Aviation Solutions

International Conference
Air Transport, Airports, Air Navigation & Globalisation of the Economics

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Overview

- Some of the Challenges
  - Future Technology
  - Capacity
  - Safety
- Working with Airports, Air Traffic Service Providers and Airlines
- The Role of the Regulator
- Air Traffic Service Providers

Today's terminal airspace – increasing complexity

Co-existing terminal airspace operations

Source: EUROCONTROL Skyview

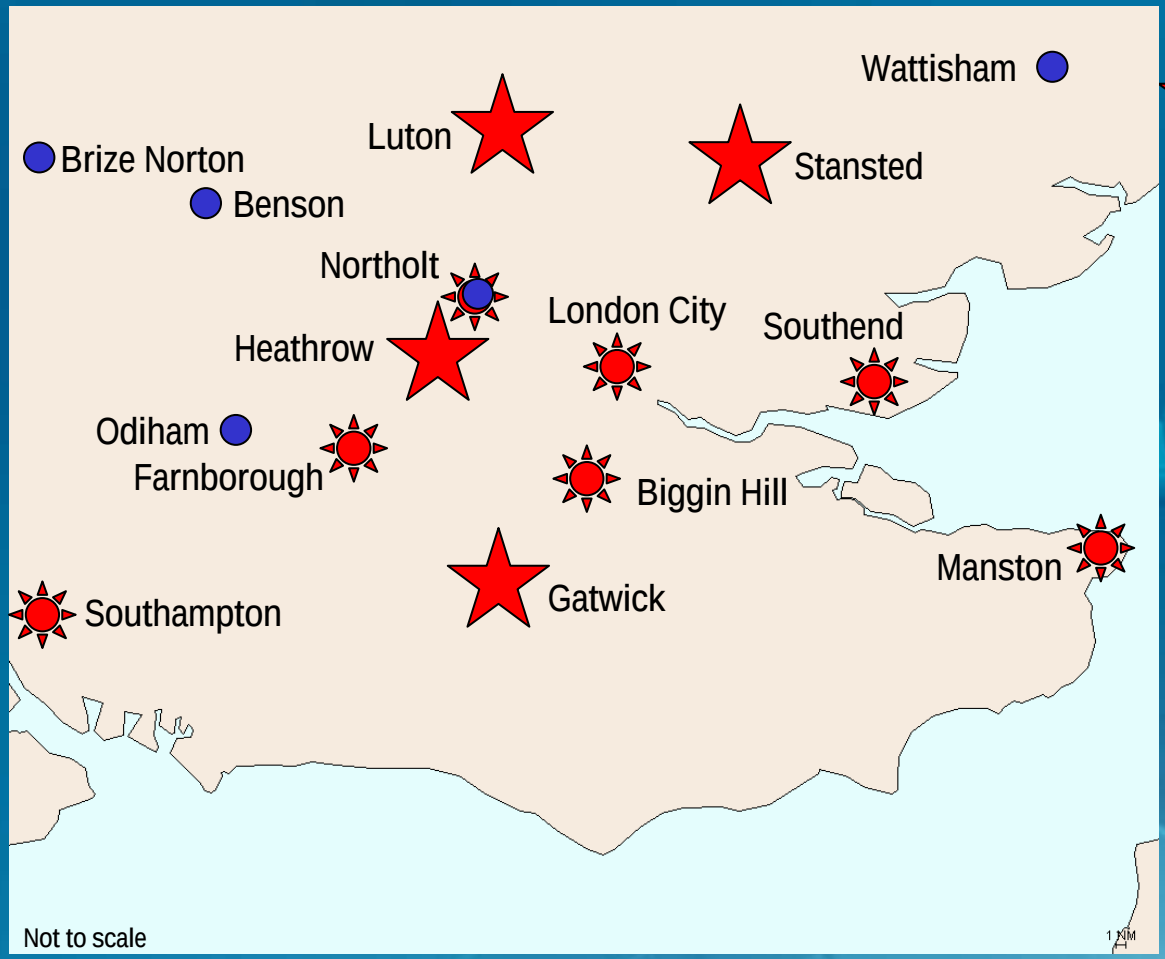
Today's terminal airspace – increasing complexity

Co-existing terminal airspace operations

Increasing importance of secondary airports

Source: EUROCONTROL Skyview

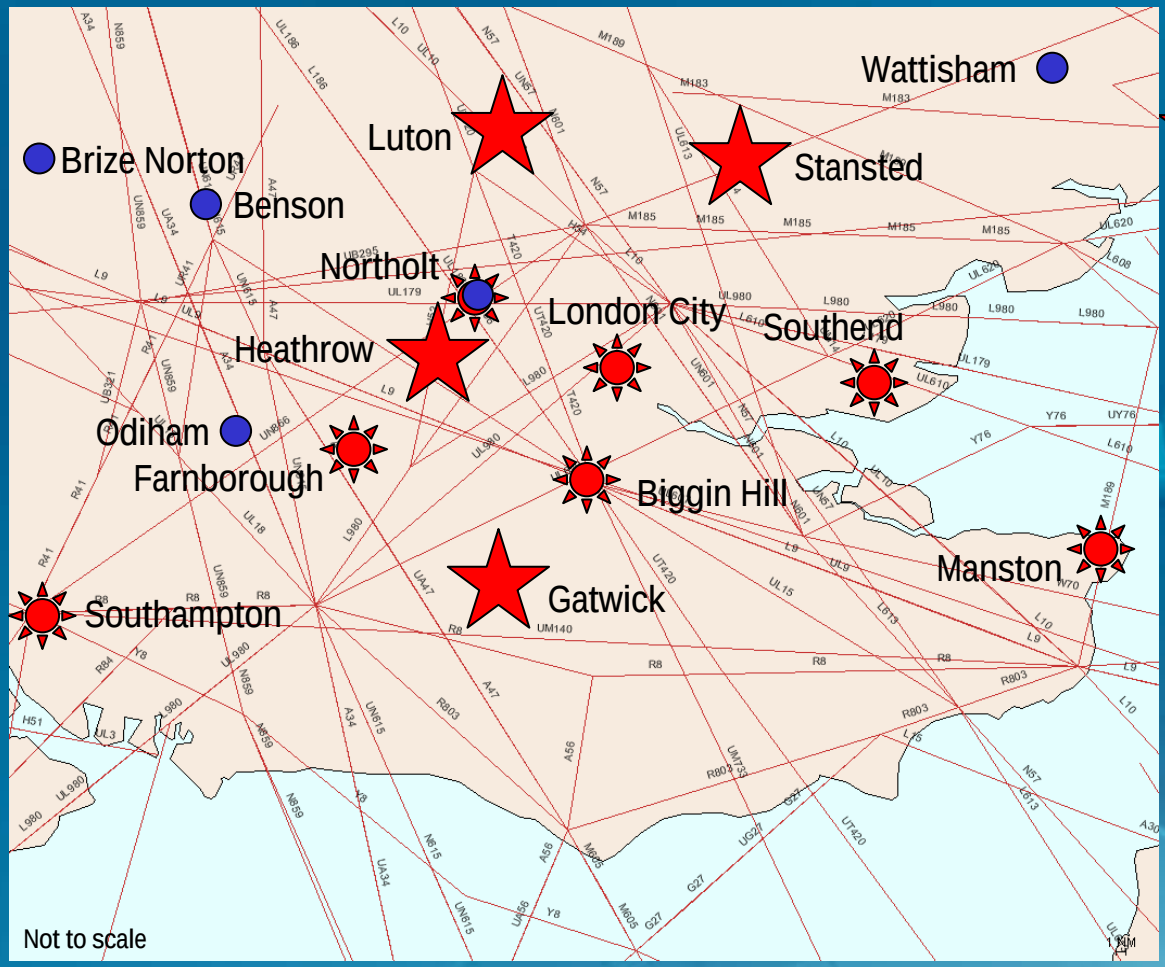
Today's terminal airspace- increasing complexity



