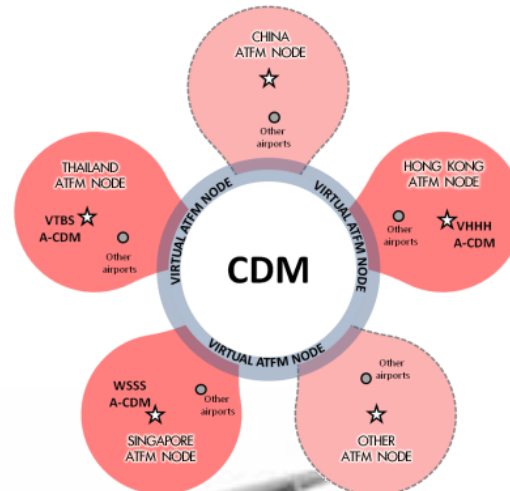




Cross-Border Multi-Nodal ATFM Concept

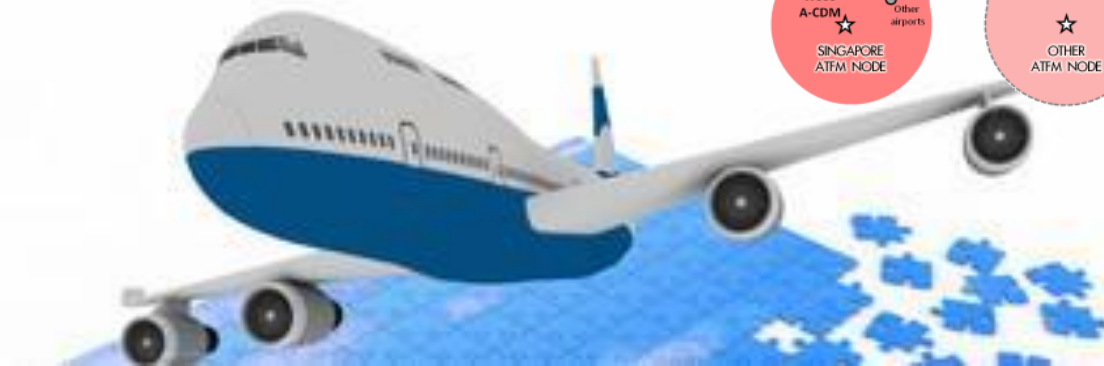
IATA-ICAO Cross-Border ATFM Workshop



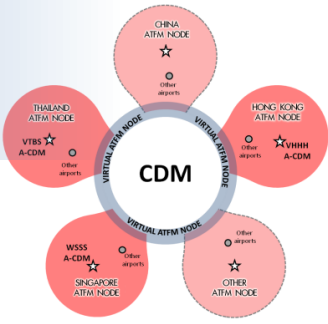
3 – 4 September 2015

Delhi, India

Piyawut Tantimekabut (Toon)
Air Traffic Management Network Manager
Network Operations ATM Centre, AEROTHAI



