



**From BOBCAT
to Cross-Border ATFM
IATA-ICAO Cross-Border ATFM
Workshop**

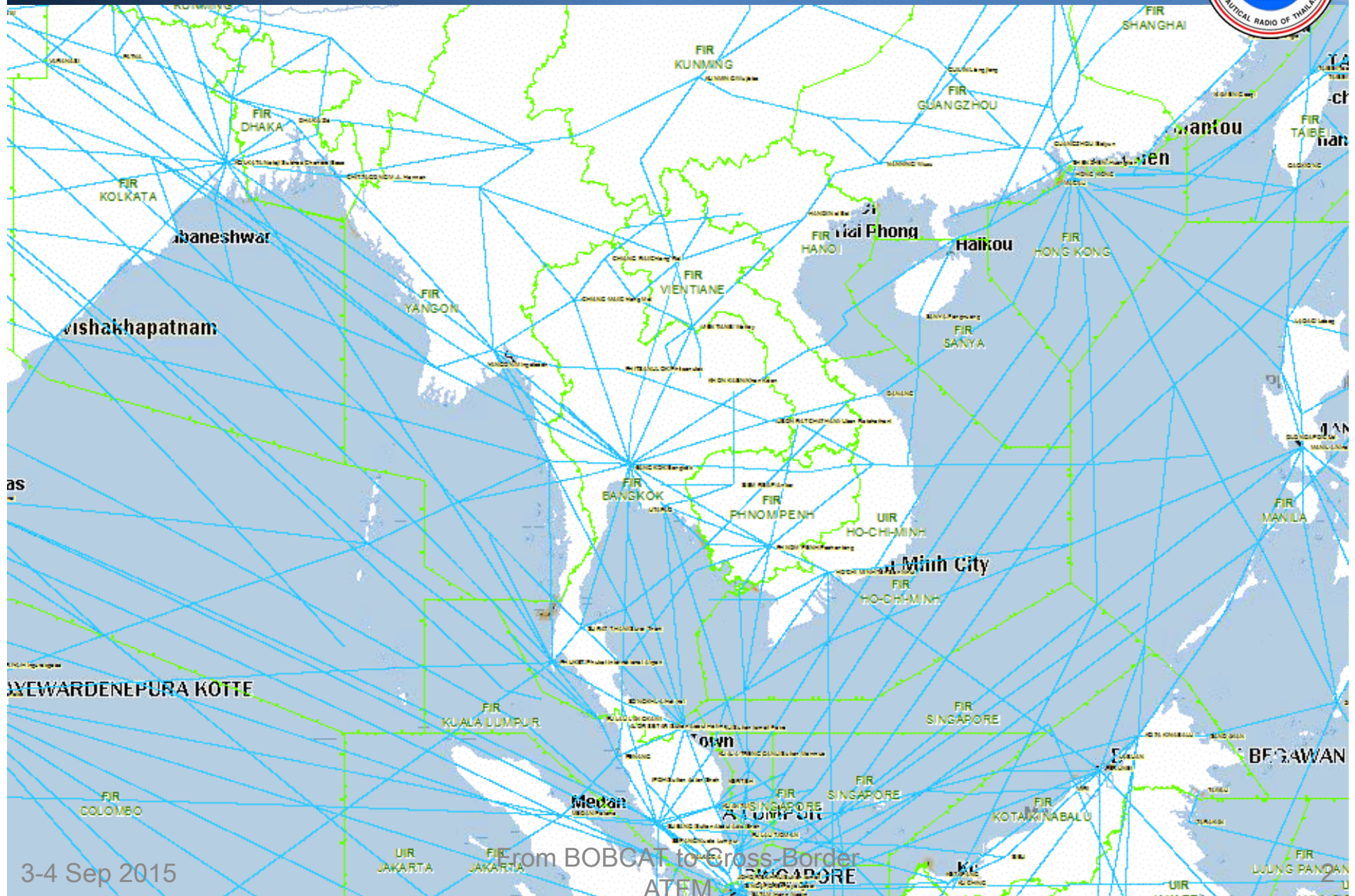
21 – 22 October 2015

Jakarta, Indonesia



Sugoon Fucharoen (Kin)
Air Traffic Management Data Officer
Network Operations ATM Centre, AEROTHAI

About Thailand

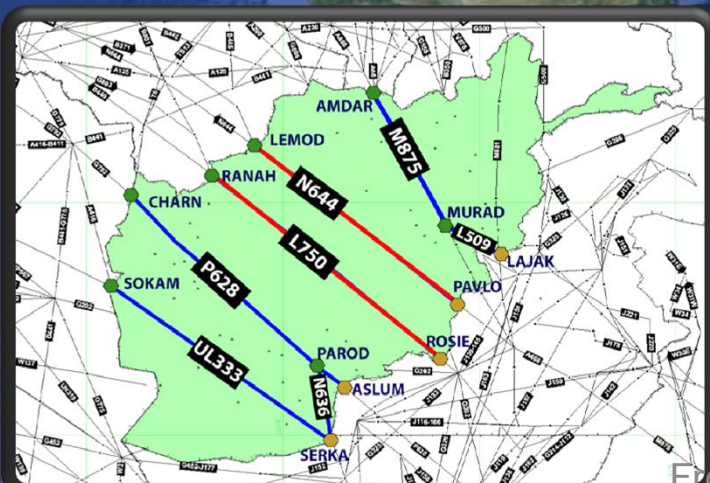


3-4 Sep 2015

From BOBCAT to Cross-Border
ATFM

Collaborative ATFM through Afghanistan

BOBCAT



3-4 Sep 2015

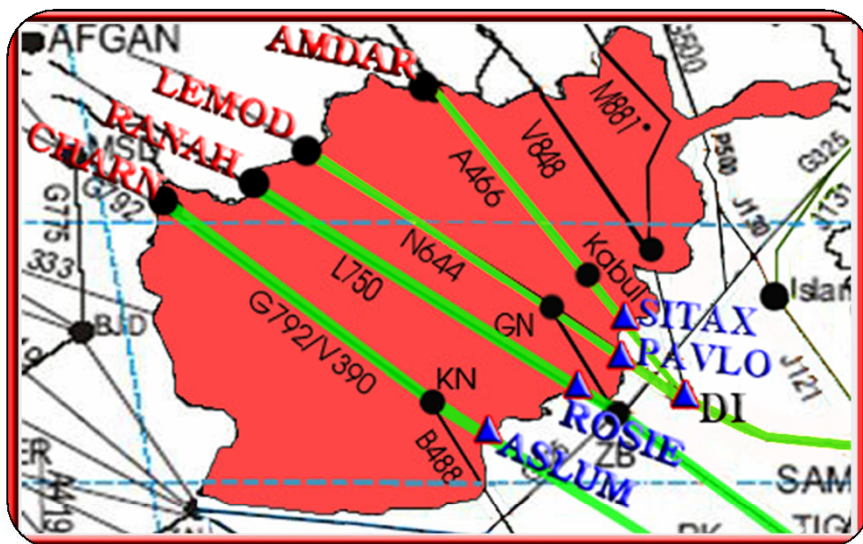
From BOBCAT to Cross-Border ATFM

21°16'31.77" N 83°43'22.17" E elev 287 m

©2010 Google

Eye alt 5121.36 km

Why ATFM Procedure using the Bay of Bengal Cooperative ATFM System (BOBCAT)?



