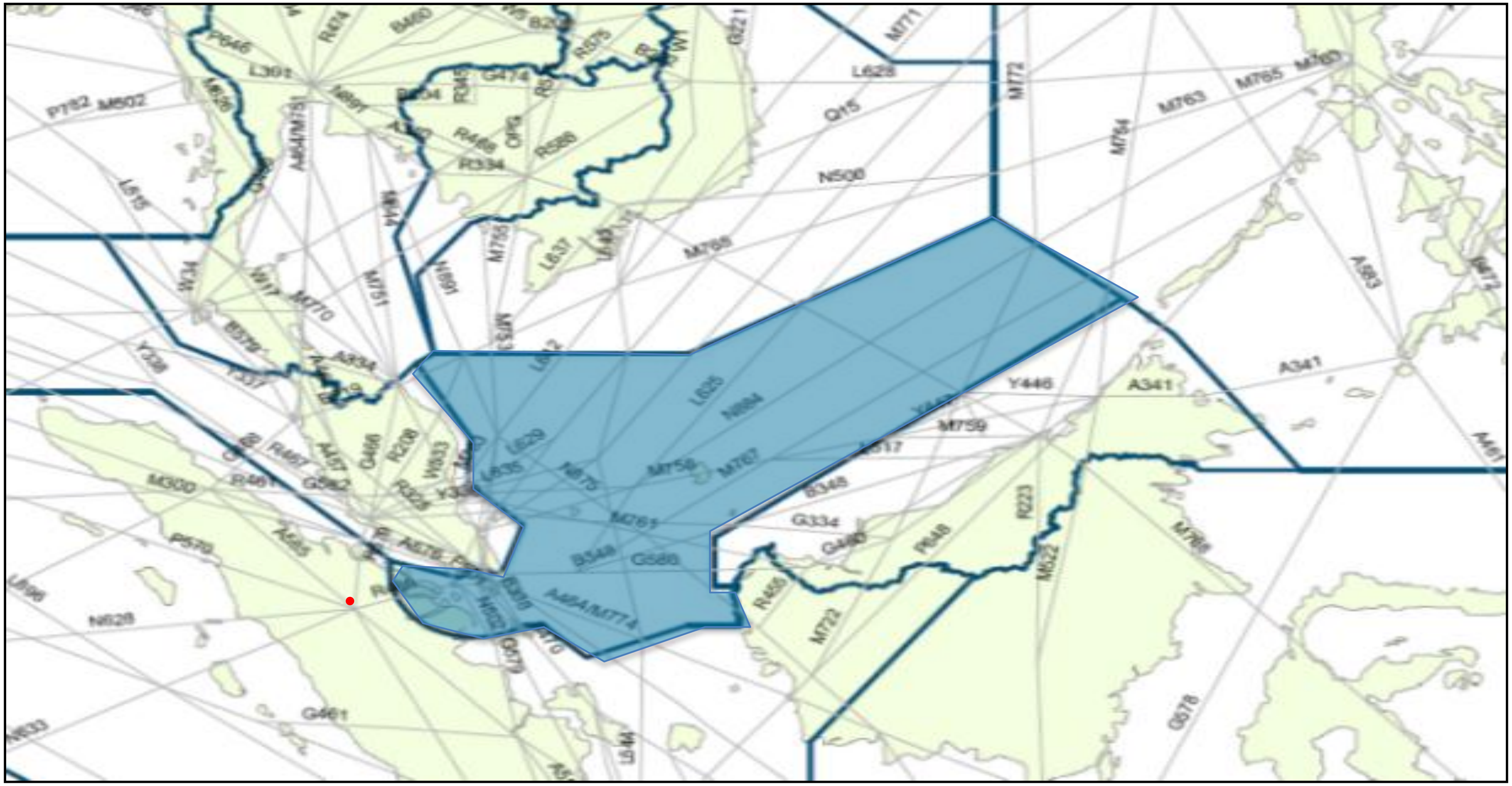
An introduction to Singapore ATC

5 Mar 2015

Civil Aviation Authority of Singapore

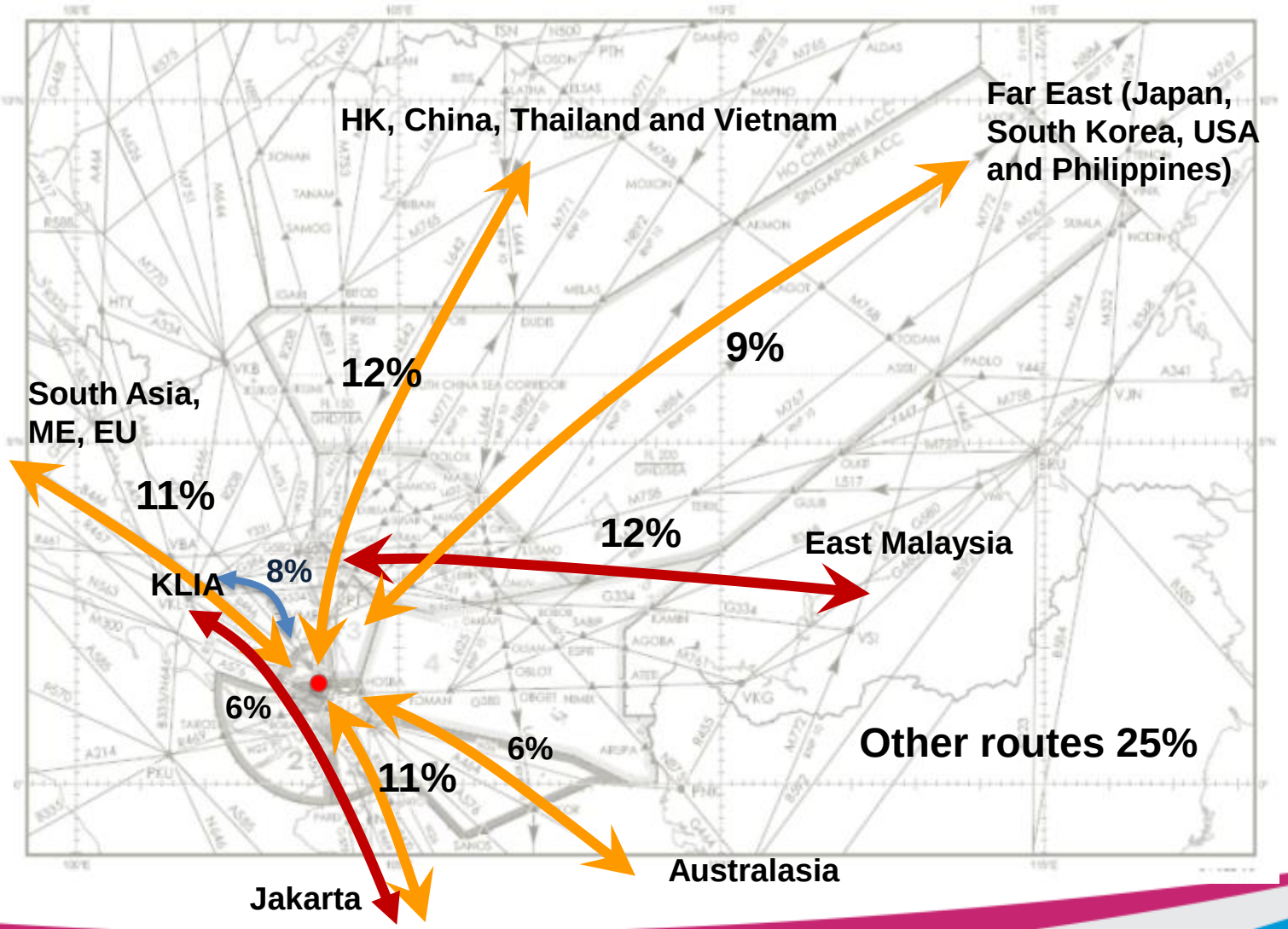