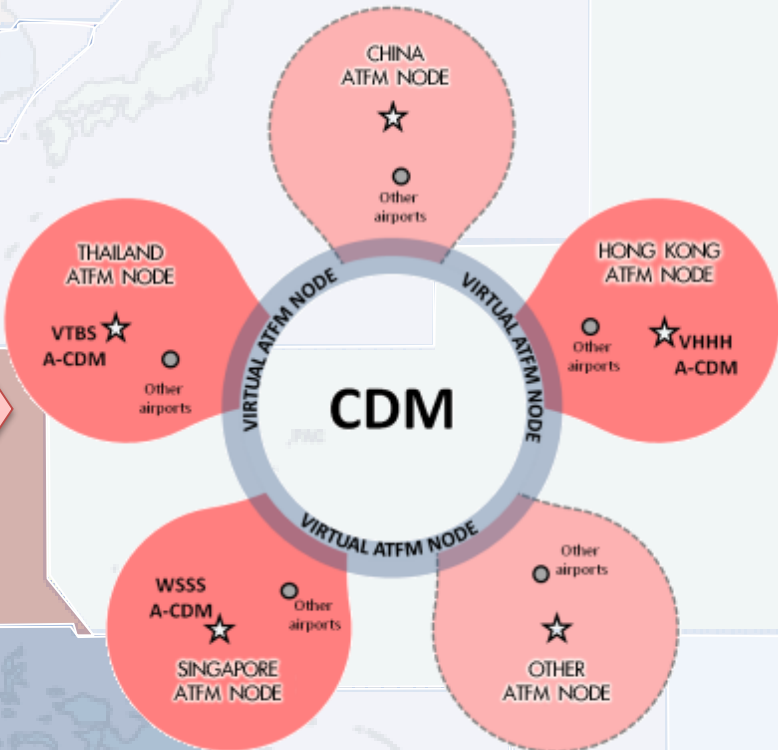
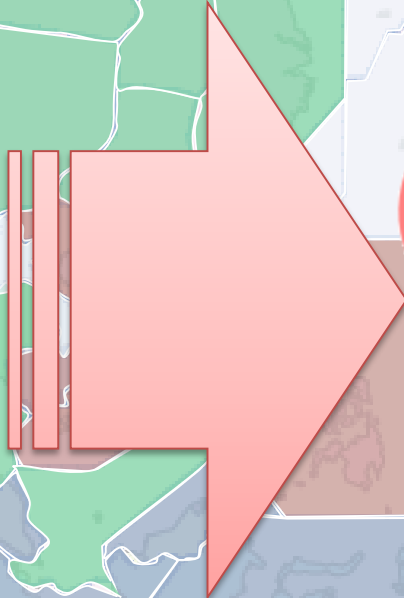
Asia-Pacific ATFM Landscape



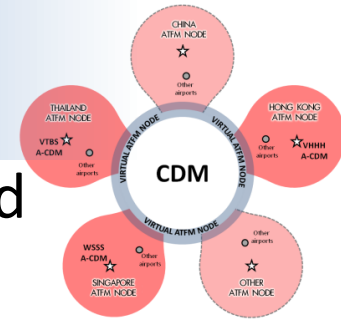
Domestic ATFM ✓

Cross-Border ATFM ?

Regional Central ATFM Unit ?

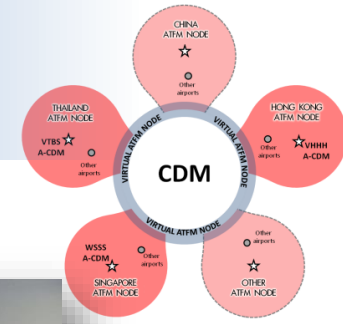


ATFM/CDM Proof of Concept Project



- 10 months proof of concept research project supported by industry partner.
- Develop a viable ATFM/CDM concept suitable for adoption by States in the APAC region
- Concept development through the concept engineering process involving concept Analysis, Exploration, Development including a benefit analysis
- Industry Stakeholders such as ANSPs, Airlines and airports operators collaborated as key contributors of operational inputs
- The project has concluded in Jan 2014 with the concept and shared at the ICAO ATFM/SG 3 meeting

