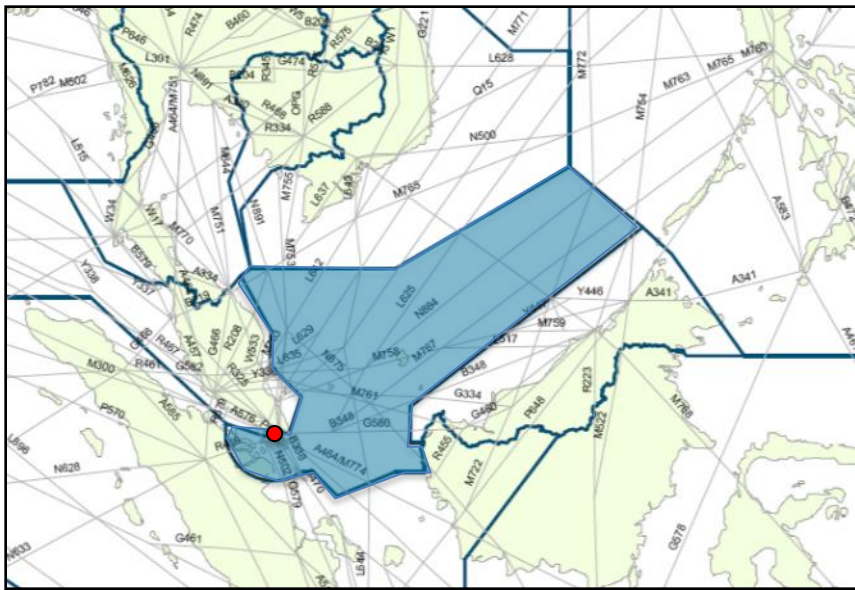


# Why Cross-Border ATFM? A Singapore's Perspective

Hermizan Jumari

3 – 4 September 2015

# Air Traffic Management in Singapore



**245,000 NM<sup>2</sup>**

(840,000 KM<sup>2</sup>)

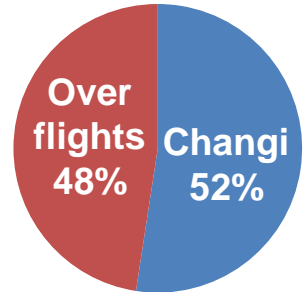
**6** Contiguous boundaries with Area Control Centres

