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COMMUNICATION FROM THE COMMISSION

Governance and incentive mechanisms for the deployment of SESAR, the Single European Sky's technological pillar.

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1. INTRODUCTION

The Single European Sky ATM[1] Research Programme (SESAR) is the technological pillar of the Single European Sky (SES). SES is an ambitious initiative launched by the European Commission in 2004 to reform European ATM through an approach, that incorporates all components of the European air transport system. This ATM reform contributes to achieving the objectives for aviation described in both in the Transport White Paper[2] and the Flight Path 2050 report[3]. SESAR contributes to the implementation of the SES by developing technologies and procedures for a new-generation ATM system capable of enhancing performance by tripling the current capacity while improving safety by a factor of 10, reducing by 50% costs for the airlines and reducing air transport's impact on the environment by 10% per flight (SES performance objectives).

At the heart of SESAR is the European ATM Master plan[4] (Master plan), a cooperative framework bringing together all relevant stakeholders. For the first time, all aviation players are involved in the definition, development and deployment of a pan-European ATM modernisation project. Today the Programme is in the development phase, managed by the SESAR Joint Undertaking[5] (SJU), a Public Private Partnership (PPP) that comprises 17 members and over 80 other participants also from third countries.

According to the Master plan, SESAR deployment will require total investments exceeding EUR 30 billion but will generate significant economic value and improvements in safety, quality of service and environment for Europe. These benefits are however extremely dependent on the ability of the stakeholders to move forward with deployment in a timely and synchronised way (Table 1).

Table 1[6]

	SESAR deployed according to the Master plan	Impact if 10 years delayed deployment	Impact if unsynchronised deployment
Cumulative impact on EU GDP	EUR 419 billion	-30%	-28%

1 Air Traffic Management
2 COM(2011)144, 28.3.2011
3 http://ec.europa.eu/research/transport/pdf/flightpath2050_final.pdf
4 http://ec.europa.eu/transport/air/sesar/european_atm_en.htm
5 Regulation (EC) 219/2007 OJ L64, p.1, 27.2.2007
6 SJU study on the macro-economic impact of SESAR, http://www.sesarju.eu/news-press/documents/assessing-macroeconomic-impact-sesar-874, June 2011

Jobs created	328 000	-58%	-22%
CO_2 saved	50 million tons	-110%	-70%

The deployment of SES technologies and procedures is the natural sequence of their development and validation by the SJU. In March 2009, the Council asked the Commission to present proposals for the preparation and transition to the deployment phase of SESAR, focusing on governance and adequate funding mechanisms. The Commission services' preliminary assessment of SESAR deployment objectives and challenges was reported in a staff working paper issued in December 2010[7]. On this basis, more detailed assessment and consultation processes were carried out through a high level task force, chaired by the Commission and comprising top officials from the European Aviation Safety Agency (EASA), the European Organisation for the Safety of Air Navigation (Eurocontrol), and the SJU, assisted by a group of experts representing a wide range of stakeholders. From the conclusions of the task force and expert group[8], the results from other consultations, workshops and spontaneous contributions from stakeholders, the Commission derived the following basic approach:

(1) SESAR deployment must be performance driven;

(2) Only a timely deployment of SESAR through synchronisation and coordination of deployment activities will achieve the SES performance objectives and overall economic benefits expected from ATM modernisation;

(3) The Commission needs to:

- establish effective governance of deployment with appropriate incentive mechanisms using the existing SES framework and existing EU funding mechanisms;
- take the necessary initiatives to create credibility in the deployment process encouraging early investments from stakeholders also taking due account of the needs of specific stakeholders such as military, business and general aviation;

(4) Industry[9], in particular stakeholders investing in SESAR deployment, shall play a central role in coordinating and synchronising the deployment activities under EU political oversight.

This Communication describes the main elements proposed by the Commission to establish governance and incentive mechanisms for SESAR deployment and the action plan to implement them from 2012 onwards.

