



# Work Package Final Report

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## Abstract

Overall, the achievement of WPC is to have developed and matured the European ATM Master Plan as a key European strategic planning tool endorsed and recognised at the highest European political level. It has been confirmed as the SES reference for the evolution of the European ATM system and is as such the maintained and performance driven plan for European SESAR R&D and Deployment. Moreover, the Master Plan has gained global recognition and is known, valued and used as a main reference for the Global Air Navigation Plan. The Janes Award 2012 for best contribution to European ATM was a clear demonstration of the achievement.

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Rational for rejection
None.

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## Acronyms

Acronym	Definition
ATM	Air Traffic Management
SESAR	Single European Sky ATM Research
SJU	SESAR Joint Undertaking
WP	Work Package
ECAC	European Civil Aviation Conference
ESSIP	European Single Sky ImPlementation
STATFOR	STATistics and FORcast
ICAO	International Civil Aviation Organisation
WP	Work Package

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# 1 Work Package Overview

WP-C has been responsible for the maintenance of the European ATM Master Plan. The Work Package included projects and tasks to develop methods and tools, maintain, coordinate and publish Master plan information and tasks to consolidate and publish this during 2 main Master Plan campaigns managed by the WP with the active involvement of the Key Stakeholder communities and consultation at ECAC wide level. WP-C was one of the transversal WPs with a central role in the SESAR Work Programme.

## 1.1 Work Package contribution to the Master Plan

The WP provided an overall contribution to the Master Plan and coordinated and consolidated contributions to the Master Plan from other WPs.

The key contributions consisted of:

- development of Master Plan structure and approach
- development of methods and tools for Master Planning including for strategic performance and deployment planning, identification and analysis of standardisation and regulatory needs as well as for incentive scheme's,
- development of Master Plan update campaign approach
- development of Master Plan document
- development of Master Plan portal for access to all Master Plan information
- integration of deployment planning and progress reporting in the Master Plan as Master Plan level 3
- development of a Master Plan information maintenance process and tools

## 1.2 Work Package achievements

Overall, the achievement of WP-C is to have developed and matured the European ATM Master Plan as a key European strategic planning tool endorsed and recognised at the highest European political level. It has been confirmed as the SES reference for the evolution of the European ATM system and is as such the maintained and performance driven plan for European SESAR R&D and Deployment. Moreover, the Master Plan has gained global recognition and is known, valued and used as a main reference for the Global Air Navigation Plan. The Janes Award 2012 for best contribution to European ATM was a clear demonstration of the achievement.

Through the prioritisation of the operational changes and the identification of Essential Operational Changes, WP-C established the basis for the Pilot Common Project and contributed to the further refinement of the PCP.

WP-C's main contributions were the two significant updates of the Master Plan, in 2012 and 2015. In that context the following developments/achievements took place:

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## Master Plan Structure and Approach

The Master Plan structure and approach have significantly evolved since the first version of the Master Plan in 2007 (deliverable D5 of the SESAR Definition Phase). It has evolved from one detailed technical document to a full Strategic Planning Environment consisting of 3 consistent and complementary levels of information.

Level 1, the executive level, is the Master Plan document and has evolved towards a true executive document that is used at the highest political level. It is widely valued by the Stakeholder Community and the last edition, edition 2015, was endorsed at all executive levels without significant issue.

Level 2 is the planning and architecture level and consists of more detailed planning and architecture information that is maintained through the results of the programme. The information has evolved in terms of quality (consistency and completeness) and in terms of ownership. The latter is of high importance for managing a complex programme like SESAR.

Level 3 is the implementation level consisting of the Implementation Plan, including Implementation Objectives for elements that have reached a certain level of maturity and for which endorsement has been reached by all Stakeholders for a coordinated implementation across ECAC. Level 3 being the ESSIP Plan and Report is instrumental in preparing for coordinated deployment of all Essential Operational Changes, reflected in the PCP and its pre-requisites, and in the SESAR Solutions.

The structure of the Master Plan is unique compared to other regional development programmes. Its main advantage compared to the pre-SESAR timeframe is that it is maintained, sustainable and complemented by an appropriate progress reporting process. This ensures maintained relationship between Strategy, R&D and Deployment which in turn prevents radical and costly changes in the evolution of European ATM.

## Master Plan methods and tools

The Master Plan is a performance driven plan. The Master Plan does not include performance targets to avoid confusion with the SES Performance Scheme. However, the Performance Ambitions and Needs that have a much longer term perspective, are consistent with the SES Performance Scheme to ensure traceability. The Performance Needs represent the Performance that is expected to be needed by the ATM system at a specific point in time. In principle it can be expressed per Key Performance Area and per Operating Environment although the availability of information (e.g. statistics) has prevented a mature system to be developed. Performance Ambitions are informed by forecasts, performance evolution and political vision and represent the performance capability (at overall European ATM Level) to be enabled by SESAR. The Long Term Forecast available through the STATFOR challenges of growth study is an essential input for strategic performance planning. The timing for the updates as well as the scope (e.g. planning horizon, forecasting area) have been made consistent with the Master Plan.