Singapore FIR



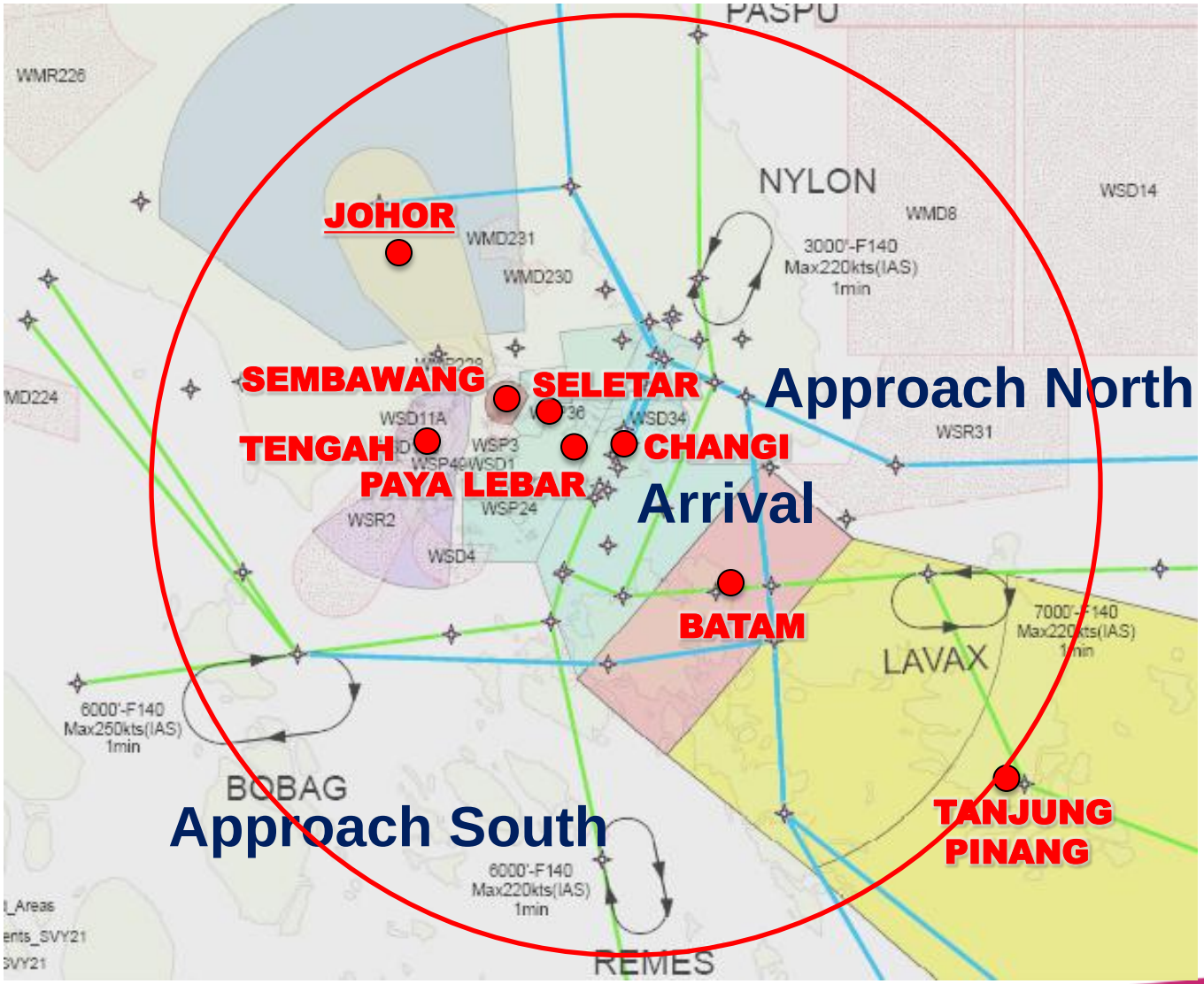
245,000 NM[2] (840,000 KM[2])
Air Traffic Movements in FY 2013: 661,000

