



# **Annual Activity Report 2011**

27 March 2012

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# 1 Introduction

As a result of the General Agreement with the European Commission signed on 7 December 2009, the SESAR Joint Undertaking (SJU) is requested to draft an Annual Activity Report (AAR) in the format Annexed to the said Agreement.

The report is built on four sections:

1. Performance (Achievement of Objectives comparing achievement versus the Annual Work Plan 2011 (Chapters 2, 3, 5 and 6);
2. Management and internal control systems (Chapters 4 and 7);
3. Reservations and their impact on the declaration of Assurance (Chapter 8);
4. The declaration of Assurance (Chapter 9).

## 1.1 The SJU

The SJU was established on 27 February 2007 by Council Regulation (EC) 219/2007, as last modified by Council Regulation (EC) 1361/2008 (SJU Regulation).

The mission of the SJU, created under Article 187 of the Treaty on the Functioning of the European Union and co-founded by the European Union and Eurocontrol, the founding members, is to ensure the modernisation of the European air traffic management system by coordinating and concentrating all relevant research and development efforts undertaken by its Members and the related financing.

In particular, the SJU is responsible for the implementation of the European ATM Master Plan and for carrying out specific activities aiming at developing the new generation of air traffic management system capable of ensuring the safety and fluidity of air transport worldwide over the next thirty years.

A substantial part of the benefit of the SESAR Programme lays in the involvement of most of the European ATM stakeholders, complemented by contributions from non-EU key players, for the development of the operational and technical solutions which best meet the objectives set out in the European ATM Master Plan.

The SJU became operational, in the sense of Article 6 of the SJU Regulation, as a result of the European Council decision of 8 June 2007, in anticipation on the EU Council decision on the endorsement of the ATM Master Plan of March 2009. Furthermore, on 7 November 2008, Eurocontrol transferred to the SJU the right to use the SESAR Master Plan, together with the exclusive right to ensure its revision throughout the lifetime of the SJU.

Following the launch of the “call for expression of interest to become member of the SJU” by the European Commission on 27 June 2007 and the ensuing negotiations conducted by the Executive Director, the membership process was finalised with the selection of fifteen organisation representing industry and at large extent stakeholders of the European ATM. The signing of the Membership Agreement, the Agreement with Eurocontrol and the Multilateral Framework Agreement in summer 2009 formalised the rules concerning the participation of a Member to the SJU as well as the contribution and the rules governing the execution of and the commitment to the SESAR Programme.

In January 2010 the Administrative Board with its decision ADB 02-2010 approved the launching of the process for the creation of a new category of stakeholders in the SESAR Programme: the “Associate

Partners of an SJU Member” with the purpose of securing the additional input and added value of critical partners in the ATM research and development activities.

The arrangement between the Member and its Associate Partner(s) are formalised in a “subcontract for research assistance” which includes specific conditions on the maximum amount of work which could be assigned, Intellectual Property Rights and financial aspects. The Associate Partners are not represented in the Administrative Board and have not voting rights.

Two invitations to its Members to propose entities to become “Associate Partners” were launched by the SJU in the Spring and Autumn of 2010. The Administrative Board at its meetings of 12 July 2010 and 14 December 2010 accepted the proposals for 16 and then an additional 5 Associate Partners of an SJU Member respectively.

In the aforementioned Decision ABD 02-2010, the Administrative Board established also the new category of stakeholders “Associate Partner of the SJU”. In January 2011 the SJU launched an invitation to submit proposals for becoming “Associate partner of the SJU”, specifically addressed to entities belonging to 4 categories: SMEs, Research Organisations, Universities and Institutes of higher education. This resulted in 10 legal groupings consisting of over 40 different entities being awarded across 5 Lots of activities.

## 1.2 The SESAR Programme

As part of the Membership process, work has been allocated to the selected Members on the basis of a Description of Work (DOW 4.0) and on the offers made through the IBAFO<sup>1</sup> 1 and IBAFO 2 which were finalised on 26 March 2009 and 14 December 2009 respectively. Furthermore, in order to ensure the alignment of the Members’ contributions to the development of the Programme results, during 2011 a resources’ “reallocation” exercise was performed in compliance with the SJU Financial Rules and MFA and within the ceilings established in the MA. On 15 December 2011, the Administrative Board adopted the new reallocated resources as of 1 January 2012.

The SESAR Programme consists of 310<sup>2</sup> projects organised in Work Packages as follows:

- WPB (Target Concept and Architecture Maintenance),
- WPC (Master Plan Maintenance),
- WP3 (Validation Infrastructure Adaptation Integration),
- WP4 (En-Route Operations),
- WP5 (TMA Operations),
- WP6 (Airport Operations),
- WP7 (Network Operations),
- WP8 (Information Management),
- WP9 (Aircraft),
- WP10 (En-Route & Approach ATC Systems),
- WP11 (Flight Operations and Centre System)
- WP12 (Airport Systems),
- WP13 (Network Information Management System)
- WP14 (SWIM Technical Architecture),
- WP15 (Non Avionic CNS System),
- WP16 (R&D Transversal Areas)

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<sup>1</sup> IBAFO = Invitation to submit a binding and final offer

<sup>2</sup> WPE not included

- WPE (Long term and Innovative Research Programme)

All the SJU resources up to 2016 are committed to the achievement of the SESAR Programme for an amount of almost EUR 2.1 billion. SESAR Programme financials, including details per Work Package/Member and sources of funding are available in Annexes 1.a and 1.b. Section 3.4 presents the details of scope, objectives and 2011 report for each WP.

### 1.2.1 Summary of the Projects status

The SJU is currently managing 310 R&D and Management projects, excluding WP E Long Term Research Projects. In addition to the 246 projects in execution end of 2010, 36 additional projects were launched in 2011, resulting in 91% of the Projects in execution phase, excluding those Projects cancelled or suspended. Figure 1 below provides a summary of the situation by project status at the end of 2011.

	As of 31.12.10	realized in 2011	As of 31.12.11	
<b>Total number of Projects in the SESAR Programme</b>	<b>304</b>	<b>6</b>	<b>310</b>	
<i>of which</i>				
• <b>Projects initiated</b>	<b>285</b>	<b>16</b>	<b>301</b>	
<i>cancelled projects</i>	2	1	3	0.9%
<i>suspended projects</i>	11	-1	10	3.2%
<i>projects still under initiation</i>	26	-20	6	2%
<b>projects in execution phase</b>	<b>246</b>	<b>36</b>	<b>282</b>	<b>91%</b>
• Projects to be initiated	19	-10	9	2.9%

## 2 The 2011 contribution to the Mid-Term Objectives

2011 constitutes a key year in the progress to achieve the Mid-Term Objectives and Vision 2012. In particular:

### Objective n. 1 - Initial 4D trajectory is validated in an operational environment supported by satellite based technology

The “Initial 4D trajectory based operations”, is planned to be validated during a first validation exercise taking place as part of Release 1 in February 2012 in the traffic environment of MUAC, NUAC and Stockholm Approach. A number of preparatory activities were performed in 2011 including the development and integration of the two FMS prototypes as well as a number of simulation activities connecting ground and airborne simulation platforms. The second iteration, part of Release 2, is planned for late 2012 and the third for 2013. The aim will be to validate operational procedure for flying according to a CTA in the En-route and TMA airspace.

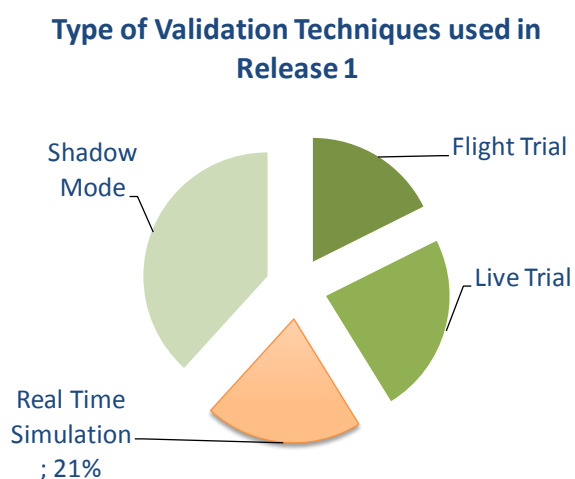
It is expected that as planned the objective will be mostly met in 2012, although the use of satellite based technologies is being introduced after the 2013 timeframe.

**Objective n. 2 – 10,000 flights, including 500 military, are SESAR labelled**

In 2011, 9366 commercial flights, demonstrated early SESAR benefits (including AIRE and OPTIMI flight demonstrations). It must be noted however that for the time being the number of Military flights remains limited. In addition to the ongoing Programme activities, the SJU Administrative Board decided the launch of a “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 too.

**Objective n. 3 – 80% of SESAR projects have tested their outputs in a real life environment**

In order to achieve the objective of 80% of validation exercises in real life environment, a Validation Strategy has been established. 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 to real systems or environment.

**Objective n. 4 – First SWIM pilots are in place to exchange data across at least 5 domains**

As already reported to the Administrative Board (hereinafter also 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. Some progress was achieved and illustrated at the SWIM Demonstration Event, which took place in November 2011 with good participation from the overall programme. Still a number of yet unresolved issues and priorities have so far delayed the achievement of this mid-term objective. Despite the progress achieved by year-end 2011 and the implementation of the action plan with the contribution of the ongoing validation exercise, it is unlikely that the objective will be met in the set timeframe.

**Objective n. 5 – The first remote tower is ready for operation**

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. The Release 1 Exercise has confirmed:

- feasibility of providing Air Traffic Service to Ängelholm airport from the Malmö ATCC R&D Remote Tower Centre;
- feasibility of conducting remotely nominal and non nominal operations;



- technical feasibility of capturing the “out of window” traffic situation and operational environment from a single airport and to display this picture in the remote site.  
Regulatory Authorities participated in these trials.

#### **Objective n. 6 – SESAR benefits are demonstrated in city pairs connecting 8 European airports**

Following the success of the first AIRE cycle in 2009, the SESAR Joint Undertaking further extended this green branch of the SESAR Programme. Through the connection of main European airports (Paris, Vienna, Madrid, Cologne, Dusseldorf, Prague, Brussels, Toulouse,...) and the involvement of some 40 partners in Europe and beyond, AIRE has demonstrated significant benefits in terms of emission reduction. The quality of these results is high not only in terms of reduction of fuel burn and therefore CO2 emissions, but because the high conversion rate from projects into daily ATM practice. The results of AIRE and the results expected in the “demonstration activities” call launched and to be performed during 2012 will allow meeting the objective.

#### **Objective n. 7 – Airspace users have signed up to the SESAR business case for time based operations**

This objective has many dimensions and the business case development process is not mature yet to encompass all the different stakeholders’ perspectives. Nevertheless, substantial effort has been invested in developing business case methodologies for ANSPs, airspace users and airports. Step 1 of the 4D Time Based Operations deliverables has been validated in 2011 and will continue to be validated in 2012 and progress will be made on standardisation activities as well. To a certain extent and in some areas the business case will be endorsed to 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.

The following sections provide details on the specific activities realized to contribute to the achievement of the Mid-Term Objectives.

## **3 Programme Execution 2011**

### **3.1 Programme Overview: from concept to Release 1 achievements**

During 2010 a comprehensive review of the SESAR Programme implementation approach was conducted and included the V&V roadmap together with the lessons learnt from the System Engineering (hereinafter also SE) process. The conclusions of the review highlighted the need to breakdown the Programme high level objectives into a more technical and operational level defining in detail what has to be done, by whom and when, and thus to clearly identify the SESAR validated deliverables which will contribute to the SESAR Development Phase objectives as well as to the specific 2012 Mid-Term Objectives.

The Programme review identified critical project dependencies as well as the first common deliveries to be completed in 2011 and 2012, the Release approach. A SESAR Release embeds groups of projects delivering, in a determined timeframe, R&D results that can support decision(s) to move related activities to the industrialisation stage (end of V3).

The progress towards the delivery of the SESAR Release is controlled at Programme level through SE Reviews.

The Release delivery process has been structured around a set of 6 Operational Packages and associated Sub-Packages clustering projects and activities based on their outputs and ensuring an operational and performance focus. Two technical packages have been defined to structure technology that has a wide operational coverage; CNS and SWIM (see table below).

In 2011, for the first time, the Release approach was applied on a first set of Validation exercises. These exercises have been prepared and executed along the year leading to the first Programme deliveries (see section 3 and Annex 2) produced in the frame of Release 1. SE Review sessions have ensured that the scope and objectives of Release 1 exercises were consistent with SESAR concept elements and that prototypes have been developed taking into consideration the operational requirements (see section 4.6).

In parallel to the Release execution activities, Primary projects which were not considered for Release 1:

- followed their project plan aligned with the E-OCVM methodology and are controlled through the Project Gates,
- contributed to the definition of further releases.

The **Operational Focus Areas** (OFA) structure set up to support the Release approach enabled to steer dependent operational and technical projects towards common operational themes and validation goals. Each OFA comprises specific interrelated Operational Improvements designed to meet specific expectations of the ATM performance. In this respect, the validation exercises have to address the Operational Improvements and to achieve the performance targets as defined per OFA.

The table below summarizes the OFAs where work is performed with exercises belonging to Releases 1 and 2 and related dates.

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	
		System Interoperability with air and ground data sharing	2012
	Airborne Spacing and	ASPA S&M	2012

Operational Package	Operational Sub-package	Operational Focus Area	Release
	Separation	ATSA-ITP	
		ASEP	
	Conflict Management and Support Tools	Conflict Detection, Resolution and Monitoring	
		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	

The following 3.2 section presents the specific results achieved for Release 1, while section 3.4 presents the contribution and achievements by Work Packages.

## 3.2 Programme Achievements: Release 1

### 3.2.1 Operational Package 1

#### Increased Runway and Airport Throughput

No exercise in Release 1 was identified for PAC01

### 3.2.2 Operational Package 2

#### Efficient and Green Terminal Airspace Operations

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 <sup>3</sup> , SPR <sup>4</sup> INTEROP, Technical Specifications, Validation Report		
Contributing Project	5.7.4		
Exercise	Validation Technique	Platform	Exercise status
EXE-05.07.04-VP-142	RTS <sup>5</sup>	Aena IBP Madrid ACC	Exercise completed
Results	<ul style="list-style-type: none"> <li>- Demonstration of the feasibility of Precision Area Navigation with Continuous Descent Arrivals and Continuous Climb Departures in high density traffic scenarios</li> <li>- Significant increase of the maximum capacity of P-RNAV Arrivals, Transitions, SIDs &amp; STARs by integration of P-RNAV &amp; conventional routes in high traffic density TMAs</li> <li>- Reduced pilot and controller workload</li> </ul> Operational Improvements: <ul style="list-style-type: none"> <li>➤ Aircraft Noise Management and Mitigation at and around Airports;</li> <li>➤ Terminal Airspace Organisation adapted through use of best practice, PRNAV and FUA where suitable;</li> <li>➤ Enhanced Terminal Airspace with Curved/Segmented Approaches, Steep Approaches and RNAV Approaches where suitable;</li> <li>➤ Visual Contact Approaches when appropriate visual conditions prevail;</li> <li>➤ Basic Arrival Management supporting TMA Improvements (incl. CDA, P-RNAV)</li> </ul>		

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 <sup>6</sup> , Validation Report		
Contributing Projects	5.7.4		
Exercise	Validation Technique	Platform	Exercise status

<sup>3</sup> 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.

<sup>4</sup> 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.

<sup>5</sup> RTS: Real Time simulation, using an operational platform.

<sup>6</sup> 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-228	RTS	ENAV IBP Milan TMA	Originally to be completed by December 2011 – postponed to R2, due to shortage in operational resources.
EXE-05.07.04-VP-229	RTS	NATS TC London TMA	Exercise completed
Results	<ul style="list-style-type: none"> <li>- Point Merge work more effectively, and provide a potential capacity increase, when used in combination with an effective AMAN</li> <li>- Runway throughput is not adversely affected or even improved</li> <li>- Stack holding generally reduces, allowing to have fewer holding levels than in the current airspace</li> <li>- Fuel burn is reduced for departure traffic and for some arrival traffic</li> <li>- Operational Improvements: <ul style="list-style-type: none"> <li>➤ Visual Contact Approaches when appropriate visual conditions prevail;</li> <li>➤ Enhanced Terminal Airspace with Curved/Segmented Approaches, Steep Approaches and RNAV Approaches where suitable;</li> <li>➤ Terminal Airspace Organisation adapted through use of best practice, PRNAV and FUA where suitable;</li> <li>➤ Aircraft Noise Management and Mitigation at and around Airports;</li> <li>➤ Basic Arrival Management supporting TMA improvements (incl. CDA, PRNAV)</li> </ul> </li> </ul>		

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 completed
Results	<ul style="list-style-type: none"> <li>- Controller work load remains within acceptable limits</li> <li>- Airport landing rate is improved or at least maintained with Approach Procedures with Vertical (APV) guidance</li> <li>- Airline diversions to alternative airports are reduced or at least not increased</li> <li>- Environmental benefits result from reduced fuel burn or noise footprint over current operations</li> </ul>		

### 3.2.3 Operational Package 3

#### Moving from airspace to trajectory Management

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	OSD, 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 completed
EXE-05.05.01-VP-212	RTS En-route	ENAV Rome	Exercise completed
EXE-04.05-VP-043	RTS	DSNA Coflight Toulouse	Exercise completed
Results	<ul style="list-style-type: none"> <li>- Analysis of the timing required to complete a Ground - Ground coordination prior to CTA uplink;</li> <li>- assessment of workload on relevant actors</li> <li>- Assessment of non nominal cases such as failing of dispatching upstream and possible remedy or cancellation of the process</li> <li>- Operational Improvements: <ul style="list-style-type: none"> <li>➤ Revision of reference business/mission trajectory (RBT)using Datalink: initial and time based implementation;</li> <li>➤ Use of Aircraft derived data (ADD) to enhance ATM ground system performance;</li> <li>➤ Use of onboard 4D trajectory data to enhance ATM ground system performance: initial time based implementation</li> <li>➤ Provision of clearances using Datalink: Initial and time based implementation;</li> <li>➤ Controlled Time of Arrival (CTA) through use of Datalink;</li> <li>➤ Automated Controller Support for trajectory management;</li> <li>➤ Medium Term Conflict Detection with Conflict Resolution Advisories and Conformance Monitoring;</li> <li>➤ Interoperability between AOC and ATM Systems.</li> </ul> </li> </ul>		

Sector team operations			
Achievement	Validated procedures to improve sector team organisation and coordination (roles & responsibilities) and initial requirements on tools support and information sharing.		V 3
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 completed – results for February 2012
EXE-04.03-VP-237	Live Trials	Brest ATCC	Exercise ongoing– 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
Expected Results	<ul style="list-style-type: none"> <li>- Overall good appreciation by Controllers of the usability of the pre-operational system ergonomics and functionalities</li> <li>- The ATCO achieves the control tasks with effectiveness while using the ERATO tools with the defined working method</li> <li>- No impossibility found to successfully integrate the concept into related foreign stripless environments for ENAV and SKyGuide</li> <li>- Operational Improvements: <ul style="list-style-type: none"> <li>➤ Sector Team Operations Adapted to new roles for Tactical and Planning Controllers;</li> <li>➤ Automated Flight Conformance Monitoring;</li> <li>➤ Automated Assistance to ATC Planning for Preventing Conflicts in En Route Airspace;</li> <li>➤ Automated Assistance to Controller for Seamless Coordination Transfer and Dialogue;</li> </ul> </li> </ul>		