The Master Plan is a plan of operational changes driven by the Performance Ambitions/Needs and enabled by technology changes. A method has been developed to identify the Operational Changes by bundling smaller operational improvements and understanding the many interdependencies between the components of the ATM system as well as the lead times for R&D, Deployment and Operations. However, the significant lack of suitable performance assessments has prevented a full performance driven approach. The contribution of engineering judgements in the assessment should be replaced by evidence from validation.

Timely industrial development, deployment and operation are in many cases also dependent on the timely availability of Standards. The plan for the availability of standards is therefore an important component of the Master Plan. A method has been developed and used to analyse the needs for Standards and to consolidate and translate them in a standardisation roadmap. Also regulatory activities are sometimes needed in support of timely deployment and delivery of performance. Also for this a method was developed and used to make an early regulatory impact assessment.

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#### Master Plan update-campaign approach

A significant contribution to the success of the Master Plan is the approach to develop buy-in. A Master Plan can only be of value if supported by all key Stakeholders. These Stakeholders have different sometimes conflicting interests. WP-C has successfully managed two 6 months Master Plan update campaigns. The campaigns followed the "cone of convergence" approach which implies a progressive and non-reversal process of agreement based on full transparency and involvement. Gradual, top-down and systematic all contents of the Master Plan across its 3 levels was shared, discussed and agreed between the SESAR Partners participating in WP-C, and during the campaigns, as member of the Master Planning Group.

#### Master Plan document

The Master Plan document has evolved from a detailed rather technical document available from the SESAR Definition Phase to a mature sustainable executive document (Master Plan Edition 2015) which has a world-wide distribution. The executive summary of the Master Plan document has been translated into all ICAO languages. Unique and a main value is that the contents of the document is consistent with and has been derived from underlying planning details which are available through the Master Plan Portal.

#### Master Plan Portal

The Master Plan Portal was developed in an evolutionary manner and gives interactive access to all 3 levels of the Master Plan. It is used as main reference for the SESAR work programme, tool for maintaining the Master Plan information and the public version of the Master Plan Portal is used to communicate the contents of the Master Plan to the global community. The Portal is valued and frequently used.

#### Master Plan Level 3

The European Single Sky ImPlementation (ESSIP) Plan and Report are the Level 3 of the Master Plan. The ESSIP process has been adapted and integrated into the overall Master Plan maintenance process. The ESSIP information, e.g. Implementation Objectives, is integrated and consistent with other Master Plan information and available through the Master Plan portal. With the three levels the Master Plan has become a unique, comprehensive and complete strategic planning tool that connects detailed implementation planning and reporting (at level 3) with the political strategic vision (at level 1).

#### Master Plan information maintenance process and tools

In the past ATM strategies were developed but not maintained. The Master Plan has evolved towards a maintained plan. The maintenance process is well structured and more importantly widely supported and used by all actors in the SESAR work programme. This ensures that the Master Plan continues to be the single reference for ATM R&D and Deployment in Europe. Understanding the dependencies between the elements of the Master Plan is very important. Further integration with the System Architecture could further improve the maintenance of dependencies and hence the quality of the Master Planning process.

## 1.3 Work Package Deliverables

The work package management activities have not led to any relevant deliverables directly.

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## 1.4 Contribution to Standards and Reference Material

The Master Planning process is key in identifying, consolidating and translating the needs for standard development. It provides a reference for reaching agreements with standardisation organisations and ICAO. For more details reference is made to the WPC.3 Final Report.

## 1.5 Work Package Conclusion and Recommendations

Overall WP-C has developed and operated a comprehensive and highly valued Master Planning Process and delivered two significant and globally recognised updates of the European ATM Master Plan.

From this the following conclusions and recommendations can be derived:

- The European ATM Master Plan and the Master Planning process are an essential reference and instrument for the governance of European ATM (R&D and Deployment)
- WP-C has successfully developed this instrument and prepared it for the next phase
- Performance is the most important driver for the evolution of ATM. Better understanding of the performance effects through the availability of performance assessments of Solutions will further improve the quality and effectiveness of Master Planning
- Further integration with and development of the Architecture will further improve the quality of the Master Planning process
- Stakeholder involvement as organised through the Master Plan update-campaign at both expert as well as executive levels has proven to be instrumental in achieving the necessary buy-in in the Master Plan.

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## 2 References

- [1] [SESAR Programme Management Plan](#)
- [2] [European ATM Master Plan](#)
- [3] Multilateral Framework Agreement (“MFA”) signed between the SJU, EUROCONTROL and its 15 selected members on August 11, 2009, amended on 14 June 2010, 19 October 2010 and 2 July 2012
- [4] Name of SWP, Title of document, Identification number, Edition, date
- [5] Name of SWP, Title of document, Identification number, Edition, date
- [6] Note: list all WP and SWP deliverables here (except with black or red assessment outcomes). This does not refer to the deliverables of the projects, but only of the WP and SWPs.

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