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AMPLE

PJ20 - AMPLE

This Final Project Report is part of a project that has received funding from the SESAR Joint Undertaking under grant agreement No 733018 under European Union's Horizon 2020 research and innovation programme.



Abstract

The duty of SESAR2020 PJ20-AMPLE (**ATM Master P**lan for Europe) has been to ensure the maintenance, update and alignment of the European ATM Master Plan (ATM MP) three Levels and its associated Portal as a Common Support Activity of the SESAR 2020 Programme.

Within the Single European Sky, the ATM MP is the roadmap to the horizon 2035+ to guide and connect ATM Research and Innovation and Deployment in building the future European ATM System.

The ATM MP three Levels need to be maintained as a living plan, kept abreast of evolutions of the European ATM performance and progress, of the SESAR solutions research results and of deployment.

Led by EUROCONTROL, PJ20-AMPLE brought together the contributions of 21 active Beneficiaries and 6 Linked Third Parties. This ensured the broad ATM representation required from Air Navigation Service providers, Airports, Airborne and Ground industry and Network Manager, all of whom have a keen interest in future ATM evolution.

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1 Project Overview

Within the SESAR2020 Programme, the project PJ20 AMPLE (ATM Master Plan for Europe) has been set-up as a Common Support Activity to support the SESAR Joint Undertaking (SESAR JU) and ensure the maintenance of the European ATM Master Plan.

The European ATM Master Plan (MP) first endorsed by the European Council in 2009¹ arose from the Single European Sky ATM Research (SESAR) Programme definition phase. It formed the basis for the SESAR JU Work Programme and as such, the SESAR JU has been in charge of the Master Plan execution and maintenance in order for the Master Plan to steer the SESAR Programme and keep pace with its progress.



Figure 1 - Master Plan Institutional backdrop²

Since 2009, the SESAR JU Administrative Board approved two further editions of the Master Plan, in 2012 and 2015.

The Master Plan Edition 2020, resulting from PJ20 AMPLE activities, approved by the SESAR JU Administrative Board on 17 December 2019 should serve as a reference for SESAR 3 Work Programme development.

¹ Decision of the Transport Ministers of the 27 Member States of the European Union on March 30th 2009.

² SJU presentation of Master Plan to EC Single Sky Committee of June 2019

1.1 Operational/Technical Context

By EU Regulation No 409/2013 the ATM MP has the status of being *“the roadmap driving the modernisation of the European ATM system and connecting SESAR research and development with deployment. It shall be the key SES instrument for the seamless operation of the EATMN [European ATM Network] and the timely, coordinated and synchronised SESAR deployment.”*

The European ATM Master Plan is composed of three levels as shown below:

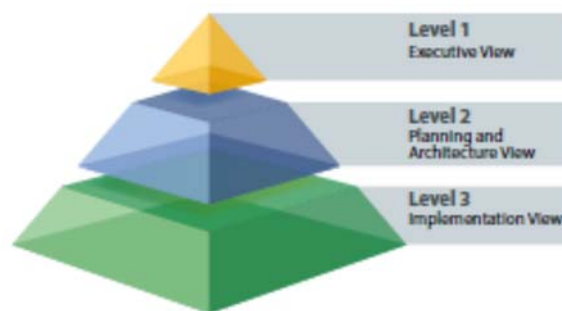


Figure 2 - Three levels of the European ATM Master Plan

The aim of the project has been to ensure the maintenance, update and alignment of the three levels of the European ATM Master Plan (executive: MPL1, planning and architecture: MPL2, implementation: MPL3) and its associated portal: <https://www.atmmasterplan.eu> .

These three Master Plan levels allow stakeholders to access information at the level the most relevant to their interest:

- MPL1 executive view, designed for decision makers, aims to ensure that SESAR development and deployment activities are focused on SES policy priorities, its time horizon looks until 20 years ahead. MPL1 is updated every 3- 4 years as a result of a MP update campaign during which all three MP levels get updated and synchronised.
- MPL2 planning and architectural view offers an expert viewpoint in terms of planning and preparation of changes needed within the various domains such as operations, systems and standards. MPL2 is fed by SESAR solution results documented in the European ATM Architecture and available only in electronic form in the European ATM Portal. MPL2 is updated continuously as SESAR development results arise. Once a year it is fixed and released in the form of a Dataset.
- MPL3 implementation view, supports how MPL2 SESAR changes are rolled-out by detailing the actions each ATM stakeholder has to undertake to deploy agreed changes for the coming 10 years. It also looks into achievements of the previous year in order to provide a European snapshot of SESAR deployment progress. The MPL3 forward-looking plan and backward-looking report are published yearly.

PJ20-AMPLE project led by EUROCONTROL brought together contributions from SESAR 2020 members (twenty-one PJ20 Beneficiaries and six Linked Third Parties). This ensured the broad ATM representativeness required from air navigation service providers, airports, airborne and ground industry and network manager; all having a keen interest in future ATM evolution as part of the Master Plan maintenance. This project membership was even complemented during the MPL1 drafting by a dedicated PJ20 working arrangement, the Master Planning Group (MPG) co-chaired with the SESAR JU (SJU) where Airspace Users, Professional Staff Organisations, SDM, EASA, EDA, EUROCAE, did participate and last but not least, the EC as an observer.

All along Project 20 life-cycle, the Master Plan maintenance activities held strong connexions with the standing advisory Master Planning Committee (MPC) from the SESAR Programme governance. For example, the MPC endorsed the Master Plan Campaign Charter [44], and drawing from PJ20 contributors’ expertise, ensured nomination of members of the MPG which undertook the groundwork and drafting of the Master Plan update during the campaign. Also, there was a continuous collaboration with “PJ19 Content Integration” different activities: in addition to the performance and cost-benefit analyses activities, collaboration was ensured with PJ19 as part of a joint Programme-wide Change Management process to capture and formalise Solution projects’ architecture information in support of the MPL 2 releases, named Datasets.

Furthermore, beyond PJ20 membership, the annual development of the MPL3 has benefitted from access to data collected through the EUROCONTROL LSSIP process and coordination with SDM, the latter mostly through the SESAR JU.

In order to deliver its Master Plan maintenance activities, PJ20 AMPLE project was organised as shown below.

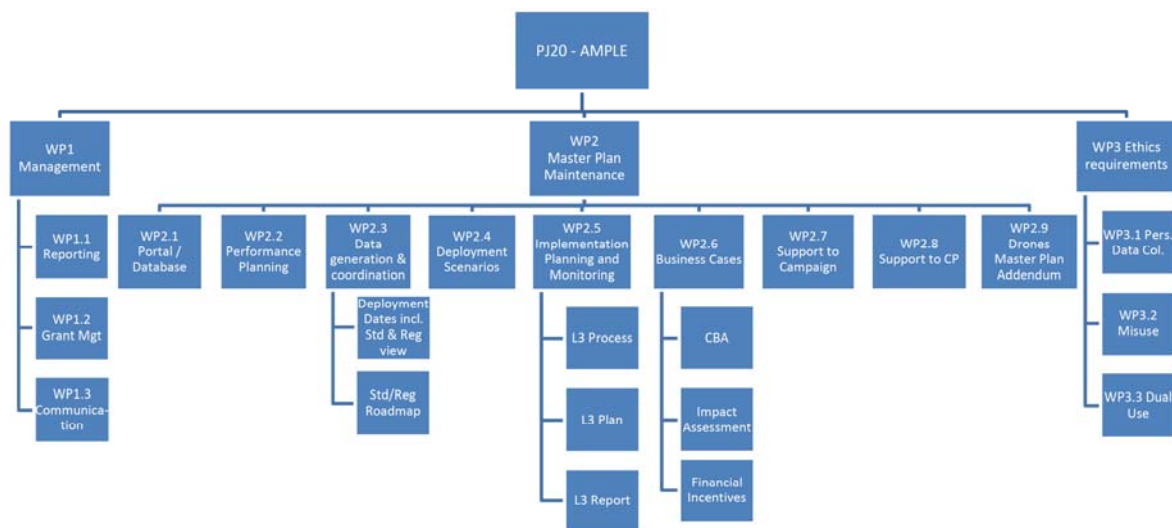


Figure 3 - Master Plan maintenance activities – PJ20 Work Breakdown Structure

The core of the development activities took place within WP2 Master Plan Maintenance’s nine sub-Work Packages (sWP). The Performance Planning sWP2.2 was led by ON (B4), all other sWPs and the Project Coordination by EUROCONTROL.