Use of Existing ATFM/CDM Methods

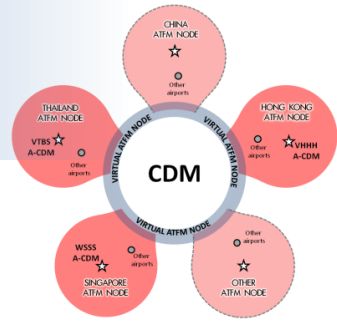


- ATFM Implementations Studied: USA, Europe, Australia, and South Africa

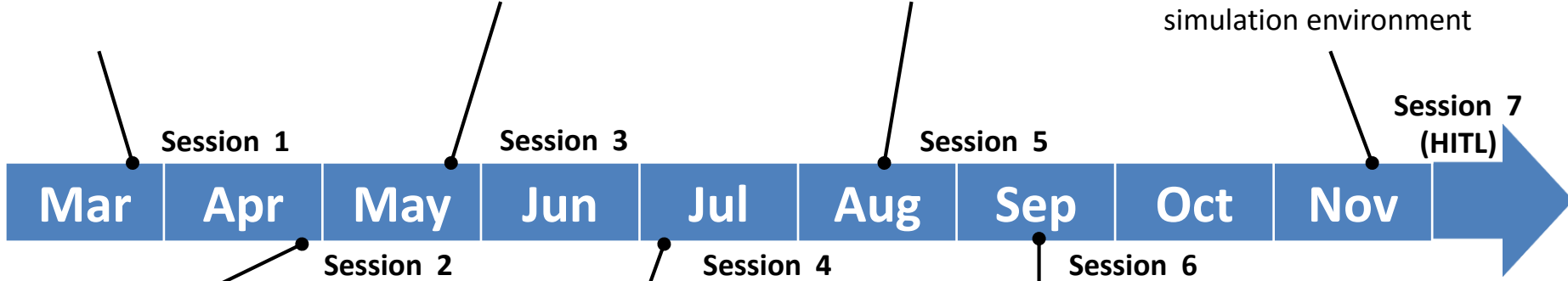


- Current ATFM implementations achieve demand and capacity balance when applied to flights regulated by a single authority
- Asia Pacific has a number of international hub airports with limited domestic traffic to apply existing ATFM principles
 - e.g. Hong Kong and Singapore are 100% international
 - Concept applicable to ANSPs with significant domestic traffic
- Concept had to be developed to regulate flights to an airport with a demand and capacity imbalance departing from ANSPs under a different control authority

Stakeholder Involvement



- Present concept engineering process
- Operational site visits
- Introduce and refine core functionality of Regional ATFM/CDM concept
- Discussion on specific components of concept
- Prepare for November HITL
- Validate concept in a simulation environment



- Introduce Stakeholders to current ATFM/CDM procedures and demonstrate benefits

- Explore potential modifications to improve the Regional ATFM/CDM concept

- Explore Regional ATFM concept with Thailand, Malaysia, and Hong Kong ANSPs

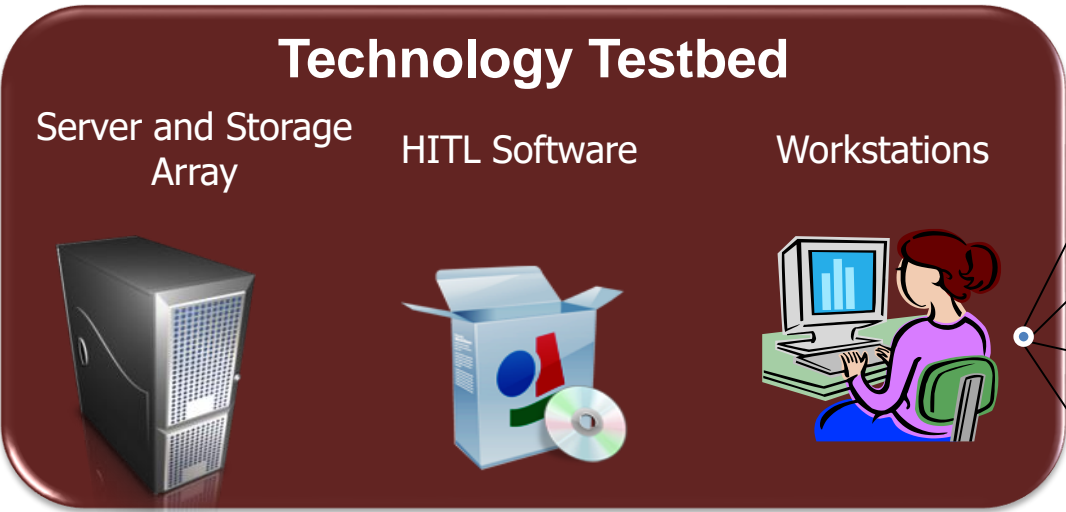
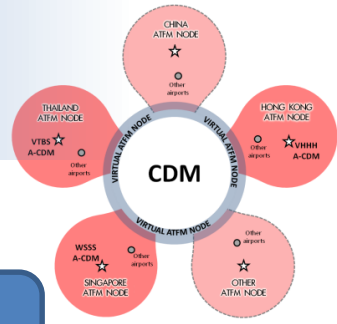
Local industry stakeholders