- Co-existing terminal airspace operations
- Increasing importance of secondary airports
- Military airfields

Source: EUROCONTROL Skyview / Royal Air Force website

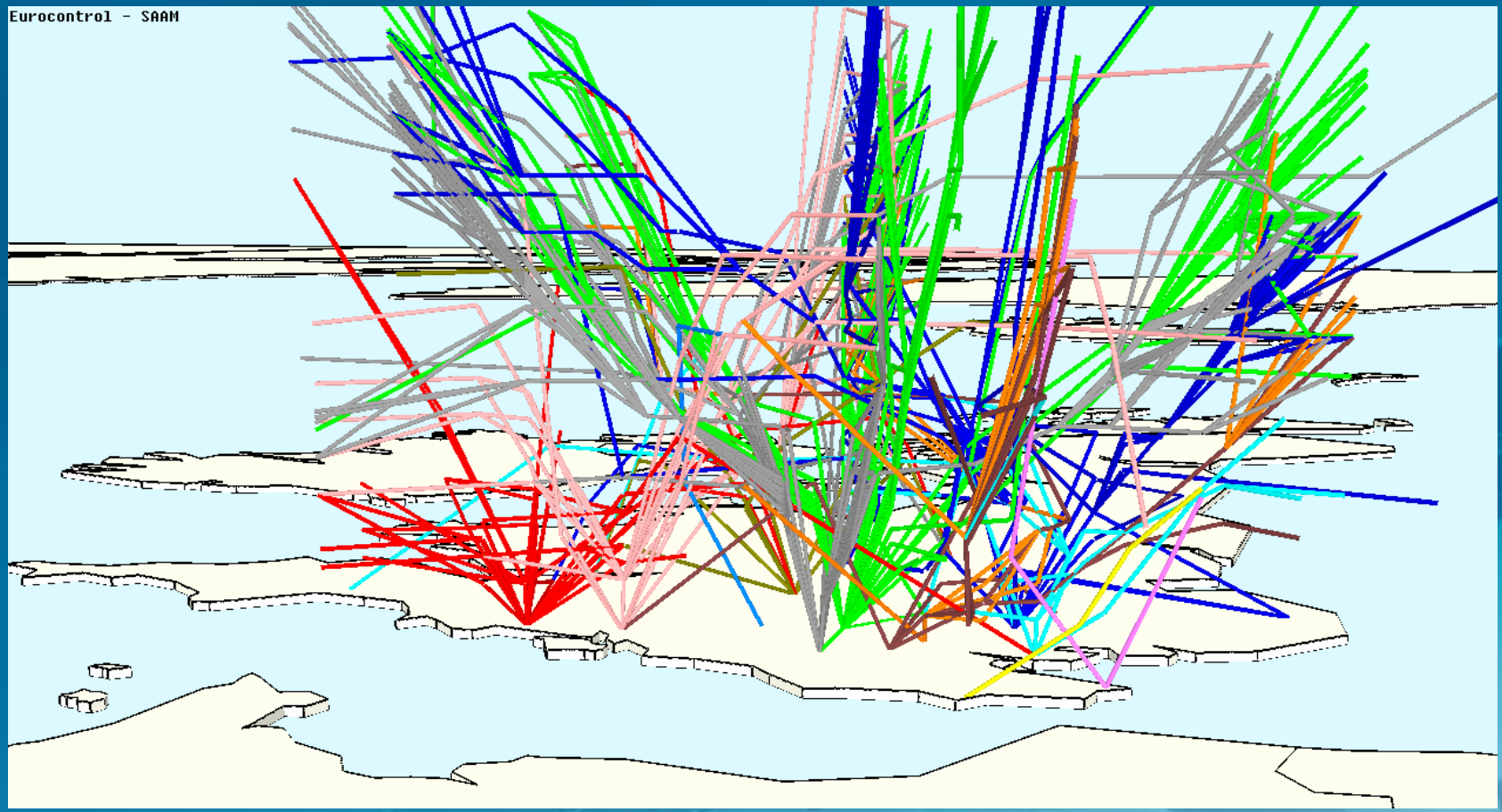
Today's terminal airspace- increasing complexity



- Co-existing terminal airspace operations
- Increasing importance of secondary airports
- Military airfields
- Complexity of routes and traffic flows