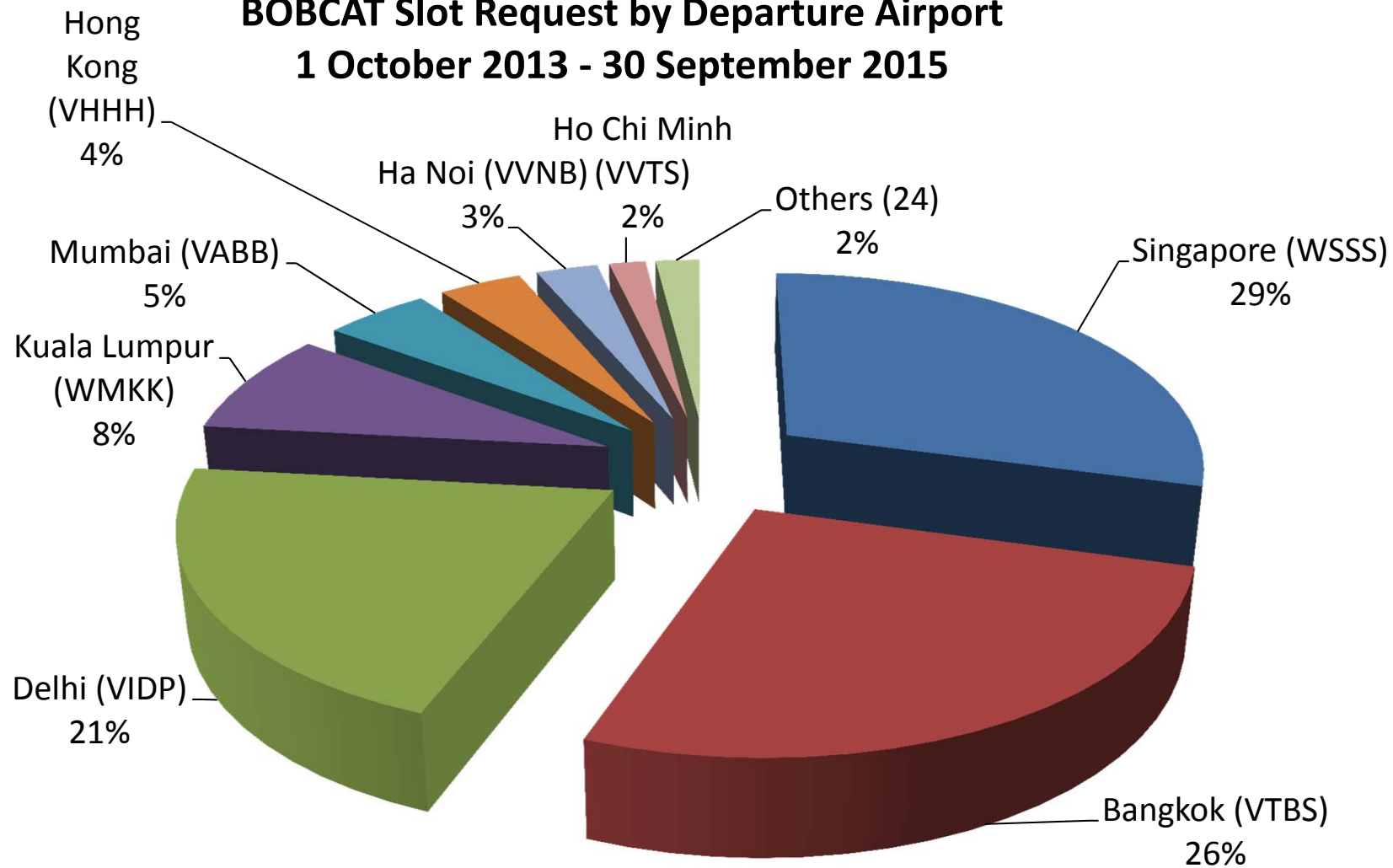
- Afghanistan airspace capacity
 - Military Operations
 - Lack of RVSM
- Uncoordinated Departures
- Westbound Night Time Traffic :
European Curfew
- Traffic Increase



Traffic Distribution: Departure Aerodromes



**BOBCAT Slot Request by Departure Airport
1 October 2013 - 30 September 2015**



BOBCAT Traffic Demand



**BOBCAT Traffic Demand from Slot Request
1 Oct 2013 - 30 Sep 2015**



	Oct 13	Nov 13	Dec 13	Jan 14	Feb 14	Mar 14	Apr 14	May 14	Jun 14	Jul 14	Aug 14	Sep 14	Oct 14	Nov 14	Dec 14	Jan 15	Feb 15	Mar 15	Apr 15	May 15	Jun 15	Jul 15	Aug 15	Sep 15
— Average	50	49	46	52	50	51	53	54	50	43	39	30	40	42	41	42	44	45	44	45	40	46	43	45
— Peak	57	57	57	60	58	58	60	59	57	56	48	42	46	48	49	51	48	50	51	53	51	55	53	53



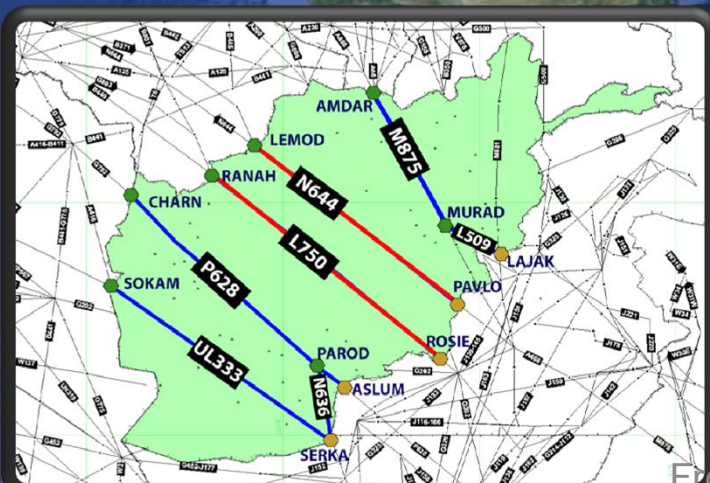
Benefits

- Regularity of departures
- Orderly Afghanistan entry
- Optimal FL achieved (80 – 90% in Afghanistan)
- Reroutes and technical stops eliminated
- Reduction of ATCO and flight crew workloads
- Environmental Outcome (Jul 2007 – Sep 2015):
 - **Estimated Airline Cost Savings ≈ USD 110 million**
 - **Estimated Fuel Savings ≈ 110 million kg**
 - **Estimated Emissions Savings ≈ 440 million kg**
 - Based on IATA estimates in 2007