1.2 Role in SESAR2020 execution framework

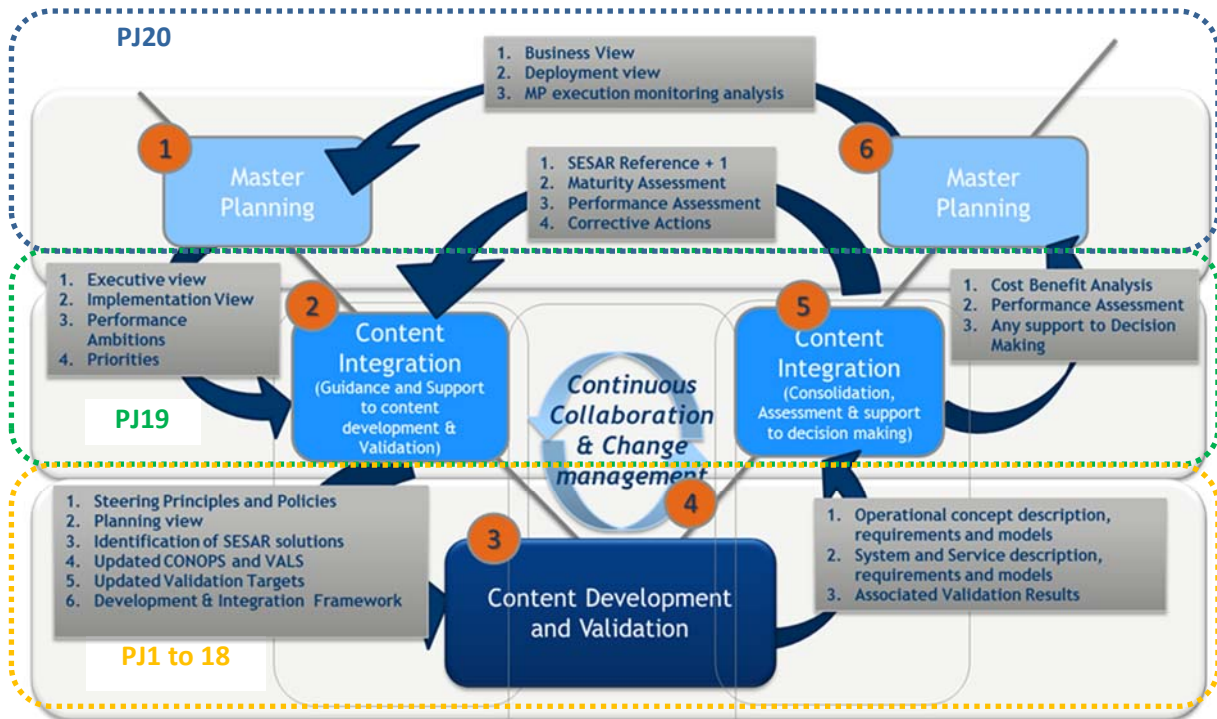


Figure 4 - Master Planning in support of S2020 Execution Framework

PJ20 Master Plan Maintenance contributed to the Research and Innovation Programme Execution Framework by setting-up a transparent process and work environment including partner resources, data management and communication tools to ensure a realistic, stable and timely updated European ATM Master Plan. The process has been designed to support guiding SESAR 2020 Solutions development based on Master Plan performance ambitions and anticipated deployment needs in Europe.

As a transversal Common Support Activity, PJ20 Master Plan Maintenance contributed to the SESAR2020 validation process as shown above (Figure 4 - Master Planning in support of S2020 Execution Framework).

Within the SESAR2020 Research and Innovation Programme, the main PJ20 cooperation was established with PJ19 Content Integration, which directly guided and supported Industrial Research projects in their Validation and Performance Assessment activities. PJ19 provided performance assessments and Cost-Benefit Analysis aggregated results to PJ20 for analysis during the campaign for the Master Plan Level 1 update.

A further intended important contribution of PJ20 to the execution of the Programme would have been to support the SESAR JU and its advisory MPC in the monitoring of the achievement by SESAR2020 Projects of the Performance Ambitions and Priorities included in the Master Plan. This monitoring

might have led PJ20 to draw SJU's and MPC's attention to shortcomings and possible areas of improvement in the Programme.

However, this monitoring could not be established because during Wave 1 Solution projects were fully dedicated to producing new contents and had not yet delivered results. Therefore, there were no sufficiently mature results to enable their meaningful monitoring.

1.3 Key Project Results

1.3.1 Project Chronology

PJ20 AMPLE started on 01st November 2016 and lasted until 31st December 2019.

In 2016, its official Kick-Off Meeting (KOM) took place with the participation of all PJ20 Beneficiaries and SJU as an observer on the 10th of November.

- **2017:**

During the first three months, a change to the Grant Agreement, requested by the SJU, was agreed in order to carry out the MPL1-3 update Campaign one year earlier than submitted in the project proposal, thus enabling input from the Master Plan to the ICAO Global Air Navigation Plan update in 2019, through the Air Navigation Conference of October 2018. This amended advanced MP update campaign and its impact on the different sWPs and project schedule has been fully reflected in the Project Management Plan [1].

In this project first semester, all WP2 sub Work Packages were launched except sWP 2.7 Support to Campaign. sWP2.7 kick-off was to take place only at MPL1-3 update campaign start (albeit advanced to end 2017). Also, an ad-hoc sWP2.9 on Drones Master Plan Addendum was launched in Spring just before and in parallel to the sWP2.8 Support to the definition of CP2 proposal in response to an EC mandate to the SJU. Both ad-hoc sWPs carried out their activities in parallel and for sWP2.8 support to CP2 with input from other PJ20 sWPs (sWP 2.5, 2.4, 2.3 and 2.6). This induced some competition in terms of resources between the different WPs during the second semester.

In July 2017, the SJU released the Master Plan Campaign Charter [44], which listed the Success Criteria for the Master Plan update as follows:

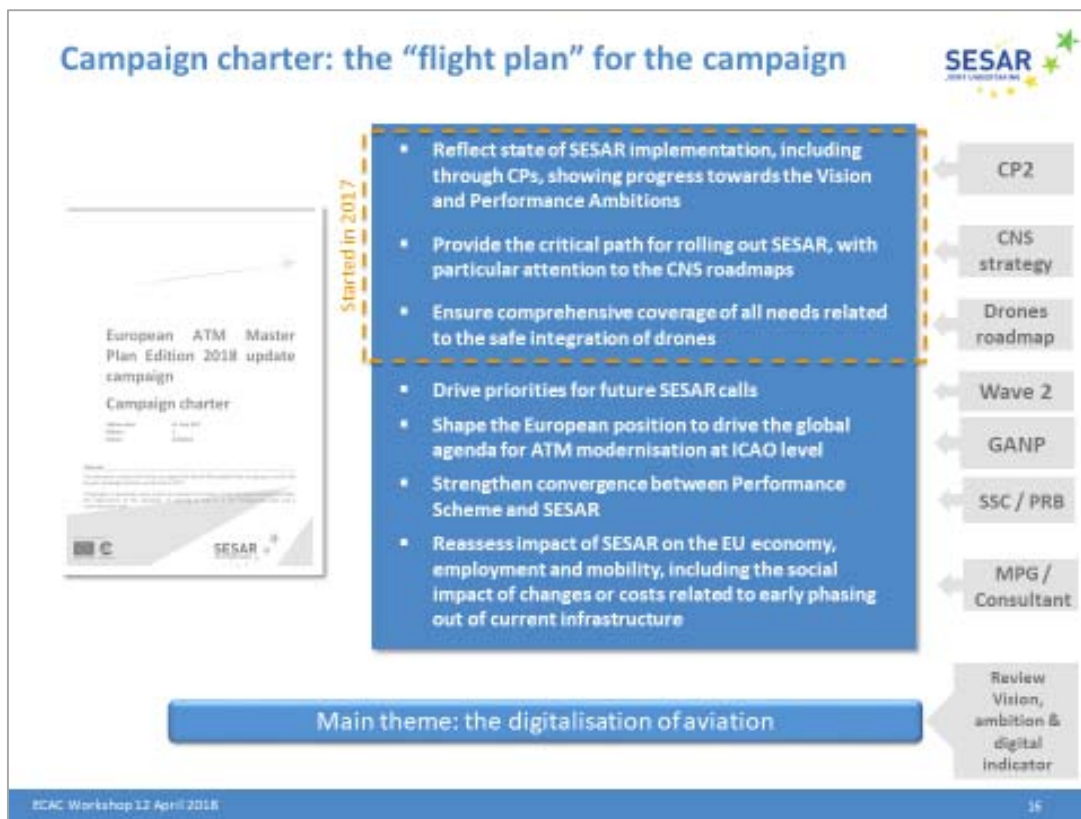


Figure 5 – Campaign Charter - Success Criteria

After the first year of activity, sWP2.7 Support to Campaign was launched following the Digital European Sky – High Level Conference held in Tallinn, and the MPG kick-off meeting took place in December 2017.

- **2018:**

The Update Campaign planned a Master Plan delivery after its formal consultation in December 2018.

This advanced launch of the Campaign, ahead of any results from Wave 1 Solutions imposed to take a creative, top down approach to develop the MP update. Dedicated expert drafting groups called Key Focus Teams (KFTs) were created as part of the MPG to develop contents for different MPL1 Chapters. There were nine KFTs set-up.

However, in March 2018, the European Commission, based on a request from the European Parliament, mandated the SJU to carry-out an Airspace Architecture Study which although not within the remit of PJ20 had to be developed in parallel to and connected with the Master Plan update as shown in Figure 6. In late Spring 2018, it became clear that the Airspace Architecture Study was attracting much effort and stakeholder attention and that it would be extremely challenging to make the AAS and MP delivery coincide, as initially intended.

