measure Metrics and Analysis*
1.2	**Access levels and authorizations for stakeholders**	***ATFM/SG/7-WP/09, Attachment A*** Service-Oriented Architecture (SOA) with the use of XML-based information exchange model (SWIM concept) is considered to be a promising option. … Stateless architecture based on request/reply and publish/subscribe technique is selected...	***ATFM/SG/5-WP/15*** Web-based Platform for ATFM information Exchange ***ATFM/SG/5-WP/16*** 1.3 ATMB CAAC has established the message exchange protocol,…	1. Task 1-4 SWIM Governance 2. Task 1-5 Regional SWIM Registry and Architecture 3. Task 1-8 APAC SWIM Architecture
1.3	**Items of ATFM information that authorized users may add or amend, including but not limited to**			
	ADP			

No.	TOR Items	Progressions		To Do List
		Multi-Nodal Ops Trial	NARAHG	
	ATFM measures	***2nd MN Core Team Meeting Summary*** 2.5 … current practice of requiring airspace users to contact arrival/ initiating ATFMU directly when requesting slot revisions…	***ATFM/SG/7-WP/25*** 2.11 - ATFM measures could be Request, Change, Amend, Reduce, Expand, Cancel, Approval, Deny	
	Collaborative ATFM interaction			
	cancellation, suspension and de-suspension of ATFM measures			
	compliance monitoring information such as ATOT and ATO			
1.4	**Network and /or node administrator arrangements**			1. Task 1-4 SWIM Governance 2. Task 1-5 Regional SWIM Registry and Architecture 3. Task 1-8 APAC SWIM Architecture
1.5	**Required reliability and availability of the distributed multi-nodal network and its interfaces**			

No.	TOR Items	Progressions		To Do List
		Multi-Nodal Ops Trial	NARAHG	
1.6	**Notification parameters guidance for ATFM measure implementation**			
2	**ICD**			
		ATFM/SG/7-WP09 2.1 - Common Minimum User Interface Requirements 2.2 - 5 operational scenarios developed to support the ICD development; ***Attachment A*** ICD for 5 scenarios	***ATFM/SG/7-WP/25*** 2.12 - NARAHG/SWG is developing standard operational procedure and ICD for CRACP. Those should be aligned wit the draft documents which are being developed by ATFM/IR/SWG ***Attachment A*** ICD ***ATFM/SG/8-IP/04*** ***Attachment A*** ICD	The ICD should be aligned to generate a common ICD that the minimum set of information could be exchanged between two groups

Attachment C

Regional ATFM Performance Objectives

		Regional ATFM Capability Phase IA (By 12 Nov. 2015)	Regional ATFM Capability Phase IB (by 25 May, 2017)	Regional ATFM Capability Phase II (by 08 Nov. 2018)
	ATFM Regulations	(7.5) - All States where air traffic demand at times exceeds, or is expected to exceed declared capacity, should enact regulations for the implementation of ATFM		
	ATFM Systems		(7.12) - FPL, CHG, DEP, DLA and CNL distribution/Processing - FPL submission less than 3 hours prior to EOBT - DLA transmission (delayed > 15 min. and GDP caused DLA) - Procedure to ensure FPL are not discarded from other ATM systems as a consequence of ATFM delay - ATFM, AMAN, DMAN and A-CDM integration	(7.30) - Distributed Multi-Nodal ATFM **information distribution capability** utilizing FIXM version 3.0 up should be implemented; * ADP * slot allocation, CTOT, CTO and CLDT * slot amendment, cancellation or suspension, slot swapping * slot compliance monitoring and reporting (7.31) - Full interoperability of cross border ATFM, A-CDM, AMAN, DMAN, ATM automation and airspace user systems shold be implemented, utilizing FIXM to provide seamless gate-to-gate collaborative ATFM Operations

		Regional ATFM Capability Phase IA (By 12 Nov. 2015)	Regional ATFM Capability Phase IB (by 25 May, 2017)	Regional ATFM Capability Phase II (by 08 Nov. 2018)
Strategic	**Capacity and Demand Monitoring and Analysis**	(7.6) - Bi-annual strategic capacity/demand analysis should be implemented - ATFM implementation preparation should be based on careful analysis of current traffic and expected growth in next 5 years		
	Capacity Improvement		(7.18) - airport and terminal airspace capacity should be increased - CCO/CDO Implementation under certain conditions	
	ATFM Execution		(7.20) - strategic airport slot allocation at all international airport	
	ATFM Measures			
	Post Operation Analysis			
Pre-Tactical	**Capacity and Demand Monitoring and Analysis**	(7.8) - Daily demand/capacity analysis - ADP be prepared and distributed to all relevant stakeholders (via: web-based ATFM network, web-pages hosted by each ANSP, or email) - ADP should be coordinated and agreed by all relevant stakeholders	(7.21) - Pre-tactical modelling of expected airport and airspace configuration and traffic demand, and the effect of ATFM measures, should be implemented for all ATFM program airports and associated terminal airspace	7.23 - Automated modelling of expected airport and airspace configuration and traffic demand and the effect of AFM measures should be implemented;

		Regional ATFM Capability Phase IA (By 12 Nov. 2015)	Regional ATFM Capability Phase IB (by 25 May, 2017)	Regional ATFM Capability Phase II (by 08 Nov. 2018)
	Capacity Improvement			
	ATFM Execution			
	ATFM Measures		(7.22) - CDM implemented, enabling sharing of all relevant information with all stakeholders, providing continuous availability of information and common reference material for daily and ad-hoc ATFM conferences	
	Post Operation Analysis			
Tactical	**Capacity and Demand Monitoring and Analysis**		(7.23) - Dynamic update of airport and airspace capacity constraints, capacity calculation, demand information using schedule, flight plan and ATS messaging, and ATM system information and modelling of tactical ATFM programs should be implemented	(7.33) - MET service to support ATM in the terminal area (MSTA)
	Capacity Improvement			

		Regional ATFM Capability Phase IA (By 12 Nov. 2015)	Regional ATFM Capability Phase IB (by 25 May, 2017)	Regional ATFM Capability Phase II (by 08 Nov. 2018)
	ATFM Execution		(7.24) - ATFM airport should implement tactical ATFM by using: *Ground Delay Programs (CTOT), or *MINIT, MIT or others specified in Doc. 9971 - All State: facilitating compliance with received CTOT - CTOT for individual aircraft should be revised, cancelled, suspended or de-suspended - individual aircraft should not be subject to more than one tactical ATFM measure per flight	
	ATFM Measures			(7.34) - ATFM measures including MIT, MINIT and, where necessary, CTO at AFIX or RFIX should be applied to flights through constrained airspace - GDP using CTOT should be applied to: * non-departed aircraft destined to constrained ATFM airport: * Non-departed aircraft planned to operate through constrained airspace where tactical ATFM measure CTO at RFIX or AFIX is in place - Capable to take into account

		Regional ATFM Capability Phase IA (By 12 Nov. 2015)	Regional ATFM Capability Phase IB (by 25 May, 2017)	Regional ATFM Capability Phase II (by 08 Nov. 2018)
				long haul flights - Timely update of estimated information for airborne aircraft
	Post Operation Analysis	(7.11) - Accuracy/Effectiveness of demand/capacity analysis - ADP preparation and distribution	(7.28) - Procedures and agreement should be developed to ensure POA of cross-border ATFM programs. - the result of POS should be used for planning ATFM, airspace and AS route improvements	