Collaborative ATFM through Afghanistan

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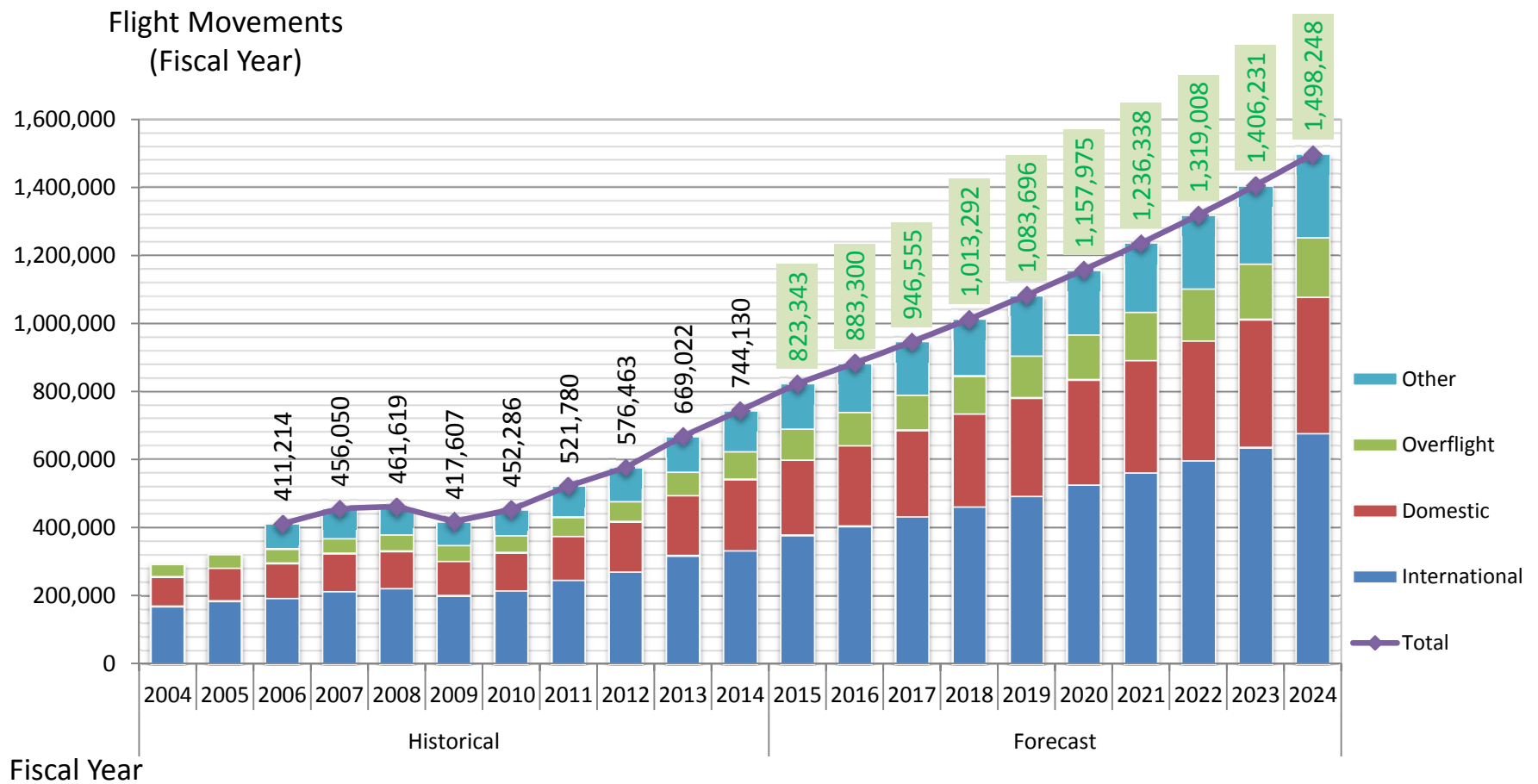
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Eye alt: 5121.36 km

Thailand Air Traffic Demand



**Flight Movements in Bangkok FIR FY2004 - 2014
and Forecast for FY2015 - 2024**



Thailand Air Traffic Demand

North

162,657 Flights/Year
446 Flights Daily
Overall GR: **34.1%**

	Volume	GR
Int'l	59%	44.4%
Dom	37%	23.7%
Overfly	4%	6.4%

East/North East

192,195 Flights/Year
527 Flights Daily
Overall GR: **17.0%**

	Volume	GR
Int'l	64%	11.6%
Dom	25%	47.9%
Overfly	11%	-2.7%

West

110,184 Flights/Year
302 Flights Daily
Overall GR: **-0.6%**

	Volume	GR
Int'l	71%	0.2%
Dom	0%	
Overfly	29%	-0.6%

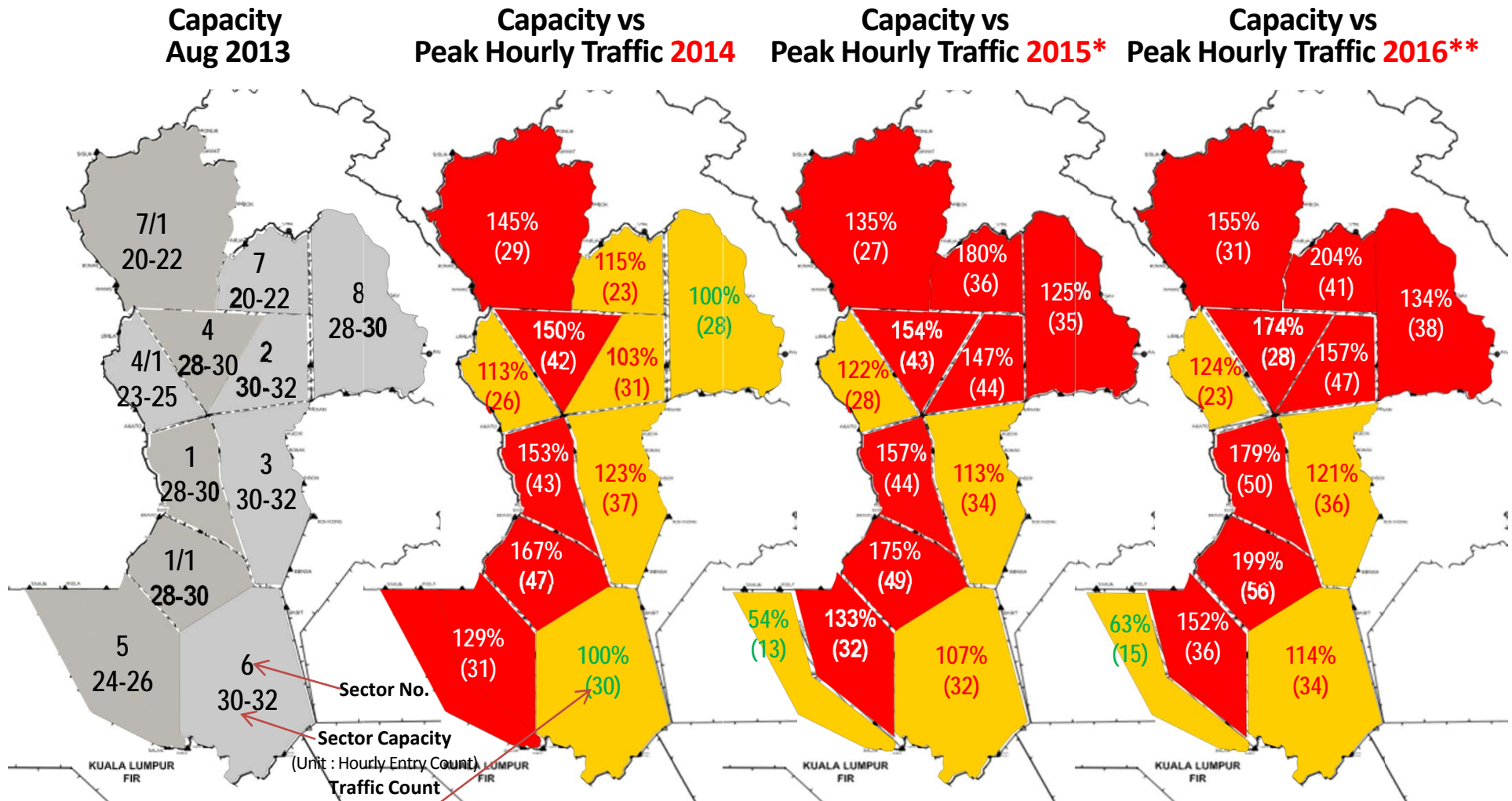
South

244,272 Flights/Year
669 Flights Daily
Overall GR: **8.7%**

	Volume	GR
Int'l	35%	6.3%
Dom	55%	11.6%
Overfly	10%	2.3%

Note: Annual Growth Rate / Data up to 30 Sep 2015

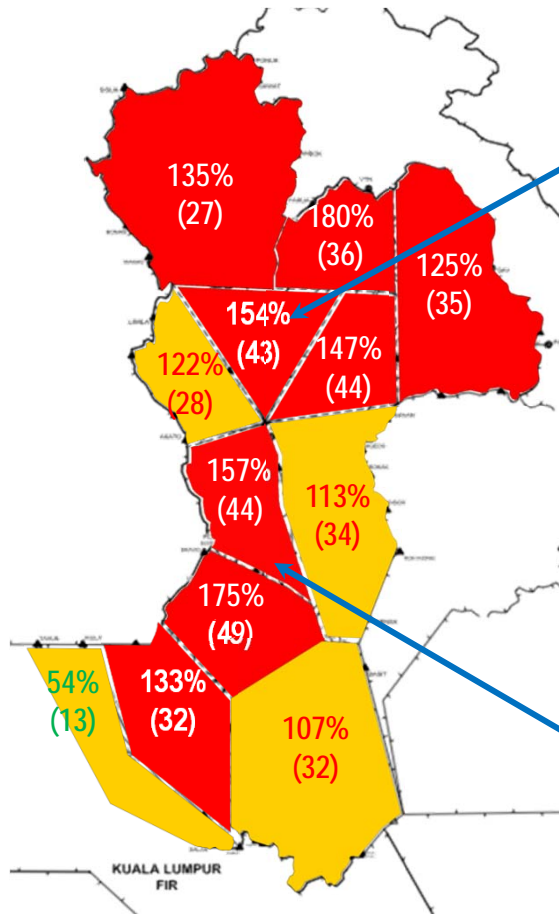
Capacity vs Demand – Bangkok ACC Sectors



