

**SOUTH EAST EUROPE  
FUNCTIONAL AIRSPACE BLOCK APPROACH  
(SEE-FABA)**

**OPERATIONAL CONCEPT DOCUMENT**

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## **EXECUTIVE SUMMARY**

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# **South East Europe Functional Airspace Block Approach** **(SEE-FABA)**

## **Operational Concept Document**

### **1. Introduction**

#### **1.1 Background**

The South East Europe Functional Airspace Block Approach (SEE-FABA) project is a States' project that was initiated in April 2005 with a study into the potential application of Functional Airspace Blocks<sup>1</sup> within the area of South East Europe.

The report of this study, "*The Opportunities for the Application of the Functional Airspace Block Approach in South East Europe*", was presented to the Directors General of Civil Aviation of Albania, Bosnia & Herzegovina, Bulgaria, Croatia, Romania, Serbia & Montenegro, The Former Yugoslav Republic of Macedonia and UNMIK<sup>2</sup> in February 2006.

They approved the commencement of the second part of the project, the Definition Phase, for which this document is the Operational Concept Document.

The above mentioned report defines the need for change, discusses the trends and options with their choices and trade-offs. These issues are therefore not addressed in this Operational Concept Document.

#### **1.2 Purpose**

The purpose of this document is to provide a list of high-level Operational Requirements that form an essential reference for project stakeholders in preparing operational and technical specifications needed for the definition and further implementation of FAB(s) within the region.

The Operational Concept Document will be supplemented by a Concept of Operations Document that will fully detail how the Operational Concept is applied. It will identify the functions and processes, and their corresponding interactions and information flows, the concerned actors and their roles and responsibilities, including:

- How systems and procedures will be developed with the aim achieving interoperability
- How airspace organisation and use will be optimised and managed.
- How a number of improvements and enablers, in particular domains such as Safety Management, AIM, Data Processing, Human Resources etc will be considered and used operationally in the process.
- How regulatory activities, in particular safety regulation and supervision will be applied in order to ensure cohesion and consistence within the region.

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<sup>1</sup> A Functional Airspace Block is defined in the SES Framework Regulation as "*an airspace block based on operational requirements, reflecting the need to ensure more integrated management of the airspace, regardless of existing boundaries*" The requirements for the establishment of Functional Airspace Blocks defined in the EUROCONTROL Report on the European Commission's Mandate on the subject.

<sup>2</sup> UNMIK = United Nations Interim Administration Mission in Kosovo as per United Nations Security Council Resolution 1244. For the purpose of this document UNMIK is treated as an equal partner along with the other States and is in line with the United Nation Council Resolution 1244.

### 1.3 Pan European Perspective

The definition of the SEE-FABA will take into consideration the overall development of European airspace and ATM and especially developments in adjacent airspace with the aim of ensuring harmonisation of purpose and operational flexibility.

SEE-FABA will take into account the EATM road map towards benefits in Safety, Capacity, Efficiency, Security and Environment for the European ATM Network, in particular those key enablers and benefits that will come from agreed clusters of operational improvements, such as.

- **Dynamic Airspace Structures:** a more flexible use of airspace structures, including better management of permanent routes, conditional route and temporarily segregated areas with respect to variations in traffic flows;
- **Collaborative Capacity Management:** procedures for collaborative airspace management in support of satisfying demand, together with facilitation of timely provision of accurate aeronautical information.
- **Shared Pan European Network Situation:** consolidate European airspace configuration information in a shared information management environment and providing (???) up to date airspace configuration information;
- **Flexible Capacity Management;**
- **Multi Sector Planning Role:** providing procedures for optimising traffic flows across several sectors and redistribution of task load between controller roles, etc.

### 1.4 Reference Documentation

*To be developed*

## 2. The SEE-FABA Concept

### 2.1 SEE-FABA Concept Statement

The concept of the SEE-FABA is to achieve highly performant, collaborative and co-ordinated ATM operations within a FAB environment, based on an operationally driven methodology and on the requirements and principles of the Single European Sky.

### 2.2 The Vision

Within a partnership between all the concerned States, the vision of the SEE-FABA is one in which the provision of air navigation services will move from the current fragmentation, inhibited by artificial constraints, to an efficient, highly interoperable and cost-effective network with dynamically adaptable airspace and collaborative capacity management.