- Bangkok
- Ho Chi Minh
- Jakarta
- Kuala Lumpur
- Kota Kinabalu
- Manila

**662,000** (2014)

Total Movements

Changi - **341,400**



**1** Area Control Centre  
**7** En-route Sector



**1** Approach Control Centre



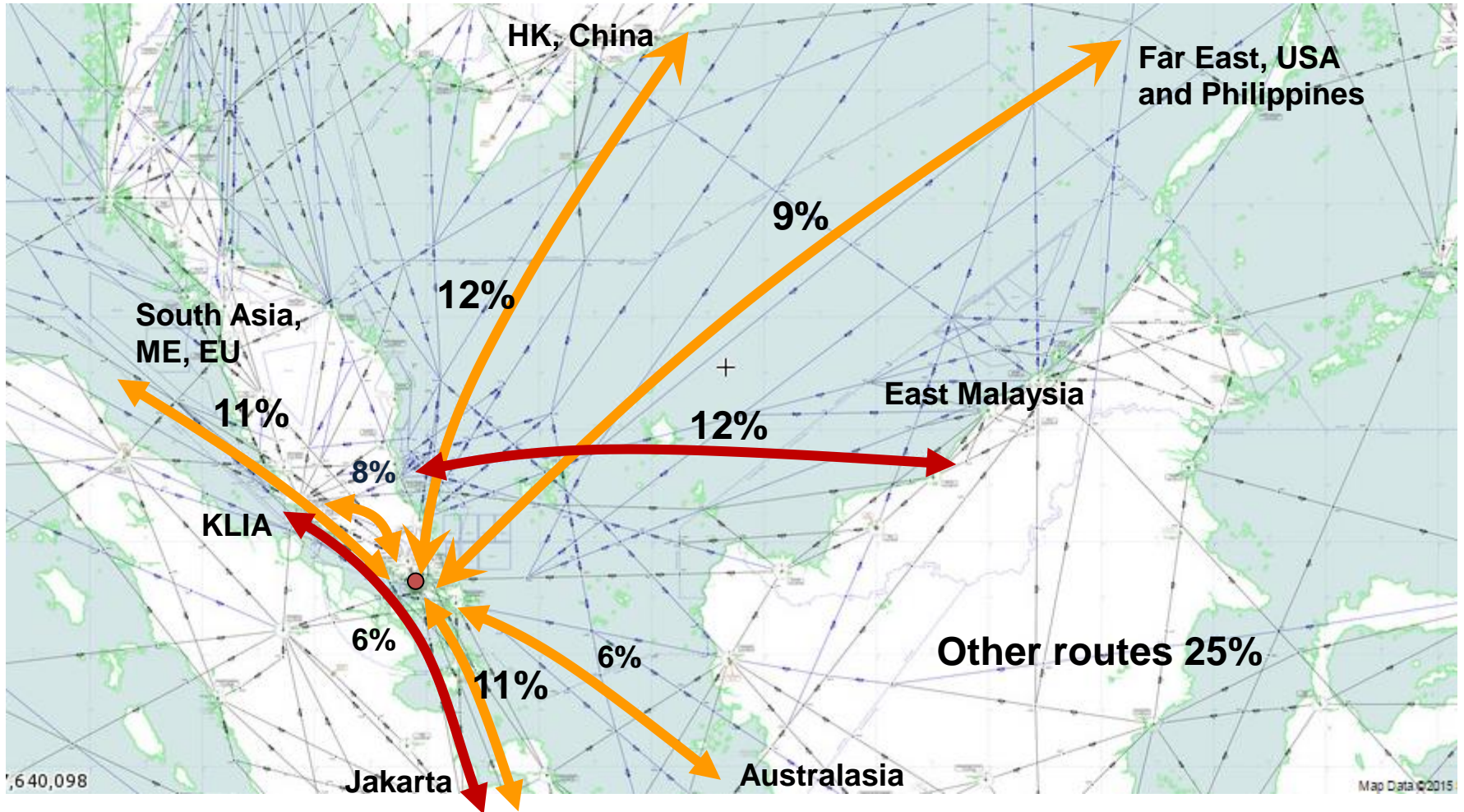
**2** Air traffic control towers

- Changi
- Seletar