Source: EUROCONTROL Skyview / Royal Air Force website

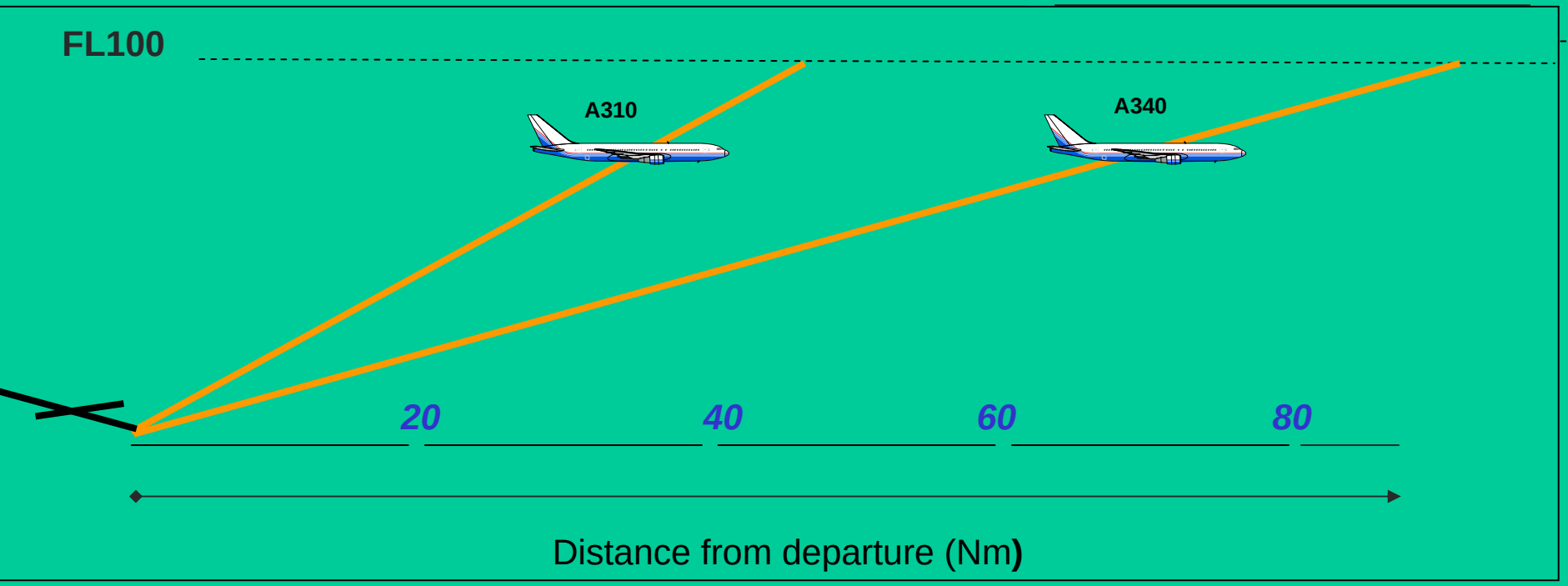
Current airspace – complexity



Source: EUROCONTROL SAAM (System for traffic Assignment and Analysis at Macroscopic level) tool

Today's Airspace

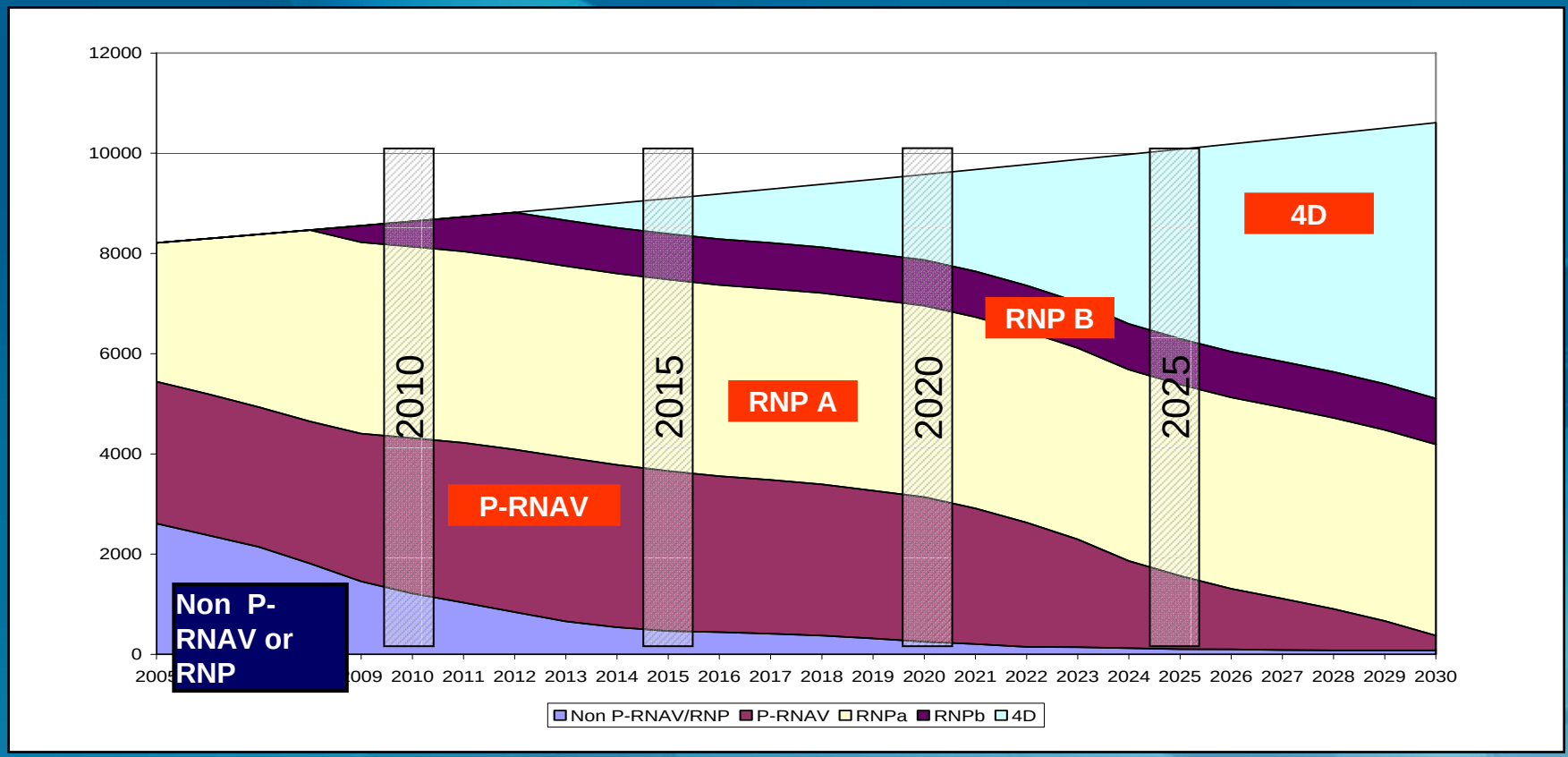
- **Complexity due to aircraft performance**
- **Co-existing terminal airspace operations**
- **Complexity of routes and traffic flows**



Climb parameters: (Airbus tables, climb parameters to FL330, 250kt up to FL100, climb rate is for TOC, cost index of 100kg/min)