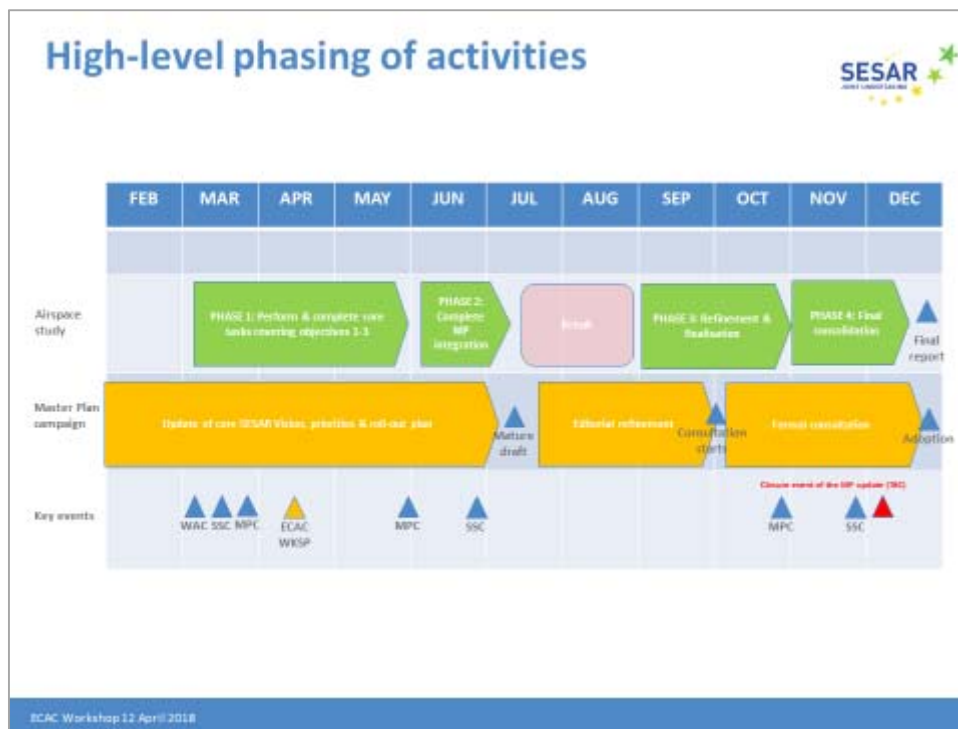


Figure 6 – AAS and Master Plan parallel phasing

At the same time, the MPC expressed serious reservations on the proposed list of Essential Operational Changes (EOCs) as developed by the MPG, and this impeded the drafting and finalisation of the related Business View Chapter. This situation was recovered through the set-up of two Completion Teams, which had to implement rethought EOCs: at a higher level and better aligned to the Vision. Inter alia this caused a restructuring of the MPL1 lowering the importance of Key Features which had been structuring elements in previous Editions of the MPL1.

During the 2nd Semester of 2018, the parallel development of the Airspace Architecture Study caused a re-scheduling of the Master Plan Campaign following the decision of the SESAR JU Executive Director to ensure connexion with the future proposed European ATM Master Plan [now aiming for a 2020 edition, fully approved after formal consultation at the SJU Administrative Board of 17th December 2019]. In December 2018, PJ20 delivered an advanced draft of the Master PlanMPL1 to the SJU as first element of PJ20 Local Milestone 10.

- **2019:**

After February the MPG did not hold further meetings but remained active in the background as a sounding board to review the successive drafts of the MPL1 and in particular their evolution linked to highlighting AAS outcome. The sWP2.7 supported the SJU in developing the successive drafts of the MPL1 during this final formal approval phase and it supported as the well the EUROCONTROL formal consultation through EUROCONTROL Working Arrangements. PJ20 supported the formal consultation and its preparation by e.g. participation in a dedicated European Commission/Single Sky Committee workshop and later on by collating the consultation comments received in the different fora and by

drafting responses to them. This included further fine-tuning of the Master Plan document where applicable.

Meanwhile, sWP2.4 undertook the necessary activities to ensure MPL1 and MPL2 alignment, to enable their interconnected presentation on the Master Plan portal, once the European ATM Master Plan 2020 has been approved by the SJU Administrative Board.

For MPL3 consistency with the proposed MPL1, sWP2.5 had to deliver the MPL3 Plan 2019 in April ahead of the usual schedule. Further on, the draft MPL3 was amended over Summer to map its implementation Objectives to the relevant elements of the Airspace Architecture Study [45], and results of this mapping became also Appendix C of the AAS Transition Plan (AAS-TP) [46],

The MPL3 Report 2019 was significantly overhauled compared to the previous editions, to include new analytics, which were very much appreciated by SJU Partners.

- **Throughout the project duration**

Activities contributing to the development of the core contents of MPL1, MPL2 and MPL3 and/or supporting Solution projects of the SESAR Programme have delivered steadily as required, in most cases yearly. This concerned in particular:

- **sWP 2.1 Portal and Database** – ensured regular updates of the European ATM/Master Plan Portal in order to enable the SESAR projects to reflect their progress in R&D online. In addition, the regular updates of the Level 3 Implementation view were published online.

- **sWP 2.2 Performance Planning** - revised SESAR1 “Methodology for the Performance Planning” including the Operating Environments (OEs) definitions and categories to produce OEs’ catalogue files taking into account requests from different stakeholders. It then provided guidance to Solution projects and PJ19 on usage of Terminal Airspace / En-route Operating Environment in the scope of SESAR 2020. It supported also the other PJ20 sWP2.3, sWP2.4 and sWP2.6 in application of the new Operating Environment concept and OEs catalogue files, for defining Deployment Scenario locations and scaling the costs (e.g. guidance on usage of Terminal Airspace / En-route OE in the scope of SESAR 2020).



- **sWP2.3 Data generation & coordination** - specified the calculation of deployment dates and their display on the European ATM/Master Plan portal. It contributed to every instance of the MPL2 Dataset Change Management process for PJ20. It supported the work of the MPG and in particular, the EPAS KFT that produced the standardisation and regulatory roadmap of the Master Plan Level 1 based on the Solution Deployment Scenarios. Every year, sWP2.3 developed and delivered updates of the standardisation and regulatory roadmaps.




- **sWP2.4 Deployment Scenarios** - contributed to the CP2 analysis in sWP2.8 and then provided support to the MPG and its KFTs in identifying Essential Operational Changes content, Deployment Scenarios and Stakeholder Roadmaps. It supported also the new EOCs definition and analysis of the alignment between the results of the draft Airspace Architecture Study and the draft MPL1. During the MP Campaign, several refinements of the Deployment Scenarios were performed to reflect updates in MPL2 Datasets as described in EATMA by Solution Projects. Finally, sWP2.4 supported the alignment of deployment information presented in MPL1 and MPL2 (EATMA).

- **sWP2.5 Implementation planning and monitoring** – yearly, developed the MPL3 Implementation Plan and Report edition, coordinating new or changed Implementation Objectives within sWP2.5 and also using EUROCONTROL working arrangements and more specifically the LSSIP process. Also, using LSSIP input, as a contribution to the MPL1 campaign (first success criterion from the Campaign Charter [44]), an analysis of SESAR1 status of implementation was carried-out during the Master Plan Campaign together with SDM.

- **sWP2.6 Business Cases** - provided Business Cases of SESAR1 solutions for the MPL3 then for the Common Project 2 proposal, plus consolidating CBAs for each of the ATM Functionalities (AFs) in the CP2 proposal. Participated in the Business View KFT to support the Master Plan development. This KFT supported the prioritisation of Solution Deployment Scenarios in support of the EOCs definition and coordinated the development of the Business View Chapter of the MPL1. The latter included development of CBAs, write-up of incentives sub-section, assessment of SESAR Investment needs, review and update of the holistic business view and model provided by the contractor (McKinsey) to the SJU.

1.3.2 Key Achievements/Milestones




What	When	Where
<ul style="list-style-type: none"> • Grant Milestone 4 - Assessment of Common Project 2 (CP2) Solutions <p>Achieved by sWP 2.8 in collaboration with and support of the SJU’s Project Office and with contribution of MPC CP2 Working Groups #1 (Deployment Scenarios and Business Cases), #2 (CNS Rationalisation) and #3 (Standards and Regulations). A further version of the M4 document incorporating latest CP2 Working Groups' outcomes was delivered on 10th November 2017 to SJU CP2 Project Office.</p>	<p>Achieved on 14/10/2017</p> 	<p>Public Available in Stellar PJ20</p>
<ul style="list-style-type: none"> • Grant Milestone 5 - Drones MP Addendum: <p>Achieved by sWP 2.9 in collaboration with the SJU’s Project Office and with contribution of MPC Working Groups #1 (Controlled Airspace), #2 (U-space) and #3 (Standardisation and Regulation). sWP2.5 developed the “M5 Drones MP Addendum” in support of “The roadmap for the safe integration of drones in all classes of airspace”, as a complement to the 2015 MPL1 document and as an input to the 2018 ATM Master Plan update campaign.</p>	<p>Achieved on 27/10/2017</p> 	<p>Confidential Available in Stellar PJ20</p>

What	When	Where
<ul style="list-style-type: none"> • Local Milestone 2 – L2 Performance Needs for OEs [Airports, En route and Terminal airspace] <p>Achieved by sWP2.2 in collaboration with PJ19.4, holds the Performance Planning Methodology and catalogue files for the Airport, En-route and Terminal Airspace OEs Performance Needs used as reference by Solution projects for their performance validation, and for Deployment Scenarios and Business Cases.</p>	<p>Achieved first on December 2017 –updated last in October 2019</p> 	<p>Confidential Available in Stellar PJ20</p>
<ul style="list-style-type: none"> • Local Milestone 10 – Proposed MPL1 Ed. 2019 + Companion Document <p>In support of the proposed MPL1 formal consultation, Local Milestone 10 was composed of two elements, the proposed MPL1 Ed.2019, delivered by sWP2.7 and based on it: the Companion Document developed by sWP2.6 & sWP2.2.</p> <p>The Companion document includes an overview of the methodology and main underlying assumptions for the SESAR performance ambitions and the business view as outlined in the proposed MPL1 Edition 2019. It has been updated to keep pace with the MPL1 formal consultation.</p>	<p>Proposed MPL1 - achieved first on 18/12/2018 – Companion document delivered 15/05/19 updated last on 19/07/2019</p> 	<p>Public Available in Stellar PJ20 and European ATM Portal</p>
<ul style="list-style-type: none"> • Standardisation and Regulatory Needs Identification – Guidance, Presentation + Document <p>Achieved by sWP2.3, in support of Solution projects maturity Gate process, provides guidelines, common references and process to ensure coordination between SESAR 2020 Solution Projects and PJ20, PJ19 when identifying Standardisation and Regulatory Needs.</p>	<p>Achieved on 24/07/2019 + 28/08/2019</p> 	<p>Confidential Available in Stellar PJ20</p>

