

Special Report

## The EU's regulation for the modernisation of air traffic management has added value – but the funding was largely unnecessary

(pursuant to Article 287(4), second subparagraph, TFEU)



EUROPEAN  
COURT  
OF AUDITORS

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## Executive summary

**I** The safe and efficient flow of record levels of air traffic in Europe requires a robust air traffic management system. Air traffic management has traditionally been developed and provided at a national level by country-specific air navigation service providers. The risks associated with the co-existence of different air navigation service providers and the need to ensure interoperability between them and airports, airspace users and the Network Manager (Eurocontrol) have led the EU to include a technological harmonisation and modernisation project – SESAR – in its wider Single European Sky policy. Overall, the EU has committed €3.8 billion to SESAR between 2005 and 2020.

**II** Having already supported the definition and development phases of SESAR, in 2014 the EU extended its intervention to the actual deployment of new air traffic management technologies and operational procedures. The EU intervention consists principally of a regulation which requires the parties concerned to make certain coordinated investments (known as common projects); and funding from the EU budget to support them amounted to approximately €1.6 billion between 2014 and 2017.

**III** The ECA published special report 18/2017 on the Single European Sky, in which we reported on the definition and development of SESAR. In this current audit, we looked at SESAR's third phase – the deployment of projects designed to modernise air traffic management. We assessed whether the EU's intervention was designed in a way appropriate to address needs and target the projects in greatest need of support, and whether it was implemented well and added value to the management of air traffic in the EU.

**IV** We visited entities involved in the governance of SESAR: the European Commission, the SESAR Joint Undertaking, the SESAR Deployment Alliance acting as Deployment Manager, the Innovation and Networks Executive Agency and the European Defence Agency. We also examined a sample of 17 EU co-funded projects implemented by airports, air navigation service providers, airspace users and Eurocontrol.

**V** We found that the concept of common projects promotes coordinated investments. However, its first application – the Pilot Common Project – wrongly included some functionalities that were not mature and/or do not require a synchronised multi-stakeholder deployment to deliver the intended benefits. In

addition, the absence of penalties in the case of non-compliance partly undermines its effectiveness.

**VI** We reviewed the cost benefit analysis presented for the Pilot Common Project and found that it was flawed because it did not take account of charging by air navigation service providers, which offsets the cost of the investment. This led to the risk that EU funds were invested in projects that would have been financed without EU support.

**VII** Weaknesses in the implementation of the funding scheme further reduced its effectiveness.

- (a) A substantial amount of funds was awarded without adequate prioritisation.
- (b) EU-funded projects were grouped according to administrative criteria aimed at facilitating the management of grants, rather than technical considerations.
- (c) The current funding mechanism requires some beneficiaries to be involved in the screening of their own applications and allows them to influence funding of eligible projects. The potential conflict of interest has not been sufficiently mitigated.

**VIII** While the legal deadline for Pilot Common Project deployment varies between 2018 and 2026 and the implementation of most projects is still on going, the delayed implementation of some is putting at risk compliance with the regulatory requirements. In addition, actual Air Traffic Management performance benefits in an operational environment have still to be demonstrated.

**IX** We recommend that the Commission should:

- (1) improve the focus of common projects;
- (2) reinforce the effectiveness of Common Projects;
- (3) review the EU's financial support for air traffic management modernisation;
- (4) review and formalise the preparation and submission of applications for funding;
- (5) ensure appropriate monitoring of performance benefits delivered by ATM modernisation.

# Introduction

## Record levels of air traffic but a fragmented infrastructure

**01** Air transport is important for the competitiveness of European industries and services and is a vital component of the EU internal market. It enables the mobility of persons and goods across and beyond the EU, while fostering economic growth, employment and trade. About 1 billion passengers and 16 million tonnes of freight departed or arrived at EU airports in 2017<sup>1</sup>. In 2018, air traffic in Europe reached an all-time record of 11 million flights, averaging some 30 000 per day. On peak days, up to 37 000 flights crossed European skies<sup>2</sup>.

**02** The safe and efficient flow of such levels of traffic requires a robust Air Traffic Management (ATM) system. ATM involves both ground (air navigation service providers, meteorological information services, airports and the Network Manager) and airborne stakeholders (mostly commercial airlines but also business, general and military aviation). ATM ensures separation between aircraft, aiming at a safe, efficient and expeditious flow of air traffic whilst also providing aeronautical information to airspace users (e.g. navigational aids or weather information).

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<sup>1</sup> Source: Eurostat, Air passenger, freight and mail traffic by reporting country.

<sup>2</sup> Source: Eurocontrol “2018’s air traffic in a nutshell”. Statistics refer to flights conducted under instrument flight rules (IFR) in the area of responsibility of the Network Manager.

## Picture 1 – Ensuring separation between aircraft



© Courtesy of EUROCONTROL.

**03** In Europe, ATM has traditionally been developed and provided at a national level by country-specific air navigation service providers (ANSPs). As a result, international flights come successively under the responsibility of different ANSPs as they move from one country's airspace to another. This fragmentation of airspace management has been identified as a key factor hampering the performance of the European ATM system, particularly in the areas of capacity and cost-efficiency<sup>3</sup>.

**04** Although safely handling a record number of flights, the ATM system is not always able to accommodate all the demand requested by airspace users. Delays have been growing as the volume of air traffic has increased, particularly since 2013<sup>4</sup>. In 2018, each of the 11 million flights experienced on average 1.73 minutes of en-route delay<sup>5</sup> attributable to the ATM system, and caused by capacity limitations of various natures (see [Figure 1](#)). The reporting of an average delay masks significant disruption to normal operations, particularly in peak summer days.

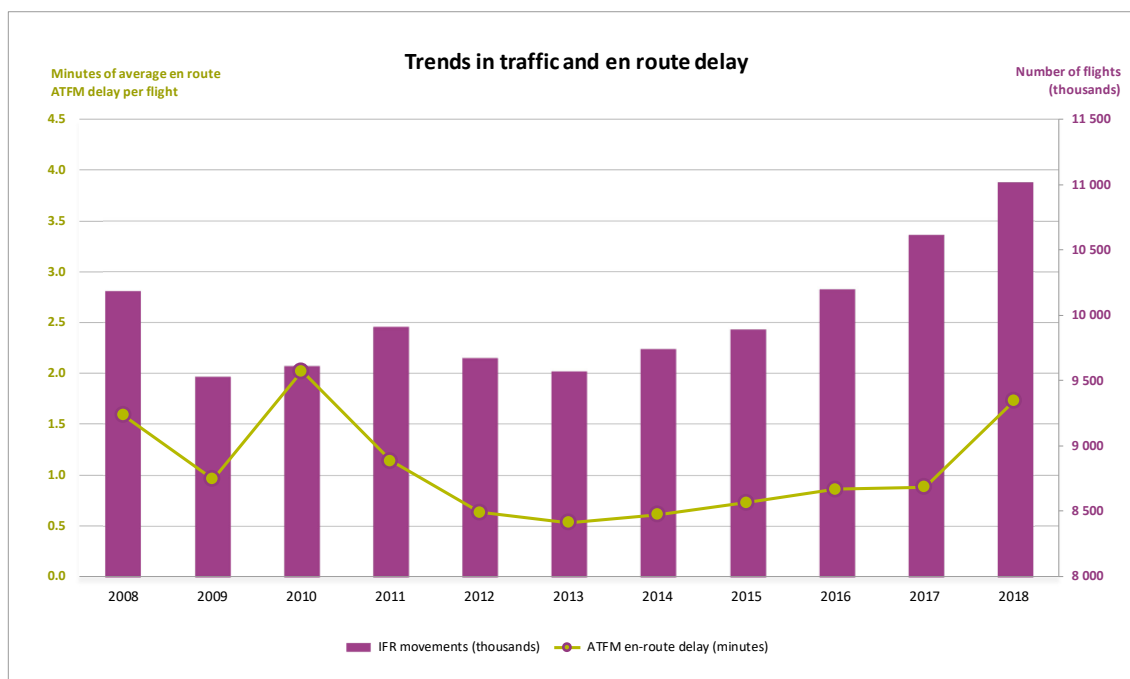
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<sup>3</sup> For detailed analysis, see European Court of Auditors, Special Report 18/2017 on the Single European Sky.

<sup>4</sup> Prior to 2013, a peak in delays was recorded in 2010, primarily due to difficulties caused by the eruption of a volcano in Iceland.

<sup>5</sup> Source: Network Manager, "2018's air traffic in a nutshell", <https://www.eurocontrol.int/news/2018-air-traffic>.

**Figure 1 – Traffic and en-route delay 2008-2018**



Source: Eurocontrol.

**05** European air traffic management is funded by the operators of the aircraft, known as airspace users, who are charged for the services they receive on the basis of the type of aircraft and distance flown within the area of responsibility of each ANSP, according to the planned trajectory. In 2016, they paid approximately €9 billion for these services<sup>6</sup>, or just above €900 per flight on average.

## The Single European Sky policy and SESAR: the EU's response to inefficiencies in Air Traffic Management

**06** The Single European Sky (SES) policy aims at improving the overall performance of air traffic management, whilst meeting the requirements of all airspace users. The policy was launched in 2004 and to implement it, a regulatory framework has been established, which includes common rules on ATM safety, on the provision of ATM services, on airspace management and on interoperability within the network.

**07** The regulatory framework is complemented by a technological modernisation programme, known as the “SESAR project” (Single European Sky ATM Research).

<sup>6</sup> Source: Eurocontrol, ATM Cost-Effectiveness 2016 Benchmarking Report. The amount refers to revenues of gate-to-gate air navigation services, including both en-route and terminal services.



SESAR seeks to harmonise and modernise ATM systems and procedures across Europe, by promoting the coordinated definition, development and implementation of a number of technologies and operational concepts. SESAR was divided into a definition phase (to draw up the European ATM Master Plan for modernisation), a development phase (to establish the necessary technological bases) and a deployment phase (to install the new systems and procedures in the operational environment). The EU has been supporting SESAR financially since its inception, as summarized in [Table 1](#) below.

