



Annual Work Programme 2014

12 December 2013

*Subject to editing revision before the ADB meeting and adoption of
Reallocation and IBAFO III by the ADB on 12 December*

Table of Contents

1.	INTRODUCTION.....	4
2.	SESAR JOINT UNDERTAKING.....	4
2.1.	BACKGROUND CONTEXT	4
2.2.	MISSION	5
2.3.	2014 VISION AND OBJECTIVES.....	6
2.4.	RISK MANAGEMENT.....	13
2.4.1.	RISK MANAGEMENT: SUPPORT TO OBJECTIVES' ACHIEVEMENT	13
2.4.2.	IMPLEMENTATION OF AUDITS AND REVIEW RECOMMENDATIONS.....	14
3.	THE PROGRAMME.....	15
3.1.	PROGRAMME MANAGEMENT	17
3.1.1.	SESAR PROGRAMME RELEASES	22
3.1.2.	RELEASE EXERCISES' DESCRIPTION	26
3.1.2.1.	PRIORITY STRATEGIC BUSINESS NEED: AIRPORT INTEGRATION AND THROUGHPUT	26
3.1.2.2.	PRIORITY STRATEGIC BUSINESS NEED: MANAGEMENT AND DYNAMIC/CAPACITY BALANCING	27
3.1.2.3.	PRIORITY STRATEGIC BUSINESS NEED: TRAFFIC SYNCRONISATION.....	31
3.1.2.4.	PRIORITY STRATEGIC BUSINESS NEED: MOVING FROM AIRSPACE TO 4D TRAJECTORY MANAGEMENT	35
3.1.2.5.	PRIORITY STRATEGIC BUSINESS NEED:CONFLICT MANAGEMENT AND AUTOMATION.....	35
3.1.2.6.	COMPLEMENTARY ACTIVITIES	37
3.2.	THIRD PARTY RESOURCE CONTRIBUTION AND MANAGEMENT	40
3.2.1.	THE AIRSPACE USERS IN THE PROGRAMME.....	40
3.2.2.	AVIATION AUTHORITIES	40
3.2.3.	PROFESSIONAL STAFF ASSOCIATIONS	41
3.2.4.	MILITARY	41
3.3.	ACI.....	42
3.4.	ASSOCIATE PARTNERS OF THE SJU AND THEIR INVOLVEMENT	43
3.5.	DEMONSTRATION ACTIVITIES	43
3.5.1.	DEMONSTRATION ACTIVITIES AND AIRE.....	43
3.5.2.	RPAS DEMONSTRATIONS.....	44
3.6.	IBAFO III	45
4.	SESAR PROJECT SPECIFIC ACTIVITIES IN 2014	45
4.1.	THE EUROPEAN ATM MASTER PLAN	45
4.2.	SUPPORT TO THE EC.....	46

4.2.1.	SUPPORT TO THE PREPARATION OF THE DEPLOYMENT.....	46
4.2.1.1.	CONTRIBUTION TO COMMON PROJECTS FOR DEPLOYMENT	ERROR! BOOKMARK NOT DEFINED.
4.2.1.2.	OTHER SUPPORT	ERROR! BOOKMARK NOT DEFINED.
4.3.	RPAS INTEGRATION IN ATM.....	47
4.4.	CYBER SECURITY.....	48
4.5.	LONG TERM & INNOVATIVE RESEARCH.....	48
4.6.	SESAR PERFORMANCE PARTNERSHIP (SPP)	50
4.7.	COORDINATION WITH FABS.....	51
4.8.	PREPARATION OF PROGRAMME SESAR 2020.....	51
5.	COORDINATION WITH OTHER PROGRAMMES AND ORGANISATIONS.....	51
5.1.	INTERNATIONAL/EXTERNAL RELATIONS	51
5.2.	FAA/NEXTGEN	52
5.3.	CLEAN SKY	52
5.4.	EUROCAE	52
5.5.	ICAO GLOBAL AIR NAVIGATION PLAN (GANP)	53
5.6.	EASA.....	53
5.7.	ESA.....	54
5.8.	RESOURCES FOR STUDIES AND DEVELOPMENTS IN SUPPORT OR COMPLEMENTARY TO THE PROGRAMME	54
6.	COMMUNICATION PLAN.....	56
7.	ADMINISTRATION & FINANCE.....	57
7.1.	ENSURE EFFICIENT SUPPORT TO THE PROGRAMME IMPLEMENTATION	57
7.2.	ON TIME ASSESSMENT OF CONTRACTUAL DELIVERABLES AND PROJECT'S INTERIM REPORT	57
7.3.	ENSURE EFFECTIVE IMPLEMENTATION OF ICS AND RISK MANAGEMENT	58
7.4.	PROJECT AUDITS' ASSURANCE	58
8.	INTERNAL AUDIT AND AUDIT CO-ORDINATION	59
8.1.	INTERNAL AUDIT WORK PROGRAMME 2012-2014	59
8.2.	CO-ORDINATION AND OVERSIGHT OF PUBLIC AUDIT FUNCTIONS	59
8.3.	RESOURCES	59
9.	GLOSSARY	60
10.	ANNEX I - PROJECTS IN EXECUTION PHASE - 2014 PLANNED DELIVERY.....	62
11.	ANNEX II - PROGRAMME FINANCIALS	62
12.	ANNEX III - RISK MANAGEMENT OVERVIEW	62
13.	ANNEX IV - STAFF ESTABLISHMENT PLAN	62
14.	ANNEX V - R1, R2, R3 EXERCISES.....	62

15. ANNEX VI - BUDGET 2014..... 62

1. Introduction

1.1. Purpose of the document

The purpose of the Annual Work Programme (hereinafter AWP) is to outline the activities that will be performed by the SESAR Joint Undertaking (hereinafter the SJU or Joint Undertaking) during 2014 to reach its annual objectives and the Programme's objectives set for the period up to 2016. This document describes how the resources made available by the European Union, Eurocontrol, and the other SJU Members, supported where necessary by the different Associate Partners, will be geared towards the 2014 achievements and onward by detailing the operational and administrative actions that will be performed during the year.

It should be noticed that this AWP 2014 does not contain yet:

- the impact of the Reallocation and IBAFO III which are currently under assessment,
- any budget allocation related to the Multi-Annual Financial Framework 2014 - 2020, which is expected to be adopted by year end 2013 by the European Union Budget Authority and is subject to the final adoption by the Council of Transport Ministers of the amendment to European Council (EC) Regulation 219/2007 on the SJU extension¹.

2. SESAR Joint Undertaking

2.1. Background context

Since 2004, the European Union gained competences in the ATM domain. The Single European Sky (SES) legislative framework aims at increasing the overall performance of the air traffic management system in Europe. SES focuses on performance through institutional changes and regulatory framework but also includes a major technological pillar, the SESAR Project.

The SESAR Project, through its definition, development and deployment processes, aims at delivering a new and global interoperable concept of ATM where operations are built around a continuous sharing of data between aircraft, air navigation service providers and airports.

The definition phase as such was concluded in 2008 and resulted in the Master Plan, which was transferred from Eurocontrol to the SJU, which is since then its owner, and endorsed by the Council in 2009 to become the European ATM Master Plan.

¹ On 10 October the Council of Transport Minister has adopted a position in favour of the extension of the SJU until 2024, which shall be completed now by the opinion of the European Parliament and of the European Economic Social Committee.

The SJU coordinates the development phase and it is in charge of the execution and maintenance of the Master Plan; the last version is the 2012 edition which provides a streamlined and more deployment oriented view on the activities to be executed to achieve the Performance Targets.

R&D and deployment are closely interrelated. The R&D activities, performed since 2009, bring initial validated results which should enter progressively in the deployment pipeline planned to start in 2014.

The current R&D phase should deliver Step 1 - Time Based Operations² - and large part of Step 2 - Trajectory Based Operations³ of the Master Plan, while the SESAR Programme 2020 should achieve the remaining part of Step 2 and Step 3 - Performance Based Operations⁴.

2.2. Mission

The SJU is established by Council Regulation (EC) 219/2007, as last modified by Council Regulation (EC) 1361/2008. The aim of the SJU is to ensure the modernisation of the European air traffic management system by coordinating and concentrating all relevant research and development efforts in the European Union. It shall be responsible for the execution of the European ATM Master Plan and in particular for carrying out the following tasks:

- organising and coordinating the activities of the development phase of the SESAR project in accordance with the ATM Master Plan, by combining and managing under a single structure public and private sector funding,
- ensuring the necessary funding for the activities of the Development phase of the SESAR Project in accordance with the ATM Master Plan,
- ensuring the involvement of the stakeholders of the air traffic management sector in Europe, in particular: air navigation service providers, airspace users, professional staff associations, airports, and manufacturing industry; as well as the relevant scientific institutions or the relevant scientific community,
- organising the technical work of research and development, validation and study, to be carried out under its authority while avoiding fragmentation of such activities,
- ensuring the supervision of activities related to the development of common products duly identified in the ATM Master Plan and if necessary, to organise specific invitations to tender.

Regulation (EC) 219/2007 establishes that the SJU ceases to exist on 31 December 2016. However, on 10 July 2013 the European Commission has proposed to extend the legal duration of the SJU until 2024. The Commission proposal aims at ensuring that research and innovation on air traffic management, and in particular, the coordinated approach in ATM research and innovation in the context of the Single European Sky (SES) continues beyond the initial legal framework of 2016. On 10 October 2013, the Council of Transport Ministers adopted a position favourable to the extension of the SJU which shall now

² Time Based Operations = focus on flight efficiency, predictability and the environment

³ Trajectory Based Operations = adds the aspect of capacity and the optimisation of business and mission trajectories, 4D based business and SWIM for exchanges of information

⁴ Performance Based Operations = implementation of a European high-performance, integrate, network centric, collaborative, seamless air/ground system

receive the formal opinions of the European Parliament and the European Economic and Social Committee.

2.3. 2014 Vision and Objectives

In 2012, the SJU management proposed a mid-term vision for the period up to 2014 included, together with related objectives.

Building on the 2012 results and looking forward at the 2014 vision, the SESAR management has established the objectives to be reached in 2014 and the intermediary targets to be achieved by the end of 2013. The planned activities leading to the long term Programme's objectives have been broken down to ensure that the SESAR Programme was focused not only on the achievement of its mission but on concrete research and innovation progress, including quick wins.

The 2013 objectives were defined as a percentage progress to be realised within the year, towards the full achievement set for the 2014. However, during 2013 it became clear the need to reprioritise the SJU activities in order to align them with the European ATM Master Plan 2012, the recent progress on deployment and the Pilot Common Project, the results on the Programme review, etc. which impacted the progress achieved during 2013 as well as requires a revision of the 2014 objectives.

The table below shows the Vision 2014, the objectives originally set in the AWP 2013 for 2014 and the qualitative and quantitative contributions to their achievement delivered in 2013 and planned for 2014 as well as the new objectives resulting from the alignment to the European ATM Master Plan.

“SESAR 2014
The SJU partnership has successfully introduced innovations, bringing measurable performance benefits to the worldwide aviation community”

OBJECTIVE DESCRIPTION	SUCCESS MEASUREMENT INDICATORS	Progress achieved by end 2013	Progress achieved by end 2014
<p>1. SESAR procedures, technology/tools and airspace design solutions enabled by the Initial 4D capability have demonstrated performance benefits in terms of efficiency, safety, capacity and predictability</p> <p>In 2013, activities focused on the evolution on the validation of the 4D trajectory coupled with CTA in mixed</p>	<p>Step 1 fuel efficiency target with significant improvements for other KPA's</p>	<p>AWP 2013 Target 2013 50%</p> <p>Actual 30%</p>	<p>AWP 2013 Target 2014 100%</p> <p>Revised Target 60%</p>

OBJECTIVE DESCRIPTION	SUCCESS MEASUREMENT INDICATORS	Progress achieved by end 2013	Progress achieved by end 2014
<p>traffic environment conditions. Nevertheless, contrary to initial expectations, ATC procedures using 4D capability need further refining for traffic separation and sequencing and the benefits in terms of flight efficiency will be measured in different operating environments.</p> <p>i4D procedures in mixed traffic environment will be validated by mid 2014. Additional work will be required to enrich the ground conflict detection systems with the trajectory down linked from the aircraft.</p> <p>Based on an intermediate version of the performance report of Project B5 (Step 1 - Cycle 2 - Deliverable D68), the objective is 30% completed in 2013 and the target for 2014 has to be revised to 60% of the initial objective. It is expected that the final version of the Deliverable, still under review will not significantly change the overall value relevant to the objective. This can be explained by the necessary trade-offs between the various KPAs since not all of them can reach 100% simultaneously, and on the contrary the progress on one of them can undermine the rest. As an example, the more i4D procedures are used for fuel efficiency, the less they contribute to capacity improvement (and the other way round). In addition, the Step 1 intermediate performance report demonstrate that while the progress is satisfactory on capacity, safety and environment, it remains too limited on cost efficiency</p>			
<p>2. <i>Technological and operational innovations in the airport domain are ready for deployment and SESAR AOP/AOC/NOP integration has</i></p>	<i>At least 10 Airports demonstrates increased</i>	<i>AWP 2013 Target 2013 60%</i>	<i>AWP 2013 Target 2014 100%</i>

OBJECTIVE DESCRIPTION	SUCCESS MEASUREMENT INDICATORS	Progress achieved by end 2013	Progress achieved by end 2014
<p><i>demonstrated positive network performance.</i></p> <p>2013 successfully delivered the Time Based Separation SESAR Solution aiming at keeping the airport capacity when arrival traffic is impacted by strong headwind conditions.</p> <p>2014 activities will focus on improving low visibility approach at airport using satellite (SBAS and GBAS), and on improving the arrival and departure traffic flows in integrating the related supporting tools. Further data services development between AOP & NOP will be validated in 2015.</p>	<i>predictability and less delays (MTS)</i>	Actual 60%	Target confirmed at 100%
<p>3. SESAR partners commit to SESAR Project innovative technological / operational results in their medium term investment plans.</p> <p>In 2013, the SJU worked on the delivery of “packages” which formalize the end of the planned R&D activities on a given operational procedure or technology. Although still under development and not yet published, the various topics have been identified through Releases 1 and 2 and widely made available. In 2013, the manufacturing industry, ANSPs and Airports, 6 out of the 15 Members, shared plans showing convergence of investments and deployment intention towards technology and procedures reflecting SESAR solutions. Although this is not yet a firm commitment, it shows a solid intention to materialize SESAR development in industrial products</p>	<i>> 5 projects</i>	<i>AWP 2013 Target 2013 40%</i> <i>Actual 40%</i>	<i>AWP 2013 Target 2014 100%</i> <i>Target confirmed at 100%</i>

OBJECTIVE DESCRIPTION	SUCCESS MEASUREMENT INDICATORS	Progress achieved by end 2013	Progress achieved by end 2014
<p>and deployment investments.</p> <p>The mid-term investment plans are expected to be part of the deployment activities, outside the remit of the SJU; however the SJU communication on benefits linked to innovations will provide strong incentives for inclusion in mid-term investment plans.</p> <p>In 2014, stemming from Release 1, 2 & 3, SESAR Solutions will be made available to the ATM community as a first set of ATM improvements deliveries.</p> <p>These SESAR Solutions will feed the new approach to deployment defined by the European Commission. It relies on deploying the Pilot Common Project (PCP) scoped by the SESAR Solutions. It is believed that the mid-term investment plans of partners will consider the business needs for deploying the content of the PCP.</p>			
<p>4. SWIM-based applications contribute to efficient implementation of Airspace Users preferred flight routes and profiles.</p> <p>In 2013 the interoperability of flight planning systems supporting the free routing operations is in validation using SWIM profiles. It is expected that following this first step, the introduction of SWIM-based applications will accelerate making possible the matching of the set</p>	<i>SWIM benefits demonstrated for Airline Operation Centres-Air Traffic Control services leading to Step 1 improvement of flight predictability</i>	AWP 2013 Target 2013 30%	AWP 2013 Target 2014 100%

