



Final Project Report

Document information

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Abstract

C.01 administrated the European ATM Master Plan updates, thus preparing, facilitating and following-up the process of updating the Master Plan Editions, specifically the level 1 document and the electronic Portal reflecting all three Master Plan levels and it was facilitating the dataset change management, the ATM Lexicon process and the System Engineering Review number 3 for the SESAR Releases R3 and R5.

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| Rational for rejection |
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Acronyms

| Acronym | Definition |
|-------------|---|
| ATM | Air Traffic Management |
| CNS | Communication, Navigation & Surveillance |
| DS | Dataset |
| eATM Portal | European Air Traffic Management electronic portal [reflecting all three Master Plan levels in an online repository] |
| EN | Enabler |
| MP | (European ATM) Master Plan |
| OI | Operational Improvement Step |
| PCP | Pilot Common Project |
| R&D | Research and Development |
| R3 | (SESAR) Release 3 |
| R3SE3 | R3 System Engineering Review number Three |
| R5 | (SESAR) Release 5 |
| R5SE3 | R5 System Engineering Review number Three |
| SDM | SESAR Deployment Manager |
| SESAR | Single European Sky ATM Research |
| SJU | SESAR Joint Undertaking |
| WPC | SESAR Work Package C |

1 Project Overview

C.01 administrated the European ATM Master Plan updates, thus preparing, facilitating and following-up the process of updating the Master Plan Editions, specifically the level 1 document and the electronic Portal reflecting all three Master Plan levels and it was facilitating the dataset change management, the ATM Lexicon process and the System Engineering Review number 3 for the SESAR Releases R3 and R5.

1.1 Project progress and contribution to the Master Plan

Project C.01 within the Work Package C was administrating the European ATM Master Plan updates and was thus contributing to the European ATM Master Plan by ensuring that it correctly reflects the status of the SESAR Programme including the planning for the future in showing the Essential Operational Changes, Technology Changes, Deployment Scenarios, as well as CNS roadmaps, stakeholder roadmaps and standardisation and regulatory needs. The Master Plan has three levels: Level 1, Executive View, Level 2, Planning and Architecture View and Level 3, Implementation View.

As a transversal project, the objective was to facilitate the work of the R&D projects in regularly delivering so-called Datasets as a reference baseline for the SESAR Programme. The Master Plan Datasets contain all Master Plan-related data entities with their latest status, including the Standardisation Roadmap, the Regulatory Roadmap, the Integrated Roadmap, the Deployment Planning data, Essential Operational Changes, Technology Changes and performance-related data.

In addition a data change management process was created by the project to support the SESAR ATM Lexicon that provides a common reference in terminology definition for the SESAR Programme.

During the System Engineering Release Reviews number 3 for Release 3 and Release 5, the project facilitated the review and conclusions on the proposed SESAR Solutions. With the Master Plan background and the dataset management experience, the discussions could be focussed in the review panel and provided a good platform to come always to a joint conclusion on the maturity status of the proposed SESAR Solutions in the respective Releases.

The European ATM Master Plan Public Portal, maintained by the project, reflects the Master Plan data for the released Editions of the Master Plan, i.e. updated in 2012 and for the 2015 Edition. To allow the SESAR Programme to trace updates and progress in the meantime, a Working Portal has been provided by C.01 to the SESAR programme. In this way, a continuous view of progress was documented, while at the release time of the Datasets, baselines were made available for projects' work.

1.2 Project achievements

Project C.01 has delivered two Editions of the European ATM Master Plan, in 2012 the 2nd Edition of the Master Plan and finally the Master Plan Edition 2015. The role of the project was the preparation of the Update Campaigns, the facilitation of the update process performed by WPC with stakeholders in the Master Planning Group and the production of the proposed document as well as, after the support to the formal consultation, the production of the final Master Plan document.

Alongside the Master Plan Update Campaigns an update of the electronic repository of the three levels of the Master Plan has been delivered resulting in updated versions of the public Master Plan portal.

In addition, for the purpose of reflecting the ongoing developments in the SESAR Programme, project C.01 maintained a Working Portal with intermediate updated baselines (so- called datasets) between the main Editions of the Master Plan.

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The tool for delivering the datasets with updates in a transparent and traceable way was the Dataset Change Management Process which was developed and maintained by project C.01. The process updates and the facilitation was done together with project B.01.