The provision of ATS will no longer necessarily rely on the current association between a State and its resident ANSP. The transfer of traffic between ACCs and inter-centre communications and procedures will be of high speed and high quality, within these assumptions:

- States will retain the responsibility to designate and supervise the ANSP that provides ATS over its airspace.
  - Designation will come through the agreements reached on the FAB implementation scenarios.
  - Supervision will come through the legal/institutional agreements reached between the States.
- Operational Air Traffic within a State may need to be given a service by, or be co-ordinated with, an ANSP that is not a resident of that particular State.

## 2.3 Regional Approach

The SEE-FABA regional approach will be based on operational requirements regardless of existing boundaries through an Operationally Driven Methodology in order to develop an optimal ATS Route Network from which the Sector Families can be identified and grouped appropriately into a number of potential scenarios on the basis of which the economical, social, military, institutional and other elements of the FAB Key Issues can be applied in order to develop one or several FAB implementation scenarios and a plan.

## 2.4 Enablers

The SEE-FABA enablers, to be further refined throughout the Definition Phase are:

- A Safety Case
- An optimised airspace designed through an operationally driven approach that will facilitate the further development of FAB Scenarios.
- Application of the FAB Key Issues to develop the FAB implementation plan.
- Harmonisation of ATC procedures, including that of recruitment, training and licensing procedures and practices.
- Legal/Institutional agreements between States
- Appropriate levels of supervision.
- Designation of ANSPs in a FAB, with adequate regard to the concept and vision of SEE FABA.
- Appropriate levels of system support and interoperability.
- Safeguarding of Military and Defence needs to include appropriate Civil/Military Co-operation and co-ordination.
- An economic model that does not inhibit ATS Route planning.

## **3. Safety**

### **3.1 Principles and Objectives**

ICAO Annex 11, 2.26 details, inter alia, the requirement for States to implement a systematic and appropriate ATS safety management programme and also that States shall establish an acceptable level of safety and safety objectives. Additionally, safety levels and safety objectives shall be established on the basis of regional air navigation agreements where this is appropriate.

The Safety Management Principles stated in EATMP Safety Policy indicate that a safety case should be completed for “all new systems and changes to operational systems”. A safety case comprises the documented evidence that the new or modified system has been assessed to be acceptably safe for operational use, and should specify the safety requirements to be met by the system. Furthermore, ESARR 1 specifically requires that there is adequate safety oversight of changes to the ATM system, including verification of compliance with the safety regulatory requirements and adequate monitoring of safety performance.

The SEE FABA Safety Objectives are established in order to meet the safety requirements of the SES Regulations, including those specified in the Common requirements, with adequate consideration also both of the EATMP Safety Policy and the ATM 2000+ Strategy. They are:

- Implementation shall be conducted in accordance with the safety requirements of the SES Regulations and the Common requirements addressing safety issues;
- Implementation shall respect the ATM 2000+ Strategy in that the number of ATM accidents, or serious or risk-bearing incidents, does not increase, and, where possible, decreases; and
- Implementation shall be conducted in accordance with the requirements of the relevant ESARRs.

### **3.2 Safety Case**

A safety case will be developed during the Definition Phase in accordance with ICAO guidelines and the principles and objectives set out above.

### **3.3 Safety Regulation and Oversight**

A regional approach for close cooperation within the regulation area regarding the safety management to safety regulation and oversight with clear lines of responsibility between States Regulators and between States and ANSPs will be developed. All potential options will be considered and the potential need for further development will be taken into account.

In particular the recommendation of the SEE-FABA Report that the development of and establishment of a common safety oversight unit in the region should be considered in the Definition Phase.

## 4. Airspace Organisation and Management

### 4.1 General Principles

SEE-FABA airspace will be organised and managed to facilitate the seamless handling of flights and the ability for flights to be conducted along optimum flight trajectories without undue restrictions or delay.

### 4.2 Area of Application

In principle all the airspace of the participating States will be considered as the SEE-FABA area of application. The final configuration for implementation will depend very much on the development process, the application of the FAB Key Issues and the relationship with adjoining airspace, especially other Functional Airspace Blocks.

Although the SES currently calls for Functional Airspace Blocks above FL285, for the SEE-FABA area the totality of the airspace will be considered for potential inclusion within the scenarios for Functional Airspace Blocks.

TMAs and airports have not been considered for inclusion within the SEE-FABA development, however during the Definition Phase attention will be given to the relationship between them and SEE-FABA to ensure coherence.

