

Domestic Solutions In ATFM – The First Steps



AIR NAVIGATION SERVICES

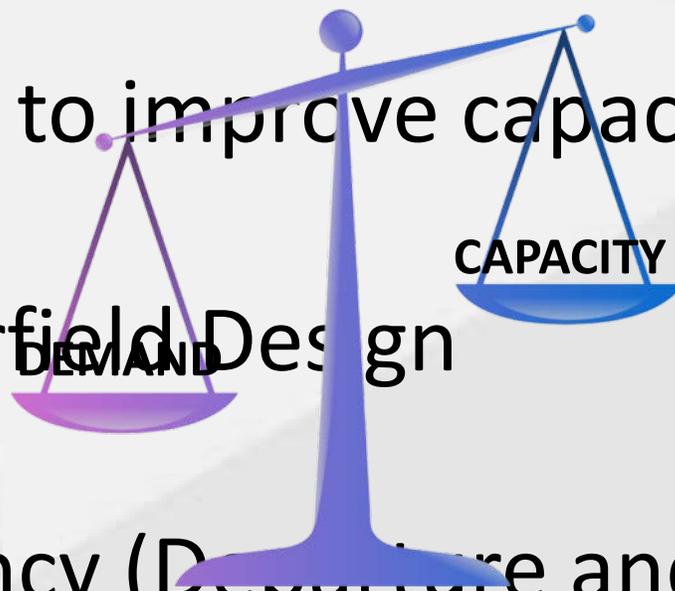
Graeme Fergus

Why Do We Need ATFM?

Bottom line is: Demand Is Greater Than Capacity

What can be done to improve capacity:

- Gate/Apron/Airfield Design
- Runway Efficiency (Departure and/or Arrival Rate)
- En Route Sector Capacity



Domestic Solutions

- Airfield Design
- Efficient Instrument Procedure Design
- Vertical and Dynamic Sectorisation
- Establishing Flow Management positions in ACCs
- Airport Collaborative Decision Making (A-CDM)