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.		V 3
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 completed
Results	<ul style="list-style-type: none"> <li>- Reduction of nuisance alert rate, while genuine alert rate and warning times are maintained or even slightly increased</li> </ul>		

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	Exercise completed
Results	<ul style="list-style-type: none"> <li>- Definition of new altitude capture laws that consist in reducing the vertical rate automatically at the approach of the selected flight level</li> <li>- These new laws lead to a reduction of nuisance RAs by a factor of 30</li> </ul>		
EXE-04.08.02-VP-480	Encounter Model Based Simulation Platform	DSNA Toulouse	Exercise completed
Results	<ul style="list-style-type: none"> <li>- Linking the Airborne Collision Avoiding System to autopilot and considering a delay of response equal to or below 4 seconds, the automatic response can bring significant operational and safety benefits.</li> <li>- Pilot acceptance and ATC compatibility criteria have been positively assessed</li> <li>- Operational Improvement: <ul style="list-style-type: none"> <li>➤ Enhanced TCAS compliant with change 7.1</li> </ul> </li> </ul>		

### 3.2.4 Operational Package 4

#### End to End Traffic Synchronisation

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.		V3
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 completed



Results	<p>Assess basic DMAN operating method on a highly complex platform</p> <p>Performance assessment based on measurements (esp. TSAT accuracy and stability, adherence to CFMU slots )</p> <p>Assess usability and reliability of the DMAN</p> <p>Assess comparability to ZRH and FRA</p> <p>Operational Improvement:</p> <p>Departure Management Synchronised with Pre-departure Sequencing</p>
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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 completed
Results	<ul style="list-style-type: none"><li>- Impact on en-route controller task load</li><li>- Feasibility of sequencing traffic in the en-route phase</li><li>- Impact on sequence stability and requirements for departure management from airports within the AMAN horizon</li></ul>			
EXE-05.06.04-VP-187bis		RTS	LVNL Schipol	Exercise completed
Results	<ul style="list-style-type: none"><li>- Improvements in the accuracy of interception of the Initial Approach Fix</li><li>- Feasibility of the Planner and Executive controller workload in adjacent en-route and Amsterdam ACC</li></ul>			
EXE-05.06.04-VP-188		RTS	NATS London TC	Exercise ongoing – results for February 2012
EXE-05.06.04-VP-189		RTS	NORACON Malmö	Exercise completed
Results	<ul style="list-style-type: none"><li>- Impact on en-route controller task load</li><li>- Feasibility of sequencing traffic in the en-route phase</li><li>- Impact on sequence stability and requirements for departure management from airports within the AMAN horizon</li></ul>			

Arrival Manager & Point Merge				
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, SPR, INTEROP, Validation report			
Contributing Projects	5.6.7			
Exercise	Validation Technique	Validation Platform		Exercise Status

EXE-05.06.07-VP-427	Live Trial	DSNA Athis-Mons	Reported to Release 2 shortage of operational resources
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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	OSD, 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 Status
EXE-04.03-VP-323	Flight Trial	ECTRL MUAC IBP & AIRBUS Flight Test Aircraft	Exercise ongoing –results expected Feb 2012
EXE-05.06.01-VP-203	Flight Trial	ECTRL MUAC NORACON Malmo IBPs & AIRBUS flight test Aircraft	Exercise ongoing –results expected Feb 2012
EXE-05.06.01-VP-205	Flight Trial	NORACON Malmo IBP	Exercise completed
Results	<ul style="list-style-type: none"> <li>- Increase pilot/controller understanding of the CTA concept</li> <li>- Evaluate and understand controller/pilot needs to execute CTA operations</li> <li>- Evaluate airborne (FMS RTA function) and ground tools (AMAN) performance</li> <li>- Compare CTA and non-CTA operation flight fuel consumption</li> <li>- Cockpit observers present on 4 flights</li> <li>- Operational Improvement: <ul style="list-style-type: none"> <li>➤ Precision Trajectory Clearance (PTC)-2D Based on Pre Defined 2D Routes;</li> <li>➤ Use of Aircraft Derived Data (ADD) to enhance ATM ground system performance;</li> <li>➤ Use of onboard 4D trajectory data to enhance ATM ground system performance: initial time based implementation</li> </ul> </li> </ul>		

### 3.2.5 Operational Package 5

#### Integrated and Collaborative Network Management

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	Eurocontrol MUAC	Exercise completed
Results	<ul style="list-style-type: none"> <li>- Ability to detect traffic congestions (airspace complexity) with a large anticipation</li> <li>- Reduction to the ATC controller workload in proposing solution to complex airspace situations</li> <li>- Operational Improvement: <ul style="list-style-type: none"> <li>➤ Automated Support for Traffic Complexity Assessment;</li> <li>➤ Automated Support for Dynamic Sectorisation and Dynamic Constraint Management</li> </ul> </li> </ul>		

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 completed
		ATSU unit of Reims	
		ATSU unit of London	
		ATSU unit of Frankfurt or Karlsruhe	
		ATSU unit of Maastricht	

Results	<ul style="list-style-type: none"> <li>- Demonstration of the feasibility to coordinate the implementation of short term ATFCM measures between different ATC actors</li> <li>- Implementation of these measures into Ops system;</li> <li>- Demonstration of the type of possible measures : small departures delay departures, FL caps, route modifications,</li> <li>- Operational Improvement: <ul style="list-style-type: none"> <li>➤ Short Term ATFCM Measures</li> </ul> </li> </ul>
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### 3.2.6 Operational Package 6

#### Cooperative Asset Management

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.		V3	
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 Southampt on IBP	Exercise completed
EXE-12.04.01-VP-404		Shadow Mode	NATS Southampt on IBP	Exercise completed

Results	<ul style="list-style-type: none"> <li>- Increased accuracy of the Estimated Take off Time</li> <li>- Early information to Approach controller leading to an improved planning of departures in the TMA</li> <li>- Evaluation of DPI (Departure Status) all the way to CFMU</li> <li>- Interface upgrade : e.g. display of Target Take –off Time on the strips ; user to set active Runway configuration as a way to indirect control to taxi-time parameter</li> </ul>
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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.		V3	
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 completed
EXE-05.09-VP-148		RTS	DSNA IBP	Exercise completed

Results	<ul style="list-style-type: none"> <li>- Overall good appreciation by Controllers of the new iCWP features, and sequence of actions to be undertaken</li> <li>- Controllers consider useful and trust automation tools outputs, reminders and triggers provided by the HMI, and resulting support in building and retaining a short &amp; a medium/long term traffic picture</li> </ul>
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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 completed
Results	<ul style="list-style-type: none"> <li>- Feasibility of providing Air Traffic Service to Ängelholm airport from the Malmö ATCC R&amp;D Remote Tower Centre</li> <li>- Feasibility of conducting remotely nominal and non nominal operations</li> <li>- Technical feasibility of capturing the “out of window” traffic situation and operational environment from a single airport and to display this picture in the remote site.</li> <li>- Operational Improvement: <ul style="list-style-type: none"> <li>➤ Enhanced Ground Controller situational Awareness in all Weather Conditions;</li> <li>➤ Remotely Provided Air Traffic services for Single Aerodrome</li> </ul> </li> </ul>		

### 3.3 Programme Achievements: Release 2 launch

During 2011, while Release 1 was progressing towards the delivery of the first results, the definition of Release 2 content started with the update of the V&V Roadmap in March 2011 and continued along the year in full coordination with the SJU Members

By applying the criteria defined by the Programme Committee, exercises were selected out of the V&V Roadmap. These exercises were closely coordinated with the Project Managers concerned in an iterative manner. This approach enabled to fine tune the exercises description and confirm their schedule.

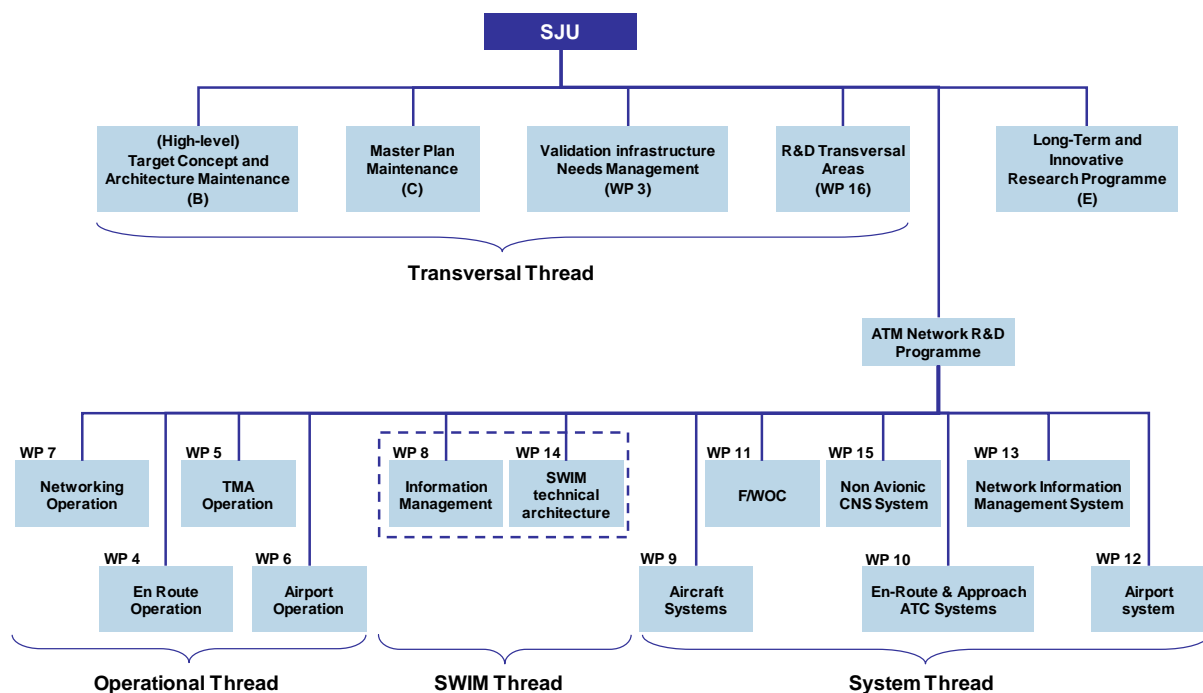
The final scope of the Release 2 was defined through the first System Engineering review that aimed at confirming:

- the commitment of the contributing projects,
- the clarity of the concept and of the operational / technical solution,
- the clarity of the validation exercise scope (expected achievements and validation objectives)
- the relevance of the validation approach (RTS, flight trials) with respect to the target maturity,
- the assurance of resources availability (controllers, platforms, Airspace Users, WP3 support).

The Definition phase formally ended with the Programme Committee (hereinafter also PC) endorsement of Release 2 content at its meeting of 14 December 2011. Release 2 includes 35 exercises clustered into 18 OFAs, including 4 exercises postponed from Release 1. The SJU Annual Work Plan 2012, approved by the ADB on 15 December 2011, provides a detailed description of Release 2.

### 3.4 Programme achievements: results by WPs

Beside the activity performed within the Releases, the Programme has progressed in all its Work Packages, as hereinafter reported. The Programme is divided into WPs addressing ATM domains, themselves organised into Sub-WPs and Projects dealing with specific issue.

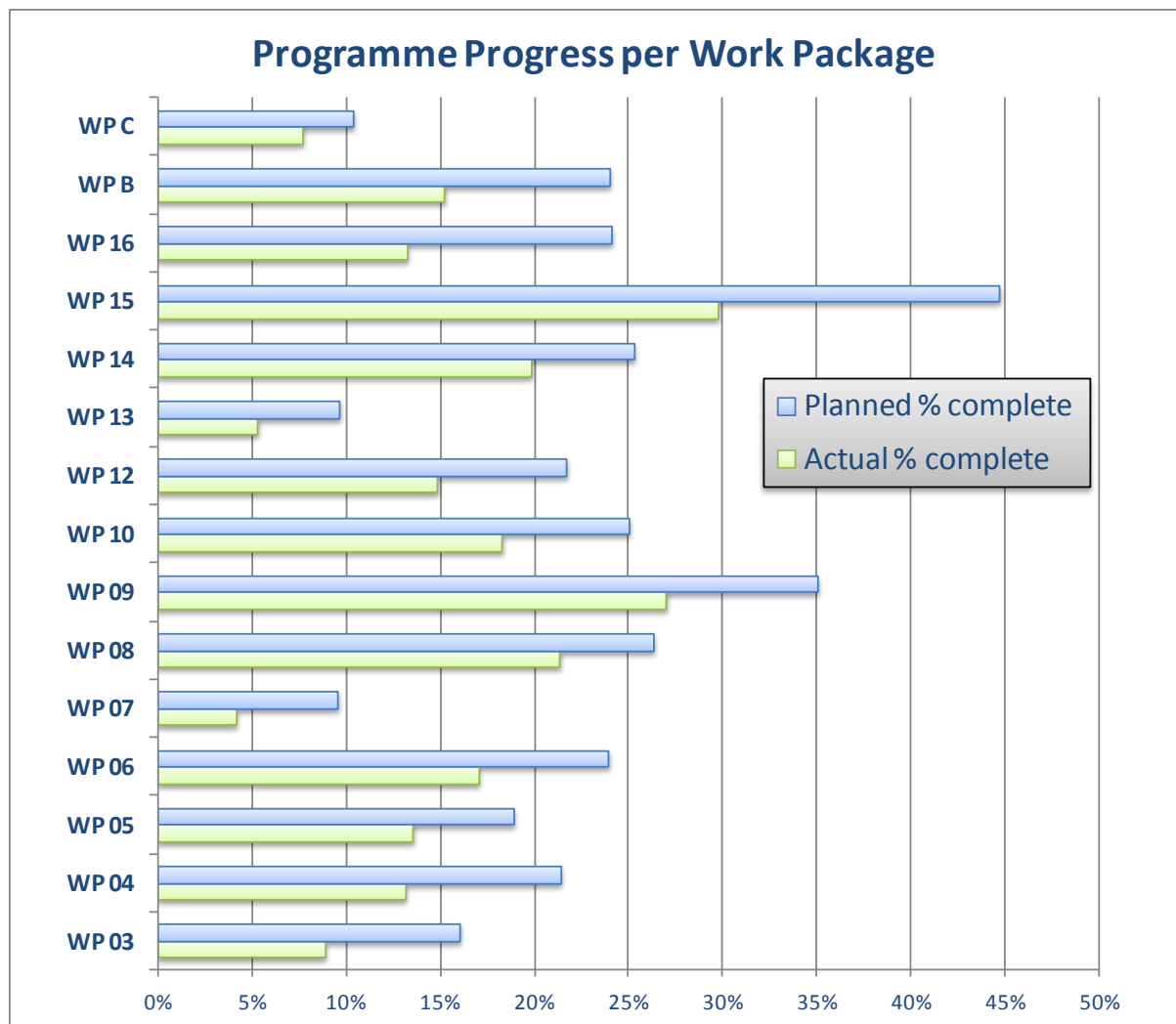


The Programme is split in 4 different threads:

- Operational considerations are addressed under WPs 4, 5, 6 and 7,
- System considerations are addressed under WPs 9, 10, 11, 12, 13 and 15,
- System Wide Information Management considerations are addressed under WPs 8 and 14,
- “Transverse” activities”, such as validation infrastructure, development of safety, security, environment and human performance cases, European ATM Master Plan, Target concept and architecture maintenance, are dealt by a number of additional WPs (i.e. B, C, 3, 16).

It is expected that benefits provided by these transverse WPs will manifest themselves through their application through other operational and system WPs, and thus will contribute to maximising benefits of those WPs.

The figure below refers to the advancement status (actual versus plan) of the WPs as of 31 December 2011. The Programme progress status is regularly monitored at the level of the Programme Control Group (hereinafter also PCG) and PC ensuring that assessments are conducted at due time and corrective actions taken.



### 3.4.1 WP 3 – Validation Infrastructure Adaptation and Integration

#### Scope

The scope of WP3 is defined by the evolution of required Industry Based/Pre-Operational Verification and Validation Platforms that include simulation, shadow mode and/or live trials capabilities. Combined with the connection/integration of the necessary test tools this allows these platforms to be used for verification and validation activities.

WP3 also has the responsibility of SESAR Verification and Validation Infrastructure (V&VI) that includes the set of preparation/analysis tools, Validation and Verification facilities, and test equipments.

WP3 should also be considered as the provider of additional tools and/or prototypes not proposed/provided by System projects but required for Industry Based/Pre-Operational Validation Verification Platforms use by the operational projects.

#### Objectives

The objective of WP3 is to support the SESAR Partners and the Operational and Technical Threads to properly define and coordinate the timely evolution and setting up of Verification and Validation Platforms along with the required support to adaptation and integration of the relevant tools and prototypes focusing on V2 and V3 maturity phases.

#### 2011 Report

WP3 continued to take an active part to the collection of information about the V&V Roadmap Releases 2 and 3 supporting a more coherent top-down approach of SESAR validation exercises in 2011. Release 2 Roadmap data collection task was completed successfully and Release 3 Roadmap campaign started. During spring, WP3 lead successfully the first System Engineering Review of Release 1.

The management of the V&V exercises by successive milestones that must be achieved in order to produce a successful validation outcome requested further optimisation of WP3 internal processes. The lessons learnt from R1 exercises helped to achieve simplified management processes which will be fully operational in January 2012.

For several tens of Operational projects or Primary projects, requesting support and acting as its customers, WP3 has been supporting them at different stage of the validation chain: from capturing the V&V needs to support the development or the adaptation of the Validation Industrial Platforms (IBPs) with their measurement tools. Some of the exercises took place in 2011 and their number will rise in 2012.

WP3 has established a recognised methodology which is gradually used by all validation actors based on a set of common tools. Additionally, WP3 is engaged in a rationalisation of the platforms. This will be a cornerstone for ensuring the IBPs will adequately satisfy R2 exercises in 2012.



### 3.4.2 WP 4 – En-Route Operations

#### Scope

The scope of Work Package (WP) 4 is to provide the operational concept description for the En Route Operations and perform its validation. The term “En Route” includes both ‘continental’ and ‘oceanic’ applications. Also, the applications of 4D, performance-based operations are seen as a cornerstone of future En-route operations.

#### Objectives

The objectives of WP4 are to:

- Refine the concept of En Route Operations;
- Define and perform the necessary validation activities including operability, safety & performance assessment at all levels;
- Demonstrate the operational feasibility of the En Route Operations concept in a complete ATM environment (including systems).

These objectives are being achieved through a portfolio of 16 R&D projects.

#### 2011 Report

During 2011, WP4 focus has been on Release 1 Exercise preparation and execution and definition of Release 2 Exercises. Furthermore activities not related to the Releases have progressed the 16 R&D projects. The main achievements in 2011 include:

- Approval to start execution for all projects mainly for Step 1 related activities and assessment of their progress during their first Gate; the remaining activities are due for review at the 2012 gates in order to receive approval for the start of execution of Step 2 activities;
- The completion of STEP 1 DOD and Validation Strategy by project 04.02;
- Submission to SJU for acceptance of several deliverables covering the Release 1 Exercises needs (OSDs, SPRs and Interops, and Validation Plans) but also numerous documents supporting the V2 activities;
- Supporting definition of Release 2 plan; about 4 projects in WP4 are involved in several Release 2 exercises related to Trajectory Management, System Interoperability, Sector Team operations, Complexity Assessment and Resolutions.
- Release 1 exercises progress in the area of:
  - Air Safety Nets: successful validation led by project 04.08.02 of improved ACAS operations with new altitude capture laws in the aircraft and with integrated management of Resolution Advisory by the autopilot;
  - Complexity Assessment and Resolutions: shadow mode validations run by project 04.07.07;
  - CDM & Sector Team Operations: Real Time Simulations and Shadow Modes led by project 04.03 to validate the improve tools support and information & task sharing;
  - Trajectory Management aspects in support to initial 4D, mainly focusing on ground-ground coordination and accommodation of CTA; preparation for validation activities;
  - i4D+CTA: Real Time Simulation led by project 04.03 in preparation for Live Trial to be run early 2012;
  - Ground Safety Nets: preparation for Fast Time simulations to be run with pre-industrial prototype by project 04.08.01.

