CREATING THE FAB EUROPE CENTRAL

SETTING THE SCENE

In the light of the ongoing discussion about the future of the European air navigation services, the civil and military authorities of 6 States (Belgium, Luxembourg, Netherlands, Germany, France and Switzerland) and air navigation service providers designated in these States launched a feasibility study on the creation of a Functional Airspace Block Europe Central (FABEC). Up to 230 experts from the different ANSPs shared their expertise and created in 18 months a common perspective in regard to the future of air navigation services in the heart of Europe. An intensive consultation process with stakeholders guaranteed transparency right from the beginning.

Based on the challenges expected from the forecasted growth in air traffic, the complexity of the high-density area with the hubs of Paris, Amsterdam, Frankfurt, Munich, Brussels and Zurich and the changing military requirements, and in harmony with the notion of the SES regulations, the FABEC feasibility study was conducted in an overarching approach based on concrete **operational necessities**. This meant that from the very beginning of the study there was a common acknowledgement that with a 'business as usual' approach air traffic will encounter considerable problems in the near future: The expected 50 per cent increase in civil flights by 2018 combined with the fact that delays will increase while flight efficiency will decrease cannot be dealt with on a national basis only. In summary, service quality in a 'business as usual' model will decrease over the next years. Therefore, the experts suggested not only to think beyond national boundaries but also to take the entire airspace (lower and upper airspace) into account and by doing so, the FABEC feasibility study went far beyond the requirements of the Single European Sky package.

To guarantee a holistic view, the experts investigated all aspects of a FABEC framework, for instance:

- The implications on safety
- A common operational understanding and concrete common operational measures, including airspace design
- The technical infrastructure and services

- Civil and military aspects to balance especially the operational requirements
- Institutional and regulatory aspects
- Financial aspects to show the costs and the benefits ratio of FABEC and to develop proposals on common charging including a common unit rate
- Training aspects and potential implications on human resources

On the basis of this common approach, the FABEC feasibility study created proposals for improvement. During this period, the experts were guided by common civil and military strategic objectives which include a set of clear common performance targets in the areas of safety, environment, capacity, cost effectiveness, flight efficiency and military mission effectiveness improvements**.**

THE POTENTIALS OF FABEC

Provided some specific issues are taken on board in the development phase, the experts indicate that the same high level of safety can be maintained despite the increase in the number of flights. In regard to capacity, sufficient capacity can be made available to accommodate increased traffic demand in a punctual manner. Without FABEC, flight efficiency in the area is expected to deteriorate over the next years. The FABEC initiatives would contribute significantly to countering this. It is expected that these initiatives improve the horizontal flight efficiency within the FABEC area. In line with the improvements in flight efficiency there will be a significant contribution to reducing the emissions per flight. In addition, it is expected that with the proposals made by the experts, the military mission effectiveness will improve. But further studies are required. The cost benefit analysis is positive.

The results of the study are based on a wide range of proposals and it was not possible to conduct in-depth investigations concerning all of the issues during the feasibility phase. It will therefore be now necessary to further assess the potential identified in the study within the scope of a new project and to flesh out the proposals made.

SOLUTIONS BASED ON A COMMON OPERATIONAL APPROACH

To fulfil these ambitious objectives, the experts have identified a number of areas of cooperation and measures that are expected to bring benefits in the FABEC area. In particular, a **common operational concept** and **airspace design** have been developed. Both initiatives are key elements to solve the challenges expected. In addition, they are a starting point for a

further cooperation in the areas of operations, safety, technical systems and services, training and the charging scheme. The operational and technical proposals are fully aligned with SESAR. The main FAB proposals are:

Common operational concept

Defining a common operational concept is one of the main drivers for the establishment of FAB Europe Central. A common operational concept was defined between all ANSPs, both civil and military, taking the FABEC region as one continuum of airspace. A regional civil/military function for both air traffic flow management and airspace management, the ATFCM/ASM function, forms a central part of the operational concept. Based on existing concepts like SESAR, the concept will contribute to meeting the needs of airspace users by delivering increased capacity and flight efficiency.

The common operational concept focuses, among other things, on:

- Balancing of demand and capacity
- Airspace organisation and management - including all Flexible Use of Airspace elements - to meet all users' needs
- Integrated decision-making process as if the airspace is controlled from one control centre

Airspace design

The FABEC airspace was designed irrespective of national borders for both civil routes and sectors, and military training areas. This approach will mainly deliver benefits through enabling an optimised route structure over a wide area, reducing controller workload by moving sector interfaces to less critical areas, and increasing the options for military training area locations.

Military partners were actively involved in the airspace design work. Airspace use requirements were thoroughly integrated into the designs. Some areas were identified where an imbalance exists between the future military airspace needs and civil traffic demand, further study is required to meet both civil and military requirements.