**Table 1 – EU financial support to the SESAR Project**

Phase	Period	EU contribution (million euro)	Funding Source
Definition	2005-2007	30	TEN-T
Development	2007-2013	700	TEN-T and 7 <sup>th</sup> Framework Programme
	2014-2020	585	Horizon 2020
Deployment	2014-2020	2 500	Connecting Europe Facility
Total		3 815	

Source: ECA. The amounts indicated for the 2014-2020 period are provisional.

**08** In our Special Report No 18/2017 “Single European Sky: a changed culture but not a single sky”, we covered key regulatory elements of the Single European Sky policy, as well as the definition and development phases of the SESAR project (2005-2013). We concluded that the initiative addressed a clear need and led to a greater culture of efficiency in ATM. However, European airspace management remained fragmented and the Single European Sky as a concept had not yet been achieved. The deployment phase was not in the scope of that audit as it was still in its inception.

## The deployment phase of SESAR

**09** When SESAR was launched in 2005, the scope of the EU’s participation was limited to definition and development: both the governance and the financing of the deployment phase were intended to be the responsibility of industrial stakeholders<sup>7</sup>.

<sup>7</sup> Communication from the Commission to the Council on the project to develop the new generation European air traffic management system (SESAR) and the establishment of the SESAR Joint Undertaking, COM(2005) 602 final.

**10** However, this position evolved over time. In 2011, the Commission assessed that “only a timely, synchronised and coordinated deployment, fully integrated in the SES framework would effectively contribute to achieving the SES performance objectives”<sup>8</sup>. The Commission together with the Member States decided that EU intervention would be needed to encourage the deployment of new technologies developed under the first two phases of SESAR. This would notably address the phenomenon of the “last mover advantage” in which stakeholders tend to postpone their investments knowing that benefits would only arrive when all stakeholders are equipped. In addition, the Commission decided to make public funding available to compensate stakeholders for financial losses on deployment. Such losses could be expected in the case of military and state aircraft, as well as general and business aviation.

**11** To address those needs, after consultation with all stakeholders, including the Member States and other SES entities, the Commission designed the deployment phase of SESAR around the concept of “Common Projects”<sup>9</sup> that require the coordinated deployment of a specific set of ATM functionalities (see **Box 1**), by a number of stakeholders within a specified timeframe. The sequence of specific steps needed for deployment is to be set out in a Deployment Programme<sup>10</sup>.

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<sup>8</sup> Communication from the Commission to the Council on Governance and incentive mechanisms for the deployment of SESAR, the Single European Sky's technological pillar – COM(2011) 923 final.

<sup>9</sup> Commission Implementing Regulation (EU) No 409/2013 provides full details on the definition of common projects, the establishment of governance and the identification of incentives supporting the implementation of the European Air Traffic Management Master Plan.

<sup>10</sup> Further details on the Deployment Programme are presented in **Annex I**.

**Box 1****The concept of an ATM functionality in Common Projects**

An ATM functionality refers to a group of technologies or procedures aimed at enhancing the management of air traffic. The EU legislation further defines an ATM functionality as “a group of ATM operational functions or services related to trajectory, airspace and surface management or to information sharing within the en-route, terminal, airport or network operating environments”.

For a functionality to be included in a common project, it must provide significant network performance improvements, be ready for implementation, and require synchronised deployment.

**12** The governance of deployment has three levels:

- (a) A policy level: the European Commission, primarily responsible for the adoption of common projects, selecting the Deployment Manager, approving the Deployment Programme and managing the EU funds supporting deployment (with the support of the Innovation and Networks Executive Agency - INEA). The Pilot Common Project<sup>11</sup> (PCP) is the first and to date the only common project adopted by the Commission.
- (b) A management level: the Deployment Manager, which is a function assigned not to an individual but to a consortium of stakeholders (see **Box 2**). The Deployment Manager is primarily responsible for developing, implementing and monitoring the Deployment Programme, as well as bringing together the operational stakeholders that are required to implement common projects.
- (c) An implementation level: the operational stakeholders who are responsible for the implementation of projects in line with the Deployment Programme.

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<sup>11</sup> Commission Implementing Regulation (EU) No 716/2014 on the establishment of the Pilot Common Project supporting the implementation of the European Air Traffic Management Master Plan.

## Box 2

### The SESAR Deployment Manager

The functions of the SESAR Deployment Manager were formally assigned to a group of operational stakeholders, known as the SESAR Deployment Alliance (SDA), by means of a Framework Partnership Agreement (FPA) signed in December 2014 and lasting until the end of 2020.

The SDA was initially composed of 11 ANSPs, four airline groups and a European Economic Interest Group representing 25 European airports. As of 2018, two additional ANSPs and one airline have joined the SDA. Members of the SDA provide staff, on secondment, to the Deployment Manager for the execution of its tasks.

The SDA was originally established as a consortium of stakeholders without a legal status, but in January 2018, the SDA changed its status to become a not-for-profit international association.

The activities of the SESAR Deployment Manager are fully funded by the EU. A total of €14.5 million has been granted between 2014 and 2017.

### EU funding for SESAR's deployment phase

**13** In 2013, the guidelines for the Trans-European Transport Network<sup>12</sup> identified SESAR as a priority project of common interest and the Connecting Europe Facility (CEF)<sup>13</sup> earmarked a total envelope of €3 billion to support it during the 2014-2020 period. The financial envelope was later reduced to €2.5 billion following the creation of the European Fund for Strategic Investments and the need to reallocate the EU budget. These funds are directly managed by the Commission and its Innovation and Networks Executive Agency (INEA). They cover between 20 % and 50 % of eligible costs in airborne and ground investments respectively. In cohesion Member States, the financing rate is up to 85 % of all eligible costs.

<sup>12</sup> Regulation (EU) No 1315/2013 of the European Parliament and of the Council on Union guidelines for the development of the trans-European transport network.

<sup>13</sup> Regulation (EU) No 1316/2013 of the European Parliament and of the Council establishing the Connecting Europe Facility.

**14** Funds are primarily addressed to PCP-related implementation projects, although other ATM projects are also eligible. Between 2014 and 2017, seven calls for proposals have been launched by INEA<sup>14</sup>, resulting in the award of approximately €1.6 billion to support 414 projects and coordination activities.

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<sup>14</sup> Normally, calls for proposals are launched on yearly basis. In some years, dedicated calls were launched for the cohesion envelope and for a blending of the CEF with other financial mechanisms.

## Audit scope and approach

**15** In this audit, we assessed how well the Commission managed the deployment of SESAR since 2011 and how that deployment helped it meet the objectives of its Single European Sky policy. We examined whether the EU's participation in SESAR's deployment phase through providing a regulatory framework and financial support:

- (a) was justified in terms of EU added value and was well designed;
- (b) has been implemented in a way that represents an efficient use of EU resources;
- (c) has contributed to improving the performance of European ATM.

**16** We visited entities involved in the governance of SESAR: the European Commission, the SESAR Joint Undertaking, the SESAR Deployment Alliance acting as Deployment Manager, INEA, the European Defence Agency and a number of stakeholders including airports, ANSPs, airspace users and Eurocontrol. We also visited the International Civil Aviation Organization (ICAO), where we reviewed the role played by the EU and the SESAR project in the setting up of international standards in ATM; and the Canadian ANSP ("Nav Canada"), to gain an understanding of how ATM is conducted in a different regional context.

**17** We reviewed the application and selection process that culminated in the granting of approximately €1.3 billion during the 2014-2016 CEF calls for proposals. We also analysed a sample of 17 EU co-financed projects<sup>15</sup>, ensuring coverage of projects implementing the Pilot Common Project and other projects contributing to SES implementation. We assessed the need for the projects examined and for their funding by the EU; their links with the European ATM Master Plan and the Pilot Common Project; and each project's outputs to date, together with their impact on the performance of European ATM.

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<sup>15</sup> In total, the 17 selected projects were awarded approximately €229 million of CEF funding.

# Observations

## EU regulation of Air Traffic Management modernisation has added value, despite shortcomings

**18** We assessed whether the EU regulation of ATM modernisation adds value. In particular, we reviewed the need for EU-level coordination, whether there are effective enforcement tools and whether the PCP addresses essential operational changes that are mature for implementation and require synchronised deployment.

### ATM modernisation benefits from EU-level coordination

**19** We assessed whether EU-level intervention in coordinating the deployment of new ATM technologies or operational procedures:

- (i) mitigates the effects of the fragmented provision of air navigation services;
- (ii) ensures interoperability between airports, ANSPs, airspace users and the Network Manager.

**20** In 2013, the Commission adopted a regulation defining the concept of common projects<sup>16</sup>. By deploying a functionality, by a specified number of stakeholders and by a certain date, common projects promote coordinated action and mitigate the “last mover advantage” that has hindered ATM technological modernisation in the past. Coordinated action also promotes a network perspective to air traffic management which can mitigate fragmentation.

### The absence of penalties for non-compliance reduces the potential effectiveness of the regulation

**21** Removal of the last mover advantage and the timely implementation of the common projects will not be achieved if the regulation is not followed. The regulation should include mechanisms to ensure compliance that are effective, proportionate and dissuasive.

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<sup>16</sup> Commission Implementing Regulation (EU) No 409/2013.

**22** Commission Implementing Regulation (EU) No 409/2013 defines the purpose and content of common projects as well as rules for their set-up, adoption, implementation and monitoring. However, there are no specific enforcement mechanisms. Apart from the infringement procedure foreseen by the EU Treaties, addressed to Member States and only to be launched once an instance of non-compliance is detected, the Commission has no powers to sanction non-compliance, for example to ensure that the required functionalities are deployed by stakeholders by the target date. The lack of adequate enforcement mechanisms reduces the effectiveness of the EU regulation.

**23** The absence of fully independent and adequately resourced National Supervisory Authorities (NSAs), responsible for the oversight of ANSPs, further aggravates this problem. In the framework of the Single European Sky, NSAs are responsible for the certification and oversight of the national ANSPs, as well as for the preparation and monitoring of their performance plans and targets. In our Special Report 18/2017 we noted that some NSAs lack adequate resources and are not fully independent of the ANSPs they oversee. This adds to the problem of insufficient enforcement mechanisms.