The WP and SWP management activities were improved by enabling the integration of the SESAR methodologies and practices into their activities and definition of federation approach for the common management of WP 04 and WP 05 projects.

### 3.4.3 WP 5 – TMA Operations

#### Scope

Work Package (WP) 5 is to manage and perform all Research, Development and Validation activities required to define the TMA ATM Target Concept (i.e. Concept of Operations, System Architecture & enabling technologies). This covers all phases of planning and execution of flights/trajectories and the identification of supporting technical systems/functions necessary for TMA Operations. TMA Operations are considered as those from 'top-of-descent' until landing and from take-off until 'top-of-climb'. Also, the applications of 4D, time-based operations are seen as a cornerstone of future TMA and En-route operations.

#### Objectives

The objectives of WP5 are to:

- Refine the concept definition at TMA operational context level and for co-ordinating and consolidating the various projects and sub work packages that encompasses Terminal Airspace Operations;
- Define and perform the necessary validation activities including operability, safety & performance assessment at all levels;
- Demonstrate the operational feasibility of the TMA Operations concept in a complete ATM environment (including systems);
- consider the potential for operational trials and the early introduction of SESAR Concepts in a TMA environment.

#### 2011 Report

During 2011, WP5 has achieved the following:

- out of 17 projects, 13 were in execution and 4 suspended (status unchanged since 2010);
- full start of the execution phase for one project which had been approved at the end of 2010 within the scope of Release 1 activities;
- support execution of Release 1 plan: 6 WP5 projects were involved in several exercises in 2011, while in one case the relative exercises were moved to Release 2 due to the unavailability of controllers; the main results are in the domain of i4D+CTA and AMAN/Extended AMAN;
- supporting the definition of Release 2 plan; 7 WP5 projects will be involved in several exercises to be performed in 2012;
- supporting 13 gates in 2011 (to be compared to 4 in 2010), 3 of which being a second Project Gate;
- 49 WP5 project deliverables were submitted to the SJU in 2011 (to be compared to the 6 in 2010) for assessment.

WP and SWP management activities ensured the implementation of SESAR methodologies and practices.

### 3.4.4 WP 6 – Airport Operations

#### Scope

The Airport Operations Work Package is addressing developments associated with the ‘airside’ elements of airport operations. However, to ensure effective planning and management, ‘landside’ elements (such as passenger and baggage handling) are also being taken into consideration, but with any associated developments being undertaken outside SESAR.

#### Objectives

The objectives of WP6 are to:

- Develop, refine and update the Airport Operations concept, based upon the SESAR CONOPS and ensure consistency with other elements of the work programme,
- Develop collaborative airport planning, including development of the Airport Operations Plan (AOP) and of the Airport Operations Centre (APOC), as well as improvements to Airport CDM,
- Improve the management of airport surface traffic (which includes aircraft and vehicle traffic) through the definition of safety nets to prevent conflicts and collisions, as well as the better routing, guidance and tactical planning of traffic movements under all weather conditions,
- Improve runway management through enhanced procedures, dynamic separations (including wake vortex) and the definition of associated system operational requirements (both ground and airborne). The focus is on improving runway throughput at all times, whilst preventing runway incursions and reducing queuing,
- Improve the provision of aerodrome control services at remote or small airports through the development of concepts for ‘remote and virtual towers’

These objectives are being achieved through a portfolio of 21 R&D projects.

#### 2011 Report

With all projects in their execution phases, 2011 has seen tangible results emerging, with a number of key documents defining requirements in domains such as airport safety nets, A-SMGCS routing and planning, as well as airport management, being delivered. These initial requirements have been subjected to V1 validation, including for example, role playing exercises using an APOC mock-up (addressing the collaborative management of the AOP) and a series of simulations addressing A-SMGCS routing/planning. The results of these early validations have been used to refine the initial requirements which will now be delivered to the corresponding technical projects for prototype development.

WP6 has also contributed to more mature activities through Release 1, where a series of Remote Tower V3 validation exercises have taken place. These have involved controllers managing live traffic operating at Ängelholm airport in Sweden from a remote tower facility situated in Malmö, 100km to the south. The initial results of these exercises have been encouraging, with further exercises to take place in 2012.

Progress has been made with requirements definition and validation in a number of other areas, in particular:

- Safety nets (including Runway Status Lights, controller tools and warnings for vehicle drivers);
- Surface traffic planning routing and guidance;

- Wake Vortex (i.e. Time Based Separations);
- Arrival and departure management;
- GBAS CAT 1 implementation.

The application of SESAR Programme management processes within WP6 is on-going. In particular, the management of dependencies has progressed well with the OFA 05.01.01 (Airport Operations Management) developing its planning in detail, gaining valuable experience that will help the SJU and other OFAs. The engagement of the Airspace Users and Staff Association's representatives within projects has been fruitful, with positive feedback from both projects and the representatives concerned.

The quality of deliverables submitted by WP6 projects has continued to be of a high standard, with the vast majority having been assessed by the SJU as either Green (no reservation) or Amber (minor clarification or amendment required).

### 3.4.5 WP 7 – Network Operations

#### Scope

The scope of the Network Operations Work Package covers the evolution of services taking place in the business development and planning phases to prepare and support trajectory-based operations including airspace management, collaborative flight planning and Network Operations Plan (NOP). It encompasses the services included in the execution phase to facilitate trajectory-based operations in case of capacity issues.

#### Objectives

The objectives of WP 7 are to:

- Develop, refine and update the Network Operations concept, based upon the SESAR CONOPS and ensure consistency with other elements of the work programme,
- Develop the methodologies for airspace management and organisation, including processes for an improved flexible use of airspace, the accommodation of user preferred routes and dynamic airspace configurations,
- Develop the Business/Mission Trajectory management (including the shared business trajectory, used for advanced planning and the required Business trajectory, which is the final and agreed trajectory),
- Further develop the Network Operations Plan (NOP), a dynamic rolling plan providing a detailed overview (past, current and forecast) of the European ATM environment to those concerned,
- Improve Demand Capacity Balancing (DCB) process to ensure that the ATM network is able to meet the demands of all users, taking into account the 4D trajectories, described through Reference Business Trajectories (RBT),
- Define and develop the User Driven Prioritisation Process (UDPP), whereby operators can apply their own priorities during periods of capacity shortfall, based upon a CDM approach.

#### 2011 Report

All 11 R&D projects in WP7 are now in execution, including 4 projects that were approved for execution in 2011. WP7 projects have experienced delays of around 6 months compared to the original planning in the PIRs. In general, these delays can be attributed to unrealistic planning in the PIRs, and difficulties when “ramping up” the projects, for example due to changes in key personnel.

The main achievements in 2011 include:

- The STAM (Short Term ATFCM Measures) live trial led by project 07.06.05, Dynamic DCB, for Release 1. Dynamic DCB is a process taking place on the day of operation and consists of pro-actively monitoring the traffic situation to identify and manage real-time imbalance situations. STAM comprises a set of proactive measures – such as introducing slight take-off delays – which can remove “Hot Spots” in busy sectors.
- The completion of the Step 1 Detailed Operational Definition (DOD) and Integrated Validation Plan by project 07.02. This provides a framework for the execution of all subsequent concept development and validation activities in Work Package 7 for Step 1.
- Progress on concept development and validation planning leading to the approval of 6 exercises for Release 2, covering: enhanced O/ATFCM interoperability for flight planning in support of trajectory management; user preferred routing in high-density airspace and cross-border aspects; increased interoperability between ASM, ATFCM and ATC in support of Advanced Flexible Use of Airspace (AFUA); User Driven Prioritisation Process (UDPP) addressing airport departure congestion.

All projects were assessed to have a Green status at the gate, with the exception of project 07.05.03, User Preferred Routing, for which a stronger commitment was requested, and subsequently received, on the availability of NORACON resources.

### 3.4.6 WP 8 – Information Management

#### Scope

In order to realise the concept of SWIM (System Wide Information Management) for ATM, which is needed to achieve interoperability and inter-system seamless operations, WP8 primarily defines the ATM Information Reference Model (AIRM) and the Information Service Model (ISRM) to be used by the various ATM services and necessary to develop the SWIM specifications and test platforms.

#### Objectives

The Objectives of WP 8 are to:

- Describe the performance and operational requirements of ATM wide information sharing,
- Strongly contribute to the definition of the Information View of the European ATM Architectural Framework and the ATM Information Model,
- Develop and document the European ATM Information Reference Model (AIRM),
- Support the standardisation of ATM Information,
- Secure semantic and syntactic interoperability within ATM for Europe and support to an overall global commitment in the same field,
- Be responsible for ensuring the effectiveness and integrity of the functional architecture for Information Management,
- Integrate the ATM world in the information sense, a necessary step towards the realisation of Service Oriented Approach (SoA),
- Produce and document (ATM) Information Service in support to a variety of system WPs or other Industry segments,
- Directly drive the operational requirements for the technical system architecture of Information Management to be developed in the SWIM Work Package (WP 14),
- Validate deliverables from various Operational WPs in order to align, harmonise and structure the different levels of ATM Information Services.

#### 2011Report

All WP8 projects, but 08.01.11, are in execution mode.

Over 2011 a SWIM Action Plan has been put in place to respond to the issue raised at PCG level in February 2011 about the risk that without adequate Project developments the Programme would not achieve its SWIM objectives. Three immediate issues to be fixed were identified:

- SWP08.01 and SWP08.03 projects not sufficiently closely involved in the operational and technical activities.
- SWIM transition strategies missing.
- Insufficient validation exercises for 2011-2013 to validate SWIM related developments.

In order to address and correct these issues, a set of 16 actions have be organised in 5 main axes:

- Creating awareness and understanding of the SWIM concept and its implications.
- Identifying improvements that should be SWIM enabled.
- Implementing appropriate development approach.
- Putting in place programme level means to control progress towards SWIM objectives.
- Bottom-up actions.

This Action Plan involves WP8, WP14, WPB, X.2s, X.1.7s and L3 projects actors.

Main achievements are:

- A SWIM CONOPS document (08.01.01 D39) has been initiated. The SWIM CONOPS work appears to be more demanding than initially foreseen due to the many different views

currently existing about SWIM. As a consequence this was accredited a top priority as part of the Action Plan. It should be available Q2 2012.

- Organisation of information/awareness sessions to present and explain SWIM related deliverables.
- Allocation of SWIM projects to OFAs in coordination with the X.2s in an attempt to embed 8.x.y projects. A short list of OFA has been identified as having potential for short term development (OFA03.01.08, OFA05.01.01, OFA04.02.03, OFA04.01.05).
- Fast track initiative has been set up in order to initiate a tight collaboration with OFA05.01.01. Projects 08.01.10 and 08.03.06 have closely worked together forming a sort of Collaboration Bridge between information and service modelling. This approach works in the context of OFA05.01.01 collaboration.
- Coordination for the SWIM Roadmap between B.4.3 and WP14 to be held in January 2012. Integrated Roadmap (IR) will contain concise picture for SWIM for each SESAR Step. SWIM Roadmap of 14.4 will be built according to the IR and be aligned.
- Nomination by B.4.3 of the focal point (SWIM architect) for coordinating from a technical perspective the developments with key architects in WP08 and WP14.
- SWIM Working together session held on the 19th and 20th of October.
- Draft compliance model reviewed and being updated.
- Set up of regular B.4.3, WP8 and WP14 coordination meetings.

The general situation of WP8 is gradually improving due to the fact that the SWIM Action Plan is starting to create impact.

In general SWP8.1 has been steadily progressing and signs of "top-down" activity start to emerge. AIRM 2.0.0 was delivered on time. Following coordination with WPB, the AIRM is being structurally embedded in the WPB deliverables.

During Q3 2011, SWP08.03 has concluded the second iteration of ISRM development (Version 0.3). The model was realised on schedule. This was planned as the first top-down iteration in the ISRM development. The release of B.4.3 document on Service development together with SWIM Action Plan A10 has improved the development process greatly.

Many coordination initiatives are taking place between 08.03.xx projects and external actors (e.g: coordination with X.2s and operational primary projects regarding operational requirements).



### 3.4.7 WP 9 – Aircraft Systems

#### Scope

The scope of the Aircraft System Work Package covers the required evolutions of the aircraft platform, in particular to progressively introduce 4D Trajectory management functions in mainline, regional and business aircraft to provide 4D trajectory management capabilities (3 spatial dimensions + time). The work will address as well the progressive development of Aircraft Separation Assurance and the aircraft components required for the improvement of surface movement operations.

#### Objectives

The objectives of WP9 are to:

- Achieve a greater integration of the aircraft in heart of the performance-based European ATM system allowing an optimum exploitation of the increasing aircraft capabilities,
- Introduce progressively the 4D Trajectory management functions. Initial 4D Trajectory capabilities will require first the downlink airborne computed predictions on the ground to establish a sequence on a merging point, and second improved time constraints management capabilities both contributing to first generalise Continuous Descent Approaches from Top to Descent in mid and high density areas. A further step will allow the full exploitation of 4D Trajectory through ensuring that the aircraft is able to compute and to share reliable gate to gate 4D trajectory predictions with the ground and execute the agreed reference trajectory with possibly imposed times constraints,
- Develop a gradual evolution of Airborne Separation Assurance services allowing first to an aircraft to establish and maintain a time spacing from a target aircraft designated by the Air Traffic Controller (ASAS-Spacing). On-board functions will be further validated to gradually introduce ASAS Separation Crossing and Passing (C&P) manoeuvres with the aim to help controllers in resolving conflicts between aircraft by temporarily delegating to the Pilots the responsibility to do the requested manoeuvre (e.g. vertical or lateral C&P) and maintaining separation during that manoeuvre, and to introduce ASAS-Self-Separation in low density areas,
- Enhance On-board approach functionalities and validate them to provide improved and all weather operations. This will allow initial CAT II/III GBAS L1 approach for new aircraft, providing rapid benefits under low visibility conditions. A second step will address the implementation of full multi-constellation (GPS, GALILEO) GBAS Cat II/III in the airborne equipments,
- Develop future on-board surveillance systems including dedicated wake encounter and significant weather (e.g. clear air turbulence) avoidance functions to reduce the risk of severe upsets due to atmospheric disturbances,
- Address environmental impact through Advanced Continuous Descent Approach aiming at minimising fuel burning and emissions, and decreasing noise,
- Improve surface movement operations through the introduction of functions to initially provide guidance and then alerting on traffic,
- Ensure interoperability between civil “Business trajectories” and military “Mission Trajectories” to allow the conformance of military aircraft with new operational concepts and to enable military aircraft to fly with the same performance level than civil aircraft to better exploit airspace resource avoiding restricting part of it for military use only,
- Provide a globally compatible avionics transition roadmap supporting the different SESAR Steps, to be used as a reference by avionics and airframe manufacturers for development planning, hence minimising the number of transition steps for a better cost efficiency.

In order to support the above evolutions, enhancement and additions to the CNS Technologies are foreseen, including updates to ADS-B, Airport datalink and Flexible communication avionics and improved navigation positioning technologies while addressing the different types of airborne platforms.

### **2011 Report**

In 2011, most of the Projects are in execution phase (24 projects out of 30). Two have completed or are completing their initiation and four project initiations remain to be launched in 2012/2013, subject to the maturity result of the upstream related Projects.

In 2011,

- the Initial 4D trajectory project has developed and implemented the elements which are necessary to manage the 4D trajectory onboard. These equipments have been integrated into an aircraft integration simulator (composed of real avionics and equipments) which has been interconnected with 2 ATC simulator systems for validation purposes; first technical flights have taken place to validate the on board functions under real conditions;
- ASAS-Spacing function, which makes an aircraft establish and maintain a time spacing from a target aircraft designated by the Air Traffic Controller (allowing a controller workload reduction and potentially a capacity increase), have been implemented in the different avionics and integrated in an aircraft integration simulator. The functional evaluation has started;
- Data Link Taxi clearance function, enabling aircraft to receive by Data Link and display on moving map its taxi routing has been implemented in a mock up that has been transferred in an aircraft research simulator (representative HMI but only simulated functions – no real equipment). Tests have been successfully performed with Pilots in the loop;
- a mock-up of enhanced/synthetic vision (enhancing the vision of the pilot through e.g. providing infra red images augmented by symbols) has been developed, and has been used during validation campaign with Pilots;
- other projects have also satisfactorily progressed, producing functional requirements, functional architectures as well as technical studies to validate technical choices or to secure key points;
- a consolidated airborne architecture for step 1 addressing different aircraft platforms (mainline aircraft, regional aircraft, etc.) has been produced and delivered.

Some delays were experienced. The main causes were the need to adapt the schedule to keep synchronised with operational projects, over ambitious plan established at project start underestimating the complexity of this multi-partner programme and availability of resources involved in different projects. However, none of the resulting plan evolutions is creating significant dependency or resources issues.

The large majority (20) of the projects was reviewed during Gates and most of them passed successfully this step.

Airspace Users supported the projects and the added value was recognised both by project team and by airspace users.

### 3.4.8 WP 10 - En-Route & Approach ATC Systems

#### Scope

The scope of this Work Package covers En-Route & TMA ATC System systems' changes, and related technical activities of phases V1-V3 of the development lifecycle reference model (i.e. up to the validation of system performance using pre-industrial prototypes). It addresses system/technical aspects such as functional and technical architecture, technical performance & safety requirements, technical interoperability requirements, associated specifications, models/simulation platforms and prototypes, technical validation and the development of inputs /proposals to technical standards groups.

#### Objectives

The objectives of WP 10 are:

- ATC system impact analysis of the operational improvements and identification of the induced system requirement to implement the evolution;
- Technical feasibility assessment of the operational changes from an architecture and technology point of view;
- define, design, specify and validate the En-route & TMA ATC Systems needed to support the SESAR ATM target concept;
- Prototype development for system and operational validation

#### 2011 Report

During 2011, the focus has been on progressing Projects into execution:

- Moving into execution for 20 projects; 1 project was suspended in 2011 while 1 was already suspended in 2010;
- All projects passed the first or even second Gate reviews ; the gate outcome showed good progress in the projects work mainly related to Step 1 activities while the Step 2 activities may be reviewed during 2012 Gate reviews;
- The quality of deliverables submitted by WP 10 project has been of a good standard: 87 deliverables were submitted to SJU for acceptance; for 12 of them SJU requested justifications for clarifications and 2 of them were assessed with Major Reservation.
- Coordination with WP 4 and WP 5 operational projects has progressed well through quarterly coordination meeting. Consequently, majority of projects have submitted schedule updates that enable a realistic assessment of future achievements, identification of deviations and mitigation actions.

The first sets of technical requirements have been developed and verified in support to mainly the Release 1 exercises, covering areas such as Trajectory Management and Flight Objects, Enhanced Data link capabilities, complexity assessment and safety net. The corresponding prototypes have been used in Release 1 exercises, as well as in some v2 activities.