The airspace was designed at the level of sector families - groups of closely interdependent sectors. Several scenarios were developed based on different design criteria.

Convergence towards common technical systems

Technical measures have been identified which enable the timely implementation of the common operational concept, overcome the present fragmentation of ATM systems in the core area of Europe and ensure that future developments follow a joint roadmap towards common technical [sub-]systems and common technical services. The study focussed on a wide range of technical systems supporting ATS, CNS and ATFCM/ASM functions. The roadmap foresees a convergence towards a common ATS system based on two products and 21 technical cooperation areas.

The study has produced a roadmap for common technical systems, which covers the major medium to long term technical developments. The roadmap covers progression in cooperation which ranges from planning and specification, through an intermediate stage featuring greater cooperation through joint procurement and development activities to possible joint training and maintenance of systems.

Common safety management

The first priority of air navigation service provision is safety. Safety is considered a prerequisite of implementing FABEC, irrespective of the content of the operational concept, airspace design or any other aspect of the cooperation.

Considering the early stage of the development of FABEC, a full safety case cannot yet be delivered. Instead, a ‘safety feasibility indication’ was produced, giving an indication of the likelihood of meeting the overall safety objective once the FAB was designed. According to the output of the study, there is justified, expert-based confidence that a FAB based on the common operational concept can be made sufficiently safe.

Harmonisation of safety management systems of the individual ANSPs into a common SMS at FAB level will support the FAB in achieving improvements in safety. A staged approach to development towards a common SMS has been proposed.

Part of the proposal is a FAB Safety Management Office. This office would be responsible for issues such as developing safety targets, monitoring performance and reporting to the FABEC governing body.

Common charging scheme

The study recommends that the whole airspace of FAB Europe Central should constitute a single charging zone with a single en route unit rate. This will be an enabler for airspace design independent of national borders, and bring benefit in the form of reducing inefficient routing to minimise user charges.

Therefore, the cost bases of the Member States of FABEC will be pooled to establish a single cost base for the zone. The unit rate for the charging zone will then be derived from this single cost base. Revenues will be shared in the ratio of the individual cost bases.

Cooperation in training

Cooperation in training has been identified as a measure adding sustainable economic value, becoming effective gradually on a short term basis.

Implementation of a common operational concept in combination with convergence in common technical systems and services will enable the opportunity for cooperation in the area of ATCO and ATSEP training. Such cooperation can improve cost effectiveness, and may also improve the effectiveness of the application of the operational concept as well as the harmonization of technical systems. A common supervisory authority and a harmonised regulatory framework would be efficient enablers to get full benefits from cooperation in training.

In the long term, a single training organisation will be possible, though one single location seems not advisable from a quality and cost perspective. This single training organisation will preserve the continuum of training covering selection and recruitment and all phases of training. Cooperation in training between civil and military will be possible but needs further investigation.

Other opportunities

Potential cooperation in the areas of AIS, MET and contingency concepts has been identified, but this will require further study on the way forward before options for implementation can be defined.

THE COST-BENEFIT ANALYSIS HAS YIELDED POSITIVE RESULTS

One central decision criterion for the creation of a FAB is a positive cost-benefit analysis. Therefore an external consultant was asked to make this analysis on the basis of the widely accepted Performance Review Unit methodology. This methodology identifies on the one hand direct cost savings (noticeable in reduced charges) and on the other hand direct savings for the airlines due to better service. Both effects are summed up in a so-called metric for economic cost-effectiveness.

The starting point is the reference case. This 'business as usual' scenario was built on the latest actual data, LCIPs and individual business plans for the years up to 2012 and commonly agreed assumptions afterwards. The experts concluded that the cost of service provision will decrease, but the quality will decline (more delays, less flight efficiency). Due to this fact, the overall economic cost per flight hour for airspace users is expected to rise in the FABEC area.

The feasibility study considered a wide range of cooperative initiatives triggered by a common operational concept, improved airspace design and a coordinated development and implementation of the technical infrastructure. Enhanced cooperation in the areas of training, MET, AIS and contingency concepts was also included. The study also recommends the implementation of a single unit rate at FABEC level, which will support optimal airspace design and flight efficiency.

The results show that the FABEC initiatives remedy the decline in economic cost effectiveness foreseen in the reference case by maintaining a high quality of service, through a decrease in delay and an increase in flight efficiency. They also reduce the costs of service provision further compared to the situation without any FABEC initiatives.

INSTITUTIONAL CHANGES ARE REQUIRED

The study investigated the requirements for the institutional framework necessary to enable the implementation of the improvements identified in the different areas and analysed potential legal forms for this framework.

Three models of cooperation were studied that are considered to meet requirements of a FAB:

- **Contractual cooperation**: independent ANSPs cooperating in a contractual framework between the parties, without establishment of a joint legal entity. A joint committee will be

installed to lead the development of improvements in the different areas of cooperation. Implementation of improvements will take place inside the individual ANSPs, not by the establishment of centralised functions.

