

# Case Study - SESAR



## Canadian Involvement in SESAR

*CANNAPE (Canadian Networking Aeronautics Project for Europe) is an EC-funded project, aimed at creating a platform for enhancing aeronautics and air transport research and development (R&D) cooperation between Europe and Canada, and to explore the potential for and, where appropriate, to promote the participation of Canadian stakeholders with their European counterparts in common activities.*

### The Need

Contrary to the United States, Europe does not have unified administration of a single sky, one in which air navigation is managed at the pan-European level. Furthermore, European airspace is among the busiest in the world with over 33,000 flights on busy days and very high airport utilisation. This significantly increases the complexities of air traffic management with many areas operating at, or close to, maximum capacity in today's operating concept.

The EU Single European Sky is an ambitious initiative launched by the European Commission in 2004 to reform the architecture of European air traffic management. It proposes a legislative approach to meet future capacity and safety needs at a European rather than at a local level.

The Single European Sky is the only way to provide a uniform and high level of safety and efficiency over Europe's skies.

The key objectives are to:

- Restructure European airspace as a function of air traffic flows
- Create additional capacity; and
- Increase the overall efficiency of the air traffic management system

The major elements of this new institutional and organisational framework for Air Traffic Management in Europe consist of:

- Separating regulatory activities from service provision, and the possibility of cross-border Air Traffic Management services.
- Reorganising European airspace that is no longer constrained by national borders.
- Setting common rules and standards, covering a wide range of issues, such as flight data exchanges and telecommunications.

### The Solution

As part of the Single European Sky initiative, SESAR (Single European Sky ATM Research) represents its technological dimension. It will help create a "paradigm shift", supported by state-of-the-art and innovative technology.

The SESAR programme will give Europe a high-performance air traffic control infrastructure which will enable the safe and environmentally friendly development of air transport.

As a partnership programme, SESAR aims to eliminate the fragmented approach to European ATM, transform the ATM system, synchronise all stakeholders and federate resources. For the first time, all aviation players are involved in the definition, development and deployment of a pan-European modernisation project.

SESAR aims at developing the new generation air traffic management system capable of ensuring the safety and fluidity of air transport worldwide over the next 30+ years. It is composed of three phases:

The Definition phase delivered the first European ATM master plan defining the content, the development and deployment plans of the next generation of ATM systems. This definition phase was led by EUROCONTROL, and co-funded by the European Commission under the Trans European Network-Transport programme and executed by a large consortium of all air transport stakeholders.

The Development phase will produce the required new generation of technological systems, components and operational procedures as defined in the SESAR ATM Master Plan and Work Programme. It updates the Master Plan based on the results of the R&D and prepares for deployment.

The Deployment phase will see the large scale production and implementation of the new air traffic management infrastructure, composed of fully harmonised and interoperable components guaranteeing high performance air transport activities in Europe.

Taking into account the number of actors involved in SESAR and the financial resources and technical expertise needed, it was vital for the rationalisation of activities to set up a legal entity pursuant to Article 171 of the Treaty establishing the European Community capable of ensuring the management of the funds assigned to the SESAR project during its Development Phase.

Consequently, the SESAR Joint Undertaking was created under European Community law on 27 February 2007, with EUROCONTROL and the European Community as founding members, in order to manage the SESAR Development Phase.

The aim of the SESAR Joint Undertaking is to ensure the modernisation of the European air traffic management system by coordinating and concentrating all relevant research and development efforts in the Community. The Joint Undertaking also fosters cooperation with similar programmes around the world. For example, there is defined collaboration under the EU-US Research Agreement specifically for SESAR to NextGen interoperability.

The mission of the SESAR Joint Undertaking is to develop a modernised air traffic management system for Europe. This future system will ensure the safety and fluidity of air transport over the next thirty years, will make flying more environmentally friendly and reduce the costs of air traffic management.

The SESAR Joint Undertaking is a Public-Private Partnership funded by the European Commission and EUROCONTROL by 700M EUR each and by the Industry with another 700M EUR giving an overall budget of €2.1 Billion Euro.