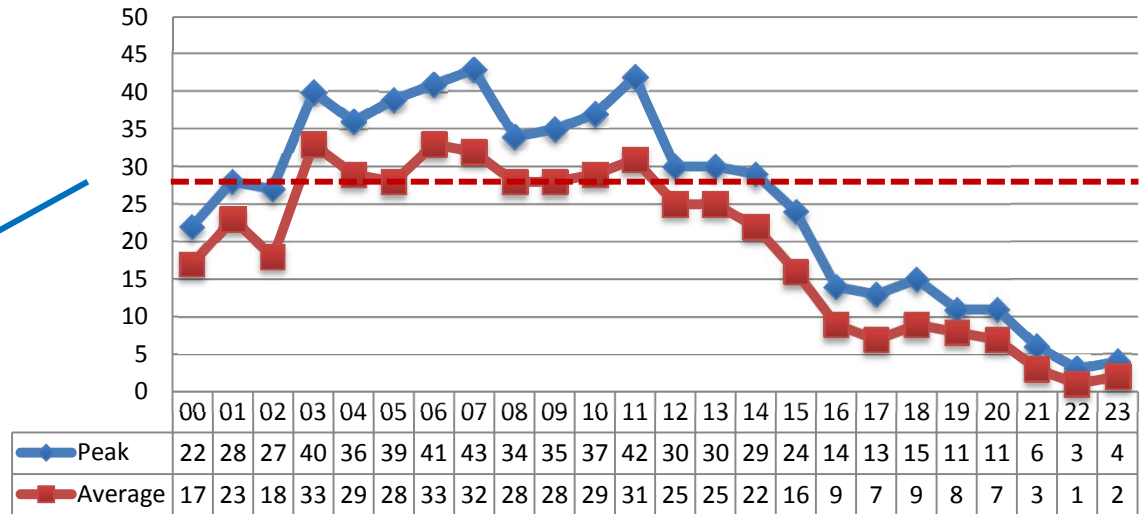
Capacity vs Demand – Bangkok ACC Sectors



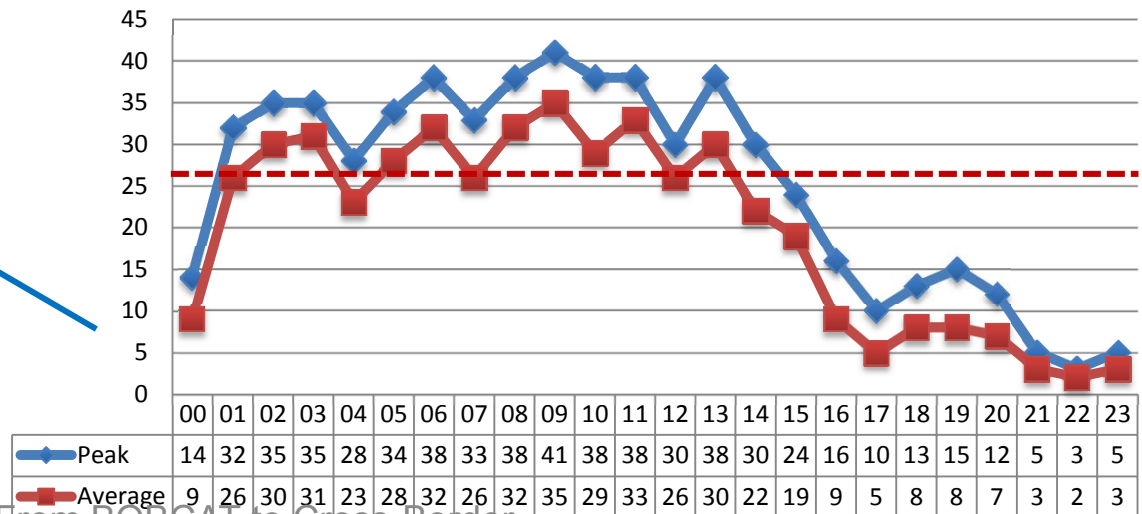
Capacity vs Peak Hourly Traffic 2015*



Hourly Traffic Volume - January 2015 - Sector4



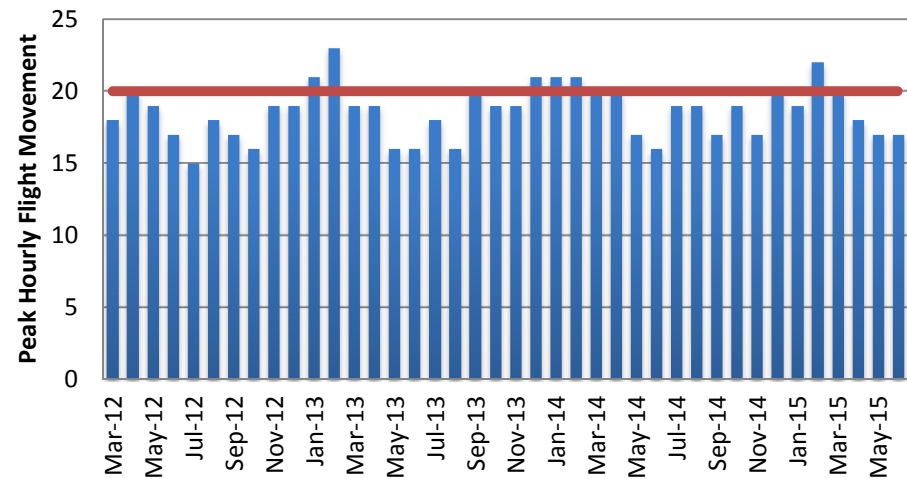
Hourly Traffic Volume - January 2015 - Sector1



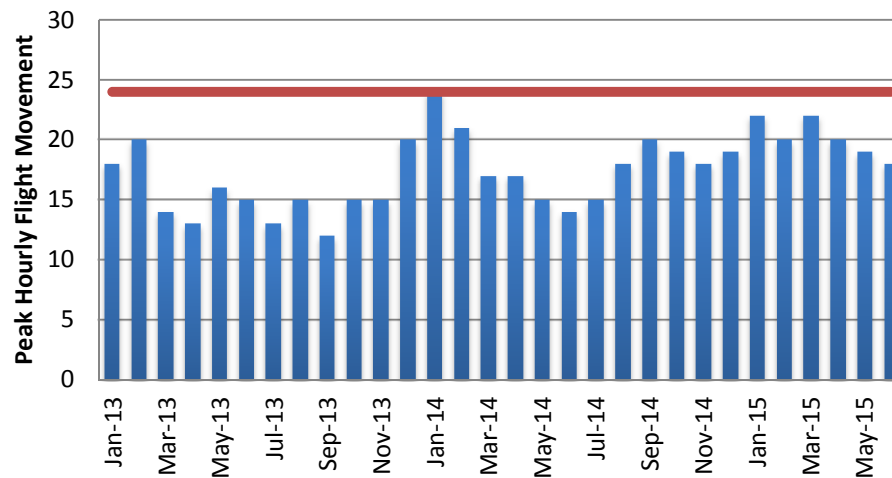
Capacity vs Demand - Chiang Mai & Phuket