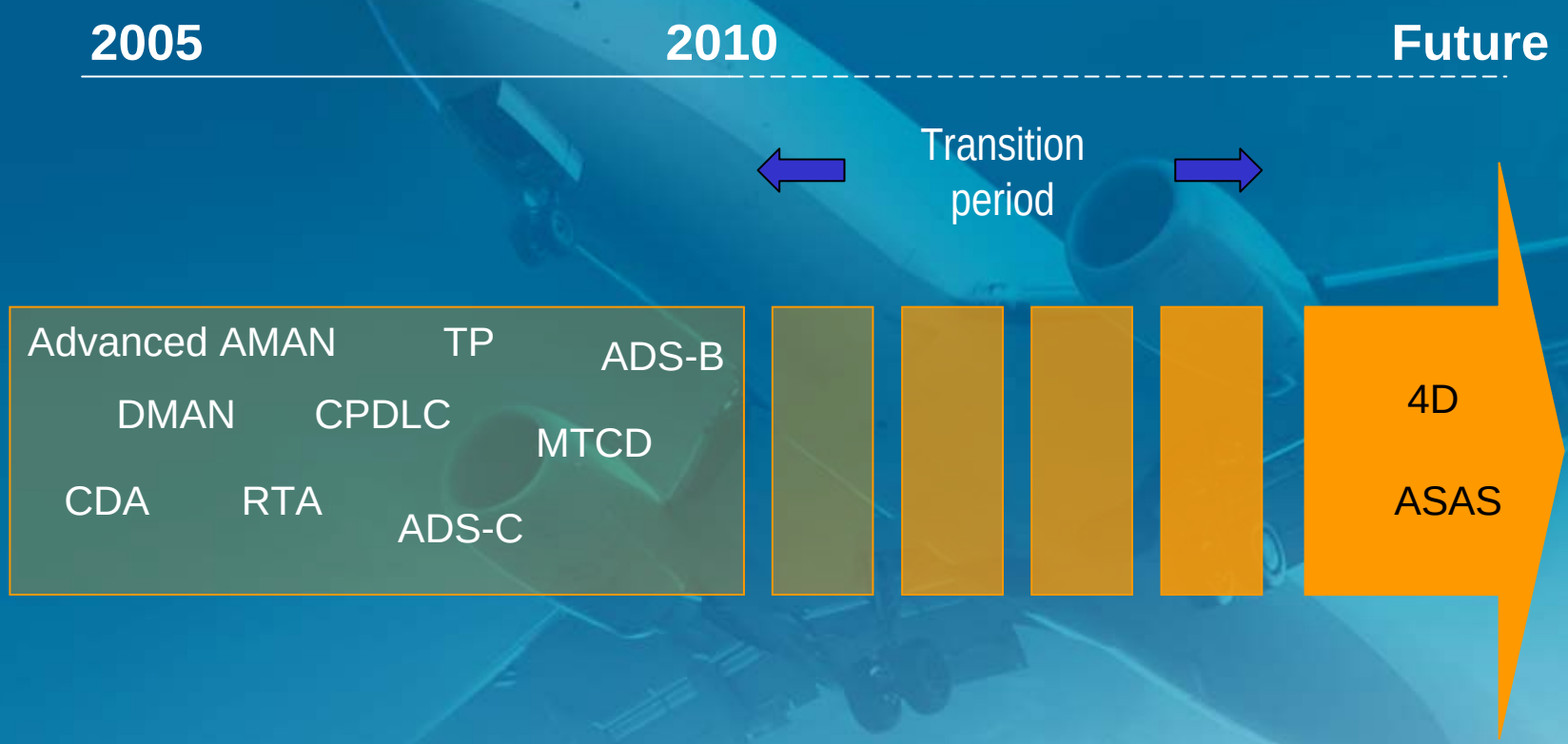
Transition phase – mixed fleet equipage

Need to accommodate a mixed equipage fleet



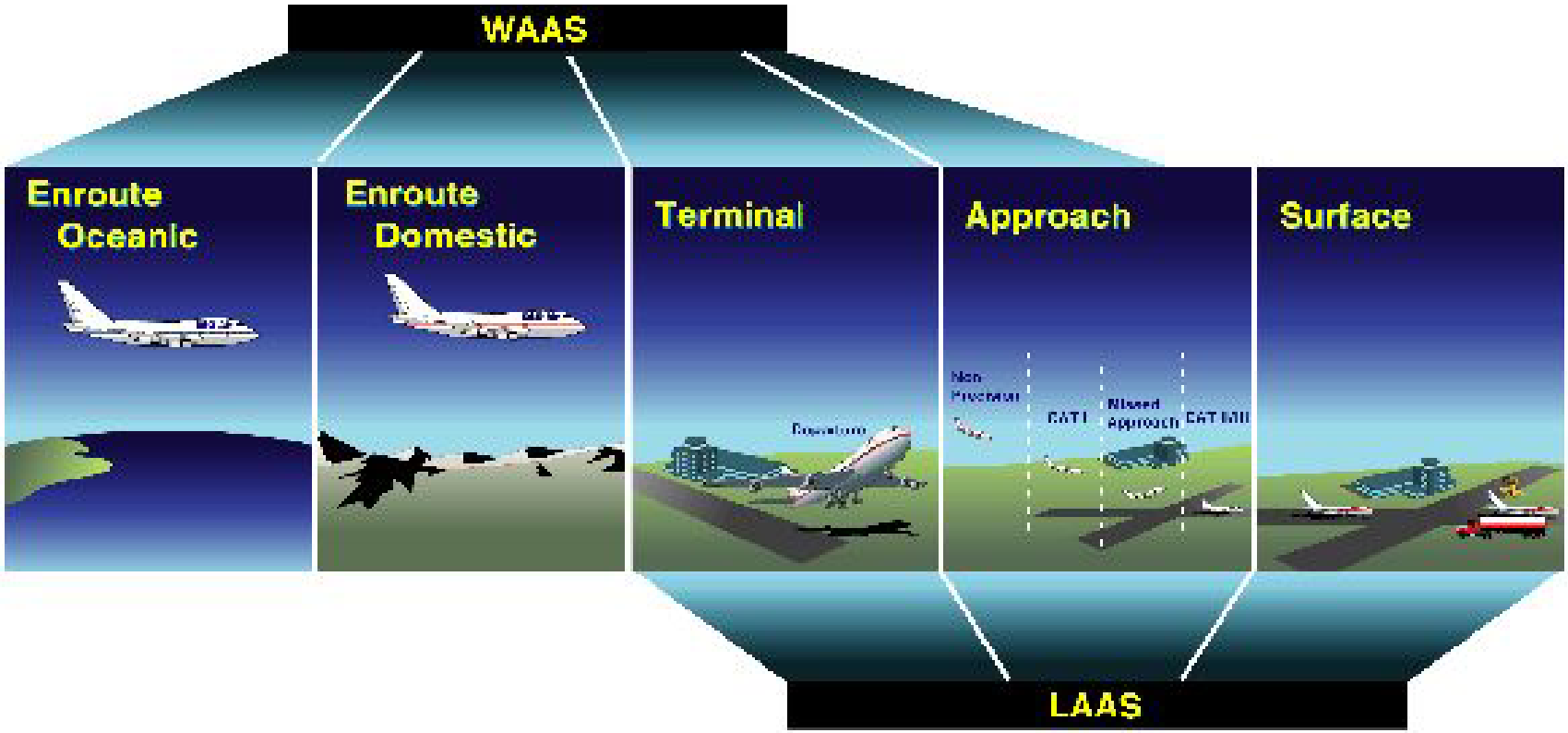
Source: RNAV business case presentation, base case equipage predictions, RNP workshop, Toulouse, October 2005