Airfield Design Optimisation



KLGA

Airfield Design Considerations

- Apron Design
- Taxi Route Design
- Runway Entrance Design

Avoid 1 Entrance Cul-De-Sac Apron Designs



1 Entrance = Generally 1 in 1 Out

Multiple Entrance's Gives GMC Controller Flexibility



Design Optimum Taxi Routings

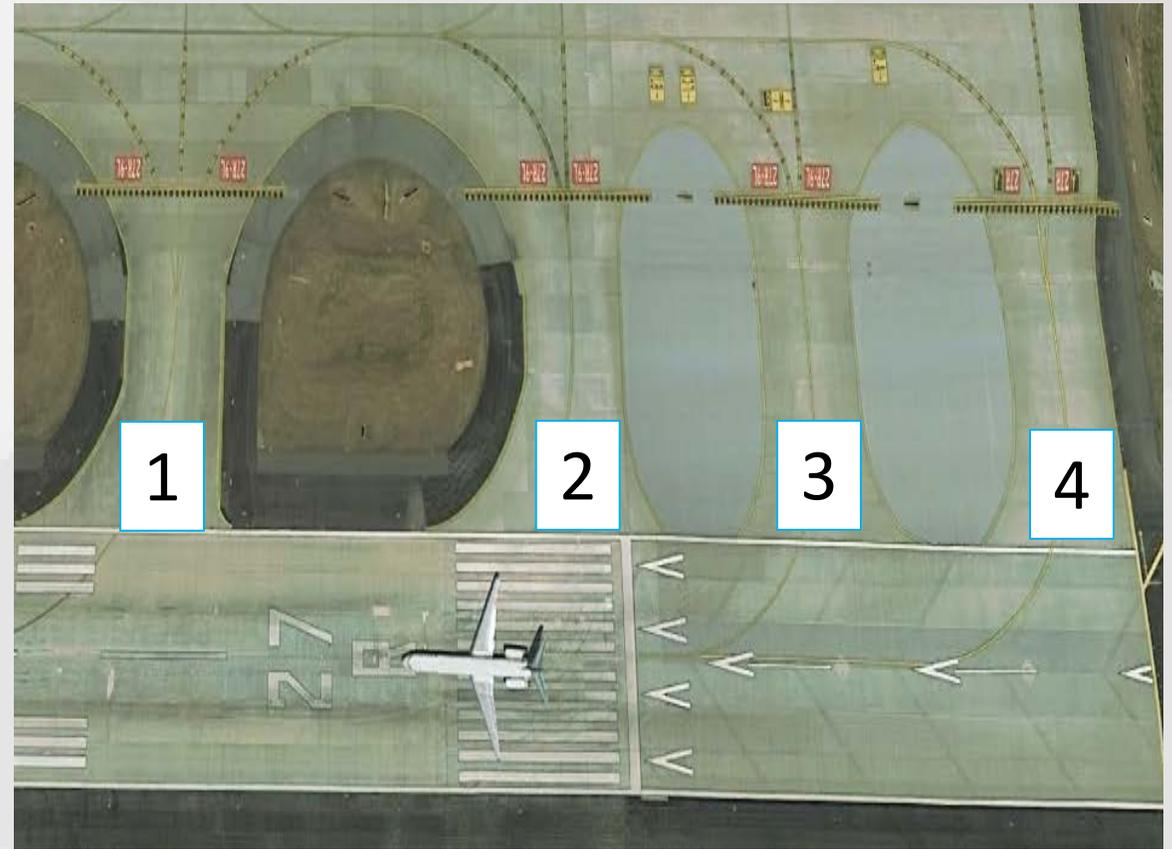


This design allows parallel or bi-directional taxiing aircraft on all portions of the airfield