Peak Hourly Flight Movement : Phuket



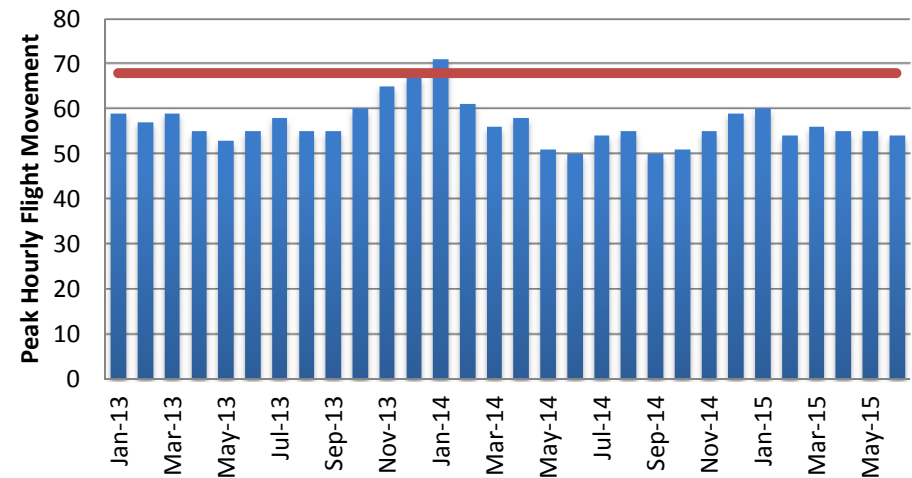
Peak Hourly Flight Movement : Chiang Mai



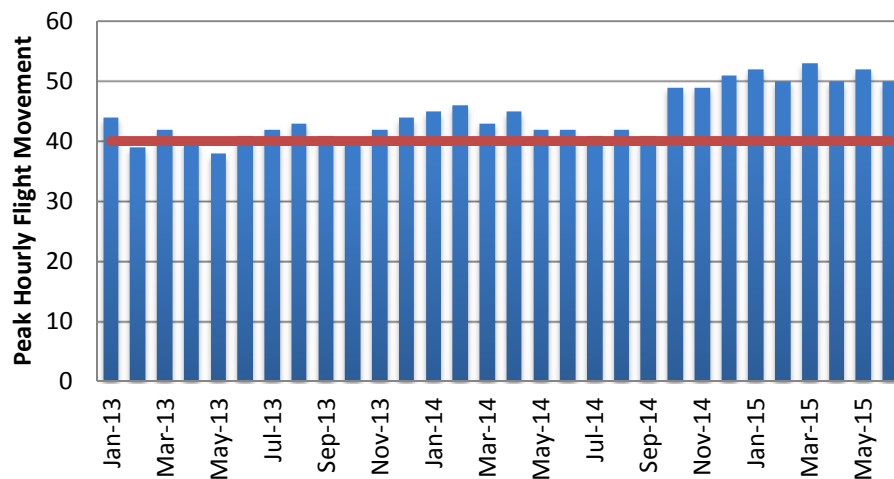
Capacity vs Demand – Bangkok Airports



Peak Hourly Flight Movement : Suvarnabhumi



Peak Hourly Flight Movement : Don Mueang



Addressing Traffic Growth



- Capacity Enhancement before new ATC System
 - ATC Workload reduction initiatives
 - “Manual” Departure Management
 - Arrival Management enhancements
 - Route Structure enhancements
 - New SID/STAR for Bangkok TMA
- CDM/ATFM Operations
- Initiatives after new ATC System

Addressing Traffic Growth



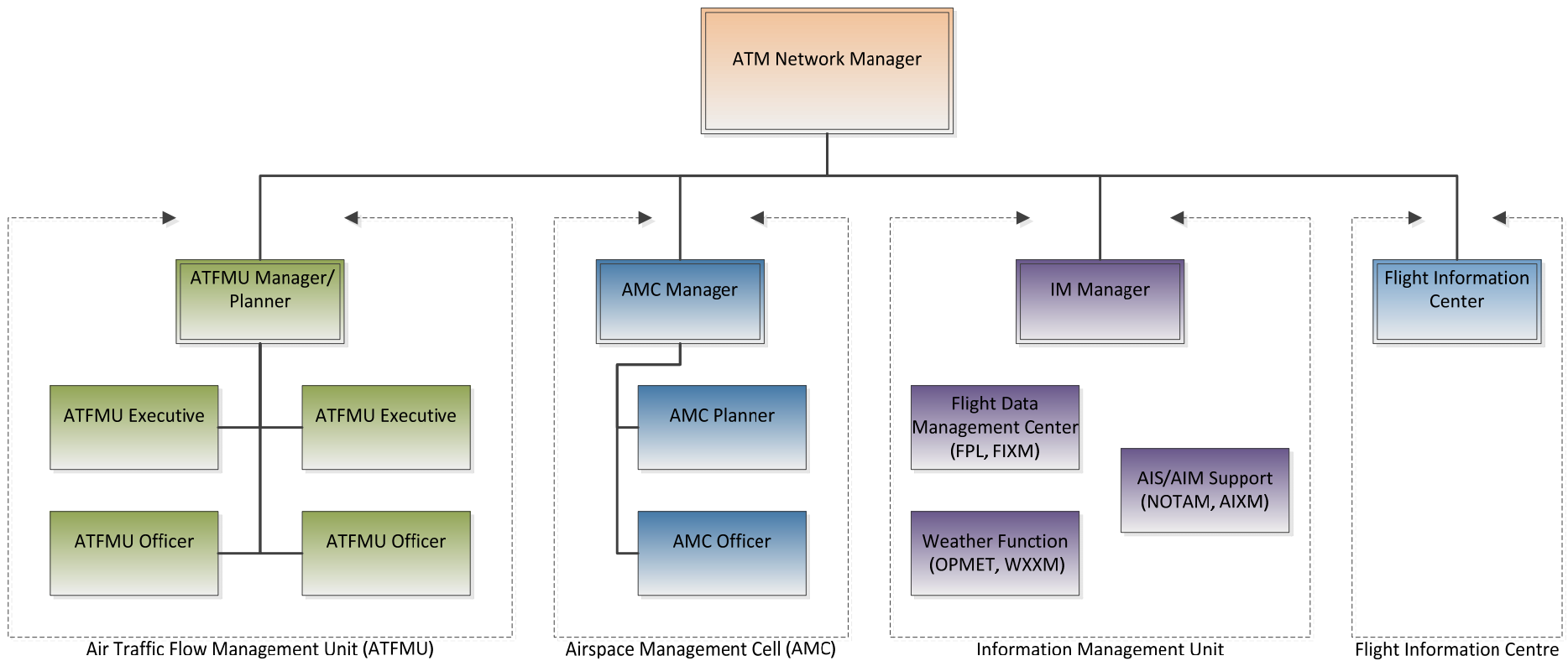
- Capacity Enhancement before new ATC System
- CDM/ATFM Operations
 - ACC Sector Capacity Review
 - Establish ATM Network Management Centre (ATM NMC)
 - Distributed Multi-Nodal CDM/ATFM Network
(Distributed Multi-Nodal ATFM Operational Trial Project)
 - ATFM/CDM Automation Support
 - Support transition to new ATC System
- Initiatives after new ATC System

Addressing Traffic Growth



- Capacity Enhancement before new ATC System
- CDM/ATFM Operations
- Initiatives after new ATC System
 - AIDC Automated Aircraft Handoff with neighboring FIRs
 - Automatic aircraft coordination within Bangkok FIR
 - SSR Mode S and ADS-B Equipage requirement (TBD)
 - More “flexible” sector configurations
 - Potential for more upper airspace sectors
 - Further enhanced cross-border ATFM collaboration in accordance to Network Operations principle