- **Integration into an alliance**: independent ANSPs cooperating in the field of ATS provision, integration of functions into centralised legal entities may take place in the field of support functions, ancillary services and the establishment of joint ATS units, requiring the establishment of joint legal entities with dedicated resources, delegated executive functions. Different scenarios are possible for integration of ancillary services.
- **Consolidation into a single ANSP**: integrated ATS service provision throughout the FABEC. Integration of ancillary services may take place inside the single ANSP or may be left to separate initiatives of ANSPs (possible with different speeds) or outsourcing of ancillary services.

The principal distinction between contractual cooperation and the two other models is that in the contractual model no integration of function takes place. Joint units require legal entities which are foreseen both in the alliance and the single ANSP model.

The study analysed the different areas of improvement where a structured cooperation will be required to enable their implementation. The main conclusions from this analysis are:

- A progressively growing level of cooperation will be the most suitable approach
- In terms of cooperation requirements 2 types of improvements can be identified:
    - Areas where the initiatives will be implemented inside the individual ANSPs. The ANSPs jointly agree about the improvements, but each of them will be responsible for the implementation in their own organisations.
    - Areas where the implementation of the improvements require centralisation of functions.

Contractual cooperation and an alliance are possible ways to organise the cooperation. The single ANSP model might be a necessary enabler for the full operational improvements, but this requires further study.

Involvement of military partners in the different institutional models of cooperation is to be clarified and will require decisions at national level. However, in general, military partners have

recognised that in a number of areas win-win situations are more realistic in stronger cooperation models.

Different legal forms were investigated but further study is needed based on policy decisions.

SOCIAL ASPECTS

The implementation of the FAB will provide many opportunities for staff, as the new international environment widens the horizon and creates new challenges.

The social impact of the implementation of FABEC will depend on different aspects like the areas of cooperation, on the level of this cooperation, and on the institutional model that is chosen. In a model using contractual cooperation only, impact on working conditions and staffing will be limited. If integration into an alliance is considered, some functions may be centralised, and impact at the level of individual organisations need to be determined. Steps need to be taken to ensure that integration occurs in a socially acceptable manner and associated transition costs need to be considered. This would include the costs related to, among other things, mobility of personnel, harmonisation of working conditions and this regardless of the institutional model that is chosen. This statement will also apply to and indeed be even more significant in the single ANSP scenario, when the different organisations are fully integrated.

Involvement of social partners in the social dialogue process and open and thorough information to staff are key contributors to the success of the FABEC implementation.

SUSTAINABLE STEPS INTO THE FUTURE

Driven by the operational necessity to improve air traffic control in the heart of Europe in the short and medium run, and following the consensus that in the future air traffic control in the entire airspace has to be organised irrespective of national boundaries, the experts propose a wide range of activities to be taken. It is obvious that a sustainable improvement can only be reached if the different activities are combined, coordinated and prioritised. Therefore a high level FABEC roadmap was developed to show the interdependencies between the different implementation packages and/or the enablers - at State or at ANSP level.

The leading element of the FABEC roadmap is the common operational concept. The implementation plan of this concept foresees three main steps in its development: initial elements in 2009, further development by 2013 (including so-called ‘short term priorities and first benefits’) and full implementation after 2018. Closely related are the airspace design developments and the technical roadmap.

Other main elements of the FABEC roadmap are a common SMS to be in place by 2013, a common charging scheme to be in place before the same time as the introduction of cross-border operations (estimated to be 2013) and human resource related enablers for the operational and technical issues.

To enable an effective implementation of the identified areas of cooperation in line with the FABEC roadmap, the States need to address a number of measures in the field of legislation and regulation. These measures cover issues such as designation, liability, licensing and safety. Furthermore, harmonisation of rules and procedure in a wide area of fields (operational, technical, financial, etc.) is necessary.

Due to the fact that the negotiation and ratification of a Treaty needs time and that there are some improvements which can be taken by the ANSPs already, a joint and parallel approach is required. Therefore the experts recommend to start immediately an ANSP cooperation, with both civil and military ANSPs, in areas where appropriate and where no Treaty is needed. In addition, to avoid losing time, preparation steps for the implementation of key functions, such as internal FABEC cross-border areas and FABEC flow management should be taken as soon as possible.

CONCLUSION

The FABEC Detailed Feasibility Study has provided an ambitious set of initiatives for cooperation, taking into account the contributions from all relevant partners: States, civil and military ANSPs. If implemented, these initiatives will make a significant contribution towards the goals of the Single European Sky as the airspace in core area Europe will increasingly become a continuum for its users. Clear benefits will be delivered and a considerable step will be made towards meeting the performance targets that have been defined. The study has proven that FABEC is feasible and also necessary to react to future challenges in core area Europe.