Design Multiple Runway Entrances



EGKK



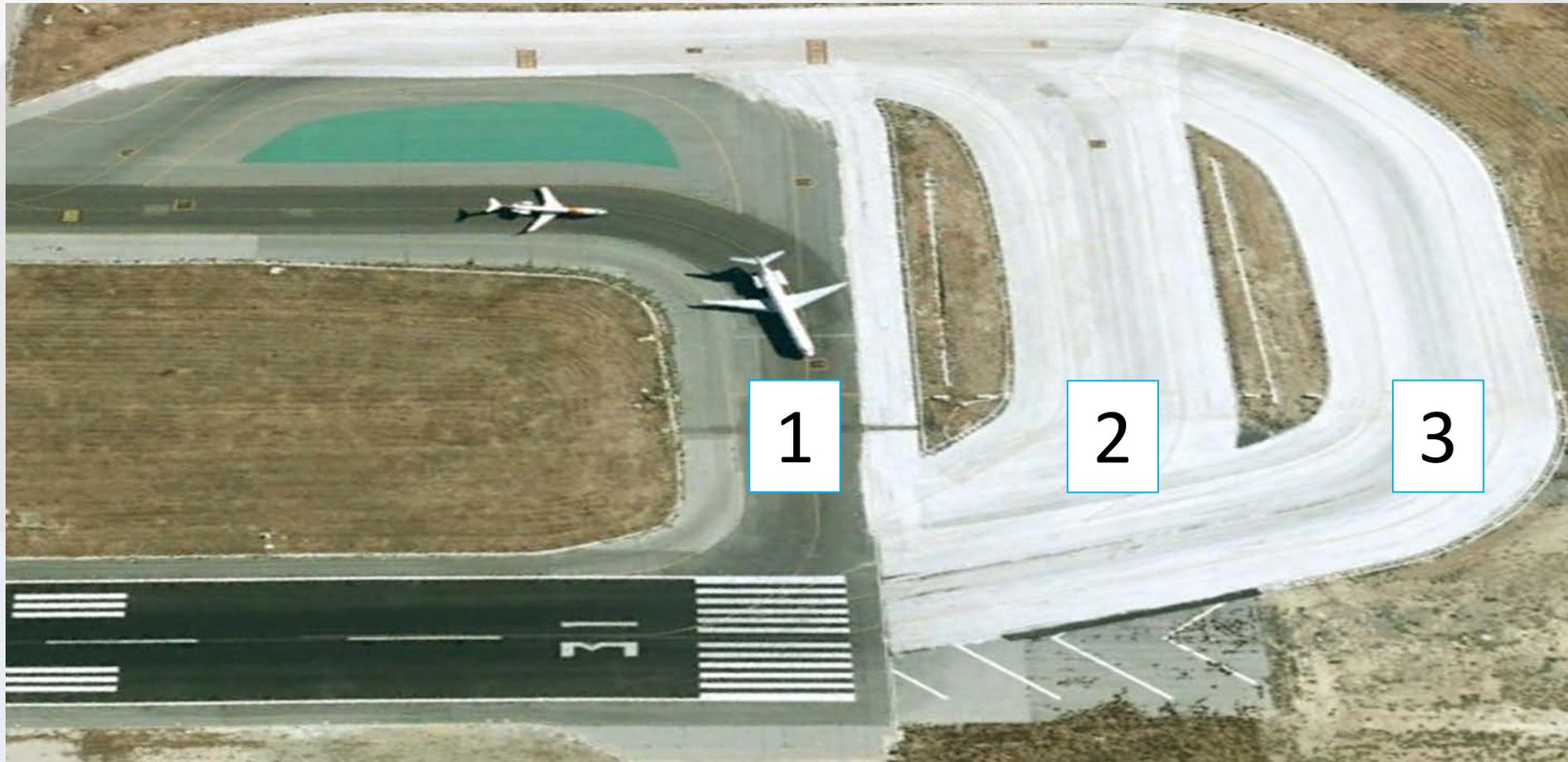
KATL

Example of Good Re-Design



Before

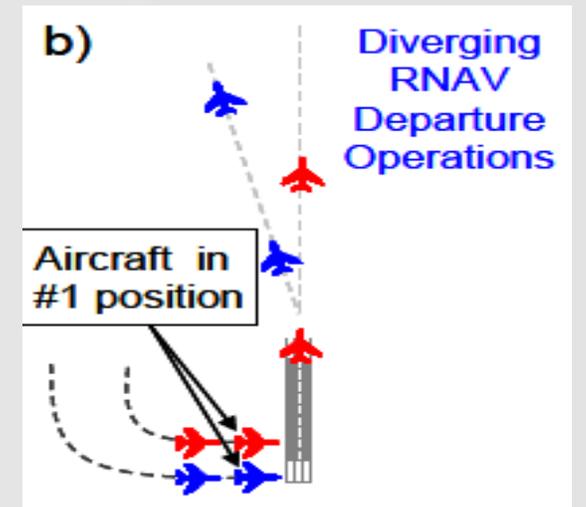
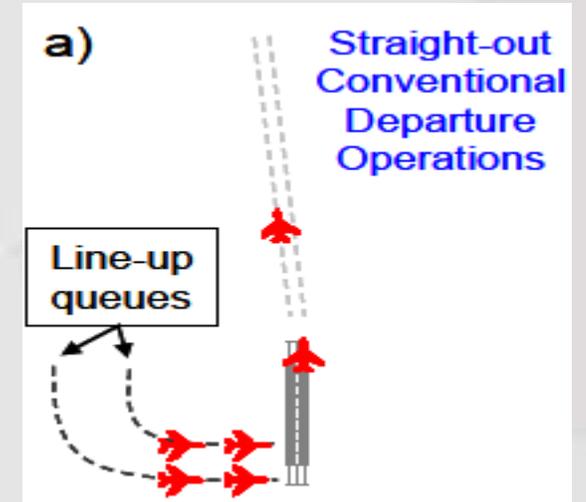
Example of Good Re-Design