CAAS

Air Traffic Flows



Approach Control Sectors

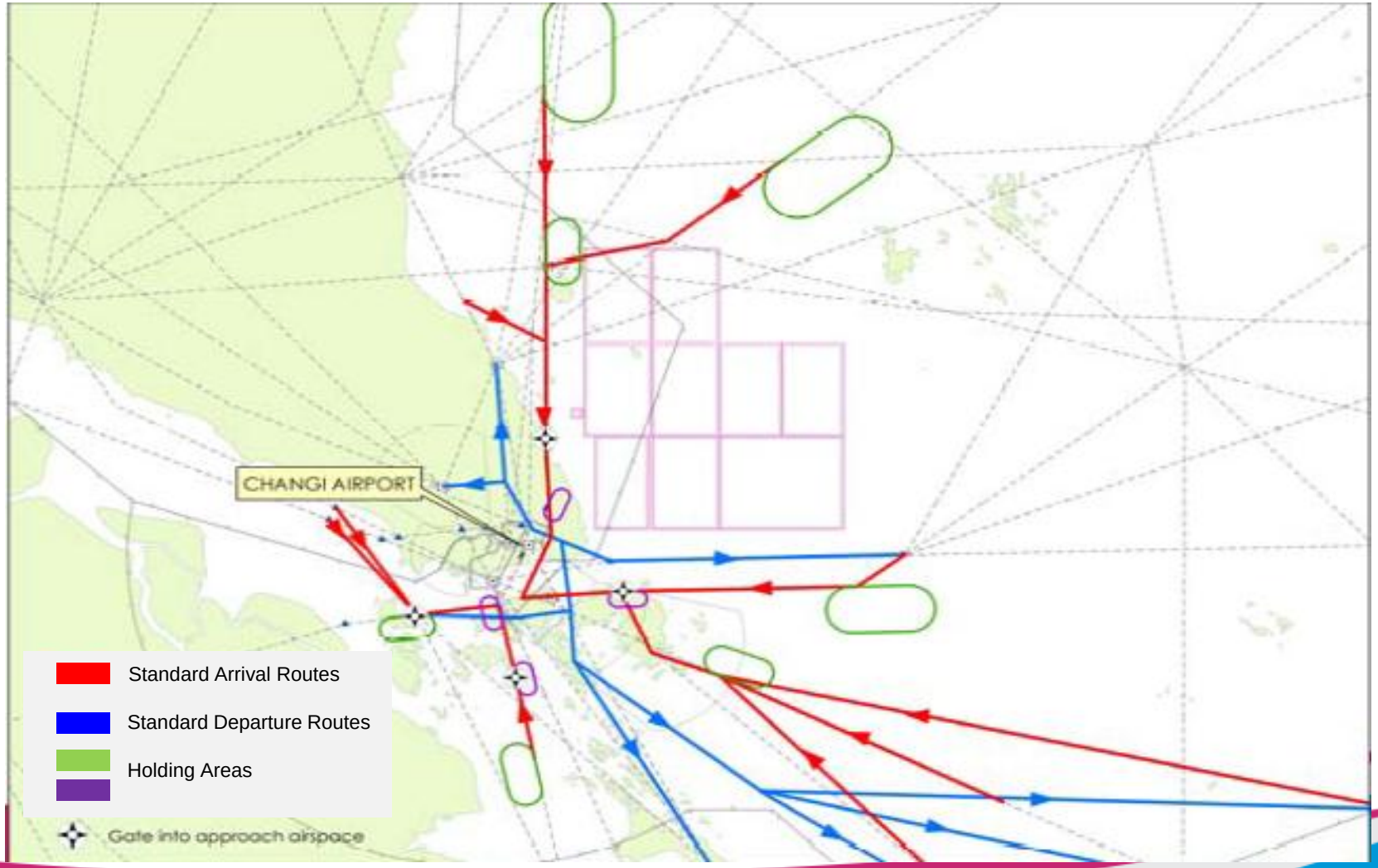


Departure

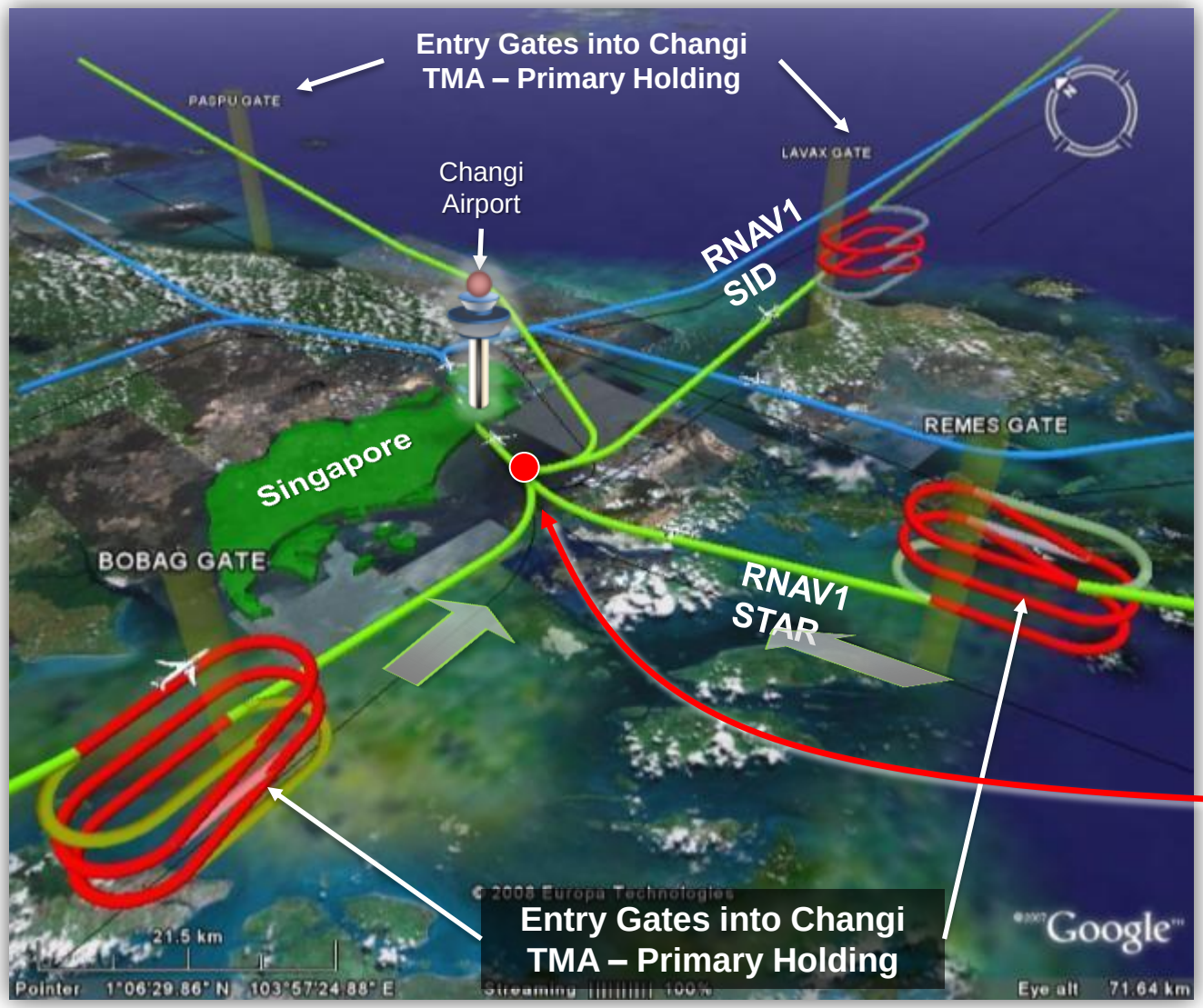
RNAV SIDs and STARs

(Area Navigation – Standard Instrument Departures and Standard Arrivals)

