Distributed Multi-Nodal Air Traffic Flow Management Core Team Meeting, Singapore

26-28 Nov 2018

Sands Expo and Convention Centre – 10 Bayfront Avenue Singapore 018956
Updates by core members
AEROTHAI – ATM Network Management Centre

Opening Ceremony: 9 Nov 2018

ATFMU

NOTAM/FDMC/COM&OPMET/FDO/FIC

AMC

DISTRIBUTED MULTI-NODAL ATFM NETWORK
CAAS – ATFM Ops Room and Support system

- Work in progress – expected completion Dec’18
- In the last phase of ATFM system (Harmony) testing – expected commissioning Dec’18
CAAC ATMB, SANYA – ATFM Initiatives

- Collaborative Mile/Minutes in trail conversion (CMCP)

- Airspace Flow Program
CAAC ATMB, SANYA – CMCP: Flow restriction type conversion

- Plans for converting MIT/MINIT restriction into CTOT
  - Collaborative Minutes/Miles-in-trial conversion program

**Stage 1**
CTOT for eastbound flights from Southeast Asia, via A1, A202

**Stage 2**
CTOT for eastbound flights from Southeast Asia, via M771, R474

**Stage 3**
CTOT for westbound flights in Southeast Asia, via SANYA FIR (Focusing on A1, A202, R474, L642 routes)
CAAC ATMB, SANYA – AFP

- Utilising CDM and 4D Trajectory Prediction to deliver a flow solution
HKCAD – Update of ATFM initiatives

- Hong Kong ATMFU will be performing flow control measures for Macao China.
  - Trials have been conducted and feedbacks are positive
  - Technical discussion to begin early 2019.
- Conducted Local industry briefing on Multi-Nodal Concept, A-CDM
- Integration of HKIA A-CDM with ATMS
  - Provision of TOBT/TTOT to Planners for earlier departure release planning in ATMS
  - Display of CTOT in the A-CDM web portal for operators, ground handling agents, etc.
  - Accurate TSAT display in the parking stand docking system
HKCAD - Further Enhance ATFM Collaboration with Guangzhou ATFMU

- Integrating Guangzhou BEKOL bound traffic departure release to HKIA A-CDM system
  - CTOTs automatically received and displayed in Tower electronic flight strip and A-CDM web portal
- Handling of Guangzhou and Shenzhen departures that overfly HK FIR
  - Guangzhou Baiyun Airport & Shenzhen Bao’an Airport – e.g. Hub for FedEx / UPS
    - During evening and overnight traffic demand surge
    - Use of CTOT to replace ‘Check for start’ or MINIT/MIT
HKCAD - Further Enhance ATFM Collaboration with Sanya ATFMU

• Targeting ‘Large Scale Weather Deviation’ where the capacity is reduced by 50%
• Use of CTOT to replace MINIT
• Discussion ongoing for the reduction of separation across FIR boundary – A1(W), L642, M771/M772
HKCAD - Trials: CTOT Verification with Japan ATMC

- Verify CTOTs generated by Hong Kong ATFMU
- Difference between EDCT and CTOT
- Conclusion
  - it is shown from the data that there is no such a big difference between EDCT and CTOT.

The tables below show the difference between EDCT assigned to the target aircrafts and simulated CTOT.

Table 1 summarizes the data when EDCT is earlier.
Table 2 summarizes the data when CTOT is earlier.

Each table shows the number of aircraft which has earlier EDCT or CTOT and also the maximum, average and total of the time difference between CTOT and EDCT.

Table 1

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>The number of times(ACFT)</td>
<td>7</td>
<td>13</td>
<td>12</td>
<td>18</td>
<td>17</td>
<td>67</td>
</tr>
<tr>
<td>Max. diff. with CTOT</td>
<td>0:56</td>
<td>0:59</td>
<td>1:15</td>
<td>1:10</td>
<td>1:00</td>
<td></td>
</tr>
<tr>
<td>Avg. diff. with CTOT</td>
<td>0:25</td>
<td>0:24</td>
<td>0:41</td>
<td>0:24</td>
<td>0:25</td>
<td>0:27</td>
</tr>
<tr>
<td>Total diff.</td>
<td>3:01</td>
<td>5:14</td>
<td>8:14</td>
<td>7:18</td>
<td>7:21</td>
<td>31:08</td>
</tr>
</tbody>
</table>