For the ATM Lexicon updates, which were a deliverable of project B.01, project C.01 developed and maintained the workflow. This ensured the delivery of coherent terminology reference data, where also Master Plan terms were fed in to create a common understanding of the specific SESAR terminology used.

Finally, in the SESAR process of the System Engineering Reviews for the SESAR Releases, project C.01 chaired the Reviews number 3, which determined the maturity of SESAR Solutions and related Operational Improvement Steps and Enablers and agreed whether the end of the R&D phase was reached or not for the Releases 3 and 5. This is an important step for the SESAR programme as this review finally determines the success of Solutions of adding performance to the European ATM System or otherwise. The results were captured and delivered in the related reports.

All of the deliverables above were used by the SESAR Programme in order to refer to reference information and to update their deliverables.

The European ATM Master Plan Portal is currently showing inter alia the complete overview of the PCP, which has been coordinated with the SJU and via the SJU with the SDM. It shows the deployment dimension as well as the R&D planning dimension and links the two.

The continuous work on the Master Plan Datasets, including Enablers and Operational Improvement Steps that are composing SESAR Solutions, allowed the Programme to improve the reference baselines steadily. This is the result of all R&D projects feeding the data into the process which subsequently got reviewed by transversal projects for strategic fit and consistency. The facilitation process, which was run together with project B.01 (Integrated Roadmap), took care of the data quality, planning and reaching of deadlines and implementation of results.

Figure 1 shows the evolution of the number of Operational Improvement Steps in the SESAR 1 programme. While at the beginning during the first Edition of the Master Plan the Operational Improvements were not fully defined the programme became more precise for the items under R&D.