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7 SEC(2010)1580 final

8 http://ec.europa.eu/transport/air/sesar/deployment_en.htm

9 Industry refers to: air navigation service providers, airspace users, airport operators, the manufacturing industry and professional staff

2. PREPARING SESAR DEPLOYMENT

2.1. Building on the SES framework

Deployment governance and incentive mechanisms shall build on existing SES instruments[10]:

(1) the Single Sky Committee[11] and the Industry Consultation Body[12] provide a wide EU Member States and industry consultation process;

(2) the performance[13] and the charging[14] schemes provide the main mechanisms for stakeholders to align their investment plans with the Master plan;

(3) the Interoperability Implementing Rules are the enforcement mechanisms to ensure deployment of essential performance enablers;

(4) the Functional Airspace Blocks are a vehicle for regional synchronization of deployment and for common procurement;

(5) the Master plan is the agreed roadmap connecting research and development (R&D) with deployment scenarios to achieve performance objectives, which also includes the regulatory and the standardisation roadmaps and will identify the essential deployments;

(6) Eurocontrol, in particular through its Directorate Single Sky, assists the Commission in its role as EU Regulator;

(7) the Network Manager is responsible for ensuring that network performance targets are met and is competent to coordinate network performance related deployments while ensuring the maintenance of the Network Strategy Plan[15];

(8) the Performance Review Body assists the Commission to prioritise and monitor deployments through their effect on performance and to define future performance targets based on the planned technological improvements;

(9) the SJU is responsible for the maintenance and execution of the Master plan connecting R&D and deployment scenarios and assembles the technical competences and ability to manage large scale programmes safeguarding public interest and achieving stakeholders' buy-in;

(10) EASA has an essential role in rulemaking, safety oversight and promotion and assists the Commission on certification and interoperability issues;

(11) National Supervisory Authorities are responsible for safety oversight and certification of air navigation service providers (ANSP) and monitoring their

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10 SEC(2010)1580 final
11 Regulation (EC) 549/2004, Article 5.1, OJ L96, p.6, 31.3.2004
12 Regulation (EC) 549/2004, Article 6, OJ L96, p.6, 31.3.2004
13 Regulation (EU) 691/2010, OJ L201, p.1, 03.08.2010
14 Regulation (EC) 550/2004, OJ L96, p.10, 31.03.2004
15 Regulation (EU) 677/2011, Annex IV, OJ L185, p.22, 15.7.2011

compliance with the SES Service Provision Regulation[16] and related common requirements for the provision of air navigation services and application of safeguards under the interoperability regulation[17];

(12) the Consultative expert group on the social dimension of the SES[18] has an advisory role regarding all measures having significant social implications;

(13) Common projects[19] are an effective tool to establish governance mechanisms and a vehicle to allocate EU funding.

2.2. Updating the Master plan

In its present form, the Master plan is an essential instrument to keep ATM R&D fully deployment oriented. It will have to better align the identified deployment scenarios with expected performance benefits, organising them into consistent deployment packages clearly identifying those deployments essential to the achievement of the SES performance objectives. It will also need to incorporate International Civil Aviation Organisation's (ICAO) "building blocks"[20] concept to ensure SESAR interoperability with other regional ATM modernisation projects.

2.3. Interim steering arrangements

The transition towards future governance must be organized now to avoid delayed or unsynchronized deployment in the critical period preceding the establishment of the deployment governance. The Commission has already set up a temporary *ad hoc* steering group under the auspices of the Single Sky Committee to facilitate synchronization of on-going deployment activities. This committee agreed to consolidate this process by turning it into a transitional steering arrangement for SESAR deployment while serving as a test bed for the future governance.

2.4. Facilitating industrialisation

SESAR deployment comprises two distinct sub-phases: industrialisation and implementation. Industrialisation follows the SJU's validation of technologies and includes standardisation, certification and large scale production and is carried out by the manufacturing industry (ground and airborne equipment manufacturers). Implementation consists in the procurement, installation and commissioning of equipment and the implementation of procedures and is carried out by airspace users, ANSP and airports.

