



BOBCAT

ATM Collaboration & Data Sharing

ATFM Steering Group 1
Tokyo, Japan

8-10 December 2010

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Airspace Management Centre

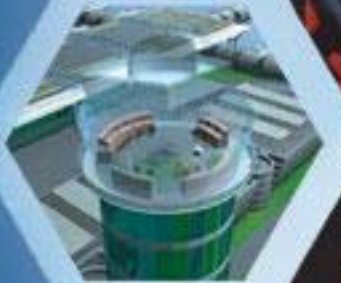
AEROTHAI 

¹ 
IATA

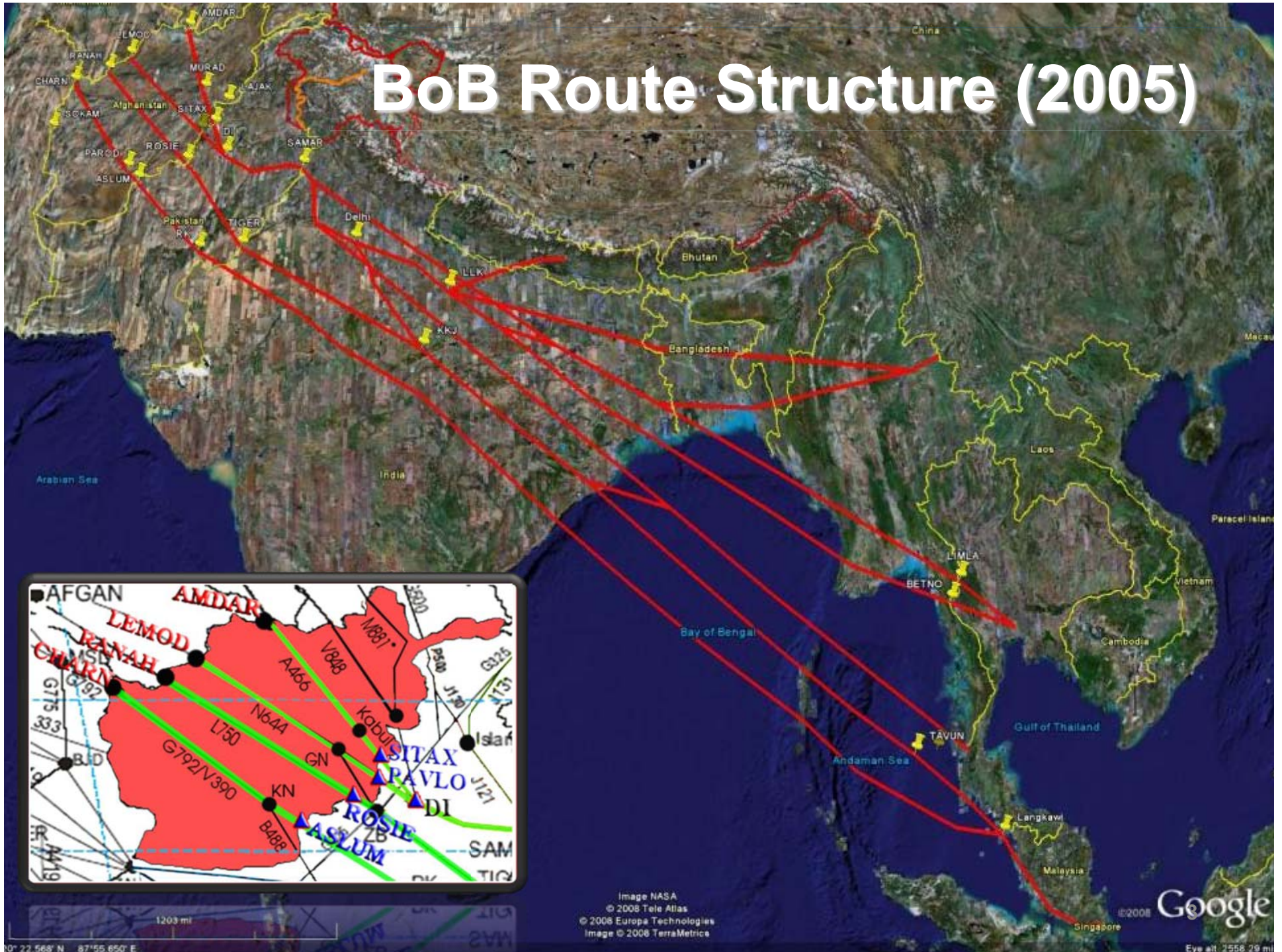


The Past ...

Pre-2005

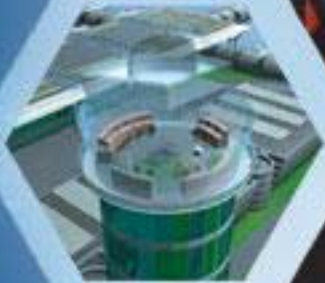


BoB Route Structure (2005)



ATFM / BOBCAT Operational Trials

2006 – 2007





Ops Trial: Data

- Pre-Tactical Demand
 - Pre-Flight Plan information
 - Ensures distribution of demand on routes and FL
- Pre-Tactical Capacity
 - 10 min Procedural Separation + 5 min buffer
- Performance Monitoring / Data Sharing
 - Traffic Sample Data from States
 - Daily, but later reduced to one-week per month
 - Analyzed by Bangkok ATFMU for presentation to ICAO meetings



Usage of TSD

- Comparison of slot request and slot allocation with real traffic
- Strategic-level tracking on whether flights obtain slot allocation altitudes and, if not, why?
- Insight into adequacy of buffer time
- Insight into effect of flight level priority
- Confirmation of system parameters



Application of TSD Analysis

- **Airspace Enhancements**
 - Bay of Bengal Airspace
 - L510 bypass route for P628
 - L759 / M770 bypass arrangements
 - Indian Subcontinent
 - Route straightening around Delhi airport

ATFM / BOBCAT Operational Implementation

2007 - 2009

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Data Availability Enhancements

- Slot Request History
 - Traffic demand history moving backward
 - Data export facility to Excel for further analysis
- Slot Allocation History
 - Slot allocation history moving backward
 - Data export facility to Excel for further analysis



Application of TSD Analysis

- **Further Airspace Enhancements**
 - Indian Subcontinent
 - Route straightening South of Delhi airport into Pakistan airspace
 - Afghanistan
 - New ATS Route UL333
 - First ATS Route Implementation since 2001
 - Concerns on aircraft congestion in the Bay of Bengal
- **Departures Punctuality identified as key cause of aircraft not obtaining slot allocation FL and inability to reduce buffer time**

BoB Route Structure (2009)

