

# SINGLE EUROPEAN SKY

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The main content of this thesis is history and gradual development of the Project SES – Single European Sky and also the SESAR – Single European Sky ATM Research Programme and the AIRE – Atlantic Interoperability Initiative to Reduce Emissions Programme. The part of thesis also encloses an approach to describe the origin and significance of Functional airspace block FAB.

**K e y w o r d s:** Project SES, SESAR Programme, AIRE Programme, FAB-Functional airspace blocks

## 1 INTRODUCTION

The problems with air services in Europe have become already noticeable since the 1950s. More and more powerful machines are able to overcome in the short term airspace many small states. All this caused the navigation and other technical problems. The reason to start preparatory work on the Single European Sky project was mainly an increase in delays of flights between 1999 and 2000. An important argument for change are also the forecasts of air traffic predicted in 2010 about 12 million movements in European airspace. Based on recommendations arising from the final reports from experts European Commission has started work on preparing the legislative proposals of the project Single European Sky (SES). The European Parliament and Council of the European Union approved the 2004 final form four basic regulations that create the basic legal framework of the project SES. From 2004 to apply 4 basic constitutive of the Single European Sky. The EU itself to deliver improvements in safety, capacity, efficiency and air environment. [1]

## 2 FRAMEWORK FOR CREATION OF THE SINGLE EUROPEAN SKY

The Single European Sky means a package of measures to meet future capacity and air safety needs. It applies to both the civil and military sectors and covers the regulatory, economic, safety, environmental, technological and institutional aspects of aviation.

The objective is to put an end to a way of organizing air traffic management which has not changed since the 1950s and is one of the main reasons for the congestion of air traffic today.

The first Commission Communication to the Council and European Parliament on the establishment of the Single European Sky was already the first December 1999. This notice has been optimization air traffic control, which should satisfy all airspace users, whether they were users of civilian or military. The Commission agreed that sky is the common wealth, which should be managed collectively regardless of national borders.

Regulation (EC) No 549/2004 of the European Parliament and of the Council of 10 March 2004 laying down the framework for the creation of the Single European Sky is part of a package of legislation on air traffic management designed to create a Single European

Sky by 31 December 2004. This regulation contains 14 articles.

The objective of the Single European Sky is to ensure an optimum use of European airspace to meet the requirements of all airspace users. The package of the Single European Sky consists of this framework regulation (the Single European Sky - Regulation (EC) No 549/2004 of the European Parliament and of the Council) plus three technical regulations on the provision of air navigation services, organization and use of the airspace and the interoperability of the European air traffic management network. These regulations are designed, in particular, to improve and reinforce safety and to restructure the airspace on the basis of traffic instead of national frontiers. The objective of this regulation is to enhance current safety standards and overall efficiency for general air traffic in Europe, to optimize capacity meeting the requirements of all airspace users and to minimize delays. A Single Sky Committee is established on the entry into force of this regulation to assist the Commission with management of the Single European Sky and make sure that due account is taken of the interests of all categories of users. It consists of two representatives of each EU country and is chaired by a representative of the Commission. The industry consultation body advises the Commission on the implementation of the Single European Sky. It is made up of representatives of air navigation service providers, associations of airspace users, airport operators, the aviation manufacturing industry and professional staff representative bodies. EUROCONTROL is involved in the development of implementing rules which fall within its remit, on the basis of mandates agreed by the Single Sky Committee.

The establishment of a performance review scheme aims to improve the performance of air navigation services and network functions in the single European sky. It will consist of:

- European-wide performance targets in the key areas of safety, environment, capacity and cost-efficiency;
- National plans including performance targets to ensure consistency with the European-wide performance targets;
- Periodic review and monitoring of the performance of air navigation services and network functions.

The Commission states that the Single European Sky, created in 2004, has not delivered the expected

results in some key areas such as the process of integration within functional airspace blocks, air traffic control, cost-efficiency and the efficiency of the European air network as a whole. Airspace users and passengers pay an unnecessary cost in time, fuel burn and money for the existing inefficiencies. As a consequence the Commission considers it necessary to amend the four regulations (549/2004, 550/2004, 551/2004 and 552/2004) on the Single Sky to improve aviation performance, to adapt the legislation to changes which have arisen over the last few years and to succeed in creating a unified air space, a truly Single Sky. [1][2][3]

## 2.1 The reform of the Single European Sky

The reform of the Single European Sky proposed by the Commission is based on four pillars: performance, single safety, new technologies and managing capacity on the ground.

