



Annual Work Programme 2012

15 December 2011

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1. Introduction

1.1 Purpose of the document

The purpose of the Annual Work Programme is to outline the activities that will be performed by the SESAR Joint Undertaking (hereinafter the SJU or Joint Undertaking) during 2012 to reach its annual objectives and its expected achievements contributing to the mid-term vision 2012 as well as to establish the basis for the vision and mid-term strategic objectives related to the period up to 2014. 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 2012 achievements and onward by detailing the operational and administrative actions that will be performed during the year.

2. SESAR Joint Undertaking

2.1 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 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 Programme 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.

2.2 2012 Horizon

At the end of 2009, the SJU management has submitted to the Administrative Board, which endorsed it, a first mid-term “vision” covering the period 2010-2012 to ensure that the SESAR Programme was focused not only on the achievement of its mission but on concrete research progress, including quick wins, up to the level of pre-industrialization.

The SJU vision for the period 2010 - 2012 was defined as follows:

“By 2012 we have created the change in the European ATM that demonstrates our ability to deliver benefits to the community”.

The strategic objectives set for achievement in the timeframe are:

1. Initial 4D trajectory is validated in an operational environment supported by satellite-based technology,
2. 10,000 flights, including 500 military, are SESAR labelled,
3. 80% of SESAR projects have tested their output in a real life environment,
4. First SWIM pilots are in place to exchange data across at least 5 domains,
5. The first remote tower is ready for operations,
6. SESAR benefits are demonstrated on city pairs connecting 8 European airports,
7. Airspace users have signed up to the SESAR business case for time-based operations.

2.3 2012 objectives: completion of the mid-term vision

2012 constitutes the last year of the SJU first mid-term Vision, key in the SESAR Programme. In fact, during 2012, the SJU will evaluate the research results achieved through Release 1 as well as the maturity level reached by the other Projects in view to their contribution to successive Releases. In order to achieve the mid-term Vision by the end of 2012, the SJU assessed the results of the work realized until 2011 and, on these bases, considers that the gap between the mid-term objectives 2012 and the results reached at the end of 2011 constitutes the annual objectives for 2012.

On this ground, the SJU has established the success measurement indicators at the end of 2012 (see table below) taking in particular account Release 1 results, the maturity level of the Projects not included in Release 1 & 2, the 2012 planned activities and the related risks for each of the mid-term objectives. The following points provide the interpretation on how the 2012 mid-term objectives are translated into annual objectives:

OBJECTIVE DESCRIPTION (the numbering corresponds to the above list)	SUCCESS MEASUREMENT INDICATORS at the end of 2012
1. The “Initial 4D trajectory”, based operations, is planned to be validated during a first validation exercise December 2011 in the traffic environment of MUAC, NUAC and Stockholm Approach. The second iteration is planned for the 2012 and the third for 2013. The objective will be mostly met in 2012, although the use of satellite based technologies is being introduced and fully met in 2013.	90%
2. By 2011 the number of flights, including AIRE and OPTIMI flight demonstrations, is above the 50% of the set objective notwithstanding a shortcoming for Military flights. In addition to the ongoing Programme activities, the SJU Administrative Board decided the launch of “demonstration activities” call where integrated trials during 2012 will allow the SJU to reach the target and bring in the military dimension mostly during 2013.	100%
3. In order to achieve the objective of 80% of validation exercises in real life environment, a Validation Strategy has been established. Nevertheless, the results achieved by 2011 are not yet in line with this mid-term objective. In particular, the deliveries of Release 1 and those planned for Release 2 in 2012 will connect primary Projects to the different exercises performed within the Operational Focus Areas and only then to real system or environment. Following the IBAFO I and II reallocation exercise and the introduction of top down steering during 2012, the objective has high probability to be met, albeit with possible delays.	80%
4. As already reported to the ADB, in 2011 a SWIM Action Plan has been introduced to respond to the risks identified in the related Projects, inter alia, the lack of a legal framework for SWIM. A number of yet unresolved issues and priorities have so far prevented from the achievement of this mid-term objective. Considering the progress achieved by year end 2011 and the implementation of the action plan, also with the contribution of the ongoing validation exercise, the likelihood of the risk occurrence has been reduced. However, it is unlikely that the specific mid-term objective will be met in the set timeframe.	50%
5. The first validation exercises for the Remote Tower, part of Release 1, have been performed as planned and will be completed during 2012 in order to achieve this mid-term objective.	100%
6. The results of AIRE and the results expected in the “demonstration activities” call launched and performed during 2012 will allow meeting the objective.	100%
7. This objective has many dimensions and the business case development process is not mature yet to encompass all the different stakeholders’ perspectives. The Step1 4D Time Based Operations deliverables are being validated in 2011 and 2012 by the Operational Focus Area exercises and by the standardisation bodies of RCTA and EUROCAE. To a certain extent and in some areas the business case will be endorsed to	25%

OBJECTIVE DESCRIPTION (the numbering corresponds to the above list)	SUCCESS MEASUREMENT INDICATORS at the end of 2012
the level of industrialisation readiness, whereby additional work will be needed with stakeholders on its deployment. The objective will not be reached in the set timeframe although preliminary business case information will be made available to prepare the transition to deployment for first SESAR solutions from 2013.	

For each objective here above detailed, reference to the actions introduced to ensure an adequate management of the relative risks is made in the “2011 Risk Management” Annex III, which presents a high level synthesis of the main risks identified, and in the following sections of the present document. During 2011, the SJU has implemented on a regular basis a revision of the risk register, available for consultation by the Members, at the different organizational levels, with focus on Projects and Work Packages, which are then grouped at the level of Programme and Corporate Risks (see 2.5).

2.4 SESAR 2014

As already mentioned, 2012 becomes a key year to set the basis for the next mid-term period up to 2014 included, in view of the final period up to 2016. Furthermore, following the IBAFO I and II reallocation, the SJU in accordance with the PC has considered the need to introduce a more top-down approach to frame the successive Releases in a more strategic framework for the achievement of the EU ATM Master Plan objectives.

Concretely, during 2012 the SJU with the necessary support of the Programme Committee will assess the shape of the next Releases in order to ensure the necessary top-down input while taking into consideration the maturity of the Projects. This work is defined at the December PC meeting and results are expected during 2012 for the definition of Releases 3 and 4.

Looking ahead and to start providing a frame, the SJU management has considered to propose a mid-term vision for the period up to 2014 included, together with related objectives, as follows:

“SESAR 2014

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

The vision is coupled with the following mid-term objectives:

OBJECTIVE DESCRIPTION	SUCCESS MEASUREMENT INDICATORS
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.	5% fuel efficiency with significant improvements for other KPA's
2. Technological and operational innovations in the airport domain are ready for deployment and SESAR AOP/AOC/NOP integration has demonstrated positive network performance.	At least 15 Airports demonstrates increased predictability and less delays (MTS)
3. SESAR partners commit to SESAR Project innovative technological / operational results in their investment plans.	> 5 projects
4. SWIM-based applications ensure efficient implementation of Airspace Users preferred flight routes and profiles.	50% improvement of flight predictability
5. The SESAR Integrated Controller Working Position prototype demonstrates performance gains through its adaptability to efficiently integrate new functionality	At least 5 service providers will invest in the iCWP
6. SESAR material to support standards has been proposed to the EC, ICAO and Industry Standardisation bodies for development into published standards and policies.	> 10 standards proposed
7. Through the SJU PPP, SESAR Staff have become world leaders in creating a culture of innovation, cooperation and accountability to deliver.	Positive result of Stakeholder, Staff & Member Survey
8. Results from SESAR long term research activities are embedded into the SESAR Programme and prove the effective link between Innovation and R&D.	6 WP-E research networks and projects have made a positive impact in other WP's

This management proposal needs to be further discussed and agreed with the SJU Members in view of its adoption by the Administrative Board during 2012, taking also into account the status of maturity of the Programme and in particular the updated EU ATM Master Plan. Furthermore, during this phase the roles and responsibilities of the Members with regard to each new mid-term objectives and the overall Vision 2014 will be defined.

2.5 Risk Management: support to objectives' achievement

The complexity of the Programme managed by the SJU with its Members, in term of organization, content and resource management requires that adequate Risk Management

processes are in place. Since 2011, 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 two reviews.

Within the SJU, Risk management is performed at different levels, starting from the Project level, to the Work Package level and up to the Programme and Corporate level. Depending on the level, different risk owners are identified who are responsible to follow up the risk evolution and the correct and effective implementation of the related mitigating actions.

As a results of the 2011 Risk Management exercise which supports the present AWP 2012, 30 risks have been identified at Programme and Corporate levels, and assessed accordingly in terms of criticality.

They have been classified under the following categories:

- 11 “Corporate” risks covering SESAR strategic objectives and KPAs;
- 12 “R&D Programme” risks related to the execution of the R&D activities and their supervision/coordination,
- 2 “Wide SESAR Scope” risks, raising general concerns on the implementation of IP1 and on the deployment phase.
- 5 “Administrative and Financial” risks relating to the support to programme activities

The full Risk Management Report, including a detailed description of the risks with a net criticality above the threshold of 6, is attached in Annexe 3 and specific mitigations actions are embedded in the different elements of Release 2 and in actions at corporate levels (see following chapters).

3. The Programme

The SESAR Programme consists of about 300 interrelated projects, grouped into 16 Work Packages, each encompassing a particular domain of Air Traffic Management.

The success in the Programme’s implementation very much relies on the synchronisation among the different Projects and on the achievements of interrelated Projects 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.

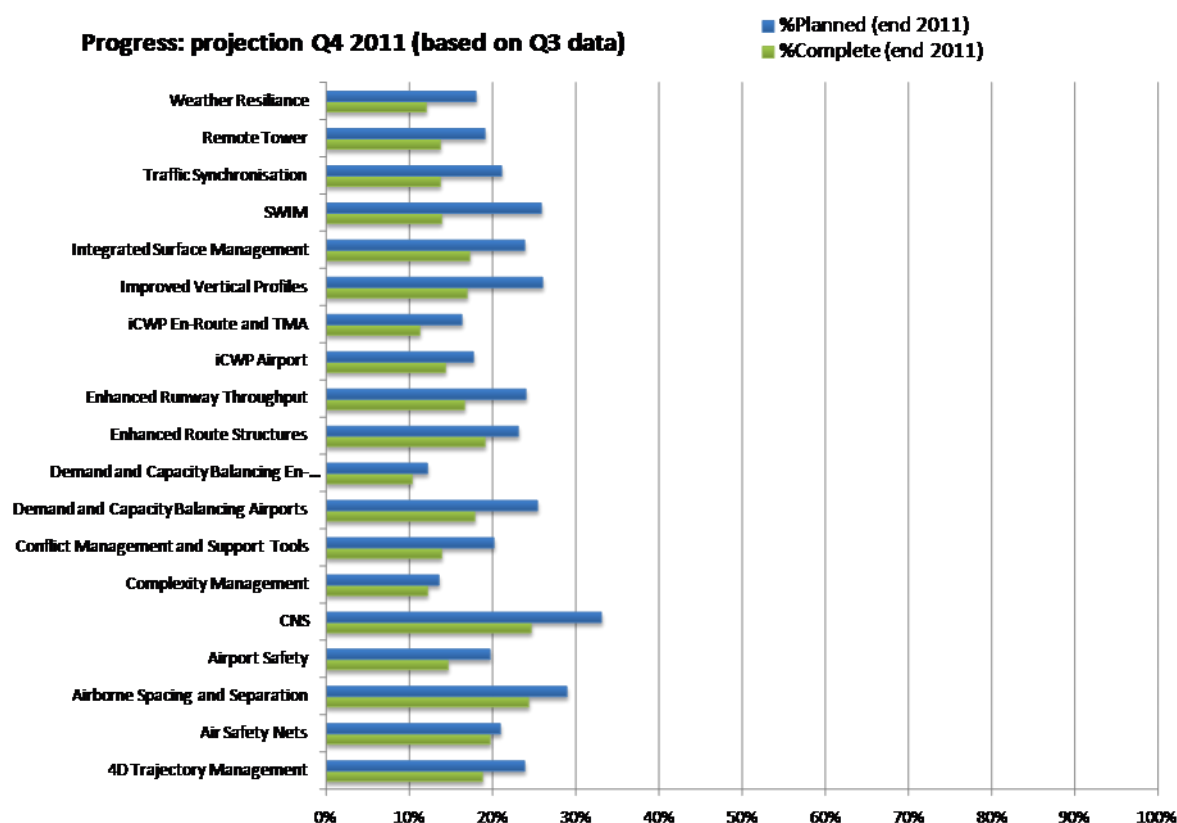
A summary of the functioning of the Programme and a detailed description of it can be found in the Programme Management Plan¹.