### 4.3 Airspace Structures

#### 4.3.1 Functional Airspace Blocks

The ATS Route Network and ATC Sectors will be contained within one or more Functional Airspace Blocks. These Functional Airspace Blocks will be designed from an operationally driven approach based on the "EUROCONTROL Technical and Operational Methodology for Functional Airspace Blocks"<sup>3</sup> at Annex..., adapted to take into account regional differences and traffic levels.

A Functional Airspace Block is likely to cover the airspace of more than one State and will interface with other Functional Airspace Blocks or other adjacent airspace. It will need to be constructed so that will be flexible enough to respond to changes in the ATS Route Network and ATC Sectors as they respond to changes in traffic flow and traffic demand. The boundary of the Functional Airspace Block should not become another artificial boundary that imposes unnecessary limitations on the optimisation of the overall ATS Route Network.

#### 4.3.2 ATS Routes

ATS Route will be designed and implemented to provide the airspace users with an optimised ATS Route Network that is unconstrained by FIR/UIR boundaries, national borders or other artificial limitations.

#### 4.3.3 ATC Sectors

ATC Sectors within the context of Sector Families and structured in accordance with the FAB Key Issues will provide an operationally efficient and safe support to the ATS Route Network.

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<sup>3</sup> The operationally driven approach presented by EUROCONTROL was accepted in the SEE-FABA report. This operationally driven approach is in the process of formal development and approval under the title "The EUROCONTROL Technical and Operational Methodology for Functional Airspace Blocks"

## **4.4 Airspace Classification**

The Airspace Classification should be common across the SEE-FABA area and in accordance with the Single European Sky Regulations. Currently all airspace above FL195 should be classified as Class C (SES Regulation awaiting final approval) Below FL195 there is no current SES regulation and the EUROCONTROL airspace classification strategy for ECAC States should be applied.

## **4.5 Military Aspects**

### **4.5.1 General**

Airspace is a joint civil/military resource and its timely availability is essential to the Military airspace users to fulfil its tasks. These may encompass developments from strategic to tactical capabilities, training and testing of weapons systems and all related SAR, police and customs activities. The establishment of the SEE-FABA area shall take into account national and international military requirements so that the conduct of military activities will not be prejudiced through the introduction of Functional Airspace Blocks.

### **4.5.2 Flexible Use of Airspace and the Advanced Airspace Scheme**

The Flexible Use of Airspace (FUA) Concept on civil/military activities has entered into SES regulations and should be applied across the SEE-FABA area with common procedures and coordination. This FUA Concept demands civil and military implementation and aims to maximize the efficient utilisation of airspace.

Across the SEE-FABA area, the full benefits of FUA will only realised through a common harmonised application of FUA by all the concerned States.

Application the Advanced Airspace Scheme will add to the flexible use of airspace through multiple option route choices that will enable greater adaptability of the ATS Route Network and ATC Sectors in reacting to the needs of the military.

### **4.5.3 Civil Military Co-ordination**

Civil Military Coordination is generally done between the military authorities within a State and the civil ANSP located within that State. In the SEE-FABA area future civil/military coordination will take place with civil ANSPs that are not necessarily located within the same State and so it is of outmost importance to have clear rules and procedures, supported by efficient communications, to exercise civil/military coordination at the strategic level, pre-tactical level and most importantly the tactical level.

Efficient and effective tactical coordination within SEE-FABA will be crucial for safeguarding of military requirements and the needs of maintaining or enhancing safety levels.

*To be further developed to include more about European developments on civil/military procedures within the FUA Concept*

## **4.6 Contingency Arrangements**

A contingency plan will be developed to ensure the continuation of ATS provision in the event of system failures or outages.

## **5. Air Traffic Services**

### **5.1 State Responsibilities**

States remain responsible to ensure the provision of Air Traffic Services within their FIR/UIR. States are individually responsible for the designation of a service provider for Air Traffic Service within their FIR/UIR.

Within the SEE-FABA airspace, the provision of ATS within a State's sovereign territory or over the high seas area for which it has a responsibility will be designated to one or more ANSPs that are not necessarily located within that State.

### **5.2 ANSP Responsibilities**

ANSPs of the SEE-FABA participating States will be responsible for the provision of Air Traffic Services as designated to them by the concerned States.

The SEE-FABA ANSPs may not necessarily provide ATS over the airspace for the State within which their ACC is located. The airspace within which each ANSP will provide its service will be confirmed in the development of the SEE-FABA implementation scenario.