OBJECTIVE DESCRIPTION	SUCCESS MEASUREMENT INDICATORS	Progress achieved by end 2013	Progress achieved by end 2014
<p>objective in 2014.</p> <p>As result of the PCP activities, an initial SWIM set of services has been defined for further deployment. Therefore, 2014 validation activities will build on Flight or Aeronautical data SWIM services. Interoperability of Flight Planning systems will enable the sharing of Flight data to all interested ATC systems instead of the current peer to peer. Access to Aeronautical data through the Network Operations Plan will be enabled through SWIM interface.</p> <p>Other SWIM services such as Meteorological domain services will be further considered in 2015. The full demonstration of SWIM capability to improve traffic predictability will then be reached at that stage; hence the target is revised to 60% in 2014.</p>			
<p>5. The SESAR Controller Working Position prototype demonstrates performance gains through its adaptability to efficiently integrate new functionality.</p> <p>In 2013 activities focused on the integration of new functionalities and decision making tools in the human machine interface of the controller working position. SESAR will complete in 2014 the research part relating to this objective validating</p>	<p>SESAR CWP supports 4D trajectory management and complies with Human Factors requirements; and at least 5 service providers will start investing in CWP new functionalities</p>	<p>AWP 2013 Target 2013 60%</p> <p>Actual 60%</p>	<p>AWP 2013 Target 2014 100%</p> <p>Revised Target 80%</p>

OBJECTIVE DESCRIPTION	SUCCESS MEASUREMENT INDICATORS	Progress achieved by end 2013	Progress achieved by end 2014
<p>CWP that fully support the management of time based operations contributing to 50% of the objective. The SJU will assess in more detail the situation with its Members at the end of 2014; it is estimated that up to 3 ANSPs out of the 5 in the objective, are currently considering the upgrade of their CWP contributing therefore to an additional 30% to the objective and leading to a global revised target of 80% in 2014.</p>			
<p>6. SESAR material to support standards has been proposed to the EC, ICAO and Industry Standardisation bodies for development into published standards and policies.</p> <p>3 standards (ED-114A, ED-143, update of ED-75) are well advanced and will definitely be proposed.</p> <p>Beside the above, the following standards are expected to be approved by the end of 2013: ED 92, ED 220, ED 221, ED 222, ED 223, ED 224, ED 228, ED 229, ED 230, ED 231.</p> <p>SESAR has provided contributions to all of them directly or through the SJU Members.</p> <p>For 2014: ED 76, ED 82, ED 87, ED 98, ED 99, ED 117, ED 119, ED 129, ED 142, ED 147, ED 148, SPR ATN, INTEROP ATN, INTEROP ATN+ FANS1A, EASA AMC on Data Link, EASA AMC for ATM systems and constituents, EASA AMC on ATCO licensing, EASA AMC on PBN, are planned for approval.</p>	<p>> 10 standards proposed</p>	<p>AWP 2013 Target 2013 40%</p> <p>Actual 40%</p>	<p>AWP 2013 Target 2014 100%</p> <p>Target confirmed at 100%</p>

OBJECTIVE DESCRIPTION	SUCCESS MEASUREMENT INDICATORS	Progress achieved by end 2013	Progress achieved by end 2014
<p>7. Through the SJU PPP, SESAR Staff have become world leaders in creating a culture of innovation, cooperation and accountability to deliver.</p> <p>In 2014 the SJU will further build on the outcome of ANC 12 to promote the SESAR concept of operations and will participate to the CANSO World ATM Congress with an objective to show the main achievements of Releases 1 to 3. International coordination will further focus on interoperability topics and in particular on data communication, RPAS and cybersecurity.</p>	<i>Positive result of Stakeholder, Staff & Member Survey (satisfaction rate>75%)</i>	<i>AWP 2013 Target</i> <i>Success of SJU participation to CANSO World ATM Congress, ICAO Air Transport Conference and General Assembly</i>	<i>Actual 100%</i> <i>Success of SJU participation to CANSO World ATM Congress, and SESAR Going Global- ICAO</i>
<p>8. Results from SESAR long term research activities are embedded into the rest of the SESAR Programme and prove the effective link between Innovation and R&D.</p>	<i>On going WPE process of research networks and projects have made a positive impact in other WP's (Three networks fully operating and delivering see section 4.5)</i>	<i>AWP 2013 Target 2013</i> <i>On going</i>	<i>AWP 2013 Target 2014</i> <i>On going</i>

OBJECTIVE DESCRIPTION	SUCCESS MEASUREMENT INDICATORS	Progress achieved by end 2013	Progress achieved by end 2014
<p>In 2013 the SJU has coordinated and participated in:</p> <ul style="list-style-type: none"> - ACARE - Work Package E - Scientific Committee - EC Coordination (Framework Programme) <p>ensuring the link between Innovation and R&D. This work will be continued during 2014, especially in view of the preparation of long term research activities of the Programme 2020</p>		On going	On going

The 2014 Vision and objectives constitute an intermediate step towards the achievement of the Programme targets defined by 2016. It further contributes to consolidate the capacity of the SJU and its Members to deliver progressively mature results for deployment activities.

In the medium term (2016) the vision is that the improvements in operational, safety, environment and cost efficiency domains brought through the SESAR Solutions will confirm the ATM stakeholders' appetite to adopt and deploy SESAR solutions.

In 2014, the SJU staff will consist of 39 positions, unchanged compared to the previous years and in accordance with the Multi-Annual Staff Policy Plan 2014 - 2016. At the end of September 2013, excluding that of the Executive Director, object of a specific undergoing procedure, 2 positions are vacant; the recruitment process will be finalised by early 2014 at the latest. Annex IV provides an overview of the staff with indications of the functions and the areas of responsibility. In addition, it should be noted that a Eurocontrol's Unit, the Programme Support Office (PSO) is hosted in the SJU premises; it contributes to provide support in the monitoring of the Programme activities under the responsibility of the SJU.

2.4. Risk Management

2.4.1. Risk Management: support to objectives' achievement

The complexity of the Programme managed by the SJU with its Members, in terms of organization, content and resource management, requires that adequate Risk Management processes are in place. An overall Risk Management exercise at SJU level is performed on a quarterly basis to assess the status of the most critical risks, the effectiveness of the mitigating actions implemented and to update programme exposure, should new risks have emerged between reviews.

Risk Management activities have been run in continuity and at different levels, starting from the Project level, to the Work Package level and up to the Programme and SJU levels.

An overall review of the Programme and SJU risks was performed in 2013. The purpose of this exercise was to identify key risk areas, to assess the status of the most critical risks, and to define appropriate mitigation actions.

As a result 11 “top risks” were identified showing high or very high criticality level:

- 2 Administrative risks (may affect the functioning of the SJU internal processes and assets)
- 3 Wide SESAR Scope risks (although not affecting directly the R&D activities, may affect the SESAR Programme negatively through the deployment of R&D results)
- 6 R&D risks (may impact the achievement of the objectives of the R&D activities directly).

Mitigating actions have been identified and are being implemented to provide a reasonable assurance that related risks will be under control in the near future (see Annex III).

In 2014, the SJU will continue strengthening its risk management by performing in particular the following actions:

- Securing the extension of the SJU (and stakeholders involvement) by establishing principles of SESAR Programme 2020, building on the lessons learnt;
- Continuing integrating 3rd Parties (Staff associations, Military and NSAs) as part of 3rd Parties Resource Management process;
- Monitoring and ensuring the commitment of member resources during BAFO 1, 2 & 3 reallocation (SESAR I & II, Development VS Deployment);
- Ensuring that Release 4 is defined in compliance with top down criteria while maintaining minimum 80% ratio actual/planned;

And in respect of the upcoming Deployment phase, by establishing and further developing SESAR solution packages, that can be used as reference material for deployment purposes. In addition, it can be highlighted that deployment risks can come from the "decoupling" between PCP deployment, IDP implementation and FAB strengthening. Although this falls outside the remit of the SJU, the progress of the deployment of the different components will be monitored.

2.4.2. Implementation of Audits and Review recommendations

During 2014, the SJU will continue ensuring that the improvements expected from the different reviews and audits of 2012 and 2013 provide their benefits increasing the effective and efficiency of the activities. In this respect, during the first semester 2012, the Internal Audit Service (IAS) of the European Commission - and Internal Auditor of the SJU - performed an Audit on all steps of the execution phase of the Programme and project management processes, except for the third party and contract management and the assessment of controls for the Release management. The internal control system in place in the SJU was considered to be providing reasonable assurance regarding the

achievement of the objectives set up for the programme and project management, except for the dependency management. The IAS therefore highly recommends strengthening the identification of the inter-projects dependencies.

6 other recommendations were also addressed to the SJU:

- To strengthen the synchronisation status of the projects
- To streamline change management
- To enhance coherence in gate reports assessments
- To enhance follow-up actions for the gate reports assessment
- To reinforce the SJU Members' Declaration in the annual co-financing requests.
- To ensure coherence & validation of quarterly dash boards indicators

In addition, the IAS has concluded at the end of October 2013 a report completing the management of the grants, focusing on the closure aspect. In this report the IAS converged and the risks highlighted by the SJU management on the closure process and indicated recommendations in line with the actions taken by the management to address the risks. The action plan was approved in November and the actions are being deployed and completed during first semester 2014.

For every recommendation the SJU has identified specific measures that have progressively been put in place.

The Reallocation 2013 process which is expected to be completed by year end is another step to further focus the Programme on the key priorities of the European ATM Master Plan and towards the programme management streamline.

In addition, taking into account the European Court of Auditors report on the Annual Accounts 2012, the SJU put in place the necessary measures to address risks and issues there identified.

3. The Programme

The SESAR Programme, following the results of the Reallocation and IBAFO III processes aiming at increasing its effectiveness and efficiency through the merger of some projects and elimination of fews, today consists of about 250 interrelated projects, grouped into 16 Work Packages, each encompassing a particular domain of Air Traffic Management. This represents the contractual structure and addresses the main programme management aspects.

The success in the Programme's implementation relies also on the synchronisation among the different Projects belonging to different domains and on the achievements of interrelated Project results.

The progress of the various activities is ensured through regular Programme and Project management activities in order to achieve the operational and technical coherence of project deliverables. A summary of the functioning and a detailed description of the Programme can be found in the Programme Management Plan V.03.

Many efforts have been dedicated since the inception to improve Programme management effectiveness from an operational perspective, declining the Programme high level

objectives into a more technical and operational level and defining in detail what has to be done, by whom and when.

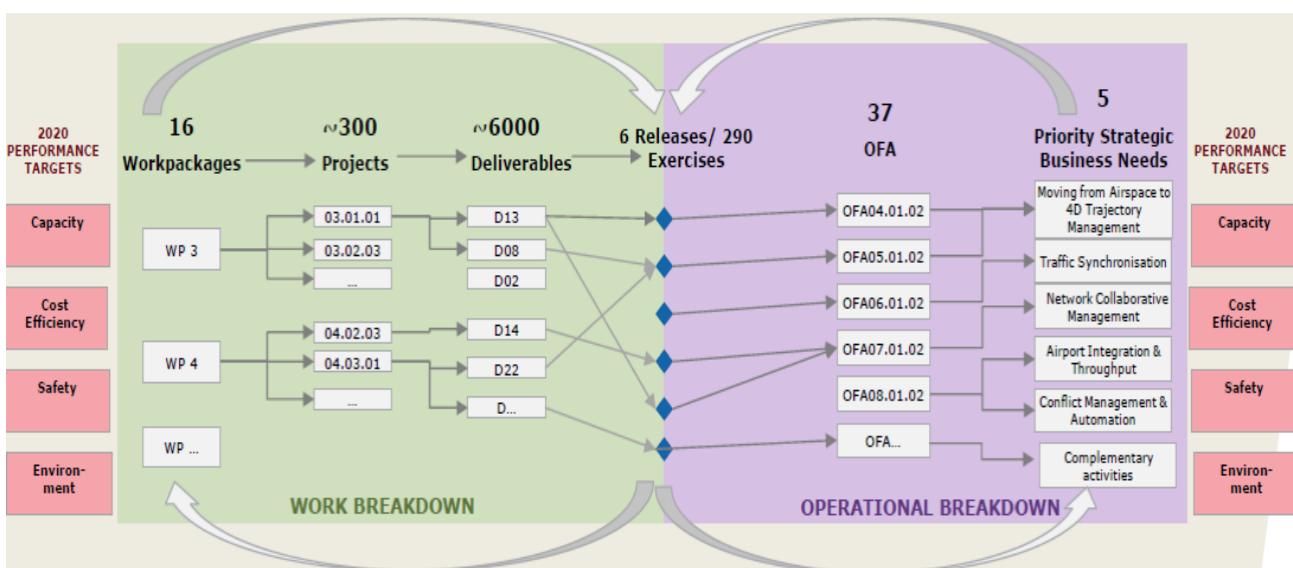
In early 2012, the SJU improved Programme effectiveness identifying 5 Priority Strategic Business Needs to meet the most pressing operational demands of ATM stakeholders. These Priority Strategic Business Needs reflected the Key Features contained in the European ATM Master Plan and include:

- Traffic Synchronisation;
- Airport Integration and Throughput;
- Moving from Airspace to 4D Trajectory Management;
- Network Collaborative Management and Dynamic/Capacity Balancing;
- Conflict Management and Automation.

In order to ensure that R&D results coming from the SESAR Projects are adequately combined in such a manner to provide an answer to the Master Plan Key Features, Operational Focus Areas were identified. The Programme results are packaged in SESAR Solutions ready for industrialization and deployment.

SESR Programme results are validated in operational environments, with a yearly approach, through Releases. A SESAR Release therefore embeds groups of Projects delivering R&D results that can support decisions to move related activities to the industrialisation stage in a determined timeframe. The Projects activities identified as part of a Release are described in the Release Plan.

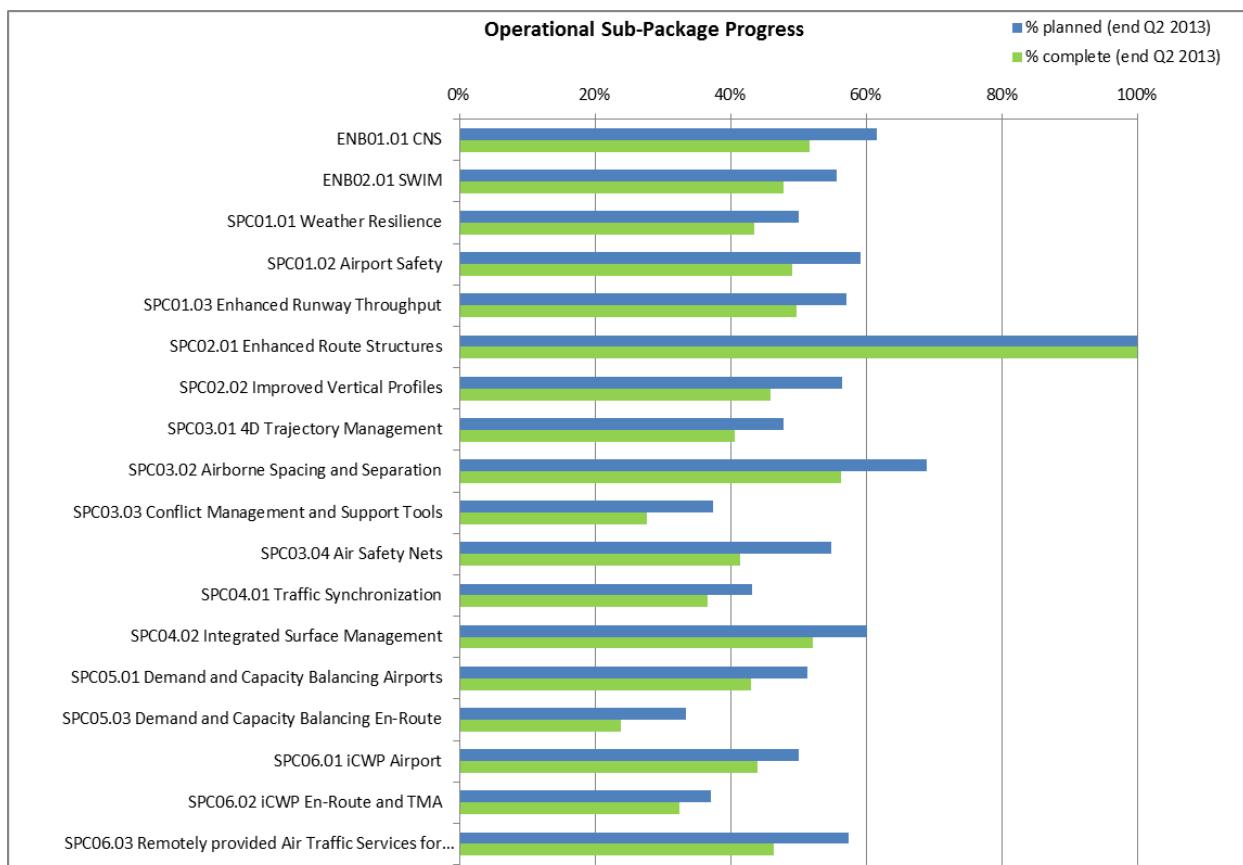
The figure below shows the link between the structure of the Programme, established to allow for the proper monitoring and supervision of the activities, and the outcome of its activities combined in Operational Focus Areas to answer the Priority Strategic Business Needs. It is a continuous virtuous cycle, which contributes to maintain the Programme focus on delivering the necessary operational and technological improvements needed to achieve, once deployed, the Master Plan Performance Targets.