*First pillar:* Regulating performance - The Commission proposes three measures under this pillar:

- a) Driving the performance of the air traffic control system: an independent performance review body monitors and assesses the performance of the system and proposes Communitywide targets for delays, cost reduction and the shortening of routes. These objectives are then approved by the Commission and passed on to national supervisory authorities who organize consultations to agree binding national and regional objectives.
- b) Facilitating the integration of service provision - the aim is to turn the current initiatives for functional airspace blocks into genuine instruments of regional integration to achieve performance targets. These blocks must be created by the end of 2012 at the latest.
- c) Strengthening the network management function - this function completes the performance framework and comprises a range of tasks, including European route network design, slot coordination and allocation and management of the deployment of the Single European Sky ATM Research (SESAR) technologies, to be carried out by different actors.

*Second pillar:* A single safety framework

The Commission stresses that the growth in air traffic, the congestion of air space and aerodromes, as well as the use of new technologies justifies a common approach to the development and application of harmonized regulation in order to improve safety levels in air transport. Following this approach the Commission proposes to extend the competence of the European Aviation Safety Agency (EASA) to the remaining key safety fields: aerodromes, air traffic management and air navigation services.

*Third pillar:* Opening the door to new technologies

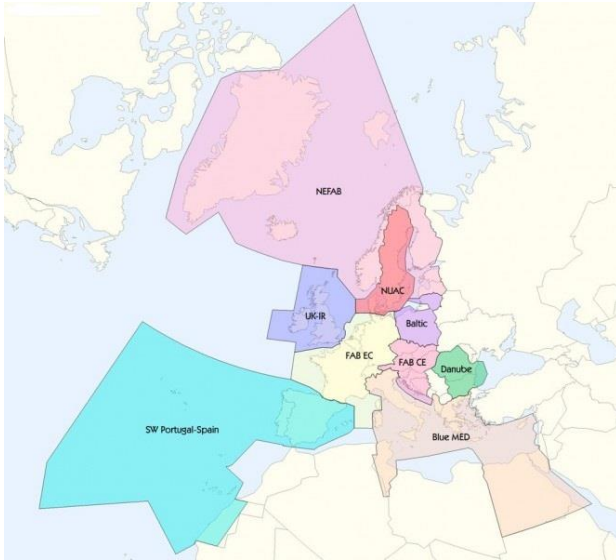
The Commission notes that the present air traffic control system is being pushed to its limits, working with obsolescent technologies and suffering from fragmentation. As a consequence, Europe must accelerate the development of its control system by implementing SESAR in order to increase safety levels and traffic control capacity.

*Fourth pillar:* Managing capacity on the ground

The Commission insists that investment is necessary to ensure that airport capacity remains aligned with air transport management capacity and to preserve the overall efficiency of the network. It reiterates the measures proposed in the action plan for airport capacity, efficiency and safety in Europe. The Commission will set up an Observatory on airport capacity, composed of Member States, relevant authorities and stakeholders, to exchange and monitor data and information on airport capacity as a whole, as well as to provide advice on the development and implementation of Community transport legislation. [3][4][5]

## 2.2 Functional Airspace Blocks (FABs)

The European Commission in 2011 has adopted rules to harmonize information between all the actors involved in creating the Single European Sky (SES). Member States decided to put an end to the fragmentation of Europe's air space by creating between themselves nine common geographical air spaces by December 2012: the Functional Airspace Blocks (FABs). The Regulation which adopted in February 2011 spells out the information to be exchanged between everyone involved. The creation of functional airspace blocks (FAB) is one of the cornerstones of the Single European Sky. FABs are a major tool for overcoming the fragmentation of our skies. Member States are responsible for establishing FABs, which will only be put in place following proper consultation of all stakeholders. The FABs will improve current safety standards, enable planes to take much shorter routes and as a result will reduce aviation's impact on the environment, minimize delays, lower costs for companies and finally make flights cheaper for passengers. Today's Regulation will allow comparative assessment of different FABs and sound mutual consultations of all actors involved. It will keep the Commission and other bodies informed of their progress and any modifications that could affect other FABs. In fulfilling the information requirements, Member States will give FABs the tools for establishing a performing European airspace by the deadline required by the European Parliament and the Council. For air navigation service providers they will facilitate the response to new binding performance targets established under the Single European Sky legislation.