After

Efficient Instrument Procedure Design

- Utilising PBN Diverging Departures
- Reduces Departure Separation Intervals
- Improve Runway Capacity
- Links back to Airfield Design of Multiple Runway Entrances

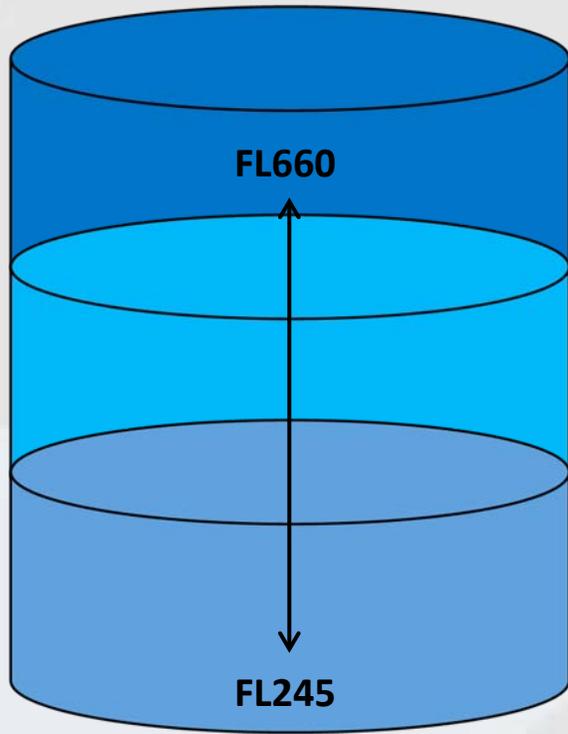


Vertical and Dynamic Sectorisation

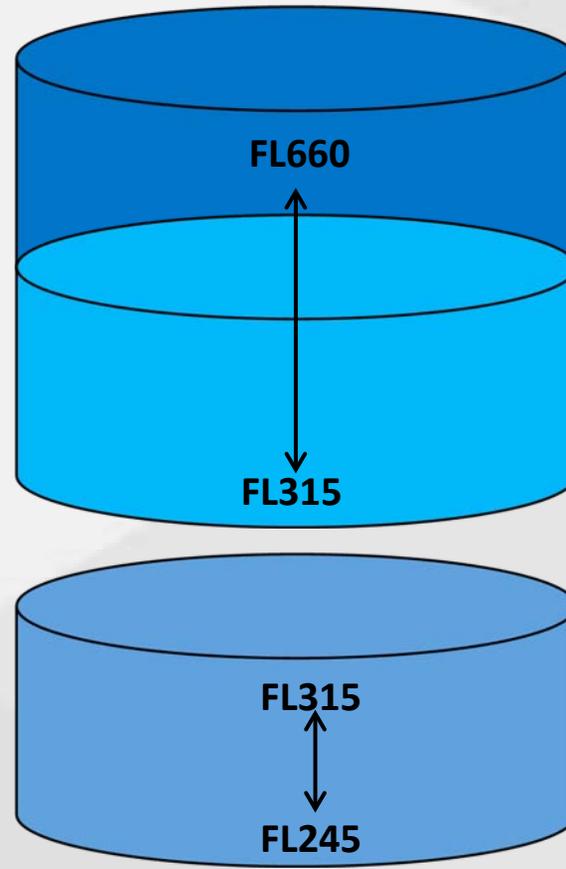
The capacity of an ATS unit is a function of the individual sector capacities and the flexibility and adaptability of the airspace configuration and sectorisation