ATM Network Management Centre (ATM NMC)



CANSO Bangkok-Singapore Whole-Flight CDM (2011-2012)



CAAS
Civil Aviation Authority of Singapore



Supported by

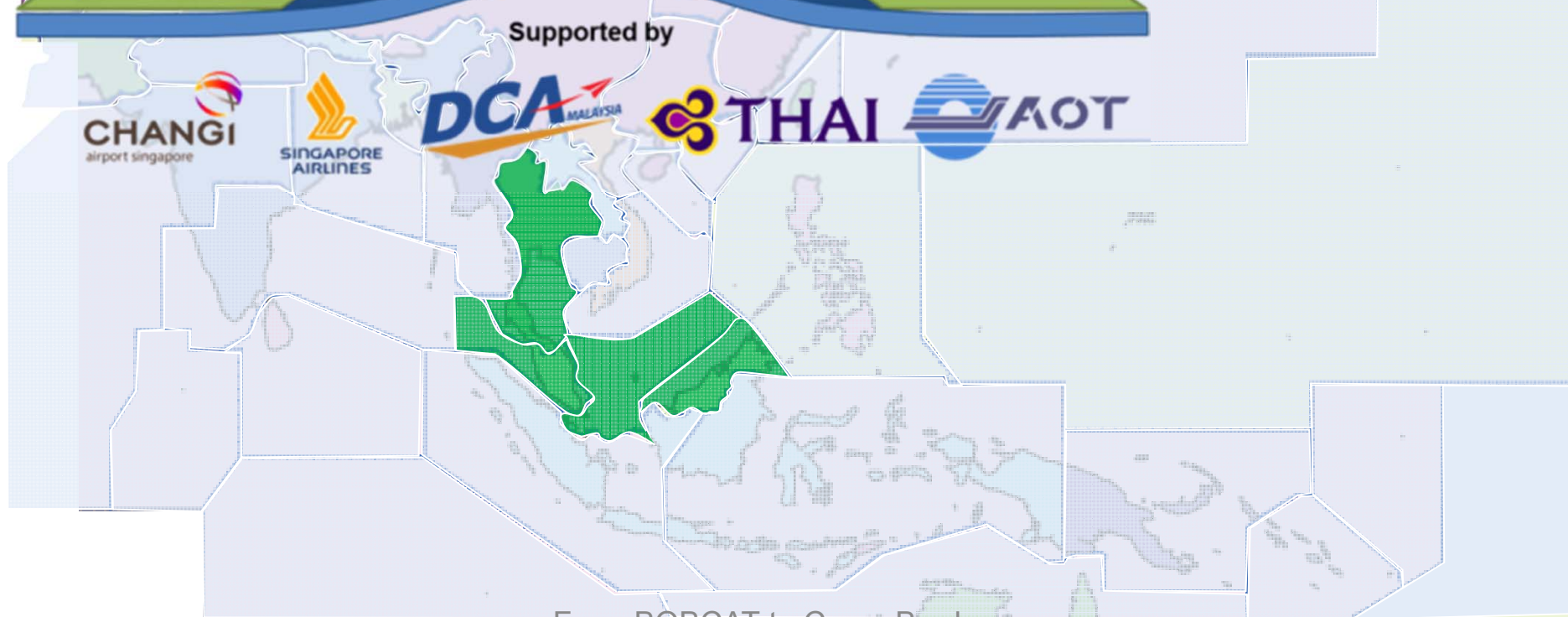
CHANGI
airport singapore

SINGAPORE AIRLINES

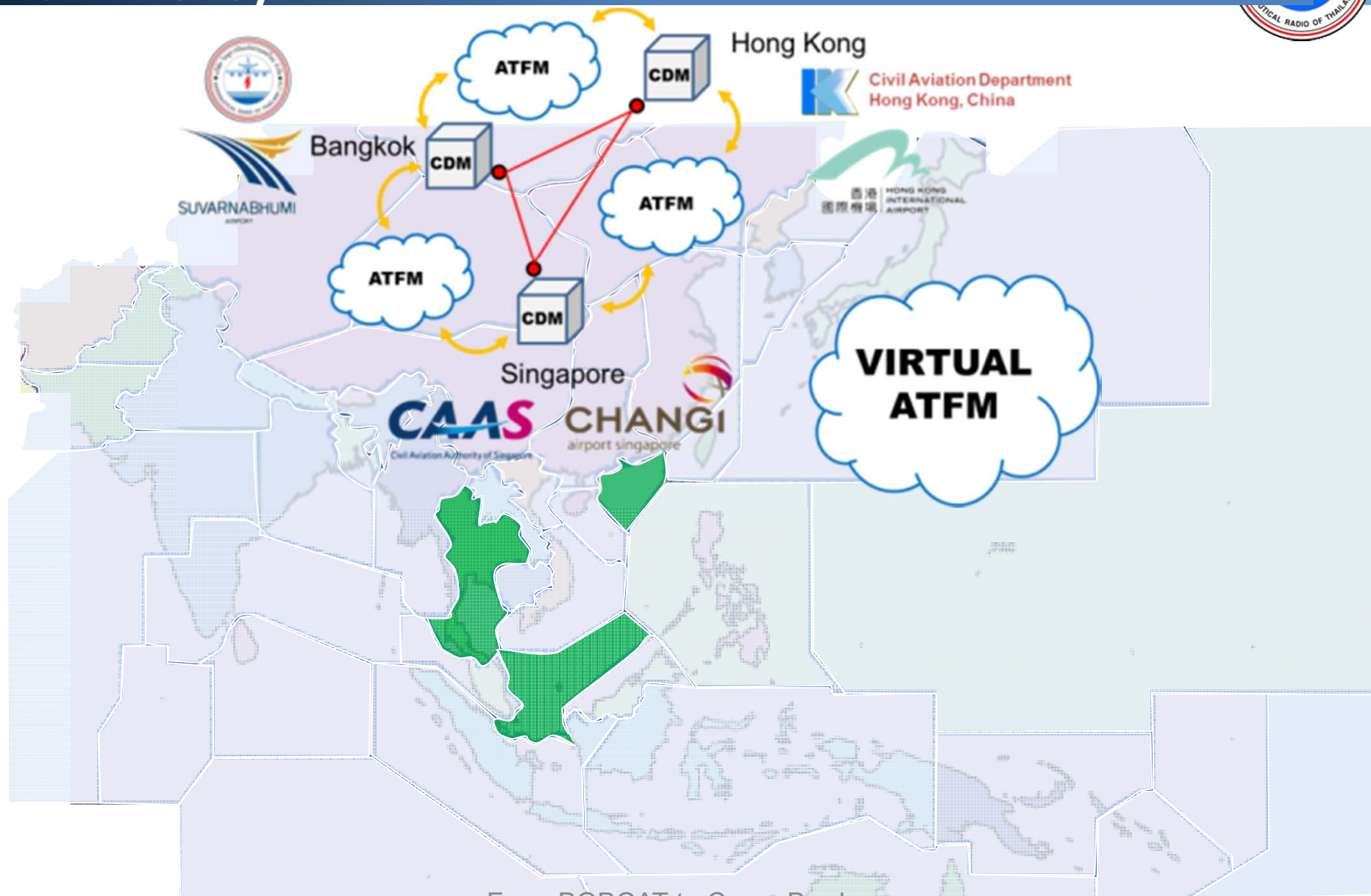
DCA MALAYSIA

THAI

AOT



Tripartite CDM/ATFM Project (2012-2013)