**24** A system of modulation of charges is already foreseen in the charging scheme regulation, with the explicit objective of accelerating the deployment of SESAR ATM capabilities<sup>17</sup>. Modulation aims to drive the behaviour of operational stakeholders by increasing or decreasing navigation charges, depending for example, on their level of compliance with common projects. However, the use of such a system is currently at the discretion of Member States and has never been implemented.

### **Some PCP functionalities did not meet the criteria for common projects**

**25** Any ATM functionality contained in a Common Project should comply with three key criteria: it should represent an “essential operational change” as defined in the European ATM Master Plan<sup>18</sup>; it should be ready for implementation; and it should

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<sup>17</sup> Article 16 of Commission Implementing Regulation (EU) No 391/2013 on the Common Charging Scheme. The regulation provides the rules by which the ANSPs and other ground stakeholders can charge to airspace users the costs of the provision of air navigation services.

<sup>18</sup> Within the framework of the Single European Sky (SES), the European Air Traffic Management Master Plan is the main planning tool for defining ATM modernisation priorities. The Master Plan is an evolving roadmap setting the framework for the development activities performed by the SESAR Joint Undertaking in the perspective also of



require synchronised deployment<sup>19</sup>. Synchronisation is at the core of common projects. It seeks to ensure that investments requiring multi-stakeholder participation are not hampered by delays in some of them. To ensure EU added value, common projects should not contain functionalities which do not meet the key criteria.

**26** The first application of the common project concept occurred in 2014 with the adoption of the Pilot Common Project (PCP) through Commission Implementing Regulation (EU) No 716/2014. The PCP contains a total of six ATM Functionalities (AF) having target dates for deployment between 2018 and 2026 (see [Table 2](#)).

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the deployment activities to be performed by all operational stakeholders. An Essential Operational Change is defined in the Master Plan as an ATM operational change that provides significant network performance improvements to the operational stakeholders.

<sup>19</sup> Article 4 of Commission Implementing Regulation (EU) No 409/2013.

**Table 2 – The Pilot Common Project (2014)**

ATM Functionality	Relevant stakeholders <sup>20</sup>	Due date <sup>21</sup>
Extended Arrival Management and Performance Based Navigation in the High Density Terminal Manoeuvring Areas (AF1)	ANSPs and Network Manager	2024
Airport Integration and Throughput (AF2)	ANSPs and airports	2021-2024
Flexible Airspace Management and Free Route (AF3)	ANSPs, Network Manager and airspace users	2018-2022
Network Collaborative Management (AF4)	ANSPs, airports, Network Manager and airspace users	2022
Initial System Wide Information Management (AF5)	ANSPs, airports, Network Manager and airspace users	2025
Initial Trajectory Information Sharing (AF6)	ANSPs, Network Manager and airspace users	2025-2026

Source: Commission Implementing Regulation (EU) No 716/2014.

**27** We found that the functionalities of the PCP represented essential operational changes, as required by the common project concept. However, they were not all mature and ready for implementation and/or did not all require synchronised deployment for the delivery of the expected performance benefits.

**28** We examined the proposal for a common project prepared by the SESAR Joint Undertaking in 2013 and found that it included technologies that were not mature at the date of assessment but would need further R&D work to make them operationally ready. As a consequence, the proposal included functionalities for which the underlying R&D work was still incomplete and which were therefore not mature enough for inclusion. According to our analysis, only gradually and after the PCP

<sup>20</sup> Not all the mentioned stakeholders are affected, since the PCP also defines a geographical scope of applicability.

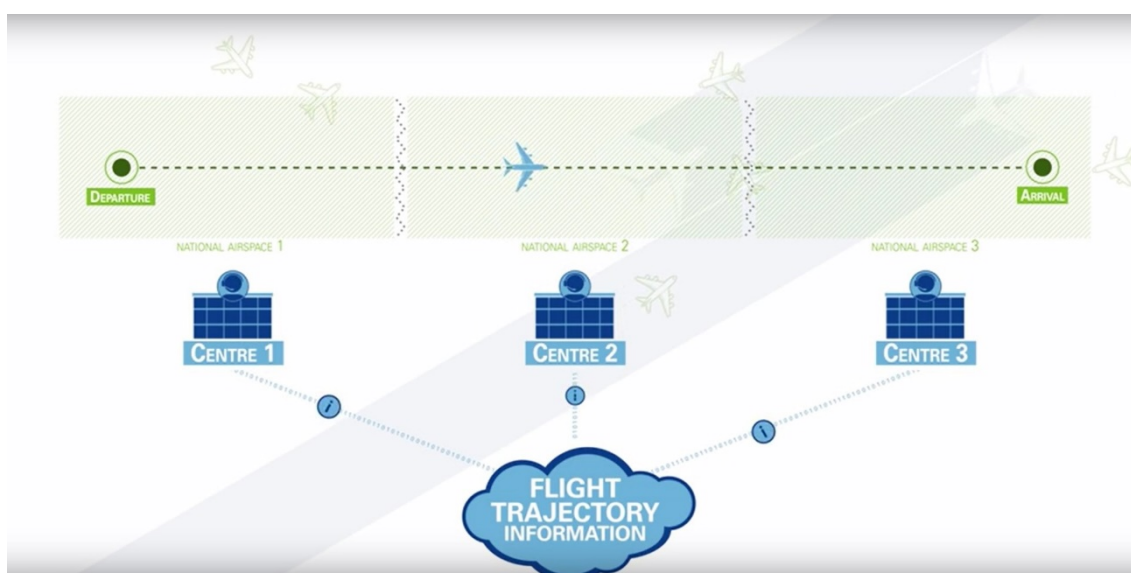
<sup>21</sup> Each ATM functionality may be composed by two or more sub-functionalities. The deployment target date may differ for each.

adoption did the necessary technologies reach the level of maturity that would allow their implementation (21 % in 2015, 81 % in 2016). An example of this lack of readiness is shown in **Box 3**.

### Box 3

#### Flight Object Interoperability: relevant but not yet ready for deployment

Flight Object interoperability is at the core of the European vision for air traffic management and is a fundamental enabler of functionalities 5 and 6 of the PCP. It allows for multiple stakeholders (and in particular the different ANSPs along the trajectory of a flight) to have a common and real time view on each flight that is or will be relevant for its operations. This delivers enhanced levels of predictability, airspace capacity, flight efficiency and safety, compared with the situation today, in which each control centre only sees the flight once it enters its airspace. However, the necessary R&D work of the SESAR Joint Undertaking is complex and expected to continue at least until 2020.



© Courtesy of the SESAR Joint Undertaking.

**29** In addition to R&D work, most functionalities also require industry-wide specifications and standards to allow their deployment. However, the proposal from the SESAR Joint Undertaking warns of the lack of such standardisation in the cases of AFs 1, 2, 5 and 6. The SESAR project contains a gap in this area as neither the SESAR Joint Undertaking nor the Deployment Manager are mandated to ensure standardisation. This shortcoming still represents a high risk to deployment at the time of this report.

**30** Lack of maturity has been repeatedly mentioned as a risk to deployment by the Deployment Manager<sup>22</sup>, namely as a potential cause of delays and non-harmonised deployment, affecting particularly AFs 4, 5 and 6. In addition, this has allowed EU funding to be channelled to support the deployment of non-mature technologies (see paragraph 56).

**31** As per the regulation, the need for synchronised deployment of a functionality should be assessed by the Commission on the basis of geographical scope, target dates and operational stakeholders required to deploy the ATM functionalities<sup>23</sup>. We found that such criteria are not sufficient because they do not demonstrate the need for synchronised multi-stakeholder participation (air-ground or ground-ground or both) to deliver operational benefits. They do not mention the specific need for coordinated action. Consequently, the current wording in the regulation would allow any essential and mature functionality to qualify for inclusion in a common project.

**32** All but two of the functionalities included in the PCP require multi-stakeholder synchronisation. However, specific components of AF 1 (for example, Performance based navigation in high density terminal manoeuvring areas) and AF 2 (for example, airport safety nets) are local in nature, need to be tailored to specific airports, and can deliver performance benefits even if only deployed independently of others on a local basis.

**33** In these two cases, we consider that the added value of EU-level coordination is limited. The mandatory deployment of functionalities which do not require multi-stakeholder synchronisation does not address the “last-mover advantage” and this weakens the purpose of the common project concept.

## EU funding was largely unnecessary

**34** In this section, we assessed whether the EU funding under the PCP was used to target the beneficiaries most in need for deploying projects to modernise ATM. We examined the risk of EU funding being paid to beneficiaries which did not need the funding (“deadweight” - see [Box 4](#)). We reviewed the initial case put forward for project funding by the Commission, whether this case existed in practice and the impact it had on the investment decisions of stakeholders.

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<sup>22</sup> SESAR Deployment Manager, Risk Management Plan of the DP, editions 2015-2018.

<sup>23</sup> Article 4.5 of Commission Implementing Regulation (EU) No 409/2013.

**Box 4****What is deadweight in EU funding**

Deadweight is a risk to the sound financial management of the EU budget. It refers to the extent to which a beneficiary would have undertaken the investment even in the absence of EU financial support. To award a grant in such cases is an inefficient use of the EU budget as it is not needed for the investment to be made.

The primary means of reducing the risk of deadweight is to design EU support so it is only available where there is an identified need for public intervention. Public support may be needed, for example, where investments are innovative and it is difficult to raise capital; or where the financial returns do not meet the full costs of the investment, e.g. a project with mainly environmental benefits.

The risk of deadweight can also be mitigated in the project selection process. The awarding authorities can obtain information about a beneficiary's financial situation and the costs and projected benefits for the investment – thereby assessing whether a grant is needed for the project to be viable.

**The initial rationale for funding was not followed**

**35** EU deployment funding should be limited to that necessary for: accelerating investments in trans-European networks; enabling projects of common interest; projects with a European added value and significant societal benefits which do not receive adequate financing from the market<sup>24</sup>. It should also be limited to the mitigation of situations where the investment generates higher costs than benefits for individual stakeholders<sup>25</sup>.