¹ SESAR Programme Management Plan, edition 02.00.00, 15 February 2011.

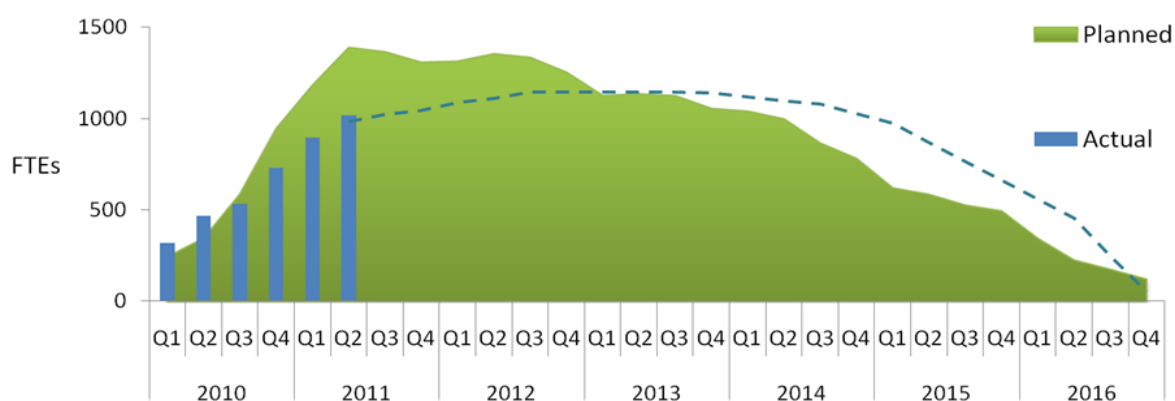
3.1 Programme achievements

Since the launch of the SESAR Programme activities in June 2009 substantial progress has been made and 2011 saw the first wave of research results, at different maturity levels, delivered. The following sections describe the most important achievements of 2011 which will impact 2012 and the following periods in terms of research developments.

- The first SESAR Release content, Release 1, was consolidated through a first System Engineering review and endorsed by the Administrative Board as part of the AWP 2011. It consisted of 29 Validation Exercises addressing concept elements in 16 Operational Focus Areas.
- In June 2011, the second System Engineering review took place to assess the progress of Release 1 towards the step V3 validation and, in particular, the validation plans and the platforms readiness. The review resulted in a number of corrective actions to mitigate risks related to the Release execution. The review concluded that the overall progress was adequate, while in terms of resource consumption and delivery alignment some weaknesses were noted. In particular, the level of maturity of the projects in following the EOCVM methodology, though improving compared to 2010, was still not sufficient.
- Release 1 has started to deliver tangible results and marks a turning point in the development of the new ATM system. Release 1 achievements are detailed in section 3.2.1 per Operational Package where they are reported in connection with the Release 2 planned activities of which they constitute a solid basis.
- At mid-December 2011, 17 validation activities have been conducted and 8 will be completed by the first days of January 2012 meaning that almost 90% of Release 1 is achieved. 4 exercises are postponed to 2012. The detail per operational focus area is presented in section 3.2.1.
- The Programme progress - which encompasses the Release, as well all the other activities addressing the maturing and validation of the SESAR concept - is monitored on a quarterly basis and the figure below shows the progress reported for the 3rd quarter 2011. The percentage of completion by operational sub packages represents what is achieved by the end of 2011 as compared to the total Programme' activities.



- 280 Projects are in execution phase, representing more than 90% of the total Programme but the progression of the Programme is not evenly distributed. The Programme is slower than planned in some areas, especially in the following two: operational requirements and SWIM. As a matter of fact, deriving the top level concept into operational requirements is slower than expected and this impacts the critical path of several technical projects. A number of mitigation actions had to be put in place and are being monitored at the level of the Programme Control Group. SWIM is another area of concern where a dedicated action plan was elaborated to overcome the issues identified in the course of 2011.
- In terms of resource consumptions (FTE), the June 2011 report provided by the Members shows an overall under consumption in the order of 20%. Nevertheless, it should be noted that for many Projects the planned distribution of resources during the execution phase is under revision and not yet reflected in the baseline used to measure the Programme progression. Following the IBAFO I and II reallocation, and the results of the work of the Tiger Team (see paragraph 3.6), the Programme baseline will be updated and provide a more solid basis to reach conclusions. At this stage, it can still be concluded that there is an under consumption of resources in the early stages of the Programme which appears to be compensated by a higher level of resources until the Programme end (see figure below).



A similar but less evident trend - maturity and resources - seems to appear in terms of deliverables, as in some areas the SJU noted a slower provisions of deliverables in line with the under consumption of the resources.

In order to address the situation in the short term, different measures have been taken, inter alia, a request to the Programme Committee members to perform further verifications at partners level, an analysis of the major reasons behind the under consumption, the IBAFO I and II reallocation, the termination of some Projects, etc. All the measures are monitored at risk management level and consolidated at the SJU level.

In addition, work is conducted with the Members to better identify key root causes. Some of them can already be mentioned, such as the organisation of the work in some Projects, some de-synchronized contributions across the Programme, the lack of clear identification of the deliverables and of more specific quality criteria.

The SJU is monitoring this issue very closely and taking remedial actions to make sure that the situation will be solved.

In order to support the Release delivery and the overall Programme execution / monitoring / control, a new version of the Programme Management Plan (PMP V2) was released in May 2011, with the agreement of the Members.

Together with the updated PMP, a new version of the Architecture Strategy was issued as a tool for structuring, organising and understanding the complex interrelationships in the ATM 'System of Systems'. Coherent planning of developments across the Programme allows implementation of the Strategy which in particular aims at:

- ensuring that technical systems provide the capabilities needed by the operational processes;
- apportioning performance requirements;
- ensuring interoperability.

The Architecture Strategy was complemented by an action plan monitored by the Programme Control Group.

The Business Management System encompassing the Information Technology infrastructure and procedures to support the business processes, has been further improved in line with the 2011 ITC Budget to cater for the Programme's execution phase.

3.2 Release 2

The definition of Release 2 content has started with the update of the V&V Roadmap in March 2011 and continued along the year in full coordination with the SJU's Members.

Building upon Release 1 results, Release 2, which is still substantially built on a bottom-up approach although under the steering of the SJU and the PC, encompasses

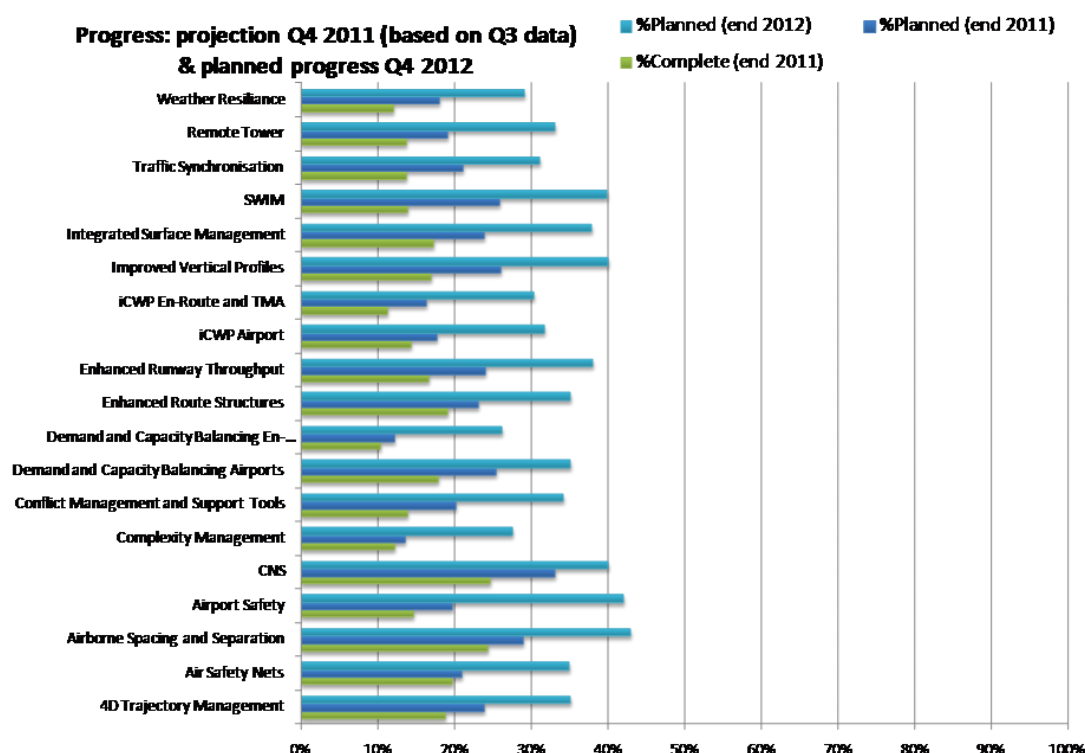
- the development and validation of additional Initial 4D features and data exchanges in order to further develop the synchronisation between the airborne and ground flight profiles,
- activities at airports, to improve the surface management and runway throughput,
- efforts on Continuous Descent Approach and Continuous Climb Departure to further increase flight efficiency and to lower the environmental impact,
- improvements in the "end to end" air traffic management.

The table below shows the grouping of the Operational Focus Areas into the Sub-packages and ultimately into the 8 Operational Packages providing a snapshot on the Programme's advancement.