Careful planning for industrialisation in the Master plan is fundamental for realistic deployment planning. Industrialisation is driven by manufacturing industry's decisions to market SESAR validated technologies and by ATM products' lifecycles. It also requires interaction with regulatory organisations[21] and standardisation organisations[22]. The

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16 Regulation (EC) 550/2004, OJ L96, p.10, 31.03.2004

17 Regulation (EC) 552/2004, OJ L96, p.26, 31.03.2004

18 Commission Decision C/2010/9016, 20.12.2010

19 Regulation (EC) 550/2004 amended by Regulation (EC)1070/2009, Article 15a, OJ L300, p.34, 14.11.2009

20 ICAO's working document to the Global Air Navigation Industry Symposium on Aviation System Block Upgrade, http://www2.icao.int/en/GANIS

21 Such as EASA and ICAO

Commission can facilitate certification and standardisation processes through continued financial support to the EU Standardisation Organisations and cooperation with the Federal Aviation Administration of the United States of America[23] and ICAO[24] to ensure global interoperability.

SESAR will impact many aspects of aviation from aircraft and airports to procedures and working methods. As safety is a common denominator to all these aspects, EASA plays an essential role in this process in ensuring timely regulation and consistency between safety regulations and SESAR developments.

2.5. Continued technological innovation

It will be necessary to address the longer term need for technological innovation to support evolving performance requirements. Development and deployment are two interrelated processes: on one hand, ATM R&D will not stop with the completion of SJU's mandate; on the other hand, SESAR deployment will spread over many years, requiring R&D support to ensure the necessary technological reactivity required by an evolving operational environment.

The experience of the SJU is proving the value of a PPP as single governance for managing ATM R&D[25]. The Commission considers that the PPP approach through an EU body is delivering the desired results and should be continued. As the SJU's mandate expires on 31.12.2016, the Commission will carry out the necessary evaluation and consultations with a view to submitting a relevant proposal to the Council and the European Parliament before 2013.

3. SESAR DEPLOYMENT FINANCING AND FUNDING

A major challenge in the deployment process is financing timely implementation. More than 2/3 of the total investments required for SESAR implementation will be borne by civil and military airspace users for equipping their aircraft (EUR 22 billion)[26]. The remaining investments, borne by civil and military ANSP and airport operators, will be necessary for ground equipment (EUR 8 billion)[27]. It is necessary to ensure a strong connection between investments and benefits. The targets imposed by the Performance Scheme[28] in key performance areas of capacity, environment, safety and cost-efficiency should constitute strong incentives for ANSP to invest early on new technology. Military and state aircraft, general and business aviation however, may not have positive business cases in deploying

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22 Such as the EU Standardisation Organisations, which include European Committee for Electrotechnical Standardisation and the European Telecommunications Standards Institute, the Organisation for Civil Aviation Equipment and Radio Technical Commission for Aeronautics

23 Memorandum of Cooperation EU-US R&D in civil aviation, annex 1 SESAR-NextGen interoperability signed on 3.3.2011

24 Memorandum of Cooperation between the EU and the ICAO providing a framework for enhanced cooperation, OJ L232, p.2, 9.9.2011

25 Report on the intermediate evaluation of the SESAR Joint Undertaking and the progress on the execution of the European ATM Master plan, COM(2011)14 final, 24.1.2011

26 European ATM Master plan : A total of EUR 22 billion, including airlines (EUR 11.5 billion), business aviation (EUR 3.4 billion), general aviation (EUR 940 million) and the military (EUR 6.4 billion)

27 European ATM Master plan : A total of EUR 8 billion, including military ANSP and airports (EUR 570 million), civil ANSP (EUR 6.2 billion) and civil airports (EUR 550 million)

28 Regulation (EU) 691/2010, OJ L201, p.1, 3.8.2010

SESAR, but will nevertheless be required to invest in and implement some SESAR equipment. In addition, SESAR implementation projects will require high financial risk-taking that private financial markets either price very high or would not accept at all. As a result, operators are inclined to be reactive rather than proactive ("last mover advantage"): an airline investing in new airborne equipment may not see any benefit before the ANSP have made the corresponding investments on ground equipment; similarly, ANSP should have positive business cases when a significant number of aircraft are equipped.