What	When	Where
<ul style="list-style-type: none"> Local Milestone 8 – Deployment Scenarios and Stakeholder Roadmaps update after MPL1 formal consultation <p>Achieved by sWP2.4, in support of MPL2 (specific Dataset DS19P) data alignment with MPL1 as updated after its formal consultation, this document records the changes made to MPL1 Deployment Scenarios and Stakeholder Roadmaps and or L2 data.</p>	<p>Achieved on 17/12/2019</p>	<p>Confidential</p> <p>Available in Stellar PJ20</p>
<ul style="list-style-type: none"> Grant Milestone 9 - ATM Master Plan Ed. 2019 (L1, L2, L3) <p>Achieved by sWP2.7 and sWP2.1 in collaboration with all PJ20 sWPs and PJ19, in particular for the coordination of the specific Dataset DS19P. The SJU Administrative Board approval of MPL1 as <u>edition 2020</u> and its publication on the European ATM Portal mark this Milestone achievement.</p>	<p>Achieved on 17/12/2019</p>	<p>Public</p> <p>Available in H2020 PJ20 and European ATM Portal</p>

Table 1: Key Milestones

1.3.3 Key Deliverables

What	When	Where
<ul style="list-style-type: none"> • D2.2 ATM Master Plan Level 3 - Plan (2017) • D2.8 ATM Master Plan Level 3 - Plan (2018) • D2.14 ATM Master Plan Level 3 - Plan (2019)* <p>MPL3 Plan including the agreed new and updated Implementation Objectives for SESAR mature Solutions with their applicability area and Stakeholder Lines of Action.</p> <p>* EC rejected this April edition to enable further work on the L3 Plan 2019 to map it to the AAS [45], as part of the ASS-TP [46] development. The final MPL3 draft was approved by SJU on 18 November</p>	<p>02/07/2017</p> <p>02/07/2018</p> <p>15/04/2019*</p> 	<p>Public</p> <p>Available in H2020 PJ20, Stellar PJ20, European ATM Portal and EUROCONTROL extranet.</p>
<ul style="list-style-type: none"> • D2.3 ATM Master Plan Level 3 - Report (2017) • D2.9 ATM Master Plan Level 3 - Report (2018) • D2.15 ATM Master Plan Level 3 - Report (2019)** <p>Level 3 Report, reporting annually on Stakeholders implementation progress of the previous year MPL3 Plan.</p> <p>** Latest draft Report uploaded on STELLAR in September. It was approved on the same date as the MPL3 Plan: 18 November</p>	<p>04/07/2017</p> <p>02/07/2018</p> <p>26/06/2019**</p> 	<p>Public</p> <p>Available in H2020 PJ20, Stellar PJ20, European ATM Portal and EUROCONTROL extranet.</p>
<ul style="list-style-type: none"> • D2.4 Update to the Standardisation Roadmap (2017) • D2.10 Update to the Standardisation Roadmap (2018) • D2.16 Update to the Standardisation Roadmap (2019) <p>Based on Solution progress, outlines annually the proposed standardisation activities required to meet the objectives of the European ATM Master Plan.</p>	<p>08/02/2018</p> <p>10/05/2019</p> <p>03/12/2019</p> 	<p>Public</p> <p>Available in H2020 PJ20</p>



What	When	Where
<ul style="list-style-type: none"> • D2.5 Update to the Regulatory Roadmap (2017) • D2.11 Update to the Regulatory Roadmap (2018) • D2.17 Update to the Regulatory Roadmap (2019) <p>Based on Solution progress, outlines annually the proposed Regulatory activities and means of compliance (EASA CS/AMC) required to meet the objectives of the European ATM Master Plan.</p>	<p>08/02/2018</p> <p>10/05/2018</p> <p>05/12/2019</p> 	<p>Public</p> <p>Available in H2020 PJ20</p>
<ul style="list-style-type: none"> • D2.6 Consolidated Business Case (2017) • D2.12 Consolidated Business Case (2018) and (2019) <p>Reports on the various Business Cases activities carried-out in support of the MPL3 and MPL1 development.</p>	<p>31/01/2018</p> <p>07/09/2019</p> 	<p>Public</p> <p>Available in H2020 PJ20</p>

Table 2: Key Deliverables

2 Links to SESAR Programme

2.1 Contribution of the ATM Master Plan maintenance

The activities of PJ20 AMPLE, as transversal project of the SESAR Programme, were fully dedicated to the ATM Master Plan maintenance. Throughout the whole project duration, links to the various Solution Projects of the SESAR Programme were ensured mostly through PJ19 Content Integration, in particular the Change Management process for the MPL2 development and updating.

2.2 Contribution to Standardisation and regulatory activities

PJ20 sWP2.3 developed guidelines for the identification of Standardisation and Regulatory needs for SESAR Solution projects and ensured briefings on these guidelines for the Solution projects (see Table 1: Key Milestones). There was then an active participation in Maturity Gates of SESAR Solution projects in order to ensure that Standardisation and Regulatory needs were identified appropriately.

The capture of these needs enabled the analysis leading to the annual deliveries of the updates to the Standardisation and Regulatory Roadmaps. In addition, during the MPL1 campaign, sWP2.3 did provide input to the EPAS KFT of the MPG and supported MPL1 edition 2020 Figure 29 development.

3 Conclusions and Next Steps

3.1 Conclusions

The Master Plan Maintenance is a responsibility of the SESAR Joint Undertaking critical to the SESAR Programme development and deployment. The European ATM Master Plan provides the bearing to the European ATM Stakeholders at large in order to pursue the SES objectives.

Transversal PJ20-AMPLE's duty has been to undertake the Master Plan maintenance in support of the SJU, as a Common Support Activity of SESAR2020 Programme.

PJ20-AMPLE has met its objectives (see Section 4) and more specifically delivered with respect to each Success Criteria from the Campaign Charter [44]. Its main achievements are highlighted in Table 1: Key Milestones and Table 2: Key Deliverables.

However, PJ20 could not put in place its maintenance process as planned originally at PJ's start: fully connected with PJ19 and based on a bottom-up collection of PJ Solution results. Lacking this input, at the beginning of the MP Campaign, PJ20 had to initiate a top-down approach to create contents with KFTs of the MPG. The changed schedule required also to establish unforeseen additional MPL2 Datasets. This beyond PJ20 Partners affected PJ19 and all Solution projects taking part in the Dataset change management process.

It can be concluded that although PJ20 Beneficiaries altogether are proud of PJ20 achievements, the level of flexibility imposed on the schedule rendered the project difficult to coordinate efficiently and in terms of contribution caused resource draining and frustration. This is one of the main lesson reported for PJ20 as part of the various lessons learned exercises captured fully in Appendix B. Further lessons learned have been considered to draw the recommendations below.

3.2 Recommendations for Next Steps

- In certain project phases – MP Campaign or Ad-hoc activities - the need to create specific Working Groups or Teams to complement PJ20 Partners with additional stakeholders' expertise should be identified and explained from the outset.
- The planning should be established and remain as stable as possible to enable broad partners' contribution including their back offices when necessary.
- To avoid recovery crash actions like the Completion Teams during the MPL1 Campaign, high-level political and or structural requirements from the EC should be established early on, and re-checked regularly.
- The support to the maturity gates for the standardisation and regulatory needs should be continued and amplified as a contribution to addressing the 'V4 gap'.
- The structure of the project should be less broken down with sWPs activities happening in parallel and therefore competing instead of complementing each other.

- The process and tooling in support of the Level2-Level1 assessment will need to be fully coordinated/integrated with PJ19, for R&D performance assessment results vs. validation targets in particular.
- The MPL3 should be structured in accordance with the new EOCs and connected with the MPL2 Solutions Deployment Scenarios. This would facilitate later the feedback loop reporting on solution implementation within the Programme.
- The broad diversity of Partners and Stakeholders has to be continued, care should be taken to develop 'induction' material to facilitate newcomers participation in the project.

4 Project Scope and Objectives as in Grant Agreement

The duty of SESAR PJ20 AMPLE (ATM Master Plan for Europe) has been to ensure the maintenance, update and alignment of the European ATM Master Plan (ATM MP) three Levels and its associated European ATM Portal as a Common Support Activity of the SESAR 2020 Programme.

Within the Single European Sky, the ATM MP is the roadmap to the horizon 2035+ to guide and connect ATM Research and Innovation and Deployment in building the future European ATM System.

