



WORKING PAPER

TWELFTH AIR NAVIGATION CONFERENCE

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Agenda Item 6: Future direction

6.1: Implementation plans and methodologies

**TOWARDS ICAO GUIDANCE MATERIAL TO FACILITATE GANP
IMPLEMENTATION THROUGH SYNCHRONIZED DEPLOYMENT OF
RELEVANT ASBUS AT REGIONAL OR LOCAL LEVELS**

(Presented by the Presidency of the European Union on behalf of the European Union and its Member States¹; by the other Member States of the European Civil Aviation Conference²; and by the Member States of EUROCONTROL)

SUMMARY

SESAR, the technological pillar of the Single European Sky (SES), promotes a deployment oriented R&D and a performance driven deployment. While the R&D is progressing under the governance of the SESAR Joint Undertaking (SJU), Europe has started to define governance and incentives mechanisms necessary to ensure timely and synchronized deployment of SESAR.

This WP highlights the main lines of the European³ approach to SESAR deployment from which it derives a generic strategy which could be captured as ICAO guidance material on how to implement GANP through synchronized deployment of relevant ASBUs at regional or local levels.

Action: The Conference is invited to agree to the recommendation in paragraph 4

1. INTRODUCTION

1.1 As concluded after GANIS, implementation of the Global Air Navigation Plan (GANP) will not deliver by itself. Special attention will be required to ensure synchronized deployment of relevant aviation system block upgrades (ASBUs) at regional or local levels. At the European level, discussions have already started on how best to organize SESAR deployment. Considering the interest raised by Europe's presentation at ICAO's Regional Symposium in Moscow in March 2012 and based on Europe's experience so far, this paper submits principles and concepts, most of them still under discussion, as an inspiration for the work of ICAO.

1.2 In Europe, the Single European Sky (SES) is being implemented to improve the performance of the aviation system while taking due account of military mission effectiveness, in particular through the modernization of the ATM system. Required performance will differ for each specific subregion in Europe and

¹ Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom. All these 27 States are also Members of ECAC.

² Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Croatia, Georgia, Iceland, Moldova, Monaco, Montenegro, Norway, San Marino, Serbia, Switzerland, The former Yugoslav Republic of Macedonia, Turkey and Ukraine.

³ European in the context of the States and industries cooperating in SESAR.

the urgency of developing new procedures and technologies is dependent on the need for performance enhancement, the general growth of air traffic and on specific local or subregional requirements. This is also a challenge for the deployment of SESAR, the technological pillar of SES.

1.3 As for Europe there is a multi-State situation with many stakeholders from industry, the European approach might be interesting for other regions and ICAO to implement the GANP through consistent local and regional plans.

1.4 The SESAR programme consists of many activities, ranging from research and development (R&D) to implementation. While R&D activities are managed by the SESAR Joint Undertaking which has started to deliver validated technologies and procedures, there is no formal governance for SESAR deployment yet.

1.5 Proposals for deployment are developed and in discussion. This paper has taken some general aspects as input for the development of an approach by ICAO to implement the GANP.

1.6 SESAR deployment should be driven by the need for increased performance. SESAR deployment is globally beneficial, but not always to all stakeholders, everywhere, and at any time. There may be a need for regulatory and economic interventions to mitigate these individual, local or transitional situations and ensure global benefits will be achieved.

1.7 These considerations have led the European Commission (the executive body of the European Union) to take initiatives towards the establishment of a governance for SESAR deployment. This paper reflects several aspects of the governance and incentive mechanisms under consideration in Europe to ensure SESAR deployment which could be relevant to other regions or States willing to manage the timely and synchronized deployment of new ATM technologies and procedures within their area consistently with the GANP.

1.8 As this is work in progress, the presenters of this paper would be happy to keep ICAO informed of any further development.

2. THE EUROPEAN APPROACH TO SESAR DEPLOYMENT

2.1 The European approach described in this section is still under discussion between the European Commission and the EU Member States. Finalization is foreseen in 2013. However, main issues and key principles have been identified and described in Commission's Communication on "Governance and incentive mechanisms for the deployment of SESAR"⁴. They are summarized below for consideration by this Conference.

2.2 The European ATM Master plan (the Master plan) constitutes the sole European reference for the technological pillar of the SES. This plan is equivalent to the GANP⁵ but for Europe.

2.3 However, the Master plan is not detailed enough to support States and stakeholders commitments and to be easily transformed into series of coordinated implementation projects. Moreover, the Master plan pursues a rather holistic approach identifying all the operational changes that new technologies and procedures could support whereas only a subset of them – the essential changes - is really required to provide most of the performance increase. As a consequence, Europe promotes the concept of a deployment programme, derived from and consistent with the Master plan, which provides the project view required to turn the plan into reality while focusing on the operational changes recognized as critical to the performance.

2.4 As an intermediate step between the Master plan and the deployment programme, Europe further promotes the concept of common projects for those elements of the Master plan which require synchronized and network-wide implementation in Europe. A common project consists of a comprehensive subset of

⁴ COM(2011) 923

⁵ See AN-Conf/12-WP/36: The European ATM Master Plan and ASBUs

implementation objectives extracted from the Master plan⁶. The common project identifies accompanying regulatory measures (implementing rules, community specifications), including standardization activities, and incentives⁷. It includes a detailed cost benefit analysis which must demonstrate that the implementation of the common project is beneficial for Europe⁸. The airspace users should be strongly involved in the deployment process and be invited to assess these benefits before the common project is adopted, committing States and stakeholders to its implementation. When adopted, the common project is then translated by industry into implementation projects which are then integrated into the deployment programme.