An optimized financial support to implementation activities will ultimately result from a coordinated combination of private and public funds using the appropriate instruments adapted to the nature of each project. In order to mitigate risks related to negative business cases and to leverage private funds, it is estimated that SESAR implementation would require EUR 3 billion in EU funds over the period 2014-2024. EU funding should support SESAR implementation by facilitating synchronisation and coordination between stakeholders for essential deployments identified in the Master plan including, as far as it is allowed by the relevant funding instruments, those involving third countries.

The Connecting Europe Facility (CEF)[29], which is an integrated instrument for investing in EU infrastructure priorities within the framework of the Trans-European Networks policy[30] in the sectors of transport (TEN-T), energy and telecommunications, includes EU funding for SESAR deployment. Other potential sources of financing need to be explored, such as loans from the European Investment Bank, the SES Charging Regulation and the Emissions Trading Scheme.

4. DEPLOYMENT GOVERNANCE

4.1. Scope

Governance and incentive mechanisms for SESAR deployment must focus on the deployment activities identified in the Master plan as critical to achieve SES performance objectives. The geographical scope of deployment will primarily address the deployment within the SES area. Nevertheless, governance mechanisms should provide for the necessary coordination, synchronisation, and cooperation with third countries with a pan-European perspective.

4.2. Governance functions

4.2.1. Deployment Programme maintenance

Deployment governance will need to develop, adopt and update a Deployment Programme as the binding reference for synchronizing, monitoring and funding of implementation projects. The Deployment Programme should be kept fully consistent with the Master plan and the Network Strategy Plan, reconciling planning performance and budget requirements in a single work programme steering deployment governance. It will focus on the Master plan's essential deployments aiming to achieve key performance targets, identifying actions required from the relevant stakeholders with the associated risks and mitigations.

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[29] Proposal for a Regulation of the European Parliament and of the Council establishing the Connecting Europe Facility, COM(2011)665 of 19.10.2011

[30] Proposal for a Regulation of the European Parliament and of the Council on Union guidelines for the development of the trans-European transport network, COM(2011)650 of 19.10.2011

4.2.2. Deployment Programme execution

This function consists in:

– synchronizing timing, coordinating deployment activities and aligning stakeholders' investment plans with the Deployment Programme while avoiding conflict of interest and promoting fair competition;

– supporting stakeholders in executing their investments plans through effective decision making, legitimacy, sharing best practices, promoting common procurement, providing common tools and guidance, raising awareness, encouraging transparency, highlighting benefits;

– enforcing and incentivising the achievement of key performance milestones through SES tools and appropriate legal instruments;

– managing the risks associated with deployment activities and activating mitigation actions.

4.2.3. Monitoring and reporting

Deployment governance should also cover the monitoring and reporting on the progress of deployment with respect to the Deployment Programme, in particular:

– assessing the alignment of stakeholders' individual investment plans with the Deployment Programme;

– detecting and reporting gaps in terms of planning, budget and performance, analysing them and defining corrective actions to be implemented as part of the execution function.

4.2.4. Financial Management

Finally, deployment governance needs to ensure an adequate combination and management of the available public and private financial resources to execute the Deployment Programme by:

– leveraging and allocating funds, in a non-discriminatory manner, to stimulate timely investments in implementing new technologies and procedures;

– supporting stakeholders in negotiating with financial organisms;

– ensuring sound and transparent financial management.

4.3. Governance structure

SESAR deployment governance should ensure a strong EU political oversight, adequate connections with and involvement of SES instruments and bodies and a central role for stakeholders, especially those investing in deployment. This can be achieved through a single structure comprising three interrelated levels**:** "Political", "Management" and "Implementation". This three-tiered governance involves the accountable entities in accordance with their respective competences and respects the principle of separation between regulatory/oversight functions and service provision.