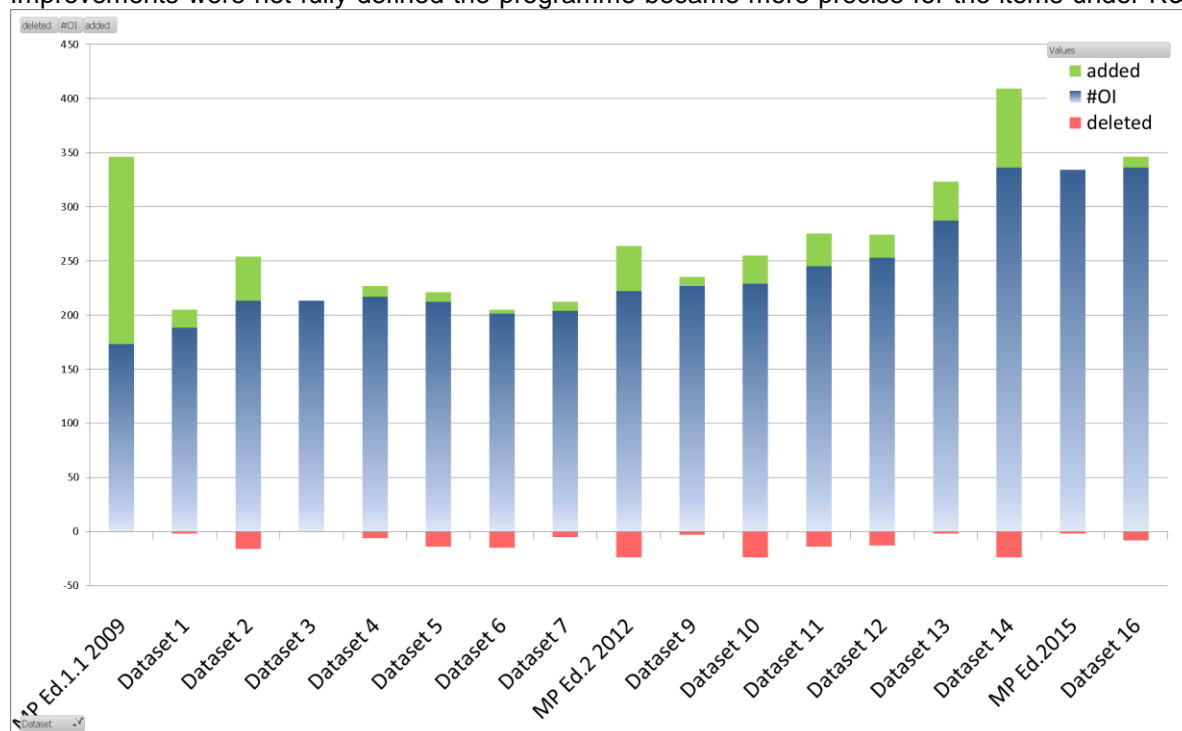


Figure 1

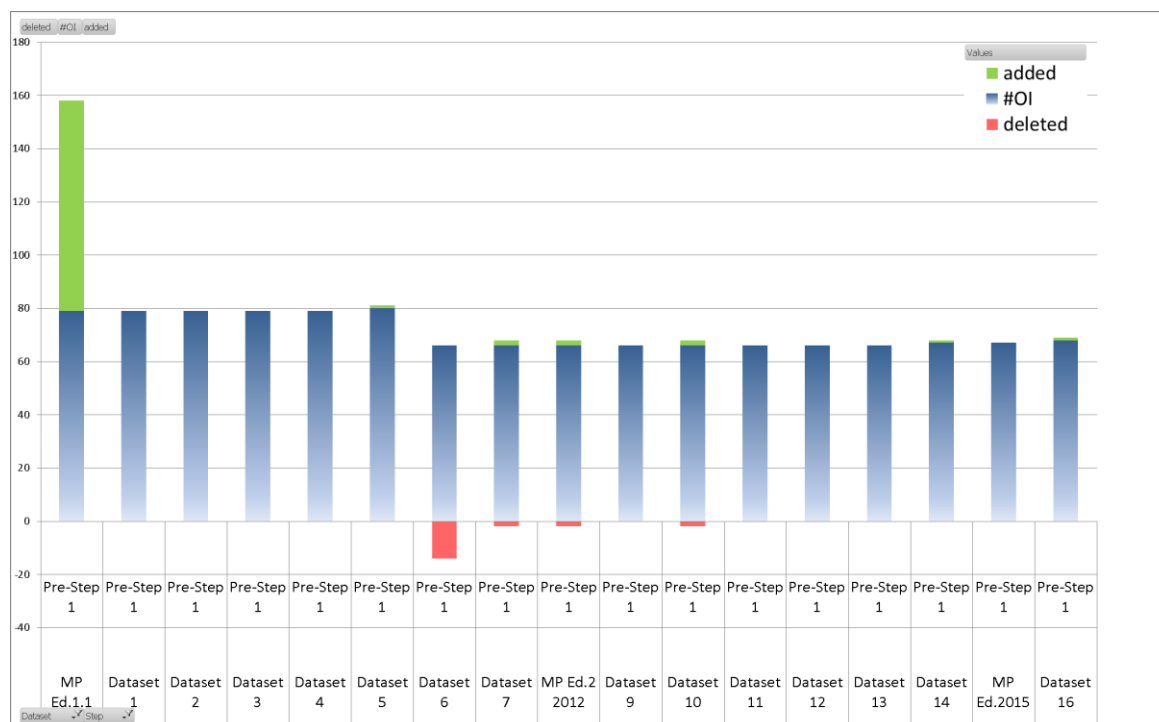


Figure 2

Figure 2 shows the first part of the Operational Improvement Steps in the Pre-Step 1. In blue the count of the Operational Improvement Steps while in green the number added and in red the number deleted are shown. Here little changes are noticeable with only a review in Dataset 6. This shows stability for the basis on which the SESAR R&D work was built. Project C.01 supported project C.02 in keeping changes to a minimum.