**36** In its 2011 communication on governance and incentive mechanisms for the deployment of SESAR<sup>26</sup>, the Commission considered that while there were strong incentives for ANSPs to invest early on new technology<sup>27</sup>, certain other stakeholder categories (namely military and state aircraft, general and business aviation) may not see a financial advantage to investing. The Commission then concluded that “in order to mitigate risks related to negative business cases and to leverage private funds, it is

<sup>24</sup> Preamble (2) and article 3 of Regulation (EU) No 1316/2013 of the European Parliament and of the Council establishing the Connecting Europe Facility.

<sup>25</sup> Preamble (20) of Commission Implementing Regulation (EU) No 409/2013.

<sup>26</sup> COM(2011) 923 final.

<sup>27</sup> The performance scheme applicable to ground stakeholders establishes binding targets in various performance areas and financial penalties in some cases of non-compliance.

estimated that SESAR implementation would require 3 billion euros in EU funds over the period 2014-2024”.

**37** This analysis of the Commission was consistent with the European ATM Master Plan in force at that time, which placed the major part of the investment requirements on airborne stakeholders (73 %). A delay in the investments of airborne stakeholders would seriously endanger ATM modernisation.

**38** However, this rationale of encouraging airborne stakeholders to invest was not followed in practice:

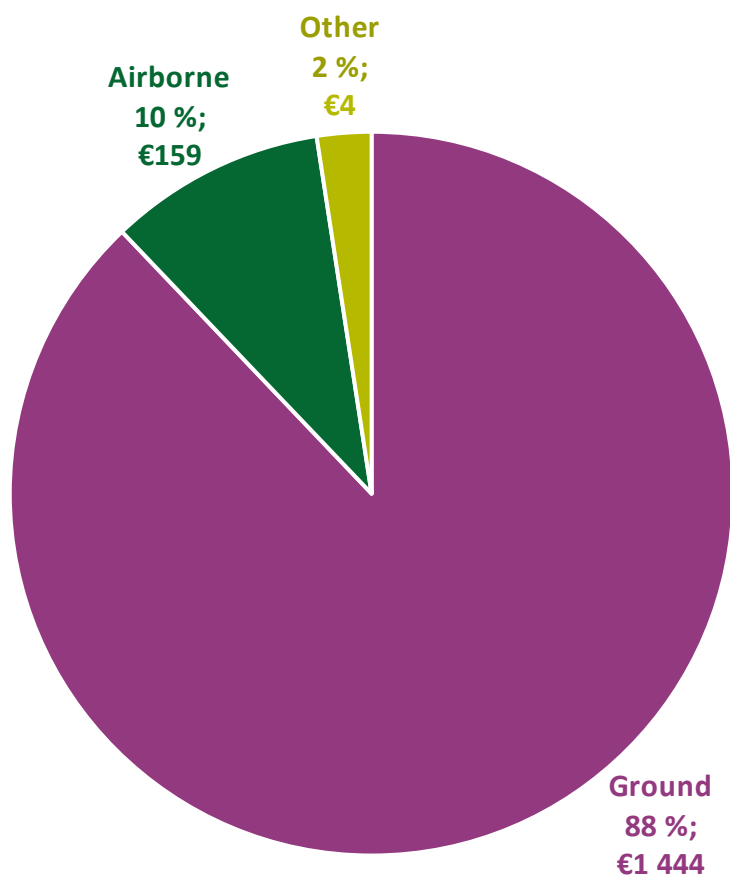
- (a) The PCP adopted by the Commission placed the bulk of investment requirements on ground stakeholders (close to 80 %, as presented also in paragraph 41 below), a different group of stakeholders to those for which funding needs had been identified in the European ATM Master Plan and the 2011 Communication. This was the result of the analysis of the SESAR JU of the potential technological improvements foreseen in the Master Plan: those that were actually ready for implementation and needed synchronisation turned out to be largely in the domain of ground stakeholders.
- (b) Despite the significant reduction of the investments for which EU funding was deemed necessary (airborne stakeholders were no longer expected to carry the major part of the investment, but only 20 %), the initially proposed financial envelope was not revised downwards and the CEF regulation earmarked the same €3 billion for the 2014-2020 period. As such, using that financial envelope in full would imply directing it to those for which the need was significantly less<sup>28</sup>. EU funding was therefore, from the outset, prone to a high risk of deadweight.

**39** The analysis of the grants awarded during the 2014-2017 calls shows that primary recipients of EU grants were ground stakeholders, in a sharp contrast to the 2011 needs assessment (see [Figure 2](#)).

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<sup>28</sup> Ground stakeholders providing air navigation services operate in a regulatory framework which allows them to recover the costs of their investment from users, through air navigation charges.

**Figure 2 – Distribution of EU funds for SESAR deployment across stakeholder categories (in million euro and % of total awarded 2014-2017)**



Source: ECA calculation based on grants awarded 2014-2017.

### The cost benefit analysis for the PCP was flawed

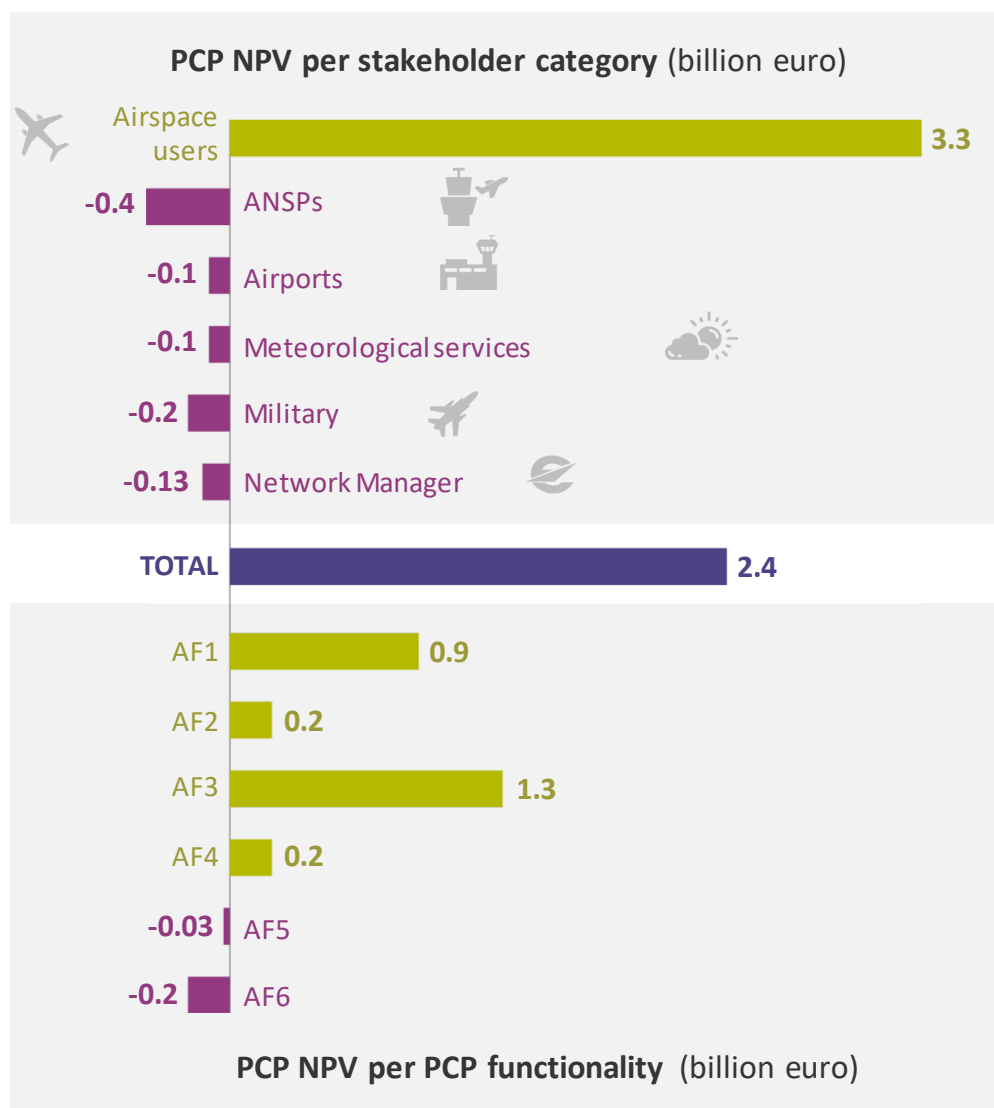
**40** EU regulations<sup>29</sup> require common projects to be accompanied by a Cost-Benefit Analysis (CBA). This analysis should, inter alia, identify potential positive or negative impacts for specific categories of operational stakeholders and be used to modulate any CEF financial assistance to each project.

**41** The CBA accompanying the pilot common project was prepared by the SESAR JU and included in its overall proposal. We reviewed its assumptions and overall results. The CBA covers the 2014-2030 period and presents a positive overall net result of

<sup>29</sup> Commission Implementing Regulation (EU) No 409/2013 on common projects, Regulations (EU) 1315/2013 and (EU) 1316/2013 of the European Parliament and of the Council on the Trans-European Transport Network and on the Connecting Europe Facility.

€2.4 billion, unevenly distributed among stakeholders: airspace users are expected to be the key beneficiaries of PCP implementation despite needing to make relatively small investments (€0.6 billion). On the other hand, ground stakeholders need to make most of the investments (€3 billion or 80 % of the total €3.8 billion estimated by the CBA) and stand to make a loss on investment. The CBA also shows different contributions from the 6 functionalities (see [Figure 3](#)).

**Figure 3 – Different expected impacts of the PCP**



Source: ECA analysis based on SESAR JU, Proposal on the content of a Pilot Common Project (2013).

**42** We analysed the CBA and found it to contain a fundamental flaw because it assumed the non-transferability of costs and benefits between stakeholders. This is not correct because ANSPs are able to recover from airspace users the costs of investments in line with the charging scheme regulation. The regulation allows ANSPs



to charge users for such investments, particularly if they are consistent with the ATM Master Plan and implemented through common projects such as the PCP<sup>30</sup>.