**Figure 1 Functional Airspace Blocks [7]**

#### 9 Functional Airspace Blocks in Europe

- NEFAB (North Europe) - Denmark, Estonia, Finland, Iceland, Norway, Sweden and Latvia discusses about joining to this initiative;
- FAB UK - Ireland;
- FAB Spain - Portugal;
- FAB Baltic - Poland, Lithuania;
- NUAC (Nordic Upper Area Control) - Denmark, Sweden;
- FAB Central Europe - Austria, Bosnia and Herzegovina, Czech Republic, Croatia, Hungary, Slovakia, Slovenia;
- FAB Danube - Bulgaria, Romania;
- FAB Europe Central – Belgium, France, Germany, Luxembourg, Netherlands, Switzerland;
- FAB MED Blue (Mediterranean Blue)- Albania, Cyprus, Egypt, Greece, Italy, Malta, Tunis and Jordan as an observer. [6][7]

### 3 SESAR

The reform of the European air traffic control system is aimed to meet the challenge of large increases in air traffic expected in the coming years. It also aims to increase security, reduce costs, delays and the impact of air traffic on the environment. Air transport is an important element of European cohesion and the European economy. It contributes EUR 220 billion to European gross domestic product and employs over 3 million people. Air traffic is expected to more than double in the next 20 years and even triple in some regions. However, the equipment and procedures used to manage these traffic flows has changed little and is struggling to keep up with developments. The current air traffic control systems are close to becoming obsolete and are ill-suited for the rapid, economic and reliable

development of aviation in Europe capable of responding to new societal needs:

- passengers want efficient, affordable and safe transport;
- respect for the environment is becoming a major constraint;
- 11 September 2001 showed that planes can be a threat to the safety of the population.

The Single European Sky (SES) is the European Union's (EU) response to the problem. This initiative was launched in March 2004, making air traffic management (ATM) a competence of the EU. It constitutes an institutional reform of ATM aiming to reorganize the European airspace and to enhance the performance of air navigation services. An institutional reform, however, is not sufficient to achieve the performance objectives of the SES. A paradigm leap through a technological reform of ATM was also needed. SESAR (Single European Sky ATM Research) is the technological pillar of the SES and an essential enabler for its implementation. Council Regulation 219/2007 of the Council, of 27 February 2007 creates a joint undertaking to ensure modernization of the European air traffic management system. The joint undertaking brings together European Union research and development efforts within the framework of the SESAR project.

SESAR is composed of three phases:

*A definition phase (2005-2007)*, in which the air traffic modernization plan (or "ATM Master Plan") has been developed to define the different technological stages, priorities and timetables;

*A development phase (2007-2016)*, consisting of research, development and validation activities relating to the new technologies and procedures which will underpin the new generation of systems;

*A deployment phase (2014-2020)*, which will see the large-scale production and implementation of the new technologies and procedures. [8][9]

#### 3.1 AIRE

The joint venture SESAR has chosen 18 projects involving dozens of airlines, airports, navigation services providers and representatives of the aviation industry to expand the cooperation of members in efforts to reduce emissions. This initiative is known as AIRE (Atlantic Interoperability Initiative to Reduce Emissions), which supports the SESAR integrated test flights contribute to reducing CO<sub>2</sub>. The AIRE initiative was launched in 2007 and aims to improve energy efficiency and reduce aircraft noise. Working closely with the U.S. Federal Aviation Administration (FAA hereafter). SESAR is responsible for managing the European part of this initiative. As a result of additional calls for proposals in the AIRE project involved partners from several countries, Benelux, Czech Republic, Germany, Great Britain, Switzerland, but also from Canada and Morocco. More partners means more test sites, and thus the wider environmental benefits.[10]

## 5 CONCLUSION

Air transport is a significant factor in achieving and maintaining prosperity in Europe. It allows efficient transport of goods and free travel for citizens. Intensified cooperation in the aviation sector can decisively help countries strengthen their economies and political stability. The reason to start preparatory work on the Single European Sky project was mainly an increase in delays of flights between 1999 and 2000. The Commission considered many forms and ways to revise its approach to traffic management. Finally it decided in line with its power interests that these objectives will be promoted both as a member of EUROCONTROL, but also the relevant secondary legislation should be adopted. Since 2004, the 4 basic pay of the Joint European or constitutive. The EU itself is deliver improvements in safety, capacity, efficiency and air environment.

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