Table 2

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</thead>
<tbody>
<tr>
<td>The number of times(ACFT)</td>
<td>12</td>
<td>24</td>
<td>6</td>
<td>24</td>
<td>9</td>
<td>75</td>
</tr>
<tr>
<td>Maximum diff. with EDCT</td>
<td>1:03</td>
<td>1:07</td>
<td>1:11</td>
<td>1:41</td>
<td>0:25</td>
<td></td>
</tr>
<tr>
<td>Avg. diff. with EDCT</td>
<td>0:18</td>
<td>0:27</td>
<td>0:36</td>
<td>0:40</td>
<td>0:14</td>
<td>0:29</td>
</tr>
<tr>
<td>Total diff. with EDCT</td>
<td>3:45</td>
<td>10:57</td>
<td>3:38</td>
<td>16:17</td>
<td>2:09</td>
<td>36:46</td>
</tr>
</tbody>
</table>

EDCT-CTOT time difference in total: -0:44, -5:43, 4:36, -8:59, 5:12, -5:38

From: Yukio JCAB
HKCAD - Trials: CTOT Verification with Vietnam ATFMC

- Vietnam is a Level 2 Node and plans to upgrade to Level 3 Node
- Previously conducted ATFM trials with Thailand and Singapore
- Agreement for conducting the trial is being finalized
Review of Multi-Nodal ATFM Common Operating and Post Operation Analysis Framework
COP and Post Ops Framework

DISTRIBUTED MULTI-NODAL ATFM NETWORK
COMMON OPERATING PROCEDURE

ATFM POST OPERATIONS ANALYSIS
RECOMMENDED FRAMEWORK
PfA to the Regional Framework For Collaborative ATFM
**DLA Message**

**ATFM MN COP**

DLA message should be originated when the departure of an aircraft, for which basic flight plan data (FPL or RPL) has been sent, is delayed by 15 minutes of more after the EOBT contained in the basic flight plan;

**PANS-ATM 4444**

11.4.2.2.3 *DELAY (DLA) MESSAGES*

11.4.2.2.3.1 A DLA message shall be transmitted when the departure of an aircraft, for which basic flight plan data (FPL or RPL) has been sent, is delayed by more than 30 minutes after the estimated off-block time contained in the basic flight plan data.

11.4.2.2.3.2 The DLA message shall be transmitted by the ATS unit serving the departure aerodrome to all recipients of basic flight plan data.

Asia/Pacific Framework for Collaborative ATFM

7.14 A DLA message should be transmitted when the departure of an aircraft, for which basic flight plan data FPL has been sent, is delayed by more than 15 minutes after the estimated off-block time contained in the basic flight plan data.

7.15 Where the delay is the result of a GDP, the DLA message should be sent by the ATFMU responsible for the destination airport, addressed to the ATS unit serving the departure aerodrome for subsequent transmission in accordance with the provisions of ICAO Doc 4444 PANS-ATM.
PfA for ICAO Doc 7030
Approach to submitting the PfA

• Doc 7030 serves a form of operating agreement between States in the region
• Amendments to incorporate the ATFM related requirements for constrained/congested aerodromes
• Amendments would be applicable for States that implements ATFM
  • Similar to implementation of RNAV routes and ADS-B
• Approach to submitting the PfA
  • to circulate draft PfA by 17th MN meeting in HongKong (Feb’19)
  • Circulate and seek endorsement at ATFM/SG/9 (tentative APR’19)
  • Seek endorsement at ATM/SG/7 (tentative Aug’19)
  • Endorsement at APANPIRG/30 (tentative Sep’19)
Technical Subgroup (TSG)
TSG Update

- Harmonisation of ADP pdf filename and email subject to facilitate automation
- Updated Interface Control Document (ICD) version 0.2 to use SWIM EMS Flight Information Service for CTOT Distribution, CTOT Revision, CTOT Cancellation messages
- Updated Asia/Pacific FIXM extension to include A-CDM and CTO trajectory/data
Next Step

• ICD will be further updated to include reference to SWIM service (ie Flight information service), technical specifications such as authentication and fallback protocol and data flow diagrams

• SWIM in ASEAN Demonstration in June 2019
Thank you