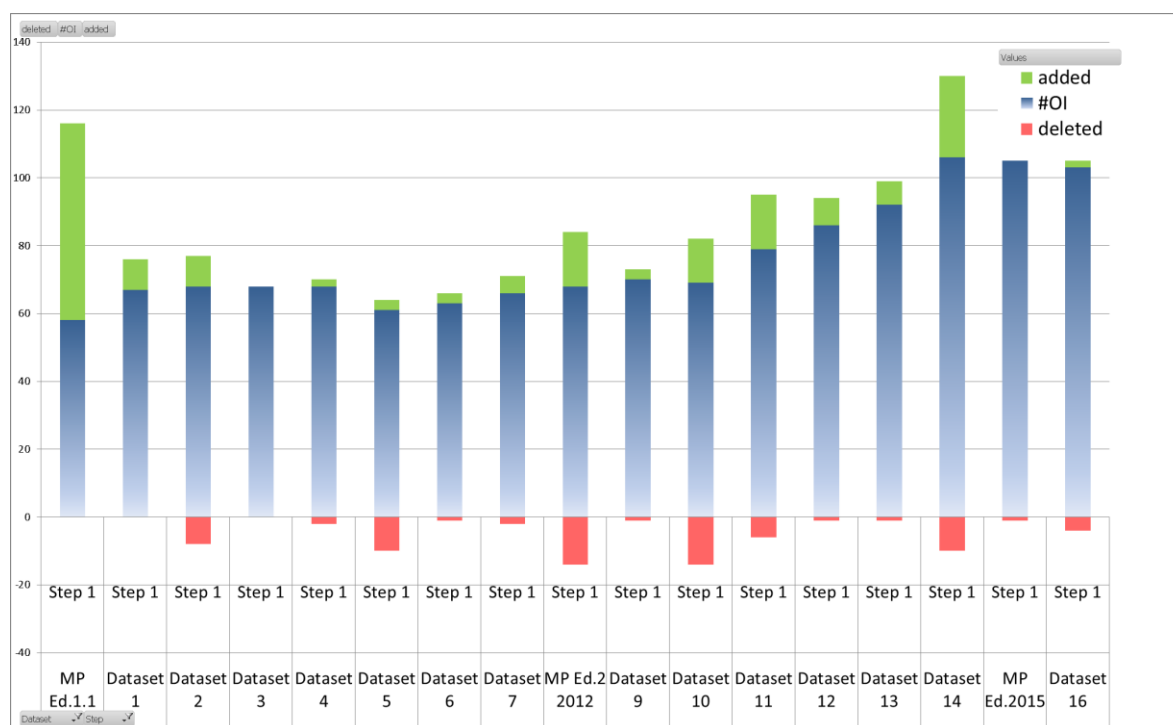


Figure 3

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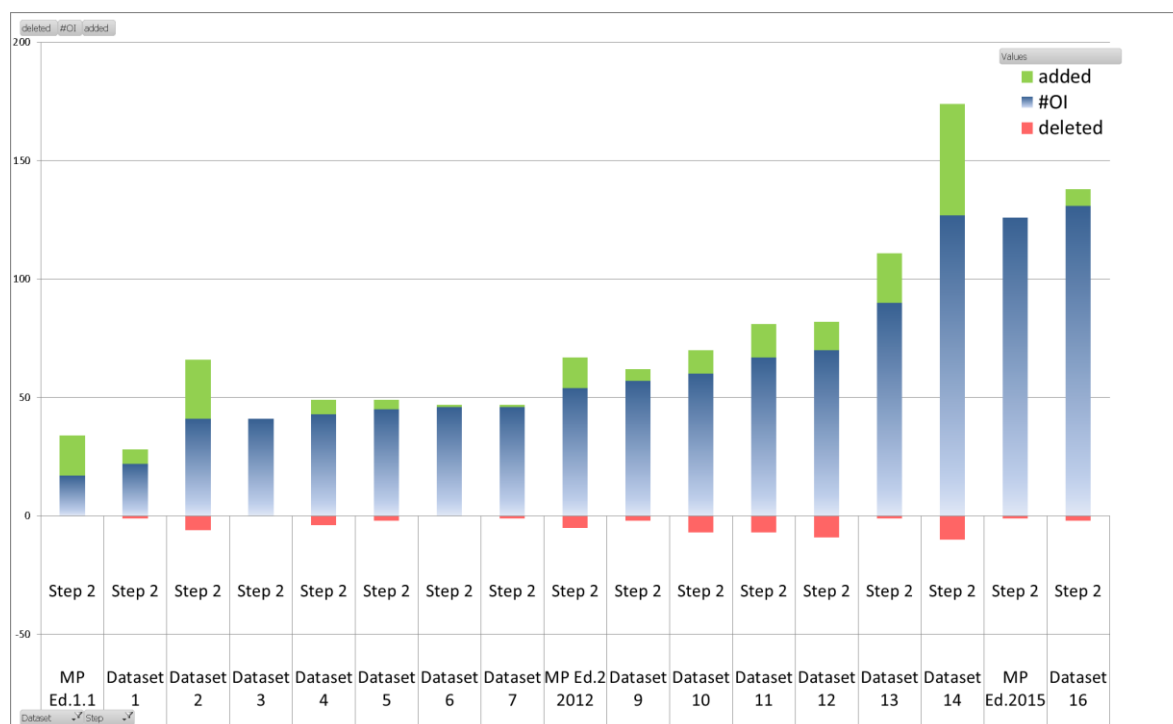