European Air Traffic Management: Principles, Practice and Research
- Andrew Cook

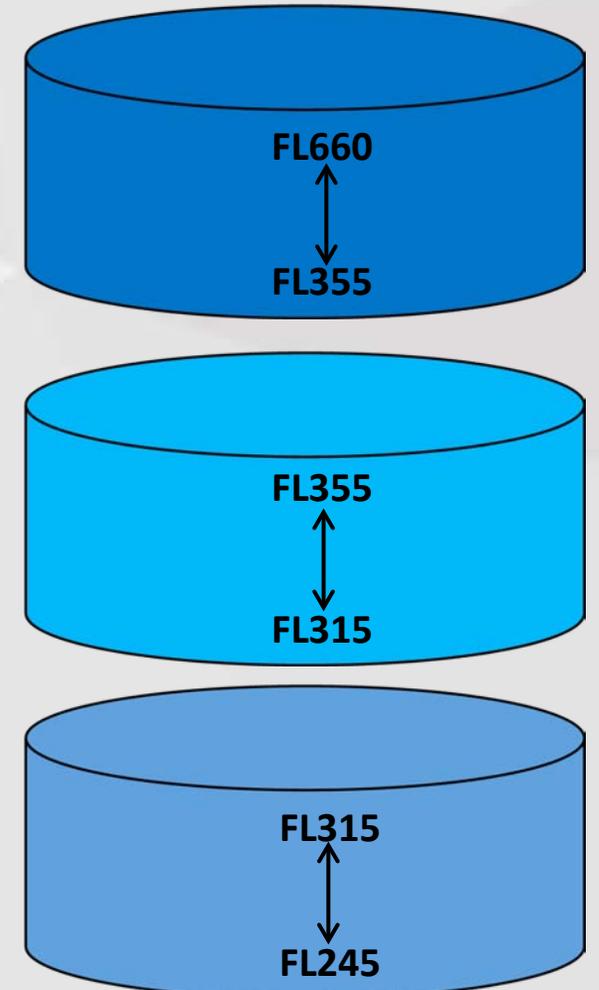
Vertical Sectorisation



A



B



C

Establishing Flow Management Positions in ACCs

The role of the FMP is to provide the direct link between ATC and the AOs in respect to ATFM measures and events

- Runway landing and departure rates
- Airport declared taxi times
- Runway configuration
- Sector configurations
- Unusual events that will affect capacity
(such as adverse w/x ,blocked runways or military exercises)

ACC FMP Planning

Pre –Tactical D-2/D-1 Planning

- Analysing expected demand ‘v’ available capacity
- Expected traffic flow and runway configurations based on available FP data and w/x forecasts
- Sector configurations ‘v’ Available Staff

Tactical “On the day” Plan

- Briefing the network stakeholders (teleconference)
- Implementing the pre-tactical plan
- Reacting to dynamic network changes on the day

All of this should involve direct link between the FMP, ATSU's and AOs

Airport Collaborative Decision Making

A-CDM: The Missing Link



EN ROUTE



EN ROUTE



APPROACH



DEPARTURE



TAXI IN



TAXI OUT



AIRPORT AUTHORITY
AIRLINES
GROUND HANDLERS

A-CDM Benefits



By implementing A-CDM, the following benefits have already been realised at these airports:

Brussels

Annual savings of
17022 tonnes of CO²
5400 tonnes of fuel saving
2.7m Euro/year in fuel saving

Munich

10% average reduction in taxi time
2.65M euro/year in fuel saving

Source: Eurocontrol

A Local Perspective – Abu Dhabi International Airport



OMAA A-CDM Project Highlights

- Target Off Block Time (TOBT) accuracy trials ongoing
- Departure Manager (D-MAN) system to integrate with the A-CDM system (expected Q2 2017)
- Target Start Up Approval Time (TSAT) trial expected by Q3 2017
- Arrival Manager System (AMAN) to optimise runway efficiency for independent parallel operations

To Summarise:

1. Employ best practice in airport design and expansion
2. Utilise PBN airspace design processes to maximise runway capacity
3. Reduce complexity of en-route sectors to improve capacity
4. Establish enhanced ATFM planning within ACCs with the establishment of an FMP
5. Explore the benefits of implementing A-CDM practices



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Thank You