Operational Package	Operational Sub-package	Operational Focus Area	Release
PAC01 Increased Runway and Airport Throughput	Weather Resilience	LVPs using GBAS	
		Pilot enhanced vision	
	Airport Safety	Airport safety nets	2012
		Enhanced situational awareness	
	Enhanced Runway Throughput	Time Based Separation	2012
		Dynamic Vortex Separation	
		Brake to Vacate	
PAC02 Efficient and Green Terminal Airspace Operations	Enhanced Route Structures	Optimised RNP Structures	2011
		Point Merge in Complex TMA	2012
	Improved Vertical Profiles	CDA	
		CCD	
PAC03 Moving from Airspace to Trajectory Management	4D Trajectory Management	Approach Procedures with Vertical Guidance	2011
		Trajectory Management Framework	2011/2012
		Free Routing	2012
		Business and Mission Trajectory	2012
		Cruise climb	
	Airborne Spacing and Separation	System Interoperability with air and ground data sharing	2012
		ASPA S&M	2012
		ATSA-ITP	
		ASEP	
	Conflict Management and Support Tools	Conflict Detection, Resolution and Monitoring	

Operational Package	Operational Sub-package	Operational Focus Area	Release
		Enhanced Decision Support Tools and Performance Based Navigation	
		Sector team operations	2012
	Air Safety Nets	Enhanced STCA	2011
		Enhanced ACAS	2011
PAC04 End to End Traffic Synchronisation	Traffic Synchronization	Integrated AMAN DMAN	2011
		AMAN and Extended AMAN horizon	2011/2012
		AMAN + Point Merge	2012
		DMAN Multiple Airports	
		i4D + CTA	2011/2012
	Integrated Surface Management	Surface Planning and Routing	2012
		Surface management Integrated with Arrival and Departure Management	
		Guidance assistance to aircraft and vehicles	
PAC05 Integrated and Collaborative Network Management	Demand and Capacity Balancing Airports	Airport Operations Planning and CDM	
	Complexity Management	Complexity Assessment and Resolution	2011/2012
	Demand and Capacity Balancing En-Route	Airspace Management and AFUA	2012
		Dynamic sectorisation and Constraint management	
		Enhanced ATFCM processes	2011
		UDPP	2012
		Network Operations Planning	
		Environmental sustainability	
PAC06 Cooperative Asset Management	iCWP Airport	iCWP Airport	2011/2012
	iCWP En-Route and TMA	iCWP En-Route and TMA	2011
	Remote Tower with AFIS	Remote Tower	2011/2012
ENB01 CNS	CNS	Communication	
		Navigation	
		Surveillance	
ENB02 Information Management	SWIM	SWIM	

Release 2 represents a significant step forward for the Programme; the activities performed in the different Operational Sub Packages are estimated to reach, at the end of 2012, a level of completeness shown in the following table, that builds on the results expected by the end of 2011 as well as on the mitigation actions to address the related issues.



Considering the results achieved in 2011 against the AWP, the challenge to implement the 2012 plan requires a thorough review of the balance between resources available and objective set. At the same time, during 2011 the reallocation exercise has allowed each Member to re-align its resources to the most relevant Projects. As already mentioned, this should result in revised and more precise plans on which the Programme progress will be measured.

The most critical risks are the postponement of some exercises and the quality of the exercises performed, which may have collateral effects on interconnected Projects (cascading effect). As already mentioned, to mitigate these risks, a monitoring activity is conducted with the Members to better identify the root causes and take remedial actions to ensure that, where necessary, adequate resources (including people, equipment & procedures) are made available in sufficient time so that deliverables of Release 2 are actually delivered within the agreed timeframe (2012).

It should also be noted that the PC meeting in December constitutes the start of the works for the preparation of Release 3, in particular defining the modus operandi in view of the introduction of a more strategic top down approach, focusing on the Programme's priorities and the performance needs.

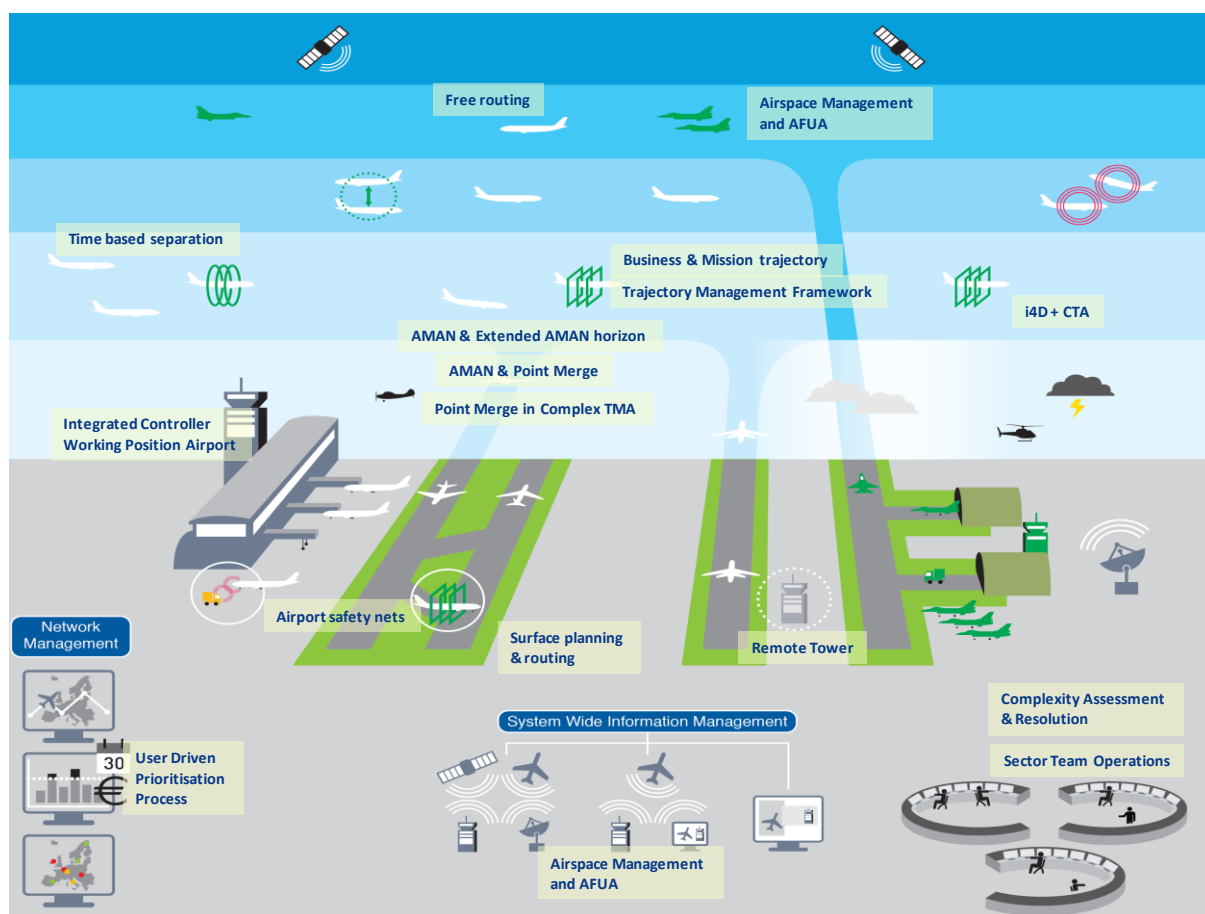
3.2.1 SESAR Programme Release 2 content

Release 2 (version 0.5 of 1 December 2011) builds upon 35 exercises including 4 postponed from release 1, clustered into 17 OFAs. The scope and the contents of Release 2 as shown in the present version of the document are stable and have been agreed upon with the Members; however some changes, well defined and limited in scope, may be expected.

The main operational improvements that Release 2 will deliver are:

- **Airport platform safety**
 - Detection of conflicting ATC clearances for Runaway controller
 - Routing of aircraft and vehicles through data link.
- **Airborne Operations**
 - Synchronisation of airborne and ground flight profiles through i4D data exchanged through datalink;
 - Improved ATC Trajectory prediction by use of AOC data;
 - Enriched ICAO flight plan information with flight performance data provided by AOC;
- **ATC Operations**
 - Multi-sector planner roles and responsibilities
 - Prediction of airspace complexity issues with an increased anticipation and Traffic complexity monitoring and resolution;
 - Streaming techniques in the frame of an extended horizon of the arrival manager
 - Improved iCWP design addressing human factors;
 - Refinement of Time Based Separation minima for tower Controllers
 - Provision of ATC Services on a single airport from a single remote site;
- **Network Management**
 - Improved ATFCM measures based on real time airspace use;
 - Interface between ASM tool and network tool;
 - Automation of slot swapping between flights from different AOs.

The picture below shows how the Release 2 Operational Focus Areas contribute to the development of the ATM system.



The following sections present the high level scope of Releases 1 and 2 per Operational Packages, describing the results of the validation exercises conducted in 2011, where already available, and the expected outcome and indicators of those to be conducted in 2012.

3.2.1.1 Operational Package 1

Increased Runway and Airport Throughput

No exercise in Release 1 was identified for PAC01

Release 2²

Airport Safety Nets				
Achievement	Validation of procedures and tools for the detection and presentation of conflicting ATC clearances to the Tower RWY controllers.			V3
Deliverables	Validation Report, Updated OSED & SPR			
Contributing Projects	06.07.01; 12.03.02; 12.04.03; 12.05.02			
Contributing AU(s)	None			
Exercise	Validation Technique	Validation Platform	Prototype	Exercise Completed
EXE-06.07.01-VP-438	Shadow Mode	DFS TWR IBP Hamburg	DFS Prototypes for Conflicting ATC Clearances Alerts and for CWP	02/11/2012

Time Based Separation				
Achievement	Validated Tower controller operational procedures enabling the use of refined time based separation minima in an effective way in typical operational circumstances, challenging wind conditions and some off-nominal cases.			V3
Deliverables	Validation Report, OSED, SPR			
Contributing Projects	06.08.01, 05.03			
Contributing AU(s)	Air France, KLM,			
Exercise	Validation Technique	Validation Platform	Prototype	Exercise Completed
EXE-06.08.01-VP-302 "In a Sequence"	RTS	NATS London TC	NATS Time separation prototype	01/04/2012

² Six of the exercises are part of a sequence that will deliver the final package of work in subsequent releases. However, they have been retained in the scope of Release 2 by PCG13 (pending PC18 approval) because they will deliver subset of concept elements (V3) with potential consideration for industrialisation. These 6 exercises are identified with the following note : "In a Sequence".

EXE-06.08.01-VP-303 "In a Sequence"	RTS	NATS London TC	NATS Time separation prototype	06/11/2011
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3.2.1.2 Operational Package 2

Efficient and Green Terminal Airspace Operations

Release 1

Optimised RNP Structures			
Achievement	Validated procedures, requirements, cases and updated operational Guidelines on P-RNAV Guidelines- on PRNAV in complex TMA leading to an increased deployment in Europe		V3
Deliverables	OSED ³ , SPR ⁴ INTEROP, Technical Specifications, Validation Report		
Contributing Project	5.7.4		
Exercise	Validation Technique	Platform	Exercise status
EXE-05.07.04-VP-142	RTS ⁵	AENA IBP Madrid TMA	Executed in October 2011, results expected in December 2011

Point Merge in Complex TMA			
Achievement	Validated Point Merge - procedures based on and exploiting the Flight Management System (FMS) without radar vectoring, constrained by controller instructions on speed and level. It will Facilitate the application of Continuous Descent Arrival and provide a baseline for Trajectory Based operations in the TMA		V3
Deliverables	OSED, SPR, INTEROP ⁶ , Validation Report		
Contributing Projects	5.7.4		
Exercise	Validation Technique	Platform	Exercise status
EXE-05.07.04-VP-228	RTS	ENAV IBP Milan TMA	Originally to be completed by December 2011 - postponed to R2, due to shortage in operational resources.

³ OSED = Operational Service Environment Description is a document detailing Concept description for each Operational Focus Area. It develops the addressed Operational Service by allocating Operational Requirements to Operators, Application Services and Information Services.