Segregated routes in and out of Changi that enhances traffic flows



Changi Flow Management



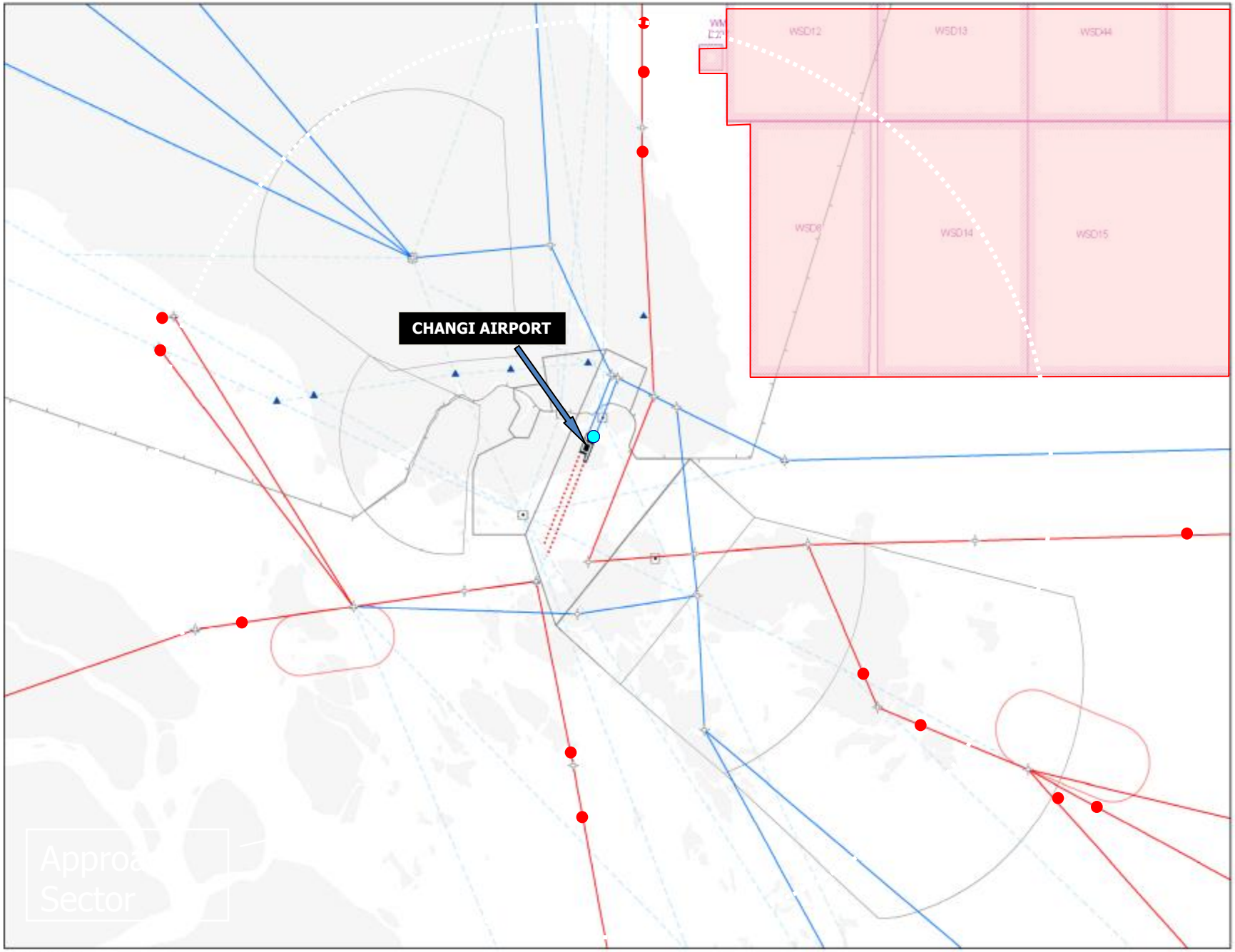
AMAN

AMAN calculates spacing requirements between arrivals, manages sequence and advises ATC on Entry Gate crossing times for synchronized approaches

SIDs

STARs

Simulation of Air Traffic Flow with Changi Flow Management



LORADS III Features

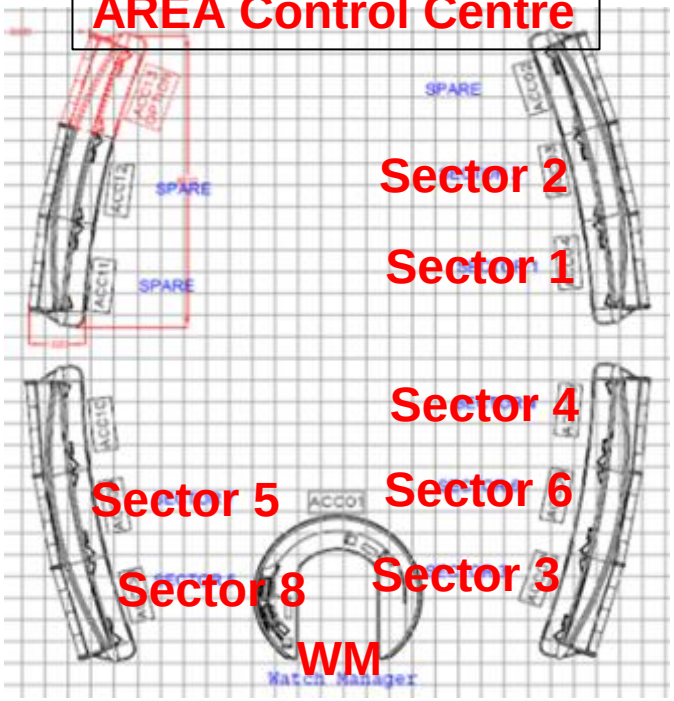
- Advanced ATC automation features
  - Silent coordination for both internal and inter-centre tasks (e.g. AIDC with HCM ACC
  - Tasks are performed on objects of interest e.g. labels, maps
  - Better management of flight information
- Enhanced decision-making tools
  - Integrated Arrival Manager
- Several layers of safety nets
  - Flight plan conflict probe
  - Short term conflict alert
  - Vertical and lateral adherence monitoring
  - New alerts such as Holding Adherence Monitoring