**43** The omission to include the revenue generated by ANSPs through the charging scheme leads to a negative business case for them (of €440 million as shown in *Figure 3* above) which is not in line with reality<sup>31</sup>. Conversely, as airspace users will have to pay for those same investments, their estimated benefit is overstated. A similar conclusion is drawn for the remainder of ground stakeholders, even if the transmission mechanisms differ. Such a situation adversely affects the use that can be made of the CBA, both in terms of guiding the investment decisions of stakeholders and in assessing the need and added value of EU funding to support them.

### **A majority of the projects audited did not need EU funding**

**44** We examined whether the EU funding succeeded in aligning the behaviour of stakeholders with the intentions of the EU policy on modernising ATM. Notably, it should trigger investment decisions in line with the ATM Master Plan and in particular the Pilot Common Project.

**45** Our analysis shows that the majority of the audited stakeholder's investment decisions were not driven nor triggered by EU funding, confirming the presence of deadweight. Nine out of 14 sampled projects associated with the PCP had been decided upon or even launched in advance of the regulation. In addition, 13 out of the total of 17 projects sampled by the audit were decided prior to the decision that awarded the co-funding. We note also that the text of the 2014 CEF call explicitly prioritises applications related to investments that had already started.

**46** In all sampled projects executed by ANSPs (total €159 million EU funding awarded) the same investments had been included in their respective performance plans and thereafter charged to airspace users<sup>32</sup>. This generates a situation of

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<sup>30</sup> Article 6.3 and 6.4 of Commission Implementing Regulation (EU) No 391/2013.

<sup>31</sup> In its 2013 PCP proposal, the SESAR JU acknowledges that the transfer of costs and benefits from ANSPs to airspace users would have to be considered in the context of reference period 2 (2015-2019) and beyond.

<sup>32</sup> A similar observation is drawn regarding the Network Manager, which has its own performance plan and is also subject to the EU's charging scheme; and the sampled airport stakeholder, which although not subject to the charging scheme, also operates under a national economic regulation contract – which includes a part of the EU co-funded project.

potential double funding as although ANSPs fully recover the costs of their investments from airspace users through the agreed navigation charges, they then receive an EU grant which adds to their revenue and further compensates them for the same investment.

**47** The charging scheme seeks to mitigate such elements of double funding by requiring ANSPs to deduct the subsidy from the navigation charges applicable to airspace users. However, deductions are not yet being consistently applied across ANSPs: within the five sampled by the audit, only one is gradually deducting the subsidy.

**48** Even if the deductions were effectively applied, they would ultimately result in the transfer of the grant to users, an outcome that does not serve any agreed policy objective. In addition, according to the PCP CBA, airspace users are already the sole beneficiaries of the PCP's deployment, through a better performing ATM system. To add to that benefit financial compensation in the form of reduced navigation charges paid for by the EU budget is unjustified, especially as this is done irrespective of the level of compliance of airspace users with the requirements of the PCP.

### **Weaknesses in implementation further reduce the effectiveness of EU funding**

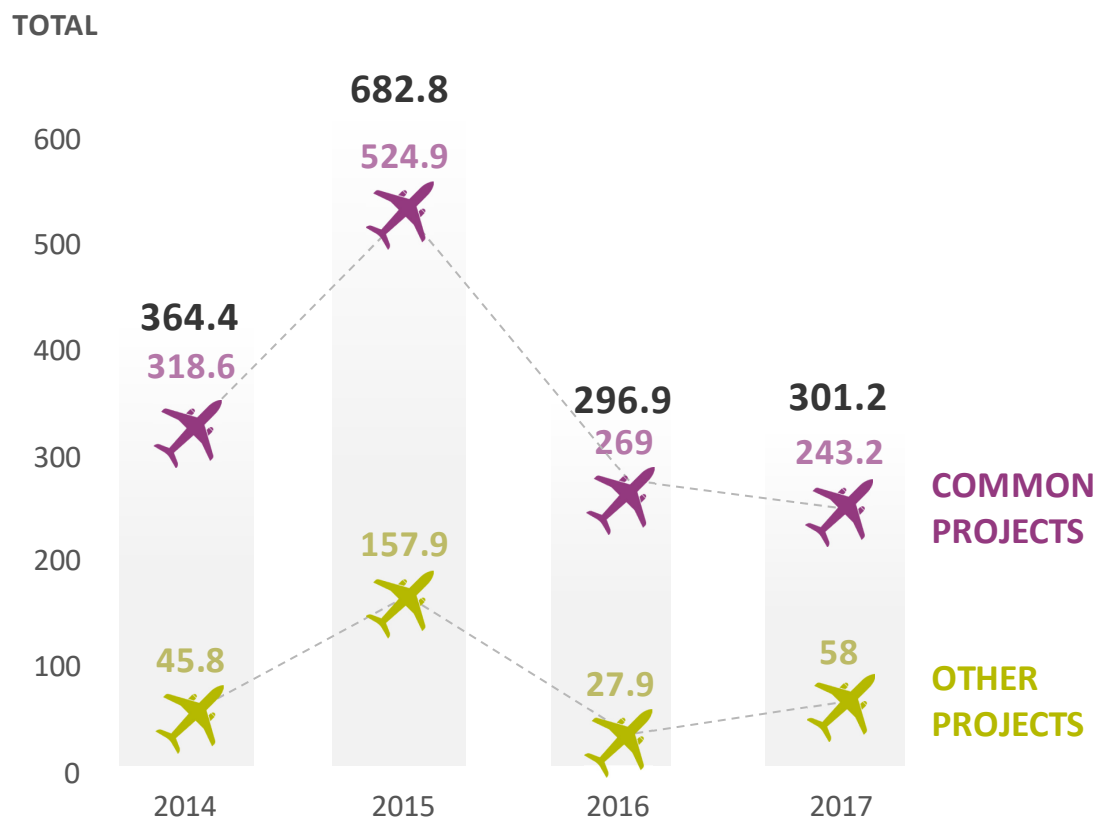
**49** In this section, we assessed whether EU funding was managed in a way that ensures the adequate use of EU resources. We reviewed the calls for proposals launched by INEA from 2014 to 2017 and the selection process led by the Commission. We assessed whether the calls for proposals set clear priorities, whether applications were grouped to best coordinate investments and whether the process was free from potential conflict of interest.

#### **EU funding was not adequately prioritised**

**50** We found a lack of adequate prioritisation:

- (a) The 2014 and 2015 CEF calls did not establish any specific priorities for funding beyond referring to the PCP. In addition, the calls were launched without an approved deployment programme, which describes in detail what is needed for PCP implementation. Despite this, these two calls awarded more than €1 billion (or 64 % of total EU funding to SESAR awarded between 2014 and 2017 – see [Figure 4](#)).

**Figure 4 – Amounts awarded per CEF call (in million euro)**



Source: ECA based on data from the Innovation and Networks Executive Agency (INEA).

- (b) In the absence of specific prioritisation, EU funding was de facto channelled to large ATM system renewal projects already in the investment pipeline and ready for implementation. 53 % of the funding awarded in the 2014-2015 calls went to five large ANSPs.
- (c) From 2016 onwards, calls for proposals set specific priorities. However, we noted that some priorities referred to elements which are outside the scope of the PCP<sup>33</sup>. Overall, between 2014 and the date of this report, the grants awarded to such projects amounted to €141 million.

**51** Moreover, all calls reserved approximately 20 % of the available funding to the so-called “other projects”, identified as contributing to the implementation of the

<sup>33</sup> As from 2016, the Deployment Programme defines core, complementary and facilitating families. As further detailed in *Annex I*, Complementary families do not form part of the PCP but are pre-requisites to it. Facilitating families are seen as beneficial but are not required by the PCP. Calls 2016 and 2017 prioritize families 2.5.2 (facilitating) and 6.1.1, 6.1.3 and 6.1.4 (complementary), respectively.

Single European Sky but outside of the scope of the PCP. Some €290 million were awarded to projects under this category in the 2014-2017 calls. Because there is no requirement for coordinated action around a common project, EU support for this category of project has limited effectiveness in tackling fragmentation.

**52** The absence of specific priorities reduced the effectiveness of EU funding. The fact that this was the case for the first two years is particularly serious, because this is the period during which the largest amounts of funding were awarded, meaning it was not used to target those investments most critical to PCP implementation.

### **Clustering of applications for funding did not aid the effective synchronisation of projects and the appropriate evaluation of applications**

**53** EU funding is intended to support the efficient synchronisation and overall coordination of the implementation projects and the related investments in line with the Deployment Programme (see [Box 5](#)), developed by the Deployment Manager and approved by the Commission. The evaluation of PCP-related projects should assess their need for synchronisation, their potential network performance improvements and their coverage of actual gaps relative to the Deployment Programme.

## Box 5

### Synchronisation as described in the Deployment Programme

The Deployment Programme is a crucial component of the governance framework established for the deployment of common projects. It is organized in four levels: the ATM functionalities (level 1) and sub-functionalities (level 2) as described in the PCP; the implementation clusters or families (level 3) which aggregate local implementation projects (level 4).

The coordination work conducted by the Deployment Manager at level 3 is fundamental in light of the overarching principle behind a common project. Clusters are defined as “Sampler/implementation initiatives under which local implementation projects are grouped that require coordination/ synchronisation at local or regional level and/or pursue the same (part of a) Sub-Functionality”<sup>34</sup>.

Further details about the Deployment Programme are provided in [Annex I](#)

**54** Each call for proposals launched by INEA specifically states that the Deployment Manager is to act as the coordinator for projects. Common projects’ applicants must coordinate their applications with the Deployment Manager who is required to screen them to assess their relevance to the common project. In practice, the Deployment Manager receives individual project applications, groups them and submits clustered applications to INEA for funding.

**55** Specifically, we found that, although the clustering could have been also used for technical coordination, it was not used for this purpose in the context of funding the common project:

- (a) Although project applications are organised in clusters by PCP functionality, individual projects were not coordinated and there was no cooperation between different stakeholders in their implementation. Instead, aggregating individual projects into clusters was driven by administrative considerations: the timing (planned start and end dates) and the funding rates for cohesion and non-cohesion countries.
- (b) Despite being grouped in clusters, more than 70 % of the co-funded projects to date were implemented by single stakeholders. This confirms that, to a large

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<sup>34</sup> Framework Partnership Agreement, Annex 1 Part B1.

extent, EU funding is not being used to promote coordinated action where needed.