⁴ SPR = Safety and Performance Requirements is a document detailing the OSED for each Operational Focus Area in allocating Operational, Safety and Performance requirements to Systems.

⁵ RTS: Real Time simulation, using an operational platform.

⁶ INTEROP = Interoperability is a document providing interoperability requirements which are the minimum technical and functional requirements that provide the basis for ensuring compatibility among the various elements of the technical systems supporting defined services and using specific technology

EXE-05.07.04-VP-229	RTS	NATS TC London TMA	Exercise scheduled for December 2011 - results expected in February 2012
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Approach Procedure with Vertical Guidance			
Achievement	Validated Approach Procedures with Vertical (APV) guidance using Satellite Based Augmentation System (SBAS) leading to the ability to fly Instrument Landing System (ILS) type approaches to airport independently of ground based infrastructure.		V3
Deliverables	OSED, SPR, Technical Specifications, Validation report		
Contributing Projects	5.6.3		
Exercise	Validation Technique	Platform	Exercise Status
EXE-05.06.03-VP-224	RTS	NATS TC Southampton on APT	Exercise executed in October 2011 - results expected in November 2011

Release 2

Point Merge in Complex TMA (from Release 1)				
Achievement	Validated Point Merge -procedures based and exploiting the Flight Management System (FMS) without radar vectoring, constrained by controller instructions on speed and level. It will Facilitate the application of Continuous Descent Arrival and provide a baseline for Trajectory Based operations in the TMA			V3
Deliverables	Validation Report, OSED, SPR and INTEROP			
Contributing Projects	5.7.4			
Contributing AU(s)	None			
Exercise	Validation Technique	Validation Platform	Prototype	Exercise Completed
EXE-05.07.04-VP-228	RTS	ENAV IBP Milan TMA	Not Applicable	31/01/2012

3.2.1.3 Operational Package 3

Moving from airspace to trajectory Management

Release 1

Trajectory Management Framework			
Achievement	Initial procedures and requirements for initial 4 Dimensions (i4D) concept for supporting the management of a single Controlled Time Arrival (CTA) constraint in the En-Route and TMA phase of flight.(VP 041 & 212) Validated procedures, and system requirements, for Trajectory Management revision considering : Flow rerouting scenario and, unexpected closure of airspace (VP 043)		V3
Deliverables	OSED, SPR, Technical Specifications& Validation Plan		
Contributing Projects	4.5; 5.5.1		
Exercise	Validation Technique	Platform	Exercise Status
EXE-04.05-VP-041	RTS En-route	ENAV Rome	Exercise executed in October 2011 - results expected by November 2011
EXE-05.05.01-VP-212	RTS En-route	ENAV Rome	Exercise executed in October 2011 - results expected by November 2011
EXE-04.05-VP-043	RTS	DSNA Coflight Toulouse	Exercise scheduled for December 2011- results in January 2012

Sector team operations			
Achievement	Validated procedures to improve sector team organisation and coordination (roles & responsibilities) and initial requirements on tools support and information sharing.		V3
Deliverables	OSED, SPR, INTEROP, Validation report		
Contributing Projects	4.3 4.7.8		
Exercise	Validation Technique	Platform	Exercise Status
EXE-04.03-VP-032	Shadow mode	Brest ATCC	Exercise scheduled for December 2011 - results for February 2012
EXE-04.03-VP-237	Live Trials	Brest ATCC	Exercise scheduled for December 2011 - results for February 2012
EXE-04.07.08-VP-304	RTS	NATS London ACC Ops room platform	Originally to be completed by October 2011 - postponed to R2, due to shortage in operational resources

Enhanced STCA			
Achievement	Validated procedures, requirements, prototype and cases for enhanced Short Term Conflict Alert (STCA). This enhanced STCA will support controllers in identifying conflict between flights inside TMA wherein difficult operations are conducted (e.g. IFF/VFR traffic, complex interface with arrival/departure sectors, etc) and avoiding false alarms.		V3
Deliverables	OSED, SPR, INTEROP, Technical Specifications, Validation report		
Contributing Projects	4.8.1; 10.4.3		
Exercise	Validation Technique	Platform	Exercise Status
EXE-04.08.01-VP-140	RTS	THALES STCA prototype	Exercise scheduled for November 2011 - results for January 2012

Airborne Collision Avoidance System Monitoring			
Achievement	Validated specifications and cases for : new altitude capture laws to avoid false alarm in high vertical rate encounter, link Airborne Collision Avoiding System to autopilot, and quantified overall safety gain.		V3
Deliverables	SPR, Technical Specifications, Validation report		
Contributing Projects	4.8.2		
Exercise	Validation Technique	Platform	Exercise Status
EXE-04.08.02-VP-054	Encounter Model Based Simulation Platform	DSNA Toulouse	Completed in February 2011
EXE-04.08.02-VP-480	Encounter Model Based Simulation Platform	DSNA Toulouse	Completed in February 2011

Release 2

Trajectory Management Framework		
Achievement	Validate that the performance of the ATC conflict detection & resolution tool in a high density Controlled Airspace improves when the underlying Trajectory Prediction is supported by AOC data.	V3
Deliverables	OSED and Validation Report	
Contributing Projects	05.05.02	
Contributing AU(s)	Novair, ELFAA, LAG, EBAA	

Exercise	Validation Technique	Validation Platform	Prototype	Exercise Completed
EXE-04.05-VP-043	RTS	DSNA CoFlight V2 platform Toulouse	DSNA CoFlight V2 platform	12/10/2012
EXE-05.05.02-VP-301	RTS	NATS' London ACC simulator	Modification to the iFACTS simulator	11/11/2012

Free Routing				
Achievement	Validated recommendations covering procedures and tools for implementing User Preferred Routing operations inside European Airspace with a particular focus on the ECAC core area.			V3
Deliverables	Validation Report, OSED, SPR and INTEROP			
Contributing Projects	07.05.03			
Contributing AU(s)	SAS, Novair, IAOPA and ELFAA			
Exercise	Validation Technique	Validation Platform	Prototype	Exercise Completed
EXE-07.05.03-VP-571	RTS	MUAC IBP	N/A	01/02/2012
EXE-07.05.03-VP-465	Live Trial	NORACON NEFAB Airspace	N/A	01/06/2012

Business and Mission Trajectory				
Achievement	Enhanced flight plan filing process based on calculated 4D profiles and aircraft performance information sent by the AOC and processed by the IFPS.			V3
Deliverables	Validation Report, OSED, SPR and INTEROP			
Contributing Projects	07.06.02; 13.02.01; 11.01.04; 03.03.02; 03.03.03.			
Contributing AU(s)	Air France ; EBAA ; EFLAA ; LAG			
Exercise	Validation Technique	Validation Platform	Prototype	Exercise Completed
EXE-07.06.02-VP-311	Shadow Mode	ECTRL NMVP Brussels	CFMU System 11.01.04 FPL prototype	30/11/2012

System Interoperability with Air and Ground Data Sharing				
Achievement	Validated procedure for coordination between ATSUs through the utilization of Flight Object information			V3
Deliverables	OSED and Validation Report			

Contributing Projects	04.03, 10.02.05, 14.02.09			
Contributing AU(s)	None			
Exercise	Validation Technique	Validation Platform	Prototype	Exercise Completed
EXE-04.03-VP-022 "In a Sequence"	RTS	DFS ENR IBP Langen DSNA En Route IBP, Toulouse ECTRL MUAC, Maastricht	INDRA-IOP ITEC INDRA IOP MUAC INDRA, SWIM Technical Infrastructure THALES-FOS for the CoFlight based IBP THALES, SWIM Technical Infrastructure	16/11/12

03.02.01 - ASPA S&M (Under analysis through adhoc SE Review session)				
Achievement	Validated operational procedures on the Airborne Spacing Sequencing & Merging Manoeuvres in preparation of the Flight trial. This includes the consideration of : the integration of lateral and vertical aspects with the longitudinal dimension, the integration with the CDA concept, the link with P-RNAV route structure in TMA, the integration of CPDLC (possibly including aircraft derived data) from both air and ground perspectives.			V3
Deliverables	Validation Report, OSED, SPR and INTEROP			
Contributing Projects	05.06.06, 09.05, 10.03.02 (10.04.04 TBC)			
Contributing AU(s)	None			
Exercise	Validation Technique	Validation Platform	Prototype	Exercise Completed
EXE-05.06.06-VP-198 (under adhoc review)	RTS	AIRBUS Aircraft Integratio n Simulator - Toulouse ENAV IBP Rome	AIRBUS- Integrated Airborne ASAS SELEX-ATC Support to ASAS	30/03/2012

EXE-05.06.06-VP-392 (under adhoc review)	RTS	AIRBUS Aircraft Integration Simulator - Toulouse Thales IBP	AIRBUS-Integrated Airborne ASAS THALES-ASPA S&M	30/03/2012
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Sector Team Operations (from release 1)				
Achievement	Defined Roles and Responsibilities for a Multi-Sector Planner operating environment and initial requirements on tools support and information sharing.			V3
Deliverables	OSED, SPR, Validation report			
Contributing Projects	4.7.8			
Contributing AU(s)				
Exercise	Validation Technique	Validation Platform	Prototype	Exercise Completed
EXE-04.07.08-VP-304	RTS	NATS London ACC Ops room platform	Not Applicable	16/03/2012

3.2.1.4 Operational Package 4

End to End Traffic Synchronisation

Release 1

Integrated AMAN/DMAN			
Achievement	Validated procedures, requirements, for basic Departure Manager (DMAN) capabilities at a single airport. Validation of procedures for establishing the departure sequence with sufficient quality taking into account surface and departure management processes.		
Deliverables	OSED, Validation report		
Contributing Projects	6.8.4		
Exercise	Validation Technique	Platform	Exercise Status
EXE-06.08.04-VP-470	Life Trial	DSNA CDG	Exercise executed in October 2011 - results for December 2011

AMAN & Extended AMAN horizon			
Achievement	Validated procedures on extending the arrival tasks to the En-route controllers within Arrival Manager (AMAN) horizon of a related airport.		V3
Deliverables	OSED, SPR, Validation report		
Contributing Projects	4.5; 5.5; 5.5.1; 5.6.1; 5.6.4; 12.4.1		
Exercise	Validation Technique	Platform	Exercise Status
EXE-05.06.04-VP-187	RTS	ENAV IBP Rome	Exercise executed in October 2011 - results for January 2012
EXE-05.06.04-VP-187bis	RTS	LVNL Schipol	Exercise scheduled in December 2011 - results for January 2012
EXE-05.06.04-VP-188	RTS	NATS London TC	Exercise executed in October 2011 - results for February 2012
EXE-05.06.04-VP-189	RTS	NORACON Malmö	Exercise expected for November 2011 - results February 2012

Arrival Manager & Point Merge - see below exercise reported to 2012

i4D + Controlled Time of Arrival			
Achievement	Validated procedures, requirements, prototype and technical specifications for both En-route and TMA environments covering: Computed and predicted Controlled Time of Arrival features exchanged between aircraft and ground using initial 4Dimension capability in traffic synchronisation; - Impacts on cockpit integration and human factors.		V3
Deliverables	OSED, SPR, Technical Specifications, Validation report		
Contributing Projects	4.3; 5.6.1; 9.1 ; 10.2.1; 10.7.1; 10.9.4		
Exercise	Validation Technique	Platform	Exercise Completed
EXE-04.03-VP-323	Flight Trial	ECTRL MUAC IBP & AIRBUS Flight Test Aircraft	Originally to be completed by December 2011 -postponed to R2 - not formally reported
EXE-05.06.01-VP-203	Flight Trial	ECTRL MUAC NORACON Malmo IBPs &AIRBUS flight test Aircraft	Originally to be completed by December 2011 -postponed to R2 - not formally reported
EXE-05.06.01-VP-205	Flight Trial	NORACON Malmo IBP	Exercise scheduled in November 2011 - results for February 2012