This structure could be defined in the guidance material for common projects[31], which would establish, for each level the main players, responsibilities, accountability, contributions to the governance functions (Table 2) and the interactions and binding arrangements between the players in each level and the necessary external interfaces. A reporting structure will define how powers and supervision are implemented throughout the three levels and the Master plan and the Network Strategy plan will set the action timeline. Deployment governance should be adequately flexible and reactive to cope with any form of contingency while assuring transparency, fair competition and avoiding conflict of interest.

4.3.1. Political level

The top level of the governance structure should safeguard the public interest and coherence with the SES framework setting, in particular, priority performance targets and safety requirements, ensure timely regulation and effective management of EU funds. Considering its institutional role and its responsibility for SES implementation and management of EU funds, the Commission will lead this level with the relevant support of:

– the Single Sky Committee and the Industry Consultation Body, in particular the airspace users as the main customers of SESAR deployment;

– the Performave Review Body;

– Eurocontrol, in particular its Directorate Single Sky;

– EASA;

– the Consultative expert group on social dimension of the SES;

– the European Defence Agency.

The Commission would retain full control over decisions on EU funding to the common projects, in accordance with the rules governing the relevant funding programmes and by establishing the appropriate contractual relationships with the beneficiaries of the financial support. This level should establish adequate interfaces with third countries, standardisation organisations and relevant non-EU regulatory authorities.

4.3.2. Management level

Considering that industry is responsible for the performance of the system and that it will necessarily bear the majority of the costs of deployment activities, it appears that a Deployment Manager, consisting of a representative industrial partnership leading this level, is the most appropriate approach to enable industry to play the leading role it legitimately claims in SESAR deployment. This level will also include the Network Manager and the SJU that, within their respective competences, will provide the Deployment Manager with a feedback on the (ex-ante and ex-post) impact of the Deployment programme on operations and the availability of operational and technical improvements to be included in that programme respectively.

[31] Regulation (EC) 550/2004 amended by Regulation (EC)1070/2009, Article 15a(2), OJ L30, p., 14.11.2009

The Deployment Manager could be set up as a common project under Article 15a(3) of Regulation 550/2004, which requires that the Commission carries out an independent cost-benefit analysis and appropriate consultations with Member states and relevant stakeholders. The characteristics and requirements for the Deployment Manager would be defined in the guidance material for common projects envisaged by the same regulation, which would in particular:

– define the procedure for the establishment of the industrial partnership;

– define the tasks of the Deployment Manager and the required attributes to execute them, including the appropriate mechanisms to avoid any risk of conflict of interest and the interactions with public authorities;

– indicate which stakeholders are required to participate in the partnership to guarantee its managerial and geographical legitimacy and ensure appropriate differentiation between consulting stakeholders and giving them a stronger [managerial] role as investors and suppliers;

– require the binding commitment of the participants to develop/maintain and execute the Deployment Programme, assuming the associated deployment risks where necessary, under the oversight of the political level;

– define the roles of, and working arrangements with, the Network Manager, the SJU and the body entrusted to ensure the coordination of the military implementation projects;

– define the external interfaces, in particular with third countries in a pan-European context;

– promote regional coordination through Functional Airspace Blocks.

The Deployment Manager would be selected through an open call process. Should industry fail to establish a partnership for the Deployment Manager, it could be envisaged to designate an existing entity to execute this role.

The Deployment Manager would evaluate financing needs of the implementation projects and match them with the public and private funding instruments as necessary. It will support the political level in deciding on the allocation of public funding to common projects .

4.3.3. Implementation level

This level is primarily composed of the common projects' managers. They will be required to implement decisions of the Deployment Manager to ensure consistency of these projects with the Deployment Programme. However, as SESAR deployment activities will be wider than those that can be eligible as common projects, this level should remain open to other implementation projects related to:

– SESAR related deployment activities carried out by the military;

– deployment activities not related to essential deployments in the Deployment Programme but consistent with the Master plan;

– deployment activities outside the SES area.