### 3.4.9 WP 11 - Flight Operations Centre System

#### Scope

The scope of the Flight and Wing Operations Centres / Meteorological Services Work Package covers the definition of the Airspace Users operations and the development of the systems required to support the implementation of the various SESAR components (e.g. adaptation to the 4D trajectory) and will also address the meteorological service component in increasing ATM Performance seen from a transversal perspective throughout the SESAR Programme.

The scope has been separated out into two stand-alone Sub-Work-Packages, the first SWP (11.1) addressing Flight and Wing Operations Centres and the second SWP (11.2) addressing Meteorological Services. Each SWP will be managed separately, with Work-Package Leader and Sub-Work-Package Manager roles combined per SWP.

#### Objectives

The objective of SWP11.1 is to Define and validate Flight and Wing Operations Centers requirements for Business / Mission Trajectory planning and execution.

All consequent system development activities must be driven by defined operational requirements and interactions with related work in other WPs of the SESAR Programme. Activities foreseen in WP11 include the development of technology and system prototyping solutions for input to validation. It will be necessary to address the needs and solutions for airspace users not operating Operations Control Centres (e.g. Business Aviation, General Aviation). The military part of this WP will be to ensure that State Airspace users can get the appropriate ground system support, from Wing Operation Centres or Command and Control (C2) Centres, in order to implement the Military Mission Trajectory Concept.

The objective of SWP11.2 is to address the meteorological service component in increasing ATM Performance seen from a transversal perspective throughout the SESAR Work Programme.

#### 2011 Report

##### FOC/WOC

On 9 June 2011, the Fly4D consortium – led by Airbus with Cassidian, Honeywell, Lufthansa Systems and Sabre Airline Solutions – was awarded a contract to perform SESAR sub-work package 11.01 (Flight and Wing Operations Centre). The work addresses the definition, the development and the validation of Airspace User's future flight planning and control systems and procedures in support of the SESAR ATM Target Concept. The project initiation phase for 11.01 began in August. At present, the management project, 11.01.00, and the operational projects, 11.01.01 and 11.01.02, have been approved for execution; the two system projects, 11.01.03 and 11.01.04, are currently in the project initiation phase; the validation project, 11.01.05, will be kicked-off mid 2012.

##### MET

On 16 January 2012, the EUMETNET Consortium – led by EUMETNET EIG with 7 National Meteorological Services (Meteo France, UK Met Office, DWD, FMI, met.no, KNMI and SMHI) and 3 Industry partners (Belgocontrol, NLR and Thales Air Systems) – has been awarded a contract to perform SESAR sub-work package 11.02 (Meteorological Information Services). The contract has been awarded by EUROCONTROL on behalf of the SESAR Joint Undertaking.

11.02 will provide the SJU and its partners with the opportunity to properly integrate weather into the SESAR Programme. It comprises one management project and two R&D projects namely: 11.02.01 (Requirements for MET Information) and 11.02.02 (MET Information Systems Development, Verification and Validation). The project initiation phase for all 3 projects was kicked-off on 16 January 2012 and the PIR/MIR submissions are due 16 March 2012. A key objective of the project initiation phase is to achieve an effective integration of 11.02 with rest of SESAR.

During 2012, 11.01 will work closely with project 07.06.02 to support a Release 2 exercise on enhanced Aircraft Operator/ATFCM interoperability.

### 3.4.10 WP 12 - Airport Systems

#### Scope

The scope of the Airport Systems Work Package encompasses all Research & Development activities to define, design, specify and validate the airport systems needed to support the SESAR ATM target concept. It also addresses system/technical aspects such as functional and technical architecture, technical performance & safety requirements, technical interoperability requirements, associated specifications, models/simulation platforms and prototypes, technical validation and the development of inputs/proposals to technical standards groups.

WP 12 will undertake technical developments and validation/verification, providing the ground-based system support to the new concepts, procedures and practices described by WP 6.

#### Objectives

The objectives of WP 12 are to:

- Support collaborative airport planning, including decision support and sequencing tools, meteorological observation and forecasting systems, all of which will be Integrated into an Airport Operations Centre (which will also be developed by WP 12),
- Improve airport surface management, including advanced surveillance techniques, ground-based safety nets, ground-based routing and guidance systems as well as sequencing tools (e.g. SMAN and integrated AMAN/DMAN),
- Define and develop new runway management tools and systems supporting the dynamic application of wake vortex separations (i.e. wake vortex detection and prediction systems).
- Improve safety through the definition and development of ground-based safety nets, with a priority upon detecting runway incursions and preventing collisions,
- Define and develop the technical systems associated with the 'remote and virtual' towers, which will include appropriate surveillance systems.

All of these developments will be brought together so that they support the controller in his tasks by the prototyping of an advanced controller working position (i.e. the iCWP), through which a set of core HMI principles will be established.

These objectives are being achieved through a portfolio of 28 R&D projects.

#### 2011 Report

2011 has seen all projects of WP12 move into their execution phase (including two projects that were suspended in 2010, both of which have resubmitted their PIR and subsequently received authorisation to continue into execution).

Coordination with WP6 operational projects has progressed well, with application of the OFAs gaining momentum. This coordination has sometimes required that WP12 Projects' schedules be adapted to align with the availability of operational requirements. However, this re-alignment has been managed in a cooperative manner by the projects concerned, bringing benefit to the overall planning of the programme. In particular, there has been the agreement of a methodology to undertake HMI developments and a proactive engagement in the planning of OFA 05.01.01 (Airport Operations Management); both of these elements have been viewed as good examples.

The first sets of initial or baseline technical requirements have now been developed, mirroring the work within WP.6 and covering areas such as:

- Wake vortex detection/prediction tools;
- AOP decision support tools;

- Safety nets;
- Surface traffic planning routing and guidance;
- Wake Vortex (i.e. Time Based Separations);
- Arrival and departure management;
- GBAS CAT 1 implementation.

The corresponding prototypes have entered production ready for V2 verification (with some examples, such as surveillance data processing, where the production has already been completed).

WP12 has contributed to Release 1 through Project 12.04.01 (Baseline for Airport Controller Tools), a stand-alone project that has successfully developed, verified and validated a low cost tool to improve the connection between small/medium airports and the CFMU.

The incorporation of SWIM into the activities of WP12 is being addressed and there is now effective coordination with WP8 and WP14.

The quality of deliverables submitted by WP12 Projects has been of a good standard, with the majority having been assessed by the SJU as either Green (no reservation) or Amber (minor clarification or amendment required).

### 3.4.11 WP 13 – Network Information Management System (NIMS)

#### Scope

The scope of the Network Information Management System Work Package covers the System and Technical R&D tasks related to the Network Information Management System (NIMS), the Advanced Airspace Management System (AAMS) and the Aeronautical Information management System (AIMS). It addresses the NIMS system-level definition and architecture concentrating on interoperability with other systems, further decomposes it into sub-systems from logical down to physical layers. It addresses the impact of new roles & responsibilities on local/sub-regional/regional systems considering the mapping of system functions on the various local/sub-regional/regional systems (namely NIMS, AOC, Airport, en-route/approach ATC).

The WP will then undertake the NIMS sub-systems definition and verification, addressing interoperability and connection between sub-systems and coordinate the management of common components between sub-systems.

#### Objectives

The objectives of WP 13 are to:

- Coordinate and map capabilities (services) on sub-systems and on their components,
- Define and develop network planning sub-system (Airspace Design, Capacity planning, ASM & ATFM scenario management and demand data management) which all aim at building and refining incrementally the NOP,
- Define and develop Aeronautical Information Management sub-system in relation to aeronautical, terrain, airport and aircraft data and in particular addressing the evolution of current European AIS Database studying the implementation at network level of the basic services and of added value services (e.g. flight briefing service),
- Define and develop Network Operations & monitoring sub-system related to Network operations and monitoring, in particular addressing the evolution of current IFPS (Initial/integrated Flight Plan) and ETFMS (Tactical Flow Management) sub-systems which all aim at executing & monitoring the NOP.

The WP will also define and verify the technical supervision of the NIMS necessary for maintaining the quality of service (e.g. in case of failures).

#### 2011 Report

All 6 R&D projects in WP13 are now in execution, including project 13.01.04, Impact of New Roles and Responsibilities, for which a PIR update had been requested. Project 13.01.04 is intended to assess the evolution of the NIMS at regional, sub-regional and local level, including the impact of the FABs. During 2011, the project has struggled to obtain useful information on FABs development and to obtain suitable contacts within the FABs working arrangements. In order to progress this work, project 13.01.04 and the SJU will do every effort to improve contacts with the interested parties and great advantage would be obtained from support from the EC that could facilitate a better access to FAB information.

WP13 projects have experienced delays in the order of 6 months compared to the original planning in the PIR, mostly due to delays in the corresponding operational projects in WP7.

The main achievements in 2011 include:



- The implementation of the Network Manager Validation Platform (NMVP) at the EUROCONTROL CFMU, under the leadership of project 13.01.01 with 13.2.3 and WP3, which was used to support the STAM (Short Term ATFCM Measures) live trial for Release 1.
- The establishment of a requirements management process in close relationship with WP7.
- Progress on system requirements and architecture aspects including: Step 1 architecture involving close coordination between 13.01.01 and B.4.3; Flight Object server requirements in 13.2.1; Digital NOTAM and Integrated Briefing requirements in 13.02.02; STAM prototype work performed by 13.02.03; supervision and Network Operations Portal requirements in 13.02.04.

Looking forward to 2012, the main challenges for WP13 include:

- Establishing an Enhanced DCB development within project 13.02.03.
- Ensuring realistic and achievable dependencies with operational projects, notably WP07, in order to achieve a realistic planning for WP13 developments including Release 2 related work.
- Build on the work performed in 2011, with a view to delivering system requirements, technical specifications and prototypes with an adequate collaboration with FABs, considering that their progress is also dependent on the commitment to achieve results at the planned dates.

### 3.4.12 WP 14 - SWIM technical architecture

#### Scope

The SWIM technical architecture Work Package is the follow-up in the context of SESAR of the SWIM-SUIT European Commission FP6 project. It uses as an input the SWIM-SUIT deliverables and adapts them and/or further develops them to cope with the SESAR Work Programme components.

#### Objectives

The primary objectives of WP14 are to define and validate the infrastructure solution for SWIM addressing the requirement received from WP8. The SWIM technical architecture work package has to interface with all other System WPs (9-15), while using the results of the European Commission's SWIM-SUIT project to develop an architectural description, technological options and system solutions. WP14 will also provide adequate support for SWIM exploitation to the other System WPs in order to ensure that system WPs will develop appropriate interfaces with SWIM.

In details to:

- Define and validate the infrastructure solution for SWIM addressing the requirement received from Information Management (WP8). The SWIM WP will have to interface with all other System WPs (9-15),
- Further develop the 'Intranet for ATM concept' by:
  - Performing an assessment of the Information Management needs of the SESAR CONOPS, as scoped by WP 8, to define the SWIM technical services that will be required,
  - Using the SWIM-SUIT results, to translate the results of the assessment into an architectural description, technological options and system solutions,
- Develop SWIM test platforms to support the operational and technical aspects of the SWIM validation and to provide regularly demonstrations,
- Provide adequate support for SWIM exploitation to the other System WPs in order to ensure that system WPs will develop appropriate interface with SWIM (via its IOP-middleware) and avoid system WPs assessing their impact on SWIM.

#### 2011 Report

At the end of 2011 all WP14 Projects are in execution mode but 14.02.01 proposed for cancellation.

WP14 is actively contributing to the SWIM Action Plan (refer to WP8 2011 Report). All tasks where WP14 is involved are progressing. Step1 SWIM development is close to completion except for the maintenance tasks. Few Step2 tasks are already active.

SWP14.04 delivered the SWIM communication Action Plan for each 2011 quarter and organised an important SWIM Awareness workshop with a significant number of participants.

SWIM Demonstration Event took place in November with good participation from the overall programme WPs. During this Event, participants received an in-depth view of the SWIM Technical Infrastructure designed and developed for SESAR Step 1. Live demonstrations of SWIM building blocks in various ATM operational contexts were scheduled.

WP14 is assessing the overall Step2 plan in order to implement properly a top-down approach. However, given than key SWIM Action Plan actions (A10, A13) progress is not according to plan, this top-down planning is at risk for the 2012 delivery. Several mitigation actions are in progress.

### 3.4.13 WP 15 – Non Avionic CNS System

#### Scope

The Non Avionic CNS System Work Package addresses CNS technologies development and validation also considering their compatibility with the Military and General Aviation user needs. It identifies and defines the future mobile datalink systems to serve communication and surveillance services, the ground SWIM backbone system. It addresses the best combination of GNSS and non-GNSS Navigation technologies to support Performance Based Navigation and precision approach requirements. It proceeds to the optimisation of the ground Surveillance infrastructure, the evolution of the Ground surveillance station to introduce ADS-B information as well as the development of Airport weather information services.

#### Objectives

The objectives of WP15 are to:

- Address subjects concerning Spectrum Management for using the spectrum in the most efficient manner and for promoting CNS spectrum allocation at ITU allowing the future CNS SESAR Concept enablers to operate properly as well as undertaking the appropriate actions to minimise the impact on aeronautical spectrum from non aeronautical systems,
- Define the future Mobile communication system supporting the SESAR Concept, capable to provide to all the types of users the required functions and quality of service, and to support Air/Ground and Air/Air services. It will be composed of a new ground-station-based system associated to two complementary systems (a satellite communication system in close cooperation with and benefiting from a related activity at the European Space Agency and an aircraft communication system at the airport AeroMACS). This set of systems will constitute the mobile part of the SWIM backbone. Interconnection of military aircraft through their specific datalink is also addressed. Enhancement of the Ground/Ground communications PENS infrastructure will also be progressed in order that it becomes the ground SWIM backbone ,
- Define from a sub-system perspective, the best combination of GNSS and non-GNSS Navigation technologies to support Performance Based Navigation and precision approach requirements in a roadmap perspective as well as to enable transition from current terminal and en route operations (with a mixture of B-RNAV, P-RNAV and conventional) to a total PBN environment. In addition the refinement and validation of GNSS based precision approaches, in line with the evolution of the SESAR ATM capability levels will be performed based in a first step on GBAS Cat II/III GPS L1 and in a further step on GBAS Multi GNSS (GPS + Galileo) Cat II/III allowing rationalisation of the infrastructure and optimisation of the runway capacity under low visibility conditions.
- Consider the decommissioning of conventional terrestrial navigation aids,
- Proceed with enhancements to the ground Surveillance systems and introduction of new Surveillance systems and services (e.g. WAM, ADS-B applications beyond initial operational capabilities). Considering these enhancements and new means, the surveillance infrastructure will be rationalised by considering decommissioning legacy technologies (e.g. SSR) thus decreasing operating costs while balancing the necessary non-cooperative requirements in TMA and for military purposes,
- Decrease delays due to weather, prevent accidents, and help to improve long-term airport operation, relevant sensors matching airport category needs for detecting weather and weather related hazards as well as the integration of their complementary characteristics will be realised.

## 2011 Report

In 2011, most of the projects have been under execution modes (15 projects). One has completed its initiation and one project initiation remains to be launched in 2012.

- The project in charge of Airport communication system (15.2.7) has delivered propagation analysis results and has produced user profile deliverable which has been fed into the international standardisation forum in charge of the WiMAX standard. 15.2.7 has also significantly contributed to EUROCAE and has been successful in starting ICAO SARPS;
- Future Communication System (15.2.4) did not formally start as it was planned due to a disagreement (between the project Team and the SJU) concerning the SJU request to concentrate the work on only one LDACS system;
- Satellite Communication (15.2.6) coordination has been ensured with the European Space Agency (ESA). A first version of the Definition deliverable (Mission Requirements) has been produced by 15.2.6 and transferred to ESA which is in charge of defining the system to be tested by SESAR. Considering the interdependencies with 15.2.4, 15.2.6 plan needed to be re-opened for a better alignment with Iris;
- Three projects are working together on navigation infrastructure definition and optimisation. At the level of rationalisation, a significant work is being achieved through the simulation of the infrastructure of the 44 ECAC States;
- GBAS Cat II/III based on GPS (15.3.6) has delivered a System Architecture definition and significantly contributed to international standardisation (in coordination with 9.12 sister project);
- The project in charge of addressing the surveillance ground infrastructure (15.4.1) has produced 3 study cases deliverables (Germany, Switzerland and Czech Republic) which will be used to build upon a rationalisation methodology to be used in the ECAC States;
- ACAS monitoring activity (15.4.3) has delivered the system specifications and the ground receiver station is being developed;
- Surveillance ground station for ADS-B integration projects (15.4.5a and 15.4.5b) have produced and delivered the first step of system definition and verification plan. Ground prototype is being developed by 15.4.5b.
- other projects have also satisfactorily progressed, producing functional requirements, functional architectures as well as technical studies to validate technical choices or to secure key points;

Most of the projects are progressing according to their original schedule (except 15.2.4 and 15.2.6). The large majority (12) of the projects was reviewed during Gates and most of them passed successfully this step. Significant deliverables have been accepted by the SJU.

Most of the projects contributed significantly to standardisation activities.

Airspace Users supported the projects and the added value was recognised both by project team and by airspace users.

### 3.4.14 WP 16 – R&D Transversal Areas

#### Scope

The scope of the R&D Transversal Areas Work Package covers the improvements needed to adapt the Transversal Area (TA) (safety, security, environment, contingency (service continuity) and human performance) management system practices to SESAR as well as towards an integrated management system. WP16 also provides support and coordination for the consistent and coherent application of the already existing as well as newly developed TA-related practices to SESAR operational and system Work Packages.

#### Objectives

The Objectives of WP16 are to:

- TA R&D: Describe the activities, deliverables and dependencies between the Transversal Areas (Safety, Security, Environment, Human Performance (HP), Contingency) and the Operational Improvements (OI), and their needs for intrinsic improvements, so called Transversal Improvements (TI),
- TA Support & Coordination Function (Safety, Security, Environment, HP): Ensure coordination & consistent approach of TA aspects and application of TA practices throughout SESAR Development Phase, including a contribution to validation acceptance for TA aspects,
  - Pro-actively provide SESAR projects with the best TA-related practices, guidelines, tools, methods, models and techniques (TA Reference Material) as well as coaching to support production of evidence on the acceptability of a cluster of OIs from a TA perspective,
  - Manage the overall SESAR Case per TA and TA assessment processes to identify and mitigate TA-related issues in projects.

#### 2011 Report

5 projects are in execution phase and one has to be initiated.

The plans of some WP16 projects are being redefined in 2012 to manage some Work Programme changes (introduction of Release, change of the System Engineering approach). A slower than expected progress has been achieved, in part due to the redefinition of many activities and in part to the partial obsolescence of the plans at the time of publishing the AAR.

16.6 Sub Work Package has taken the leadership of System Engineering Review 3 and has initiated its preparation by contributing to the definition of the various roles and responsibilities as well as the criteria to run this review.

WP16 will define the initial methodologies (Reference Material) to develop Transversal Areas (TA) and Business Cases (BC). The methods to develop an initial BC for Step1 have been produced and need to be mature taking into account the initial feedback of their applicability and their suitability to the Programme needs and maturity. WP16 has also supported the initiation of working methods with EASA and National Supervisory Authorities for cases acceptability. WP16 has supported and provided coaching to WP4-15 projects for conducting their TA assessments. WP16 has produced some examples of application of Transversal Area Reference Material.