Transition to tomorrow's terminal airspace operations



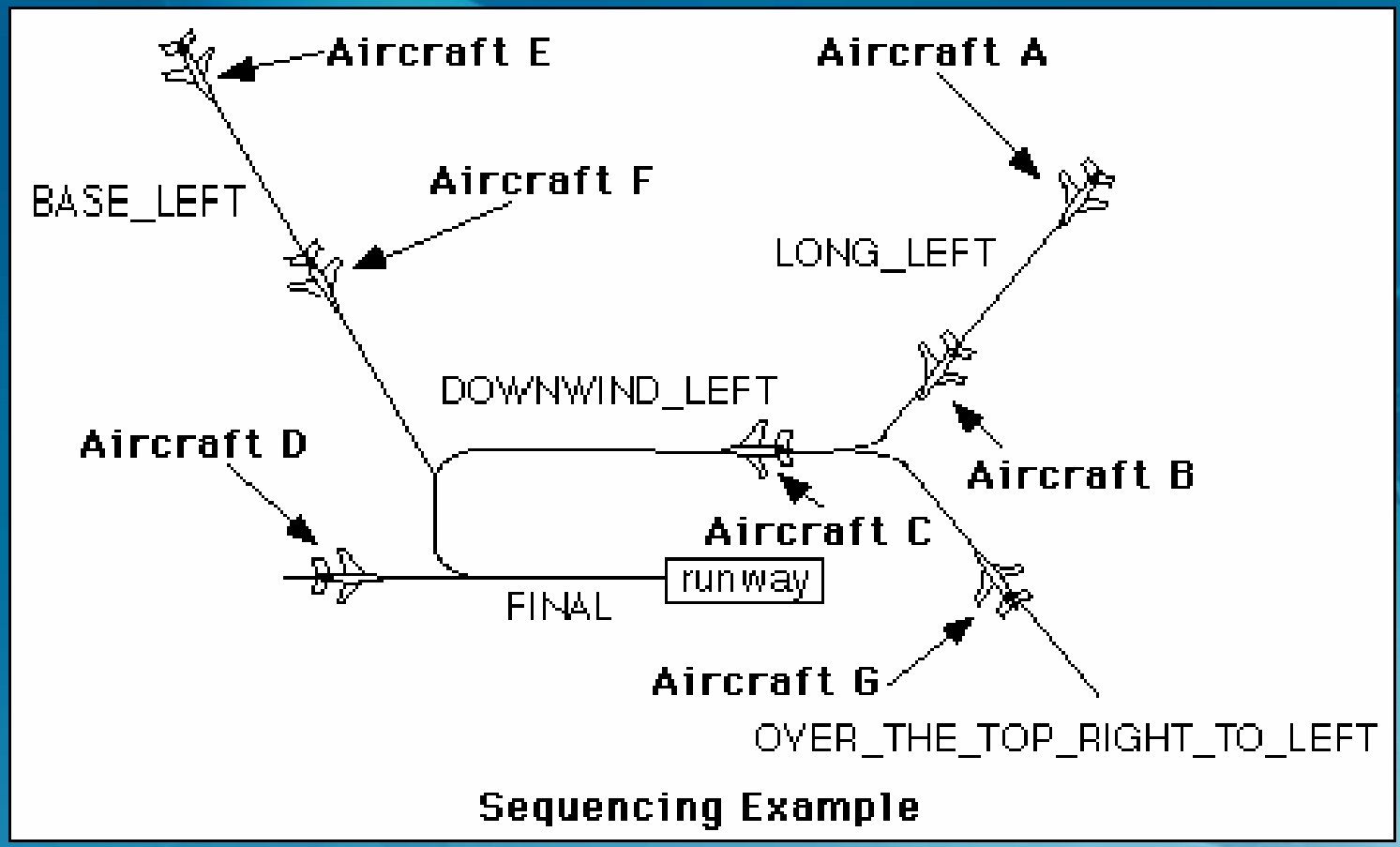
Free Flight Technology: WAAS/LAAS

Approach & En-route Technology



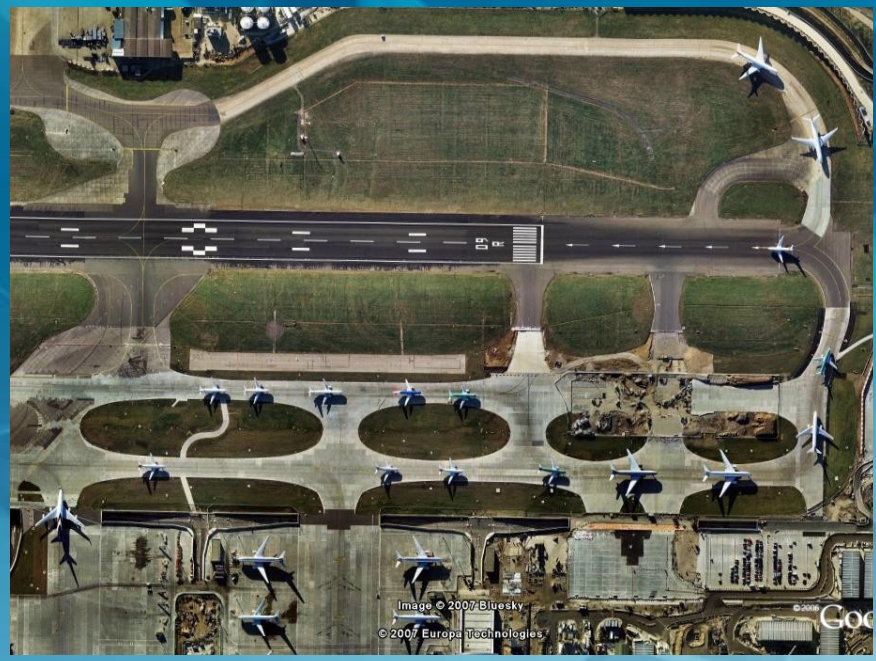
Final Approach Spacing Tool (FAST)