2.5 To ensure timely and synchronized execution of the deployment programme and its related implementation projects, Europe intends to establish a deployment manager at the heart of SESAR's deployment governance. The deployment manager should consist of an industrial consortium composed of air navigation service providers, airports and airspace users. It should interface closely with the network manager as well as the military community whose adequate involvement will be key to the success of SESAR deployment.

2.6 No implementation can happen without industrialization which is the process bridging between successful validation of new technologies and procedures and the readiness to implement them. Amongst others, industrialization comprises the establishment of the technical standards required to market new ATM technologies and procedures through fair competition between the suppliers and safety standards required to certify them before going operational while ensuring global interoperability⁹. Although there is no intention to govern the industrialization phase, it is required to keep it closely connected with the development phase upstream and the implementation phase downstream, in particular to ensure timely delivery of all the necessary standards.

2.7 Where necessary the standardization, in the sense of technical specifications, will be supported by EU regulation, making the use of some technical specifications mandatory. To assure global interoperability it is requested, that ICAO will update or develop ICAO provisions for implementation of the GANP, so that the deployment of SESAR can be aligned with ICAO provisions.

3. STRATEGY

3.1 Global interoperability and improved performance are essential to airspace users. They can maximize return on investments and translate into a benefit for the global ATM system.

3.2 Implementation of new ATM technologies and procedures may differ for each region and even for each specific application depending on the needs and the context to implement. Regional and local Master plans are therefore essential to translate the GANP, taking due consideration of the regional/local specific needs and constraints.

3.3 In view of the numerous stakeholders interdependencies in an optimized, modernized ATM environment, and in order to achieve successful planning and implementation, the importance of working together (e.g. with military authorities) in a collaborative approach which takes account of the regional specificities, cannot be overemphasized.

3.4 It is proposed to take the following elements into account when preparing for the deployment of new ATM technologies and procedures at regional or local level.

⁶ A common project could well be structured in terms of ASBUs.

⁷ See AN-Conf/12-WP/58 on Best Equipped Best Served provides an example of incentive; other incentives should arise from the activation of mechanisms in the EU performance and charging schemes and EU financial tools such as Connecting Europe Facility (CEF). Other financial instruments are still under investigation.

⁸ See AN-Conf/12-WP/60 on Cost Benefit Analysis

⁹ See AN-Conf/12-WP/61 on Standardization

A Regional/local Master plan

3.4.1 Using the GANP as the global framework, develop and promote a regional/local vision of what has to be achieved, underlining the connection between performance needs, implementation objectives and R&D activities. This vision should be expressed in terms of ASBUs and constitute the regional/local Master plan. Buy-in from the relevant stakeholders should be sought. Such a plan should then be maintained to reflect evolutions in terms of performance needs, achieved deployments, validated R&D results and regularly renew stakeholders' buy-in. The European ATM Master plan provides an example.

From the plan to the deployment programme

3.4.2 However, such a plan is not a deployment programme. To ensure timely and synchronized deployment, it is necessary to move from the non-binding common vision reflected in the plan to the detailed binding project view with clear identification of the individual role of a deployment programme. The whole plan does not need to be transformed into a programme at once. Indeed, to be efficient, the programme must be kept focused on implementation objectives:

- a) supported by mature technologies and procedures (i.e. successfully validated);
- b) acknowledged as critical to performance; and
- c) requiring synchronization amongst multiple stakeholders and States.

3.4.3 So, at least after each update of the Master plan, there is a need to assess what's new in the Master plan which could be relevant to be transferred in the deployment programme.

The common project

3.4.4 Some elements of the Master plan need to be implemented synchronized and network-wide. In Europe, the vehicle to transfer between the Master plan and the deployment programme for these network-wide elements is named common project. It could be seen as the business view for a subset of implementation objectives from the Master plan. The common project includes:

- a) validation of R&D results, including proven contribution to the SES performance objectives and coherence with performance plans;
- b) solid overall business case, in particular endorsed by airspace users;
- c) assessment of safety cases;
- d) identification of regulatory needs; and
- e) dedicated incentives.

3.4.5 Above all, a common project must demonstrate it brings an overall benefit before it could be adopted. When adopted, States and the stakeholders should be committed to its implementation and it should be translated by industry into implementation projects then aggregated into the deployment programme.

Deployment governance

3.4.6 Deployment should happen through the execution of the implementation projects identified in the deployment programme. Because these projects jointly achieve the deployment programme, their execution should be coordinated through a single governance structure where the respective roles and responsibilities of the States and of the stakeholders should be clearly defined.

3.5 It is further proposed to ICAO to refine the above items in guidance material that regions and States could use to facilitate regional and local implementation of the GANP.

4. **RECOMMENDATIONS**

4.1 The Conference is invited to:

- a) advise ICAO to cooperate with States and regions with major ATM modernization programmes to keep the GANP up date in line with global developments;
- b) advise ICAO to support other States and regions when establishing their regional/local Master plan to ensure consistent implementation of the GANP at regional/local level and preserve global interoperability; and
- c) invite ICAO to develop guidance material for the regional/local deployment strategy of new ATM technologies and procedures to support the implementation of the GANP, based on regional thoughts and future practices, in particular the European approach shortly described in this paper.

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