Figure 4

Figure 3 and Figure 4 show the developments for the SESAR Concept Step1 respectively Step 2. In the preparation of the SESAR 2020 programme quite some Operational Improvement Steps have been added, specifically to Step 2. The increase is also due to the splitting of content in order to be more precise on the parts validated under SESAR1 and the parts to undergo further R&D. Project C.01 facilitated this work from the formalisation the raising of change requests, the processing facilitation up to the implementation of changes in the datasets.

Figure 5 shows how the programme started to focus on Essential Operational Changes (in orange), introduced as an important element with the update of the Edition 2 of the European ATM Master Plan.

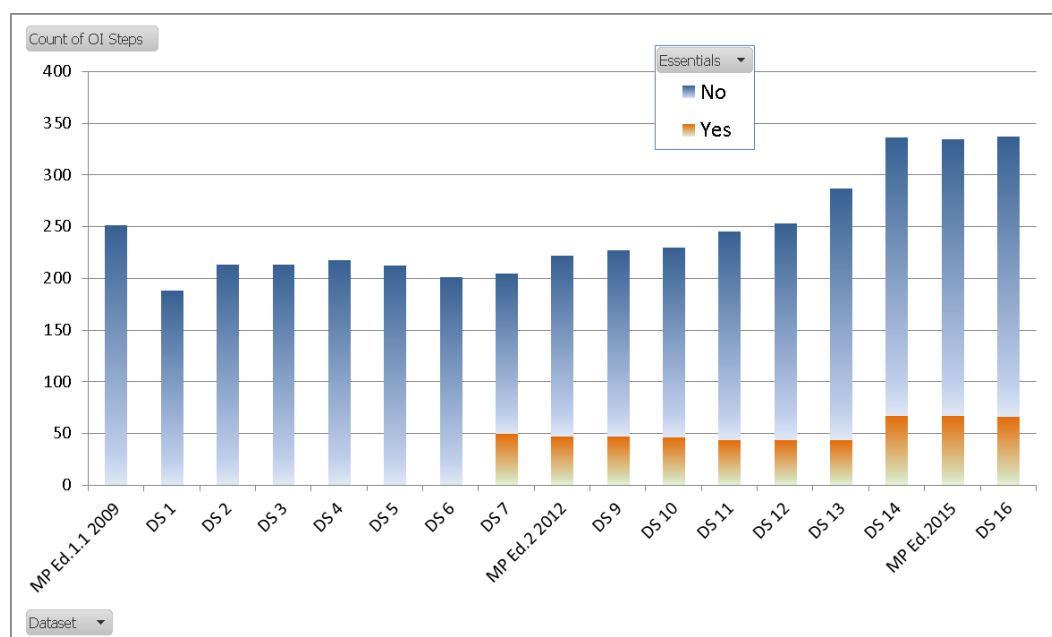


Figure 5

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Figure 6 finally shows the overview of the PCP-related data of Operational Improvement Steps and Enablers, which is captured since Dataset (DS) 14.