Release 2

AMAN and Extended AMAN Horizon				
Achievement	Validated extended horizon arrival manager streaming techniques linked with AMAN-dependent point merge procedures in a multi-airport TMA P-RNAV procedures in a complex TMA Tactical Queue Management techniques			V3
Deliverables	Validation Report, OSED, SPR, Technical Specifications and INTEROP			
Contributing Projects	05.03; 10.09.01; 10.09.02; 10.10.03; 03.03.02; 03.03.03.			
Contributing AU(s)	ATA, SAS & Novair			
Exercise	Validation Technique	Validation Platform	Prototype	Exercise Completed
EXE-05.03-VP-034	RTS	AENA IBP Madrid	INDRA : Queue Management/ Multiple Airport A/DMAN/ iCWP TMA	27/04/2012
EXE-05.03-VP-580	RTS	NATS IBP Southampton	N/A	30/11/2012
EXE-05.06.04-VP-244	RTS	ENAV IBP Rome	N/A	24/10/2012

OFA04.01.03 - AMAN & Point Merge (From Release 1)				
Achievement	Validated procedures, requirements, and cases for using Point Merge in TMA-Extended concept (PMS-TE) for achieving Continuous Descent Approach from High level altitude in high level traffic load.			V3
Deliverables	OSED, Validation report			
Contributing Projects	5.6.7; 03.03.02; 03.03.03.			
Contributing AU(s)	NOVAIR, SAS, AF			
Exercise	Validation Technique	Validation Platform	Prototype	Exercise Completed
EXE-05.06.07-VP-427	Live Trial	DSNA Athis-Mons	Not Applicable	31/03/2012

i4D + CTA				
Achievement	Validated operational procedure for flying according to a CTA in the En-route and TMA airspace.			V3
Deliverables	Validation Reports, OSED, SPR Technical Specifications and INTEROP.			
Contributing Projects	04.03; 05.06.01; 09.01; 10.02.01; 10.04.02; 10.07.01; 10.09.04 ; 03.03.02; 03.03.03.			
Contributing AU(s)	Lufthansa; Novair; SAS (EXE-05.06.01-VP-279) IATA, ELFAA (EXE-04.03-VP-29 & 330)			

Exercise	Validation Technique	Validation Platform	Prototype	Exercise Completed
EXE-04.03-VP-029 "In a Sequence"	RTS	AIRBUS Aircraft Integration Simulator Toulouse ECTRL MUAC	INDRA-ATS Datalink ECTRL-ATS Datalink	28/02/2011
EXE-04.03-VP-330 "In a Sequence"	RTS	ECTRL MUAC	AIRBUS - Aircraft behaviour model (4D Predictor)	28/02/2012
EXE-05.06.01-VP-204 "In a Sequence"	RTS	AIRBUS Aircraft Integration Simulator Toulouse NORACON IBP Malmö	THALES : ATC Trajectory Management Design ATS Datalink CDA/CCD	28/02/2012
EXE-05.06.01-VP-279	Flight Trial	NORACON Stockholm	N/A	31/10/2012

Surface Planning and Routing				
Achievement	Validated procedures and technical specifications for planning, assigning and modifying a route to individual aircraft and vehicles using data link for a safe, expeditious, and efficient movement from their current position to their intended position on the airport movement area.			V3
Deliverables	Validation Report (federating project considering OSEDs from others primary projects).			
Contributing Projects	06.03.02; 06.07.01; 06.07.02; 06.07.03; 06.08.04; 06.09.02; ; 10.07.01; 12.03.01 ; 12.03.02; 12.03.03 ; 12.03.04 ; 12.03.05 ; 12.04.04; 12.05.02; 12.05.04; 15.04.05b; 03.03.02; 03.03.03.			
Contributing AU(s)	None			
Exercise	Validation Technique	Validation Platform	Prototype	Exercise Completed
EXE-06.03.02-VP-064	RTS	IBP-CDG DSNA	THALES-ATS Datalink THALES-Enhanced Surface Safety Nets THALES- Basic DMAN THALES-Airport Safety Nets	30/09/2012
EXE-06.03.02-VP-065	Live Trial	ENAV IBP Malpensa	SELEX : Surface safety nets server Surface taxi clearances Integrated DMAN and SMAN platform Surface alert HMI Tower CWP ADS-B ground station	29/06/2012

EXE-06.03.02-VP-401	RTS	AENA IBP Madrid	INDRA : Advanced Multi Sensor Data Fusion (MSDF) Surface -routing Sequencing tools DMAN-SMAN Tower iCWP	28/06/2012
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3.2.1.5 Operational Package 5

Integrated and Collaborative Network Management

Release 1

Complexity Assessment and Resolution			
Achievement	Validated procedures, requirements, prototypes and cases for a complexity prediction tool based on: controller capabilities to solve different complex situations in the airspace, but also possible controller resolutions in the traffic prediction through continuous simulations; breaking down the predicted complexity/workload in its constituent components, i.e. workload caused by coordination, workload caused by predicted conflicts etc.		V3
Deliverables	OSED, SPR, INTEROP, Technical Specifications, Validation report		
Contributing Projects	4.7.1; 10.8.1		
Exercise	Validation Technique	Platform	Exercise Status
EXE-04.07.01-VP-001	Shadow Mode	Eurocontr ol MUAC	Exercise scheduled for December 2011 - results for February 2012

Enhanced ATFCM Processes			
Achievement	Validated Operational procedures, requirements, cases and CFMU Human Machine Interface (HMI) and Network Operational Plan Portal (NOP) enhancement for Short Term Air Traffic flow & Capacity Management Measures (STAM). STAMs are pre-defined scenarios aimed at improving the traffic flow between ATC sectors in coordination with the CFMU for optimising the related sectors capacities.		V3
Deliverables	OSED, SPR, INTEROP, Technical Specifications, Validation report		
Contributing Projects	7.6.5; 13.1.1; 13.2.3		
Exercise	Validation Technique	Platform	Exercise Status
EXE-07.06.05-VP-314	Live Trial	Eurocontrol CFMU	Exercise scheduled for November 2011 - results for January 2012
		ATSU unit of Reims	
		ATSU unit of London	

		ATSU unit of Frankfurt or Karlsruhe	
		ATSU unit of Maastricht	

Release 2

Complexity Assessment and Resolution				
Achievement	Validated procedures and supporting tools used in a high density traffic area that continuously monitor the traffic complexity and that support decision making to solve complexity issues through adapting the capacity to the traffic load by grouping or de-grouping sectors.			V3
Deliverables	Validation Report, OSED, SPR.			
Contributing Projects	04.03; 04.07.01, 04.07.07; 10.08.01; 13.02.03; 03.03.02; 03.03.03.			
Contributing AU(s)	None			
Exercise	Validation Technique	Validation Platform	Prototype	Exercise Completed
EXE-04.07.07-VP-006	Shadow Mode	Automated System of ATC (SATCA), AENA Barcelona ACC	DCB/ASM Local Prototype	31/10/2012
EXE-04.03-VP-031	RTS	MUAC IBP	INDRA-Complexity Tool	31/03/2012

Airspace Management and AFUA				
Achievement	Validated operational procedures related to ATFCM Measures considering real time use of airspace and the activation/de activation of a restricted airspace. Validated technical specifications covering the interface of ASM support systems with ATFCM systems and with ATC working position (real time update of the airspace situation on the CWP)			V3
Deliverables	Validation report, OSED, SPR and INTEROP			
Contributing Projects	07.05.02; 13.02.01; 10.05.01; 03.03.02; 03.03.03.			
Contributing AU(s)	Flybe, LAG, EBAA & Novair			
Exercise	Validation Technique	Validation Platform	Prototype	Exercise Completed
EXE-07.05.02-VP-016	Live Trial	ECTRL NMVP	INDRA-Dynamic DCB en route LARA & STANLY_ACOS	10/09/2012

EXE-07.05.02-VP-017	Live Trial	ECTRL MUAC	INDRA & LARA	17/12/2012
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UDPP				
Achievement	Validated new procedures to enable Airspace Users to swap TTOT (Target Take Off Time) on a CDM airport in case of "significant" Demand/Capacity unbalance mismatch on the day of OPS. The swap of TTOTs is relies on close coordination between the different impacted AUs.			V3
Deliverables	Validation Report, OSED, SPR and INTEROP			
Contributing Projects	07.06.04; 12.06.08			
Contributing AU(s)	Air France & Regional; EBAA; British Airways; British Midlands			
Exercise	Validation Technique	Validation Platform	Prototype	Exercise Completed
EXE-07.06.04-VP-538	Live Trial	London Heathrow Airport CDM tools	Enhanced Airport CDM tools	01/12/2012

3.2.1.6 Operational Package 6

Cooperative Asset Management

Release 1

Integrated Controller Working Position Airport			
Achievement	Validated procedures for: -low cost and simple departure data entry panel to be deployed at airfields enabling them to be in electronic communication with CFMU concerning the departure status of aircraft under their control.		
Deliverables	Technical Specifications, Validation report		
Contributing Projects	12.4.1		
Exercise	Validation Technique	Platform	Exercise Status
EXE-12.04.01-VP-391	Shadow Mode	NATS Southampton IBP	Completed/Achieved in February 2011
EXE-12.04.01-VP-404	Shadow Mode	NATS Southampton IBP	Exercise scheduled for November 2011 - results for January 2012

Integrated Controller Working Position Route and TMA		
Achievement	Validated specifications and prototypes for a new Human Machine Interface for TMA Controller Working Position (CWP) with improved design, addressing Human Factors related issues.	
Deliverables	OSED, SPR, INTEROP, Technical Specifications, Validation report	

Contributing Projects	5.9; 10.10.3; 10.10.2		
Exercise	Validation Technique	Platform	Exercise Status
EXE-05.09-VP-356	RTS	ENAV IBP	Exercise scheduled in December 2011 - results February 2012
EXE-05.09-VP-148	RTS	DSNA IBP	Exercise scheduled in December 2011 - results February 2012

Remote Tower			
Achievement	Validated procedures, requirements and prototype for-provision of ATC Services on a single airport from a remote site		V3
Deliverables	OSED, SPR, INTEROP, Validation report.		
Contributing Projects	6.9.3 12.4.6; 12.4.7; 12.4.8		
Exercise	Validation Technique	Platform	Exercise Status
EXE-06.09.03-VP-056	Live Trial	NORACON Ängelholm Airport	Exercise scheduled in November 2011 - results February 2012

Release 2

iCWP Airport				
Achievement	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 associated operational procedures, accommodating the wide range of controller's skill levels and experience.			V3
Deliverables	OSED, SPR & Validation Report			
Contributing Projects	06.09.02; 12.05.02; 12.05.04; 03.03.02; 03.03.03.			
Contributing AU(s)	None			
Exercise	Validation Technique	Validation Platform	Prototype	Exercise Completed
EXE-06.09.02-VP-317	Shadow Mode	DSNA Roissy-CDG	THALES: Airport Safety Nets Tower iCWP	15/06/2012
EXE-06.09.02-VP-567	RTS	Aena HQ Pre-operation al IBP TWR segment (Madrid).	INDRA Tower iCWP	28/06/2012
EXE-06.09.02-VP-568	RTS	ENAV IBP Malpensa	SELEX Tower iCWP	29/06/2012

EXE-06.09.02-VP-569	RTS	DFS TWR IBP Langen	FREQUENTIS/ DFS TWR iCWP	30/06/2012
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Remote Tower				
Achievement	Validated procedures, requirements and technical specifications for provision of ATC Services on a single airport from a single remote site.			V3
Deliverables	OSED, TS & Validation Report			
Contributing Projects	06.09.03; 12.04.07; 12.04.06.			
Contributing AU(s)	AOPA, EBAA, Wioderoe, SAS, TAP			
Exercise	Validation Technique	Validation Platform	Prototype	Exercise Completed
EXE-06.09.03-VP-057	Shadow Mode	NORACON Malmö ATCC	NATMIG Remote Tower Prototype	31/05/2012
EXE-06.09.03-VP-058	Shadow Mode	NORACON Vaeröy	NATMIG Remote Tower Prototype	14/12/2012

The SJU objective is that all Release 2 exercises, including those carried over by Release 1, are performed by the end of 2012; the level of success will be firstly measured as percentage of the actually executed exercises as compared to the total planned (100% success factor) and secondly in terms of quality of results achieved as assessed by the System Engineering Review (80% of the deliverables are classified as “Green”).