The European ATM Master Plan is composed of three levels as shown below:

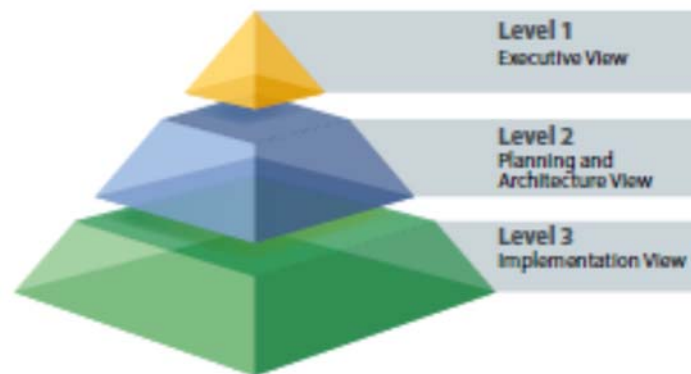


Figure 7 - Three levels of the European ATM Master Plan

PJ20 work consisted in maintaining, updating and publishing as and when necessary the ATM MP in support and under the leadership of the SJU and its governance bodies. To do so, there was a breakdown of twelve PJ20 AMPLE objectives defining the overall scope of the Master Plan maintenance activities as summarised³ below:

Objective 1. - Maintenance, update and publication of ATM MP 3 levels To develop and maintain resources and processes to carry-out the activities, necessary to perform the maintenance, update and publication of the three levels of the ATM MP in support of the SESAR Programme processes and as led by the SJU and its governance bodies. The Levels 2 and 3 will be updated and published yearly whereas the Level 1 synchronized with Levels 2 and 3 will be updated and published together once before 2020.

³ The full text of the objectives may be accessed in PJ20 AMPLE Grant Agreement

“It shall also consist in managing the ATM MP update campaigns. Such campaigns consist in a major and simultaneous update of the three levels of the ATM MP.”

Objective 2. - Manage ATM MP Campaigns To manage the update campaigns of the ATM MP. The scope of the campaigns includes all three ATM MP Levels, comprising the update and consolidation of the “Planning & Architecture Level-2”, the update of the “Executive Level-1” and of the “Implementation Level-3”. The result is the delivery of a synchronised and consistent update of the three levels of the ATM MP.

Objective 3. - Transparent process To manage the update of the ATM MP in a transparent and collaborative process. This will be achieved by involving representatives of all relevant stakeholder groups in the dedicated working arrangement set-up for the update campaign. This will result in the delivery of a proposed ATM MP update, ready for the formal consultation, with broad stakeholder buy-in and fully consistent with relevant plans (e.g. Network Strategy Plan) as required by respective regulations. The success of this objective is supported by the preparatory campaign tasks and the strategic guidance of the SJU ATM Master Planning Committee. Significant updates of the ATM MP should also be kicked-off by a high-level stakeholder event at political level.

Objective 4. - Manage Portal & contents Concerning DoW activity 1, to manage the ATM MP portal supporting the ATM MP and its updates with the synchronisation of all three levels. The first continuous goal is to manage the ATM MP portal, in maintaining and improving the access to all SESAR ATM MP related information of the three levels. Specifically reflected will be the essential and other operational and technological changes emanating from SESAR Solutions, the standardisation, the regulatory and the integrated roadmaps and an access to EATMA and the SESAR ATM lexicon. The portal will also make the links with ICAO global plans (GANP).

The second goal is to use the Portal in support the Master Plan Update Campaign described in Objective 3. - under the guidance of the ATM Master Planning Committee, and to deliver a proposed ATM MP version on the Portal for the formal consultation, support the formal consultation as required and to support the publication of the adopted ATM MP Edition. The plan is to deliver one ATM MP portal public version providing access to the synchronised three levels of the new ATM MP Edition resulting of the update campaign, before 2020.

Objective 5. - Deployment Scenarios (DS) development, deployment dates, standardisation, regulatory and incentives analysis Concerning DoW activity 2, first three bullets, PJ20 will set-up the required work packages and sequenced yearly process at ATM MP Level 2 to:

- identify which SESAR Solutions need to be grouped/synchronised (including where and when) to optimise the benefit of their deployment, making use of consolidated performance assessments and Cost Benefit Analysis information.
- detail the operational and technological changes resulting from R&I activities, the investing stakeholders (civil and military) concerned, the deployment timeframe and the geographical scope where the changes will impact and deliver benefits. This task has to be performed after each update of the Solution contents: Operational Improvement steps and Enablers, in order to evaluate the impact of latest R&I results and information available.
- consider incentives principles, regulations and standards needed to secure their deployment or mitigate deployment risks.

Objective 6. - **Level 2 Data Set & change management process** Concerning DoW activity 2, 4th bullet, the objective is to baseline, maintain, facilitate the update and publish the resulting basis of ATM MP Level 2 data for the SESAR 2020 programme: OIs, Enablers and their deployment dates, targeted operating environments and associated SESAR solutions' Deployment Scenarios. This necessitates establishing the Level 2 data change management process in close cooperation with SESAR Projects (specifically PJ19-Content Integration and other data owners). The result is one release of a Data Set per year in line with the requirements of the ATM MP update process.

Objective 7. - **Performance Planning** For DoW activity 3, based on the EUROCONTROL long term forecast, PJ20 will carry-out trend analyses for the SES key performance areas in order to anticipate the evolution of the capability requirements of both the European civil and military ATM operating environments (airports, terminal areas, En-route and network) for the medium to long term time horizon. These performance long term requirements will be assessed in relation to the performance ambition level expressed in the ATM MP Edition 2015 and the performance expected to be brought by the SESAR Solutions in order to guide the composition of Scenarios for Solutions deployment set forth in the DoW activity 2. To do so, PJ20 Performance Planning activities will be fully connected with PJ19 activities (in particular Performance Framework) and PJ20 will contribute to address the overall Programme objective to ensure that the SESAR Performance Ambition level drives R&I and deployment prioritisation.

Objective 8. - **ATM MP Level 3 Plan & Report.**

Concerning DoW activity 4, one part of the objective will consist in delivering yearly an **Implementation Plan**, describing the Implementation Objectives and related Stakeholders Lines of Action resulting from the analysis of Deployment Scenarios of the SESAR Solutions, ensuring full coordination with the SESAR Deployment Manager for the mutual alignment with the

Deployment Programme. The Implementation Plan will represent a common implementation reference, ensuring the link between development and deployment phases.

The other part of the objective will consist in delivering yearly an **Implementation (Progress) Report**. Using as sources existing implementation progress data such as information collected via the EUROCONTROL LSSIP monitoring and reporting mechanism and where possible other complementary, traceable sources (e.g. PRISME for air fleet, OEM industrial roadmaps, etc.), it will provide a complete ECAC-wide view on the status of progress of all the elements present in the Implementation Plan, taking due consideration of other reporting mechanisms due by regulations (e.g. SDM monitoring process, NM monitoring process, etc.).

A one-off initial objective will reside, under SJU guidance, in the description of the Level 3 update and maintenance process to contribute to decision making in relation to the future SESAR governance.

Objective 9. - **Common Project (CP) Definition** Concerning DoW activity 5. To provide, on SJU request, expert support to the definition of Common Projects by identifying the candidate Essential Operational Changes matching the three criteria of maturity, performance benefits and need for synchronised deployment.

Objective 10. - **Regulation needs identification & roadmap** Concerning DoW activity 6. PJ20 will consider in the plan constraints stemming from links of Master Plan items (e.g. Deployment Scenarios and Implementation Objectives) with existing regulation. Also, PJ20 will identify as early as possible the potential need for new regulatory actions that might foster the common realisation of SESAR Solutions.

The maintenance of a regulatory roadmap will help an efficient planning of the industrialisation phase and increase the robustness of the Deployment Scenarios.

Objective 11. - **Standardisation and certification Needs identification and roadmap** Concerning DoW activity 7.

PJ20 will assess in collaboration with PJ19, the need for new standardisation activities to support common industrialisation and interoperability of SESAR solutions. The timelines for standardisation activities will be monitored and taken into consideration to determine dates for the commercial availability of SESAR solutions.

PJ20 will suggest updates of the SESAR related part of the European Commission's standardisation roadmap to enable an accurate and early identification of all developments giving rise to a need for standardisation, thereby avoiding gaps and enhancing global and regional harmonisation.

As for the regulatory roadmap, the maintenance of a standardisation roadmap equally published yearly will enable an efficient planning of the industrialisation phase and increase the robustness of the Deployment Scenarios.

Objective 12. - **Business Cases** Concerning DoW activity 8. To demonstrate a positive Business Case covering both financial (monetised) and qualitative arguments, identifying positive and negative aspects and ways of mitigating the negative aspects. The Business Cases will rely as much as possible on CBA, Safety, Security, Environmental, Human Performance and other performance assessments, terminology and assumptions from the programme validation activities consolidated by the Content Integration Project (PJ19).

5 References

5.1 Project Deliverables

PJ20-AMPLE delivered a number of contractual and non-contractual deliverables and, communication and dissemination papers.