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### AIRE Programme:

The SESAR Joint Undertaking collaborates with the US Federal Aviation Administration (FAA) and a number of European and North American partners in an international programme for the reduction of aircraft emissions (AIRE - Atlantic Interoperability Initiative to Reduce Emissions). On the European side alone, this project has since 2009 realised more than 6.000 trials in real operational conditions. Most of the solutions validated in AIRE are in operations today or will be shortly.

AIRE is a programme designed to improve energy efficiency and lower engine emissions and aircraft noise in cooperation with the FAA. The SESAR JU is responsible for its management from a European perspective.

### Programme Aims:

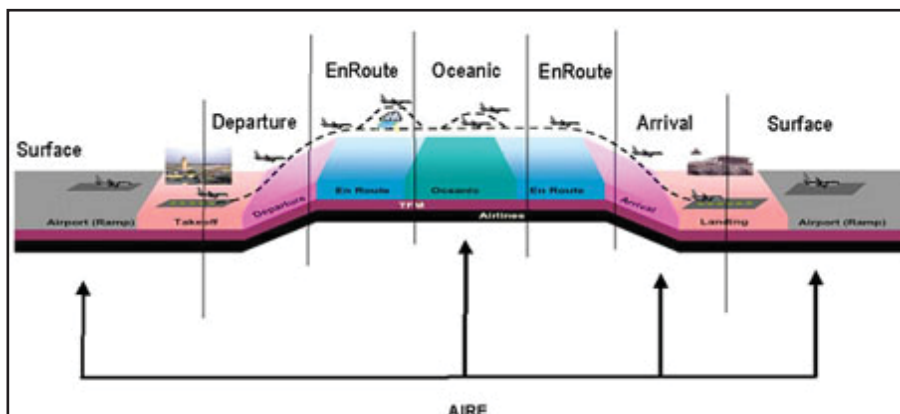
Main AIRE objectives:

- Jointly validate solutions that reduce CO2 emissions in the short term
- No, or little, R&D needed (capitalise on present aircraft capabilities)
- Demonstrate benefits by performing flight trials in real operations
- Communicate the initiative as an example on how the industry is reducing its environmental impact

Under AIRE ATM stakeholders work collaboratively to perform integrated flight trials and demonstrations validating solutions for the reduction of CO2 emissions for all phases of flight including Oceanic operations.

The strategic objective is to produce constant step-based improvements, to be implemented as quickly as possible after the projects conclusion in order to contribute to the achievement of environmental savings. In 2009, the SESAR JU co-financed more than 1,000 flight trials performed in real operations with 18 partners. In July 2010, eighteen projects involving forty airlines, airports, ANSPs and industry partners were selected for the second cycle of the AIRE programme, in which surface, terminal, oceanic and gate-to-gate operations were tackled. In comparison to the first round of AIRE projects in 2008/2009, this cycle was significantly expanded, with more ambitious projects, many additional locations and partners, and more than 9,000 flight trials completed.

In 2012 nine new projects have been selected as part of the AIRE 3 cycle taking place from 2012 to 2014. Worth of noting is the expansion of the programme to the South Atlantic as well as its enlargement – 31 partners are part of AIRE 3 family (with 15 new comers) in 14 locations.



### Collaboration On The Ground and In The Air:

In AIRE trials for all phases of flight are conducted. Some projects perform several optimisations in a “gate to gate” perspective.

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### SESAR Programme Details

Programme Name: SESAR (Singel European Skies ATM Research)

Programme Cost: €2.1bn

Duration: 16 years (2004 – 2020)



### SESAR Programme Participants

Programme Participants	Country
1 AENA	Spain
2 AIRBUS	France
3 Alenia Aermacchi	Italy
4 The DFS	Germany
5 The DSNA	France
6 ENAV	Italy
7 Frequentis	Austria
8 Honeywell	Czech Republic
9 INDRA	Spanish
10 NATMIG	Airtel-ATN, Northrop Grumman PARK Air Systems, Saab, SINTEF
11 NATS Ltd	United Kingdom
12 NORACON	Northern Europe & Austria
13 SEAC	Pan-Europe
14 Selex Consortium	Italy
15 Thales	France

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