LORADS III Redundancy

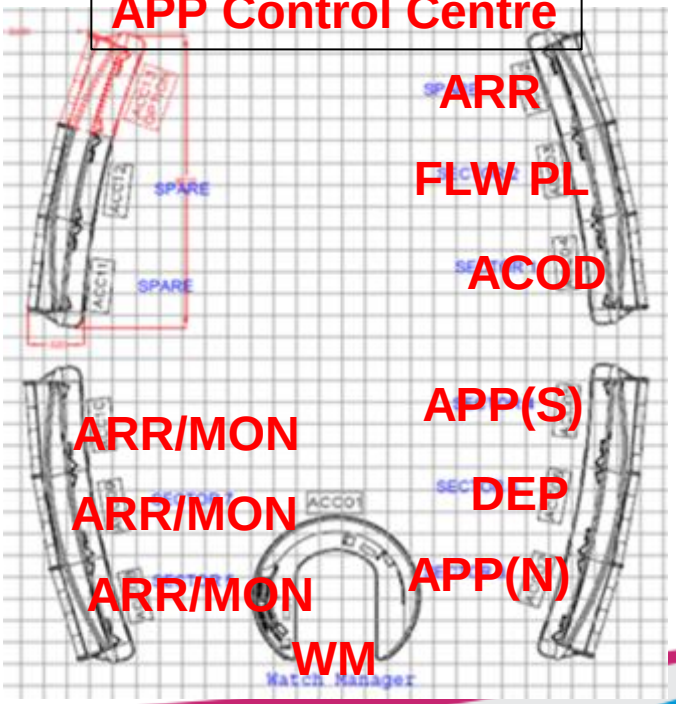
- Many levels of redundancy to ensure uninterrupted ATC services
- Built-in redundancies, multiple networks, duplicated servers
- Bypass processing for key servers e.g. FDP, SNAP
- Immediate Back-up (IBU) on hot standby
  - Provides controllers with immediate Air Picture at press of a button should the main system fail
  - 2 modes: HMI-IBU (standalone) or SYS-IBU (system wide upgrade with external links)
- Other Back-up modes
- Separate power sources, (including uninterruptable power supply (UPS) and generators)

SATCC
Area and Approach Control Centres

AREA Control Centre



APP Control Centre



CAAS

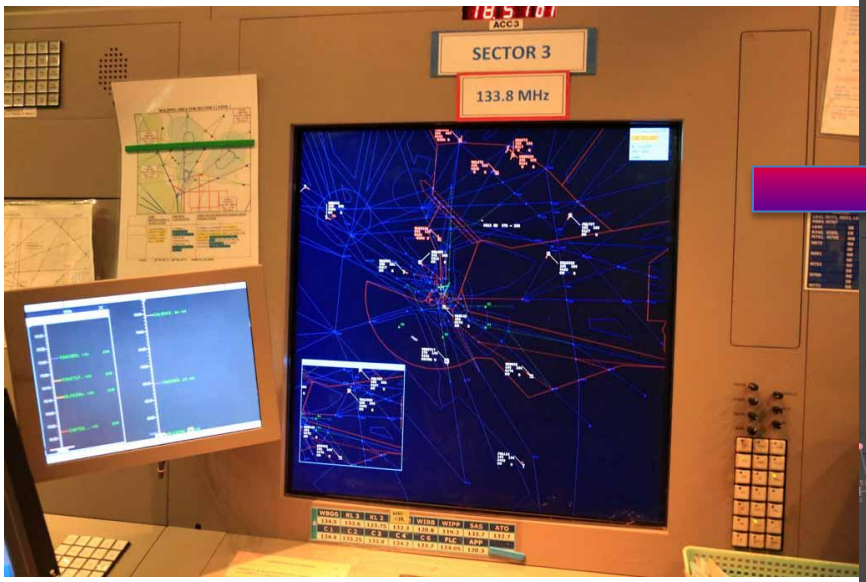
Enhanced ATC Workstations

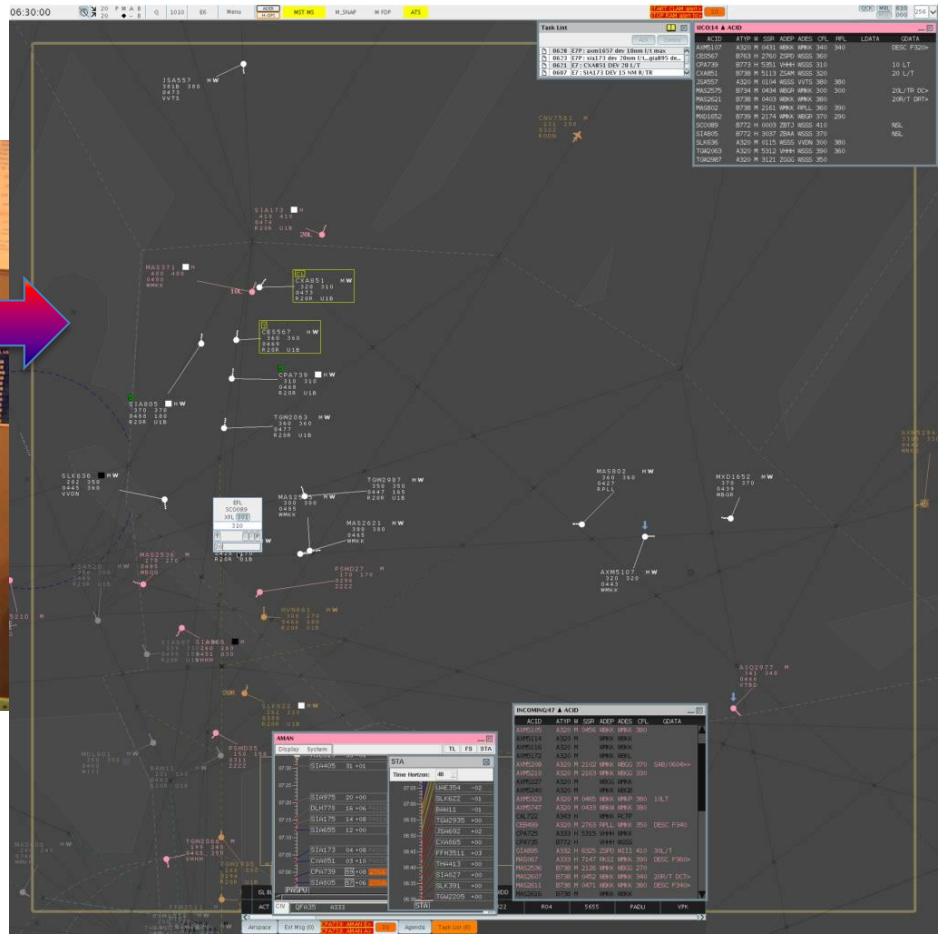
Award winning ergonomic designer consoles