Local & other stakeholders



ANSP (ATC), Airlines and Airport Operators

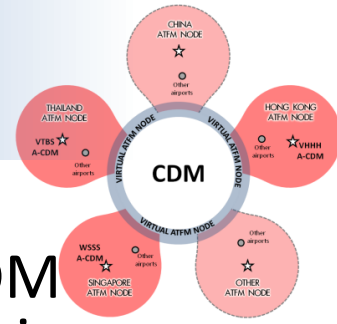
HITL Simulation - Technology Testbed



- Manager Position
- Airline
- Airport Operator
- Departure Tower

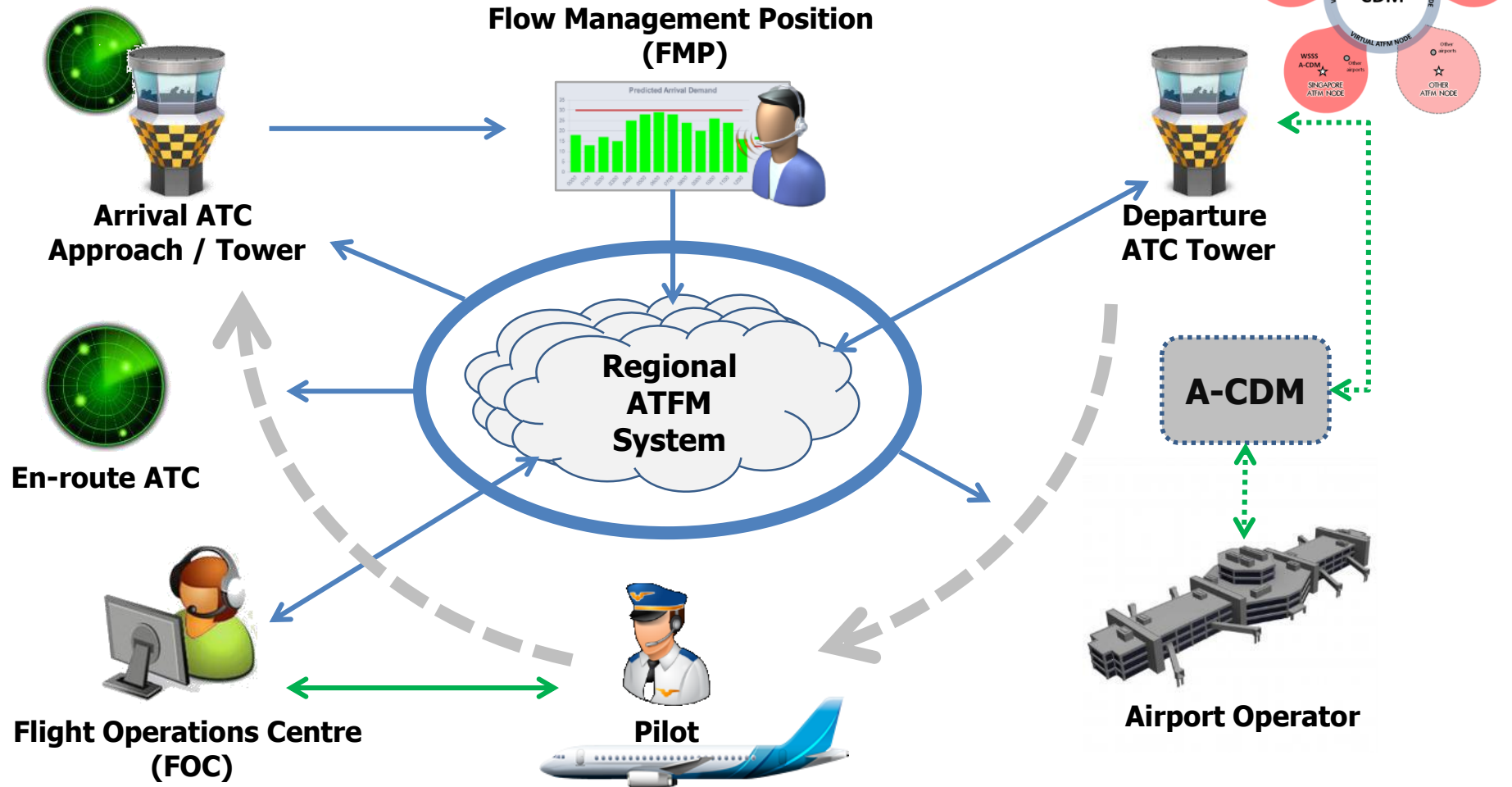


Multi-Nodal ATFM Concept of Operation



- Each ANSP operating an independent, virtual ATFM/CDM Node supported by an interconnected information sharing framework.
- A-CDM mechanisms, especially at busy airports, can supplement ATFM in the CDM process.