- (c) Some operational concepts within the PCP that would in principle benefit from a synchronised deployment were actually implemented separately by the relevant stakeholders. An example of this is the implementation of AF 3-Free Route Airspace, which in principle requires coordinated action from both ANSPs and airspace users. However, the audit revealed that these stakeholders are implementing this functionality in separate clusters, with different timeframes, leading to inefficiencies and protracted implementation periods.

**56** In addition, we found that clustered applications comprise a large number of individual implementation projects (up to 104 in one case) and that they are wide in scope, covering the full range of functionalities and sub-functionalities described in the PCP. We found that, while complying with INEA's templates, they present crucial information in a condensed manner. This meant that INEA could not examine in a thorough manner the relevance and impact of applications:

- (a) All sampled ANSPs submitted projects that, while claiming to address a specific PCP functionality, actually cover the renewal of their entire ATM systems. However, the information supplied to INEA does not allow an adequate identification of the cost corresponding to the specific PCP functionality being targeted. Overall, in the context of the 2014-2017 calls, close to €500 million of EU funding were awarded to ATM system upgrades, approximately 30 % of the total grants to date.
- (b) Cost effectiveness analyses (CEA), which are required by INEA calls, are presented in a grouped manner and not per individual project proposal, effectively preventing the INEA from assessing a project's alignment with the PCP CBA. Moreover, our audit has identified pervasive low CEA scores, indicating that the cost-benefit ratio of the projects for which EU co-funding being requested was significantly worse than that included in the PCP's CBA.
- (c) We found several (8 out of 17) cases where the content of the projects was either partly or fully outside the scope of the PCP. In two cases, the funded projects claimed to support the deployment of flight information exchange, a functionality which was not ready for implementation.

**57** In our view, these weaknesses demonstrate that clustering has undermined the key SESAR objective of synchronised deployment. Projects have been grouped for administrative reasons, rather than in multi-stakeholder groupings aiming at delivering

operational synchronisation. Additionally, adequate evaluation of the proposals is hindered by the size, heterogeneity and lack of transparency within the clusters.

### **The risk of conflict of interest is not sufficiently mitigated**

**58** The EU financial regulation requires that financial actors and other persons involved in budget implementation and management, audit or control shall not take any action which may bring their own interests into conflict with those of the Union<sup>35</sup>. In addition, the regulation on defining common projects gives responsibility for ensuring effective management of risks and conflict of interest to the Deployment Manager<sup>36</sup>.

**59** As described in paragraph 54, the rules established by INEA state that applicants for funding of projects implementing the PCP must coordinate their proposals with the Deployment Manager who will then screen these individual project applications. In practice, the DM has also supported the preparation of applications, and clustered and submitted them to INEA for funding.

**60** The SESAR Deployment Alliance, acting as Deployment Manager, is a consortium composed of some but not all ATM stakeholders. Its members are themselves beneficiaries of funding and they second staff to the DM for the execution of its tasks – notably the screening of the member’s own projects for PCP relevance. We consider that this framework generates a potential conflict of interest as regards the EU funding allocation. This potential conflict of interest has not been sufficiently mitigated:

- (a) No formal document attributes to the Deployment Manager the responsibility for submitting clustered applications nor describes the procedures to be followed in this process. Particularly at risk is the activity of screening individual applications, where there is no assurance of independence between the applicant and the Deployment Manager’s staff conducting the screening.
- (b) The Deployment Manager does not sufficiently document the interactions with applicants when preparing the clustered applications. In particular, the Deployment Manager does not keep a complete record of the contacts held with the concerned stakeholders, the follow-up actions and their rationale. This limits

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<sup>35</sup> Article 61 of Regulation (EU, EURATOM) No 2018/1046 of the European Parliament and of the Council on the financial rules applicable to the general budget of the Union.

<sup>36</sup> Article 9.2.d) of Commission Implementing Regulation (EU) No 409/2013.

the possibility of tracing the process from the initial project proposals to the final composition of the clustered applications (see [Box 6](#)).

- (c) In order to optimise the allocation of funds in a context of oversubscribed calls, the Deployment Manager advised applicants of large investment projects to split them into phases spread over several calls. Depending on the scope of the projects and their phases, such splitting effectively modifies the final allocation of funding to each of them.
- (d) In the 2015 call, the withdrawal of some applicants after the award of the funding and before the signing of the grant agreements led INEA to redistribute the funds made available by such withdrawal. However, the redistribution followed a specific proposal provided by the Deployment Manager. Although ultimately agreed by the Commission, this process lacked transparent criteria and benefited a limited number of projects.

### Box 6

#### Example of insufficient transparency

In the 2015 call, 318 individual proposals were received by the Deployment Manager but 108 of those were not retained in the clusters finally submitted to INEA. The Deployment Manager does not keep a systematic record of the underlying reasons for their removal and could not provide a reconciliation between proposals received and retained. The absence of a systematic record is detrimental to the transparency of the clustering process.

In the same call, the Deployment Manager also created priority groups among the retained proposals, according to criteria devised by the Deployment Manager itself and not by INEA in its call for proposals. This ultimately resulted in different co-financing rates for projects, even if addressing the same PCP functionalities.

## Improvements in European ATM still not demonstrated

**61** In this section, we assessed whether EU intervention actually contributes to improving the performance of European ATM. We analysed the progress achieved so far with the deployment of the PCP, both in terms of the outputs actually deployed in a real operational environment and in terms of the performance benefits delivered to the ATM system. To this end, we assessed whether the PCP's implementation is on track as per the regulatory deadlines and whether there are actual performance gains being detected by the monitoring system.



### Deployment is ongoing, but the risk of delays is increasing

**62** The PCP establishes deadlines varying between 2018 and 2026 for the full deployment of its 6 functionalities (see [Table 2](#) above). In addition to a completion deadline, each grant agreement defines the expected outputs of each implementation project.

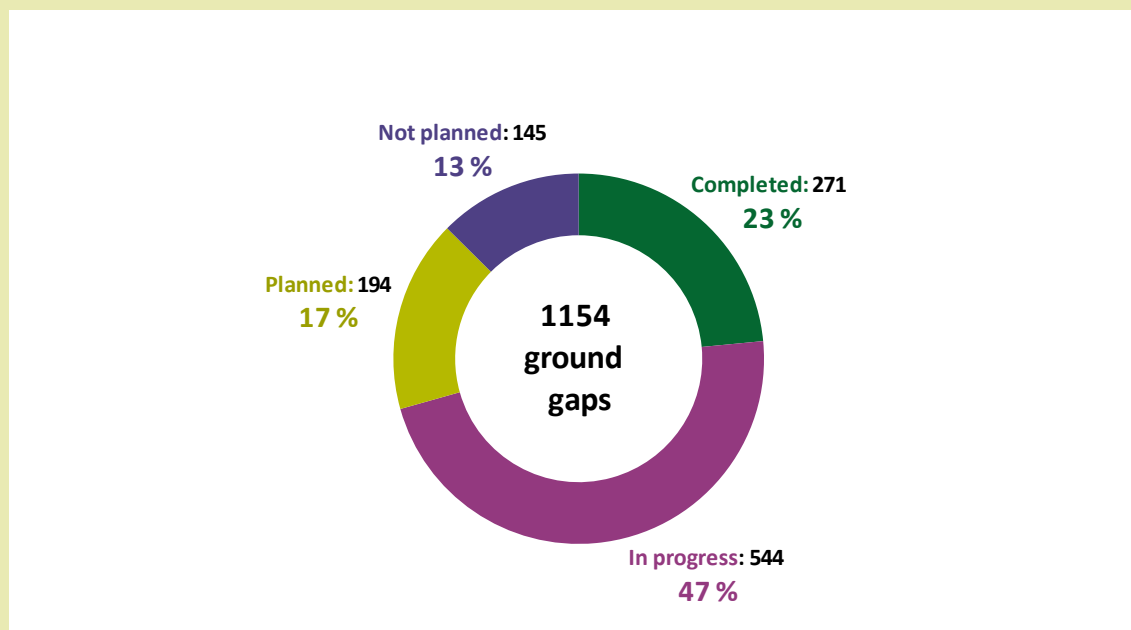
**63** 30 % of PCP components have not yet been planned or are being planned (see [Box 7](#)). These are mainly related to ATM functionalities 4, 5 and 6, where some of the technology required for implementation is not yet ready for deployment. The Risk Management Plan of the Deployment Programme repeatedly identifies these risks. This is partly the consequence of the lack of maturity of the necessary technology and concepts described in paragraph [28](#) and can impact negatively on the achievement of the PCP deadlines.

## Box 7

### Pilot Common Project implementation

The Deployment Manager monitors the implementation of the PCP. For this purpose, it collects and publishes information about implementation gaps.

By July 2018 the progress of the deployment of the PCP measured in what is technically known as implementation gaps<sup>37</sup> was as follows:



Source: ECA on the basis of data from the SESAR Deployment Manager, Monitoring View 2018.

**64** Some of the projects already launched are facing delays in their implementation. Our sample showed that 3 out of the 6 completed projects experienced delays of up to 12 months beyond the original end date<sup>38</sup>. The Deployment Manager's request to INEA

<sup>37</sup> An implementation gap is the smallest unit of implementation activities of the PCP. It is defined by the combination of a technical/operational element (e.g. a family of the Deployment Programme) and a geographical element (e.g. an airport or a country). When necessary, the second element is replaced by a stakeholder (e.g. the Network Manager) or a group of stakeholders (e.g. airspace users). Due to the complexity of providing an accurate percentage or aircraft fleet equipage levels, airborne gaps are not measured for all concerned DP families and are reported separately from the monitoring of the ground gaps.

<sup>38</sup> Such delays were due to longer than foreseen tendering procedures or to difficulties of contractors to achieve the agreed deadlines due to the technical complexity of the deliverables.

for a 12-month extension to the completion date of 18 projects confirms the wider scale of this situation<sup>39</sup>.

**65** Under the PCP, a total of 299 implementation projects were launched as a result of the 2014, 2015 and 2016 calls. In its June 2018 monitoring report<sup>40</sup>, the Deployment Manager announced that 72 of those 299 had been completed. We note however, that 24 of the 72 do not represent an operational solution already deployed but instead studies, enablers or safety-related projects.