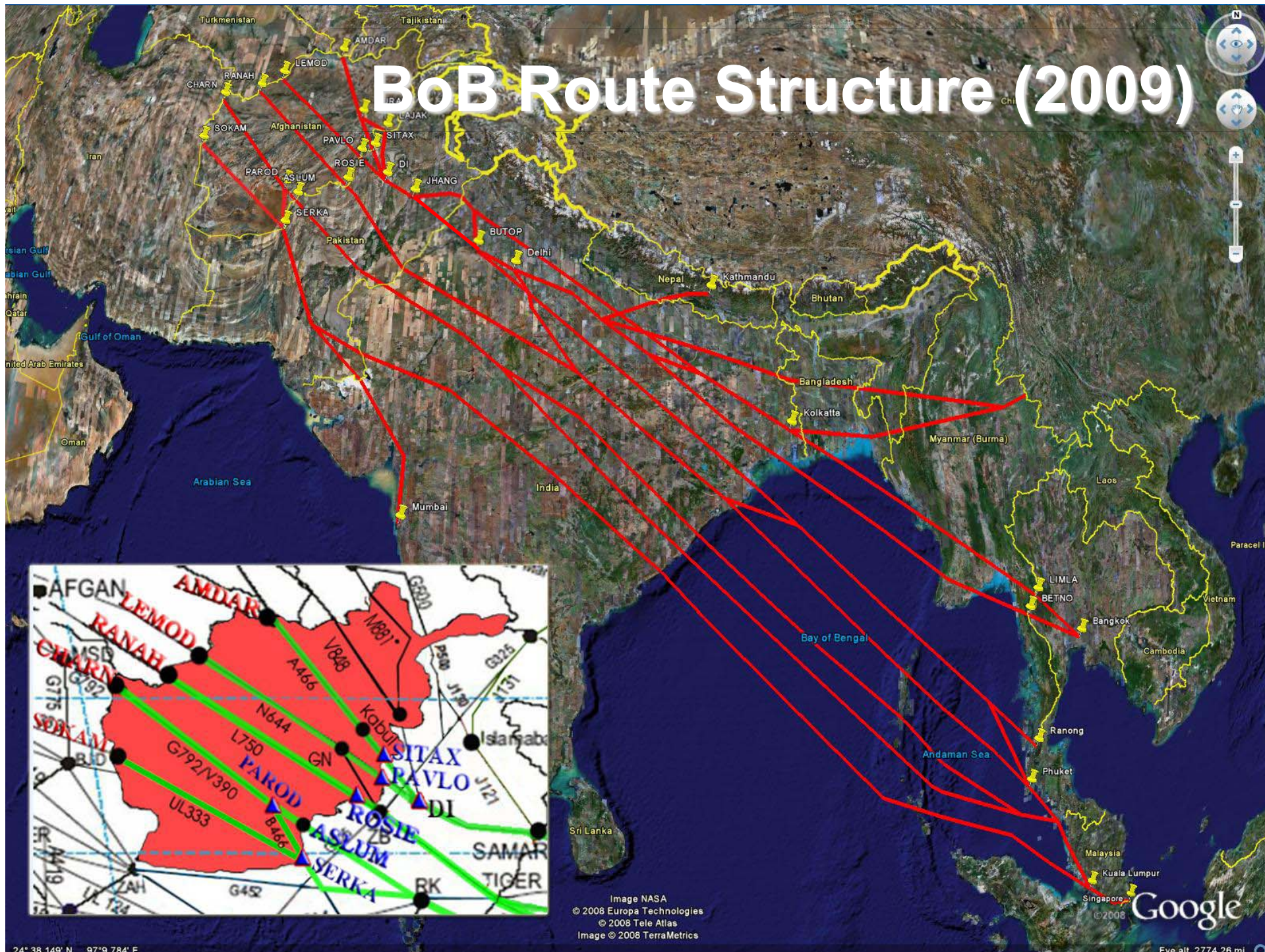


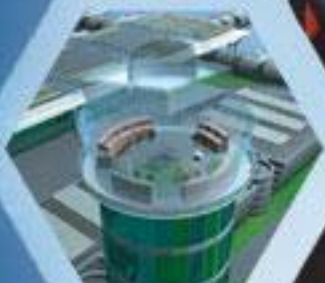
Image NASA
© 2008 Europa Technologies
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Google

24° 38' 149" N 97° 9' 784" E

Eye alt: 2774.26 mi

Moving Forward ...



Application of TSD Analysis



- Further Airspace Enhancements
 - Reduced Horizontal Separation from Bay of Bengal through Afghanistan (10-min → 50NM)
 - Routing in Pakistan by-passing DI (SAMAR-LAJAK)
- Departures Punctuality improves
 - Best percentage of aircraft obtaining same or better preferred FL compared to slot allocation since Operational Implementation (August 2010)
 - Elapsed Time accuracy issues become more dominant cause of aircraft not obtaining slot allocation FL