3.1. Programme management

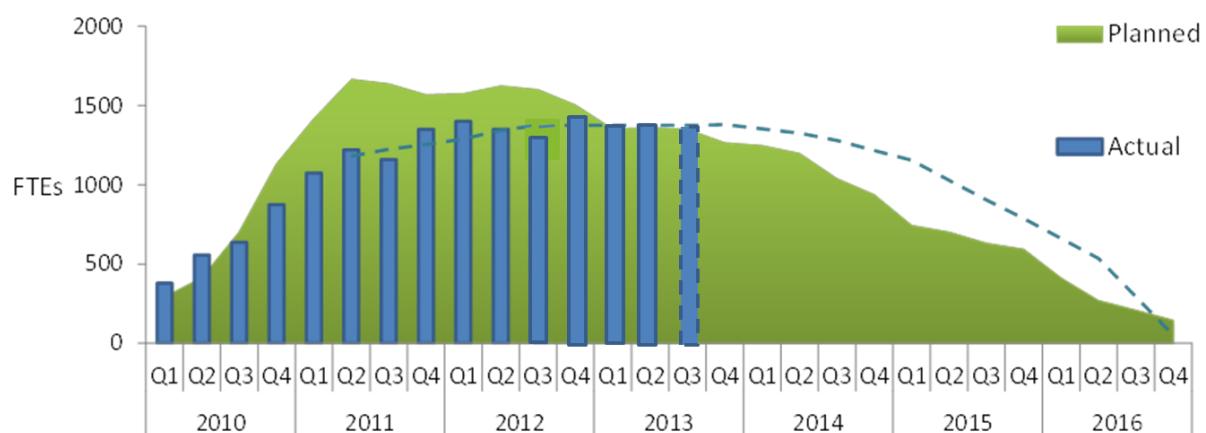
These sections describe the most important achievements so far, which will impact 2014 and the following periods in terms of research developments.

The Programme progress, which encompasses the already achieved and on-going Releases, as well all the other activities addressing the maturing and validation of the SESAR concept, is monitored on a quarterly basis. The graph below shows the progress reported at the 2nd quarter 2013.



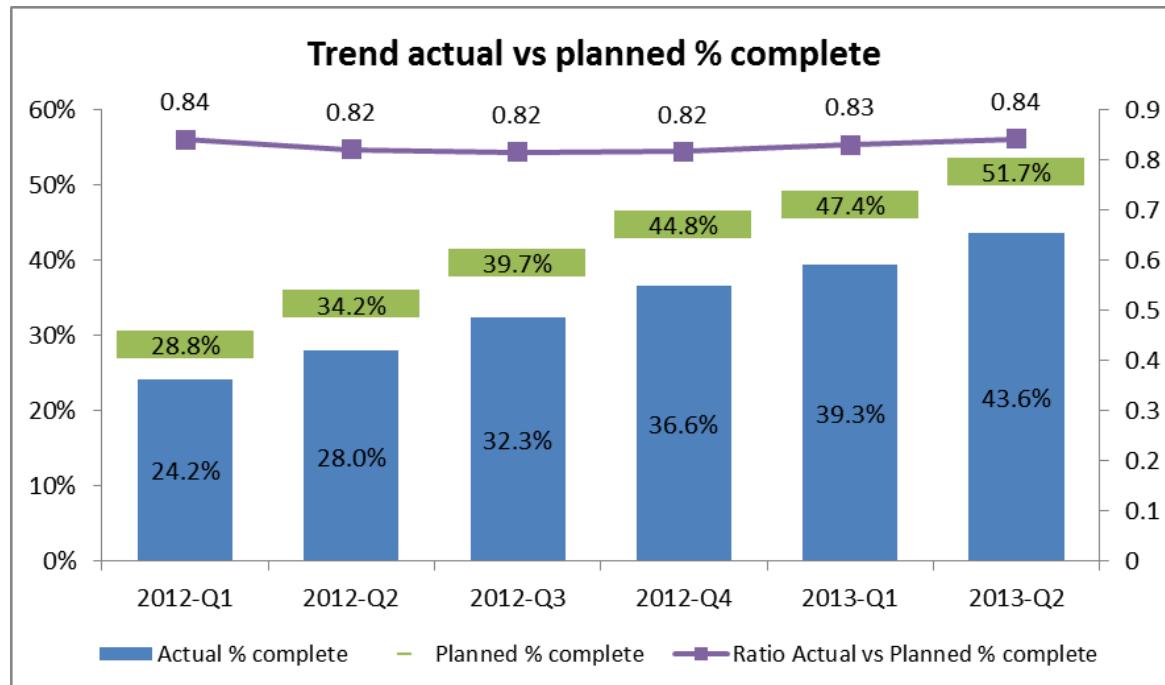
During its first years the Programme showed an under consumption of around 20%; following an analysis of the root causes, mitigating actions were put in place during 2011 and 2012. The first IBAFO reallocation gave then the possibility to the Members to review their plans in function of the actual situation and estimated resource consumption per Project. Successive analyses on the Programme efficiency and priorities and the results of internal reviews and audits, showed that there was still scope for a more detailed revision of the resources allocation. Therefore a second IBAFO reallocation was launched during 2013 with the aim of strengthening the resources allocated to projects delivering Programme priorities. In addition, an assessment has been performed to identify possible gaps in the coverage of the Programme content. As result, a list of 15 new projects has been defined against which the Members could submit proposals through an IBAFO III process. It is expected that the second reallocation and IBAFO III proposals are approved by the Administrative Board at its December 2013 meeting.

The graph here below shows that the resources made available to perform the Programme activities have reached certain stability, just below 1500 FTEs per quarter. This indicates that the Members, as overall, have reached a ceiling in the allocation of resources dedicated to the Programme. The aforementioned resources re-allocation activities and the results of the launch of IBAFO III will enable to bring the Programme to successful and timely completion.



In terms of Programme progress, the positive trend recorded along 2012 is confirmed as shown in the figure below. The percentage of completion versus plan has now stabilised above 80% heading up to progressively catch up to 90%. According to industry standards and taking into account the R&D nature of the work done, this can be considered as a good progress indicator.

The trend of data of the last five quarters (Q2 2012 to Q2 2013) shows a Programme completion of 4% per quarter on average. This leads to an actual % complete around 44% for the Q2 2013 and an estimate of above 50% by year end. Confirmation of this trend along 2014 will bring Programme execution to above 60% by year end, in line with the overall Programme targets.



Between January 2012 and June 2013, the SJU received 1,500 project deliverables and, in accordance with the PMP⁵ procedures, it reviewed directly a subset of 600 priority deliverables providing the elements to reach conclusions on the overall quality of the Programme results. The SJU uses the direct review as a way to control quality and to take corrective actions before the output is used as input in interdependent Projects.

In 2014, about 1200 deliverables should be made available for SJU quality assessment and around 1/3 will be effectively assessed, selected through a risk based approach.

A more effective quality assessment has been applied as of beginning 2013: rather than focusing on single projects, Gates and deliverables' assessment are performed at the level of OFAs. In addition, the SJU is complementing the Programme activities through the launch of ad hoc studies and assess the relative deliverables as needed, such as in the case of a call on telecommunications technology ("Breaking Point of VDL Mode 2").

The definition of the "Priority Strategic Business Needs" - derived from the Master Plan Key Features - enabled to provide a better visibility on the Programme direction and results expected. This was translated into a top-down process applied to Releases with clear end of V3 targets defined in time: this approach enabled the retro-planning of V1 & V2 activities - a substantial component of applied research - a more effective management of the Programme and, finally, a re-prioritization of resources.

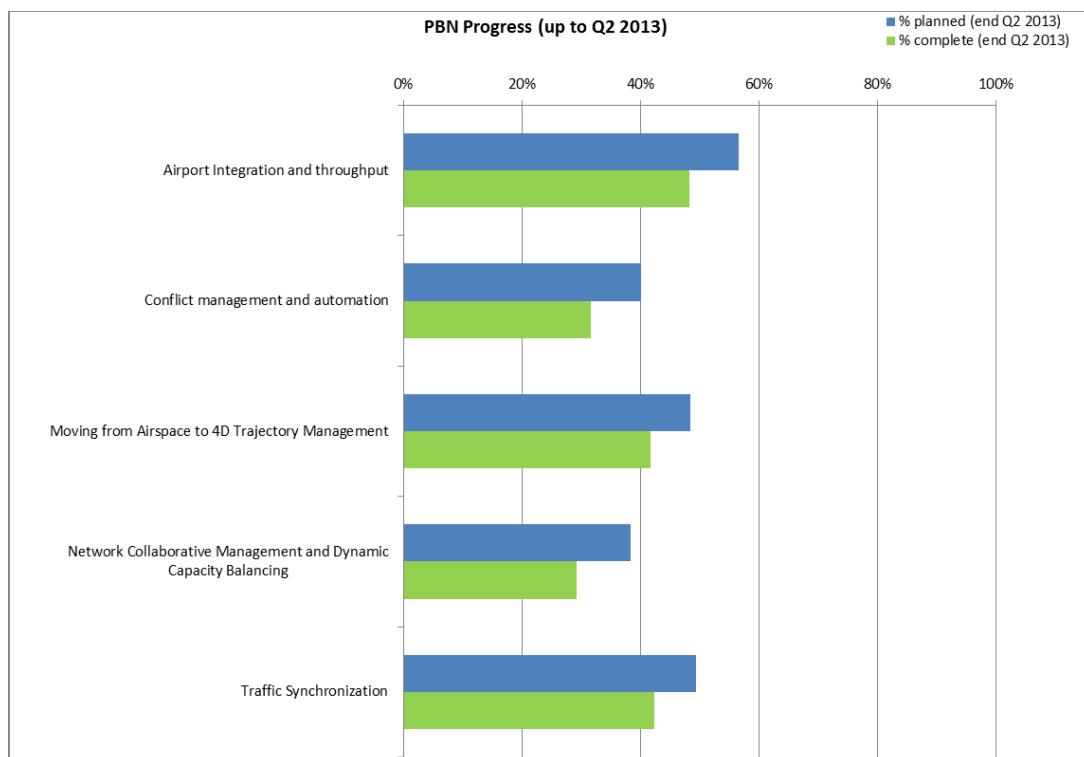
This top-down approach will be strengthen in 2014 in order to ensure that Release 4 execution and Release 5 definition are aligned with the proposal on the first set of operational/technical improvements mature for deployment, as submitted to the European Commission in May 2013 in the Pilot Common Project (PCP). The Pilot Common Project constitutes the first batch of technical and/or operational changes to start to be implemented in the 2014-2020 timeframe (see section 4.2.1.1).

⁵ SESAR Programme Management Plan, ed. 03.00.00 - April 2013

In order to ensure that the PCP content meets the maturity requirements needed to ensure timely and synchronized deployment, some Programme priorities need to be revised and focused on the expected PCP components' delivery.

Beyond the activities related to Releases, Projects will be progressed to reach a maturity level to be part of future releases.

The overall progress planned for Q2 2013 is reported in the graph below together with the progress made along the first 6 months of 2013 in the 5 Priority Strategic Business Needs. During 2014, it is expected that the Reallocation 2013 and BAFO III would allow for further focusing the Programme to answer the Priority Strategic Business Needs.



Looking forward, beyond the 2014 horizon, the table below gives an overall view of the operational improvements to be achieved through successive Releases to fulfill the Priority Strategic Business Needs. The table shows actual deliveries as regards R1 and R2 and expected deliveries for R3, R4, R5.

Priority Business Need	Operational Sub-Package	OFA	R1	R2	R3	R4	R5	R6
Airport Integration and Throughput	SPC01.01 Weather Resilience	01.01.01 LVPs using GBAS				AO-0505-A		
	SPC01.03 Enhanced Runway Throughput	01.03.01 Enhanced Runway Throughput		AO-0303				
							AO-0306 AO-0310	
					AUO-0702		AUO-0703	
	SPC01.02 Airport Safety	01.01.02 Pilot Enhanced Vision						
		01.02.01 Airport Safety Nets					AO-0209 AO-0104-A	
		01.02.02 Enhanced Situational Awareness			AO-0201-A		AO-0204	
	SPC04.02 Integrated Surface management	04.02.01 Integrated Surface Management					AO-0205	
								AUO-0603-A
	SPC05.01 Demand and Capacity Balancing Airports	05.01.01 Airport Operations Management	DCB-0304		DCB-0310			AO-0801 AO-0802 AO-0803 AO-0804
Network Collaborative Management and Dynamic and Capacity Balancing	SPC05.03 Demand and Capacity Balancing En-Route	05.03.06 UDPP				AUO-0101-A AUO-0103		AUO-0102 DCB-0305
		05.03.03 Dynamic sectorisation and Constraint management		CM-0102-A			CM-0102-B	AOM-0803
		05.03.04 Enhanced ATFM Processes				CM-0103-A DCB-0308	DCB-0208 CM-0103-B CM-0104-A	CM-0104-B
		05.03.07 Network Operations Planning					DCB-0103-A	DCB-0103-B
		05.03.01 Airspace Management and AFUA				AOM-0206-A AOM-0202-A	AOM-0208-B	
	SPC03.01 4D Trajectory Management	03.01.03 Free Routing					AOM-0501 AOM-0502	
	SPC02.01 Enhanced Route Structures	02.01.01 Optimised 2D/3D Routes	AOM-0603 TS-0102	AOM-0601 AOM-0705-A	AOM-0702-A			AOM-0702-B AOM-0705-B
Traffic Synchronisation	SPC03.02 Airborne Spacing and Separation	OFA03.02.01 ASPA S&M				TS-0105-A		
	SPC04.01 Traffic Synchronization	04.01.02 Enhanced Arrival & Departure Management in TMA and En Route				TS-0103 TS-0305-A	TS-0304 TS-0303	TS-0106
		04.01.01 Integrated Arrival/Departure Management at Airports				TS-0202 TS-0308	TS-0309 TS-0203	
	SPC03.01 4D Trajectory Management	03.01.01 Trajectory Management Framework		IS-0301			AUO-0302-A AUO-0303-A	AUO-0302-B AUO-0303-B CM-0402
Moving from Airspace to 4D Trajectory Management		03.01.04 Business and Mission Trajectory					AOM-0304-A AUO-0203-A AUO-0204-A	AOM-0304-B AUO-0203-B AUO-0204-B
		03.01.08 System Interoperability with air and ground data sharing			IS-0302		IS-0303-A	IS-0303-B
		OFA03.03.01 Ground Based Separation Provision in En Route	CM-0201 CM-0202 CM-0203	CM-0301		CM-0205	CM-0403-A	
Conflict management and automation	SPC03.03 Ground Based Conflict Management	OFA03.03.02 Ground Based Separation Provision in the TMA						
		OFA03.04.01 Enhanced Ground Based Safety Nets	CM-0811					CM-0807
	SPC03.04 Air Safety Nets	OFA03.04.02 Enhanced ACAS	CM-0803			CM-0802	CM-0808	
	SPC02.01 Enhanced Route Structures	02.02.04 Approach Procedures with Vertical Guidance	AOM-0605 (LPV Procedures)			AOM-0605 (RNP transition to GLS)	AOM-0605 (RNP transition to ILS)	
Complementary Activities	SPC06.03 CWP Airport	06.01.01 CWP Airport				AO-0208-A		
	SPC06.03 Remotely provided Air Traffic Services for aerodromes	06.03.01 Remote Tower			SDM-0201 (Small size airports)	SDM-0201 (Medium airports)		
	ENB02.01 SWIM	ENB02.01.01 SWIM				SDM-0205	IS-0901-A	
		ENB02.01.02 AIM/MET					MET-0101	

3.1.1. SESAR Programme Releases

A yearly Release encompasses SESAR solutions expected to reach a maturity V3 (ready for industrialisation) within the reference year; three Releases have been already launched in the period 2011/2013, and the fourth is planned for 2014. Here below there is a summary description of their contents and achievements. It should be noted however that the activity performed within Releases represents only part of the whole Programme's activity; the Projects not directly involved in the exercises shall continue performing applied and pre-industrial research to ensure its reaching of the necessary maturity levels in view of the future Releases.