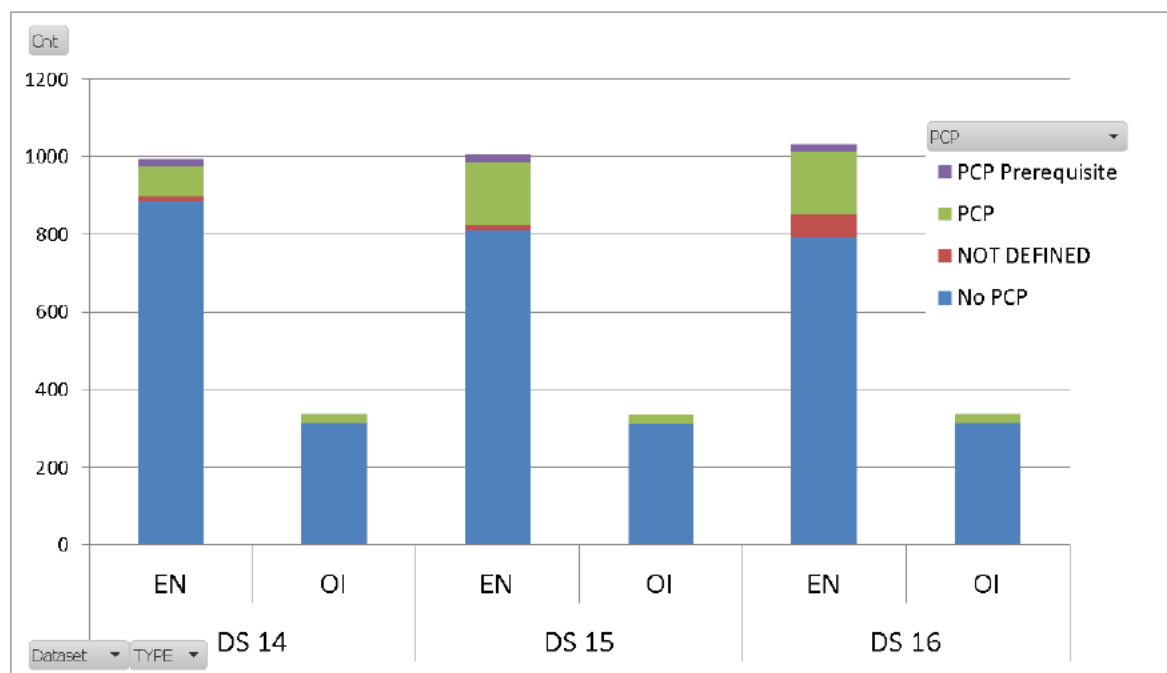


Figure 6

All these evolutions have been facilitated by the results of project C.01.

1.3 Project Deliverables

The following table presents the relevant deliverables that have been produced by the project.

| Reference | Title | Description |
|-----------|---|---|
| D04-001 | Scoping and Planning before each Master Plan update campaign | The Update Campaign for the European ATM Master Plan took about six months of intense interaction with stakeholders, frequent meetings, ECAC-wide expert consultation and the production of many interim deliverables. This period needed to be very well scoped and planned in advance in order to enable the successful delivery of the proposed Master Plan. |
| D07-001 | Proposed ATM Master Plan document (level1) | The European ATM Master Plan document (Level1) is the key document produced by WPC in a concerted way together with partners and stakeholders. The proposed version was delivered after the Master Plan Update Campaign to the SJU who would then launch the formal consultation on the Master Plan. |
| D10-001 | Proposed e-ATM Master information reflecting the proposed Master Plan document delivered to SJU for endorsement. This | Together with the proposed Master Plan, an electronic version was delivered, which allowed the integrated online access of the three levels of the Master Plan. It also facilitated the formal |

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| | deliverable will represent as well a milestone (gate) for the project. | consultation process. |
| D05-001 | ATM Master Plan Update Report to the SJU providing a summary of the update (campaign) process - approval issues etc. | The update report is an agreed document with the Master Plan Update Campaign participants highlighting the strengths and areas for improvement of the update process. It is thus feeding into the following Master Plan Update Campaign for improving possible shortcomings and to build on the established strengths. |
| D08-001 | ATM Master Plan document published after endorsement-format and number of copies to be determined during initiation phase. | The editorial work on the European ATM Master Plan level 1 document done during the Update Campaign continued here in order to get the final document into an executive level graphical layout and prepare for printing. For the Edition 2, EUROCONTROL also printed the Master Plan documents. |
| D11-001 | Updated e-ATM Master Plan Edition 2 after endorsement. | Together with the released Master Plan Edition, an electronic version was delivered, which allowed the integrated online access of the three levels of the Master Plan. It constitutes the public European ATM Master Plan Portal. At the same time a working version for the SESAR Programme – the Working Portal – was released that allowed to capture and display the updates in-between Master Plan Update Campaigns. |
| D18 | R3 SE Review 3 report | The System Engineering Review #3 for Release 3 Report details the assessments of the transversal projects on the proposed SESAR Solutions for Release 3. For some of them this marking the milestone of having finalised the R&D phase and being mature for industrialisation and afterwards for deployment. |
| D04-002 | Scoping and Planning before Master Plan Edition 3 update campaign | The Update Campaign for the European ATM Master Plan took about six months of intense interaction with stakeholders, frequent meetings and the production of many interim deliverables. This period needed to be very well scoped and planned in advance in order to enable the successful delivery of the proposed Master Plan. |
| D14 | Dataset 14 (Deliverable with contribution from C.02-T024) | The Master Plan Dataset 14 is the released reference for the SESAR Programme mid-2015. It contains inter alia the Standardisation and Regulatory Roadmaps, the Integrated Roadmap, the Deployment Planning, etc. Dataset 14 contains the data for the proposed European ATM Master Plan after the Master Plan Update Campaign. |
| D07-002 | Proposed ATM Master Plan Edition 2015 document (level1) | The European ATM Master Plan document (Level1) is the key document produced by WPC in a concerted way together with partners and |