Approach Technology

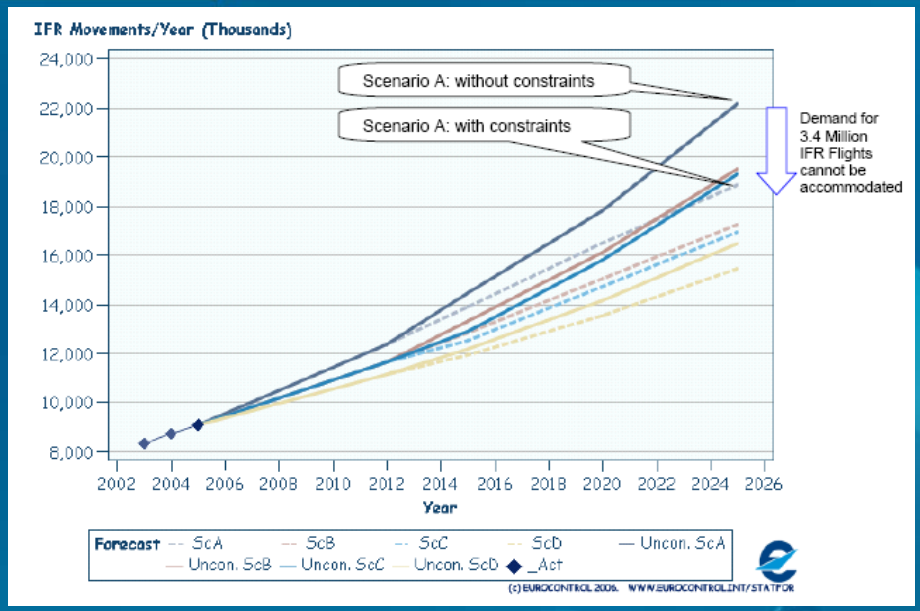


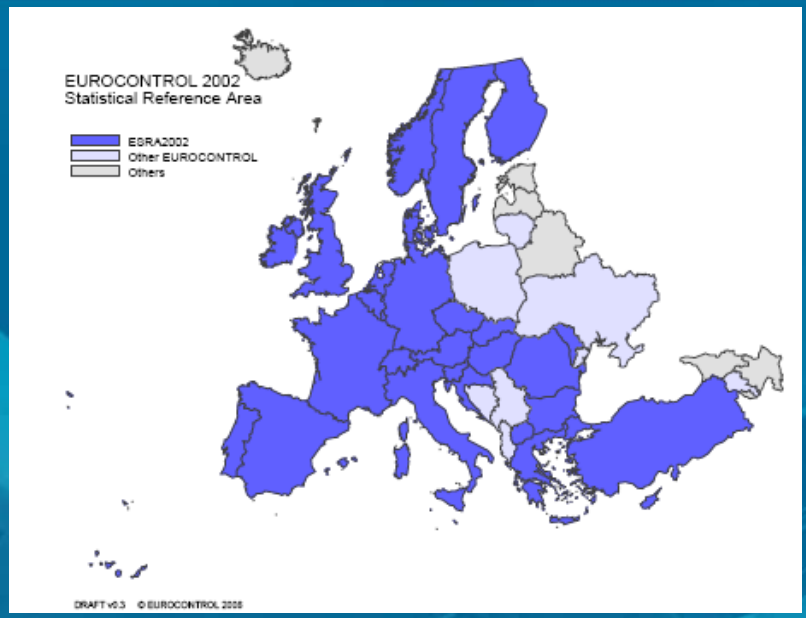
Sequencing Example

Airport Challenges and Managing Capacity Safely



Eurocontrol Predicted Traffic (IFR Movements)

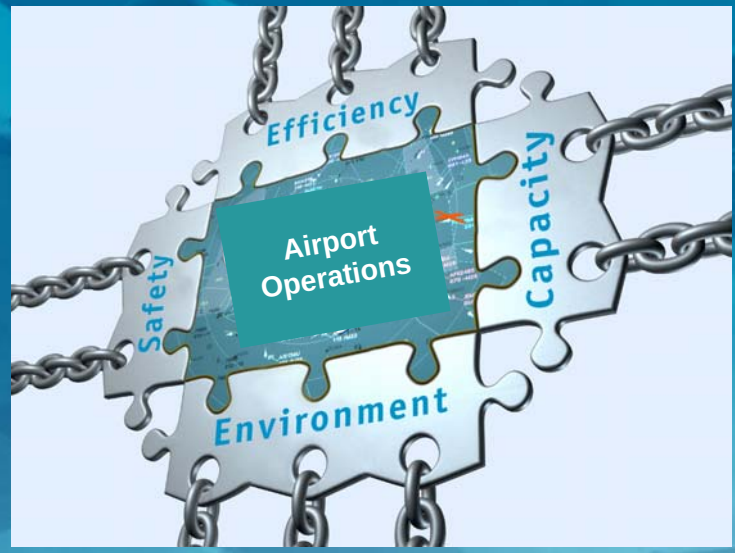




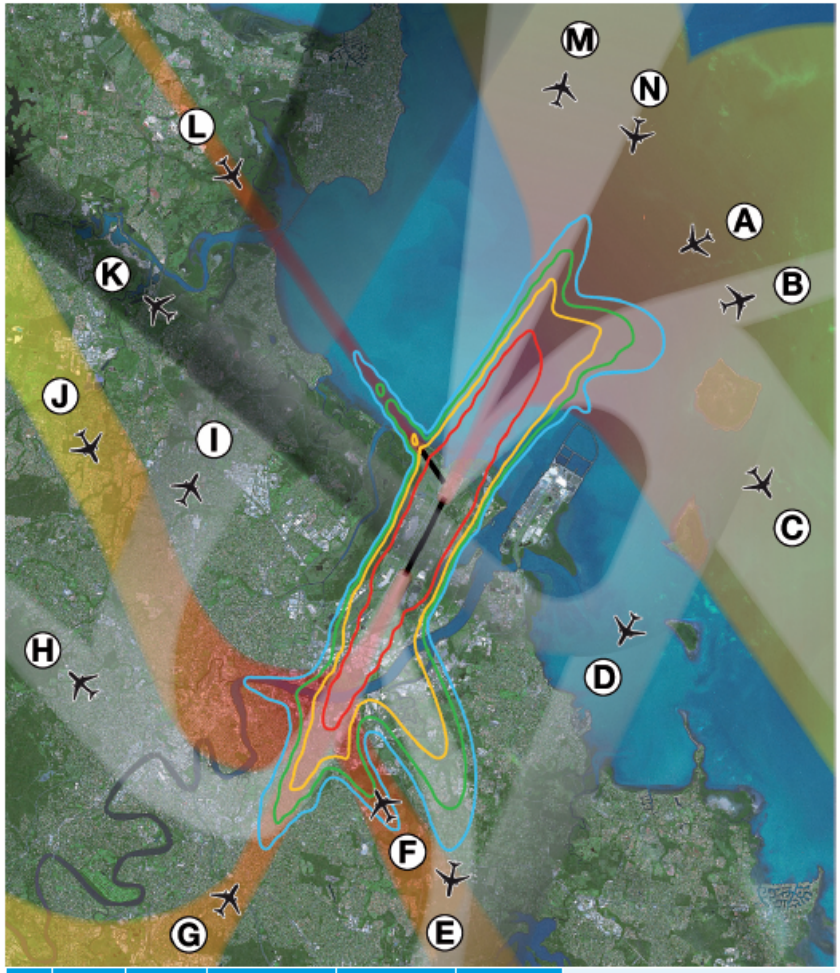
	IFR Movements(000s)							Annual Growth							Average Annual Growth 2025/ 2005	Traffic Multiple 2025/ 2005
	2003	2004	2005	2012	2015	2020	2025	2003	2004	2005	2012	2015	2020	2025		
Scenario A	.	.	.	12,376	13,895	16,502	18,858	.	.	.	4.5%	3.9%	3.5%	2.7%	3.7%	2.1
Scenario B	.	.	.	11,652	12,838	15,048	17,253	.	.	.	3.6%	3.3%	3.2%	2.8%	3.3%	1.9
Scenario C	8,344	8,745	9,088	11,652	12,524	14,729	16,944	.	4.8%	3.9%	3.6%	2.4%	3.3%	2.8%	3.2%	1.9
Scenario D	.	.	.	11,147	11,938	13,543	15,456	.	.	.	3.0%	2.3%	2.6%	2.7%	2.7%	1.7

