PBN within the UK's Future Airspace System

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UK Regulatory Model

- In the UK, provision of ATS is separate from policy and regulatory oversight
- NATS En-Route Ltd (NERL) has a licence to operate services in the en-route and London terminal control
- CAA can therefore regulate PBN implementation for en-route and London terminal airspace through this mechanism
- Aerodromes are in the private sector, not State controlled
- The implementation of PBN i.e., airspace change, is therefore the responsibility of the ANSP
- CAA can only influence PBN implementation through the formulation of strategy and policy
- CAA can not mandate, only facilitate
UK Regulatory Model

• Therefore, in the UK it is impracticable to assure implementation of APV at all aerodromes by 2016

• Implementation of APV should be considered, not only on the grounds of safety, but also as part of wider business case i.e., operator equipage, access requirements, infrastructure rationalisation

• CAA will continue to be proactive in support of APV
ICAO 37th General Assembly Resolution A37-11

- States complete a PBN implementation plan as a matter of urgency to achieve:
  - implementation of RNAV and RNP operations (where required) for en-route and terminal areas ...... and;
  - Implementation of approach procedures with vertical guidance (APV) (Baro-VNAV and/or augmented GNSS) including LNAV only minima for all instrument runway ends, either as the primary approach or as a back-up for precision approaches by 2016 (with 30 per cent by 2010 and 70 per cent by 2014);
  - implementation of straight-in LNAV only procedures, as an exception to 2) above ......
The Future Airspace Strategy (FAS)

- UK is fully supportive of the ICAO PBN concept
- As a National Supervisory Authority, the UK CAA is not producing a PBN Implementation Plan
  - Implementation plans are the responsibility of the ANSPs/airports and not the State/regulator
- CAA in conjunction with major stakeholders (NATS, Military and Government Department) is putting in place a high level Future Airspace Strategy
- Reflects the requirements of the Air Navigation Service Providers (ANSPs) i.e., those responsible for the management of UK airspace
The FAS sets out the strategy for modernising the UK airspace system answering the question "How can we make the most efficient use of airspace, to meet users requirements, within future constraints?"

In scope for the FAS

- Maximising efficiency of the system within safety and environmental constraints
- Integration with SES II and SESAR
- Balancing demand for airspace capacity with supply - when and where it occurs
- Setting out the characteristics and benefits of the future airspace system
- Roadmap for implementation of changes.

Areas not in scope but key to delivering overall improvements

- The efficiency of airports’ operations (scheduling, ground movements etc.)
- Government policy on airport development
- A detailed plan for implementation of the proposed changes
- Alignment of industry investment plans to implement changes
- Mechanisms to track the overall performance of the system as changes are implemented.
UK Airspace requirements for the future and the FAS Vision

UK Airspace Requires Modernisation to:

• Deal with current hotspots of congestion
• Enable and facilitate continuous improvement in safety
• Implement SES proposals
• Take advantage of technological developments to improve efficiency
• Be responsive to Government policy and decision-making
• Ensure access to sufficient airspace for non CAT users
• Provide flexibility within the system to enable future development and advancements

FAS Vision

Safe, efficient airspace, that has the capacity to meet reasonable demand, balances the needs of all users and mitigates the impact of aviation on the environment
FAS proposes significant changes to modernise the way the UK’s airspace system operates over next 20 years, introducing greater flexibility, cooperation and systemisation.

Characteristics of 2030 Airspace

- Routeing based on ‘user preferred (4D) trajectories’
- Flexible, often dynamic, management of the airspace structure through Joint and Integrated, Civil/Military operations
- Greater cooperation and the increased use of systems and technology to safely manage additional complexity
- Simpler airspace structures, integrated across National and Functional Airspace Block (FAB) boundaries
The draft Strategy currently undergoing formal industry consultation until Feb 2011
Final publication 2Q2011

CAA Webpage for FAS

- Full draft FAS document
- Consultation document with questions
- Airspace for Tomorrow 1 and 2
- E-mail address for questions and replies FAS@caa.co.uk

www.caa.co.uk/FAS
E-mail: FAS@caa.co.uk

Consultation Document

Developing the United Kingdom’s Future Airspace Strategy
Consultation and Stakeholder Engagement
1 November 2010
PBN in a FAS Context

- PBN is an essential component in delivering the FAS objectives and modernisation of the UK airspace system
- Transition from airspace, routes and instrument flight procedures including holds, predicated on conventional navigation systems e.g., VOR, DME, NDB to an airspace described in terms of Performance-based Navigation
- Delivery on:
  - Increase in capacity and access to General Aviation
  - Improvement in safety
  - Reduction in the effects that flights have on the environment
  - Provision of ATM services to airspace users at a reduced cost
- Putting down the foundations for future 3D and 4D User Preferred Trajectories
UK PBN Policy

- The Future Airspace Strategy (FAS) sets out the roadmap for development of UK airspace
- UK and IRL jointly developing a FAB aligned PBN Policy as an enabler to FAS
- Reflects the requirements of the Air Navigation Service Providers (ANSPs) i.e., those responsible for the management of UK airspace
- The PBN Policy sets out a specific framework with guidance and support to ANSPs and operators to help facilitate that development
- Available early 2011
Objectives of UK PBN Policy

• The UK PBN Policy proposes to take due account of:
  – The current status of development of RNAV and RNP airspace, routes and procedures within the UK
  – The desire from operators to take greater advantage of onboard aircraft capability
  – The desire of ANSPs to have a clearer framework for PBN
  – The UK model for service provision, separate from State control
  – The future direction of the European ATM Master Plan and the introduction of a PBN Implementing Rule circa 2018-2020
  – Costs/business case involved in making any form of airspace change
Key Features of UK PBN Policy

- Extension of RNAV 5 to all ATS routes by April 2011
- Utilisation of RNAV 1 capable aircraft on strategic ATS routes
- CAA will not intervene on overlay of conventional procedures
- All new terminal airspace procedures shall be designed using PBN terminal airspace procedure criteria
- New terminal airspace designs should facilitate use of Continuous Climb and Continuous Descent Operations (CCO and CDO)
- A “Soft Mandate” for PBN in terminal airspace
- Facilitation of APV in accordance with the ICAO General Assembly Resolution
- Progressive rationalisation of conventional navigation infrastructure
PBN Policy Caveats

- PBN is only one element of technological and operational enhancements providing enablers for FAS
- Environmental policy, cost and business drivers will have an impact on how quickly PBN can be moved forward
- The PBN Policy will not contain all of the answers to implementation issues, these will have to be developed separately
Where do we want to be in 2020?

- Mid-way to realising objectives from the Future Airspace Strategy (FAS)
- Compatibility with SESAR objectives
- Delivery on:
  - Increase in capacity
  - Improvement in safety
  - Reduction in the effects that flights have on the environment
  - Provision of ATM services to airspace users at a reduced cost
- Putting down the foundations for future 3D and 4D User Preferred Trajectories
- From a navigation and infrastructure perspective that means embracing the concept of PBN and moving the UK controlled airspace environment towards RNP
# The Transition to PBN and Advanced RNP

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Summary

- The UK is committed to the application of PBN as one of the key components of FAS
- From a navigation and infrastructure perspective that means embracing the concept of PBN and moving the UK controlled airspace environment towards RNP
  - Set as an objective, a UK controlled airspace system based on navigation applications using RNAV and RNP by 2020 with eventual sole use of RNP by 2030
- PBN will only deliver benefits in conjunction with other airspace changes
  - Improvements in structure e.g., Transition Altitude and new departure and arrival tracks
  - ATM tools e.g., arrival and departure managers
Questions?