 - Air traffic flow effectively managed between participating ANSPs through agreed set of business rules for stakeholders.
 - Concept of Operation allows inclusion of international flights and airborne flights
- Accords greater flexibility to airspace users to manage delays through collaboration and negotiation with ANSPs and Airport Operators within existing ATC procedures and constraints

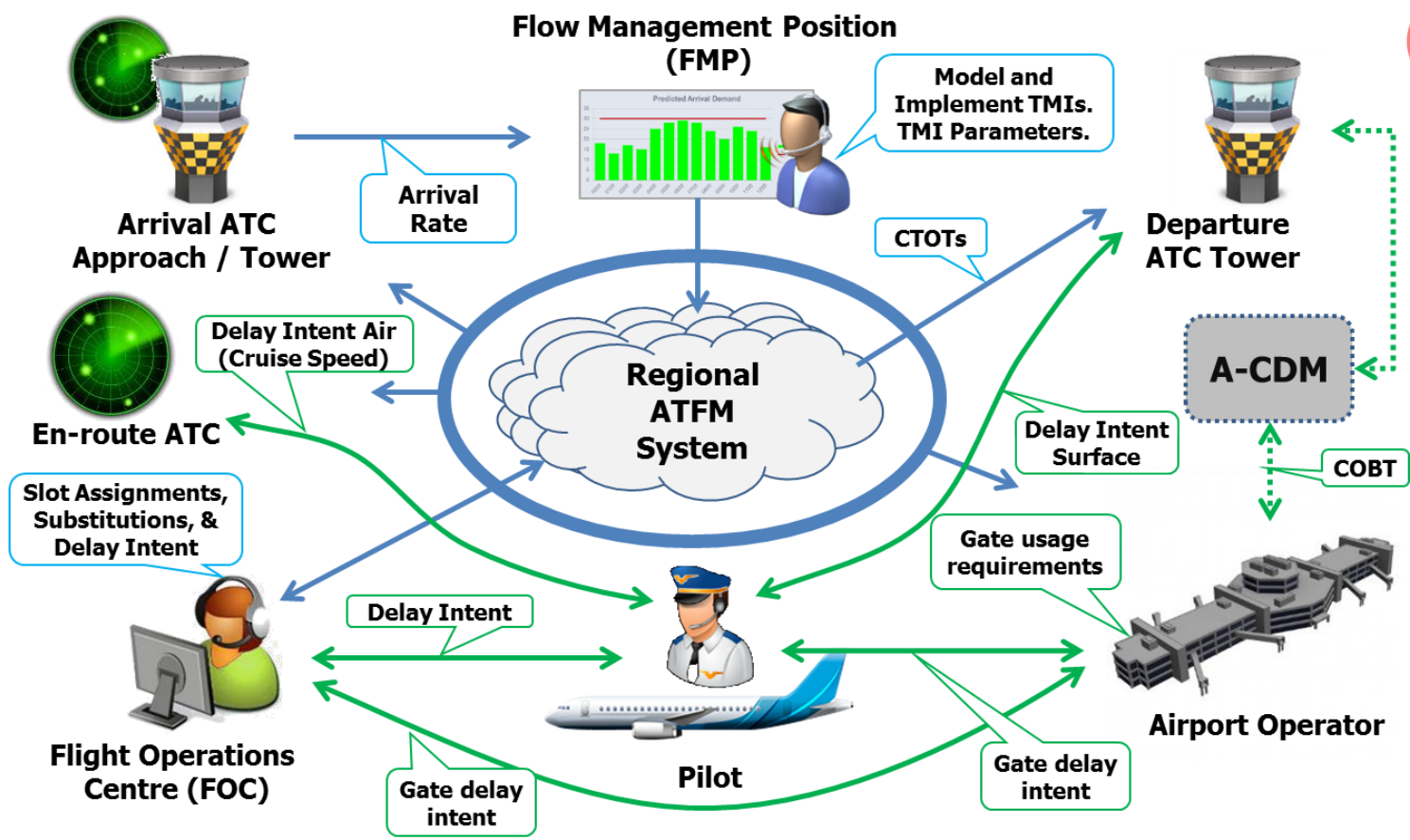
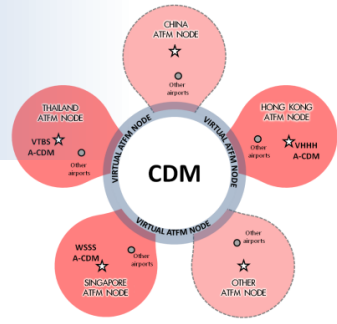
Regional ATFM/CDM Stakeholders & Environment