### Effective monitoring of deployment faces some challenges

**66** The Commission, assisted by the Deployment Manager, should monitor the deployment of SESAR in respect of impact on ATM performance. There should be evidence that the finalised implementation projects contributed to an improvement of ATM performance, against the expectations set in the ATM Master Plan, the PCP CBA, the Deployment Programme and the project application.

**67** INEA is in charge of monitoring the progress of all projects co-financed through the CEF. However, without a clear mandate to monitor performance, INEA focuses on the outputs of projects, rather than results.

**68** The Deployment Manager is responsible for monitoring the PCP (see paragraph 12). We found several challenges in this process:

- (a) The operational stakeholders deploying the PCP inform the Deployment Manager of progress in implementation on a regular basis. However, this information is not independently verified. In addition, only recipients of EU grants are contractually

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<sup>39</sup> In November 2018, the Deployment Manager requested INEA to amend the Specific Grant Agreement of one of the clusters of the call 2015 to provide a 12-month extension in the duration of 18 out of 51 IPs (35 %) of that cluster, until the end of 2019.

<sup>40</sup> SESAR Deployment Manager, DP Execution Progress Report, June 2018. The number of launched and completed projects is dynamic. As of February 2019, the Deployment Manager presented 105 completed projects out of 348 launched.

bound to provide such information, making the full monitoring of the PCP dependent on the voluntary reporting of others<sup>41</sup>.

- (b) Measurement of the progress of implementation of the PCP provides a quantitative view (see **Box 7**), which is, again, focused on outputs deployed. As such, it does not refer to the delivery of ATM performance benefits for operational stakeholders or for the network as a whole. Within our sample of completed projects, we found a lack of measurement of actual performance results<sup>42</sup>.
- (c) A sound methodology for the measurement of actual results of projects is still under development by the Deployment Manager, as is their comparison with the original expectations (PCP CBA) and their contribution to the achievement of targets in performance plans<sup>43</sup>. In the absence of these tools, there is no assurance that the expected benefits are materialising, in particular, for airspace users.

**69** As a result of the above, there is still insufficient evidence to demonstrate the contribution of the PCP and of EU-funded implementation projects to ATM performance in an actual operational environment.

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<sup>41</sup> The Risk Management Plan of the Deployment Programme 2018 identifies as a high-level risk the PCP implementation outside the framework of the SESAR deployment Framework Partnership Agreement.

<sup>42</sup> We noted one exception among six sampled projects where an actual improvement has been measured, although not monetised.

<sup>43</sup> Performance plans mandatory under the Performance scheme Regulation for air navigation services (Commission Implementing Regulation (EU) No 390/2013).

## Conclusions and recommendations

**70** The fragmented provision of air navigation services and the need to ensure interoperability between airports, ANSPs, airspace users and the Network Manager led the EU to support the deployment of new ATM technologies and operational procedures. Since 2014, the EU has been using two key instruments to address those concerns: a regulation mandating certain coordinated investments (common projects); and funding from the EU budget to support them. In this audit, we examined whether these instruments were justified, well implemented and have improved the performance of European ATM.

**71** We concluded that the EU's regulatory intervention in the form of common projects has added value, although the first application of that concept – the Pilot Common Project – lacked adequate enforcement provisions and included functionalities which did not fulfil the necessary criteria for selection. We also found that EU funding in support of ATM modernisation was largely unnecessary, and that the management of the funding is affected by shortcomings.

**72** The concept of common projects promotes coordinated investments. However, its first application – the Pilot Common Project – wrongly included some functionalities that are not mature and/or do not require a synchronised multi-stakeholder deployment to deliver the intended benefits. In addition, the absence of penalties in the case of non-compliance partly undermines its effectiveness (see paragraphs [18](#) to [33](#)).

### Recommendation 1 – Improve the focus of common projects

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The Commission should improve the focus of common projects by specifying more accurate criteria of synchronisation and by strictly applying the criteria for maturity, when selecting functionalities whose coordinated deployment is to be mandated. The PCP should be reviewed accordingly.

**Timeframe: end of 2021**

## Recommendation 2 – Reinforce the effectiveness of Common Projects

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The Commission should make proposals to reinforce the effectiveness of Common projects by strengthening their enforcement mechanisms. This could include, for example, a making mandatory the system of modulation of charges, applicable to both ground and airborne stakeholders, which is currently voluntary in the charging scheme regulation. Such modulation should notably include more favourable navigation charges for early movers in the deployment of common projects.

**Timeframe: end of 2020**

**73** The need for grants for deployment from the CEF has not been adequately demonstrated and this has resulted in the funding of projects that would have taken place even without EU support. The original thinking was that EU support would be needed to counteract financial losses from deployment and difficulties in accessing capital from financial markets; however these factors have had limited impact. EU funding was primarily channelled to ground stakeholders who had already decided to make such investments and who are passing on the charges for them to airspace users in the context of their regular business. This has resulted in investors receiving grants for assets and also recouping the cost of the investments through charging users (see paragraphs 34 to 48).

## Recommendation 3 – Review the EU’s financial support for ATM modernisation

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The Commission should better target the EU’s financial support for modernising ATM:

- (a) In the current framework (2014-2020), support in the form of grants should be limited to:
- maintaining and monitoring the deployment programme, including technical coordination activities;
  - compensating stakeholders for negative business cases in deploying projects that implement mature and essential functionalities and require synchronised multi-stakeholder involvement.

**Timeframe: applicable to calls for proposals as from 2019**

- (b) In the longer term, if the EU budget continues funding such deployment beyond the current financial framework, the Commission should adequately set out the objectives the funding is intended to achieve as well as the time frame for their achievement.

**Timeframe: end of 2021**

**74** Additional shortcomings in the actual implementation of the funding scheme further reduced its effectiveness (see paragraphs **49** to **60**):

- (a) A substantial amount of funds was awarded in the calls of 2014 and 2015 without setting and applying clear priorities.
- (b) Despite the overarching objective of ensuring coordinated investments, EU-funded projects were grouped according to administrative criteria aimed at facilitating the management of grants, rather than technical considerations.
- (c) Notwithstanding the ultimate role of the Commission in selecting projects, the current funding mechanism requires some beneficiaries, acting as the Deployment Manager, to be involved in the screening of their own applications and allows them to influence the allocation of funding among eligible projects. The potential conflict of interest has not been sufficiently mitigated.

## **Recommendation 4 – Review and formalise the preparation and submission of applications for funding**

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The Commission should:

- (a) clarify, streamline and formalise the roles and responsibilities of the SESAR Deployment Manager in the preparation and submission of applications for funding, so as to also mitigate the potential conflict of interest;

**Timeframe: end of 2019**

- (b) ensure that future calls for proposals require that submitted applications reflect and support the technical dimension of coordination, which is the ultimate goal of common projects.

**Timeframe: end of 2021**

**75** While the legal deadline for PCP deployment varies between 2018 and 2026 and the implementation of most projects is still on going, we observed that the delayed

implementation of some is putting at risk compliance with the regulatory requirements - partly the consequence of the PCP's inclusion of non-mature functionalities. In addition, actual ATM performance benefits in an operational environment have still to be demonstrated (see paragraphs 61 to 69).

### **Recommendation 5 – Ensure appropriate monitoring of performance benefits delivered by ATM modernisation**

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The Commission should:

- (a) ensure that ATM modernisation is appropriately monitored. Performance benefits should be measured and compared with the initial expectations (PCP CBA);
- (b) where applicable in the performance scheme, ensure that targets being proposed take into account all performance gains being realised – thereby assuring their delivery to airspace users.

**Timeframe: as soon as possible and at the latest for the next target setting exercise (reporting period 4 of the performance scheme)**

This Report was adopted by Chamber II, headed by Mrs Iliana Ivanova, Member of the Court of Auditors, in Luxembourg at its meeting of 5 June 2019.

*For the Court of Auditors*

Klaus-Heiner Lehne  
*President*



# Annexes

## Annex I — The Deployment Programme

### What is the Deployment Programme?

The Deployment Programme (DP) is a document aimed at detailing the technical features and guidelines necessary for the implementation of the common projects, thereby promoting the buy-in of the operational stakeholders. According to the legislation<sup>44</sup>, “the deployment programme shall provide a comprehensive and structured work plan of all activities necessary to implement technologies, procedures and best practices required to implement common projects”.

### Picture 2 – Deployment Programme



Source: SESAR Deployment Manager, <https://www.sesardeploymentmanager.eu/publications/deployment-programme/>

### Who is responsible for preparing and approving it?

The SESAR Deployment Manager is responsible for developing, maintaining and implementing the Deployment Programme, subject to the approval of the Commission<sup>45</sup>. Since its setup in December 2014, the Deployment Manager has updated the Deployment Programme at least annually.

### Who is consulted for its preparation?

Every version of the Deployment Programme is subject to a consultation process with the relevant stakeholders. The consultation involves: operational stakeholders mandated to deploy common projects regardless whether they are members of the DM or not; and key institutional stakeholders with which the Deployment Manager has

<sup>44</sup> Article 11.1 of Commission Implementing Regulation (EU) No 409/2013.

<sup>45</sup> Article 12.1 of Commission Implementing Regulation (EU) No 409/2013.

signed cooperation agreements, notably the SESAR Joint Undertaking, the European Defence Agency, the Network Manager, the European Investment Bank and EUROCAE. The consultation process takes place in several cycles where the comments provided by the stakeholders are recorded and responded to by the Deployment Manager, until its final adoption.

#### What is its level of granularity?

The Pilot Common Project (PCP) provides a high-level view (functionalities and sub-functionalities) of what needs to be deployed by whom and when. In order to ensure the understanding of the operational stakeholders and facilitate their investments necessary to deploy the functionalities mandated in the PCP, the Deployment Programme has introduced an element of additional granularity: the concept of families. A family represents a set of homogeneous technological and operational elements to be deployed within a defined geographical scope and timeframe. For each family, the Deployment Programme includes information about its scope, the stakeholders involved, the timing for implementation, inter-dependencies with other families and expected performance improvements.