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| | | stakeholders. The proposed version was delivered after the Master Plan Update Campaign to the SJU who would then launch the formal consultation on the Master Plan. |
| D10-002 | Proposed e-ATM Master Plan information reflecting the proposed Master Plan document delivered to SJU for endorsement. | Together with the proposed Master Plan, an electronic version was delivered, which allowed the integrated online access of the three levels of the Master Plan. It also facilitated the formal consultation process. |
| D05-002 | ATM Master Plan Update Report to the SJU providing a summary of the Ed. 3 update (campaign) process - approval issues etc. | The update report is an agreed document with the Master Plan Update Campaign participants highlighting the strengths and areas for improvement of the update process. It is thus feeding into the following Master Plan Update Campaign for improving possible shortcomings and to build on the established strengths. |
| D06-002 | Material for consultation for Master Plan Edition 2015 and decision support if or when applicable (optional). | The SJU required the production of supporting material for the formal consultation on the proposed version of the European ATM Master Plan. This supported the production of the final version to be submitted to the SJU Admin Board for approval. |
| D19 | Setup of the electronic ATM Lexicon Workflow | The SESAR ATM Lexicon required a more structured data change management process, which was delivered and put online for the purpose of a central, transparent electronic change management process. |
| D08-002 | ATM Master Plan Edition 3 document published after endorsement- format and number of copies to be determined during initiation phase. | The editorial work on the European ATM Master Plan level 1 document done during the Update Campaign continued here in order to get the final document into an executive level graphical layout and prepare for printing. For the Edition 2015, C.01 performed several review iterations, as SJU/COM took a more prominent role and the printing was assured by the European Office for Publications. |
| D15 | Dataset 15 (Deliverable with contribution from C.02-T024) | The Master Plan Dataset 15 is the released reference for the SESAR Programme at the end of 2015/ early 2016. It contains inter alia the Standardisation and Regulatory Roadmaps, the Integrated Roadmap, the Deployment Planning, etc. Dataset 15 contains the reference data for the European ATM Master Plan Edition 2015 |
| D11-002 | Updated e-ATM Master Plan Edition 2015 after endorsement. | Together with the released Master Plan Edition, an electronic version was delivered, which allowed the integrated online access of the three levels of the Master Plan. It constitutes the public European ATM Master Plan Portal. At the same time a new edition of the working version for the SESAR Programme – the Working Portal – was released that allowed to capture and display the updates in-between Master Plan Update Campaigns. |

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| D16 | Dataset 16 (Deliverable with contribution from C.02-T024) | The Master Plan Dataset 16 is the released reference for the SESAR Programme mid-2016. It contains inter alia the Standardisation and Regulatory Roadmaps, the Integrated Roadmap, the Deployment Planning, etc. Dataset 16 is the final delivered Dataset for SESAR1. |
| D21 | R5 SE Review 3 report | The System Engineering Review #3 for Release 5 Report details the assessments of the transversal projects on the proposed SESAR Solutions for Release 5 batch 1. For some of them this marking the milestone of having finalised the R&D phase and being mature for industrialisation and afterwards for deployment. It should be noted that the R5 batch 2 will be treated later in 2016 by a pure SJU process. The batch 2 SESAR Solutions were not ready in time for the batch 1. |
| D22 | Proposed e-ATM Master Plan Portal status at end of project C.01 | At the planned end of project C.01 an update to the European ATM Master Plan Portal and Working Portal was delivered. Improvements have been implemented following a review with SJU and other stakeholders. An increased representation of the ATM Architecture was planned for 2016. It is partially reflected in this Portal version. In the deliverable it is recommended to keep the Portal updates running in order to prepare for SESAR2020. |
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1.4 Contribution to Standardisation

While C.01 as a transversal project has not been working on the production of standards, it is part of the European ATM Master Plan to provide an overview of all standardisation activities and to ensure that the links to Operational Improvement Steps and thus to SESAR Solutions are transparent.