5.1.1 Contractual Deliverables

- [1] D1.1, Project Management Plan, 09/05/2017
- [2] D1.2, Final Project Report (2019), 17/12/2019
- [3] D1.3, Quarterly Report Q4 2016, 03/02/2017
- [4] D1.4, Quarterly Report Q1 2017, 03/05/2017
- [5] D1.5, Quarterly Report Q2 2017, 04/08/2017
- [6] D1.6, Quarterly Report Q3 2017, 07/12/2017
- [7] D1.7, Quarterly Report Q4 2017, 09/02/2018
- [8] D1.8, Quarterly Report Q1 2018, 07/05/2018
- [9] D1.9, Quarterly Report Q2 2018, 27/07/2018
- [10] D1.10, Quarterly Report Q3 2018, 07/11/2018
- [11] D1.11, Quarterly Report Q4 2018, 01/02/2019
- [12] D1.12, Quarterly Report Q1 2019, 19/04/2019
- [13] D1.13, Quarterly Report Q2 2019, 13/07/2019
- [14] D1.14, Quarterly Report Q3 2019, 30/10/2019
- [15] D2.1, PJ20:ATM Master Plan Level 2 (2017), 22/02/2018
- [16] D2.2, PJ20:ATM Master Plan Level 3 - Plan (2017), 20/02/2018
- [17] D2.3, PJ20:ATM Master Plan Level 3 - Report (2017), 20/09/2017
- [18] D2.4, PJ20: Update to the Standardisation Roadmap (2017), 30/05/2018
- [19] D2.5, PJ20: Update to the Regulatory Roadmap (2017), 30/05/2018
- [20] D2.6, PJ20: Consolidated Business Case (2017), 31/06/2018
- [21] D2.7, PJ20:ATM Master Plan Level 2 (2018), 29/05/2019

- [22] D2.8, PJ20:ATM Master Plan Level 3 - Plan (2018), 02/07/2018
- [23] D2.9, PJ20:ATM Master Plan Level 3 - Report (2018), 02/07/2018
- [24] D2.10, PJ20: Update to the Standardisation Roadmap (2018), 10/05/2019
- [25] D2.11, PJ20: Update to the Regulatory Roadmap (2018), 10/05/2019
- [26] D2.12, PJ20: Consolidated Business Case (2018) and (2019), 07/09/2019
- [27] D2.13, PJ20:ATM Master Plan Level 2 (2019), 13/12/2019
- [28] D2.14, PJ20:ATM Master Plan Level 3 - Plan (2019), 18/11/2019
- [29] D2.15, PJ20:ATM Master Plan Level 3 - Report (2019), 26/06/2019
- [30] D2.16, PJ20: Update to the Standardisation Roadmap (2019), 03/12/2019
- [31] D2.17, PJ20: Update to the Regulatory Roadmap (2019), 05/12/2019
- [32] D3.1, POPD - Requirement No.1 (2018), 01/03/2018
- [33] D3.2, M - Requirement No.2 (2018), 01/03/2018
- [34] D3.3, DU - Requirement No.3 (2018), 01/03/2018

5.1.2 Non-Contractual Deliverables

- [35] M5, Drones MP Addendum, “The roadmap for the safe integration of Drones into all classes of airspace”, 06/10/2017
- [36] Update of M4 Phase 3: Assessment of Common Project 2 (CP2) Solutions, 10/11/2017
- [37] LOC_D001, ATM Master Plan Level 3 Process, 22/12/2017
- [38] sWP2.2 Dataset “En-route and Terminal Airspace OEs Dataset October 2019” and “Airport OE_ October2019”
- [39] Standardisation and Regulatory Needs Identification – Guidance, 28/08/2019
- [40] LOC_M010, Proposed Master Plan Level 1 + Companion Document, 18/12/2018 + 19/07/2019

5.2 Project Communication and Dissemination papers

- [41] You can view the Science Impact article on Ingenta Connect here: <https://www.ingentaconnect.com/content/sil/impact/2019/00002019/00000005/art00015>
- [42] European ATM Portal: <https://www.atmmasterplan.eu> and for the SESAR programme: <https://www.atmmasterplan.eu/working>

- [43] Several Press releases covering the Master Plan campaign progress on the EUROCONTROL and SJU Web and LinkedIn or Tweeter (Consultation of Partners, publication of the drones: some links (not exhaustive)

<https://www.eurocontrol.int/news/common-stakeholder-view-achieved-european-atm-master-plan>

<https://www.eurocontrol.int/event/2019-master-plan-event>

https://orbite.eurocontrol.int/Headlines/Pages/2018_Master_Plan.aspx

<https://www.eurocontrol.int/news/ecac-stakeholders-discuss-future-european-air-traffic-management>

<https://www.sesarju.eu/news/regulators-and-stakeholders-discuss-future-european-air-traffic-management>

<https://www.sesarju.eu/news/european-aviation-stakeholders-commit-sesar-and-digital-agenda>

5.3 External References

- [44] European ATM Master Plan Edition 2018 update campaign - Campaign charter, 07/07/2017
- [45] Airspace Architecture Study, 'A proposal for the future architecture of the European airspace', 05/03/2019
- [46] Airspace Architecture Study Transition Plan, 11/09/2019

Appendix A Acronyms and Terminology

A.1 Acronyms and Terminology

Term	Definition
AMPLE	ATM Master P lan for Europe
ATM	Air Traffic M anagement
EASA	European Union Aviation S afety A gency
EC	European C ommission
EDA	European D efence A gency
EPAS	European P lan for A viation S afety
EUROCAE	EU ropean O rganisation for C ivil A viation E quipment
KFT	Key F ocus T eam (of the MPG)
MP	ATM M aster P lan
MPC	Master P lanning C ommittee
MPG	Master P lanning G roup
MPL	Master P lan L evel
SDM	SESAR D eployment M anager
SESAR	Single E uropean S ky A TM R esearch P rogramme
SJU	SESAR J oint U ndertaking

Table 3: Acronyms and terminology

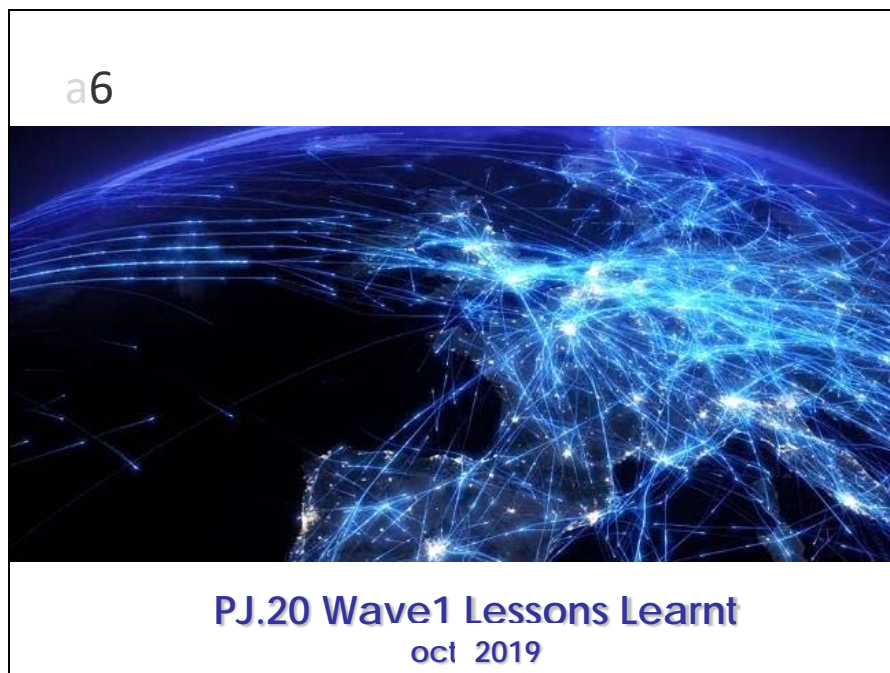
Appendix B Lessons Learned

The third and last meeting of PJ20 Extended-Project Management Board (E-PMB#3) carried out an extensive Lessons Learned session gathering feedback from different perspectives:

- a) Lessons Learned exercise from ANSP (A6) partners;
- b) Lessons Learned from individual Work Packages;
- c) Lessons Learnt from the Master Planning Group;
- d) Lessons Learned captured during E-PMB#3 conclusion.

For completeness and later reference, these different feedbacks are fully included here; Chapter 3 Conclusions and Next Steps covered the salient points drawn from their analysis.

B.1 Lessons Learned exercise from ANSP (A6) partners



A6+ feedback to DMSC07

GENERAL COMMENTS

a6
26

Major drafting work done outside of PJ20

Observation	Recommendation
<ul style="list-style-type: none"> a. Regular expertise in PJ20 was of representative nature b. PJ20 unable to perform top-down planning, MP L1 update hardly prepared by prior PJ20 work, c. The main deliverable MP L1 	<ul style="list-style-type: none"> 1. Integrate drafting MP L1 and MPG into PJ20 and its Grant Agreement 2. Adapt PJ20 working arrangement to deliver complete MP (all levels, one-stop). PJ20 structure should reflect MP L1 structure + central Editorial committee MPG Include MP L1 production during preparing works in planning phase and PMP Include members for KFT in PJ20 planning 3. Avoid ad hoc KFT staffing

27

MP finalisation significantly delayed

Observation

Other reasons for delay – besides AAS:

- a. Several organisational disruptions in PJ20/MPG
- b. Missing concept of PJ20 for the ‘critical path’
- c. Ineffective approach to prioritisation of SESAR Solutions
- d. Reinterpretation of a known term: Essential Operational Change

Proposal

1. Establish lean and stable working arrangement for PJ20/MPG
2. Agree stable concepts, contents and guidelines (strawman MP L1)
3. Agree on practical prioritisation principle

a6

28

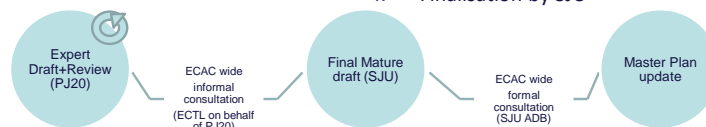
Run in no built up systematically & Drafting mixed with consultation

Observation

- a. Drafting process (MPG/KFT) mixed with consultation (via CANSO) – but ineffective.
- b. E.g. Reviews via MPG with too short review periods reached only MPG/KFT or PJ20 representatives.
- c. Buy-in by stakeholders not evident until consultation of SJU ADB.