Release 1 (2011)

This first SESAR Release included 25 exercises which enabled to conclude that the following concept options are ready to be considered for potential industrialisation:

- **PRNAV in a Complex TMA:** P-RNAV procedures to improve the TMA organisation (use best practices PRNAV and the route network using RNP1, and to enhance the TMA with curved and segmented P-RNAV approaches).
- **Validation of LPV, ATC Procedures and ATC Training:** Integration of LPV (Localizer Performance with Vertical Guidance) on airport as fallback system/procedure in case of ILS failure or where ILS does not exist.
- **En Route Air Traffic Organiser:** Enhanced ATC team organisation with the decision aid tool kit for En Route air traffic controller in an electronic environment including medium term conflict detection (MTCD) monitoring aid and the first step of CORA (Conflict Resolution Assistant).
- **Enhanced STCA for TMA operations:** Enhanced algorithms ensuring earlier warning and lower false alert rates related to steady and manoeuvring aircraft.
- **Altitude capture laws improving compatibility with ACAS, & Automatic Responses to ACAS RA:** Reduction of the unnecessary ACAS (Airborne Collision Avoidance System) alarm and automated response to ACAS Resolution Advisory (RA) through linking ACAS and the autopilot.
- **DMAN Baseline to be used for integration of AMAN and DMAN:** Enhanced Departure Manager (DMAN) to establish a pre-departure sequence, to improve traffic predictability, airport capacity, cost & environmental effectiveness and safety.
- **Low cost and simple departure data entry panel:** Airport Departure Data Entry Panel (ADDEP) for smaller airports improving the availability and accuracy of departure information shared between the Tower and the Approach and with the Network Manager.

On the total of the Release 1 exercises, 16 successfully demonstrated the maturity of the related concepts and the results were conclusive and sufficient to support a decision for industrialisation; 6 partially demonstrated the maturity of the related concepts; 3 did not demonstrate the maturity of the related concepts (see Annex V).

Release 2 (2012)

Release 2 built on the results of Release 1, widened its scope and emphasised the importance of coherence with the overall SESAR Programme through linking Release 2 with the ATM Master Plan. Release 2 included 28 exercises

The validation results enabled to conclude that the following achievements are ready to be considered for potential industrialisation:

- **Time Based Separation:** Time Based Separation (TBS) procedures improve the landing rate on airports with strong headwind conditions compared to the Distance Based Separation (DBS) procedures.
- **Automated Support for Dynamic Sectorisation:** ATC Supervisor What-if tool that proposes optimised ACC sector configurations to ensure that airspace capacity complies with forecasted traffic demand.
- **Point Merge in complex TMA:** Point Merge procedures specific to the London and Milan TMA operational environments.
- **Point Merge with an extended TMA horizon:** Point Merge procedures specific to Paris ACC considering an extended horizon of TMA operations.
- **User Preferred Routing:** More than 250 new direct routes (DCTs) ready for implementation inside the UAC Maastricht area of responsibility.
- **AOC Data Increasing Trajectory Prediction Accuracy:** Improvement of the Medium Term Conflict Detection system (NATS - iFACTS) thanks to a more accurate trajectory prediction enriched with AOC data.
- **Multi Sector Planning (1Planner-2Tactical controllers' configuration):** new operational procedures for London ACC where a Planner Controller is responsible for the sectors which are under control of two Executive Controllers.

The plan was to cover a total of 387 validation objectives with these exercises. The progress of the R&D activities and the quality of the work performed in the validation exercises enabled to address 89% of the validation objectives while identifying the need to further progress in R&D work to reach the necessary maturity levels for the remaining 11%. This work was planned as part of the Release 3 and Release 4 activities (see Annexes).

Release 3 (2013)

The execution of the Release 3 has started in January 2013 and includes 19 exercises clustered into 13 OFAs and covering all Priority Strategic Business Needs.

The main operational improvements Release 3 will contribute to:

- **Airport Operations & Throughput:** Detection of runway incursion and infringements of restricted areas by aircraft and vehicles and alert to the ATC controllers and vehicle driver.

- **Optimum braking procedures and associated technology** for reducing the runway occupancy time (and thus increasing runway throughput) by exploiting the ability of the aircraft to brake in an optimum fashion to exit the runway at a pre-selected exit coordinated with ground ATC by voice.
- **Network Collaborative Management and Dynamic Capacity Balancing:** Linking Airport Operations Plan with the Network Operations Plan for a better management of the arrivals.
- **Traffic Synchronisation:** Synchronisation of airborne and ground flight profiles through i4D data exchanged through datalink;
- **Conflict Management & Automation:** Enhanced Short Term Conflict Alert system using down-linked aircraft parameters.
- **Moving from Airspace to 4D Trajectory Management:** Interoperability between ATS units for flights data and coordination information sharing.

Out of the 19 exercises initially planned, 6 have been completed, 7 will be completed by the end of the year 2013, 1 has been cancelled, 4 have been moved to Release 4 and 1 moved to Release 5 (see Annex V).

Release 4 (2014)

The content of Release 4 has been defined with a top down approach within the frame of the Priority Strategic Business Needs whereby candidate exercises must demonstrate the contribution to the Performance target per KPA.

Release 4 includes **20** exercises (among which 4 are moved from Release 3) clustered into **13** OFAs (1 Integrated Validation addresses 2 OFAs) and covers **4** Priority Strategic Business Needs.

Priority Business Needs	OFA	Nr of EXEs
Traffic Synchronization	Multi-OFA Integrated Validation: -03.02.01 ASAS Spacing -04.01.02 Enhanced Arrival &Departure Management	1
	04.01.01 Integrated Arrival/Departure Management	1
	04.01.02 Enhanced Arrival &Departure Management	4
Airport Integration and Throughput	01.01.01 LVPs using GBAS	2
Network Collaborative Management and Dynamic/Capacity Balancing	05.03.01 Airspace Management and AFUA	2
	05.03.04 Enhanced ATFCM processes	2
	05.03.06 UDPP	1
Conflict Management and Automation	03.03.01 Ground Based Separation Provision in En Route	1
	03.04.02 Enhanced ACAS	1
Complementary Activities	02.02.04 Approach Procedures with Vertical Guidance	1
	06.01.01 CWP Airport	1
	06.03.01 Remote Tower	2
	ENB02.01.02 AIM/MET	1
	Total	20

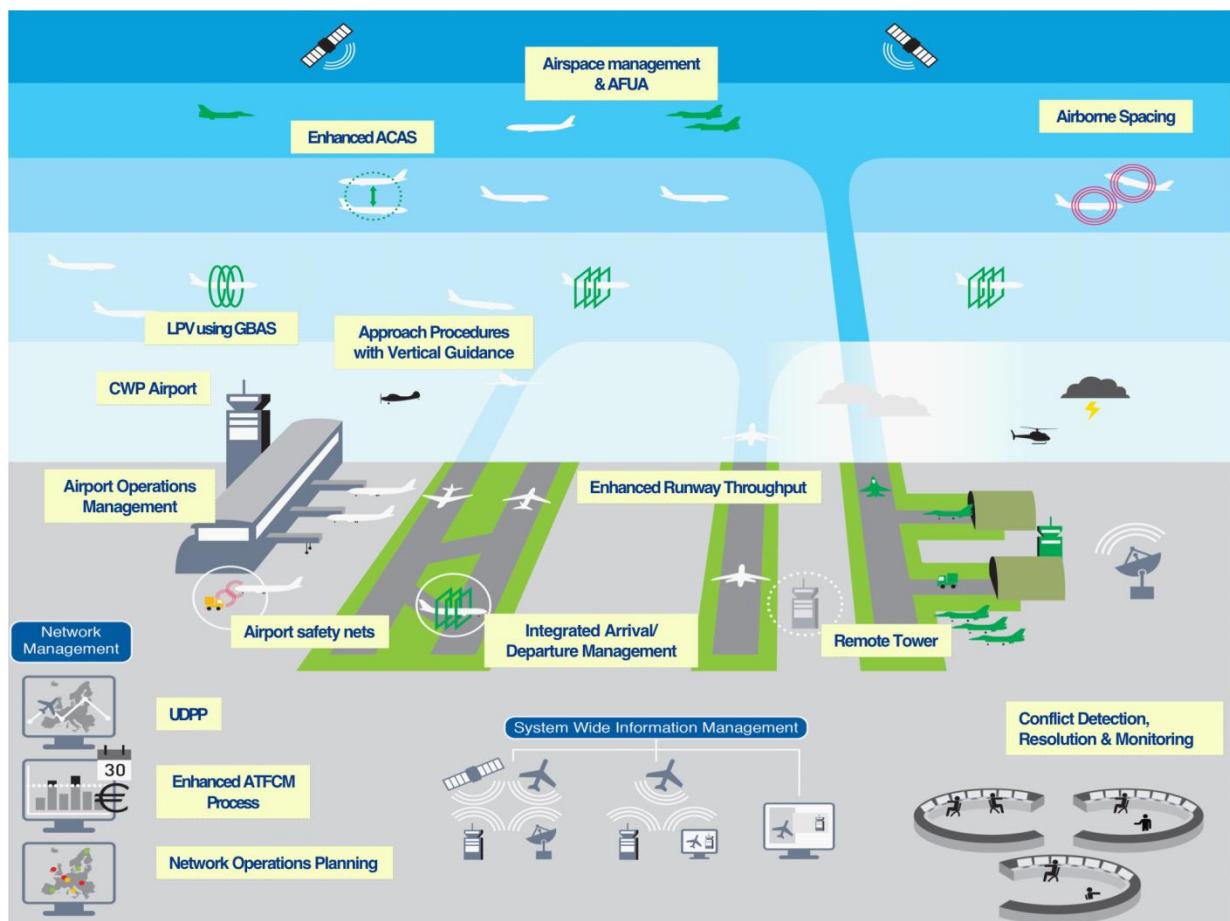
The main operational improvements that Release 4 will deliver are:

- **Traffic Synchronisation**
 - Enhanced Arrival Management procedures integrating Airborne Spacing manoeuvres in an i4D+CTA and AMAN Extended Horizon environment;
 - Basic AMAN-DMAN-ASMGCs integration;
 - I4D+CTA operational procedures (for ATCO and Flight Crews) in the TMA environment.
- **Airport Integration & Throughput**
 - Improved low visibility operations thanks to the use of GBAS stations enabling Cat II/III approaches;
- **Network Collaborative Management and Dynamic Capacity Balancing**
 - Enhanced civil-military coordination using real-time airspace status data and the use of Variable Profile Area principle;
 - Further development of the Short Term ATFCM Measures coordination procedures;
 - Enhanced slot swapping procedures between different airlines;

- **Conflict management and automation**
 - Enhanced Medium term Conflict Detection and Resolution tools for the Planner and Tactical Controllers in the En Route;
 - ACAS Resolution Advisory downlinked on the controller working position.

3.1.2. Release exercises' description

The following sections present the high level scope of Release 4 per Priority Strategic Business Needs, describing the results of the validation exercises to be conducted in 2014, as well as the link between the exercises and the Operational Improvements (OIs). The details of the previous years' Releases can be found in Annex V.



3.1.2.1. Priority Strategic Business Need: Airport Integration and Throughput

Integrated Airport Management aims at achieving a full integration of airports into the ATM network as nodes in the system, ensuring a seamless process through Collaborative Decision Making (CDM). Airports will contribute to achieve SESAR performance goals through the Increase of runway throughput and improved surface movement management in combination with Trajectory Management, Airborne Spacing tools and precision

navigation techniques e.g. reducing air and ground holding leading to reduced noise and environmental emissions per flight.

Release 4 OFA01.01.01 - LVP using GBAS

OFA contents

Ground Based Augmentation System (GBAS) Operational Implementation from (airport) CAT I to initial and full CAT II/III capability

Bad weather conditions reduce runway and therefore airport capacity. Landing rate resilience suffers from weather conditions, particularly in low-visibility conditions. This forces constraints on scheduled demand and can lead to delays and flight cancellations.

Related OI : AO-0505-A

Use GBAS CAT II/III based on GPS L1 for precision approaches

The main benefit is the increased runway capacity in poor weather conditions as the glide path and azimuth signals will face hardly any interference from previous landing aircraft or other obstacles. More sustained accuracy in aircraft guidance on final approach.

Achievement	Increased runway throughput in low visibility operations thanks to the use of GBAS stations (Ground Based Augmentation System based on GNSS) enabling Cat II/III approaches.				V3
Deliverables	VALR, OSED, TS.				
Contributing Projects	06.08.05, 09.12, 15.03.06, 03.03.03				
Contributing AU(s)	(TBC)				
Exercise	OIs	Validation Technique	Validation Platform	Prototype	Exercise Completed
EXE-06.08.05-VP-563	AO-0505-A	Real Time Simulation	ECTRL eDEP Brétigny	N/A	01/04/2014
EXE-15.03.06-VP-236	AO-0505-A	Flight Trial	DSNA Blagnac GBAS Airbus Flight test Aircraft	15.03.06-D10-THALES-GBAS ground station, THALES. 09.12-AIRBUS-Airborne GBAS CAT2-3 capability, AIRBUS	31/10/2014

3.1.2.2. Priority Strategic Business Need: Network Collaborative Management and Dynamic/Capacity Balancing

Throughout the lifecycle of a flight, a layered and collaborative planning consists of successive planning phases from long term to medium and short term, involving all ATM stakeholders in Collaborative Decision Making (A-CDM) processes to progressively build the

Network Operation Plan (NOP) through the sharing of more and more up to date and precise data once the day of operations approaches.

As the day of operation approaches, the Aircraft Operator's plans and the details regarding airspace management become richer in detail and less subject to variation. For military flights, if a specific airspace structure is needed, it is fully integrated into the trajectory description.

A collaborative planning process is applied to the trajectory in a number of iterations, refining it with constraints arising from new and more accurate information. If ATM constraints have to be applied, the preferred way to integrate them is through a collaborative process with the Airspace Users in order to achieve the best business or mission outcome.

Enhanced Network Management through a dynamic, on-line, collaborative NOP fully integrated with AOP (considering all relevant actor's planning aspects including airports, airspace users, decision makers, etc.) allows the Network Manager to assess the evolution of traffic and airspace demand, to identify capacity/traffic imbalances, to develop ATFCM scenarios for capacity shortfalls (through a A-CDM process involving all concerned actors) and to record the agreed scenarios in the NOP. When necessary it proposes modified routes to the Aircraft Operators based on the published alternative routes. The Aircraft Operators submit the revised user preferred trajectories integrating the ATM constraints.

The Network Manager monitors the demand capacity imbalances, identifies and coordinates issues? with Local Traffic Manager, TWR/ACC Supervisor and Airport Operation Centres (AOPC) to take appropriate actions for demand capacity balancing. NOP and AOP are then updated accordingly.

This linking of AOP/NOP parameters (Actual Block Time (ABT) and User Preferred Trajectory) optimise the network and airport management by timely and simultaneously updating AOP and NOP via SWIM, providing Network and Airport Managers with a commonly updated, consistent and accurate Plan. The NOP becomes the Information Delivery Service Unit for all planning units in the Network: Airport Operators, ANSP, Airspace Users and Network Manager.

Release 4 OFA 05.03.04 - Enhanced ATFCM processes

OFA contents

Evolution of Demand Capacity Balancing (DCB) process (including Dynamic DCB processes) and systems from today's Air Traffic Flow Capacity Management (ATFCM) baseline towards the SESAR Target Operational Concept. The process is single continuous and seamless covering all phases of the Network management Planning Phase and fully integrated with the planning and execution aspects of airports, en-route environment and airspace users.

Definition of metrics and algorithms for predicting, detecting and assessing traffic complexity, at short-term planning and execution phases, and development of new associated functionalities to assess Dynamic Airspace Management and Resource Allocation measures e.g. dynamic sector configuration, Multi Sector Planning allocation and Traffic Management measures (e.g. re-routing, level capping) to solve complexity problems. This includes the definition and refinement of associated processes, roles, responsibilities, functionalities and information exchanges required to perform Complexity Management activities.

Related OI CM-0103-A; DCB-0308

CM-0103-A

Automated tools continuously monitor sector demand and evaluate traffic complexity (by applying predefined complexity metrics) according to a predetermined qualitative scale. Forecast complexity coupled with demand enables ATFCM to take timely action to adjust capacity, or demand profiles through various means, in collaboration with ATC and airspace users

DCB - 0308

ATFCM Measures relying on improved predictability enable ANSPs to adopt and improve the tactical capacity management procedures to optimise traffic throughput (with the use of Short Term ATFCM Measures -STAM). The tactical capacity management procedures will be supported by automated tools for hot spot detections in the network view, and for promulgation and implementation of STAM including CDM. These tools are envisaged to be at local and regional network management function level for information sharing and CDM. dDCB is a high confidence measure with primary focus on local planning at Tactical level applied to current flight plan pre or post departure.

