Thailand ATFM Operations at Sub-Regional Level

From BOBCAT to Cross-Border ATFM

ICAO Middle East ATFM Seminar

13 – 15 December 2016
Dubai, United Arab Emirates

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About Thailand

13-15 Dec 2016

Thailand ATFM at Sub-Regional Level
Historical Annual Traffic Volume in Bangkok FIR Fiscal Year 2006-2015
Forecast Annual Traffic Volume - Fiscal Year 2016-2026

~2,500 flights/day

Note: Assumed GDP growth rate in 2016 of 3.5% per year and GDP growth rate in 2017-2026 at 3.8% per
Thailand Air Traffic Demand

North
195,367 Flights/Year
535 Flights Daily
Overall GR: 20.1%

<table>
<thead>
<tr>
<th>Volume</th>
<th>GR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Int’l</td>
<td>62%</td>
</tr>
<tr>
<td>Dom</td>
<td>33%</td>
</tr>
<tr>
<td>Overfly</td>
<td>5%</td>
</tr>
</tbody>
</table>

East/North East
207,147 Flights/Year
568 Flights Daily
Overall GR: 7.8%

<table>
<thead>
<tr>
<th>Volume</th>
<th>GR</th>
</tr>
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<tbody>
<tr>
<td>Int’l</td>
<td>63%</td>
</tr>
<tr>
<td>Dom</td>
<td>26%</td>
</tr>
<tr>
<td>Overfly</td>
<td>11%</td>
</tr>
</tbody>
</table>

West
120,692 Flights/Year
331 Flights Daily
Overall GR: 9.5%

<table>
<thead>
<tr>
<th>Volume</th>
<th>GR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Int’l</td>
<td>70%</td>
</tr>
<tr>
<td>Dom</td>
<td>0%</td>
</tr>
<tr>
<td>Overfly</td>
<td>30%</td>
</tr>
</tbody>
</table>

South
257,213 Flights/Year
705 Flights Daily
Overall GR: 5.3%

<table>
<thead>
<tr>
<th>Volume</th>
<th>GR</th>
</tr>
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<tbody>
<tr>
<td>Int’l</td>
<td>35%</td>
</tr>
<tr>
<td>Dom</td>
<td>55%</td>
</tr>
<tr>
<td>Overfly</td>
<td>10%</td>
</tr>
</tbody>
</table>

Volume GR
Int’l 70%
Dom 0%
Overfly 30%

Int’l 63%
Dom 26%
Overfly 11%

Int’l 35%
Dom 55%
Overfly 10%

Note: Annual Growth Rate / Data up to 30 Sep 2016

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Collaborative ATFM through Afghanistan

BOBCAT

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Thailand ATFM at Sub-Regional Level
Tripartite CDM/ATFM Project (2012-2013)
Distributed Multi-Nodal ATFM/CDM Network (2014+)

Thailand ATFM at Sub-Regional Level

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Problem Statement:
Develop a viable ATFM/CDM concept that can regulate flights into constrained resource, when those flights **depart from ANSPs under different control authority**

ATFM/CDM Proof-of-Concept Project:
10-month proof-of-concept research project supported by industry partners

- Analysis of Existing Solutions
- Engineering Process
- Stakeholders Involvement
- HITL Simulation
Multi-Nodal ATFM Network: Concept

Bases:
- Common ATFM principles and guidance with harmonized protocols supported by agreed Common Operating Procedures (COP)
- Effective information sharing and dissemination framework

Concept:
Independent “virtual” ATFM nodes supported by interconnected information sharing framework

Supplement: A-CDM Process
Multi-Nodal ATFM Network: Participation

Level 3 ATFM Nodes
Generate, Distribute, Comply to ATFM Measure
- China
- Hong Kong China
- Singapore
- Thailand

Level 2 ATFM Nodes
Comply to ATFM Measure
- Indonesia
- Malaysia
- Cambodia
- Philippines

Level 1 ATFM Nodes
Observers
- Lao PDR
- Myanmar
- Viet Nam

Advisory ATFM Node
- Australia

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Thailand ATFM at Sub-Regional Level
**Multi-Nodal ATFM Operational Trial**

**Phased Approach to the Operational Trial**

**Phase 1**  
2015 - 2016  
- Distributed Ground Delay Program  
- Airport Arrival Constraints (short-term & medium-term) e.g. weather, runway outage

**Phase 2**

- Ground Delay Program supporting Airspace Congestion & Capacity Planning  
- Explore interconnectivity among ATFM systems

**Phase X**  
Vision  
- Fully interconnected Global ATFM Service  
- Integration with SWIM and 4D-Trajectory Management

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Multi-Nodal ATFM Network: Phase 1

Phase 1: DCB for Arrival Airport Constraints

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Thailand ATFM at Sub-Regional Level
### Phase 1 – DCB for Constrained Airports

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Communication Linkage and Protocols</td>
<td>✓ Demand Prediction Validation Validation</td>
<td>➤ Limited-Scope Operational Service</td>
</tr>
<tr>
<td>✓ Dissemination of Information</td>
<td>✓ Local Table-Top Exercises</td>
<td>- Planned Event</td>
</tr>
<tr>
<td></td>
<td>✓ Cross-Border ATFM Procedures Development and Validation (through demo flights)</td>
<td>- Ad-Hoc ATFM</td>
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### Phase 2 – DCB for Constrained Airspace

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>13-15 Dec 2016</td>
<td>TBD</td>
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Phase 1 Stage 3: Limited-Scope Ops Service

Project Progression

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Thailand ATFM at Sub-Regional Level

- **Planned Event**: Singapore National Day Parade 2016
- **Feedback and Review**: Multi-Nodal / 11 Meeting
  - Bangkok Don Mueang Air Display (Sep 2016)
- **Planned Event**: Singapore Bersama Lima
  - Singapore Friday Afternoon Traffic Congestions
- **Review & Phase 2 Work Plan discussion**: Multi-Nodal/12 Meeting
- **Ad-Hoc ATFM Service (Predicted Arrival Airport Constraint)**

Q3 2016, Q4 2016, Apr 2017
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>Nov – Dec 2016</td>
<td>Singapore Fridays Peak Hour GDP/CTOT</td>
</tr>
<tr>
<td>Dec 2016</td>
<td>Multi-Nodal/12 Project Team Meeting</td>
</tr>
<tr>
<td>14 Jan 2017</td>
<td>Don Mueang Children’s Day 2017 Airshow</td>
</tr>
<tr>
<td>Feb 2017</td>
<td>Cobra Gold Joint Military Exercise 2017</td>
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<tr>
<td>Mar 2017</td>
<td>Cope Tiger Joint Military Exercise 2017</td>
</tr>
<tr>
<td>Mar 2017</td>
<td>Multi-Nodal/13 Project Team Meeting</td>
</tr>
<tr>
<td>Mar – May 2017</td>
<td>Suvarnabhumi Runway Maintenance</td>
</tr>
<tr>
<td>Q2 2017</td>
<td>Multi-Nodal/14 Project Team Meeting</td>
</tr>
<tr>
<td>Q4 2017 – 2018</td>
<td>Thailand ATM System Transition</td>
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Towards Regional Cross-Border ATFM

Thailand ATFM at Sub-Regional Level
Thank You!