### **5.3 ATC Procedures**

Controllers in a single ACC will be expected to operate in ATC Sectors that cover more multiple States. A common set of operational rules and procedures within SEE-FABA is needed to ensure the coherence of ATM operations and to maintain or enhance safety.

### **5.4 Associated Services**

#### **5.4.1 Aeronautical Information Service (AIS)**

The provision of AIS by the participating States in a SEE FAB environment will be studied with the aim of proposing options for a cost-effective coherent and coordinated approach.

#### **5.4.2 Meteorological Services**

The provision of meteorological information by the participating States in a SEE FAB environment will be studied with the aim of identifying the potential for a cost-effective coherent and coordinated approach.

## **6. Air Traffic Flow and Capacity Management (ATFCM)**

### **6.1 General principles for Capacity Planning**

Capacity planning within the SEE-FABA airspace should meet the European ATM network performance requirements as well as Air Traffic Flow and Capacity Management (ATFCM)

processes. Within and between FABs ATFCM should be seamless and harmonised, and ensure consistency with pan-European network requirements.

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## **7. System Support and Interoperability**

### **7.1 Existing and Future CNS/ATM Technical Infrastructure**

Within the development of the common operational concept, harmonisation and integration in the CNS infrastructure could take place in several areas, such as:

- Implementation of a common surveillance strategy.
- Creation of a common backbone communication network to enhance the cross border exchange of information.
- Optimisation of the en-route navigation infrastructure.
- Optimisation of the number of radio sites and regional frequency management.

The aim of the harmonisation and integration activities should be to establish a common harmonised and integrated CNS infrastructure to support the provision of ATS. The ownership of such structure depends strongly on the institutional framework, but the process should not depend on such a decision.

The existing technical infrastructure will need to be assessed in order to identify its capability to support the SEE-FABA Concept of Operations as well as to see what enhancements to it might be required.

In principle all the dispersed radar and radio facilities will be available to all ANSPs and their use of individual sites will depend on the technical requirements to support the provision of ATS within their area of responsibility.

The SEE-FABA process also offers the opportunity for convergence among disparate technical systems. The procurement and implementation of new technical system components will need to be undertaken in a timely and cost efficient manner.

### **7.2 Common Interconnected Regional Network (CIRN)**

The seamless flow of data between ACCs in order ensures a seamless and efficient transfer of traffic is a SEE-FABA aim. To meet this call the potential for a Common Interconnected Regional Network (CIRN) harmonised with the pan European network, will be examined as a potential early deliverable.

### **7.3 Navigation Infrastructure**

The navigation current infrastructure will be studied with the aim of optimising the number of sites and reducing unnecessary duplication and overlap.

## 7.4 Surveillance

A common surveillance strategy is required to ensure that there is sufficient radar coverage available in the correct locations and connected to the appropriate ACCs. The strategy should examine the future developments for the distribution of surveillance data with the aim of eliminating unnecessary overlap and duplication..

It should particularly include the possibility of ADS/B, the implementation of a common surveillance infrastructure and the potential implementation of ARTAS for the distribution of surveillance data.

## 7.5 Frequency Management

A frequency management strategy is required in order to ensure that appropriate numbers of VHF (and UHF?) frequencies are available with their transmitters and receiver sites in the correct locations and connected to the appropriate ACCs. This strategy should also aim at optimising the overall number of sites and frequencies, with adequate regard to the forthcoming agreed technological and operational improvements as described in the EATM roadmap.

## 7.6 Data Processing

Data Processing and Data exchange should be achieved through high quality interoperability between systems in order to ensure a seamless flow of information between ACCs.

A coordinated action will be needed which takes into consideration European strategies, future technology, system upgrades, operational needs, information exchange requirements and future contingency arrangements.

## 8. Human Performance

With the implementation of SEE-FABA it is to be expected that ATC staff will need to adapt to a new operational environment with an amended ATS Route structure, new ATC sector schemes and changes to rules and procedures, as well as any modifications to technical systems and the Human Machine Interface. There will also need to be common standards for linguistic proficiency.

Although the transition process to SEE-FABA is yet to be determined, the training, validation and licensing of ATC Staff in their new tasks will need a comprehensive assessment leading to common training programmes, recruitment and licensing procedures and practices.

## 9. Implementation Process

Proposals for an implementation process will be developed during the Definition Phase.

## ACRONYMS AND ABBREVIATIONS

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