Project 16.3.7 has provided valuable support to the European Commission (EC) for the update of Directive 2002/30/EC on the establishment of rules and procedures with regard to the introduction of noise-related operating restrictions at Community airports. The Project has proposed amendments to this Directive in order to allow noise reduction through the deployment of SESAR solutions. The proposed amendments should be approved by the European Parliament and EU

Council **in accordance with** the "co-decision" procedure, before being adopted, potentially in 2012. 16.3.7's deliverable was reviewed by the National Supervisory Authorities (NSA) before being submitted to the EC.

### 3.4.15 WP E – Long Term and Innovative Research Programme

#### Scope

Stimulate long-term research, creativity and innovation to develop the scientific knowledge aimed at extending the SESAR vision and also to complement SESAR activities. Long term/innovative research addressing knowledge and breakthrough technologies/concept elements beyond the current SESAR vision or not in the main stream of SESAR work programme has been launched in the framework of WP E to accompany advanced research in aeronautics. This would assure the continuity in implementations beyond the existing horizons (both in time and scope).

#### Objectives

The objectives of WPE were to establish Research Networks, PhDs and a portfolio of Research Projects and to then explore several topics (concept element and/or technology) extending the SESAR vision without any predefined time frame.

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, they also select and fund the PhD activities in their area of competence. Research Projects are selected by the SJU and assigned to a Research Network who provides ongoing scientific support.

SESAR Long Term and Innovative research themes were defined with the advice of the Scientific Committee. These research themes include:

- Legal aspects of paradigm shift;
- Towards higher levels of Automation in ATM;
- Mastering complex systems safely;
- Economics and performance.

#### 2011 Report

The research themes have been used to establish the work in WPE to date, consisting of two Research Networks some PhDs and the selection of 18 Research Projects.

During 2011 the portfolio of 18 Research Projects was launched and details on these Projects can be found on the SJU website.

During 2011 further PhDs were awarded by the Automation Research Network area, on this occasion these were co-funded activities. All PhD funds allocated to the Research Networks are now committed. So in total 20 PhDs students are currently working in ATM research.

2011 represented the majority of the first year of operation of the Research Networks and their annual reviews. Both Research Networks have established themselves and built a reputation in their respective areas of specialism. Both research networks have developed their position papers on state-of-the art and candidate applications in ATM in order to provide a sound repository of knowledge as well as hosting/supporting summer school activities and dedicated scientific events. Particularly noteworthy was the ATACCS 2011 event that attracted over 120 attendees and received very strong feedback. Both Research Networks have been renewed for a second year with clear objectives to achieve in preparation for their mid-term reviews in 2012.

During November/December 2011 the inaugural SESAR Innovation Days event was held at ENAC in Toulouse where all the WPE activities were presented in addition to invited presenters and guest speakers. This first event of an annual series has begun with a strong support and positive feedback

even though some of the research work is in the very early stages and there were few results to present yet.

The Scientific Committee has met on three occasions, twice with the specific agenda to review progress and activities being undertaken by the two Research Networks. They provided advice to the SJU on the best strategy to adopt for the coverage Research Themes and took an active part in the PhDs selection during 2011.



### 3.4.16 WP B – Target Concept and Architecture Maintenance

#### Scope

The scope of the Target Concept and Architecture Maintenance Work Package covers the maintenance and refinement of the high-level ATM Performance Target and Architecture including the Concept of Operations (CONOPS). It defines and ensures the consistency of the ATM architecture for all SESAR WPs. WPB will also conduct a performance analysis of the ATM Target Concept throughout SESAR development phase.

#### Objectives

The role of WPB was revisited and PC13 agreed on the following updated objectives:

1. to develop proposals for ATM-related content in the following main areas:
  - performance framework;
  - high level business model;
  - high level concept of operations;
  - high level architecture of ATM technical systems; and
  - architecture principles.
2. To identify inconsistencies of the content with the top down approach of the programme and to propose mitigating actions by:
  - preparing, contributing to and performing SE Reviews for the Releases;
  - using, to the relevant level and detail, Enterprise Architecture as a tool; and
  - applying SESAR strategies in the evolution of European ATM.
3. To focus on content produced by the federating projects.
4. To support the SJU in managing the release approach as laid down in the “SEMP Application Guidelines”.

WP B is in charge of developing, where requested by the SJU, further guidance to support the application of the SESAR strategies. The guidance material produced will be used to support developments by operational, system and SWIM projects.

#### 2011 Report

As a result of a thorough review due to different risks highlighted by the SJU Members in the progress of the work, during 2011 WP B has been restructured and aligned to the new role and working arrangements agreed at PC level (PC13 meeting). In this respect, the Integrated Roadmap has been developed as one integrated operational and technical roadmap from B.1, using operational and technical expertise from WP B and federating projects.

The plan of Work Package B has been redefined in 2011 taking into account the lessons learnt and difficulties faced in 2010. This updated plan identifies some feasibility studies for 2011 to clarify the way forward. However, the complexity of the change did not allow completing the update of the baseline plans of those projects by year end 2011.

WP B has supported the SESAR Releases; Release 2 SE Review 1 has been prepared and chaired by B.1.

The Enterprise Architecture (EA) customer needs, value for money, scope and methodology has been evaluated. An approach and plan is being developed under the leadership of B.4.1 to progressively implement an Enterprise Architecture (EA) fitting the needs of the Programme as well as recognising the different levels of maturity.

A Service Oriented Approach (SOA), led by B.4.3, has been developed jointly with WP 8 & 14. The working methods and scope have been adjusted to support the development of SWIM services (in the framework of SWIM Action Plan A10).

Operational concept definition (Initial Trajectory operations, WP B-level scenarios/requirements for step1), led by B.4.2, has been conducted in consultation with stakeholders, in particular with airspace users, staff associations and X.2s.

### 3.4.17 WP C – Master Plan Maintenance

#### Scope

The scope of the Master Plan Maintenance Work Package is to administrate the up-to-date maintenance of the European ATM Master Plan to monitor the progress of development and of implementation. It also maintains the standard and regulatory roadmaps as well as the SESAR business cases.

#### Objectives

The Objectives of WP C are to:

- Maintain Master Plan information up to date and monitor the progress of development and of implementation of the Master Plan by reference to the baseline,
- Administrate the overall process to keep the Master Plan up-to-date, and propose amendments to the SJU Administrative Board,
- Include a renewed process that delivers the Single European Sky Deployment plan and provides input for development of local/regional performance based implementation plans and targets;
- Monitor and report on the achievement of these local/regional plans and derive the impact on system wide performance too,
- Maintain the overall standards and regulatory roadmap from the capture of needs to the definition, development and validation of standards and rules, including the roadmap for regulatory enablers.

#### 2011 Report

In 2011, all WPC projects have started their execution and in particular:

- C.1 has prepared the initiation of the European ATM Master Plan update campaign. The Campaign was officially launched on October 5<sup>th</sup> 2011. A group has been created to support the update work: the Master Planning Group (MPG) composed of Programme key projects (B.1, B.4.2, B.4.3, C.2, C.3, 16.6.6), the European Commission, EASA, the Performance Review Unit, and representative of different stakeholders such as ANSPs, Airspace Users, air and ground Manufacturers, Staff Associations, Military, etc.
- MPG members have finalised their first, important technical review of Operational Improvement Steps, Enablers, Deployment Scenarios and Deployment Packages. With this, the update campaign moved to the following step, the broad consultation with ECAC experts on 19 December 2011. A portal dedicated to the ATM-MP update consultation and review has been made available to the ATM community.
- C.2 has described the processes which will be applied for the regular updates of the levels 2 (Planning area: OI steps, Enablers, Deployment Packages and Scenarios) and 3 (European Single Sky Implementation) of the European ATM Master Plan, and for its level 1 (High-Level Overview) as contribution to the Master Plan update campaign. C.2 has contributed accordingly to the ATM-MP campaign by updating the performance needs for various time frames for various Operational Environment categories.
- C.2 has produced the (ESSIP) report for 2010 and plan for 2011. Finally C.2 has initiated its tasks related to the identification of generic financial incentives to support the deployment of SESAR proposed improvements.
- C.3 has supported the ICAO standardisation process with the initial SESAR needs, and has defined the processes to develop and maintain the standardisation and the regulatory roadmaps. C.3 has developed an initial regulatory and standardisation baseline as well as an initial version of the two roadmaps.

### 3.5 Main expenditure related to output

The 2011 marked first year of the Programme proceeding at cruise speed, supported by the usage of the available financial resources at a larger extent through co-financing of Projects in execution phase. In fact, in 2011 the SJU paid to the Members and for other operational activities (Title 3) the amount of EUR 62 million against a comparable amount of EUR 25 million in 2010. The co-financing relates to the deliverables accepted in 2010 whose costs were reported into the Members' Interim Financial Statements. Considering that the Programme is now progressing with intensified efforts and resources usage, it can be expected for the next year a significant increase of the amount requested for co-financing.

In terms of pre-financing, due to the fact that almost all Projects are already in execution phase the amount paid by the SJU decreased from EUR 53 million in 2010 to EUR 6 million in 2011.

Overall, the acquisition of goods and services has gone through the procurement process according to the SJU Financial Rules ensuring fair competition among the potential suppliers and efficient use of the SJU funds

In terms of payments, staff expenditure amounted to EUR 4.7 with an increase of EUR 1.1 million due to the fact that compared to 2010 the SJU reached almost full staff as per Staff Establishment Plan (EUR 5.4 million in 2011 vs EUR 5.0 million in terms of commitments).

In accordance with Article 15 of the SJU Financial Rules and in order to ensure the most adequate cash management in view of 2012 expenditure, the SJU limited its cash request to the EU to EUR 18 million, received in December 2011. The resources made available by the SJU Members, the budget provided by FP7 and TEN-T, the cash contribution from Eurocontrol, were used in accordance with the SJU Financial Rules and, consequently, in line with the principles of the European Union Programmes providing the funds. With particular regard to the estimated eligible costs of the SESAR Programme, the provisions of Title 9 of the SJU Financial Rules were applied, considering that these provisions are derived from the principles of FP7 and TEN-T funding systems.

With regard to the use of TEN-T and FP7 funds during the execution phase this primarily depends on their availability than on the allocation to Work Packages with a spending profile which ensures the timely and balanced use of the commitment and payment resources. The revenue commitments available have been used in accordance with this strategy.

**Provisional Annual Accounts 2011 of 27 March 2012 – Budget Accounting – Budget Outturn**

<i>all figures in EUR</i>	<b>2011</b>	<b>2010</b>
<b><u>REVENUE RECEIVED FOR THE YEAR</u></b>		
Contribution from the European Union	18.000.000	41.000.000
Contribution from Eurocontrol	11.165.408	11.625.884
Contributions from other Members	4.599.776	3.631.366
Other sources of contribution and revenue	206.283	(642.211)
<b>TOTAL REVENUE (1)</b>	<b>33.971.467</b>	<b>55.615.039</b>
<b><u>PAYMENTS MADE FOR THE YEAR</u></b>		
Staff Expenditure	(4.729.025)	(3.597.831)
Administrative Expenditure	(2.906.687)	(3.561.624)
Operating Expenditure	(67.947.528)	(77.740.814)
<b>TOTAL EXPENDITURE (2)</b>	<b>(75.583.240)</b>	<b>(84.900.269)</b>
<b><i>BUDGET SURPLUS of the year (3)=(1)-(2)</i></b>	<b>(41.611.773)</b>	<b>(29.285.230)</b>
<b>Total Budget Surplus previous year (4)</b>	<b>57.183.031</b>	<b>86.468.261</b>
<b><i>NEW TOTAL BUDGET SURPLUS (5)=(3)+(4)</i></b>	<b>15.571.258</b>	<b>57.183.031</b>
<b><u>COMMITMENTS STILL TO BE PAID (6)</u></b> <b><u>(RAL 2011 Title 1&amp;2 only)</u></b>	<b>(4.132.943)</b>	<b>(3.713.549)</b>
<b>TOTAL BUDGET OUTTURN (7)=(5)+(6)</b>	<b>11.438.315</b>	<b>53.469.482</b>

Provisional Annual Accounts 2011 of 27 March 2012– Budget Accounting - Revenues

<i>all figures in EUR</i>	1	2	3=2/1	4	5	6=5/4	7	8
<u>Type of revenue</u>	<u>Commitment appropriations</u>	<u>Actual Revenues established</u>	<u>% of budget</u>	<u>Payment appropriations</u>	<u>Actual Revenues received</u>	<u>% of budget</u>	<u>Outstanding (from 2011 only)</u>	<u>Outstanding (Total)</u>
Contribution from the European Union	109.994.680	109.994.680	100,0%	18.000.000	18.000.000	100,0%	91.994.680	332.442.680
Contribution from Eurocontrol	21.244.496	21.007.543	43,3%	11.165.409	11.165.408	100,0%	9.842.135	13.754.983
Contributions from other Members	4.842.724	4.842.725	100,0%	4.842.724	4.599.776	95,0%	261.581	261.581
Other sources of contribution and revenue	190.000	56.747	29,9%	190.000	206.283	108,6%	13.292	13.292
Budget surplus previous year	11.767.877	11.767.877		57.183.031	57.183.031			
<b>TOTAL REVENUE</b>	<b>148.039.777</b>	<b>147.669.572</b>	<b>91,8%</b>	<b>91.381.164</b>	<b>91.154.498</b>	<b>99,8%</b>	<b>102.111.688</b>	<b>346.472.536</b>

Provisional Annual Accounts 2011 of 27 March 2012 – Budget Accounting – Expenditure

<i>all figures in EUR</i>	1	2	3=2/1	4	5	6=5/4	7	8
	<u>Commitment appropriations (Final budget)</u>	<u>Actual Commitments</u>	<u>% of budget</u>	<u>Payment appropriations (Final budget)</u>	<u>Actual Payments</u>	<u>% of budget</u>	<u>Commitments still to be paid (RAL 2011 only)</u>	<u>Commitments still to be paid (TOTAL)</u>
Staff Expenditure	5.428.000	5.420.000	99,9%	5.428.000	4.729.025	87,1%	2.213.689	2.213.689
Administrative Expenditure	3.161.000	3.110.035	98,4%	3.161.000	2.906.687	92,0%	1.919.254	1.959.318
Operating Expenditure	139.450.777	138.650.777	99,4%	82.792.164	67.947.528	82,1%	136.438.230	353.898.020
1. Studies/Development conducted by the SJU	27.320.000	26.520.000		20.000.000	18.482.604		25.042.256	67.662.222
2. Studies/Development conducted by Eurocontrol	0	0		702.853	702.853		0	0
3. Studies/Development conducted by other Members	112.130.777	112.130.777		62.089.311	48.762.071		111.395.974	286.235.798
<b>TOTAL EXPENDITURE</b>	<b>148.039.777</b>	<b>147.180.812</b>	<b>99,4%</b>	<b>91.381.164</b>	<b>75.583.240</b>	<b>82,7%</b>	<b>140.571.173</b>	<b>358.071.027</b>
<b>TOTAL REVENUE</b>		<b>147.669.572</b>			<b>91.154.498</b>			
<b>BUDGET Surplus / Deficit</b>		<b>488.760</b>			<b>15.571.258</b>			

## Provisional Annual Accounts 2011 of 27 March 2012 – Budget Accounting

In-Kind Revenue (*Annexe I of the Budget in accordance with the SJU Financial Rules*)

<i>all figures in EUR</i>	1	2	3=2/1
<u>Type of revenue</u>	<u>Commitment appropriations</u>	<u>Actual Revenues established</u>	<u>% of budget</u>
Contribution from the European Union	0	0	
Contribution from Eurocontrol to be recognized	69.800.000	69.800.000	100,0%
Contributions from other Members to be recognized	112.130.777	112.130.777	100,0%
Other sources of contribution and revenue	0	0	
Budget surplus previous year	0	0	
<b>TOTAL REVENUE</b>	<b>181.930.777</b>	<b>181.930.777</b>	<b>100,0%</b>



Provisional Annual Accounts 2011 of 27 March 2012 – Budget Accounting

In-Kind Expenditure (Annexe I of the Budget in accordance with the SJU Financial Rules)

<i>all figures in EUR</i>	1	2	3=2/1
<u>Type of expenditure</u>	<u>Commitment appropriations (Final budget)</u>	<u>Actual Commitments</u>	<u>% of budget</u>
Staff Expenditure	0	0	
Administrative Expenditure*	0		
Operating Expenditure	181.930.777	181.930.777	100,0%
1. Studies/Development conducted by the SJU**	0		
2. Studies/Development conducted by Eurocontrol**	69.800.000	69.800.000	
3. Studies/Development conducted by other Members	112.130.777	112.130.777	
<b>TOTAL EXPENDITURE</b>	<b>181.930.777</b>	<b>181.930.777</b>	<b>100,0%</b>
<b>TOTAL REVENUE</b>		<b>181.930.777</b>	
<b>BUDGET SURPLUS</b>		<b>0</b>	

## 4 Programme management 2011 achievements

### 4.1 Operational Concept storyboard

In 2011, the main achievements with regards CONOPS activities consisted in clarifying the definition of the OFAs and consolidating the list of OIs contributing to them, developing high-level scenarios for Step1, an initial definition of the 4D trajectory operations, the GA and rotorcraft aspects of the CONOPS as well as addressing some open issues such as the Use of the RBT in ATM Systems & multi flight BT. Those information are also used by the Operational federating projects (X.2) to refine those aspects of the CONOPS for their phase of flight in their DOD.

### 4.2 Validation Strategy

The Validation roadmap has become the source for the SESAR Release Definition through the collection of all V/V activities by WP 3 building an overall picture of all V/V activities, sites, actors and prototypes. In November 2011, the SJU launched the V&V Roadmap Update campaign in order to achieve a new baseline of the V&V Roadmap incorporating a more defined top-down view through the integration of Validation targets developed by Project B.04.01. The V&V Roadmap Version 3 will contribute to define a more top-down SESAR Release 3 ensuring that the stakeholders' key priorities are addressed by the validation exercises.

The SESAR IVT (International Validation Team) proposed list of experts has been finalised during the last quarter of 2011. The definition of a core, transversal and independent validation team is central to the successful execution of SESAR validation exercises. The role of the IVT is to make available to the SESAR Programme the required operational and technical expertise provided by a team of skilled Staff Associations representatives (ATCOs, ATSEPs and Pilots). The diversity of skills, nationality and experiences of the appointed experts in the Validation team will enable SJU to provide focused and independent contribution for the execution of the planned SESAR validation activities.

### 4.3 Architecture and Technology Strategy

Based on the needs of the Programme and the issues identified as a result of the WP B work, an updated Architecture Strategy has been developed. The updated Architecture strategy took on board all the issues including a system thread guidance document to support the Programme in areas where guidance was currently missing.

The system thread guidance now provides a framework for the Architecture Definition Document (per step) and further functional breakdown of the technical system within each domain through the technical architecture documents. The development of the integrated roadmap including extensive review of the enablers now allows a clear understanding of the coverage of the technical developments in the programme.

During 2011, significant progress has been made with the definition of services and components within the Programme with clear criteria allowing the identification of candidate services for further development in 2012.

Based on the update of the CONOPS to include GA and rotorcraft, a set of tasks that address the related technical aspects of their integration into the wider ATM system have been defined. These tasks are expected to be progressed in 2012.

A critical review of communication technologies was conducted for the ground-based segment and the results fed into the Programme (15.2.4 Future Mobile data link system definition and 15.2.6 Future Mobile Satellite Communication). Furthermore, a business focussed investigation has begun into different communication options and evolution for the satellite segment involving ESA, with initial results available by the end of Q1 2012.

## 4.4 Programme Management and Execution

At the end of 2011, the common SESAR execution framework (based on best practices from industry such as CMMI & PMI) to enable adequate programme management through streamlined monitoring and control activities is defined, implemented and documented.