BOBCAT Software Update

- **Stage 1** – More Tactical Traffic Management
 - Flight Plan & ATS Messages Processing
 - More tactical data sharing of FIR boundary handover targets
 - Flexible Taxi Time
- **Stage 2** – More Flexible Slot System
 - System-Assisted Slot Swapping and Slot Compression
- **Stage 3** – Reduced Workload
 - Slot allocation page usability enhancements
 - Further Automation of ATFM TSD Sharing

Future Data Availability



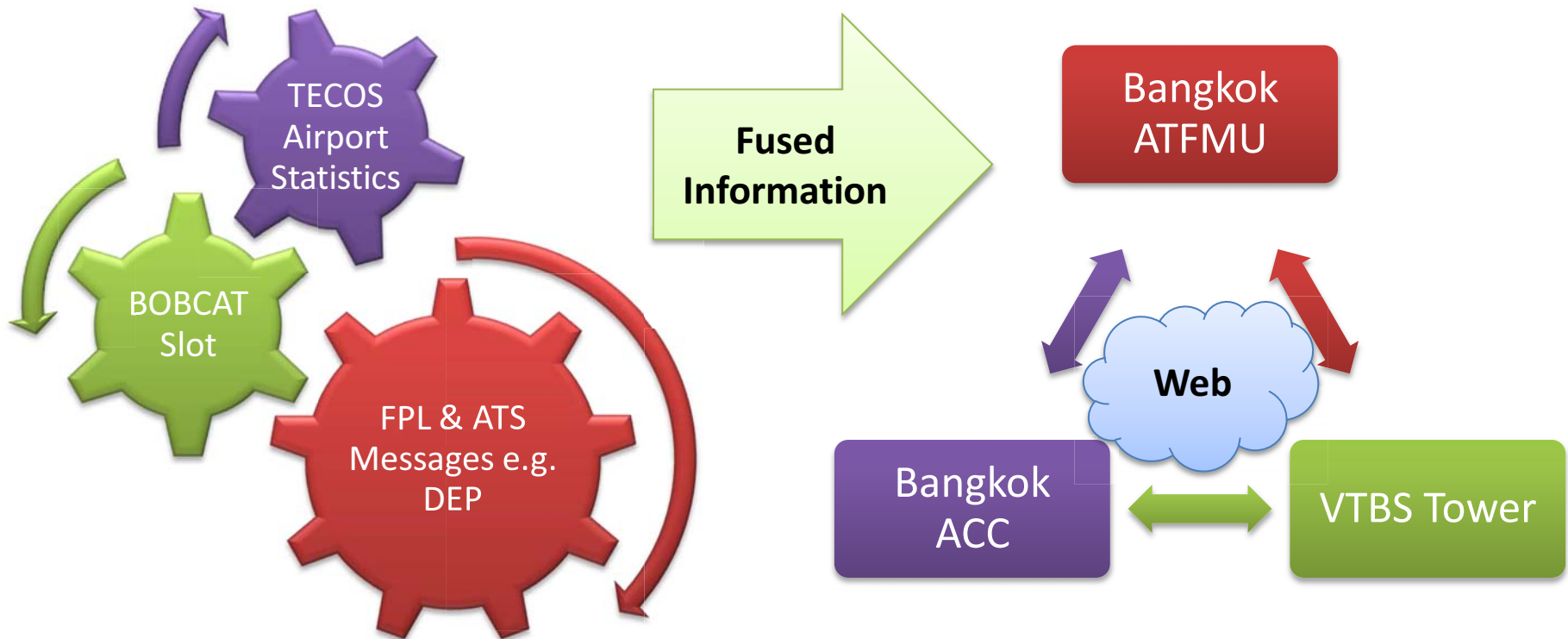
- **Pre-Tactical Demand**
 - Pre-Flight Plan information
- **Pre-Tactical Capacity**
 - 10 min Procedural Separation + 5 min buffer
 - To be reduced to 7-min (~50NM) + 5 min buffer
- **Tactical Traffic**
 - Target FIR Boundary based on FPL and DEP
- **Performance Monitoring / Data Sharing**
 - Traffic Sample Data from States



Initial CDM Plans for Suvarnabhumi

Fusing information from...