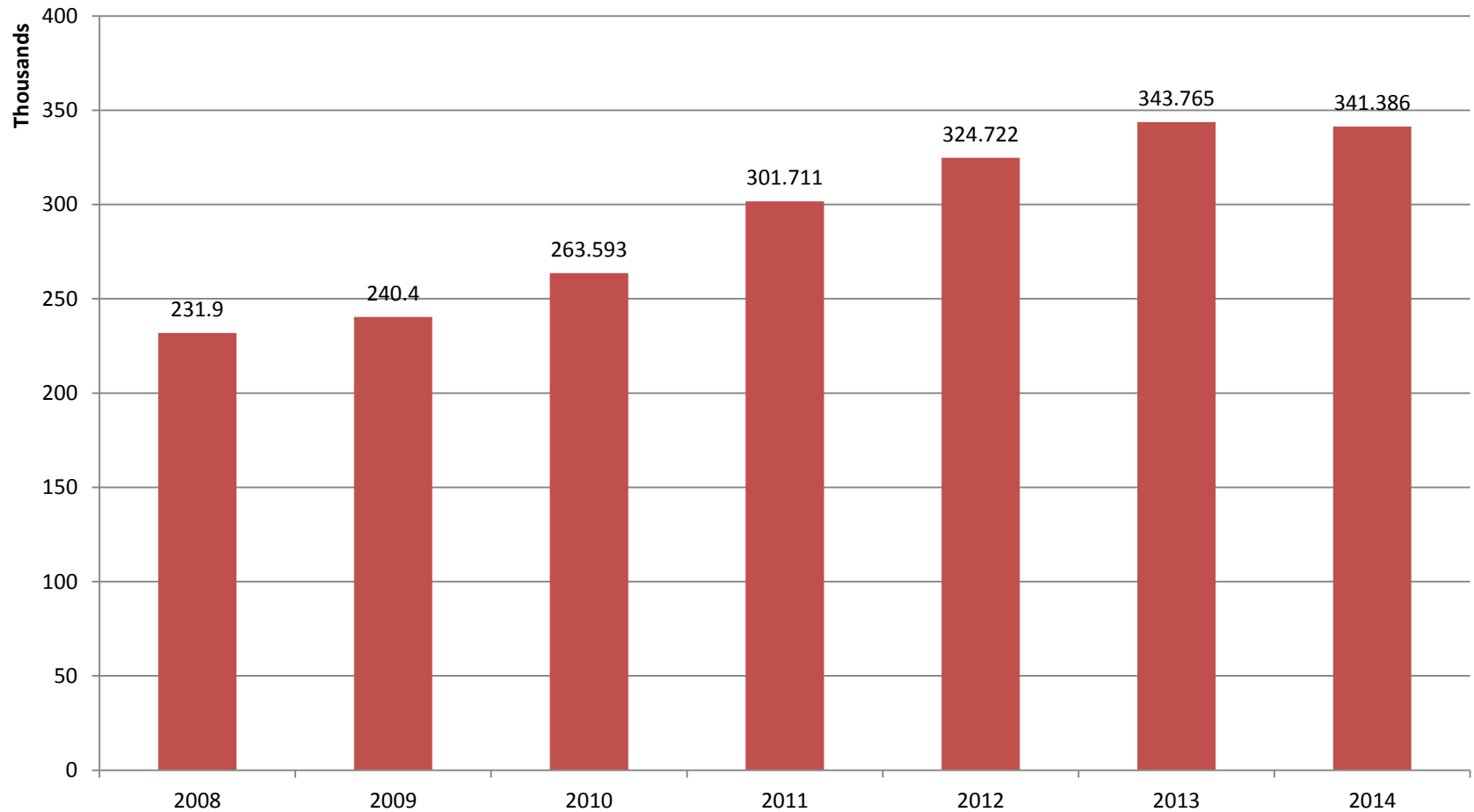


**350**  
Air Traffic Controllers

# Major Traffic Flows in Singapore FIR

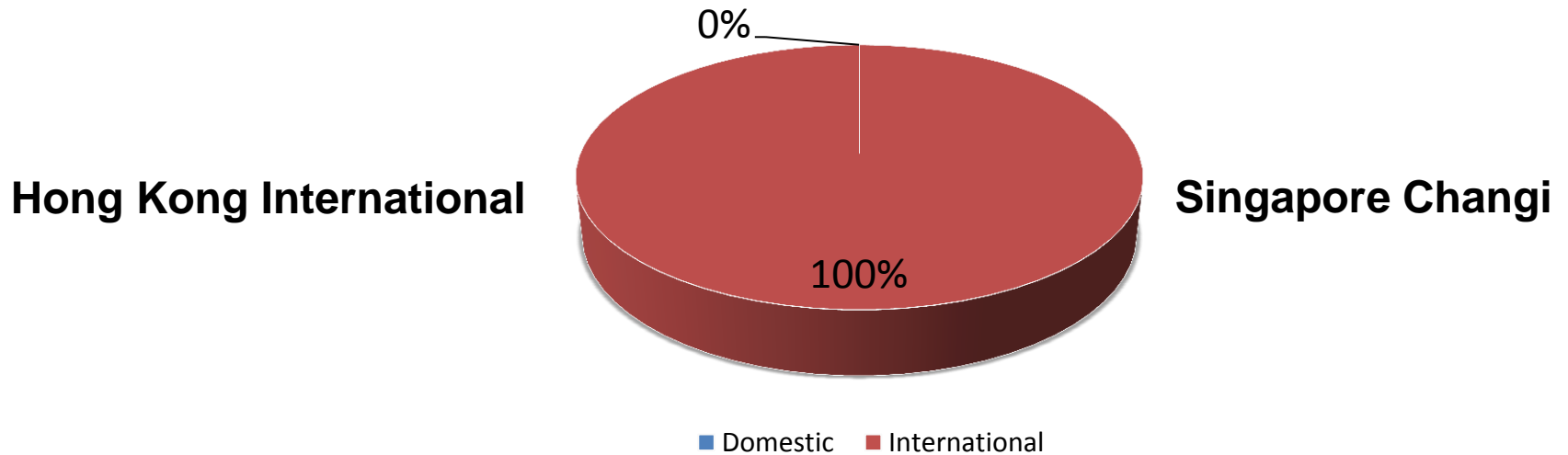


# Air Traffic Volume at Changi

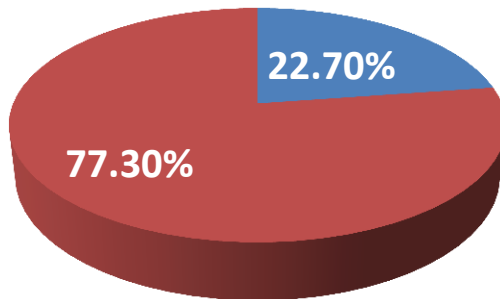


Source : Changi Airport Group through CAPA

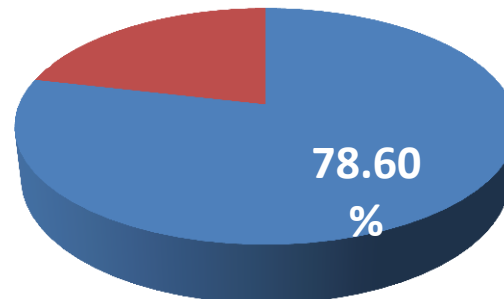