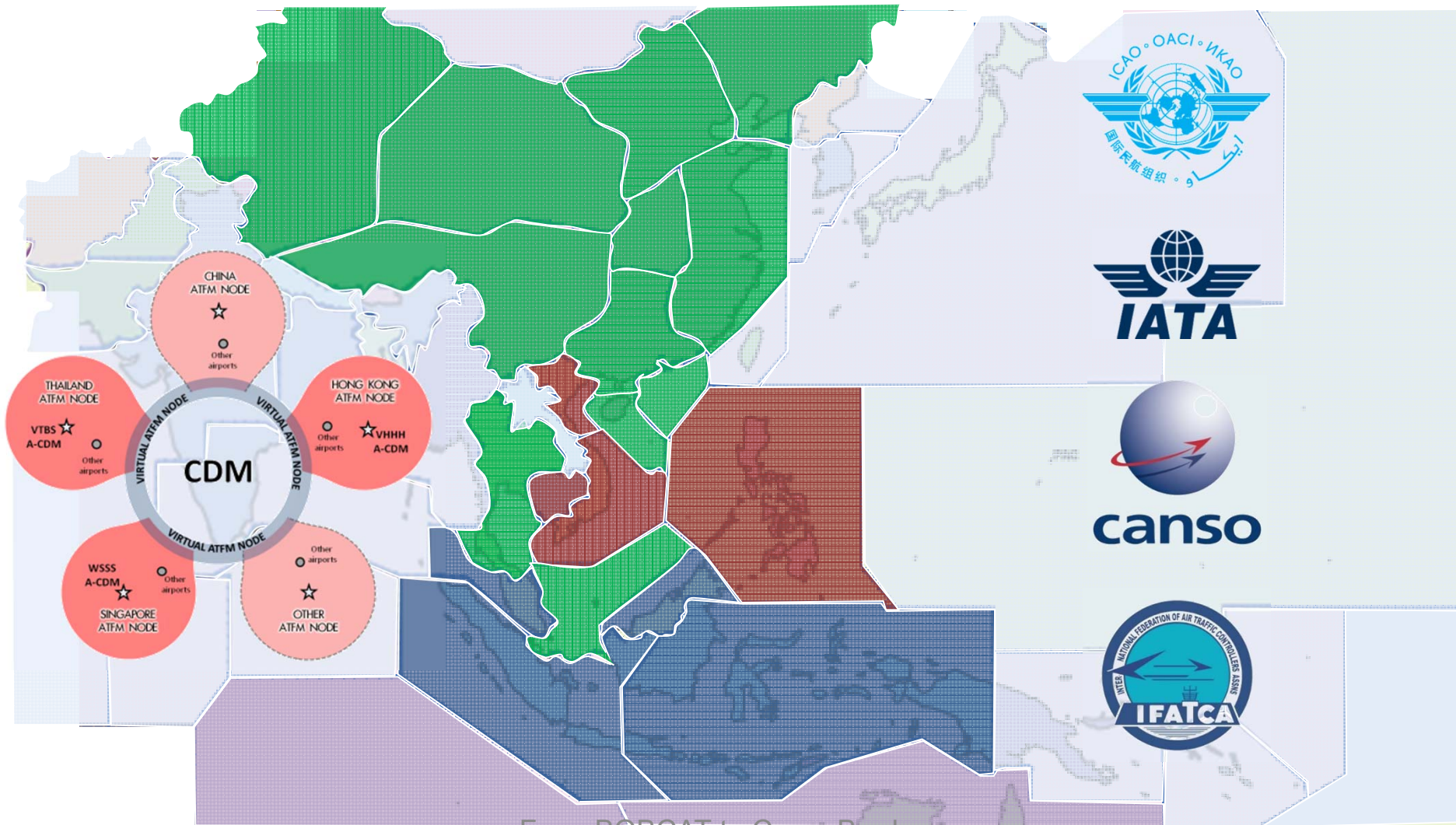
APEC ATM Emissions Reduction Project (2012-2013)



Air Traffic Management
Emissions Reduction
Project Report

APEC Transportation Working Group
December 2013

Distributed Multi-Nodal ATFM/CDM Network (2014+)



3-4 Sep 2015

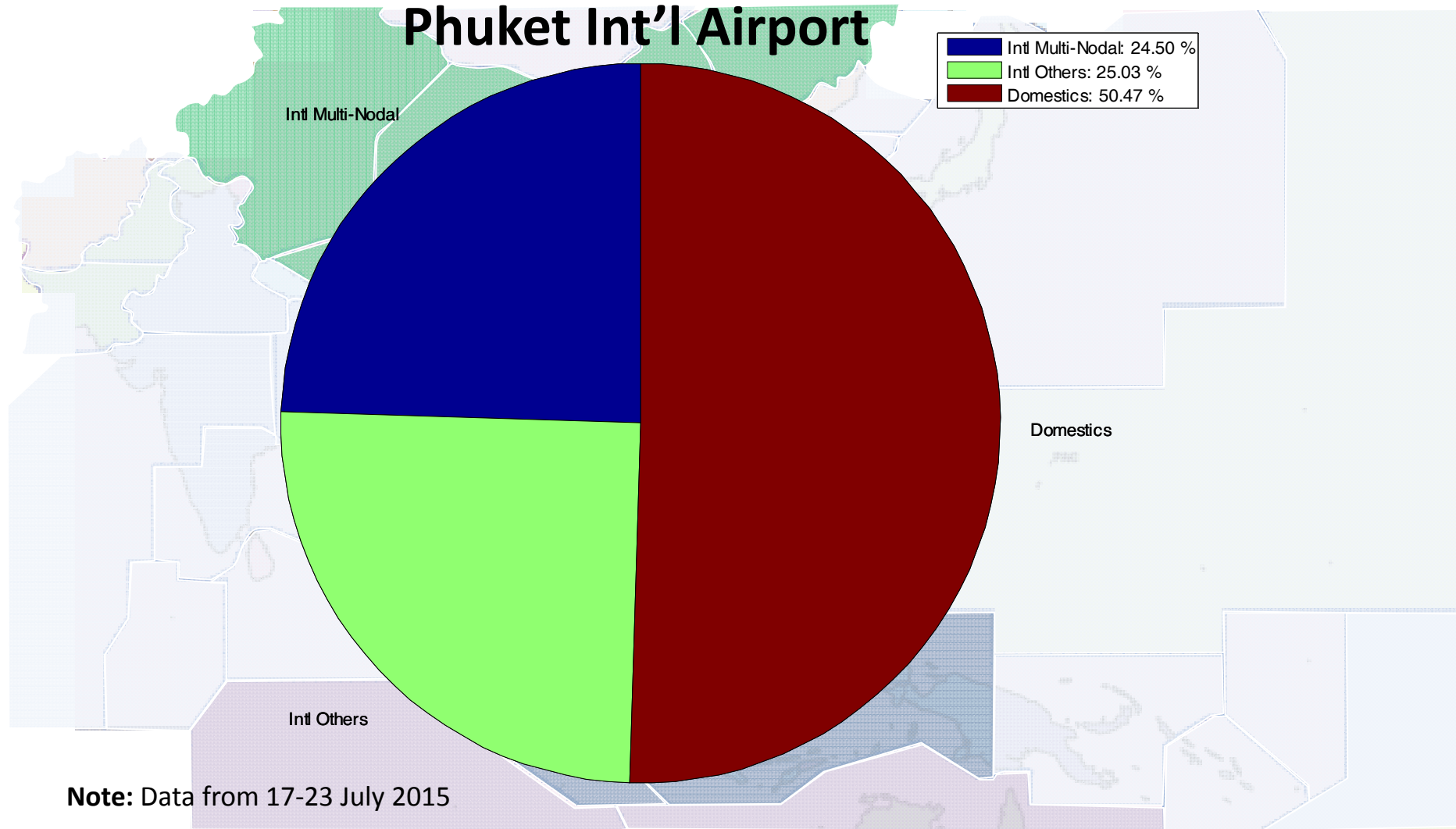
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Multi-Nodal ATFM Ops Trial Participation by Departure Aerodromes