Furthermore, the links between the exercises performed within the Releases and the Operational Improvements of the EU ATM Master Plan are identified in Annexe IV.

Three main risks associated to Release 2 have been identified

- an unstable schedule between projects contributing to an exercise, which could result in a delay in the exercise execution and in a lack of synchronization between projects deliveries,
- the postponement of some exercises to Release 3 that could undermine the achievement of 2012 objectives and delay the completeness of the Programme,
- the unfeasibility of the exercise due to insufficient or inadequate resources that could lead to the incapacity to produce deliverables to the appropriate level of quality within the appropriate timescale.

Several mitigation actions are already in place to align the projects’ implementation and regular monitoring of the timetables by the Project and Programme Managers will be performed to identify and tackle possible issues.

Furthermore particular attention will be paid to the resources allocation per validation exercise in order to ensure that Projects plans correctly address the needs of qualified staff.

3.3 Involvement of the civil AUs

The SJU is driving deployment-oriented R&D, strongly involving airspace users from beginning to end.

In order to ensure that the Programme output would meet the performance needs expressed by the EU ATM Master Plan, the SJU has ensured since 2009 the strong and effective participation of the Airspace User experts. During 2011, contracts that were signed for an initial duration of 2 years have been extended to ensure continuity and enhanced contribution. Furthermore management processes have been implemented to strengthen the involvement of airspace user experts in the Programme. Particular focus is now being put on the involvement of airspace users in the planning and execution of SESAR Release activities. At the end of October 2011, 87 AUs experts are actively associated to more than 120 Projects, providing AUs inputs, assessing deliverables and contributing to the Release process.

During 2012, the involvement of the AUs in the Programme will be further extended through a procurement process that Eurocontrol will execute on behalf of the SJU in accordance with the SJU-Eurocontrol Art. 9.2 Agreement of 2009. While on the substance the SJU will continue to manage the contribution of the AUs in the Programme, the contracts will be administered - let and paid - by Eurocontrol as surrogate of its cash contribution to the JU. The complexity of the contract arrangements under this new framework - experienced already in the WP11 procedure - will be assessed during 2012 and 2013 and in case brought to the attention of the Administrative Board for a different course of action.

It is expected that this work will result in the involvement of around 100 experts corresponding to an estimated efforts of more than 3000 days.

The successful involvement of the AUs in the Programme is measured as part of the success of Release 2 and the maturity level reached by the other Projects in view of the following Releases.

Budget 2012	Commitment	Payment
Chapter 3.1 - EUR Mio	1.5	4.4

3.4 Associate Partners of the SJU and their involvement

The new 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.

Following the Administrative Board approval of the Associate Partners' framework, in January 2011 the SJU launched an invitation to submit proposals for becoming "Associate partners of the SJU". The invitation was specifically addressed to entities belonging to 4 categories: SMEs, Research Organisations, Universities and Institutes of higher education.

The process was organised in two phases, the first being based upon a gap analysis that identified six broad areas of activities (the lots) and inviting prospective Associate Partners to enter into a Framework Partnership with the SJU. This resulted in the selection of 10 legal entities, assigned to 5 Lots (for each lot, 2 entities were appointed). The first framework partnership contract was signed in August 2011 with others following.

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.

There is no plan to re-launch Lot 3 at present.

In the second phase, started in November 2011, Specific Proposals will be requested by the SJU and Specific Agreements are expected to be awarded to successful Associate Partners. The definition of the activities for Lots 1, 2 and 5 will be based mostly on the needs expressed by the Members to ensure that the scope of work complements activities already underway in the Programme.

For Lots 4 and 6, where the scope completes aspects of the Programme, the SJU will describe the work to be performed in Specific Proposal requests and launch these activities during 2012, ensuring the necessary involvement of the Members at the relevant stages of the process. An overview of the work expected to be performed in these two lots is described below.

Lot 4 - Airborne & CNS Systems

With increased operational service levels across the SES, enhancing the airborne and CNS capability when operating into smaller, less well equipped airfields will be required. The cost-effective use of satellite based signals as well as improvements in airborne and ground-based capabilities necessary to further improve services requires further innovative infrastructure and application developments.

While the existing projects focus on solutions for mainline and regional aircraft capabilities the Associate Partners will be requested to give the SJU proposals for development and validation capabilities covering the airborne capability under the SESAR concept of operations for development and integration of avionics equipment and installations for General Aviation (GA), Very Light Jets (VLJ), Business Aviation (BA) and Rotorcraft Aircraft (RA) operating in SESAR airspace.

Lot 6 - UAV/UAS Integration in SESAR

The employment of Unmanned Aircraft Vehicles/Systems (UAV/UAS) has increased dramatically during the past years in the public and private sectors. However, the use of UAS remains restricted to operations in segregated airspace or under Visual Flight Rules (VFR). It is now necessary for SESAR to investigate the feasibility and means of achieving UAV insertion into "normal" traffic.

In the framework for the Associate Partners, during 2012 the SJU will launch a work order to develop a consolidated concept of operations for the full spectrum of potential UAS activities, and to identify and develop current and further unmanned aircraft requirements to operate in non segregated airspace.

The successful involvement of the Associate Partners of the SJU in the Programme is measured as part of the success of Release 2 and the maturity level reached by the other Projects in view of the following Releases.

Budget 2012	Commitment	Payment
Chapter 3.1 - EUR Mio	(EUR 10.0 Mio in 2011)	0.4

3.5 Demonstration activities and AIRE

Since 2008, the SJU has let contracts to perform demonstration activities particularly focused on environmental aspects under the umbrella of the collaboration between the EU and FAA, the AIRE Initiative.

AIRE is pulling together stakeholders from airlines, air navigation service providers, the manufacturing industry and airports to capitalise on present avionics technology and to work collaboratively in order to perform integrated flight trials and demonstrations aiming at validating solutions for the reduction of CO₂ emissions, and in particular to:

- show in practice the environmental benefits that the adoption of the solution will bring operationally to the stakeholders,
- highlight the solution advantages with respect to the current systems and operations,
- raise awareness regarding the activities related to environmental issues and in particular regarding the demonstration project and its results.

One of the main positive outcomes of AIRE is that the results are progressively being implemented in the day to day operations of the entities participating and that in some cases the relevant benefits obtained have pushed additional stakeholders to start following the same path.

In 2012, the AIRE initiative will merge into the Demonstration Activities initiative, approved by the Administrative Board at its meeting on 1 July 2011. The Demonstration Activities call is open to groupings of two or more legal entities from airspace users, ANSPs, ground and airborne industry and airports, which will be working together to demonstrate the effective benefits brought by SESAR to the stakeholders and to test and prepare for deployment of SESAR research validated results.

The SJU established in 2011 the domains of the integrated flight trials and demonstration activities, asking for submission of proposals, which will be assessed in 2012 with dedicated contracts being let to the most interesting projects in accordance with the call criteria and budget. During 2012 the SJU will initiate the projects and control and monitor their implementation.

The estimated budget to be dedicated to the demonstration activities is expected to be up to EUR 30 million (of which EUR 10 million related to the 2011 call) and cover the period 2012-2016.

Looking forwards, the advantage of having one single initiative integrating AIRE more fully to the SESAR Programme is to reinforce the broader stakeholder links to aspects of the execution of the European ATM Master Plan ensuring that the results of the AIRE trials are well translated into the SESAR Programme and that synergies are increased. Finally this initiative, through the translation of the results achieved in the Programme, will foster the achievement of the SESAR 2012 objectives and the translation of those objectives into tangible benefits for the ATM community.

The successful achievement of this activity in 2012 will be measured against the number of contracts that will be signed (target: 20) and the quality of the proposals received.

Budget 2012	Commitment	Payment
Chapter 3.3 - EUR Mio	10.0	6.0 0.6 (AIRE previous years)

3.6 IBAFO I and II Reallocation, IBAFO III

At the end of 2010 and more clearly during the first part of 2011, once the initiation phase was almost completed, it appeared necessary to have the Members assessing their resources in the Projects where they were involved. This exercise, which will result in an amendment to Schedule 14 of the MFA expected to be signed in the first quarter 2012 with effective date 1 January 2012, that will integrate the Initiation Phase results, the Change Requests and the reallocation of IBAFO I and II resources, will be followed in 2012 by a further assessment of the Programme in view of the future Releases.

During the PC meeting of 8 November 2011, the Members agreed with the SJU that there is a need to determine areas/Projects where, in particular,

- to increase the efficiency for spending the resources,
- to rationalise/simplify the Programme to better focus on the operational needs (e.g. withdrawing projects not bringing solutions compliant with the CONOPS)

in view of the possible release of budget resources for IBAFO III.

In this respect, during the period February - March 2012 a small "Tiger Team" exclusively composed of PC members (one representative from each of the industries, i.e. A6, from Ground Industry, from Airborne Industry, and from Eurocontrol) would be set up with the objective to provide principles and guidelines for rationalising the Programme. Best efficiency in the use of the resources and the delivery needs would be the main criteria to be considered. The implementation of the criteria identified by the Tiger Team should bring each Member to determine the potential amount of resources that could be released or re-allocated.

Where the Tiger Team work would result in the possible release of resources currently committed for the Programme, an IBAFO III process would be considered during the summer 2012 with finalization by year end and effective entry into force of the modifications on 1 January 2013.

It can be considered that a similar exercise will be conducted during 2015 in view of the completion of the Programme activities.

The success of this activity will be measured against the proposal for an IBAFO III.

4. SESAR Programme Specific Activities in 2012

4.1 EU ATM Master Plan update

The EU ATM Master Plan identifies the performance needs of the future ATM system and provides primarily the operational, technological, standardisation and regulatory sequence that will contribute to the achievement of the performance needs.

The initial version of the ATM Master Plan has been produced during the SESAR Programme Definition Phase (2006-2008) and endorsed by the EU Transport Council on 30 March 2009. The EU ATM Master Plan was handed over to the SESAR JU, who is now responsible for its maintenance and execution.