Challenges

- Matching Airspace, Runway and Airport Capacity.
- Maintaining a safe operation;
- Efficient Operations;
- Environmental Issues and constraints;
- Responsive to airlines needs;
- Operating in a regulated and non regulated markets;
- Role of the Safety and Economic Regulator



2005 Current Runway – Summer Weekday Day Monday to Friday 6.00am – 6.00pm



Flight path	Flight path type	Average number of jet flights on flight path	Expected minimum and maximum numbers of jet flights on path	Percentage of Brisbane Airport's total jet flights on path	Percentage of days with no jet flights on path
A	Arrival	38	0 - 83	16%	27%
B	Departure	1	0 - 1	0%	25%
C	Departure	4	0 - 8	2%	25%
D	Departure	35	0 - 66	15%	25%
E	Departure	34	0 - 73	15%	27%
F	Arrival	30	0 - 69	13%	30%
G	Arrival	17	0 - 113	6%	25%
H	Departure	5	0 - 10	2%	27%
I	Departure	14	0 - 30	6%	27%
J	Arrival	16	0 - 36	7%	25%
K	Departure	2	0 - 3	1%	25%
L	Arrival	<1	0 - 1	<1%	29%

Altitude Key

Arrivals
Mean Altitude
4,500 ft
0 ft

Departures
Mean Altitude
12,000 ft

Contour Key

The number of overflights of 70dB(A) and above during the indicated time period

- 5 to 9 overflights
- 10 to 19 overflights
- 20 to 49 overflights
- 50 or more overflights

Stansted G2, UK

The importance of predictability

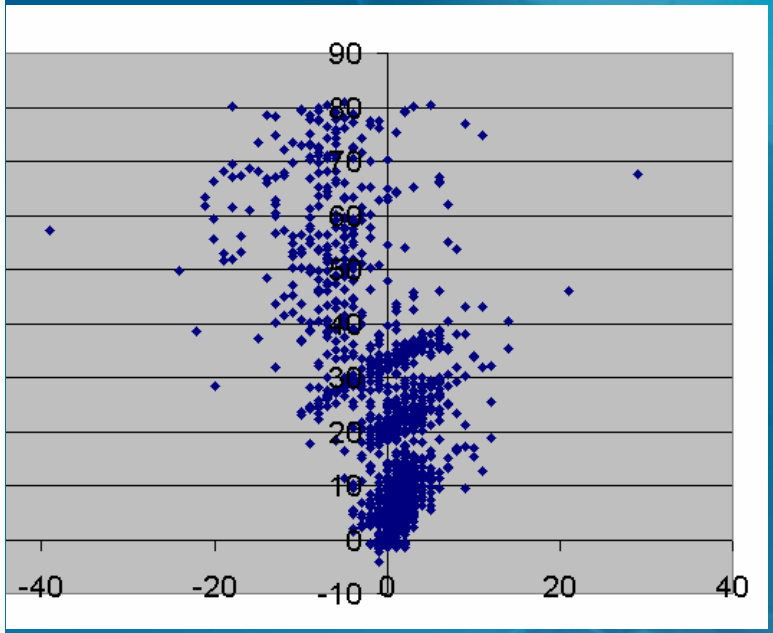
- "... Predictability is of major importance in airline and airport scheduling. Reducing by 5 minutes the scheduled time of a flight from 50% of schedules would be worth some € 1000 million per annum in better use of airline & airport resources..."

Source: PRR 8 (available on www.eurocontrol.int)

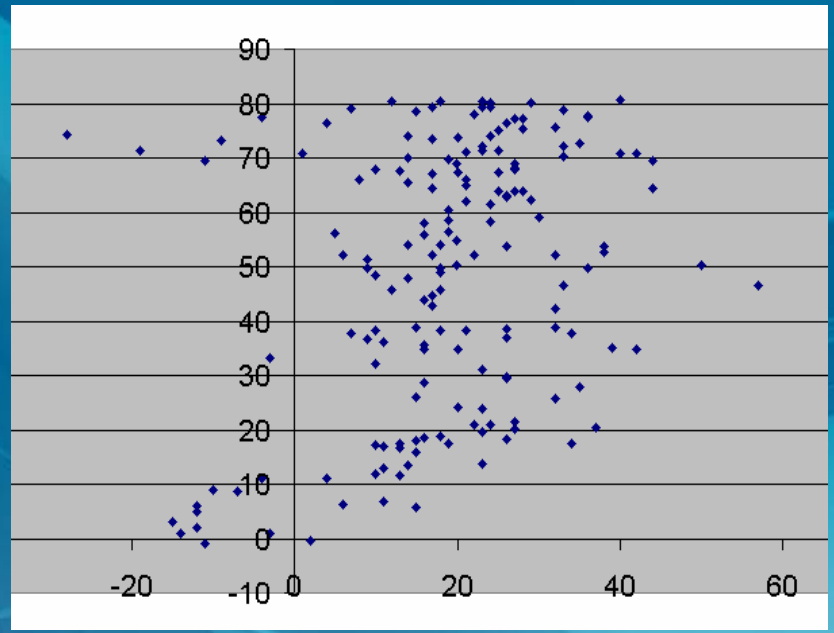
Quality of information

Timeliness: Horizon (min)

Arrivals



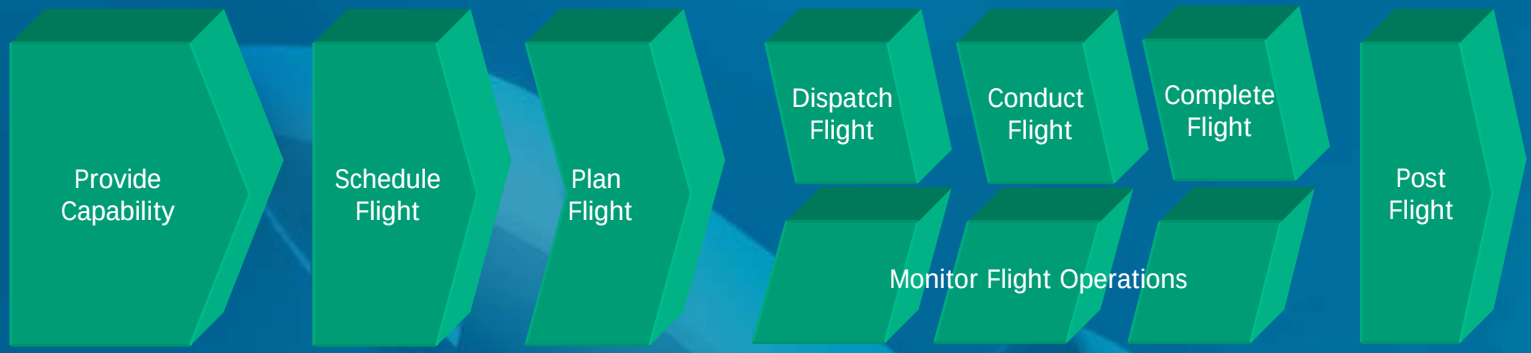
Departures



Accuracy: Actual-Estimated time (min)