Advanced ATFCM measures are built on the basis of STAM deployment (hotspot, coordination tool, occupancy traffic monitoring values (OTMV)). The enhancements foreseen focus on improved predictability of operations, including iSBT/iRBT supported traffic and complexity prediction, weather, airport operations (departure sequences, ground handling, gate management, runway usage, etc.), What-if function and network view capabilities

Achievement	Validated procedures and tool for a complexity prediction based on statistical analysis of historical data. Validated process for STAM (operational procedure, roles & responsibilities, tooling supporting co-ordination workflow).	V3			
Deliverables	VALR, OSED, SPR, INTEROP, TS.				
Contributing Projects	04.07.01, 07.03.02, 07.06.05, 10.08.01, 13.02.03, 03.03.02, 03.03.03.				
Contributing AU(s)	TBD				
Exercise	OIs	Validation Technique	Validation Platform	Prototype	Exercise Completed
EXE-04.07.01-VP-002 *	CM-0103-A	Shadow Mode	DSNA Coflight-Based IBP, Toulouse	10.08.01-D07-THALES	31/10/2014

EXE-07.03.02-VP-522 *	DCB-0308	Live trial	ECTRL ENMVP Brussels or Brétigny	13.02.03-ECTRL 13.02.03-D81-NATS	31/05/2014
-----------------------	----------	------------	----------------------------------	-------------------------------------	------------

Release 4 OFA 05.03.01 - Airspace Management and AFUA

OFA contents

Harmonised design of ad hoc airspace structures, definition of procedures for sharing airspace or those ad hoc structures and their context of use, taking into account the military's need for flexibility with regard to meteorological and/or operational constraints. Optimization of the trade-off between civil and military requirements by defining the types of airspace structures and the reservation processes (CDM) that will facilitate the sharing of airspace between civil and military airspace users.

Related OI AOM-0202; AOM- 0206-A

AOM-0202

Real-time coordination is further enhanced through what-if functionalities and automated support to airspace booking and airspace management (e.g. integrated toolset allowing Airspace Military Cells (AMC) and other parties to design, allocate, open and close military airspace structures on the day of operations).

AOM-0206-A

The activation of ad hoc airspace configurations (Airspace REServation ARES) within predefined structures at short notice is offered to respond to short-term airspace users' requirements. In step 1, changes in the airspace status are not uplinked to the pilot yet but are shared with all other concerned airspace users by the system, i.e. Network Manager (ASM and ATFCM functions), ANSPs, civil and military Airspace Users (FOC/WOC).

Achievement	Enhanced real-time civil military coordination for airspace use based on real-time data exchange between ASM support system, NM systems and ATC system. Validated procedures for a modular planning and activation of the ARES based on Variable Profile Area principle.				V3
Deliverables	VALR				
Contributing Projects	07.05.02, 13.01.01, 13.02.01				
Contributing AU(s)	TBD				
Exercise	OIs	Validation Technique	Validation Platform	Prototype	Exercise Completed
EXE-07.05.02-VP-710	AOM-0202	Live Trial	ECTRL NMVP,Bretigny DFS ENR IBP Langen 1	13.02.01-TBD-DFS-STANLY ACOS, INDRA 13.02.01-TBD-DFS-STANLY ACOS, ECTRL	31/10/2014

EXE-07.05.02-VP-717	AOM-0206-A	Fast Time Simulation	ECTRL SAAM,Bretigny	ECTRL-NEST	31/03/2014
---------------------	------------	----------------------	---------------------	------------	------------

Release 4 OFA 05.03.06 - UDPP

OFA contents

Design and development of a feasible User Driven Prioritization Process (UDPP) and associated procedures and technology ensuring its conformity with Airspace Users Needs and considering ATM constraints

Related OI : AUO-0101-A

The swapping of regulated flights on departure, on arrival, and en-route, that is already possible for the flights of the same Airspace User (AU) sharing the same Most Penalising Regulation (MPR), will be extended to all regulated flights without any constraints due to AU. Changing of flight priority between 2 flights where at least one flight is not regulated will also be possible. The AUs requests for these changes in flight priority will be introduced at the initiative of the AUs themselves, of the airport authorities or of the Network Management function. The Network Management function may propose ATFM slot exchanges that satisfy the network performance targets. The Network Management function will supervise the swapping or changing of flight priority requests

Achievement	Enhanced Slot Swapping service enabling slot swap between different Airlines.			V3	
Deliverables	VALR				
Contributing Projects	07.06.04, 13.02.03				
Contributing AU(s)	TBD				
Exercise	OIs	Validation Technique	Validation Platform	Prototype	Exercise Completed
EXE-07.06.04-VP-712	AUO-0101-A	Real Time Simulation & Live Trial	TBD	TBD	20/12/2014

3.1.2.3. Priority Strategic Business Need: Traffic Synchronisation

Traffic synchronisation covers all aspects related to improve arrival/departure management and sequence building in en-route and Terminal Manoeuvring Area (TMA) environments in order to achieve an optimum traffic sequence resulting in significantly less need for Air Traffic Controller (ATC) tactical intervention, and the optimisation of climbing and descending traffic profiles. As a consequence flights are able to fly closer to their optimum trajectories bringing benefits across Predictability, Efficiency, Safety, Capacity, and Environment.

Release 4 Multi-OFA Integrated Validation

OFA04.01.02 Enhanced Arrival & Departure Management content

Extension of arrival management horizon into the En-Route phase including the arrival management for multiple airports and the integration of departing traffic from airports within the extended arrival management horizon, especially in complex Terminal Manoeuvring Areas (TMAs).

OFA03.02.01 ASAS Spacing content

Development and consolidation of the "Airborne SPacing Sequencing & Merging Application" (ASPA S&M), including full integration of lateral and vertical aspects with the longitudinal dimension and Controller Pilot Data Link Computer (CPDLC) from both air and ground perspectives, and its combination with Arrival Management, Continuous Descent Approach and a P-RNAV route structure

Related OI: TS-0103; TS-0105-A; TS-0305-A

TS-0103

All ATM partners work towards achieving Controlled Time of Arrival (CTA) with enhanced accuracy to optimize arrival sequence. Datalink may be used in some cases. The CTA is an ATM imposed time constraint on a defined merging point associated to an arrival runway. The CTA (which may include wake vortex optimisation) is calculated after the flight is airborne taking into account the on-board Estimate Time of Arrival (ETA) min/max report and published to the relevant controllers, arrival airport systems Arrival Management (AMAN) System and feedback or any update to the Stand allocation management, Taxi-in profile, user systems and the pilot.

TS-0105-A

The ASAS Sequencing and Merging applications require the flight crew to achieve and maintain a given spacing with designated aircraft, as specified in a new ATC instruction. The spacing could be in time or distance. Although the flight crew is given new task, separation provision is still the controllers' responsibility and applicable separation minima are unchanged. The three applications envisaged for step 1 are Remain behind, Merge behind and an instruction of Path stretching still to be defined in details. Linked to CONOPS. E.2.6.2.3.3

TS-0305-A

The system integrates information from arrival management systems operating out to a certain distance (beyond the typical Step 0 E-TMA horizon into En-Route) to provide an enhanced and more consistent arrival sequence. The system helps to reduce holding by absorbing some of the queuing time further upstream well into En-Route. In Step 1, the "newly" impacted En-Route sectors are expected to contribute to the sequencing towards a single TMA

Achievement	Enhanced Arrival Management procedures thanks to the integration of Airborne Spacing manoeuvres in an i4D+CTA and AMAN Extended Horizon environment.				V3
Deliverables	VALR, TS				
Contributing Projects	05.03, 09.01, 09.05, 10.03.02, 10.04.04, 10.10.03, 03.03.02, 03.03.03				
Contributing AU(s)	TBD				
Exercise	OIs	Validation Technique	Validation Platform	Prototype	Exercise Completed
EXE-05.03-VP-708	TS-0103 TS-0105-A TS-0305-A	Real Time Simulation	ENAV IBP Rome AIRBUS Integration Simulator, Toulouse	10.03.02-D27- SELEX-ASPA S&M 10.04.04-D11-	28/11/2014

				SELEX-TBS 10.10.03-D65- SELEX-CWP 09.05-D18-AIRBUS 09.01-D23- AIRBUS-Integrated Airborne i4D simulator II	
--	--	--	--	--------------------------------------------------------------------------------------------------------------------------------	--

Release 4 OFA 04.01.01 - Integrated Arrival/Departure Management

OFA contents

Development of coupled Arrival Management (AMAN) and Departure Management (DMAN) functions integrating surface management constraints

Related OI: AO-0303; TS-0202; TS-0308

AO-0303

The application of time based wake turbulence radar separation rules on final approach (TBS) provides a consistent time spacing between arriving aircraft in order to maintain runway approach capacity independently of any headwind component. The final approach controller and the Tower runway controller are to be provided with the necessary TBS tool support to enable consistent and accurate delivery to the TBS rules on final approach. The minimum radar separation and runway related spacing constraints will be required to be respected when applying the TBS rules.

TS-0202

Pre-Departure management has the objective of delivering an optimal traffic flow to the runway. Accurate taxi time forecasts provided by route planning are taken into account for Target Start up Approval Time (TSAT)-Calculation while the flight is off-block. Pre-Departure sequence (TSAT sequence) is set up by Tower Clearance Delivery Controllers who will follow TSAT-window when issuing start-up approval.

TS-0308

Integrated Arrival and Departure management aims at increasing throughput and predictability at an airport by improved co-ordination between Approach and Tower controllers. Arrival and Departure flows to the same runway (or for dependent runways) are integrated by setting up fixed arrival-departure pattern for defined periods. The successive pattern might be chosen by the operators or provided by an optimization algorithm considering arrival and departure demand. Departure flow to the runway is managed by pre-departure sequencing (integrating route planning) while arrival flow to the runway is managed by arrival metering.

Achievement	Enhanced pre-departure sequence established thanks to the integration of arrival and departure flows situation set up through the combined use of AMAN, DMAN, A-SMGCS and TBS.				V3
Deliverables	VALR, OSED, SPR, INTEROP				
Contributing Projects	06.08.04				
Contributing AU(s)	TBD				
Exercise	OIs	Validation Technique	Validation Platform	Prototype	Exercise Completed

EXE-06.08.04-VP-453	AO-0303 TS-0202 TS-0308	Shadow Mode	NATS CTC,Gatwick	06.08.04-NATS (BARCO/ATRICS)	30/04/2014
---------------------	-------------------------------	-------------	------------------	------------------------------	------------

Release 4 OFA 04.01.02 - Enhanced Arrival & Departure Management

OFA contents

Extension of arrival management horizon into the En-Route phase including the arrival management for multiple airports and the integration of departing traffic from airports within the extended arrival management horizon, especially in complex Terminal Manoeuvring Areas (TMAs).

Related OI :TS-0103; TS-0305-A

TS-0103

All ATM partners work towards achieving Controlled Time of Arrival (CTA) through use of datalink and with enhanced accuracy to optimize arrival sequence.

The CTA is an ATM imposed time constraint on a defined merging point (in the airspace close to the airport) associated to an arrival runway. The CTA (which may include wake vortex optimisation) is calculated after the flight is airborne taking into account the on-board Estimate Time of Arrival (ETA) min/max report, and published to the relevant controllers, arrival airport systems AMAN System and feedback or any update to the Stand allocation management, Taxi-in profile , user systems and the pilot.

TS-0305-A

The system integrates information from arrival management systems operating out to a certain distance (beyond the typical Step 0 E-TMA horizon into En-Route) to provide an enhanced and more consistent arrival sequence. The system helps to reduce holding by absorbing some of the queuing time further upstream well into En-Route. In Step 1, the "newly" impacted En-Route sectors are expected to contribute to the sequencing towards a single TMA

Achievement	Validated operational procedures (for ATCO and Flight Crews) for the use of the i4D+CTA concept in the TMA environment. It encompasses the use of an Extended AMAN Horizon for cross-border arrival management.				V3
Deliverables	VALR, OSED, TS				
Contributing Projects	05.06.01, 05.06.04, 05.06.07, 09.01, 10.02.01, 10.07.01, 10.09.02, 03.03.02, 03.03.03				
Contributing AU(s)	TBD				
Exercise	OIs	Validation Technique	Validation Platform	Prototype	Exercise Completed
EXE-05.06.01-VP-477	TS-0103	Real Time Simulation	AIRBUS Integration Simulator,Toulouse NORACON IBP Thales,Malmö	09.01-D23- AIRBUS- Integrated Airborne i4D simulator II 10.02.01-D04- THALES-I4D in TMA	30/09/2014

EXE-05.06.01-VP-478	TS-0103	Flight Trial	NORACon IBP Thales,Malmö AIRBUS Flight Test Aircraft	09.01-D23- AIRBUS- Integrated Airborne i4D simulator II 10.07.01-D12- THALES-ATS Datalink	30/03/2014
EXE-05.06.07-VP-695	TS-0305-A	Live Trial	DSNA TBD,Reims	10.09.02-D08- THALES-AMAN	15/12/2014
EXE-04.03-VP-472*	TS-0103	Flight Trial	AIRBUS Flight Test Aircraft ECTRL MUAC	09.01-D23- AIRBUS- i4D Test Aircraft 10.07.01-D11 (updated for Step C)-INDRA- ATS Datalink 10.07.01-D44 (updated for Step C)-ECTRL- ATS Datalink	28/03/2014

3.1.2.4. Priority Strategic Business Need: Moving from Airspace to 4D Trajectory Management

Moving from Airspace to Trajectory Management entails the systematic sharing of aircraft trajectories between various participants in the ATM process to ensure that all partners have a common view of a flight and have access to the most up to date data available to perform their tasks. It enables the dynamic adjustment of airspace characteristics to meet predicted demand with distortions to the business/mission trajectories kept to a minimum. Whenever possible, the necessary tactical interventions are considered at the gate to gate (from departing Gate to Arrival Gate) trajectory level and not only at sector level, taking into consideration the wider impact on the trajectories concerned as well as on the Network.

No exercises are foreseen in Release 4.

3.1.2.5. Priority Strategic Business Need: Conflict management and automation

Conflict Management and Automation aims at substantially reducing controller task load per flight, while meeting safety and environmental SESAR goals and without incurring in a significant increase in Air Navigation Service Provider (ANSO) costs, through an intense enhancement of integrated automation support. However, human operators will remain at the core of the system (overall system managers) using automated systems with the required degree of integrity and redundancy.

Release 4 OFA 03.04.02 - Enhanced ACAS

OFA contents

Upgrade and enhancement of Airborne Collision Avoidance System (ACAS) by using trajectory information. Introducing ACAS modification including those for use in future separation modes through:

- * modifying autopilot laws for altitude capture (reducing the number of nuisance ACAS Resolution Advisories (RAs));
- * linking ACAS to auto-flight systems;
- * using of Automatic Dependent Surveillance Broadcast (ADS-B) information by airborne Safety NET (SNETs);
- * paving the way to global standardization within ICAO in coordination with NEXTGEN (USA Programme).

Related OI: CM-0802

Controllers are automatically informed when ACAS generates an RA (resolution advisory). This improvement is intended to complement the voice report by the pilot.

Achievement	Set of Requirements for ACAS X adaptation to European future operations relying on quantitative safety benefits analysis. Requirements (on operational procedures and CWP support) for ACAS RAs downlinked information display on Controller Working Position (CWP).					V3
Deliverables	VALR, OSED					
Contributing Projects	04.08.02, 04.08.03, 10.04.03, 03.03.02, 03.03.03					
Contributing AU(s)	TBD					
Exercise	OIs	Validation Technique	Validation Platform	Prototype	Exercise Completed	
EXE-04.08.03-VP-066	CM-0802	Real Time Simulation	1. DFS ENR IBP Langen 1, Frankfurt	TBD, INDRA	07/02/2014	

Release 4 OFA 03.03.01 - Ground Based Separation Provision in En Route**Describe OFA contents**

Design, development and validation of an Automated Support tool chain (complementary set of conflict detection and resolution tools) for assisting ATC in aircraft trajectory conformance monitoring and preventing, detecting and resolving conflicts in En Route and Terminal Area Operations

Related OI : CM-0205

The system provides real-time assistance to the En route controllers in conflict detection and resolution using trajectory data in Predefined or User Preferred Routes environments and provides resolution support information based upon predicted conflict detection and associated monitoring features.