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 to ensure the maintenance of the EU ATM Master Plan and the monitoring of the progresses related to the development and the deployment of SESAR.

The EU ATM Master Plan first update, focusing on the Implementation Package 1, the Regulatory Roadmap and the Risk Management Plan, was issued and endorsed in March 2010 by the SJU Administrative Board (ADB).

A significant update began during the summer 2011 to take into account the developments since the end of the definition phase and it will result in a major Master Plan update which will be submitted for approval to the Administrative Board by the end of June 2012.

The updated EU ATM Master Plan will be more connected to the SESAR Programme and will refer to the timely deployment of enablers (technology, procedures, regulations, standards etc) to reach the performance targets. The document will take into account various developments like the updated Long Term Traffic Growth Forecast, as well as the results achieved and the indications emerged so far. The update will also rationalize and simplify the first edition and introduce comprehensive views of the European ATM Master Plan per category of stakeholders.

Considering the phase of maturity of the SESAR Programme (results of R&D available through Release 1 beginning 2012, risk of delays identified for the implementation of IP1), the scope will result in the following:

- An update of the performance needs required for the future ATM system, taking into account the SES Performance Scheme in each reference period and the

contributions expected from the different SES initiatives (SESAR, FABs⁷, Network Manager, etc);

- An update of the deployment plan, describing clearly how the performance could be achieved by Operational Improvements through the deployment of groups of Enablers, as well as an updated high-level analysis of associated benefits and costs per category of stakeholders;
- An update of the content of the information model (OIs, Enablers, etc) underlying the Master Plan Document, improving the usability, quality and the link with R&D activities and results (in particular through the Operational Focus Area notion);
- An update of the risk management plan.

Regular reports on the update process to the Programme Committee (PC) will ensure the appropriate level of control and buy-in. To widen the consensus to the ATM Community, the SESAR Performance Partnership (SPP) Group will also be consulted during the Master Plan update process.

It is expected that following the submission of the update for approval at the SJU ADB by the end of June 2012 the document:

1. Will be finally approved by the end of 2012, once the consultation processes are completed, in particular those to be carried out by the EU and Eurocontrol;
2. Will constitute the concrete contribution to the ICAO Air Navigation Conference during autumn 2012 to support the definition of the short term transition steps (up to 2020) towards the Global ATM Concept and to ensure adaptation of the ICAO work programme for timely global standardization.

The success of this activity will be measured against the delivery of the EU ATM Plan update by the SJU to its Administrative Board within the fixed deadline.

In addition to the update of the EU ATM Master Plan and based on the Communication of the European Commission on the SESAR Deployment, Governance and Incentive Mechanisms, the SJU will work closely and provide the necessary support to the Commission to ensure the preparation of the Deployment Phase. The detailed activities will be defined during the year, but it is expected that they will require the allocation of one FTE within the existing SJU Staff Establishment Plan.

Budget 2012	Commitment	Payment
Chapter 3.3 - EUR Mio	<i>see WP C</i>	<i>see WP C</i>

⁷ See section 4.8 below.

4.2 Coordination of Long Term & Innovative Research

In accordance with Council Regulation (EC) 219/2007, the SJU is responsible for coordinating and concentrating all relevant Research & Development efforts in the European Union. Consequently the SJU will continue to execute and build this role further in 2012 by including a specific contribution in the EU ATM Master Plan update as well as further supporting research planning activities.

a) ACARE

The SJU membership to ACARE was established in 2011, further reinforcing the research coordination role, and in 2012 further links with other organisations at General Assembly and other levels will be established.

The SJU will lead the activities on developing the ‘meeting societal and market needs’ (Mobility) contribution to the Strategic Research & Innovation Agenda (SRIA). This is conducted as part of a cross-industry contribution involving a wide range of stakeholders. The objective is to produce the agreed strategy document for summer 2012.

b) Work package E (WPE)

The SJU funded long term research and innovation activities coordinated under one Work package of the Programme (WPE) encompassing Research Networks, PhD activities and Research Projects.

The Research Networks, through involvement of a wide range of universities, research centres and industries, offer a structured way to build competence and capability that will not only continue to serve the needs of the ATM sector in the long term but will also be valuable for other sectors. In 2012, the existing two Research Networks (‘Managing Complexity Safely’ & ‘Towards Higher Levels of Automation in ATM’) will build their outreach and influence, add more research PhD’s and provide context to the SESAR Research Projects launched during 2011.

During 2012 the ALIAS Project will establish the first ‘Legal’ themed SESAR Research Network and a new call for additional Research projects will be made. The objective will be to call, evaluate and commit the remainder of the EUR 23 million funds during 2012 with the launch of these activities expected to start in 2013.

With the launch of the inaugural annual SESAR Innovation Days event in 2011, WPE will extend its capability in 2012 to further support full research coordination and coherence activities to take place, along with extending the potential for innovation input to the mainstream programme.

Work Package E is an integral part of the SESAR Programme and as such is covered by the established governance and communication arrangements so that 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 2012	Commitment	Payment
Chapter 3.1 - EUR Mio	5.0	8.3

c) Scientific Committee

The Scientific Committee provides advice, guidance, and conducts specific tasks in support of the SESAR JU in order to reinforce its innovative and scientific approach to building the future Air Traffic Management systems and procedures. In particular during 2012 the Scientific Committee shall be requested to provide advice (in accordance with the established terms of reference) on a number of subjects, including:

- the means of establishing some applied economics activities in the SESAR long term research portfolio;
- providing feedback on the established WPE Research Network;
- providing feedback on project activities from a content, results, management and relationship to other domains perspective;
- as providing the SJU, in its role in ACARE, with scientific advice relevant to this work.

Membership of the Committee is not permanent; consequently membership is refreshed over time by appointing members from a waiting list as other members step down. During 2012 there will be a new call for membership of the scientific Committee to both refresh the waiting list and appoint some new member(s) to the committee as part of the agreed rotation process.

During 2012 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.

Budget 2012	Commitment	Payment
Chapter 3.1 - EUR Mio	0.1	0.2

d) Framework Programme (FP) Project Coordination

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.

During 2011 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 2012 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 and can therefore complement the objectives of ATM, aviation and air transport as a whole.

4.3 Military

Initiated in 2011, the Military Engagement Plan for SESAR (MEPS) has today a contribution of 86 military experts from six countries (DE, UK, FR, ES, BE and NL) for an assessed initial need of 110 experts, channelled to the SJU through Eurocontrol. To achieve the expected participation of national military authorities in all relevant aspects of the Programme and not only the military ATM perspective it is necessary to gain a larger contribution both from the States and at EU Institutional level with the European Defence Agency (EDA) as focal point. Discussions will take place early 2012 with relevant authorities (in particular NATO) in order to establish the best pragmatic working arrangements.

The SJU has launched a call for tender to support the Programme in order to make an inventory of existing and future military state of the art technologies, in particular for airborne equipage, and their respective performance capabilities. The project, so-called "SESAR Military Avionics Study", is conducted by a consortium between ISDEFE (Ingeniería de Sistemas para la Defensa de España, S.A.) and AIRBUS Military and will highlight how to ensure interoperability between military and civil technologies, in order to reduce implementation cost for SESAR. The final deliverable (D4-Military Avionics Roadmap for SESAR) is expected by the end of March 2012.

The success of this activity will be measured against the successful involvement of the Military experts and their input in the Programme.

Budget 2012	Commitment	Payment
Chapter 3.1 - EUR Mio	0.2	0.4

4.4 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 the last year and there is a greater interest to participate as the Programme evolves and delivers results. The operational expertise brought in by the Staff Association experts and buy-in are crucial for validating new procedures and/or 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 participate in the 2012 R2 validation activities. The plans for participation have been finalised for 2011 and first three months of 2012 with a further planning as the finalisation of dates of exercises are confirmed.

During 2012, it is expected that this work will result in the involvement of 65 experts for an estimated number of 150 days contributing to the Release 2 validation exercises as well as other ongoing Projects.

The successful involvement of Professional Staff Associations' experts in the Programme is measured as part of the success of Release 2 and the maturity level reached by the other Projects in view of the following Releases.

Budget 2012	Commitment	Payment
Chapter 3.1 - EUR Mio	0.3	0.5

4.5 Aviation Authorities

In 2011, the Memoranda of Understanding (MOUs) with 7 Authorities:

- AESA, Spanish National Supervisory Authority
- Avia, Civil Aviation Authority from Ukraine
- CAA, UK Civil Aviation Authority
- DGAC, French Civil Aviation Authority
- IVW, National Supervisory Authority from The Netherlands
- The French Air Force, as Military Aviation Authority
- The German Federal Supervisory Authority for Air Navigation Services

were put into operation. Furthermore, expertise from the Polish authority was also added to the ongoing work.

The participation of the Aviation Authorities in the SESAR Programme has been particularly important during 2011, comprising the review of 10 deliverables, and the participation in 3 validation exercises as observers.

Due to the high added value of the involvement of the National Authorities in the Programme, the duration of the MoUs is extended for 2012.

During 2012, the activities will comprise the review of deliverables, appropriately selected among those scheduled in 2012, having a potential regulatory impact. The National Authorities will be required to review not less than 10 deliverables, which will be identified by Project 16.6.1. Additionally, the National Authorities will be called to contribute to the ongoing update of the EU ATM Master Plan.

Authorities will further participate in at least 10 validation exercises, of Release 2 for which their view is considered valuable.

Budget 2012	Commitment	Payment
Chapter 3.1 - EUR Mio	<i>(already committed in 2010)</i>	0.1

4.6 Security

The future European ATM System (EATMS) has to be trusted by the general public, as well as by the Member States, as secure, resilient and well protected against any unlawful activities that could potentially cause disruption to air transport.

As a critical resource, the ATM information exchange through SWIM (System Wide Information Management) is expected to become a fundamental European critical infrastructure and places SWIM level of protection beyond ATM remits only and therefore needs a multidisciplinary approach.

In essence, SWIM envisages an 'intranet of ATM' where the ATM information held by different stakeholders is shared over a common platform. Each stakeholder needs to have access to the information to carry out their role in the ATM system. SWIM will provide the necessary technical abilities and applications for all civil and military stakeholders involved, regardless of size or requirement, to have access to the shared data and information.

In 2012, the SJU plans to launch a call for tender to perform a study with the purpose of:

- Assessing security threat and vulnerability,
- Suggesting a target SWIM Security framework, including basic requirements for liability/accountability, structure/architecture and management system,
- Providing solutions for later prototyping, verification and validation of SWIM security.

This study will in particular highlight how to ensure interoperability with worldwide existing, or foreseen, ATM platforms and net-centric concepts (e.g. NextGen, NATO...) and between military and civil technologies.

Budget 2012	Commitment	Payment
Chapter 3.1 - EUR Mio	1.0	1.0

4.7 SESAR Performance Partnership (SPP)

During 2012 it is expected that approximately 2-3 meetings will take place. The primary focus of the SESAR Performance Partnership activities in 2012 will be related to the update of the EU ATM Master Plan and securing necessary stakeholder buy-in, to perform trade-offs and follow-up activities as necessary. In addition SPP members will be informed about progress of the implementation of the Programme and in particular on the implementation of the "Best Efficiency Best Serviced" (BEBS) document endorsed by the SPP in 2011. The selection process for the nomination of the new Chairman for the next cycle, according to the terms of reference defined in the SPP, will be launched in 2012.