Proposal

1. Separation of drafting process from consultation process – very important!
2. Schedule intermediate consultations based on sufficiently mature drafts
3. ECTL to organise consultation on behalf of PJ20 / SJU (lead). Feedback on MP to be processed by PJ20
4. Finalisation by SJU



a6

29

No significant innuts from IR&VID for the ATM Master Plan 2018/19 update	
<u>Observation</u>	<u>Proposal</u>
<ul style="list-style-type: none"> a. MP campaign brought forward 1y to 2018 b. No significant new inputs from SESAR R&D work on wave 1 available. c. In the consequence the deployment scenarios and the business view are very much based on old data or guesswork and on political messages. 	<ul style="list-style-type: none"> 1. Synchronise the ATM MP updates with the availability of the significant IR&VLD results 2. Or cope with this fact which will also be the case in 2022 at the end of wave 2. 3. Provide instead more details of the infrastructures that will to be modernised/replaced. 4. Early coordination of update calendar and amount of work with EC.
a6	30

<p>A6+ feedback to DMSC07</p> <p style="font-size: 2em; font-weight: bold; margin-top: 20px;">PJ20 INTERNAL COMMENTS</p>	
a6	31

P. 2(Organisation fragmented

Observation	Proposal
<ul style="list-style-type: none"> a. Many WPs, same persons, schedules hardly coordinated, demanding activities in parallel b. Deployment Scenario (PJ20 WP2.4) not recognized for Performance Ambition' (KFT 2) and 'Business View' (WP2.6) and hence not synchronised with these packages c. Limited PJ20 participant resources were not used optimally, leading to a need for Eurocontrol to do more of the work than was comfortable d. Less experienced PJ20 participants were under-productive because there was little discussion of what contribution was expected and how it could be made for each task 	<ul style="list-style-type: none"> 1. Identify interrelations among the different workgroups of PJ19 and PJ20 and synchronize their activities 2. Reduce no of WPs in PJ19/20 3. All WPs to use a shared calendar of meetings that is kept up to date with planned meetings: both F2F and webex meetings. 4. Use scarce resources carefully 5. Add some orientation or guidance at the start of tasks. Create a common understanding. Consider putting a little self-directed PJ20 induction material together for new participants.

a6

32

Cumbersome dataset change management

Observation	Proposal
<ul style="list-style-type: none"> a. EATMA dataset change process complicated and not transparent. Hardly direct communication between observer and owner of a problem. Many faults and voids spoil the dataset. b. Excel as tool for deployment scenarios is inconvenient c. Data repository (OST, STELLAR) for PJ20 WPs not used consequently 	<ul style="list-style-type: none"> 1. Use a largely <u>automated management tool</u> for the elaboration and optimisation of the deployment scenarios and for the quality testing and assurance of Solution, OI step and enabler data. 2. Introduce an appropriate tool for maintenance of Deployment Scenarios 3. Use Stellar or OST consequently as sophisticated data repository.

a6

33

Mino Issues with PJ20	
<u>Observation</u>	<u>Proposal</u>
<ul style="list-style-type: none"> a. PJ20 support to the maturity gate was not well coordinated b. WP2.3 overload , contributors diconnected from work c. MP L3 review and approval process quite fuzzy d. Actual status of deployment missing in MP L1 e. Relations to ICAO GANP indicated, but real gap not assessed. 	<ul style="list-style-type: none"> 1. To avoid discussions in the gates it's important to provide our guidance material to the projects asap and through all possible channels and offer our support, too. 2. Keep PJ20 WP members in connection to the work 3. Simplify MP L3 review and approval process 4. Actual data of deployment status, collected through ATM MP L3 and DP monitoring processes should be included into the MP L1 document. 5. Report gap between MP and GANP?
a6	34

B.2 Lessons Learned from individual Work Packages

sWP2.1 Portal/Database & sWP2.7 Support to Campaign

- Master Plan Portal and Database are depending on Data Quality of Solution Projects
- Master Plan Update Campaign shifted back and forth creating major planning impact regarding timing & resources.
- Lessons Learned captured during Master Planning Group #12 in December 2018 are included in B.3 below.

sWP2.2 Performance Planning

- Cooperation with different stakeholders (project partners, institutions (PRU, etc.)) is essential in order to delivery high quality results
- Cooperation with different work packages within PJ.19 and PJ.20 projects will remain very important in Wave 2 as well
- Participation of partners in both PJ.19 and PJ.20 projects will be essential in order to ensure better coordination and cooperation at SESAR 2020 Programme

sWP2.3 Data generation & coordination (including STD and REG needs)

There are no specific lessons learned for sWP2.3. Such an exercise was not carried out within the task, but only discussed within the overall lessons learned exercise at the EPMB#3.

sWP 2.4 Deployment Scenarios (DS)

Overall

- Good deliverable
- Active Partners involvement

Process

- sWP2.4 acted in a reactive way
 - Due to CP2 proposal , no time and resources to prepare /propose DS before starting the campaign
- Major delay due to new input : CP2, EOC, AAS
- Interaction with MP Campaign : first 6 months quite “clear” then on ad-hoc basis
- Interaction with other WPs : not too much active

Recommendation : Identify constraints from the beginning of work and ensure time for developing the process and developing the task

Task planning from SJU

- Very transparent and supportive PM
- Overlapping of activities (CP2, sWP2.4 activities, support to MP campaign...)
- Major changes at the end of the task

Recommendation : Respect the planning and involvement of SJU experts during development

Partners contribution to the tasks

- Very active and supportive
- However, missing resources in certain area: airport, ground industry and in the last period network
- Very active civil-military contribution
- Expectations of the partners not always fulfilled

Data /Tool support

- DS started with poor data and data not yet complete in MEGA
- Alignment L1-L2 difficult due to manual operations

Recommendations :

- SJU to support in capturing the necessary information
- Build IT support to develop and monitor DS
- Develop new techniques to ease the process of collections

Task planning within sWP2.4: Two coordinators : Daniela and Antonio

sWP2.5 Implementation Planning and Monitoring

There are no specific lessons learned for sWP2.5. Such an exercise was not carried out within the task, but only discussed within the overall lessons learned exercise at the EPMB#3.

sWP 2.6 Business Cases

What Went Well

- Continuity from SESAR 1 as Key Focus Team
- Involvement of all stakeholders improved the link to performance
- Good collaboration even with challenging schedules

- Great team
- Good planning of sWP2.6
- High level professionalism
- Inspiring atmosphere
- Well documented material and CBA model
- Accessible documentation
- Good quality of documents
- Clear instructions on what to do by when

Received by mail:

- SWP2.6 partner involvement from the early activities (initial prioritisation of the Wave 1 Solutions /CP2 CBA development) until the BV model inputs were provided. E.g. attendance at progress webexes, providing inputs, etc.
- ECTL (KP) was able to pick up the BCG model and successfully update and finalise the CP2 work once the SJU contractors left
- Having Andy Greenwood (days effort from Nicolas Eertmans) to help consolidate the financial incentives section
- ECTL (BMF) was able to pick up the McKinsey model and successfully update and finalise the BV work once the SJU contractors left.
- ECTL (BMF) able to react and fulfil SJU requests for changes in the final stages

What Could Be Improved

- Key Focus Team: lack of transparency of outcome how it was shared in the MP. Outcomes discussed in KFT have not been taken on board of MP
- Interaction between sub-WPs could be improved as the input to other WPs got lost
- Tight and challenging timescale to provide data - planning ahead would help to organise individual work planning
- Communication could be improved when using mails by e.g. grouping subjects, improve mail title – please don't reply to all
- The transversal / federating view was missing (9.39) with help from industry
- Involvement of EASA in proof of concept
- Some projects are mature and are not pushed forward and vice versa
- Link between CBAs and Standard and deployment could be improved
- Take into account all users (small) and local business cases
- Make business cases for matures solutions rather than focus on non-mature solutions
- Monitoring view of previous CBA (2015) and current CBA (2019) and highlight the difference between previous and current CBA also for deployment results

- Provision of feedback on papers submitted by members (buy in)
- Double count of benefits. Overlap of KPAs and KPIs
- Feedback on CBAs could be improved. Closing loop R&D, V5. There is a need to satisfy a public
- Improve the support from the SJU
- Holistic view outsourced to McKenzie but limited responsibility (to collect data). Next time
- outsource the complete task and have a clear contract with responsibilities.
- Timescale is too tight, work is compressed. When ad hoc work gets on top, priorities need to be reset
- Deployment and business case should consider “acceptable means of compliance”
- For Airports, deployment scenarios should look at “service level of operations” rather than group categorisation. E.g. Lyon is a group II APT but behaves like a group I APT because of AOP.
- Difficult to get the Airport view in the MP
- The MP should increase the view of passengers / customer / EU citizen i.e. CO2 per passenger or seat/miles costs
- Set the expectations at the beginning and work with change control when expectations change
- Link between Business Case and deployment scenario and deployment ambitions
- Improve ability to estimate costs – make use of federating projects
- In document add link between MP and excel model

Received by mail:

- The realism of the MP planning – it’s always too tight, it always get extended (maybe there is a need to keep the pressure on to get people to focus but this campaign has dragged on forever considering how little time we had to collect data, etc.)
- Avoid using external contractors to develop the BV
- Ensure a direct link with the Performance ambitions experts and consistent use of data (flights / movements, etc.)
- Expand knowledge available in team/project of macroeconomic assessment methodologies
- Solution projects should improve their work to update and complete their OI Step/Enabler information in the Dataset – often in CBA tasks we found Solutions using quite different OI Step/Enabler lists internally (sometimes because they only focused on those related to their validations) and doing the minimum regards getting the Dataset up to date (i.e. they don’t see or don’t care about the link up to the MP)
- PJ19 Performance Framework – ECAC CBA needs ECAC level data, while the PAR says local level capacity is sufficient. This can lead to confusion for Solutions (I have to use the PAR results but I also have to do an ECAC-level CBA) and to PJ20 Deployment Package CBAs (as the Deployment performance inputs from PJ19 will be based on the PAR approach).
- Would be nice to have a way of defining the content of the baseline (2012) and reference scenarios (what will be deployed by 2030 in a certain sub-OE) from a solution point of view

- The link between the MP Deployment Scenarios and the Solution projects whose solutions are included in them – are the Solution projects aware? Do they agree with sub-OE, etc?
- Do sWP2.6 participants feel like everything disappears into a black hole when the SJU start driving the BV finalisation process? Changes are made but often not communicated back to the partners until some time later (when they're delivered as a 'fait accompli')
- The quality of the cost data for W1 and W2 (W1 should be improved with the Solution CBA data, but W2 will still be very high-level)

sWP 2.8 - CP2 proposal

1. Process of capturing the feed back
2. Structure of the feed back
3. Final report

Process of capturing the feedback

- An evaluation form was developed by sWP2.8 partners after the CP2 proposal was sent to SJU
- Feedback from sWP2.8 partners were consolidated
- A report was developed including recommendations

Structure of the feedback

- Processes:

Selection (consensus, qualified majority, arbitration, scope), Scope of CP2, Management of contracts for CBA development, Mandate feedback (Criteria definition).