The objective is to provide the controller (Planner or Tactical) with an automated Conflict Detection and Resolution tool using an enhanced Trajectory Prediction model through the use of improved data (e.g. extended flight plan data, real-time on board trajectory data, met data). Trajectory data may be made available via extended flight plans and new IOP capabilities

Achievement	Enhanced Medium Term Conflict detection and resolution tools and functions provided to Planning and Tactical controllers operating in an En-Route sector and considering i4D flights and mixed flights, and what-if capability.					V3
Deliverables	VALR					
Contributing Projects	04.07.02, 10.04.01, 03.03.03					
Contributing AU(s)	TBD					
Exercise	OIs	Validation Technique	Validation Platform	Prototype	Exercise Completed	
EXE-04.07.02-VP-500	CM-0205	Real Time Simulation	NATS CTC	10.04.01-TBD-INDRA	30/12/2014	

3.1.2.6. Complementary activities

Albeit not directly linked to the Priority Strategic Business Needs these validation exercises should be seen as an important complement in the overall Program perspective.

Release 4 OFA 02.02.04 - Approach Procedures with Vertical Guidance						
OFA contents Development and consolidation of improved approach procedures, including vertical guidance e.g. APV SBAS and improved lateral performance for supporting curved and segmented approaches.						
Related OI : AOM-0605 Advanced transitions with curved procedures connecting directly to the final approach can provide improved access in obstacle rich environments and can reduce environmental impact.						
Achievement	Enhanced Terminal operations based on automated RNP transition to LPV thanks to improved flight procedures and upgraded avionics support for regional airplane.					V3
Deliverables	VALR, OSED, SPR, INTEROP, TS					
Contributing Projects	05.06.03, 09.10					
Contributing AU(s)	TBD					
Exercise	OIs	Validation Technique	Validation Platform	Prototype	Exercise Completed	
EXE-05.06.03-VP-483	AOM-0605	Flight Trial	ALENIA ATR-Aircraft Research Simulator, ALENIA Flight Test Center	09.10-D11, THALES	28/03/2014	

Release 4 OFA 06.01.01 - CWP Airport

OFA contents

Integration of the different systems and elements from the airport air side into one homogenous set of configurable and customizable Tower Controller Working Position (CWP) and development of associated operational procedures, accommodating the wide range of controller's skill levels and experience.

Related OI : AO-0208-A

The integration and exploitation of new ATC functions such as routing, guidance, virtual stop bars (during LVP), BTV and alerts, with current elements such as surveillance and Electronic Flight strips into an Advanced Integrated Controller Working Position (A-ICWP) will result in enhanced situational awareness for ATCOs and flight crews, improved safety nets and will integrate the Tower with external units such as the TMA and the Network.

Achievement	Validation of integrated CWP HMI functions for airport considering new features for surface management operations (focussing on routing and guidance, Airport Ground Light procedures and D-TAXI).					V3
Deliverables	VALR, OSED					
Contributing Projects	06.09.02, 12.05.04, 03.03.02					
Contributing AU(s)	TBD					
Exercise	OIs	Validation Technique	Validation Platform	Prototype	Exercise Completed	
EXE-06.09.02-VP-678	AO-0208-A	Real Time Simulation	ECTRL eDEP, Bretigny	12.05.04-D05-FREQUENTIS/DFS	15/12/2014	

Release 4 OFA 06.03.01 - Remote Tower

OFA contents

Development and assessment of an operational concept that enables the cost effective provision of Air Traffic Services (ATS) at one or more airports from a control facility that is not located in the local ATS Tower.

Related OI : SDM-0201; SDM-0205

SDM-0201

Aerodrome Control Service or Aerodrome Flight Information Service for an aerodrome is provided from a remote location, i.e. not from a control tower local to the aerodrome. The Air Traffic Controller Officer (ATCO) or Aerodrome Flight Information Service Officer (AFISO) in this facility performs the remote ATS for the concerned aerodrome.

SDM-0205

Aerodrome Control Service or Aerodrome Flight Information Service for more than one aerodrome is provided by a single ATCO/AFISO from a remote location, i.e. not from a control tower local to any of the aerodromes. The ATCO (or AFISO) in this facility performs the remote ATS for the concerned aerodromes.

Achievement	Validated Remote Tower ATS procedures for a single airport in the Core Area. Validated Remote Tower AFIS procedures for Multiple Airports.					V3
Deliverables	VALR					
Contributing Projects	06.08.04, 06.09.03, 12.04.07					
Contributing AU(s)	TBD					
Exercise	OIs	Validation Technique	Validation Platform	Prototype	Exercise Completed	
EXE-06.08.04-VP-639	SDM-0201	Shadow Mode	DFS TBD			30/04/2014
EXE-06.09.03-VP-063	SDM-0205	Shadow Mode	NORAON IBP SAAB, Vaeroy / Bodö	12.04.07-D15-NATMIG		28/11/2014

Release 4 ENB02.01.02 AIM/MET**OFA contents**

The objective is to improve the quality and the usability of the aeronautical and meteorological information presented to the pilot, flight dispatchers and air traffic controllers for all phases of flight, through the use of digital aeronautical data (including Digital NOTAM) and digital MET data. The provision of digital data shall radically enhance the information services and products: easier to understand, better filtered, in-flight updates, workload reduction.

Related OI: TBD

Achievement	Digitally enhanced pre-flight briefing services (ePIB) thanks to the provision of Digital NOTAM and digital MET data.					V3
Deliverables	VALR					
Contributing Projects	13.02.02					
Contributing AU(s)	TBD					
Exercise	OIs	Validation Technique	Validation Platform	Prototype	Exercise Completed	
EXE-13.02.02-VP-462	-	Live Trial	FREQUENTIS Vienna	13.02.02-D13-FREQUENTIS		19/12/2014

The experience gathered in ‘Release Management’ shows in particular a high risk of delay, in particular due to the availability of operational resources (platforms and operators). This will be monitored very closely by the SJU, since it also has an impact on external actors (Airspace Users, Staff, Military) who have specific operational constraints.

Moreover, a particular focus has been placed in the Release 4 definition on the expected outcomes of exercises, in terms of performance improvement. The SJU will insist on getting meaningful results, as soon as possible after the exercises, in order to be able to draw conclusions and trends on the most promising options.

3.2. Third Party Resource Contribution and management

During 2013 the process to manage contributions from stakeholders other than Members - experts from airspace users, professional staff associations, NSAs and Military- has been successfully implemented. During 2014, the Third Party Resource management will allow a better planning of the contributions needed, concentrating on the content of the work and bringing even more value to the Programme.

3.2.1. The Airspace Users in the Programme

The SJU is driving deployment-oriented R&D, involving across the Programme all stakeholders, and, in particular, the airspace users, in order to gain confidence that the Programme output would meet the performance needs expressed by the European ATM Master Plan.

In addition to their key role in the Administrative Board, their strategic participation to the SPP (see below), representatives and experts of the Airspace Users (AUs) are heavily involved in the different Projects where they provide feedback on the different developments and results.

The AUs involvement in the Programme during 2013 has been extended to additional participants as a result of the procurement process that Eurocontrol executed on behalf of the SJU.

During 2014, the SJU will continue to manage the contribution of the AUs in the Programme, it is expected that resources will be made available to the Programme to ensure their alignment with the users business needs.

Budget 2014	Commitment	Payment
Chapter 3.1 - EUR Mio	4.2 (in 2013)	3.9

3.2.2. Aviation Authorities

In order to ensure the continuous participation of National Aviation Authorities for the whole development phase of SESAR, the SJU issued in June 2012 a call for expression of interest for the provision of Civil and Military Authority expertise. The Memorandum of Understandings resulting from this call started to be in operation in January 2013 and will continue up to December 2016.

During 2014 the National Aviation Authorities will be required to review a number of deliverables, progressively addressing the results of SESAR work, such as the SESAR Solutions, or the Regulatory Overview of the Pilot Common Project. They will review also

transversal deliverables, and will focus more at the OFA level. They will participate in at least 10 validation exercises relating to Release 4 where their view is considered valuable. As in 2012 and 2013 the outcome of this work will be reviewed and assessed with the participating NSAs in order to make sure that the recommendations loop is closed with the relevant actions.

Budget 2014	Commitment	Payment
Chapter 3.1 - EUR Mio	0.2 (2013)	0.1

3.2.3. Professional Staff Associations

The framework Contract between the SJU and the Professional Staff Associations of IFATSEA, IFATCA, ATCEUC, ECA and the ETF is a contract procured by Eurocontrol on behalf of the SJU. The participation across the SESAR Programme has increased during 2012 and there is a greater interest to participate as the Programme evolves and delivers results. The operational expertise brought in by the Professional Staff Association experts and buy-in is crucial for validating new procedures and technical and system solutions applicability.

It is expected that the International validation Team, which was set up in 2011 and currently comprises 65 members, will again participate in the 2014 R4 validation activities. In this respect, it is expected that the involvement of experts in Release 4 will be in the order of 240 man-days.

Given the evolution of the programme, the increasing interest of staff to be associated to SESAR work packages, the international validation team (IVT) and the incumbent coordination between the Staff associations, a rethink of the approach for further years may have to be foreseen in 2014. The current contracts have just been revised until the end of the programme in 2016. Moreover, the SJU is currently letting a new expert contract for IVT liaison officer to the SJU, to complement the work of the current IVT coordinator and to manage the extra validation activities arising from the Demonstration projects and other potential activities.

Budget 2014	Commitment	Payment
Chapter 3.1	0.5 (in 2013)	0.2

3.2.4. Military

Initiated in 2011, the Military Engagement Plan for SESAR (MEPS) has today a contribution of 98 military experts (10 % pilots, 20% air defence experts, 30% ATM experts, 40% engineers) from ten countries (DE, UK, FR, ES, BE, SW, PT, FI, IT and NL), channelled to the SJU Programme through Eurocontrol contract administration

Since April 2011, the European Defence Agency (EDA) has been acting as focal point ensuring a larger contribution by States and military organisations in order to achieve participation of military authorities in all the relevant aspects of the Programme.

EDA ensures the appropriate information and collaboration of the defence community, including NATO, in specific areas such as:

- Defence Investment and procurement
- Planning for relevant military evolution
- Risk mitigation actions on the military implementation of SESAR

Further to the agreement of the participating Member States to establish a programme on the military implementation of SES/SESAR, EDA has created a cell, the "SESAR Cell", composed by experts seconded by some Member States to reinforce the military engagement in SES and to avoid any adverse impact on defence capabilities stemming from SESAR deployment. Expected to be active as of beginning 2014, the SESAR cell will allow for a greater interaction with the SESAR JU.

Following the indications of the "SESAR Military Avionics Study" conducted in 2012, the SJU will launch in 2014 a call for tender in order to make an inventory of existing military state of the art technologies. In particular the focus will be ground equipment and their respective performance capabilities to fit in SESAR Concept of operations and to provide a clear link with the Mission Trajectory concept. This study will highlight how to ensure interoperability between Business Trajectory and Mission Trajectory, in order to reduce implementation costs for SESAR and thus for the overall benefit of European ATM Network.

Budget 2014	Commitment	Payment
Chapter 3.1	0.5 (in 2013)	0.5

3.3. ACI

In 2010 the SJU signed a framework contract agreement with Airport Council International - Europe. The objective was to extend SESAR activities and awareness beyond the airports already represented through SJU Members (SEACAs as well as AENA and NORACON) to the wider airport community.

The contract has proven to be a useful tool, both for SJU and ACI, stimulating small and medium-size airports throughout the European region to engage in the programme. The contract has just been renewed for a further 2 years until June 2015.

To date, one work order has been completed and a second work order is underway for completion in April 2014. The intention in 2014 is to let a third work order still under development to complement the previous two, for completion at the end of the contract. The objective of the work orders with ACI is to increase awareness in the airport community on the benefits brought by the SESAR Solutions and facilitating their future buy-in. The planned actions include information material, organization of workshops at national and regional level, professional input to the airports activities within SESAR, etc. During 2014, the SESAR strategy towards the airport community will be reviewed together with ACI to ensure its alignment with the SJU priorities.

Budget 2014	Commitment	Payment
Chapter 3.1	0.3	0.3

3.4. Associate Partners of the SJU and their involvement

The category of stakeholders “Associate Partner of the SJU” was created to answer the need to complement and complete the expertise brought by the SJU Members to the SESAR Programme in specific ATM fields and from the specific categories of SMEs, Research Organisations, Universities and Institutes of higher education.

Ten (10) entities, assigned to 5 Lots (two for each lot) were appointed. The first framework partnership contract was signed in August 2011 with others following in 2012.

The lots awarded are as follows:

- Lot 1: Information Management;
- Lot 2: Network & Airport Collaboration;
- Lot 4: Airborne & CNS Systems;
- Lot 5: Modelling Support to Validation;
- Lot 6: UAV/UAS integration in SESAR.

The award of work to the Associates is a progressive activity closely coupled to the needs of the Programme as well as of the SJU itself. During 2014 it is expected to continue the engagement of the Associates in activities across the programme and on specific tasks for the SJU.

By the end of 2013 up to 9 Specific Agreements will have been settled across all Lots and others are expected during 2014.

Budget 2014	Commitment	Payment
Chapter 3.1 - EUR Mio	3.0 (in 2013)	0.6

3.5. Demonstration activities

3.5.1. Demonstration activities and AIRE

Demonstration activities are pulling together stakeholders from airlines, air navigation service providers, the manufacturing industry and airports to show in a real life environment the benefits of SESAR solutions. Demonstrations are seen as a very powerful tool to engage operational users in SESAR, and continue to identify technical and operational issues which can be obstacles to implementation.

In 2013, the ramp-up of the activities was completed for all 18 contracts that were awarded in the latest call for tender on green flight trials and technological demonstration activities. Final results of these projects are expected to be delivered before the end of 2014.

The 2013 call relates to the demonstration activities related to RPAs, for which projects for a total amount of EUR 4.5 million were awarded. Subject to budget availability, a new

call for tenders is planned to be launched in the first quarter of 2014, to complement the demonstration activities in the following broad areas:

- Support to the preparation of the deployment in line with the Interim Deployment Programme and the Pilot Common Project objectives;
- Global interoperability.

The successful achievement of this activity in 2014 will be measured both against the acceptance by the SJU of the final deliverables of the 18 contracts awarded in 2013 and the successful transition from initiation to execution of all new projects that will be launched in 2014.

Budget 2014	Commitment	Payment
Chapter 3.1 - EUR Mio	5.0 (in 2013) 30.0 (Dec 2013 - call Jan 2014)	2.1 (call 2013) 6.8 (call 2012) 8.0 (call Jan 2014)

3.5.2. RPAS demonstrations

Furthermore as a result of a call, nine “Remotely Piloted Air System (RPAS) Demonstration Activities” projects were awarded and contract signed in 2013. The aim is to demonstrate the innovative nature of RPAS operations and integration experience through the introduction of new technologies and operational improvements. In this respect, each project is considered as an integrated pre-operational demonstration for technologies as well as associated operational procedures. The selected demonstrations and flight trials are related to safety, capacity and efficiency, airport integration & airspace throughput, as well as security.

The ramp-up of the demonstration activities is completed and the final results are expected in 2015.

RPAS Demonstration Activities which include integrated pre-operational flight trials activities, aim at:

- Demonstrating how to integrate RPAS into non-segregated airspace in a multi-aircraft and manned flight environment, in order to explore the feasibility of integration with the wider aviation community by 2016;
- Focusing on concrete results filling the operational and technical gaps identified for RPAS integration into non-segregated airspace; and
- Capitalising on the SESAR delivery approach by providing synergies, risk and opportunities, with the overall SESAR programme.

The successful achievement of this activity in 2014 will be assessed against the approval by the SJU of the different proposed RPAS Demonstration plans and the outcomes of the first flight trials.

Budget 2014	Commitment	Payment
Chapter 3.1 - EUR Mio	4.2	1.5

3.6. IBAFO III

The progressive alignment of the Programme with the "Priority Strategic Business Needs", derived from the European Master Plan 2012, highlighted the scope for actions addressing efficiency improvements and rationalisation in the production of the Programme deliverables.

At the end of 2013, the Administrative Board has endorsed the proposed Programme Reallocation which resulted in reducing the number of Projects to 250, through the prioritization of activities and the merging of some them. The result of the Reallocation 2013 provided the SJU with the necessary financial resources to award the activities for IBAFO III.

In fact, in 2013, the SJU identified the need to launch as of 2014 a number of new activities in order to complement or complete the work performed in the SESAR Programme. The scope of the IBAFO III addresses 3 types of activities:

1. Operational and technical activities that aim at complementing the existing Programme in order to deliver the Step 1 of the European ATM Master Plan. The experience gained through the delivery of SESAR Releases 1 to 3, and the work performed in the context of the Pilot Common Project mandate, highlighted a number of gaps in the Programme, preventing to properly address the various Operational Improvement steps of the Master Plan; in particular the ones identified as "Essentials". Some of these activities could be dealt within existing projects while others required the definition new operational or technical projects (e.g. on General Aviation and Rotorcraft Operations).
2. Activities of strategic nature in relation to SESAR deployment preparation. Following various discussions at the SJU Administrative Board level regarding the high level architecture of the future ATM system, and considering the notion of ATM data service provision and of Centralised Services, two new projects have been identified to deal respectively with the controller "Workstation Service Interface Definition" and with the various "Options on high level architecture".
3. Activities of strategic nature in relation to the Very Large Demonstrations and to the bridging of the SESAR Programme 2020.