The 2018 edition of the Deployment Programme defines 48 families that have been clustered into three groups:

- 36 core families. They correspond to operational and technological improvements necessary for and within the scope of the PCP Regulation.
- 7 facilitating families. They include implementation activities deemed to improve the overall performance of ATM. However, they are not part of the scope of the PCP.
- 5 complementary families. They are pre-requisites to PCP functionalities but which do not form part of the scope of the PCP itself.

#### How is it used to define priorities?

The Deployment Programme includes a deployment approach that identifies which families are needed in the short term to achieve a timely deployment of the entire Programme. The Deployment Manager encourages the concerned operational stakeholders to follow that approach and focus their deployment activities on such families considered most urgent. Moreover, the INEA CEF calls as from 2016 attribute

priority to those project proposals supporting the implementation of certain Deployment Programme families.

Who is monitoring its execution?

The Deployment Manager is responsible for monitoring the implementation of the Deployment Programme. On a yearly basis, the DM collects information from the operational stakeholders in order to identify which families have been already deployed, which are in progress, which have been planned and which are still to be planned. They also declare the expected completion dates of the families. This information allows the Deployment Manager to quantify the implementation gaps used as a basis to measure the progress of the PCP implementation.

# Acronyms and abbreviations

**AF:** ATM Functionality

**ANSP:** Air Navigation Service Provider

**ATFM:** Air Traffic Flow Management

**ATM:** Air Traffic Management

**CBA:** Cost Benefit Analysis

**CEF:** Connecting Europe Facility

**EUROCAE:** European Organisation for Civil Aviation Equipment

**EUROCONTROL:** European Organisation for the Safety of Air Navigation

**FPA:** Framework Partnership Agreement

**ICAO:** International Civil Aviation Organization

**IFR:** Instrument Flight Rules

**INEA:** Innovation and Networks Executive Agency

**PCP:** Pilot Common Project

**R&D:** Research and Development

**SDA:** SESAR Deployment Alliance

**SES:** Single European Sky

**SESAR:** Single European Sky ATM Research

**SESAR JU:** SESAR Joint Undertaking

**TEN-T:** Trans-European Networks - Transport

# Glossary

**Air navigation services:** Air traffic services (mainly air traffic control); communication, navigation and surveillance services (CNS); meteorological services (MET); and aeronautical information services (AIS).

**Air Navigation Service Provider (ANSP):** Any public or private entity providing air navigation services for general air traffic.

**Air Traffic Control:** A service provided for the purpose of ensuring a safe separation between aircraft and maintaining an orderly flow of air traffic.

**Air Traffic Controller:** A person authorised to provide air traffic control services.

**Air Traffic Management (ATM):** The aggregation of the airborne and ground-based services (air traffic services, airspace management and air traffic flow management) required to ensure the safe and efficient movement of aircraft during all phases of operations.

**Air Traffic Flow Management:** A function established to ensure a safe, orderly and expeditious flow of air traffic. It consists of a set of rules and procedures designed to achieve optimum use of available air traffic control capacity and to ensure that traffic volume is compatible with the capacities declared by the appropriate air navigation service providers.

**Airspace users:** Operators of aircraft, either civil (commercial airlines and general aviation) or military.

**ATM functionality:** A group of ATM operational functions or services related to trajectory, airspace and surface management or to information sharing within the en-route, terminal, airport or network operating environments.

**Common Projects:** EU regulations mandating the deployment of a set of ATM functionalities in a timely, coordinated and synchronised way, to achieve essential operational changes. Common projects shall identify the ATM functionalities that: having reached the appropriate level of industrialisation, are mature for implementation; and require synchronised deployment.

**Connecting Europe Facility:** A funding instrument providing EU financial assistance to trans-European networks in order to support projects of common interest in the sectors of transport, telecommunications and energy infrastructures and to exploit potential synergies between those sectors. In addition to grants, the CEF offers

financial support to projects through innovative financial instruments such as guarantees and project bonds.

**Cost Effectiveness Analysis:** In the general context of CEF calls for proposals, a cost effectiveness analysis (CEA) is meant to identify the projects that, for a given output level (e.g. compliance with a certain standard), minimize the present net value of costs. In respect of PCP-related projects, the DM has prepared CEAs with the purpose of presenting how the cost-benefit ratio of the candidate project compares with that of the PCP as whole. A CEA score of 1 would indicate that the cost-benefit ratio of that project is perfectly aligned with the expectations of the PCP.

**En route ATFM delay:** A capacity key performance indicator that measures the average minutes of en-route ATFM delay per flight attributable to air navigation services and expressed as the difference between the estimated take-off time requested by the aircraft operator in the last submitted flight plan and the calculated take-off time allocated by the Network Manager.

**Eurocontrol:** The European Organisation for the Safety of Air Navigation is an intergovernmental organisation founded in 1960 and aimed at promoting safe, efficient and environmentally-friendly air traffic operations throughout the European region. Among other roles, it executes the Network Manager functions and assists the Commission and the Performance Review Body in the implementation of the performance and charging schemes.

**European ATM Master Plan:** The main planning tool for defining ATM modernisation priorities, as agreed by the ATM stakeholders. The Master Plan is an evolving roadmap setting the framework for the development activities performed by the SESAR Joint Undertaking in the perspective also of the deployment activities to be performed by all operational stakeholders.

**Free Route Airspace:** A specified airspace within which users may freely plan a route between a defined entry point and a defined exit point. Subject to airspace availability, the route can be planned directly from one to the other or via intermediate (published or unpublished) way points, without reference to the ATS route network. Within this airspace, flights remain subject to air traffic control.

**Innovation and Networks Executive Agency (INEA):** An European Agency created in 2014 by the European Commission to manage the technical and financial implementation of certain EU programmes, one of which is the Connecting Europe Facility.

**Interoperability:** A set of functional, technical and operational properties required of the systems and constituents of the European ATM Network and of the procedures for

its operation, in order to enable its safe, seamless and efficient operation. Interoperability is achieved by making the systems and constituents compliant with the essential requirements.

**Network Manager:** A role created by the European Commission in 2011 to execute key functions at a supra-national (network) level: the central air traffic flow management, the coordination of the use of scarce resources and the design of the European Route Network. The Network Manager role has been assigned to Eurocontrol until the end of 2019.

**Performance and Charging Schemes:** The performance scheme sets binding targets for ANSPs in the key performance areas of safety, environment, airspace capacity and cost-efficiency. The charging scheme provides the rules for the calculation of the unit rates chargeable to airspace users for the provision of air navigation services.

**Pilot Common Project (PCP):** The first Common Project supporting the implementation of the European ATM Master Plan. The PCP identifies 6 ATM functionalities and was adopted as Commission Implementing Regulation (EC) No 716/2014.

**SESAR Deployment:** The activities and processes relating to the industrialisation and implementation of ATM functionalities identified in the ATM Master Plan.

**SESAR Deployment Alliance:** The SDA was established as a consortium of stakeholders initially without a legal status, governed by the provisions of the FPA and an Internal Cooperation Agreement. In January 2018, the SDA has changed its status to become a not-for-profit international association. It acts as SESAR Deployment Manager for the 2014-2020 period.

**SESAR Deployment Manager (SESAR DM or DM):** A function established in Commission Implementing Regulation (EU) No 409/2013 and formalized through a Framework Partnership Agreement. It mainly comprises: developing, proposing, maintaining and implementing the Deployment Programme; associating the operational stakeholders that are required to implement common projects; ensuring efficient synchronisation and overall coordination of the implementation projects and the related investments.

**SESAR Joint Undertaking (SESAR JU):** A public private partnership set up to manage the activities of the development phase of the SESAR project. The aim of the SESAR JU is to promote the modernisation of the European air traffic management system by coordinating and concentrating all relevant research and development efforts in the EU. It is responsible for the execution of the European ATM Master Plan.

**Single European Sky ATM Research (SESAR):** A project that aims to improve ATM performance by modernising and harmonising ATM systems through the definition, development, validation and deployment of innovative technological and operational ATM solutions.



## Replies of the Commission

<https://www.eca.europa.eu/en/Pages/DocItem.aspx?did=50455>

## Timeline

<https://www.eca.europa.eu/en/Pages/DocItem.aspx?did=50505>

## Audit team

The ECA's special reports set out the results of its audits of EU policies and programmes, or of management-related topics from specific budgetary areas. The ECA selects and designs these audit tasks to be of maximum impact by considering the risks to performance or compliance, the level of income or spending involved, forthcoming developments and political and public interest.

This performance audit was carried out by Audit Chamber II Investment for cohesion, growth and inclusion spending areas, headed by ECA Member Ms Iliana Ivanova. The audit was led by ECA Member Mr George Pufan, supported by Mr Patrick Weldon, Head of Private Office and Mr Mircea Radulescu, Private Office Attaché; Mr Pietro Puricella, Principal Manager; Mr Afonso Malheiro, Head of Task; Mr Luis De La Fuente Layos, Mr Romuald Kayibanda, Mr David Boothby and Ms Maria Pia Brizzi, Auditors.



*From left to right:* Patrick Weldon, Luis De La Fuente Layos, Romuald Kayibanda, Pietro Puricella, Afonso Malheiro, Maria Pia Brizzi, George Pufan, Mircea Radulescu.

In this audit, we reviewed the EU's intervention in the deployment phase of SESAR, the technological pillar of the EU's Single European Sky (SES) initiative. SESAR seeks to harmonise and modernise Air Traffic Management across Europe.

Overall, we conclude that the EU's regulatory intervention in the form of common projects has added value. However, we also found that EU funding in support of ATM modernisation was largely unnecessary, and that the management of the funding is affected by some shortcomings. We make a number of recommendations to the European Commission to help improve its support for ATM modernisation.



EUROPEAN  
COURT  
OF AUDITORS



Publications Office

EUROPEAN COURT OF AUDITORS  
12, rue Alcide De Gasperi  
1615 Luxembourg  
LUXEMBOURG

Tel. +352 4398-1

Enquiries: [eca.europa.eu/en/Pages/ContactForm.aspx](https://eca.europa.eu/en/Pages/ContactForm.aspx)

Website: [eca.europa.eu](https://eca.europa.eu)

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