CAAS

Advanced Java-based HM

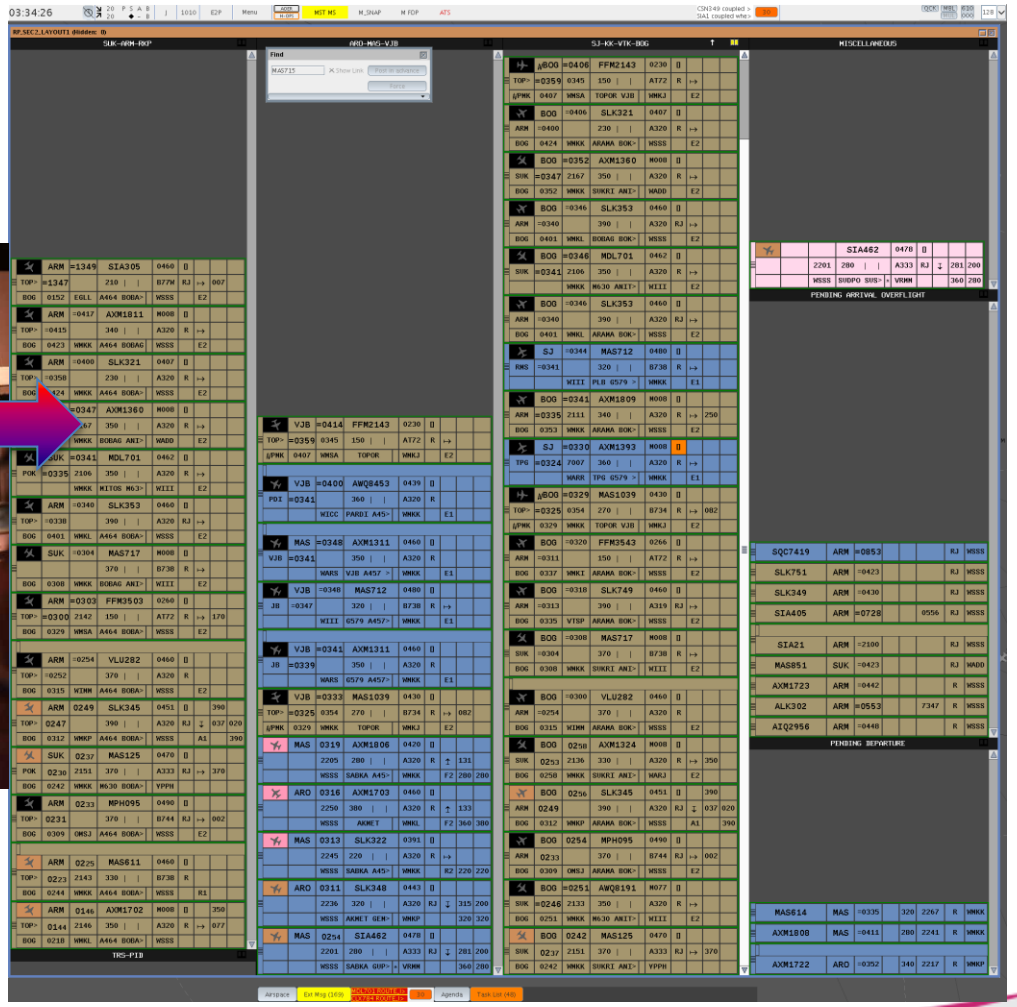
OLD





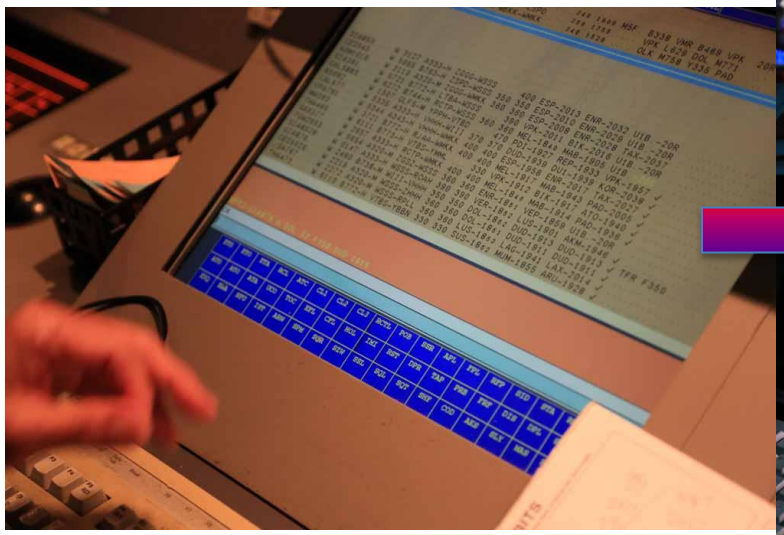
Paperless environment

OLD

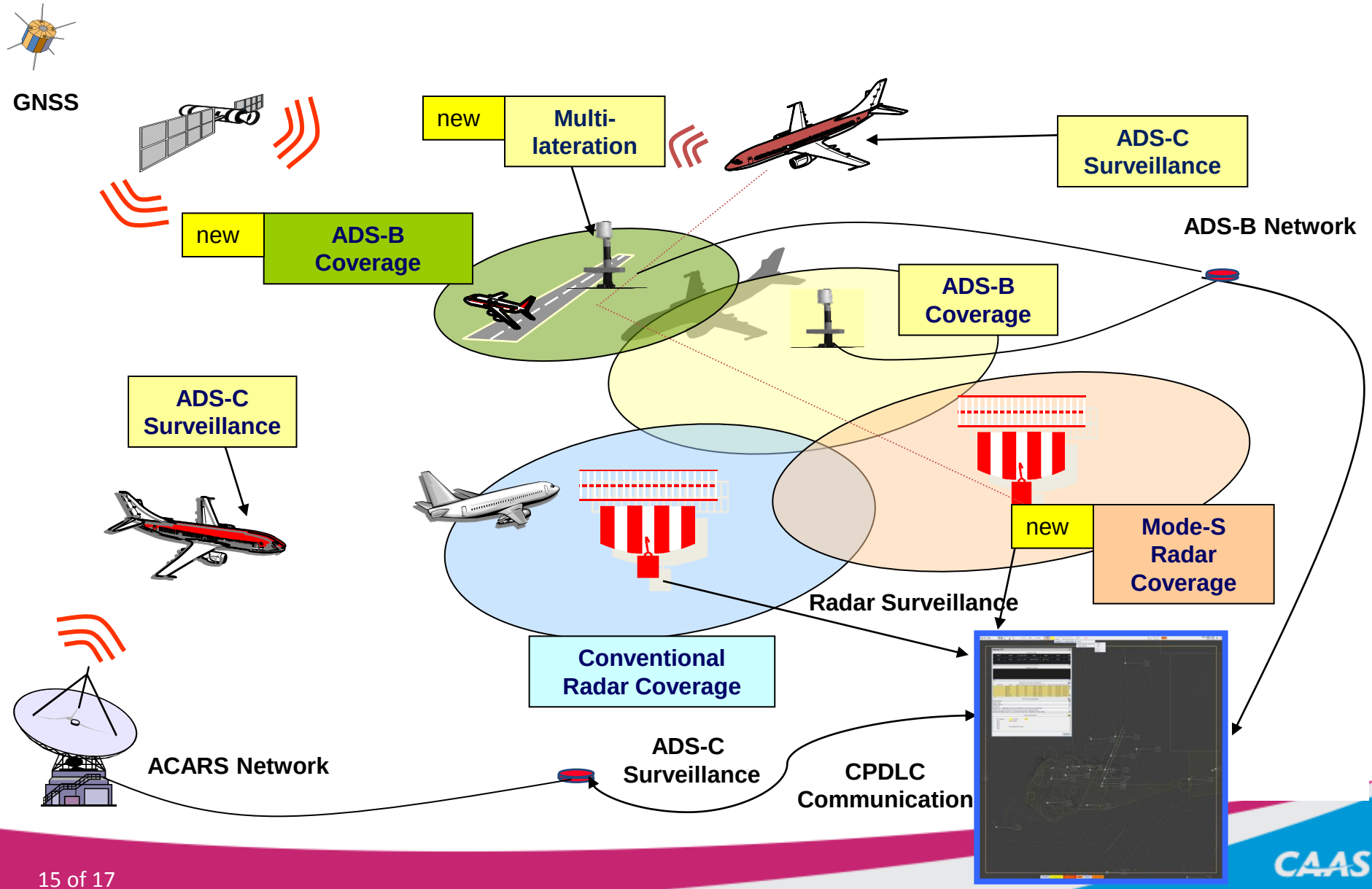


Improved workflow with new HMI

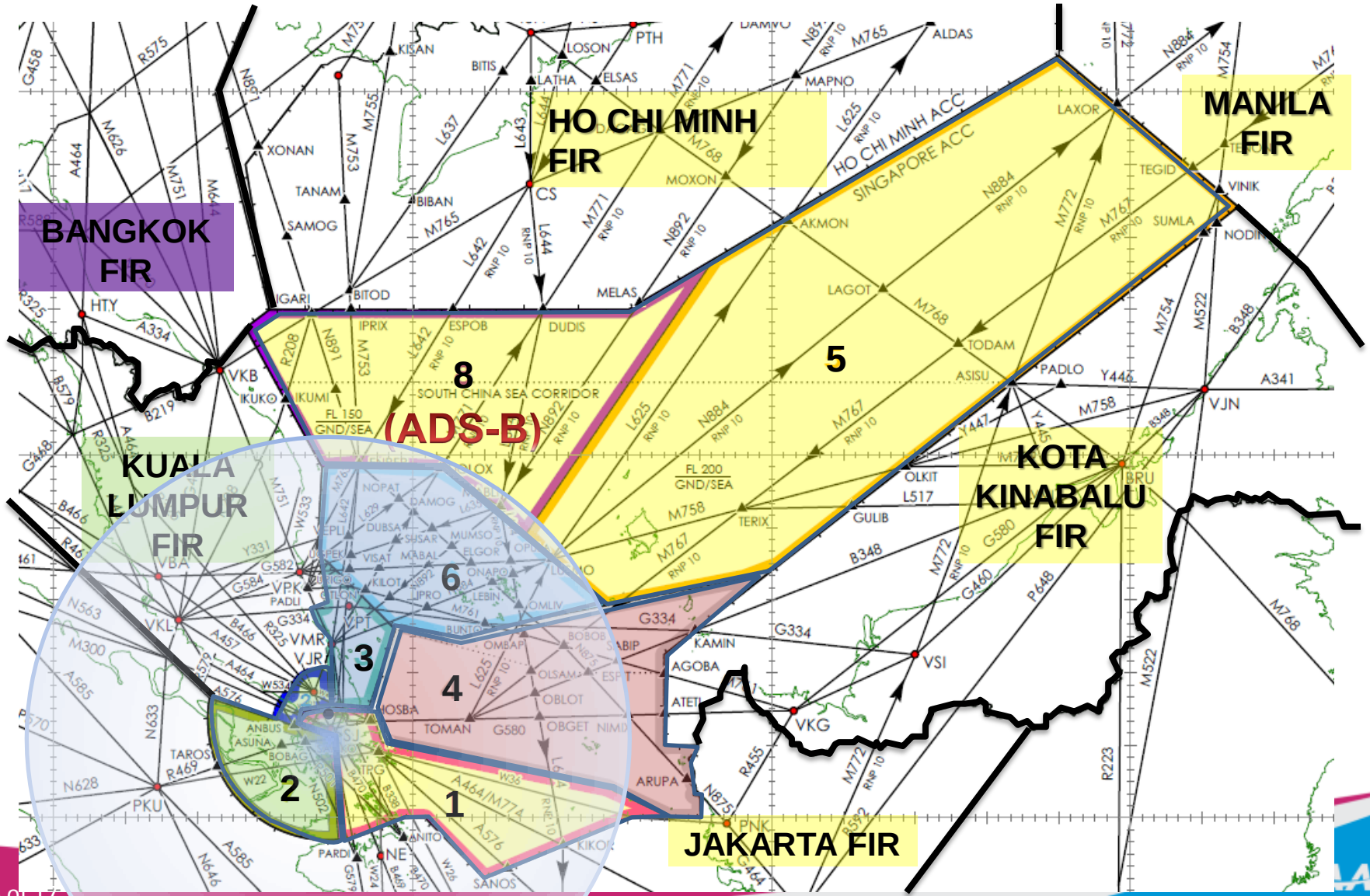
OLD