In answer to the call launched by the SJU to its Members concerning 15 new Projects, the Members submitted proposals for 12 Projects for a total amount of EUR 19.9 million. These Projects will enter the execution phase in January 2014 and they will last until the end of 2016, complementing the current Programme Activities.

4. SESAR Programme Specific Activities in 2014

4.1. The European ATM Master Plan

The initial version of the European ATM Master Plan (Master Plan) has been produced during the SESAR Project Definition Phase (2006-2008) and endorsed by the EU Transport

Council on 30 March 2009. Its maintenance and execution was handed over to the SESAR JU, who is responsible since for it.

The October 2012, Edition 2 of the Master Plan outlines the essential operational and technological changes as well as standardisation and regulatory activities that are required to contribute to achieving the European SES performance objectives, making the Master Plan a key tool in the context of SESAR deployment and providing the basis for timely and coordinated deployment of efficient technologies and procedures. It is the agreed European “roadmap” connecting research and development with deployment scenarios and the Operational Concept underlying the essential operational changes is aligned with ICAO’s Global Operational Concept and its Aviation System Block Upgrades (ASBUs) for global interoperability.

The Master Planning process is performance-driven looking out to 2030 and following the principles specified in the ICAO Manual on Global Performance of the Air Navigation System.

Organised in 3 pillars (C1 - Master Plan Maintenance, C2 - Performance Deployment Planning, Financial incentives and Reporting, and C3 - Maintenance of Standardisation and Regulatory roadmap), Work Package C is the instrument within the SESAR Programme ensuring the maintenance of the Master Plan and providing a base reference to monitor the progresses related to the development and the deployment of SESAR.

Consisting in three integrated levels, the Master Plan information is maintained at level 2 - the Planning View - in the Integrated Roadmap of the SESAR Programme (WP B & C). From this information, level 1, the Executive View, is derived as well as level 3, the Implementation View.

The next significant update of the Master Plan is planned for 2015. On the basis of the lessons learnt from the previous exercises, the work to arrive to the delivery of the Master Plan 2015 will be started in 2014, including the review of the approach to the maintenance of the Master Plan. In this respect, the SJU has established a task force within of Members’ Representative to work on the review aiming to make more efficient and effective the work leading to the Master Plan 2015.

Budget 2014	Commitment	Payment
Chapter 3.3 - EUR Mio	See WP C (*)	See WP C (*)

(*) See Annex II

4.2. Support to the EC

The SJU is requested by the EC in different occasion to provide its technical expertise to support the preparatory activities in different domains.

4.2.1. Support to the preparation of the deployment

In 2013 The European Commission requested the SJU to prepare a proposal on the content of a Pilot Common Project (PCP) including the methodology to move from the implementation view in the ATM Master Plan to a business view. The request was a step

within the approach the EC intends to adopt to ensure the deployment of SESAR R&D results. The proposal was delivered in May 2013 by the SJU and later further complemented, on request of the EC, with an assessment of the technical interdependencies between the PCP on the emerging notion of “Centralised Services”.

The Pilot Common Project constitutes the first batch of technical and/or operational changes to start to be implemented in the 2014-2020 timeframe. The proposal from the SJU has been based on several essential operational changes identified in level 1 of the European ATM Master Plan 2012, whose need and maturity are demonstrated.

During 2014, the SJU will continue to be focused in supporting the EC in activities related to the preparation for deployment under the leadership of the EC.

The SJU will continue, as requested, to work closely and provide the necessary support to the Commission to ensure the preparation of the Deployment Phase as well as any other related activity. The detailed activities will be defined during the year, and it is expected that they will require the allocation of one FTE within the existing SJU Staff Establishment Plan. Where additional resources will be requested, this will require a re-assignment of the priorities and tasks among the existing staff, with the support of independent experts if needed.

4.3. RPAS integration in ATM

The European RPAS (Remotely Piloted Aircraft Systems) Roadmap, handed over by RPAS stakeholders to the European Commission on 20 June 2013, paves the way for the safe integration of RPAS into the non-segregated ATM environments in Europe from 2016. To achieve a broad and swift integration of all sizes of unmanned systems, the roadmap enhances the coordination between the numerous actors and the different activities involved (regulatory, R & D and others measures).

Since not all the key technologies required for RPAS to fly in non-segregated ATM environments are today mature and standardized, it is agreed that the integration of RPAS into ATM needs to be gradual and evolutionary, while technology as well as regulation and societal acceptance would progress.

Albeit the SESAR ConOps do cover the general conceptual operational requirements, the Annex 2 of the European RPAS ATM integration roadmap requires to develop a work breakdown structure with further details and enhancements to fully cover the R&D needs of RPAS ATM integration in the SJU work programme for 2014 and onwards.

During 2014, the RPAS Definition Phase will be launched which will result in detailing the work to be performed, resources needed together with a work breakdown structure. In addition, the gaps with the current work programme as well as the gaps to be filled in with regard to the European ATM Master Plan and its roadmaps will be identified. At the Board meeting on 30 October, the European Commission formally mandated the SJU to launch the RPAS Definition Phase of the R&D work to be performed in view of the eventual integration of RPAS in controlled airspace.

This will be the basis for the R&D activities to be performed in the context of the SESAR 2020 Programme.

The amount of resources for the Definition Phase of the RPAS integration in the non-segregated airspace is estimated at maximum EUR 3.0 million that, in line with the SESAR Definition Phase, will be financed 100%.

In anticipation and preparation of the RPPAS Definition Phase, during 2013 the SJU launched a call for demonstration activities on RPAS which resulted in the award of contracts for an amount of EUR 4.5 million in terms of co-financing. The objective of this call was to capture best practices, experience and data through demonstration activities at flight test centres or centres of excellence with access to the required relevant airspace, bringing together RPAS operators, manufacturers, air navigation service providers and regulatory authorities to assess the state of the art of the integration of RPAs in non-segregated airspace. This will allow to channel the future resources of the definition and R&D phases on the priority aspects..

4.4. Cyber security

The future European ATM System must be secure, resilient and trustworthy to support EU goals of modernisation of the ATM sector in line with the perspectives of growth of the European air traffic.

Creating a trusted and effective security shield in a SWIM-enabled environment with critical infrastructure requires adoption of Cyber Security management, enabled to secure the information and protect ATM against cyber threats with a proactive prevention and with reactive remediation. Technical solutions to Cyber threats exist and are already exploited in the SESAR Programme through a more piecemeal approach.

In order to introduce a holistic approach to cyber-security, a “SESAR Strategy and Management framework study for Information Cyber-Security” is expected to be awarded early 2014. The aim is to detail a holistic approach to ATM information cyber-security taking into consideration guiding frameworks and the experience of various industry domains and leading edge consultancy, as well as the cyber-security strategy of the European Union and the already delivered outlined actions.

The results of the study, which are expected in the second half of 2014, will be applied to support the next developments in the SESAR Programme in particular on SWIM and will be the foundation of a cyber-security strategy aiming at adequately managing information cyber-security aspects in the new ATM systems. Such strategy could then contribute to the effective deployment of the new ATM systems and to their interoperability.

Budget 2014	Commitment	Payment
Chapter 3.1 - EUR Mio	0.7 (2013)	0.7

4.5. Long Term & Innovative Research

In terms of on-going activities and coordination, the following action areas should be noted:

a) ACARE

The SJU is an active member of ACARE and specific areas of activity during 2013 included co-leading and contributing to ACARE Working Group 1 where contribution of material on ‘meeting societal & market needs’ as well as coordination across all areas of the Strategic Research & innovation Agenda (SRIA) were performed. Priority research areas were identified to support the EC in preparation of their Horizon 2020 call in 2014 and preparations were put in place to begin supporting the maintenance of the SRIA over the coming period.

The SJU will continue to participate in ACARE during 2014 with contributions to the General Assembly, Strategy & Integration Board, Implementation Monitoring Groups as well as specifically WG1 as needed.

b) Work Package E

Regarding the Long Term and Innovative Research activities included in the SESAR Programme, 2012 saw the final call and selection of new projects to Work Package E. During 2013, 22 additional projects were added to the scope of WP E corresponding to the full commitment of the total budget available.

2014 will see the continuation into their fourth and final year of the two established Research Networks in Complexity and Automation. As an integral part of the Research Networks, the 20 funded PhDs activities will continue in their respective areas, will provide expert guidance to projects as well as outreach to relevant research activities beyond current ATM.

The third annual SESAR Innovation Days event in 2013 moved the centre of SESAR Research networking to Stockholm and for the 2014 event another location will be selected from the wide range of contributing universities and research organisations. This event enables the dissemination of SESAR Innovative Research results to students, universities, researchers, Research organisations and industries and facilitates interactions with the wider ATM research community and industry representatives.

The SESAR Young Scientist Award, a prize recognising outstanding talent and potential contribution from young scientist to any SESAR activity, is also assigned in the context of the Innovation Days event.

As Work Package E is an integral part of the SESAR Programme and as such is covered by the established governance and communication arrangements, information and results will flow to the other Programme WPs and Projects through the extranet and existing governing bodies (PCG, WPL, PC etc); furthermore, on a case by case basis, closer working links will be established between projects where clear dependencies exist and this through the involvement of the respective SJU Programme Managers.

Budget 2014	Commitment	Payment
Chapter 3.1	4.9 (in 2013)	5.2

c) Scientific Committee

The Scientific Committee provides advice, guidance, and conducts specific tasks in support of the SJU in order to reinforce its innovative and scientific approach to building the future Air Traffic Management systems and procedures.

Membership of the Committee is not permanent; consequently membership was refreshed in 2012 by a new call for members to fill vacant positions as well as establishing a new waiting list and permitting rotation of members.

During 2014, there will continue to be regular Scientific Committee meetings addressing the core activities, as well as exceptional meetings specifically focussed on dedicated topics or issues to be resolved.

The Scientific Committee shall support the SJU in recognising excellence within the SESAR Programme from the perspective of Science & Innovation as part of the Awards initiative with the first Young Scientist Award having been made in 2012 and annually thereafter at the SESAR Innovation Days.

Budget 2013	Commitment	Payment
Chapter 3.1	0.1	0.1

d) EC Coordination (Framework programme)

The SJU has established regular coordination with both DG MOVE and DG RTD and maintains a list of active and new framework projects relevant to SESAR in order to optimise overall research efforts.

Coordination between the projects funded by the Framework Programme for Research and Development, identified as relevant to the Programme, and projects in SESAR has taken place to ensure the SJU is '*coordinating and concentrating all European Union's relevant research and development efforts in ATM*'.

During 2014, the SJU will continue to offer independent support to the European Commission to ensure that proposals do not duplicate what is already scoped and funded in the SESAR work programme as well as linking to peripheral Framework Projects that have a close interdependency with ATM and therefore complement the objectives of ATM, aviation and air transport as a whole.

4.6. SESAR Performance Partnership (SPP)

During 2014, it is expected that approximately 3-4 meetings will take place. The primary focus of the SESAR Performance Partnership activities in 2014 will be related to the further engagement of users of the systems in the hand-over process between R&D and implementation.

Budget 2014	Commitment	Payment
Chapter 3.1 - EUR Mio	0.1	0.1

4.7. Coordination with FABs

Many deliverables of the SESAR Programme relate directly to the performance of future organisation and operations as required under the SES legislation for FABs. The SJU has, through its ANSP Members, an established link to the FAB's needs from SESAR, and tries to ensure appropriate coordination and complementarity between FAB work and SESAR.

It is the intention of the SJU to maintain operational links with FABs, in the perspective that their work moves forward from institutional and airspace design aspects to new operational procedures supported by new tools and technologies. In the context, the 2014 call for Demonstration Activities to foster proposals which are targeted at FABs.

4.8. Preparation of Programme SESAR 2020

In view of the definition and launch of the SESAR Programme 2020, subject to the adoption on the extension decision by the Council of Transport Ministers, it is necessary to ensure the bridge between the on-going R&D activities and the future ones, taking into account the lessons learned from the current SESAR Programme and feedback from deployment activities (such as the Pilot Common Projects, Common Projects 2).

Therefore the SJU intends to undertake the following activities:

- Assess, exchange and share the SESAR Programme outcomes and product roadmap;
- Ensure the bridge between the current Programme and SESAR 2020, through the initial definition of objectives, work plan, perimeter and activities. This will also include elements such as identifying the kind of operations, the possible operational environment categories, the expected benefit, the actors, the technical and operational feasibility analysis;
- Proceed with an update of the SESAR V&V strategy with the integration of the Large Scale Demonstration and Proof of concept demonstrations;
- Identify any additional R&D activity which can contribute to ensure the maximization of the resources in the phasing out of the current Programme by the end of 2016 and the most adequate start-up of the activities of the programme SESAR 2020.

5. Coordination with other Programmes and Organisations

5.1. International/External relations

The SJU continues to work on international relations in the context of the EU external aviation policy framework. At the initiative of the EC, the SJU will participate in specific activities or workshops in order to advertise and communicate worldwide the great achievements of the SESAR partnership.

Particular importance will be given, like in past years, to Eurocontrol non EU countries, in order to ensure an appropriate level of engagement from these countries.

5.2. FAA/NextGen

The SJU has coordinated its Master Plan and Programme view with the FAA under the EU-US MoC in areas and topics where it is essential to achieve agreed industry standards and ICAO provisions to support both the development and deployment of SESAR Solutions and the overall global interoperability in the identified areas.

The principle agreement with the FAA is to have clear and concrete harmonised and possibly joint positions on standards and their implementation timelines. An overall aim is to produce as of 2014 a “State of Harmonisation SESAR-NextGen” report together with the general progress to the High Level Group governing the Annex 1 of the MoC.

5.3. Clean Sky

Clean Sky includes within its scope two aspects of key interest for SESAR: the airborne flight management and trajectory aspect as well as environmental modelling to demonstrate what improvement is expected from the CleanSky technology developments. SESAR, with AIRE, has a complementary environmental programme of work and develops environmental modelling in Work Package 16 as well as Airborne trajectory management and communications improvements in Work Packages 9 and 15.

During 2013, one ATM operations focussed workshop was held, where the SJU and its Members presented a number of operational concepts and results. The workshop, which answered the recommendations of an external group of experts on the cooperation between the two JUs, concluded that there was no immediate identification of any overlap or mismatch between the CleanSky activities and the SESAR Programme.

In addition to on-going coordination it is expected that during 2014 it will be necessary to study future programme alignment, in particular how to conduct joint large scale demonstrations across the respective programmes CleanSky2 and SESAR 2020.

In 2014, the SJU aims at maintaining a clear and consistent approach to describing environmental improvements across the two Programmes. Furthermore, the SJU, including the common Members with CleanSky, will remain ready to exchange relevant information to ensure that development of enhanced flight management capability do not contradict in any way and, where possible, can complement each other. The actions put in place following the joint review of one of the complementary activities will continue in 2014.

In preparation for the launch of SESAR 2020, it is essential that during 2014 the ongoing Programme and the activities envisaged in the new Programme 2020 are compared, discussed and coordinate, in particular, with Clean Sky 2 Air Vehicle Programme. This will continue ensuring correct alignment of a complementary set of proposed research activities that can promote the ongoing development of Air Transport within the remit of the respective Joint Undertaking.

5.4. EUROCAE

The SJU continues its major involvement in the European industry standardisation body (EUROCAE). Some elements of the formal Memorandum of Cooperation (MoC) between both entities have been put into operation. In 2014, it is expected to have in place in EUROCAE the control mechanisms to monitor the performance of this MoC. In particular, attention will be paid to the role of the SJU in the validation of standards.

The SJU will also support EUROCAE in the establishment of mature governance tools for this body.

5.5. ICAO Global Air Navigation Plan (GANP)

At the ANConf/12 and at the ICAO General Assembly 38, the ICAO Air Navigation Global Plan (GANP) with the ASBU's and its modules was endorsed. The development of the ASBU's concept and modules was done through a substantial input from the SJU. A full mapping to the European ATM Master Plan makes the two aligned in terms of concepts, work to be achieved and roadmaps.