Poor quality of information ..... Results in ***Wrong / bad decisions***

Value Added Chain



Other Suppliers

R&D, Market Customers,	Weather trends Airport facilities Slot Allocation	Weather forecast Airport constraints Slot Allocation	Airside Ops Aircraft – AOC Airport configuration	Airside Prep Aircraft – AOC Weather Updates	Airside Ops Aircraft – AOC Airport configuration	Analysis Trends Maintenance

Airlines

Aircraft Suppliers, IT, Telecoms	Flight needs Briefings Aircraft Config	Aircraft availability Crew, cargo, catering	Aircraft prep Aircraft – AOC Aircraft - ANSP	Flight Optimisation Fuel Management A-A, AGA Comms	Disembarkation Baggage, cleaning Customs	Analysis Trends Maintenance

Air Traffic Service Provider

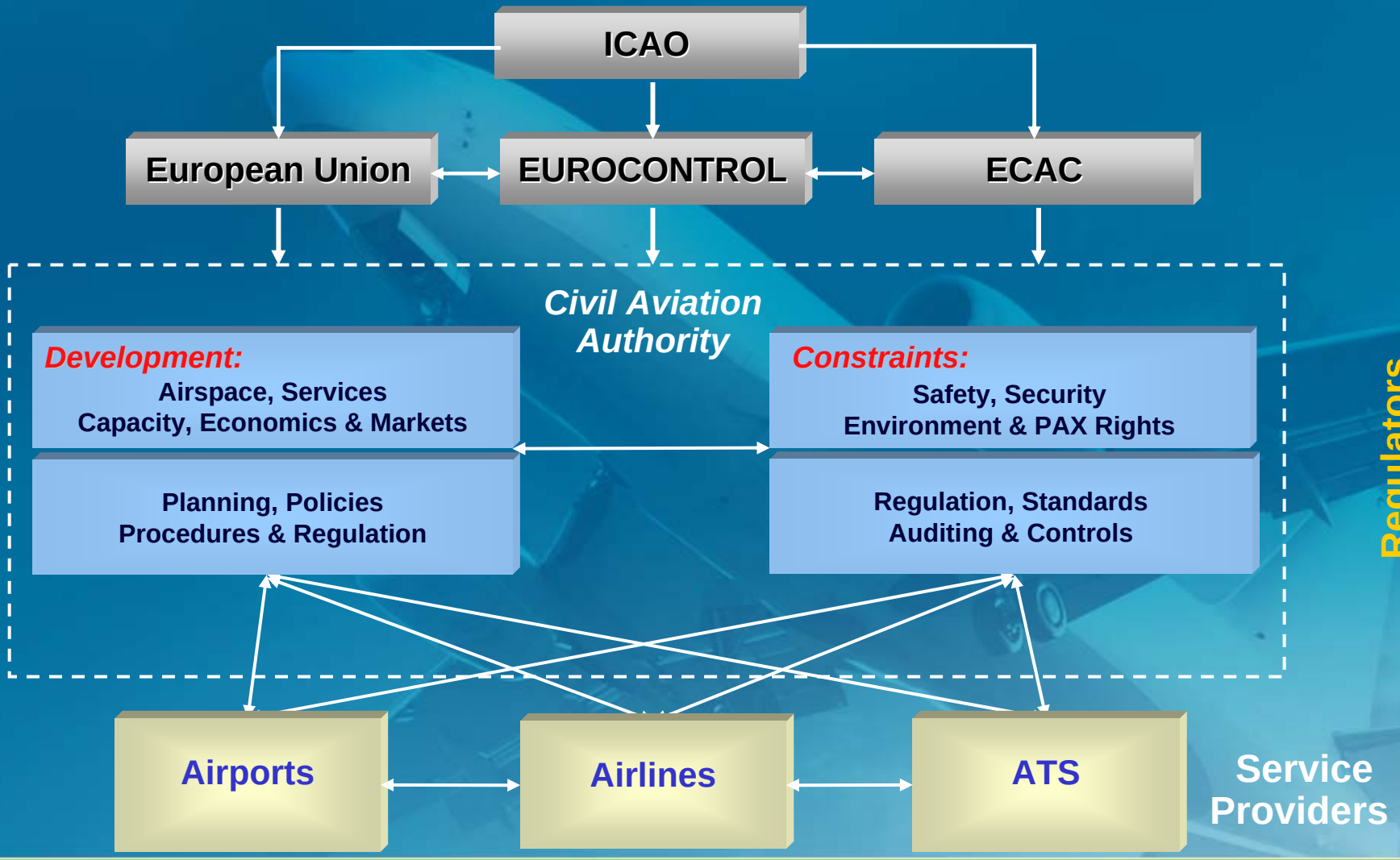
R&D, Infrastructure, People	Airspace Constraints, AIS data	Briefings, flight plan Acceptance, Capacity balancing	PDC, Ground movements, AGA Comms, Navaids	Separation, flow, UPT, FUA, conflict Mgt, AGA comms, Navaids	Terminal area mgt, Airport control, Ground movement, Navaids	Analysis Trends Maintenance

Kunming Airport, China

The Role of the Regulator

- **"With the recent publication of the advisory ICAO state letter on the certification of airports, and the increasing demand for the separation of the CAA Regulator and Service provider, the development of a national safety & Regulatory framework is essential.**
- **The travelling public is more aware and demands the highest possible standards of safety and security**
  - Who do we regulate?
  - **Airport Operators, Air Traffic Service Providers & Airlines are no longer State owned. The trend to privatise or co-operatise these once state entities continues**

Regulator Framework



Air Traffic Organisations

- **European Single skies will mean a rationalisation of Air Traffic Services;**
- **Privatisation of Airports and greater competition will lead to further privatisation of Air Traffic Service Providers and greater competition.**

Country	ANSP	Since	Shareholders
U.K.	NATS	2001	Airlines 42%, BAA 4%, staff 5%, State 49%
Germany	DFS	1993	State (non profit)
Switzerland	Skyguide	2001	State
Italy	ENAV	2001	State
Portugal	NAV Portugal	1998	State
Hungary	Hungarocontrol	2002	State


Questions