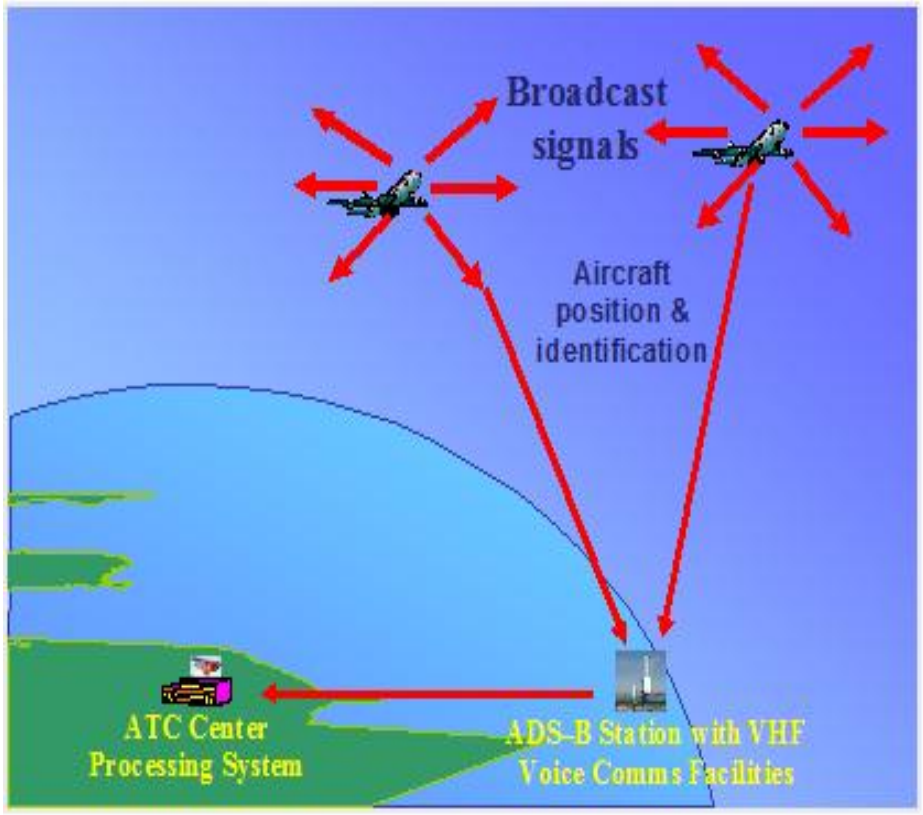
Communications and Surveillance



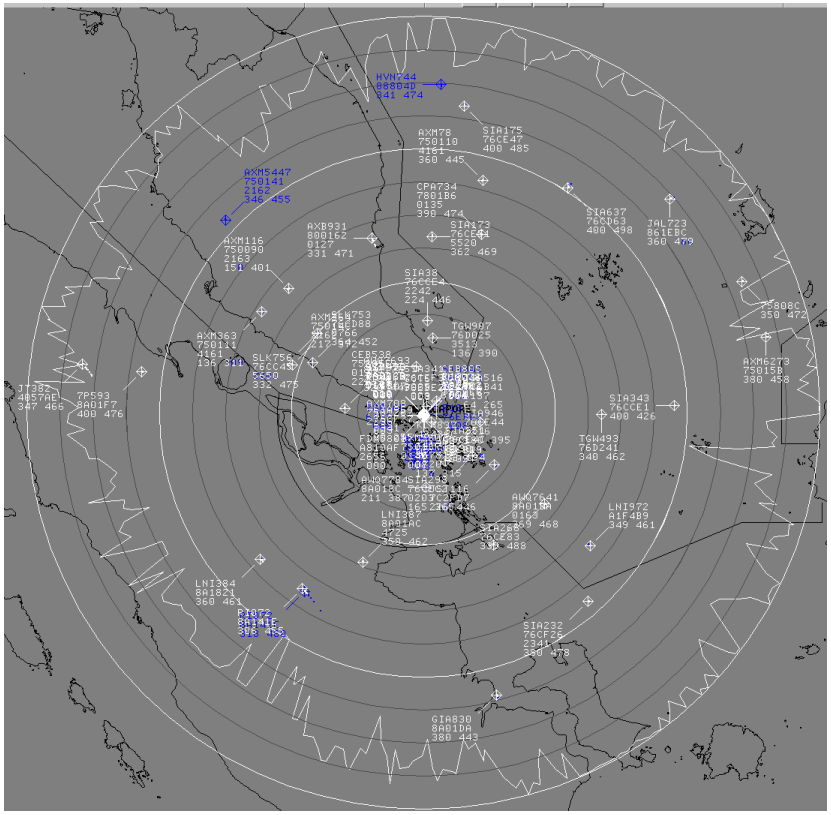
Area Control Sectors



Extending ADS-B & VHF Communications Coverage



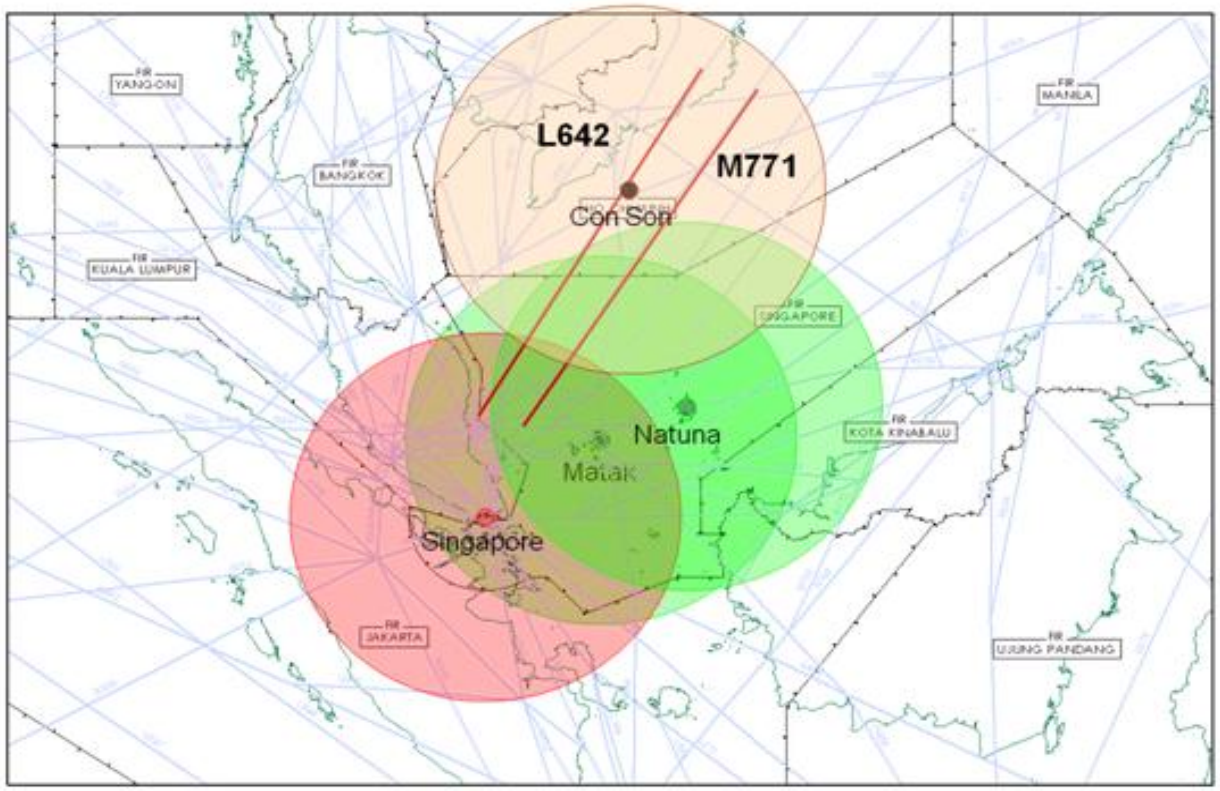
By receiving aircraft data from remote ADS-B station and communicating with aircraft via VHF relay stations



ADS-B coverage display

Phase 1 of South China Sea ADS-B Collaboration Project

- Singapore's collaboration with Indonesia and Viet Nam - has enhanced ATC service on routes L642 and M771



Thank you