# Composition of Air Traffic – Int'l vs Domestic



**Bangkok Suvarnabhumi**



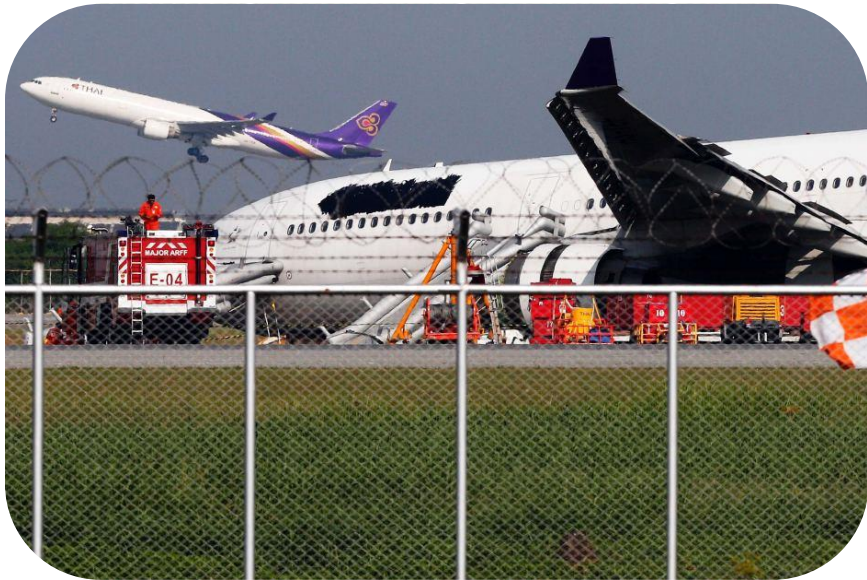
**Delhi Indira Gandhi International**



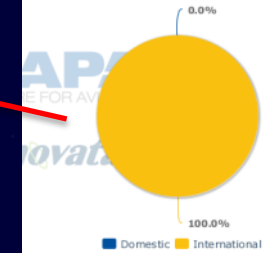
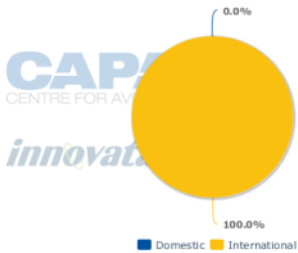
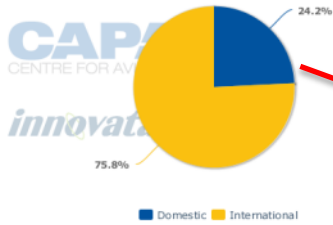
# ATFM Around the World