...to enable CDM information sharing

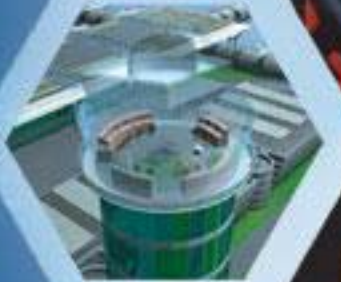


Further CDM Plans



- Inclusion of other stakeholders e.g. airlines
 - Sharing of airlines’ “departure flexibility window”
 - Integration into a more seamless departure plans
 - Potential application for other airports
- Combination with traffic demand & capacity monitoring tools
 - Help manage Bangkok Suvarnabhumi Airport runway maintenance in 2011

What about the future?





Traffic Demand

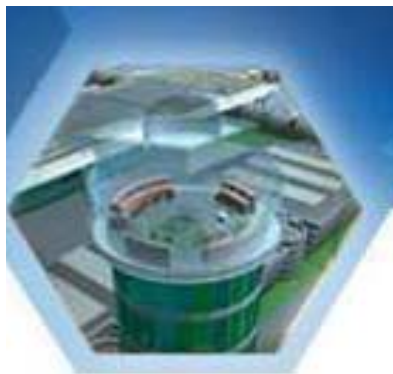
- Experience from Southeast Asia Route Review Task Force (SEA-RR/TF)
 - ATS routes normally carry traffic from multiple city pairs potentially spanning multiple FIRs
 - Traffic demand on same route varies by route segment being examined
 - (Sub-?) Regional traffic demand assessment of entire routes could be more useful
 - Flight Plan as primary traffic demand
 - TSD could be used for comparison



Future Traffic Demand?

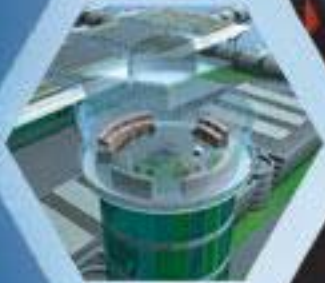
- Decompose traffic demand on routes into city pairs
- Model 10-year traffic growth rate between city pairs
 - Potential Sources
 - Official Airline Guide (OAG) schedule data
 - IATA Airport Intelligence Service (AirportIS)
 - Economic cycles are approximately 10-year-long
- Use growth rate to forecast future traffic demand based on current traffic demand

Airspace Capacity...



- Airport Capacity
 - Normal conditions – simulations
 - Weather affected situation?
- Sector Capacity
 - Process of turning “Strategic / Pre-Tactical” Sector Capacity into “Tactical” Sector Capacity
- FIR Boundary Handovers
 - Radar spacing within an FIR
 - Longer spacing being applied between FIRs

A Possible Path Forward...





Possible Path Forward...

- Traffic Demand Data Sharing
 - Flight Plan forwarding mechanisms
 - Sub-regional traffic demand analyses
 - TSD & comparison with demand
- Further dissemination of capacity assessment methodology
 - One cannot manage what one cannot measure
 - 6th Global ATFM Conference (Phuket – Feb/Mar 2011) could be a venue
- ATFM as enabler of seamless operations



Global 6 ATFM Conference

- Draft Agenda
 - Day 1: ATFM Provider Status Updates
 - Day 2:
 - Morning: Dispelling myth of ATFM as “Delay Factory” – experience sharing from ATFM providers
 - Afternoon:
 - *ATFM “Newbies”*: airspace and airport capacity assessment
 - *ATFM Providers*: Global ATFM Manual discussions; data sharing; future harmonization of ATFM services
 - Day 3: Conclusion
 - Merger of results from Day 2 Afternoon session
 - Importance of coordinated ATFM implementations

Discussions

