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

Paul Willis – Managing Director, Aviation Solutions
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
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

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• 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)
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

2005 2010 Future

Advanced AMAN TP ADS-B
DMAN CPDLC MTCD
CDA RTA ADS-C

Transition period

4D ASAS

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Free Flight Technology: WAAS/LAAS

Approach & En-route Technology

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Final Approach Spacing Tool (FAST)

Approach Technology

Sequencing Example
Airport Challenges and Managing Capacity Safely
Eurocontrol Predicted Traffic (IFR Movements)

**IFR Movements (Thousands)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Scenario A: without constraints</th>
<th>Scenario A: with constraints</th>
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</thead>
<tbody>
<tr>
<td>2002</td>
<td>10,000</td>
<td>10,000</td>
</tr>
<tr>
<td>2003</td>
<td>12,000</td>
<td>12,000</td>
</tr>
<tr>
<td>2004</td>
<td>14,000</td>
<td>14,000</td>
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<tr>
<td>2005</td>
<td>16,000</td>
<td>16,000</td>
</tr>
<tr>
<td>2006</td>
<td>18,000</td>
<td>18,000</td>
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**Forecast**
- SCA
- SCB
- SCD
- SDE
- Uncon, SCA
- Uncon, SCB
- Uncon, SCD
- Uncon, SDE
- FME

**Diagram**
- Demand for 3.4 Million IFR Flights cannot be accommodated

**Table**

<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>12,376 13,895 16,502 18,858</td>
<td>4.5% 3.9% 3.5% 2.7%</td>
<td>3.7%</td>
<td>2.1</td>
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<tr>
<td>B</td>
<td>11,652 12,838 15,048 17,253</td>
<td>3.6% 3.3% 3.2% 2.8%</td>
<td>3.3%</td>
<td>1.9</td>
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<tr>
<td>C</td>
<td>8,344 8,745 9,088 11,652 12,524 14,729 16,944</td>
<td>4.8% 3.5% 3.6% 2.4% 3.3% 2.8%</td>
<td>3.2%</td>
<td>1.9</td>
</tr>
<tr>
<td>D</td>
<td>11,147 11,938 13,543 15,456</td>
<td>3.0% 2.3% 2.6% 2.7%</td>
<td>2.7%</td>
<td>1.7</td>
</tr>
</tbody>
</table>

**Website**
www.aviationsol.com
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
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

Arrivals

Departures

Timeliness:
Horizon (min)

Accuracy: Actual-Estimated time (min)

Poor quality of information ..... Results in Wrong / bad decisions
Value Added Chain

Provide Capability
Schedule Flight
Plan Flight
Dispatch Flight
Conduct Flight
Complete Flight
Monitor Flight Operations
Post Flight

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

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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.
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.

<table>
<thead>
<tr>
<th>Country</th>
<th>ANSP</th>
<th>Since</th>
<th>Shareholders</th>
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</thead>
<tbody>
<tr>
<td>U.K.</td>
<td>NATS</td>
<td>2001</td>
<td>Airlines 42%, BAA 4%, staff 5%, State 49%</td>
</tr>
<tr>
<td>Germany</td>
<td>DFS</td>
<td>1993</td>
<td>State (non profit)</td>
</tr>
<tr>
<td>Switzerland</td>
<td>Skyguide</td>
<td>2001</td>
<td>State</td>
</tr>
<tr>
<td>Italy</td>
<td>ENAV</td>
<td>2001</td>
<td>State</td>
</tr>
<tr>
<td>Portugal</td>
<td>NAV Portugal</td>
<td>1998</td>
<td>State</td>
</tr>
<tr>
<td>Hungary</td>
<td>Hungarocontrol</td>
<td>2002</td>
<td>State</td>
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</tbody>
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Questions