Details on the status of progressing of Programme execution are provided in sections from 3.1 to 3.4 of this report (Release 1 and 2 status and details per Work package).

## 4.5 Engineering Methodology

The SESAR Programme is facing a number of challenges common to large scale integration programmes:

- System elements tend to operate independently;
- System elements have different life cycles. Some of the system elements are possibly in their development life cycle while others are ready to be deployed;
- Adaptability of organisations and behaviors to the change depends of up-front preparation and information management;
- The various Systems requirements are likely to be at different maturity levels;
- Complexity is the major issue. As system elements are added, the complexity of system interaction grows in a non-linear fashion.

To face those challenges and manage the overall complexity of the Programme, the System Engineering focuses on:

- Building the right system: meeting the performances targets,
- Building the system right: control and deal with inherent technical complexity.

The key principles of the performance approach in the Programme are the following:

- Performance is firstly set at System level and then progress toward its achievement is monitored through the performance management process of WP B using its framework. The performance management process of WP B interfaces with the engineering process in the initial setting and allocation of performances requirements to System components and in their monitoring by consolidating the results up to the level of the Operational Focus Areas.
- Performance is expressed in term of requirements in order to ensure complete traceability from high level targets (KPAs) cascading down to a lower level to the System components and their allocated performance requirements.
- Performance monitoring is then implemented through the V&V activities which include Verification of the achieved performance towards requirements. Performance consolidation is achieved through the WPB using the Performance Framework.
- Gaps between required and expected performance reveal assumptions or design inconsistencies.

The Engineering Methodology is articulated around a number of Review Session aiming at assessing the maturity of projects and supporting the decision making within the Programme.

A significant part of the work of the Technical Coordination (TC) has been devoted to:

- Monitor and consolidate the Release 1 (19 exercises) by coordinating the System Engineering Review Sessions, contributing to feedback analysis and following up of the issues
- Define the Release 2 (43 exercises considered) by elaborating 18 OFA Plans in coordination with Project Managers, preparing guidance document, preparing and organising the System Engineering Review Session 1 .

In 2011, SESAR Industrial Support (IS) put an important effort on the analysis of SESAR Projects requirements, including the review of V&V data. A process was proposed to analyse the requirements and V&V data produced, based on:

- The integration of the requirements,
- The analysis of their coherency,
- Their publication on the SJU Extranet.

It was agreed to define a series of coaching sessions with SESAR Projects having produced draft requirements and V&V data to help them deliver outputs of good quality and afterwards review and update the requirement and V&V analysis process. These are active since August.

In April 2011 a draft version of the Maturity Target Definition and Variance documents was produced. A revised version was produced in September. It provides a gap analysis from a planning point of view between SESAR targets, reflected in the SESAR Master Plan and in the Integrated Roadmap, and SESAR projects activities.

## 4.6 Scheduling

The schedule of the various projects are elaborated and delivered to the SJU during their Initiation Phase.

In 2011, 41 additional projects have connected their schedule to the rest of the Programme allowing building the overall Programme Planning detailing when tasks are performed and deliverables available.

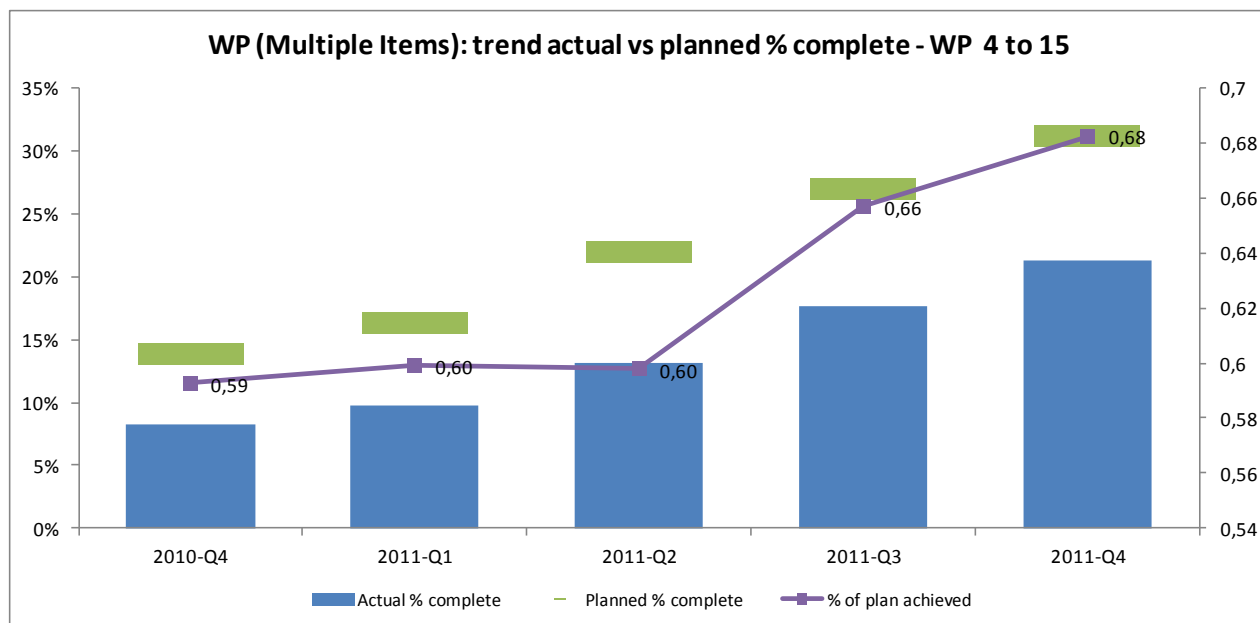
Thanks to this integration the SJU is able using its support system:

- to generate roll up views at Programme level, WP and member level;
- to compare the reported progress with the schedule contractually base-lined;
- to integrate the individual project schedules of all projects collaborating in the context of Releases or on Operational Focus area content level

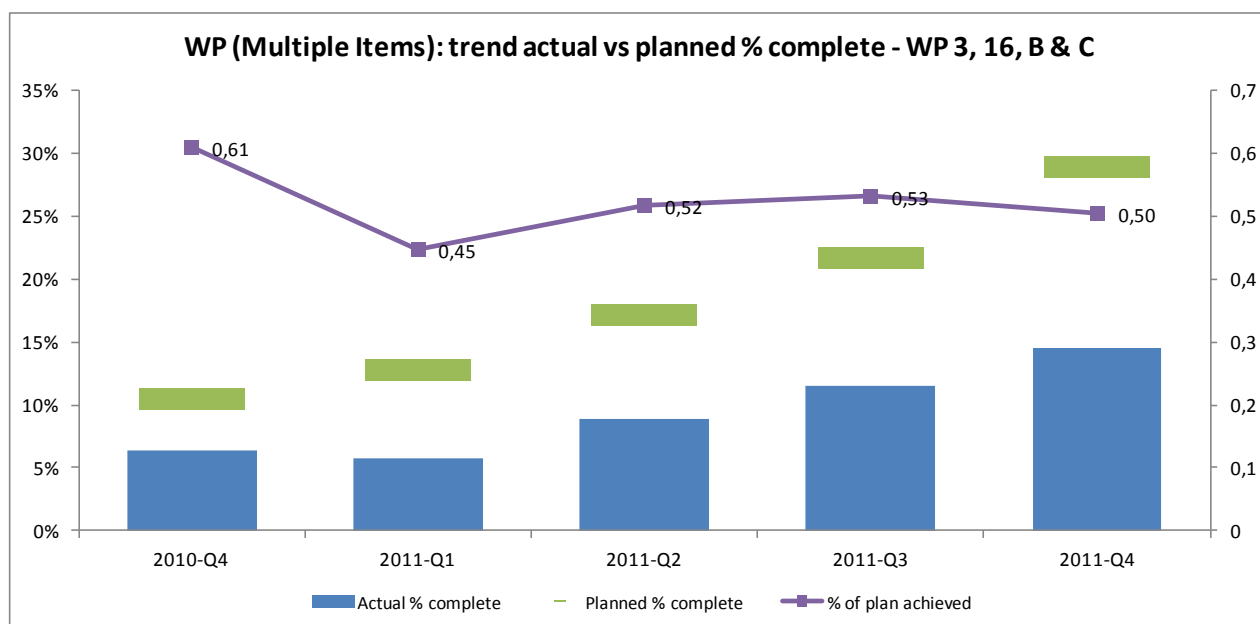
All schedules are constantly monitored and quarterly reports are provided by the Project Managers in terms of percentage completed and milestones achievements.

The figures below show the evolution of the percentage of completion of the Programme over the 2011 period. The first relates to Work Packages 4 to 15 hosting the core of the R&D activities. The trend shows a significant increase of the ratio between planned and actual (from 0.60 to 0.68) which can be explained by various factors:

- completion of ramp-up activities;
- increasing level of maturity of programme management and of the partnership in general;
- better alignment of projects with programme objectives;
- overall positive “tension” created by the Release approach.



The second relates to transversal activities dealing with the integration of the various components as well as the top down approach. Despite significant efforts made in particular in WP B (e.g. Concept of Operation on Trajectory Management) and WP C (e.g. launch of the Master Plan campaign), no significant improvements have been achieved yet.



Furthermore, 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. As already mentioned, 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 first December 2011 reports show an overall under consumption in the order of 20% compared to the initial planning before the reallocation exercise. Consequently, it should be noted that for many Projects the planned distribution of resources during the execution phase is under amendment 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 4.11), 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.

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 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. As already mentioned, the Tiger Team should identify areas to introduce efficiency in the Programme and to propose criteria to be used in this respect.

## 4.7 Programme Risk Management

The Risk Management approach followed by the SJU is inspired by the SJU Regulation – Council Regulation (EC) 219/2007, Article 1.5 – where it is established that the SJU is responsible for the execution of the ATM Master Plan; thus risk management is crucial to the successful execution of the ATM Master Plan.

The 2011 Risk Management Report (SJU-AB-020-11-DOC-01) was approved by the ADB as part of the SJU Annual Work Plan 2011 on 15 December 2011.

Compared to the situation at the end of 2010, no new or additional risks were of such a magnitude to be brought to the attention of the SJU management and the gross criticality of the risks identified in 2010 did not change. As result of these processes, the following risks, originally identified and maintained at the end of 2011, are assessed with their gross criticality (criticality ranging from 1 up to 16):

- 8 risks with a very high criticality (12 or more points),
- 8 risks with high criticality (8 – 9 points),
- 13 risks with medium criticality (4 – 6 points), and
- 1 risk with low criticality.

Since then, as result of the mitigating measures identified and progressively implemented through risk specific action plans, which contribute to the substantial reduction of the SJU risk profile, the Net Criticality measured at the end of 2011 is the following:

- 2 risks with a very high criticality (12 or more points),
- 6 risks with high criticality (8 – 9 points),
- 21 risks with medium criticality (4 – 6 points), and
- 1 risk with low criticality.

The mathematical average of the Net Criticality is at 6.23 points decreasing by 7% comparing to the previous year, while the standard deviation is at 2.13, showing a high concentration around the mean, and a limited number of risks with very high or low criticality.

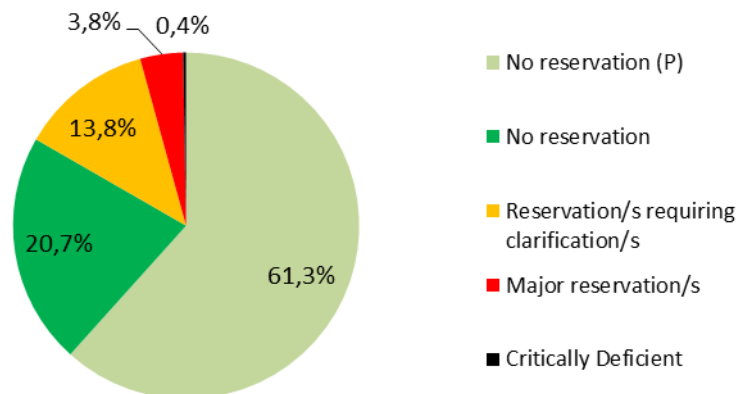
It should be noted that risks which are associated to reaching the 2020 SES political targets (capacity, safety, environment and cost efficiency) will be reassessed in the light of the outcome of the EU ATM Master Plan update which is expected to be approved in the second half of 2012.

## 4.8 Quality Management

The quality management system is part of the SESAR Programme Management Plan (2nd edition) established early 2011.

In line with the approved second edition of the SESAR Programme Management Plan, the SJU assesses about 40% of deliverables with focus on the content produced. The other 60% of deliverables, flagged below as “No reservation (P)”, are assessed by the internal project quality management processes themselves.

During 2011, in total 668 deliverables were handed over to the SJU of which 550 have been assessed so far (see Annexe 2).



Overall the quality of deliverable is steadily improving. It is expected that the more the engineering processes are systematically and consistently applied the more the content quality will increase.

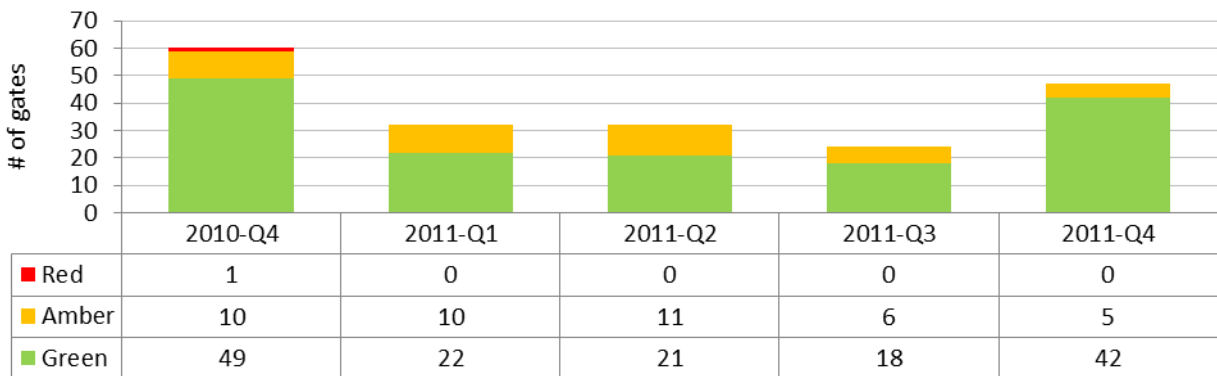
This assessment of deliverables assumes that the projects correctly apply internal quality controls prior to the submission of the deliverable to the SJU and the project is asked to provide evidence of the assessment made. The assessment made by the SJU itself leads to a common defined assessment status:

- Green: no reservations;
- Amber: reservation requiring clarification and/or rework;
- Red: reservation due to issues observed entailing critical risks for project/programme execution with as consequence that the deliverable will not be disseminated through the Programme for future re-use. Additionally, the identified issues require major action(s) by the Project team, leading to significant changes to the Project plan such as partial or global tasks redefinition, suspension or cancellation to be decided at the next Project Control Gate.
- Black: the deliverable does not fulfil standard expectations and require major action(s) by the Project team, leading to significant changes to the Project plan such as partial or global tasks redefinition, suspension or cancellation to be decided at the next Project Control Gate.

Furthermore the SJU conducts on a yearly basis a Project Control Gate. The assessment of the Project performance at the Control Gate results as well in a status provided by the SJU:

- Green: the Project is under control and objectives to date have been achieved,
- Amber: during the Control Gate, significant issues have been identified which pose a significant threat to a successful outcome of the Project or Projects and its / their deliverables.
- Red: during the Control Gate, gross deficiencies have been identified with the Project's management and control and/or the technical quality and direction.

The following figure shows the gate outcomes per quarter in 2011



An 'AMBER' status is a recommendation to continue with the project implementing a corrective action plan. The Programme Manager monitors the completion and impact of the corrective actions taken.

## 4.9 Programme Management System (PMS)

The SJU has continued to develop and enhance the IT applications and adapt them to the way the SESAR Programme is executed. The Programme Management System is composed of the following three components:

- A collaboration component that ensures that all Members and partners in the programme can work together and exchange information within the partnership (Extranet);
- A central repository that collects and consolidates all information necessary to successfully run the programme by monitoring and controlling progress, quality, costs and risks (SIR Info Repository);
- A central schedule management system that enables to consolidate individual project plans and inter-project related dependencies and consolidate the information at programme and release level (PMS).

The Extranet, SIR and PMS Deliverables in 2011 could be summarised as follows:

- Collaboration and documentation management facilities in to support of release management and operational focus area exercises;
- Facilities to integrate and maintain V&V roadmap information in SIR and browsing facilities to view this information in the extranet;
- A database and control user interface application to schedule and performs information extracts and distributes the information to the programme participants designated to project, WP and member extranet sites;
- A database and user interface application to monitor and control the acceptance of deliveries, the quality assessments, the preparation of output in function of project control gates and financial processes.



- A user interface and workflow to enable and support hand over of deliverables and trigger and control deliverable review assessments.

#### 4.10 Associate Partners of the SJU

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.

The Lot 3 was not awarded as no proposals were received and there is no plan at the moment to re-launch it.

In the second phase, started in November 2011, a Specific Proposal was requested by the SJU from the two Associate partners to the SJU awarded in Lot 6 and Specific Agreements are expected to be awarded to successful Associate Partners. For the remaining Lots further Specific Proposal requests are anticipated during 2012. 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.

#### 4.11 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 resources’ reallocation exercise, which resulted in an amendment to Schedule 14 of the MFA approved by the Administrative Board on 15 December 2011 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, the Members agreed with the SJU that there is a need for a top down approach in order to determine areas/Projects where:

- 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 BAFO III.

In this respect, during the period February – March 2012 a small “Tiger Team” exclusively composed of PC members will 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. Furthermore, the Tiger Team was also tasked at the PC in December to define a more top-down approach in defining the future releases of the Programme.

Where the Tiger Team 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 of by year end and effective entry into force of the modifications on 1 January 2013.

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

## 5 SESAR Programme specific activities in 2011

### 5.1 AIRE

In 2010 eighteen new AIRE projects were selected for co-funding with sixteen ending at the last quarter of 2011. Generally the project’s pre-defined objectives were achieved, only with minor adjustments, allowing for average fuel savings<sup>7</sup> per flight in the order of 40 kg for surface trials, 110 kg for projects covering TMA operations, and 375 kg of fuel for oceanic for a A330 type. Projects carried out live trials with commercial flights from November-December 2010 to March-April 2011 for 4 months in average. Around 41 partners from 13 different States (including Morocco and Canada) formed the projects’ consortia.

A very large number of flight trials - more than 7000<sup>8</sup> - have been performed in 2011 and once more the initiative attracted a lot of media attention with increased interest and information requests from airlines and ANSPs not officially part of consortia. On the technical side, a large range of areas were covered with an immediate implementation in Paris CDG, Zurich, Vienna Toulouse, Brussels and Vienna airports; and on the oceanic FIRs of St Maria, Casablanca, New York, Shanwick and Gander. Another very successful result has been the active involvement of the Swedish aviation regulator with the provisional approval of new RNP-AR procedures for two Swedish airports.