4.8 Coordination with FABs

Many of the deliverables of the SESAR work programme relates directly to the future organisation and operations as required under the SES legislation for FAB's. The SJU has, through its ANSP Members, an established link to the FAB's needs from SESAR, reinforced by an ongoing coordination with the EC and their FAB coordinator.

During the last two years the SJU had contacts with especially the FABEC initiative and was ready to further coordination whenever needed.

During 2012, the SJU will maintain and further develop contacts with the different FAB initiatives to ensure that the same message is passed through FAB coordination meetings as well as directly and will continue to develop close coordination as SESAR progresses in developing and validating operational and technical solutions in collaboration with the stakeholders.

5. Coordination with other Programmes and Organisations

5.1 FAA/NextGen

The EU/USA Memorandum of Cooperation (MoC) in civil aviation research and development and its Annexe on SESAR-NextGen cooperation were signed in March 2011 and formally entered into force during 2011. They provide a political and legal framework allowing the SJU to initiate cooperative activities on SESAR/NextGen interoperability. The MoC includes 5 headline areas of cooperation:

- Transversal Activities,
- Information Management,
- Trajectory Management
- CNS & Airborne Interoperability,
- Collaborative Projects.

Working Groups involving SJU members have been established for each of the cooperation areas and their activity will focus on the definition of actions and outputs to ensure that appropriate coordination is achieved. A set of Coordination plans in each cooperation area has been established and agreed with the FAA along with the respective priorities.

During 2012, the cooperative activities will concentrate on achieving agreements on: where work conducted within the SESAR Programme and the NextGen needs to be "identical" in content, where work may need to be "dissimilar" but compatible in content, and where work needs to be synchronised in time in order to support/achieve interoperability.

It is also expected that cooperative activities would serve as a coordination platform in view of the ANC 2012 ICAO Conference (see section 5.4).

Additional areas of technical and operational coordination will also be established in the future. Strong and effective cooperation is expected to produce concrete results for input into the work programme.

Budget 2012	Commitment	Payment
Chapter 3.1 - EUR Mio	<i>See Programme Financials</i>	<i>See Programme Financials</i>

5.2 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 for the programme in Work Package 16 as well as Airborne FMS/Avionics and communications improvements in Work Packages 9 and 15.

During 2011 regular meetings between CleanSky Technology Evaluator representatives and the SJU (Workpackage 16) have been held to ensure

- alignment of modelling assumptions,
- common understanding target terminology, and
- methods of establishing environmental claims.

During 2012, the objective is to ensure that claims for environmental improvements are expressed consistently and that input data is relevant and consistent across the two Programmes.

The SJU will remain ready to discuss content and exchange relevant information during 2012 to ensure that both CleanSky and SJU assumptions of SESAR and about future air vehicle performance and operations remain aligned.

5.3 EUROCAE

The SJU has already established a major involvement in the European industry standardisation body (EUROCAE) through its involvement in the governing Council and its support to the technical working groups from many of the SJU Projects and Members.

During 2012, the SJU intends to extend its involvement to cover the technical coordination level to ensure that appropriate input is being made across the right groups and the groups are clear about SESAR needs, including the monitoring of the WP C (standardisation) links.

During 2012, EUROCAE and the SJU will establish a formal Memorandum agreement to formalise the links between the programme and the necessary standardisation activities. Maintaining the links between technology development, industry standards and other standardisation both from a European standpoint and in the context of ICAO will be the key content of the agreement that will be signed during 2012.

5.4 ICAO (ANC 2012)

The SJU takes on a key role of the European coordination for the Air Navigation Conference 2012 (ANC/12) together with the EU, Eurocontrol, EASA, ECAC and EUROCAE.

The ANC/12 is the conference of ICAO where the ICAO work Plan for the next ten years will be agreed based on the needs of the different ATM modernisation programmes and, specifically, those of NextGen and SESAR.

The coordination started during 2011 and will peak during 2012 in order for an agreed set of European Working Papers to be ready in time for ANC/12.

SJU has performed a complete mapping of the Programme Work Packages and Projects to the recent ICAO initiative of Aviation System Block Upgrades(ASBU) SJU Members' Experts are expected to represent SESAR in some of the ICAO works, in particular to further define the ASBU.

To steer this ASBU initiative, ICAO has entered into a high level coordination with a number of officials outside the traditional ICAO Member State and stakeholder consultation forums. This forum is called the ICAO Challenge Team and includes from the European side the EC, SJU, Eurocontrol, the Industry Standardisation organisations of EUROCAE and RTCA.

The aim of the ANC/12 will be, amongst others, to reach agreement on these ASBU's, within an updated Global Air Navigation Plan, which in turn would require a change to the current work programme of ICAO Panels. This will also mean a new and modernised way to capitalise on the work of different standardisation organisations available globally.

The SJU has identified key areas where standards and ICAO provisions are needed to support the SESAR Development Phase. These areas have been coordinated with the FAA under the EU-US MoC Coordination Plans and will be further worked on with the aim of having SESAR and NextGen coordinated working papers on ICAO provisions and standards for presentation and agreement at the ANC/12(see section 4.1);

5.5 EASA

In January 2011, a tripartite Letter of Agreement between the SJU, EASA and Eurocontrol was signed. This arrangement allows EASA to participate in the SESAR Programme, either at the early stages or at the review of deliverables, with its own resources or supported by Eurocontrol.

Since then, EASA has received seven deliverables and completed the review of three of them.

In 2012, EASA will deepen its involvement in the SESAR Programme and will review a selected set of safety deliverables, between 6 and 10.

5.6 ESA

In the context of WP 15 (SatCom datalink) and the previous OPTMI and SAT-OPTIMI initiatives, there are both technical and financial (SatCom operating costs) reasons to maintain an ongoing 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 actively participates in SJU Projects relevant to them, and SJU staff and Project participants meet to exchange relevant information. The SJU also participate directly to the Joint Iris Advisory Committee. These activities will continue in 2012.

The SJU and ESA have during 2011 established an activity on an initial business case analysis of SatCom development, deployment and operation to help inform investment decisions being discussed in both an ESA and SESAR context. This work will continue in 2012 in support of the need to fully assess all technical options for the future SatCom solution.

In particular, during 2012 the SJU will continue to support activities described in an exchange of letters between the EC and ESA, in which the role of the SJU in matters such as the EU/US Memorandum of Cooperation (NAT-I-9406) on promotion and development of cooperation in civil aviation research and development (Annex 1 - SESAR-NEXTGEN Cooperation for Global Interoperability) is referenced. Furthermore the SJU will develop an agreement with ESA to secure its technical expertise in support of technical due-diligence reviews on SatCom options.

5.7 External relations

The SJU pursues international relations in the context of the EU external relations framework, brought forward by the EC in the specific fields. Apart from that, follow-up on SESAR workshops such as Singapore, Turkey and the Ukraine as well as further developments and maintenance of relations with Southern Mediterranean States is also foreseen. For example, Singapore has expressed a wish to cooperate and the SJU will continue to liaise with the Singaporeans to explore this cooperation, in the context of a visit by VP Siim Kallas in early 2012. Work will continue with China, South East Asia, India and the Middle Eastern Countries.

6. Communication plan

The success of the SJU and the achievement of the SESAR Programme results depend from a proper communication of the correct messages to the staff involved in the Programme, to the SJU stakeholders and to the Air Transport community at large and the general public as well. Furthermore, the SJU will pay particular attention to raise political awareness on SESAR in strict collaboration with the European Commission, in particular, and its Members.

In this respect the “*Communication Plan SESAR JU*” has been established and approved by the ADB in 2009. Based on the lessons learnt from 2010 and 2011, the Communication activities for the 2012 will strengthen the first results of awareness and proactive information attitude achieved so far. In 2012, different actions detailed in the Communication Plan will be performed:

- Joint communication activities with the SESAR Members & Associate Partners;
- Intense internal communication to the 2.000 SESAR dedicated staff;
- Strong presence at ATC Global Amsterdam for the third time with several conferences and workshops to inform the audiences on the SESAR WP progresses;
- Regular on-line communication + internal & external newsletters;
- Enriching databases to reach new air transport stakeholders;
- Selective participation at major conferences on ATM & Air Transport;
- Updated communication tools such as website, brochures, videos, etc
- Communication actions towards passengers at airports;
- Elaboration of a dedicated Airports communication plan together with ACI-Europe
- Communication activities on the AIRE programme and future demonstration calls and also validation activities around the Release plans.

Furthermore in the occasion of the ICAO ANC12, the presence of SJU is foreseen, most likely with a joint stand with EASA and Eurocontrol.

Budget 2012	Commitment	Payment
Chapter 2.3 - EUR Mio	0.3	0.3

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.

Between the critical activities, the Directorate will organize and support the work of the Tiger Team (see above) and in particular the outcomes in terms of resources, operational aspects and legal aspects including a possible IBAFO III. It will support the execution of the contracts with “Associate Partners of the SJU” and of “Demonstration Activities” 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 2011 the SJU has pre financed almost all the Programme projects with an overall disbursement of about EUR 114 million since 2009, and few pre-financing are expected to be granted in 2012 for an expected amount of EUR 5 million.

Eligible costs referring to projects having completed the initiation phase are co-financed according to the provisions of the MFA.

SJU Members will provide the Interim Financial statements in April 2012, including eligible costs incurred by the Members during 2011; 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 plans to disburse in 2012 at least EUR 50 million to the Members as co-financing, which brings the total co-financing since 2010 up to EUR 97 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 experience of the last two years suggests that particular attention should be given by the Members on the timely and complete submission of the necessary documentation, whereas the SJU will make available the necessary resources to absorb the work peak.

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 them by developing and applying internal control processes and procedures including a periodical follow up of the risk exposure both at operational and administrative and financial levels.

Building on the results achieved and on the findings of the 2011 Risk Report, the SJU will further progress in 2012 with the Risk management system. This is 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, 7 audits have been performed in 2011 concerning 5 members.

At the beginning of 2012, the Project Audit Annual Plan will be established and submitted for approval to the Executive Director. Following the agreed methodology, additional members will be selected and audited in 2012.

The Plan will contain the project audits to be performed

- At least 5 Members and 2 Service Contracts determined either through a statistical approach or on a risk based approach;
- Additional audits as required by the SJU management taking into consideration different relevant elements.

8. Internal Audit and audit co-ordination

8.1 Changes to the SJU internal audit arrangements in 2011

Following Administrative Board Decisions taken in 2010⁸ 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.

8.2 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.

8.3 Co-ordination and oversight of public audit functions

The SJU Permanent Audit Panel established by the Administrative Board in 2008⁹ 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.

8.4 Resources

The SJU will recruit one full-time internal auditor in 2012 to fulfil the IAC function undertaken by an auditor seconded from Eurocontrol for the period 2009-2011. In addition to audit tools and guidance on methodology provided by the IAS through its Auditnet for Agencies, the IAS also provides approximately 0,5 FTE auditor whose cost is borne by the General Budget of the European Union and not the SJU. Therefore resource requirements in 2012 are expected to be maintained at the level of previous years.

⁸ ADB(D) 11-2010, dated 19.10.2010. ADB(D) 17-2010, dated 31.12.2010.

⁹ ADB(D) 01-2008, dated 21.02.2008.

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
I CWP	Integrated 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 - 2012 planned delivery
- 11. Annex II - Programme Financials
- 12. Annex III - 2011 Risk Management
- 13. Annex IV - Link Release / EU ATM MP