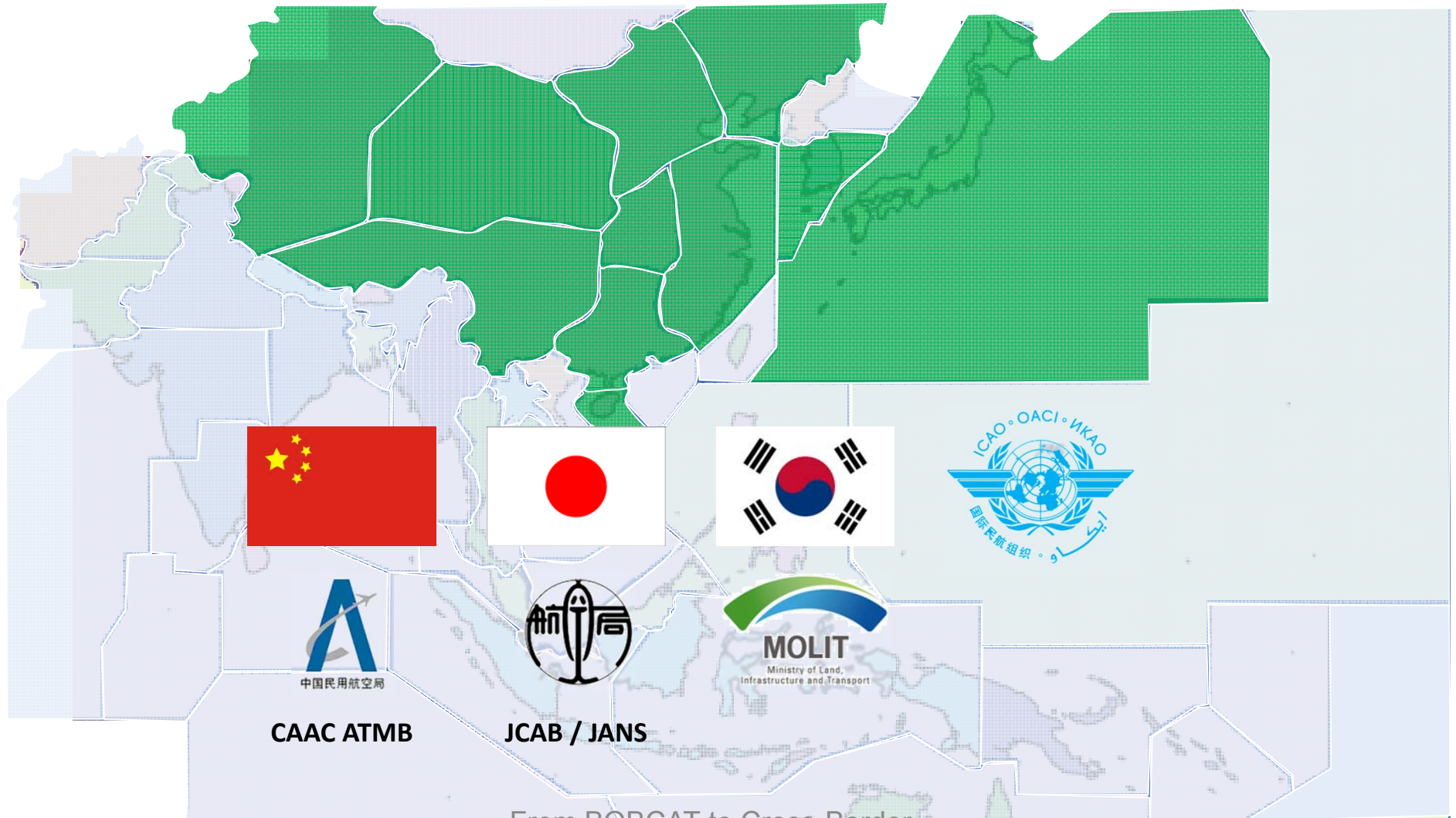
ATFM Participation of Departures

Phuket Int'l Airport



Note: Data from 17-23 July 2015

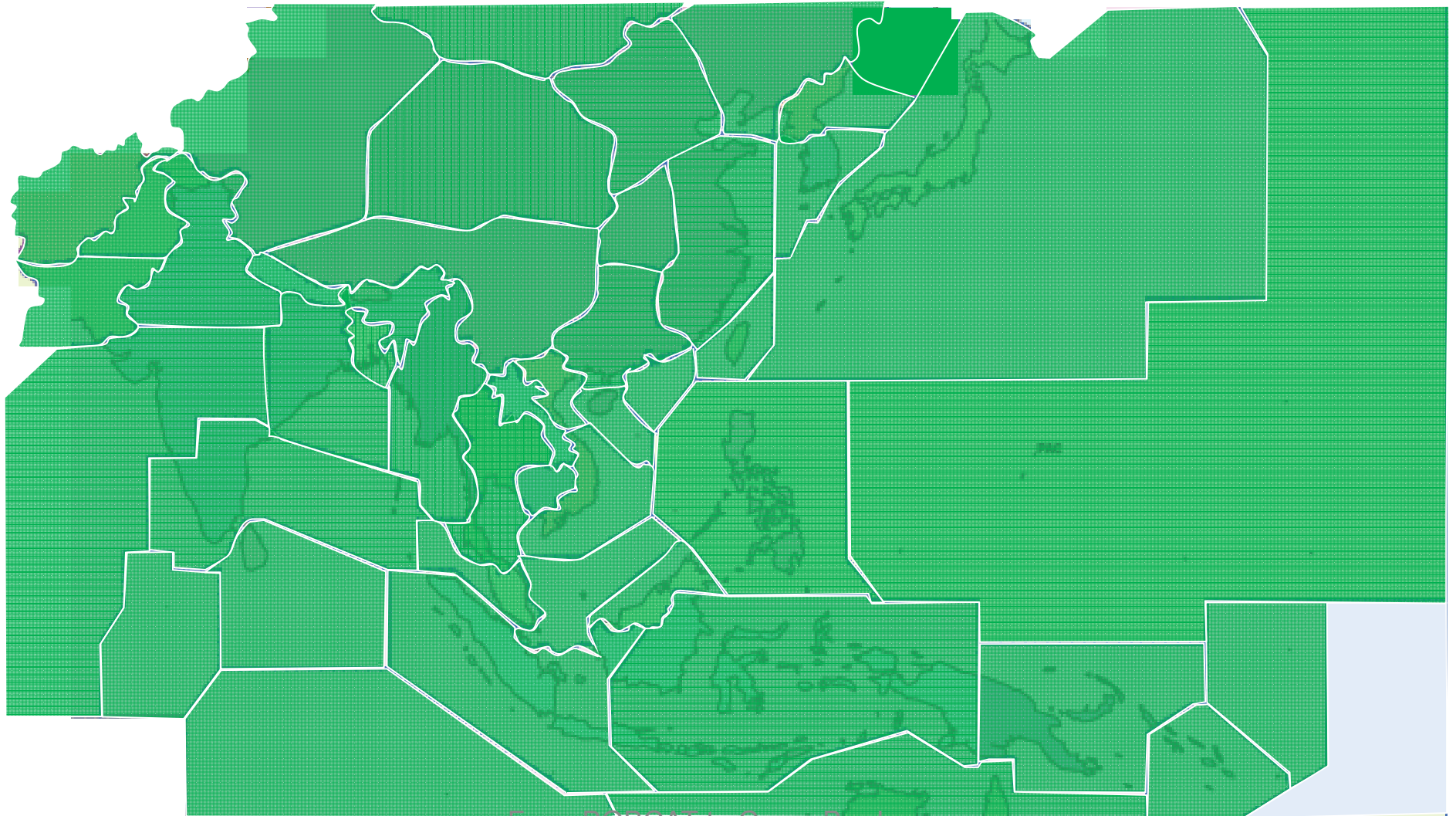
North Asia Regional ATFM Harmonization Group (NARAHG) (2014+)



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Towards Regional Cross-Border ATFM



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Thank You!