The relationship between these projects and the Deployment Manager would have to be defined on a case by case basis.

Table 2- Contributions to governance functions

	Political level European Commission	**Management level** Deployment Manager	**Implementation level** Project managers
Deployment Programme Maintenance	– Endorse the Deployment Programme	– Establish the Deployment Programme – Submit the Deployment Programme to the political level for endorsement – Adopt the endorsed Deployment Programme	
Deployment Programme Execution	– Overall oversight – Decisions/arbitrations – Enforcement/incentivisation through regulation and/or financial stimulus	– Implement decisions of the Political level – Synchronised execution of the Deployment Programme – Coordination of the Implementation projects – Risk management	– Implementation of the Management level decisions – Individual management of projects
Reporting & monitoring	– Overall monitoring	– Monitor & report exectution of the Deployment Programme to the Political level – activate alert mechanisms	– Reports progress on individual implementation projects & contribution to Deployment Programme – activate alert mechanisms
Financial management	– Decide on allocation of EU funds to Common projects	– Combine public & private funds – Propose allocation of EU funds to Common Projects – Financial management of Implementation projects	– Financial management of allocated funds for individual implementation projects

5. CONCLUSIONS

SESAR deployment is an essential step towards the full implementation of the SES. Only a timely, synchronised and coordinated deployment, fully integrated in SES framework will effectively contribute to achieving the SES performance objectives. The Commission, continuing to implement and coordinate SES instruments, aims to facilitate SESAR deployment.

A number of actions will be initiated without delay as it is estimated that the set up of the Deployment Manager and the launch of the most urgent common projects could require up to 36 months. In particular, the Commission will ensure coherence of development and deployment processes with the SES framework and that the human factor, military and safety issues are duly addressed. If necessary, it will consider adapting SES instruments, such as the performance and charging schemes to better respond to deployment objectives. It will also stregthen and consolidate cooperation with Eurocontrol within the SES framework, focussing

on the Performance Review Body and the Network Manager, in conjunction with the negotiations for concluding a high level agreement between the EU and Eurocontrol[32].

In order to prepare the transition to SESAR deployment, the Commission will ensure consistency between the Network Strategy Plan and the Master plan update (planned to be adopted by July 2012), which will be the references for the Deployment Programme. It will ensure that industrialisation issues are duly addressed in the Master plan and that appropriate connections are established and support is maintained to standardisation and certification bodies as well as manufacturing industry through SJU's technical expertise. In this context, the Commission will continue to support ICAO's standardisation effort and technical cooperation with the USA and Japan to ensure global interoperability.

The Commission will carry out the necessary assessments and consultations in view of submitting a proposal before 2013, consistent with the future financial perspectives, for extending the SJU's mandate beyond 31.12.2016. The proposal should also address the governance and funding of future ATM R&D, Master plan maintenance and coordination between development and deployment governances.

The Commission will also implement the actions endorsed by the Single Sky Committee to consolidate the steering process for early deployment activities, as test bed for the deployment governance mechanisms to be implemented, and ensure its continuation up to the establishment of the future deployment governance (January 2012). This will include the initialisation of an interim deployment programme (March 2012).

Common projects and the related guidance material will be used as vehicles to establish deployment governance and to channel incentives for timely and synchronised deployment. Deployment governance will be implemented through three levels ensuring a strong EU political oversight, an effective deployment management through a binding industrial partnership and an efficient management within each individual implementation project. Incentive mechanisms also include focussed EU financial support that will be provided through existing instruments, in particular through the CEF in accordance with the TEN-T guidelines. Before the end of 2012 and after consulting Member states and relevant stakeholders, the Commission aims to establish and adopt guidance material for common projects defining the three levels of governance and the eligibility criteria for common projects. Based on the guidance material and with the assistance of the SJU and Eurocontrol, the Commission would then prepare and launch the call for proposals for the Deployment Manager and establish the future common projects.

[32] Council's mandate of 6.10.2011