#### Summary of projects:

Projects	End project	# of trials	Technical Focus Area
Lot 2 - Flight trials during transition from en route to final approach in a multi airport environment	16-Oct-11	362	Synchronising multiple airport traffic flow
Lot 4 - A380 transatlantic flight	19-Oct-11	19	Taxi-out reduction; Oceanic trajectory optimization

<sup>7</sup> Averaged figures based on 14 projects

<sup>8</sup> Two projects were conducted in full live operations, however trials alone still account for more than 3000 flights

Projects	End project	# of trials	Technical Focus Area
Lot 3 - RLong	25 Oct 11	1330	Reduced separations for RNP4 equipped aircrafts
Lot 4 - Green Wave	31 Oct 11	1700	Improved AMAN pre-planning tool
Lot 4 - Trans-Atlantic Green Flight	1 Nov 11	33	Oceanic trajectory optimization; CDO
Lot 3 - ENGAGE	25 Nov 11	23	Increased surveillance on the North Atlantic
Lot 1 - CDM in Vienna	30 Nov 11	208	Collaborative decision support systems
Lot 4 - VINGA	30 Nov 11	178	Reduced engine taxi out; direct route; RNAV GNSS Approaches
Lot 2 - RETA-CDA2	3-Dec-11	210	Verify CDO implementation and predictability
Lot 2 - B3 project	21 Dec 11	2000	CDO
Lot 3 - DORIS	24 Dec 11	110	Oceanic trajectory optimization
Lot 3 - ONATAP	24 Dec 11	999	Direct route/Free route
Lot 1 – Greener airports under adverse conditions	27-Dec-11	1800	Improved AMAN pre-planning tool
Lot 2 - DoWo - Down Wind Optimization	27-Dec-11	200	CDO
Lot 4 - Green Shuttle	27 Dec 11	60	En-route optimisation; CDO
Lot 2 - REACT-CR	6-Jan-12	400	CDO
Lot 4 - Green Connections	1-Jun-12	100	RNAV GNSS Approaches, continuous cruise climb
Lot 4 - Trajectory based night time CDAs	26 Feb 12	300	Improved AMAN pre-planning tool; CDOs

### AIRE Dissemination/closure Workshop

On the 27 and 28 October 2011 the SJU organised a technical workshop to focus on common thematic to all the projects and lessons learnt focusing on the issuing of recommendations to non participating ANSPs, airports and airlines. This workshop was intended also to SESAR projects to ensure a dissemination of the results inside the SESAR Programme. This event was particularly important to guarantee the integration of the AIRE results into similar SESAR projects in areas like assessment of benefits, regulatory, and for some technical aspects.

### Cooperation with the FAA

During 2011 regular meetings took place between the SJU and the FAA and a Coordination Plan has been jointly prepared establishing the future activities. The FAA also participated in the closure workshop on Marseille and confirmed its interest in continuing its support to the new European projects resulting of the expansion of the initiative planned for 2012.

### Communication

A lot of diversified media material has been produced to promote the AIRE initiative during 2011, of note the large number of projects that have produced videos and organised national dissemination events. As an example a dissemination event for the VINGA project, a gate-to-gate project, took place in May 2011 accompanied by a demo flight with press officials on board. AIRE projects were also presented at the Aviation Noise and Emission Reduction Symposium (ANERS), a major event on Aviation and environment, which took place in October. Due to this external high visibility a strong response to the 2012 call should be expected.

## 5.2 OPTIMI and SAT-OPTIMI

To complement the results on OPTIMI, the SJU launched the SAT-OPTIMI study, using the output from OPTIMI to present the feasibility and options for the best use of satellite infrastructure and technology to ensure full deployment of oceanic and remote tracking services.

The study report included, among other things, the timing, investment and operations cost estimates, as well as a business and service model for tracking services, giving a clear direction on a deployment path for aircraft tracking services over oceanic, remote continental and Polar Regions.

The main recommendations from the study were to:

- Initiate Iridium based flight data triggered transmission system demonstrations for the quick adoption of emergency triggered service.
- Sponsor the development of INMARSAT SB200 Oceanic Safety as a key driver for an optimised FANS 1/A regulated service.
- Support a comparative study of various ADS-B information reporting solutions through satellite for a forward looking SAR continuous service.

## 5.3 European ATM Master Plan Update

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

An update started during the summer 2011 to take into account the developments since the end of the definition phase and it will result in a significant Master Plan update, which will be submitted for approval to the Administrative Board before summer 2012.

A six months Master Plan Update campaign was initiated in October supported by a Master Planning Group (MPG) to prepare the update. The MPG brings together the combined expertise required to develop actively the update Master Plan, supports the consultation process, as well as co-ordinates and consolidates resolutions to identified issues.

The European ATM Master Plan will address the following issues which were agreed upon at the Master Plan update exercise on October 5<sup>th</sup>:

- Preparing for the deployment phase, including the connection between the research and development activities, deployment scenarios and performance needs;
- Ensuring global interoperability;
- Updating the risk management plan

The next European ATM Master Plan will be more connected to the SESAR Programme and aligns the timely deployment of enablers (technology, procedures, regulations, standards etc) in accordance with the performance targets. It will take into account various developments like the updated Long Term Traffic Growth Forecast, the results achieved in the R&D programme as well as in implementation activities (IP1) and the indications emerged so far. It will also rationalize and simplify the first edition and introduce comprehensive views of the European ATM Master Plan per category of stakeholders.

## 5.4 Military

Initiated in mid-2011, the Military Engagement Plan for SESAR (MEPS) has reached by end of the year 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, the MEPS will enable the full participation of national military in all relevant aspects of the work programme, via a structured organisation including the formation of specific panels to collate a large number of military inputs in specific technical or operational domains.

The SJU awarded a study, so-called "SESAR Military Avionics Study", to a consortium composed of ISDEFE (Ingeniería de Sistemas para la Defensa de España, S.A.) and AIRBUS Military to make an inventory of existing and future military state of the art technologies, in particular for airborne equipment, and their respective performance capabilities.

Initiated in September, the Study will highlight how to ensure interoperability between military and civil technologies, in order to reduce implementation cost for SESAR. The success of these two military linked activities measures the gradual and positive involvement of the Military experts and their input in the SESAR Programme.

## 5.5 Professional Staff Associations

The involvement of the Professional Staff Associations has been assured through the signature by Eurocontrol on behalf of the SJU of 5 framework contracts, one for each of the associations. These framework contracts were extended for another two-year period as of 1<sup>st</sup> September 2011. During 2011, 4 meetings took place to ensure coordination among the work orders allocated to each of them. The full integration of staff associations' representatives into the Programme at different levels is in place and a pool of 65 cross-nationality licensed and operational ATCO's, Pilots and ATSEP's have formed an International Validation Team. The Team is ready to participate in the different validation activities depending on the type of exercise and need. The interest and motivation of the Staff Associations to participate in SESAR has increased during 2011.

## 5.6 National Authorities

The SJU has continued to be active in the relevant forum in which Regulatory Authorities coordinate and take decisions, such as:

- The Single Sky Committee,
- The Eurocontrol Safety Regulatory Commission,
- The Regulatory Interface and Coordination Board – Area Northwest (RICBAN).

The SJU interacts with the National Supervisory Authorities through the National Supervisory Authorities Coordination Platform, under the umbrella of the Single Sky Committee.

During 2011, the Memoranda of Understanding with 7 Authorities signed in 2010, were put into operation.

In 2011, several quarterly meetings took place in the SJU premises with NSAs' experts and their participation to the SESAR Programme reinforced:

- Review of the Remote and Virtual Control Towers OSED, finished on 16/03/2011
- Review of the OPTIMI Safety Case, finished in on 16/06/2011
- Review of the "Best Efficient Best Served" SJU Policy, finished on 08/09/2011
- Elaboration of a draft proposal for a "Best Efficient Best Served" ICAO paper, finished on 16/06/2011
- Review of the EC PBN draft regulation, finished on 08/09/2011
- Review of the EC Noise draft directive, finished on 08/09/2011

- Review of the Proof of Concept protocol, finished on 08/09/2011
- participation of Authorities in several validation exercises, such as:
  - DMAN, in Paris Charles de Gaulle, on 09/09/2011
  - Remote control Towers, in Malmö, on the week from 8 to 11 November 2011.
- Participation of the Authorities in the ATM Master Plan update, namely in the elaboration of the Regulatory Roadmap and the Standardization Roadmap.
- Review of the Standardization Roadmap Development and Maintenance Process
- Review of the Regulatory Roadmap Development and Maintenance Process
- Review of the SWIM regulatory framework.
- Participation in the validation exercises on CTA operations in Sweden in November, on i4D with flight trials conducted at MUAC and in Sweden in the end of November, beginning of December

Due to the high interest of this involvement, it was decided to extend the duration of the MoUs to 2012.

## 5.7 Civil Airspace Users

Airspace Users have been actively involved across the programme, contributing towards projects tasks and deliverables across 92 projects. Initial project utilisation of resources was slow but steadily increased over successive quarters.

Contributions have been received from Air France, EBAA, ELFAA, IAOPA, IATA, KLM, LAG, Novair, SAS and TAP. KLM unfortunately had to reduce its effort in the middle of the year and Iberia indicated that it intended to expand its areas of involvement in 2012.

The main Airspace User achievements in 2011 include:

- Contribution of 1750 days of effort to 92 Projects by 84 experts from 11 Organisations (20 companies);
- Contribution to 2 Release 1 exercises;
- The introduction of Airspace Users KPIs and Reporting;
- The addition of Rotorcraft expertise in addition to Scheduled (Main and Regional), Charter, Low Fare, Cargo, International Associations, Business Aviation and General aviation expertise.
- The following objectives will be progressed in early 2012:
- Participation in 96 projects where effort in excess of 4000 days has been requested;
- AU Contribution to 10 OFAs and 17 Release 2 Exercises planned by 8 AU organisations
- A simplification of the process where possible.

## 6 Coordination with other Programmes and Organisation

### 6.1 FAA/ Next Gen

During 2011, the priority co-ordination activities (described in Coordination Plans) have been scoped, agreed and embedded within the work programme.

Within the frame of the Annex 1 of the Memorandum of Cooperation with the US addressing interoperability between SESAR and NextGen, the Coordination committee (co-chaired between the SJU and the FAA) has met on three occasions during 2011, at the first occasion this was constituted as an informal meeting pending confirmation from the EC on transfer of responsibility to the SJU. This was received and consequently the two further meetings were held on a formal basis.

The following coordination activities are now active, with others to follow in 2012:

- Coordination of technical efforts in support of global and ICAO standardisation activities
- Road-mapping including standardisation and regulation with a view to facilitate implementation synchronisation
- Avionics technology and applications roadmap
- Data-link technology
- Atlantic Interoperability Initiative to Reduce Emissions (AIRE)

## 6.2 Clean Sky

Coordination with Clean Sky focused on specific areas of common interest with the start of project level discussion and alignment; these are:

- WP16 (SESAR Gate to gate aircraft operation improvement for fuel and environmental savings, environment metrics and modelling and the Clean Sky Technology Evaluator work),
- WP9 (Aircraft Systems in support of SESAR Trajectory based Operations and Clean Sky Trajectories for Green Operations),

During 2011, the primary area of information exchange has been on the SESAR WP16 and CleanSky technology Evaluator activities to align measuring and metric assumptions for CO<sub>2</sub> emissions claims.

## 6.3 7th Framework Programme projects

Regular formal and informal coordination meetings between the SJU, DG MOVE and DG RTD representatives have taken place during 2011. There is a consolidated list of both SESAR and EC Research activities maintained jointly, including a mapping of related projects as well as coordination on the scope and potential links between new EC research calls and SESAR scope.

During 2011 both SESAR JU and CleanSky attended a joint presentation meeting to brief EC project officers on key areas of activity and the differences in the constitution of the two JU/JTI initiatives.

As an example, the coordination between SANDRA project and communication related SESAR projects on points of common interest (e.g. airport communication system) is expected to provide concrete benefit.

## 6.4 ICAO

The SJU takes on a key role of the European coordination for the Air Navigation Conference 2012 (AN - Conf/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). The SJU contributes with its Experts to 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 and Eurocontrol.



The SJU has identified key areas where the SESAR Development Phase needs the support of standards and ICAO provisions. 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.

## 6.5 EASA

In January 2011, the Letter of Agreement signed in 2010 between the SJU and EASA, was also signed by Eurocontrol. This arrangement would allow EASA to participate in SESAR work program, either at the early stages or at the review of deliverables, with its own resources or supported by Eurocontrol.

In June a letter was sent to EASA with the initial list of deliverables to be reviewed during 2011:

- OSED on Remote and virtual TWR, SESAR project 06.09.03
- Safety Assessment of OPTIMI
- OSED from SESAR project 06.08.04 Coupled AMAN-DMAN, "Basic DMAN Operational Service and Environment Definition (OSED) "
- OSED from SESAR project 05.06.04 Tactical TMA and End-route Queue Management, "Step 1 Initial OSED"
- SPR from SESAR project 04.08.01 Evolution of Ground Based Safety Nets, "Consolidated baseline framework for Safety & performance evaluation of STCA"
- SPR from SESAR project 04.07.01 Complexity Management in En-route, "Final Safety and Performance Requirements"

In September, it was introduced, as a high priority, the review of the document P 16.01.04 – “Guidance Material to execute Proof of Concept – Draft 1” (Version 00 02 00 updated after the first round of NSA comments). The work is ongoing and results expected in 2012.

## 6.6 ESA

In the context of WP 15 (SatCom datalink, navigation) 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 has during 2011 established an activity, in which ESA is participating, on an initial business case analysis of SatCom development, deployment and operation. This work will continue in 2012 in support of the need to fully assess all technical options for the future SatCom solution.

ESA and S-JU are also coordinating on GNSS navigation aspects. ESA experts are directly participating in projects within WP9 and 15. This contribution aims at bringing the necessary “Space” technical expertise as well as clarifying plans for Galileo and for EGNOS.



## 6.7 External relations

The SJU pursues international relations in the context of the European Commission external relations framework. The approach has been aligned with DG MOVE, with the SJU acting together with DG MOVE.

The SJU has also been carrying out SESAR workshops in third countries, mostly as awareness exercises or joint ventures technical fora at the request of the third state, and supported by DG MOVE.

Concrete cooperation has taken the form of association to technical annexes of bilateral Memoranda of Cooperation between the Commission and third countries, to which there have been three so far:

- the implementation of the US EU-US MoC on civil aviation R&D , Annex 1 on ATM interoperability;
- MoC with the Japanese Civil Aviation Bureau (JCAB) signed in July 2011, technical appendix on ATM research ;
- MoC with Mexico, to explore ATM cooperation, as a follow on to the horizontal agreement of 2010.

The content of the SJU's relations with third countries is outlined in more detail below:

### United States

The European Union concluded a Memorandum of Cooperation with the US Department of State in 2011 on civil aviation R&D . A technical annex on Nextgen – SESAR Cooperation for interoperability defines the scope and working methods for the SJU to work with the Nextgen programme team.

Work with the USA has now evolved from the preparatory period prior to signature to full implementation. Moreover, regular coordination meetings are held between DG MOVE, Eurocontrol, EASA and SJU staff, inter alia, to align this process with work ongoing at ICAO level.

### Japan

DG MOVE signed an MoC with the Japanese MLIT this year on ATM, with a technical appendix focussed on SESAR-CARATS cooperation with the JCAB.

There were numerous technical areas identified for cooperation. Up to the end of 2011, the SJU had bilateral discussions with Japanese industry with a view to considering Japanese industry participate in SESAR.

### Mexico

In follow-on to the horizontal agreement in 2010, the European Commission signed a MoC with the Mexican "MOT" focusing on ATM, in mid 2011. Concrete actions are currently under consideration.

### Singapore

In October 2010 the SJU organised an EU/SJU workshop, with the support of the EU Ambassador and in close collaboration with DG MOVE. This was a follow-up to a visit to Singapore mid 2011 to prepare the up-and-coming visit of VP Kallas to Singapore in early 2012. A joint EU-Singapore statement outlined the will to have more concrete technical cooperation between the two regions on ATM.

Furthermore, good relations continued to develop with China, , Russia, Ukraine, Turkey and the Middle East Countries. The SJU participated at the EU/Russian summit in October 2011 and the Russian company FGUP "GosNIAS became a candidate associate partner of SESAR.

It was also agreed to welcome a Turkish (SNE) air navigation services expert in-house as well as a Ukrainian. These experts will join the SJU in 2012.

## 7 Governance Management and internal control system

During 2011, the Administrative Board met 4 times providing governance and steering the activity of the SJU. Key decisions were taken during this year in particular concerning the Memorandum of Understanding with the US, the Associate Partners of the SJU, the IAS Strategic Audit Plan, the Third Amendment to the MFA.

At the Administrative Board Meeting of 29 March the Memorandum of Cooperation between the EU and USA, that forges cooperation in terms of Aviation with the FAA beyond the SESAR Programme, was presented. To ensure a strong cooperation with the US a SJU Liaison officer position was created to work in the EU delegation in Washington.

Regarding the Associate Partners to the SJU, the Board adopted the decision ADB(D)-04-2011 on the selection process of the Associate Partners on the basis of the Executive Director proposal. This new category of stakeholders was created to answer the need to complement and complete the expertise brought by the SJU Members to the SESAR programme in specific ATM fields and to ensure a better participation of SMEs, research centres and universities in the Programme.

Following the appointment of the IAS of the European Commission as the SJU internal auditor, the Board adopted the Decision ADB(D)-06-2011 on the Coordinated IAS-IAC Strategic Audit Plan 2012-2014, presented by the IAS to the meeting of 17 November. The Strategic Audit Plan is the results of a risk analysis performed jointly by the IAS and SJU IAC and propose the topics to be audited until 2014 (see section 7.2).

The proposal on the Third Amendment to the MFA was approved at the Administrative Board Meeting of 15 December, with the Decision ADB(D)-10-2011. The Third Amendment to the MFA was created to take into account the development of the Programme since the launch phase in June 2009 and up to 15 December 2011, the results of the initiation phase and the exercise of reallocation of resources through IBAFO I and II. It foresees that on yearly basis Projects baseline Report are drafted to provide a snapshot on the situation of the Programme at the date. This document complements the schedule 14 of the MFA (Technical Offer). Furthermore it clarifies some financial aspects concerning the granting of interim and final payments for Projects and Programme.

### 7.1 Programme Management and Risk Management

Early 2011, version 2 of the “SESAR Programme Management Plan” (SESAR PMP) including improvements and reviews proposed by the stakeholders was finalised and delivered. It details how the Programme is organised and how the various R&D projects will be conducted. The Programme is managed following basic principles of full transparency, timely and comprehensive communication, efficient reporting and escalating procedures which ensure participation and collaboration between Members and the SJU at different levels. The Members contribute to the Programme decision making process through the Programme Committee and at a more operational level through the Program Control Group, which met bimonthly in 2011.

The complexity of the Programme calls for a management structure which provides the Project Manager with some flexibility in the development of the projects and enables steering and control mechanisms to

ensure overall coherence. In December an internal reorganisation aiming at simplifying and increasing effectiveness of the management structure led to the creation of two Deputy Executive Directors responsible for the Program developments and Administrative and Financial matters respectively.

The SJU's Risk Management activities have been conducted in line with the Policy approved by the Executive Director with the decision ED 64 on March 25<sup>th</sup> 2010. The 2011 Risk Management Report has been endorsed by the Administrative Board as part of the Annual Work Plan 2012 on 15 December 2011. The key elements of the report are presented in section 4.7.

## 7.2 The Internal Control System

The Internal Control System provides set out the minimum requirements for the internal control activities. It is articulated in six building blocks each of them has been developed at different degrees by the SJU, in line with the system in place at the European Commission.

- **Mission and Values.**

The mission of the SJU is clearly stated in Article 5.1 of the SJU Regulation.