C.01, together with C.03 has identified and implemented the views on the Master Plan Portals for the Standardisation Roadmap and all information related to standards.

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1.5 Project Conclusion and Recommendations

The project C.01 - Administrative ATM Master Plan Updates was delivering the updated European ATM Master Plan after a joint Master Plan Update Campaign of WPC together with SESAR partners and stakeholders. In this context the lessons learnt from the Update Campaigns should be taken into account for the next update of the Master Plan.

1.5.1 The delivery of the European ATM Master Plan Edition 2015, together with the Master Plan Portal, has been a full success for WPC and C.01. The latest Master Plan edition was an improvement over the Edition 2 from 2012, not to mention the Edition 1.

Recommendations are:

- Within this success story, further improvements can be achieved through a better synchronisation of inputs and outputs throughout the SESAR Programme by the SJU. An example was the planning of an updated CNS roadmap at a time when the data contribution for the Master Plan update was closed already. In this case it took additional effort and meetings in order to get the relevant information into the European ATM Master Plan.
- Furthermore, a continuous effort throughout the Programme should ensure the use of compatible data definitions and granularity, to make it fully compatible between projects, e.g. on performance.
- The current performance ambitions need to be better linked to the SESAR Solutions' performance data for the next edition of the Master Plan.
- It is recommended to keep the update process of the Public European ATM Master Plan Portal and the Working Portal running until the end of SESAR1 in order to allow the Portals to reflect the data at SESAR1 closure, which prepares better for SESAR2020 (e.g. the R5 Release Review batch 2 will take place around or after the C.01 closure gate).

1.5.2 The establishment of a structured data change management process has been an instrumental enabler for the successful updates of the Master Plan campaigns. The running and continuous improvement of the process and thus the semi-annual SESAR Programme datasets served as a central reference for the entire Programme. The data quality in the final dataset was much improved over previous versions due to the buy-in from all projects and the well-established process.

Recommendations are:

- Clearly maintain a data change management process for the Master Plan-related datasets in order to allow traceability and transparency in the joint updates of any dataset element.
- Keep the possibility of entering Change Requests open for the projects until the closure of SESAR1 in order to give the Programme a central reference database for the required changes identified in the course of 2016.

1.5.3 The chairmanship of the SESAR System Engineering Review Number 3 for the SESAR Releases 3 and 5 went smoothly, also due to an excellent cooperation from the SJU Industrial Support. The Release Reviews were challenging and very much time constraint. Nevertheless, the final face-to-face sessions delivered agreed conclusions per SESAR Solution reviewed. Release 5 saw the introduction of SESAR Technological Solutions, which were successfully reviewed.

Recommendation is:

- Use the lessons learnt from the Release Reviews with a transversal confirmation of the maturity of SESAR Solutions to feed into the Maturity Gates in SESAR2020.

1.5.4 The setup of a data change management workflow for the ATM Lexicon was a success. Due to the experience in the dataset management process, this similar (but not equal) data change management process was implemented in an extremely short time and allowed the production of two releases of the ATM Lexicon as a reference for the terminology in the European ATM Master Plan and in the SESAR Programme.

Recommendations are:

- Maintain an ATM Lexicon as a terminology reference for the European ATM Master Plan and the SESAR Programme together with a data change management process supported by the subject matter experts.

2 References

- [1] SESAR Programme Management Plan, Edition 03.00.01
- [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] The European ATM Master Plan Edition 2015 - Executive View - Level 1 document
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- [6] WPC - C.01: Proposed ATM Master Plan document (level1), D07-001, Edition 00.01.00
- [7] WPC - C.01: Proposed e-ATM Master information reflecting the proposed Master Plan document delivered to SJU for endorsement. This deliverable will represent as well a milestone (gate) for the project, D10-001, Edition 04.32.07
- [8] WPC - C.01: Supporting material for updated ATM Risk management for each Master Plan update campaign, D03-001, Edition 00.00.01
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- [10] WPC - C.01: Material for consultation and decision support if or when applicable (optional), D06-001, Edition 00.01.00
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- [30]WPC - C.01: R5 SE Review 3 report, D21, Edition 00.00.03
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