# How do we deal with these?

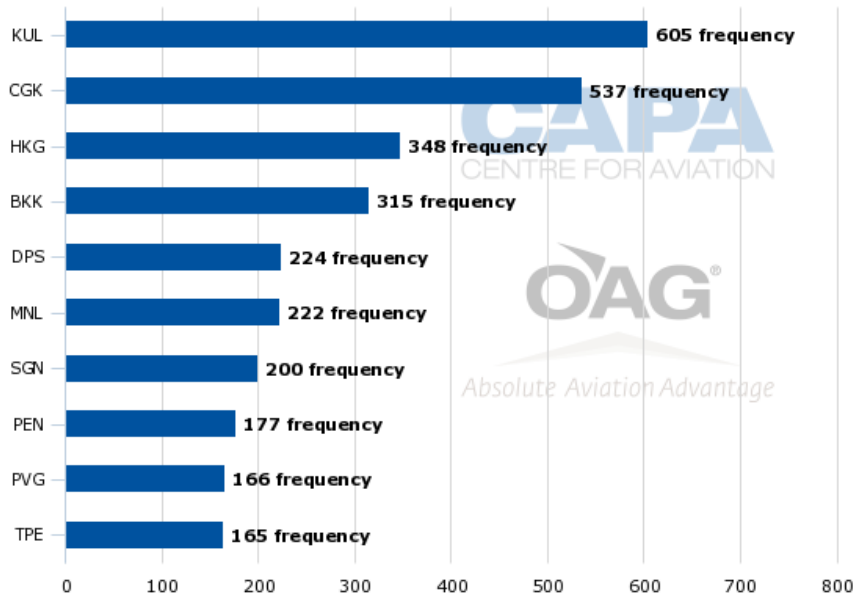


# ATFM Concept for the Region



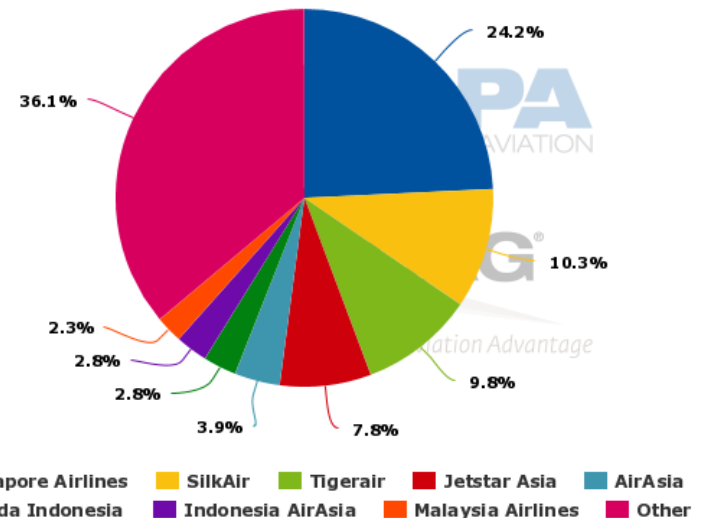


# Managing International Flights at Changi



Focus on major city pairs

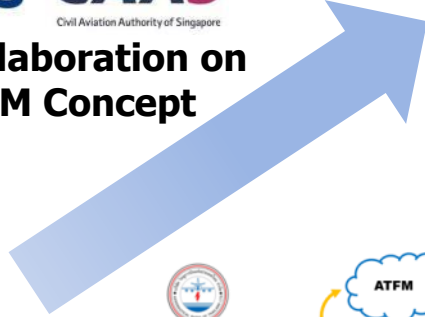
- Engaging local based carriers



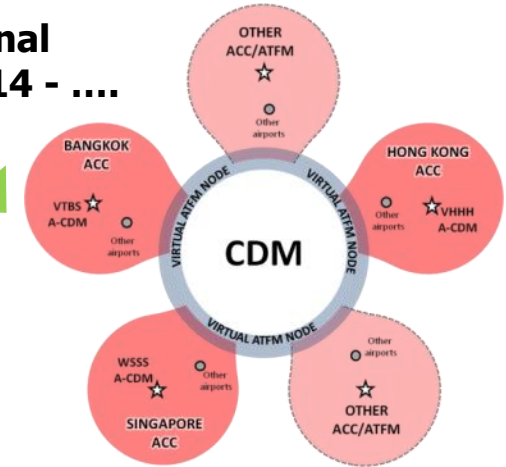
# Evolution of the Regional ATFM Concept



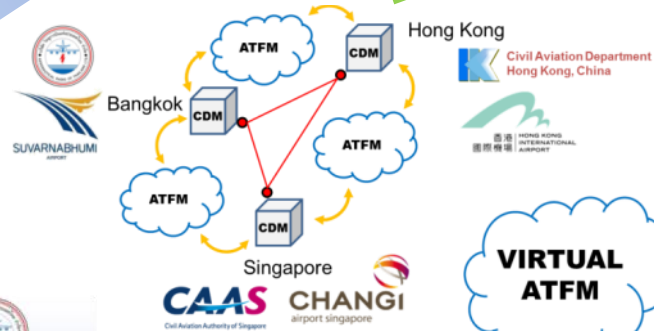
**Research Collaboration on Regional ATFM Concept 2013**



**Multi Nodal Regional ATFM Concept 2014 - ....**



**CANSO Whole of flight CDM Pilot Project between BKK-SIN 2011-2012**



**Tripartite CDM Project between BKK-HKG-SIN 2012-2013**



# Collaboration; Key to Cross-Border ATFM



Photo credit: NATS UK