- Each ANSP has an independent FMP and ATFM System
- Each ANSP independently manages demand/capacity of its own Arrival Airport(s)/ Air space
- Stakeholders/ANSPs communicate via existing Internet/Telecommunications networks
- Data from each ANSP is viewable by stakeholders via software web interfaces



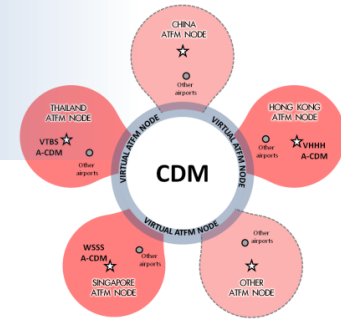
Delay Management by Aircraft Operators



- Aircraft Operators manage the TMI delay assigned to flights
- Aircraft Operators perform CDM with Airport Operators for ground/surface delay intent
- Slot assignments can be viewed via software web interface and notifications
- FOC performs CDM with Pilots to coordinate delay absorption intent and update into ATFM
- Pilots operate request Cruise Speed and Flight Levels per current ATC procedures and within ATC constraints

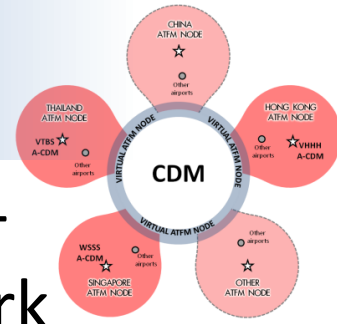


Next Steps?



- Conduct Distributed Multi-Nodal ATFM Operational Trial
 - Phase 1 : June 2015 – June 2016
 - Phase 2 : TBD
- Support ICAO Asia-Pacific ATFM Steering Group – ATFM Information Requirements Small Working Group (ATFM-IR/SWG)
 - Develop Operational Requirements documents for exchange and interaction with ATFM information
 - Develop Technical Interface Control Document
 - Participation: China, Hong Kong China, India, Indonesia, Japan, Singapore, Thailand, ICAO

Next Steps?



- Support ICAO Asia-Pacific ATFM Steering Group – Further development of ICAO Regional Framework for Collaborative ATFM
 - Delay Absorption Intent
 - Flight Information Exchange Model (FIXM) Extension
 - ATFM Measures for Long Range Flights
 - ATFM – AMAN/DMAN – A-CDM Interoperability
 - Collaborative Trajectory Options
 - Network CDM
 - Harmonization of Multiple ATFM Measures

Questions & Discussions