ICAO will provide a "standardisation roadmap" for the timely development and delivery of ICAO global provisions of SARPs and guidance material which will make it possible for modernisation programmes such as SESAR and NextGen to be able to support the ICAO work programmes for the next three years. In this roadmap reference will be made to ongoing work in standardisation bodies to which the SESAR work, through its Members, serves as crucial input to both standards development and work prioritisations.

The full ICAO work programme priorities, work structure of panels and work groups for the next triennium are under consideration by ICAO and will be presented early 2014. During 2014, the SJU will therefore need to continuously work on pushing and supporting on key topics and their priorities to gain the most value of the SESAR work into ICAO. This will safeguard SESAR solutions and European industry products and procedures as globally interoperable and serving as means of compliance to standards and enablers at the global level.

The SJU will also have a dedicated part of the foreseen demonstration activities dedicated to global interoperability as described in the European Working Paper to the ICAO GA38 as an equal partner initiative to the US "Mini Global Demonstration". The SESAR Going Global Interoperability demonstration activities will have to be further defined and detailed, but it is already agreed that a part will focus on SWIM information sharing, building on the SESAR SWIM Master Class activities. The intention will be to establish already during 2013 a dedicated SESAR activity for the purpose and to plan for demonstration activities starting end 2014 and extending into 2015.

A specifically tailored multidisciplinary work group initiated by ICAO for the establishment of operational and economic incentive principles - in relation to the inputs SJU made at the ANConf/12 and ATC/6 regarding Most-Capable-Best-Served concept - is planned to start working in 2014. The EC and the SJU will be asked to participate bringing the knowledge and experience gained so far with SESAR. The FAA will do the same with reference to NextGen and, on the basis of that knowledge, a comparison will be made to identify possible gaps in the ICAO provisions.

5.6. EASA

Under the Letter of Agreement, EASA is having an increasing role in the contribution to SESAR on the regulatory domain.

During 2014, EASA will maintain this contribution, with a special focus on the safety methodologies, and the continuous alignment of the SESAR Regulatory and Standardization Roadmaps and associated documentation, with the EASA Rulemaking Plan. The 2014 edition of these roadmaps will be issued in March 2014.

5.7. ESA

In the context of the SESAR Programme, in particular some of the Work Package 15 projects (SatCom datalink) and the previous OPTMI and SAT-OPTIMI initiatives, there are technical (requirements and solution development), financial (operating costs estimation) and organisational (respective mandate) reasons to maintain a strong on-going relationship with the European Space Agency (ESA).

The SJU and ESA, through the IRIS programme, have already established a productive working arrangement where ESA staff has actively participated in SJU Projects relevant to them, and SJU staff and project participants meet to exchange relevant information. The SJU also participates directly to the Joint Iris Advisory Committee. During 2013 there was a significant contribution to the strategic approach for ATM SatCom through analysis and technical due-diligence of the Inmarsat commercial precursor proposal based on THAUMAS and utilising a development of the existing Swift Broadband capability to support i4D operations. This has resulted in a decision at the ESA Ministerial level to further support development of the precursor option (now called IRIS2017) and to delay ANTARES.

In support of this approach the SJU has raised a new IBAFO Project proposal covering the necessary links between SESAR and IRIS2017.

During early 2014 the SJU intends to launch its own complementary activity. These complementary projects will enable the integration of the i4D over SatCom capability with other i4D developments in SESAR and a validation assessment to be made, leading to later demonstrations.

5.8. Resources for studies and developments in support or complementary to the Programme

All the activities described in sections from 3.2 to 5.7 will be performed both through the use of internal resources and the acquisition of external support and expertise. The table below summarises the budgeted commitment and payment appropriations.

<u>BUDGET 2014</u>		
2. Commitments Appropriations BDG 2013	3. Commitments Appropriations BDG 2014	Payment Appropriations BDG 2014
4. -	5. -	6. -
7.	8.	9.

Airport Expertise (ACI)
Airspace Users 1 (contracted by the SJU)
Airspace Users 2 (Lowcost,...)
Airspace Users (***)
Associates of the SJU
Demonstration Activities (call 2012)
Demonstration Activities (call 2013)
Demonstration Activities (call 2014)
Definition Phase RPAS
Independent Experts
Industrial Support
NSA Advisory Group
Provision for Military Studies
Programme Support (Audit, Legal, Programme)
Scientific Committee
ATMPP Strategic Performance Partnership
Security Study
Ad hoc studies in complement to the core working programme
Representation of the SJU to the USA (**)
WP11 (***)
WPE (***)
Military and Professional Staff Associations (***)
Total

<u>BUDGET 2014</u>			
2. <i>Commitments Appropriations BDG 2013</i>	3. <i>Commitments Appropriations BDG 2014</i>	Payment Appropriations BDG 2014	
-	-	-	-
10. 0,3	11. 0,3	12. 0,3	
13. -	14. -	15. -	
16. -	17. -	18. -	
19. 4,2	20. -	21. 3,9	
22. -	23. -	24. 0,6	
25. -	26. -	27. 6,8	
28. 5,0	29. -	30. 2,1	
31. 30,0	32. -	33. 8,0	
34. 3,0	35. -	36. 1,0	
37. 0,3	38. 0,3	39. 0,3	
40. 6,0	41. -	42. 6,2	
43. 0,2	44. -	45. 0,1	
46. -	47. -	48. -	
49. 2,0	50. 1,6	51. 1,9	
52. -	53. 0,2	54. 0,1	
55. 0,1	56. 0,1	57. 0,1	
58. 0,7	59. -	60. -	
61. 1,0	62. 0,5	63. 1,0	
64. -	65. -	66. -	
67. -	68. -	69. 2,0	
70. -	71. -	72. 5,2	
73. 1,0	74. -	75. 0,7	
76. -	77. -	78. -	
79. 53,8	80. 2,9	81. 40,3	

- (**) The SJU representation to the USA is still subject to the finalization of the necessary administrative agreement and final endorsement of the complete proposal by the ADB. In the Budget 2012 the costs are included correctly in Title 1 and Title 2 based on their specific nature.
- (***) In accordance with the SJU/Eurocontrol agreements, these are considered Eurocontrol cash contribution.

6. Communication plan

The SJU believes that to ensure the necessary buy-in from a wide range of stakeholders, Communication must be truly integrated into the overall framework of the SESAR Programme. The success of the Programme, and the achievement of the Programme's results, relies heavily on an effective communications plan to ensure that key messages are disseminated to the main audiences of the SJU:

- The membership network;
- All staff and/or experts involved in the Programme;
- The wider Air transport community; and
- The general public.

To this end, particular efforts will be done in 2014 to adopt, as much as possible, clear wording and explanations to tune up accessible texts to the different audiences. In addition, the SJU aims to raise the political awareness of SESAR with the support of, and in close collaboration with, the European Commission and the members of the SJU; therefore it will coordinate its communications efforts with the communication activities planned by the Members of the SESAR Programme.

The objective of the “*SESTAR JU Communications Plan*⁶” is to improve communication effectiveness and efficiency by synchronising the activities related to the above mentioned objectives. In 2014, several actions detailed in the Communication Plan will be performed:

- Joint communication activities with the SESAR Members & Associate Partners;
- Intense internal communication to the +/- 3000 SESAR dedicated staff;
- Strong presence at the World ATM Congress in Madrid, with several conferences and workshops to inform the audiences on the SESAR's progress;
- Regular online communication, including internal and external newsletters;
- Enriching databases to reach new air transport stakeholders;
- Selective participation at major conferences concerning ATM and Air Transport;
- Updating and enhancing communication tools such as website, brochures, videos, etc.;
- Communication actions towards passengers at airports;
- Elaboration of communication regarding R&D achievements (Solution Packs) in order to hand over solutions to the industry for implementation.

Budget 2013	Commitment	Payment
Chapter 2.3 - EUR Mio	0.3	0.3

⁶ The SJU Communications Plan will be reviewed in 2014, with the aim of being adopted by the Administrative Board of Directors by summer 2014.

7. Administration & Finance

7.1. Ensure efficient support to the Programme implementation

The Directorate of Administration & Finance will continue to support the Programme implementation by ensuring the timely availability of the necessary resources, human and financial, and by providing the necessary internal control aiming at the respect of the principle of sound financial management and the legality of the underlying transactions.

It will support in particular the execution of the contracts with “Associate Partners of the SJU” and of “Demonstration Activities” as well as the organisation of IBAFO III, and will ensure the amendment of the MFA as necessary to provide an effective legal framework to the execution of the Programme.

7.2. On time assessment of Contractual Deliverables and Project's Interim Report

By the end of 2013 the SJU will have pre financed almost all the Programme projects with an overall disbursement of about EUR 107 million since 2009 (net figure after partial clearing), and few pre-financing are expected to be granted in 2014 for an amount of EUR 4 million. This amount may increase if pre-financing requests related to IBAFO III are introduced by Members.

Within the Interim Financial Statements process, SJU Members will provide the requested documentation in May 2014, including eligible costs incurred by the Members during 2013. Internal procedures ensure that the operational and financial requirements are satisfied in respect of the acceptance of contractual deliverables.

According to the provision of the MFA, the projects co-financing is granted to the Members on the basis of the Certified Interim Financial Statements referring to the incurred costs related to accepted deliverables and work in progress. In this respect and on the basis of the Certified Interim Financial Statements, the SJU estimates to disburse by the end 2013 EUR 84 million to the Members as co-financing, and plans to disburse EUR 88 million in 2014 which brings the total co-financing since 2010 up to EUR 299 million.

The deliverables acceptance and the payment authorisation processes are defined in the Financial Circuits ensuring full compliance with the terms of the Financial Rules necessary to receive financing from the European Union budget. The progress made both by the Members in submitting high quality documentation on time and by the SJU in managing the internal process has made it possible to finalise all the co-financing requests by the end of 2013. Further efforts will be made in 2014 to strengthen and accelerate the process so that Programme's financial resources are timely and efficiently used.

Financial Initiation and Verification functions are performed respecting the four eyes principle with a clear separation of responsibilities. The process is supported by the use of the ABAC system. The delegation of authority for budget implementation and the assignment of Initiating and Verifying functions to staff ensure the necessary resources to

implement the processes providing adequate segregation of functions and accountability of the actors involved.

7.3. Ensure effective implementation of ICS and risk management

The Administrative Board has approved in 2010 the SJU's Internal Control Standards for effective management derived from the Communication of the European Commission "Revision of the Internal Control Standards and Underlying Framework Strengthening Control Effectiveness" SEC (2007) 1341. This provides the SJU's management and staff with a clear set of standards to comply with in performing their activity. Since then the SJU management and staff are effectively implementing the standards, by developing and applying internal control processes and procedures. During 2014 the internal exercise will continue to assess the level of compliance with ICS and identify areas for improvements.

A solid Risk management system has been developed at different levels, from projects to program with a recurring process of risk identification, mitigating actions definition and results assessment. The related activities will continue in 2014 in line with the requirements of the European Commission concerning risk management contained in the Communication SEC (2005) 1327.

7.4. Project Audits' assurance

The Project Audit Sector, supports the Members to achieve the overarching result of maximising the benefit of the resources available for the Programme by raising awareness of best practice, guiding in the better implementation of the SJU Rules, MA, MFA and contributing to the proper, economic, efficient use of the resources.

In strict cooperation with operational functions, the Projects Auditors are responsible for checking the compliance with the principle of sound financial management and in particular to assess deliverables' value for money. In line with the Ex-Post Project Audit Strategy, approved by the ADB in December 2010 and the Project Audit Annual Plan, 17 audits have been performed in the first semester of 2013 concerning 5 members and completed the first three-year cycle of audits of all the 15 SJU Members. A new selection of a new Batch of another 5 Members concerning the IFS2012 will be made and some of these audits will be performed before end of April 2014; the concerned Members will be informed before year end 2013.

The SJU is also starting the activities necessary to design, develop and implement Performance Audits to assess the effectiveness, efficiency and economy of the SESAR Project results. These activities are part of the Project Audit Strategy. A first Performance Audit concerning Remote Towers is expected to be launched early 2014 as first pilot audit.

The Project Audit Annual Plan will be established and submitted for approval to the Executive Director before 2014, so that some of the audits can be already finalised at the beginning of 2014 as a result of discussions with the ECA.

The Plan will contain:

- The completion of the audits of Batch 4 which will be initiated before the end of 2013
- The follow-up audits of Batch 1

- The selection for the audits of Batch 5 concerning the IFS2013 in late 2014
- The completion of the Performance Audit on projects 06.09.03 and 12.04.07 which was launched during the second semester of 2013
- Audits of contracts for Demonstration Activities, if payments take place within 2014
- Supervision of the audits of Eurocontrol on WPE and WP11.

As the current Framework Contract for Auditing Services expires in April 2014, in the first semester of 2014 a new call for a Framework Contract for Auditing Services will be published.

8. Internal Audit and audit co-ordination

Following the Administrative Board Decisions taken in 2010⁷ the European Commission's internal auditor (IAS) undertakes the overall responsibility of being the SJU Internal Auditor. An Internal Audit Capability (IAC) has been established under the authority of the Executive Director to undertake audits planned in co-ordination with the Internal Audit Service of the European Commission.

8.1. Internal Audit Work Programme 2012-2014

The Administrative Board adopted the Coordinated IAS-IAC Strategic Audit Plan for the three year period 2012-2014 at its 19th meeting on 17 November 2011. The plan has been established on the basis of an updated analysis of risks faced by the SJU in co-ordination with SJU management and Internal Audit Capability. The outcome of the updated risk analysis highlighted areas requiring further management action to upgrade aspects of the SJU Internal Control System to meet the expectations of an EU body charged with the management of a Public Private Partnership R&D programme. The Strategic Audit Plan foresees for 2014 audits focussing on Document management and Business Continuity Plan.

8.2. Co-ordination and oversight of public audit functions

The SJU Permanent Audit Panel established by the Administrative Board in 2008⁸ co-ordinates the activities of the audit and control functions of the SJU's Founding Members and advises the Administrative Board on audit related matters. The SJU IAC also participates in the Auditnet for Agencies established by the IAS to share tools and methodology, and to co-ordinate the work of IACs in implementing the Coordinated IAS Strategic Plan.

8.3. Resources

The SJU has recruited one full-time internal auditor in 2012 to fulfil the IAC function undertaken by an auditor seconded from Eurocontrol for the period 2009-2011. The IAS, being the Internal Auditor for the SJU, provides audit tools and guidance on methodology

⁷ ADB(D) 11-2010, dated 19.10.2010. ADB(D) 17-2010, dated 31.12.2010.

⁸ ADB(D) 01-2008, dated 21.02.2008.

through its Audinet for Agencies. The costs of the internal auditors from the IAS are borne by the General Budget of the European Union and not the SJU. Therefore resource requirements in 2014 are expected to be maintained at the level of previous years.

9. Glossary

4 D	4 Dimensions
ABAC	Accrual Based Accounting
ACAS	Airborne Collision Avoidance System
A-CCD	Advanced Continuous Climb Departure
A-CDA	Advanced Continuous Descent Approach
ADS-B	Automatic Dependence Surveillance-Broadcast
ADS-C	Automatic Dependence Surveillance-Contract
AeroMacs	Aeronautical Mobile Airport Communications System
AFUA/ASM	Advanced Flexible Use Airspace/Airspace Management
AMAN	Arrival Manager
ASPA	Airborne Spacing
ATM	Air Traffic Management
ATSA ITP	Air Traffic Situation Awareness- In-Trail Procedure
AU	Civil airspace users
CCD	Continuous Climb Departure
CDA	Continuous Descent Approach
CDM	Collaborative Decision Making
CNS	Communication, Navigation, Surveillance
CTA	Controlled Time Arrival
DCB	Demand and Capacity Balancing
DCMAC Euroc.	Directorate Civil Military ATM Coordination
DMAN	Departure Manager
GBAS	Ground Based Augmentation System
GNSS	Global Navigation Satellite System
I 4D	Initial 4 Dimensions
CWP	Controller Working Position
IOP	Inter Operability

LVP	Low Visibility Procedure
MSP	Multi Sector Planning
NOP	Network Operation Plan
OAT	Operational Air Traffic
P-RNAV	Precision Area Navigation
RNP	Required Navigation Performance
RTS	Real Time Simulation
S&M	Sequencing & Merging
SBT/RBT	Shared Business Trajectory/Reference Business Trajectory
STCA	Short Term Conflict Alert
SWIM	System Wide Information Management
TMA	Terminal Manoeuvring Area
UDPP	User Driven Prioritisation Process

10. Annex I - Projects in Execution Phase - 2014 planned delivery
11. Annex II - Programme Financials
12. Annex III - Risk Management overview
13. Annex IV - Staff Establishment Plan
14. Annex V - R1, R2, R3 exercises
15. Annex VI - Budget 2014