- Task Planning from SJU:

Communication of the plan, Initial Discussion, Timing, Follow up through the phases

- Task Planning within sWP2.8

- Deliverable:

Management of the development, Organisation of the document (Structure and Quality), Integration of Mandate's criteria, Completeness, Readability, Usefulness, Timing delivery

- Task Organisation:

Management, sWP 2.8 Communication incl. Feedbacks, Reporting/slides/presentations, E-mails, OST, Meetings (WebEx / tel. calls and F2F)

- Partners Contributions to the tasks:

Share of the workload, Quality of contribution, Availability of PJ20 partners (Issue with airport experts)

- Interfaces:

- sWP2.3, sWP2.4, sWP2.5, sWP2.6,

- Working Groups (including consultation), MPC,

- SJU (including SJU with other organisations such as Airports, SDM, etc.)

- Roles of PJ20 and SJU:

Distinction, Support to WGs, Development of final recommendation, Being an expert vs representing an organisation

- Civil-military contribution
- Contribution of EUROCONTROL Agency different experts
- CP2 and PCP review processes
- CNS rationalisation and evolution scenarios integration
- SJU Feedback on the feasibility of deployment scenarios

Final report

- Draft report available with main conclusions:
 - The mandate received from the SJU was successfully fulfilled as much as concerns the sWP2.8 related task
 - CP2 activity should have started with some 'do's and don'ts. This would have avoided falling into the same traps (transparency and decision process).
 - The tasks were very arduous and agreements were difficult to be made.
 - The work on the Master Plan 2018 will likely suffer because CP2 activity prevented an adequate pre-Campaign preparation during 2017.
- also 18 recommendations.

sWP 2.9 Drones Master Plan Addendum

- No Level 2 data but satisfactory Level 1
- Clarify respective role of external Working Groups vs. PJ20 WP
- Resource competition with CP2 WP
- Increase our ability to embrace “novelties”

B.3 Master Plan Campaign – Master Planning Group – Lessons Learned

What went well	Areas for Improvement
<ol style="list-style-type: none"> 1. Great collaboration 2. Wide involvement 3. SJU internship to capture “Making OF” 2018 MP Business View is a good point 4. KFT: good idea 5. All relevant stakeholders involved 6. Positive atmosphere 7. Wider Stakeholders’ contribution (KFTs, CTs) 8. Flexibility 9. Good work and team spirit 10. Professionalism 11. Clear vision, good integration of Business, Technological and Operational views 12. Vision shaped early in the MP” 13. CNS presented as an EOC 14. Good CNS Roadmap aligned with CNS strategy 15. Reactivity and willingness to deliver 16. Charter respected 17. Positive commitment from all members 18. Good support from PJ20 19. Capacity of the meeting rooms 20. Top down derivation of EOCs 21. CT - recovery of MP succeeded thanks to people commitment 22. Constructive MPG participation and meetings 23. Performance Ambitions are now water proofed and linked to Performance Scheme 24. Vision is driving priorities, top down approach (item 3) (but not for wave 2) 25. Productivity of the team 26. Underlying data respective contribution factors provide the link! 27. Adaptability to extraneous events 28. KFT’s work 29. Good spirit and atmosphere 30. Team spirit 31. Open discussions, honest advice and team spirit 	<ol style="list-style-type: none"> 1. PSO absence and low implication might create issues 2. PSOs not present, buy-in? 3. KFT drones: Little commitment from SJU, good ECTL participation, scarce from other participants 4. MP draft comments should be delegated to KFT’s to process and escalate to MPG the ones requiring decisions 5. KFT: not enough empowerment, it should have been led by PJ20/SJU 6. Lack of top-down approach initially 7. Too many individual positions linked to funding 8. Time pressure 9. MPG resistance to some requirements (EOCs?) 10. Tight time schedule for changes 11. Completion team set up as a recovery plan to process MPC directives. Next campaign: setup better coordination with MPC to avoid that. 12. Too many iterations in the beginning without track changes 13. Coordination among KFT’s 14. Limited involvement of the PSOs 15. Deficit in resourcing; to cope with rapid changes in direction 16. Limited commitment from airports due to lack of resources 17. Lack of sufficient long term planning, difficulties to consult back-office 18. EC: No decision on CP2/negative impact on campaign 19. Difficulty in emphasizing Airport views 20. Campaign obj5 drive global agenda for ATM modernisation at ICAO level: MPC did not really play a role in this (was done via ASBU-ppt at the same time as campaign) 21. Clearer agreement methods (melon re-opening) 22. Critical Path 2

<p>32. Campaign objective 6 convergence performance scheme and SESAR definitely achieved, at least in chapter 3</p> <p>33. Some EOCs need more substance from AAs</p> <p>34. Broad involvement through Key Focus Teams, CTs and MPG itself</p> <p>35. CNS infra and services = obj.2</p>	<p>23. Priorities for future SESAR calls are not readable</p> <p>24. Not enough time to review all the work performed</p> <p>25. EC participation too remote, not always consistent</p> <p>26. Too much bottom-up CP view</p> <p>27. Ad1: work in progress; needs more assessments (yearly)</p> <p>28. Essential details missing</p> <p>29. Not yet satisfactory coordination between SESAR and Performance Scheme</p> <p>30. Comment reviews during MPG was not necessarily the best use of meeting time</p> <p>31. Not enough time to work with “back offices” impression - working in “firefighting” mode</p> <p>32. AAS process interrupted the campaign</p> <p>33. Review periods were too short</p> <p>34. Analysis of performance achieved so far is still missing (only forward looking)</p> <p>35. Campaign charter should have been updated each time a substantial change happened (KFT to CT’s)</p> <p>36. ICAO GANP was completed sooner</p> <p>37. CONOPS is still missing</p> <p>38. Changing EOC too late in the process</p> <p>39. Performance KFT started off late due to unclear Leadership</p> <p>40. Major changes during the process</p> <p>41. Where do we find the passengers?</p> <p>42. Too many changes in the planning</p> <p>43. Lack of a clear view from the beginning</p> <p>44. Limited time to do the work</p> <p>45. CT Business View rationale not clear, number justification hard to find from previous MP (BCG material)</p> <p>46. Item 4: The safe integration of drones was sacrificed for the Airspace Architecture, no integration yet - only parallel work</p> <p>47. The “minor update of the 2015 edition” for drones and lessons learnt took more than a year with changing objectives.</p>
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B.4 Overall PJ20 LL - captured during E-PMB#3 conclusion

What Went Well

- CBA: good quality material/well documented
- Well coordinated positions from stakeholder group
- Successful delivery of good quality document, supported by “heroes”
- Agility of teams to allow delivery of good MP
- ANSP implication and Task sharing
- Helpful involvement of AUs and stakeholders in general
- Result-oriented approach allowing overcoming obstacles and changes
- Good relation with ECTL experts (PRU, STATFOR) to be kept!
- Trust and confidence/Ability to really talk
- Stability of the team
- Experience gained on reconciling top-down with bottom-up approach and using it for the Plan.
- Readability of S&R figure
- Good collaboration with PJ19
- Companion document
- Master Plan – best ever!
- Climate of trust – team spirit

What To Improve

- No-clear follow-up to comments (Business View)
- Difficulty to accommodate consultant works and input
- Contribution not always as expected
- Relying on heroes to be replaced by better organisation
- Top-down approach did not allow for reality check
- Dialogue with EC to be improved in order to establish stable requirements
- Airport frustration to be addressed in the future
- Find a way to obtain contribution from members fast (ex 19.4.2) – use of champions
- Shorter meetings – more webexes – use tutorial
- Too short approval time and lack of transparency on development of S&R needs (WP2.3 vs KFT)
- Availability and quality of L2 DS was missing
- MP should stop selling dreams

- Followers instead of Leaders S&R – global interoperability
- Coordination of schedule and tasks between WPS
- Lack of a broad Master Planning process overview
- Contact with solutions projects at Maturity gate
- Standardisation and Regulatory case analysis was missing
- Better planning and resource usage, to give time to develop (think before acting)
- Deployment Scenarios need contact with solution projects
- Organisation and involvement of back offices (PSO and SJU)
- PJ should inform MPC of “planning” abilities
- Access to information in multiple tools (H2020, Stellar, OST...)
- EASA involvement