In 2009, the SJU management established a SJU Vision which is included in the Annual Work Programme and communicated outside through the SJU Web site. It is summarised as follows: *"by 2012 we have created the change in European ATM that demonstrates to the world our ability to deliver benefits to the community"*.

The vision has been further detailed in medium term strategic objectives to be achieved by the end of 2012, to ensure there is an effective monitoring towards the achievement of the SJU Mission at the end of the Programme.

Approaching the 2012 and looking ahead, the SJU management has proposed to the ADB at its session of December 15<sup>th</sup>, a mid-term vision for the period up to 2014 included, together with related objectives, as follows: *"2014 - The SJU partnership has successfully introduced innovations, bringing measurable performance benefits to the worldwide aviation community"*

A set of ethical values have been developed by the SJU Executive Team which constitutes a reference for the SJU staff and set the tone at the top of the SJU.

In house training are organised for new staff members on ethics and integrity or staff members are requested to attend the EU Commission trainings on the subject. Furthermore, in accordance with the Administrative Board decision on Conflict of Interest, each staff member is requested to sign a declaration on confidentiality, commitment and conflict of interest at the beginning of his/her work at the SJU and to revise its declaration on conflict of interest on an annual basis.

- **Human Resources**

The SJU is an EU body and therefore its staff is subject to the EU Staff Regulations.

The SJU relies on a solid and experienced staff; in addition the SJU Management continuously assesses the HR needs and priorities, to match the available competencies with the developments of the SESAR Programme. The possibilities for mobility within the SJU are limited considering the staffing numbers (39 FTEs) and the fact that most of the positions require highly specialised competencies and built up

experience in the technical fields. A physiologic turnover has led to some changes especially in respect of National Experts and Members experts coming at the end of their secondment; the process has been managed to minimise the impact on the SJU's continuing activities.

Following the results of a staff satisfaction survey held in 2010, the performance assessment process has been reinforced and it is now a key element for staff career progression. The assessment focuses also on the need for training as an integral part of the staff development as clearly stated in the "Learning and Development Policy".

In line with the Decision 05-2011 of the ADB and in accordance with Article 110 of the EU Staff Regulations, the SJU Staff Committee has been elected to ensure smooth running of the SJU and contribute to improvement of staff working conditions and general living conditions. Furthermore, at its last meeting of the year, the Administrative Board approved new leave management procedures in line with those in force at the EC. The evaluation and reclassification implementing rules have been discussed with the EC services for the last two years and are expected to be adopted early 2012.

- **Planning and Risk Management Processes**

The AWP 2012 was presented to the Administrative Board and approved at its meeting of December 15th. The document identifies short term objectives contributing to the achievement of the medium term strategic objectives (see section 2) and overall of the European ATM Master Plan. The progress of each Project is monitored on yearly basis through the Control Gates, where actual results are compared with the planned as defined in the Project Initiation Report (PIR) and its amendments and necessary actions for the re-alignment are identified or decision for discontinuing the activities taken. Some indicators as the resources consumed, the deliverables handed over, schedule respect, allow the SJU management to obtain a good picture of the progress made towards the plan.

With regard to risk management, section 4.7 provides further information.

- **Operations and control activities**

The operational structure of the SJU is composed by the Programme Support Office (PSO) focusing on coordinating and supervising the execution of the projects and by "Chiefs" who ensure the consistency of programme in respect to the objectives set in their relevant area of responsibility. These cover:

- Programmes,
- Air Traffic Management,
- Technology and Innovation,
- Economics and Environment,
- Regulatory Affairs,

The combination of the two approaches supports effective and efficient decision making. In order to better frame the Programme implementation, a new organization chart has been submitted by the Executive Director and approved by the Administrative Board as part of the Budget 2012.

The financial circuits have been formalised and consistently applied ensuring segregation of duties as required by the SJU Financial Rules of 28 July 2009. The Implementing rules have been drafted and presented to the ADB at the end of 2010 and since then are at the EC for approval. No comments are yet received since then.

In accordance with the Financial Rules, the SJU follows the four eyes principle ensuring that, before a transaction is authorised, all aspects (both operational and financial) have been verified by a staff member other than the one who initiated the operation. The verification aims at ensuring compliance with rules and sound financial management and supports decision by the authorising officer.

Besides the ex ante control, the SJU has performed ex post controls, with its Projects Audit Sector with the support of an external audit firm.

The ex-post audit's goal is to support the Members in the better implementation of the SJU rules, MA and MFA, and contributing to the proper, economic, efficient and effective use of resources

During 2011, seven audits have been performed in five Selected Members and five of those audits have been finalised<sup>9</sup>. The remaining two are expected to be finalised by February 2012. In the statistical selection of 2009 IFs from a total of 95 Cost Break-down Forms (CBFs) of a total amount of EUR 5.428.589 accepted and paid, there were 14 CBFs audited representing EUR 1.943.390 (i.e. 36% of total costs accepted); the sample is considered representative to provide assurance on the Members subject to audits. The audit centred on operational budget and focused on the eligibility of the costs presented by the Members in respect of the provisions of the SJU Financial Regulations and in particular on the underlying process in order to identify systematic errors.

The results of the finalised audits indicate an error rate of 1.76%. Where systematic errors were found, audited Members have taken immediate action to correct them and implement recommendations made by the auditors in the audit reports. In most of the cases IFs of 2009 have been corrected and resubmitted along with the IFs 2010 and corrections have been applied also to IFs 2010 where appropriate.

The errors found mainly concerned the incorrect inclusion of ineligible items in the calculation of indirect costs. These audits contributed to provide the Executive Director on the legality and regularity of the executed transactions (see section 8.2).

Within the frame of the ex-post Project Audit Strategy approved by the ADB on the 14 December 2010, the SJU has proposed a Work Plan for the 2012 which foresees the audit of five additional Members.

To ensure the correct document management and archiving a procedure has been drafted, it is progressively applied and it is expected to be fully in place with the set up of the necessary supporting software.

On the IT point of view, the services provided by Eurocontrol have been reviewed within the context of the Agreement signed with them. The same standards followed by Eurocontrol are applied to the SJU applications and data. During 2011, although with 6 months delay due mostly to technical problems of the provider, the transfer of the most of the ITC environment to hosting facility was successfully completed. This allowed the SJU to reduce its ITC running costs, increase security and mobility and ensuring continuity of operations. To this end, the SJU is further developing a business continuity plan identifying key functions, staff and procedures necessary for the continuation of activities even in case of major disruption to the SJU infrastructure. An agreement has been signed with Eurocontrol whereas office spaces and IT support would be provided if needed.

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<sup>9</sup> As per the SJU Project Audit Strategy, each year a minimum of 5 members are audited. The selection of the members foresees that all the 16 Members are audited in 3 years time. For each member, a number of CBFs is selected on a statistical sampling basis. The SJU uses the MUS (Monetary Unit Sampling) approach.

- **Information and Financial Reporting**

### ***Communication***

Effective communication is crucial to the success of SESAR; the SESAR JU implements its communication strategy through a multiannual Communication Plan. The strategy is based on a two pronged approach: internal communication addressed to SJU's staff and to all SESAR dedicated staff at the Members; external communication addressed to all stakeholders and citizens having interest in SESAR. SESAR JU's Communication section continued to engage its communication counterparts at the member's organisations in further distributing messages on SESAR internally and externally. Additionally, first ties were established with the communication departments of the Associate Partners.

In 2011 the thematic focus was to explain some concrete results gained through Release 1 and to go into more technical details in all of the SJU's communication channels. Topics of high importance were also international cooperation and interoperability of SESAR solutions.

The SESAR Joint Undertaking arranged again for a strong presence at ATC Global 2011 in Amsterdam, the largest ATM exhibition worldwide. The SJU organised seven conferences: one large internal meeting with all project managers, the SESAR Forum, a Symposium on Interoperability and four technical workshops. At the Internal Meeting, the newly created SESAR Project Awards were granted in three categories. The SESAR Forum is the yearly information appointment for all stakeholders looking for some detailed updates on SESAR from the founding members, the members and the SJU executive management. During the Symposium on Interoperability, speakers from the ICAO, the SJU, FAA, Boeing, Airbus and others outlined needs and strategies for the future interoperable ATM system. The four technical workshops on avionics, mobile data communication systems, green ATM and SWIM attracted an expert audience. In total, some 1,400 experts attended the SESAR conferences. An additional 600 exhibition participants visited the SESAR branded booth. The section also prepared a joint SESAR JU, European Commission, Eurocontrol and EASA stand at the 2011 ICAO Global Air Navigation Industry Symposium (GANIS) in Montréal in September.

In 2011 the website, being the SJU's main communication channel, attracted some 155,000 visitors (average of 13,000 per month) constituting an increase of roughly 15% in website traffic. Additionally, a dedicated minisite for ATC Global was set up and a first relaunch of the website was effected; regular, informative e-mail newsletters to internal and external audiences using optimised mail templates were sent out.

In 2011, the communication to citizens was further extended. The section developed a second pro-active campaign in seven European airports with 35,000 SESAR leaflets being distributed at the airports and inserted in in-flight magazines and newspapers. Additionally, a short video was produced, explaining in a laymen's way the future of flying with SESAR. The video was broadly disseminated among members (especially airport partners) and reached a record of more than 250,000 views on YouTube.

### ***Financial Reporting and Information***

The SJU internal reporting system covering Budget and Finance has proved its effectiveness providing the management and the Executive Director with follow-up of the Programme and its Financial and Human Resources related aspects. The ABAC/SAP completed its first full year operations providing support for financial transactions and accounting and aligning the SJU to the standard of the European Commission. The implementation of ABAC Assets was completed in test phase, while ABAC Contract will be implemented early 2012.

The financial reporting is based on the annual Interim Financial Statements per Member, which includes the detail of the eligible costs incurred by a Member broken down by Projects identifying costs related to accepted deliverables and work in progress. This report, accompanied by the audit certificate is the basis of the financial assessment which upon coherence check with the operational reports leads to the granting of the co-financing. An internal control aims at identifying significant divergences between actual and planned costs both at total and category levels and clarifications are requested to the Members. In 2011 the assessment and approval process was significantly improved taking lesson from the previous year experience. By the end of year all the Members' 2010 Financial Reports but one had been approved for co-financing ensuring an efficient use of the SJU's financial resources. The criteria to identify eligible costs are clearly defined in the MFA (Schedule 2 – Financial Provisions) whereas the methodology followed for the assessment reflects the four eyes principle with Initiation and Verification for both the operational and financial aspects.

- **Evaluation and audit**

Following the recommendation of the European Court of Auditors, the Administrative Board adopted decision ADB(d) 11-2010 of 19 October 2010 where it took note of the role of the Internal Auditor of the European Commission as Internal Auditor of the SJU in accordance with Article 185 (3) of the General Financial Regulation. In addition, the Executive Director has established the Internal Audit Capability to complement the work of the Internal Auditor.

The European Court of Auditors is the external auditor of the SJU.

In addition, in order to increase the level of assurance on the Programme activities, the SJU established a Project Audit Sector to perform ex-post controls and audits. The SJU Ex-Post Project Audit Strategy was adopted by the Administrative Board on 31 December 2010.

As required by the SJU Regulation, the European Commission carried out a first intermediate evaluation of the SJU in 2010 and presented the results in a report to the European Parliament and the Council (COM(2011)14). By focussing research and development activities and steering them towards deployment and actively involving the stakeholders, the SJU provides an optimal response to the needs of the airspace users and service providers. The public-private partnership approach at EU level ensures that the SES objectives of high societal relevance such as safety and decarbonisation are integrated and internalised in the Programme. This approach has allowed leveraging and pooling funding and know-how and reducing fragmentation created by similar national and regional projects and harness the skills and innovation capacity of the private sector within appropriate risk sharing arrangements.

## **8 Criteria for Annual declaration of Assurance**

### **8.1 Building blocks towards reasonable assurance of the Executive Director (AOD) for the legality and regularity of underlying transactions**

The 2011 saw the progressive start of the programme operations progressing at cruise speed with more than 90% of the projects being in the execution phase; the volume and the value of the transactions analysed, assessed and processed by the SJU increased significantly requiring well tested and formalised financial circuits to support operational activities. Acquisition of the necessary resources for the smooth functioning of the joint undertaking continued through the procurement in strict compliance with the



provisions of the Financial Regulation, and in case of human resources through recruitment in compliance with the Staff Regulation.

## 8.2 Assessment by management to be reviewed

In order to ensure the sound financial management, legality and regularity of the underlying transactions, all transactions are submitted to the four eyes principle in the preparation phase as well as in the deliverable acceptance/payment phase. The ex-ante control function is exercised at operational level, to verify the work performed during the initiation of the transaction to ensure that the required results are achieved, and at financial level to verify the application of the rules,

The extensive ex-ante controls allowed for avoidance of material errors and formal errors, detected at different level of the authorization process (initiation, verification, authorization and payment). The Accounting Officer performs a final control on each payment made, finally verifying that the authorization process has been complied with and no issues highlighted in the acceptance of the deliverables.

The ex post control, performed by the projects control staff and by Ernst & Young, with whom a framework contract has been signed, did not identify significant divergences from the application of the provisions of the MFA and the SJU Financial Rules. This provides the assurance on the eligibility of the costs co-financed as well as on the value for money (see section 7.2 Operations and control activities).

The SJU has established an “exceptions’ register” to manage and monitor possible exceptions to rules, and all exceptions are submitted to the AO with a justification for endorsement. Exceptions recorded during the year are not material in value.

Although substantial progress has been achieved, the SJU’s staff is committed to continue its efforts to reach the highest standards for management and control systems.

## 8.3 Results from independents audits during the reporting

### ***SJU Internal Auditor***

In March 2011, the SJU Internal Auditor performed a risk assessment of the SJU, together with the IAC, which resulted in the establishment of a IAS Strategic Audit Plan for 2012 – 2014. No other audit activities were performed.

### ***SJU Internal Audit Capability***

In accordance with the Internal Audit Capability charter, the IAC submits to the Administrative Board an annual activity report setting out, *inter alia*, the number and type of internal audits conducted, the recommendations made and the action taken on these recommendations. The IAC activity in 2011 will be reported to the Board at its 21st meeting in March 2012. In summary, the following audit assurance reports were submitted to the Executive Director and/or the Board in 2011:

- Validation of ABAC user access rights.
- Opinion on the 2010 Annual Activity Report of the Authorising Officer.
- Information for decision making: reporting to the Executive Director and the Administrative Board.
- Verification of the results of elections to the SJU Staff Committee.
- Emerging risks: IP1 deployment.



- Audit Review of the SJU physical security arrangements (executed by Scope Cvba)
- Internal Audit Annual Activity Report 2010.

The European Court of Auditors audits the SJU on an annual basis, in particular the annual accounts and assesses the respect of the principle of sound financial management, legality and regularity of the underlying transactions.

In order to ensure the co-ordination of the work of the different SJU auditors, the Administrative Board of the SJU established in 2008 an Audit Panel. The Permanent Audit Panel met on four occasions in 2011 to co-ordinate audit matters.

The SJU Internal Audit Capability worked closely with auditors from DG IAS at the beginning of 2011 to identify risks, assess the internal controls put in place by management to mitigate those risks and to identify areas that required further action to enhance risk mitigation. Three areas were identified by the IAS as requiring enhanced mitigation: Grant management closing; document management and business continuity planning. The Internal Audit Capability subsequently provided advice and guidance to management to improve controls over these areas. In 2011 the Administrative Board approved the Co-ordinated Strategic Audit Plan of the Internal Audit Service at its 19<sup>th</sup> meeting on 17 November 2011.

Following observations from the European Court of Auditors on to the implementation of the Commission financial reporting system ABAC in 2010, together with a request from DG BUDG services of the European Commission, the Internal Audit Capability reviewed and validated the user access rights granted to SJU officials in the ABAC system.

In execution of the Work Plan agreed with the Executive Director, the Internal Audit performed a numbers of audits focusing on specific areas identified by the internal audit risk assessment for planning purposes (see 4.2). Recommendations arising from audits performed in 2010 identified scope for improvement in the SJU internal control system.

In 2010 follow-up audits from previous years have been performed, in particular:

- Mission expenditure
- Recommendations from ECA

The results, together with the assessment of the actions taken following the audit recommendations have been reported to the Executive Director. Consistent with the SJU vision and mission statement, each audit recommendation has received prompt attention from management.

### ***European Court of Auditors***

The European Court of Auditors audited the 2010 Annual Accounts during two missions in 2011, and issued the final report on 12 October 2011 together with the auditee comments. The report cleared the 2010 accounts with no qualifications. However some observations for improvement were formulated by the ECA. In particular, with regard to

- the positive budget outturn of EUR 53.5 million, the SJU has substantially reduced it by the end of 2011;
- the operational management system not integrated into ABAC/SAP, the SJU answered that everything was done to ensure the maximum level of integration reachable, considering the current security barriers on the connections with ABAC/SAP;
- the validation of the local financial systems, the SJU confirmed that it will be finalized in 2011;

- the late payment of membership contributions, the SJU requested the Members to ensure timely payment of the contributions of 2011, but one Member was unable to execute the payment by year end.

***Other indirect audit activities***

During 2010, in accordance with the terms of Contract SJU/0006-CTR to provide industrial support activities, the Airbus Chief Compliance Officer provided the SJU with a report on the effectiveness of the measures contained in the contract to identify and manage conflict of interest and to ensure confidentiality in information management. The report contained recommendations to improve the measures put in place and provided reasonable assurance overall to the Executive Director on these matters, consistent with the EU ethic & integrity principles and the principles of confidentiality, commitment and management of conflict of interest established by Administrative Board Decision ADB(D) 10-2008.

In 2011, the Project Audit Sector was requested by the SJU management, following the audit of the ECA on the 2010 annual accounts, to perform a in depth desk control on costs claimed by an SJU Member for the IFS 2009. It is expected to be completed by early 2012.

No contracts have been audited on other budget lines.

## **8.4 Reservations and their impact on the declaration of assurance to be reviewed**

No reservations are made.

## 9 Declaration of Assurance

I, the undersigned, Patrick Ky, Executive Director of the SESAR Joint Undertaking, in my capacity as authorising officer

- Declare** that the information contained in this report gives a true and fair view,
- State** that I have reasonable assurance that the resources assigned to the activities described in this report have been used for their intended purpose and in accordance with the principles of sound financial management, and that the control procedures put in place give the necessary guarantees concerning the legality and regularity of the underlying transactions. This reasonable assurance is based on my own judgement and on the information at my disposal, such as the results of the self-assessment, ex-post controls, the work of the SJU Internal Auditor and the lessons learnt from the report of the European Court of Auditors for years prior to the year of this declaration.
- Confirm** that I am not aware of anything not reported here which could harm the interests of the SJU.

Brussels, 29 March 2012



Patrick Ky  
Executive Director

## 10 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

## PROGRAMME RESOURCES 2016 - situation as at 31.12.2011

EUR million	European Union	Eurocontrol	Industry		Total
			SJU Other Members	Others *	
In Kind Contributions	0,0	498,4	1.185,9	184,4	1.868,7
Co-financing					
WPs <i>B, 3,4,5,6,8,9,10,12,14,15 + C,7,13,16</i>	537,4	55,0	(592,4)		0,0
WP11 + WP E	0,0	43,0	0,0	(107,6)	0,0
Demonstration Activities	30,0	0,0	0,0		
Other activities (AIRE, Optimi, SatOptimi, Associates of the SJU, other studies)	34,6	0,0	0,0		
<b>Total Co-financing</b>	<b>602,0</b>	<b>98,0</b>	<b>(592,4)</b>	<b>(107,6)</b>	<b>0,0</b>
Other Cash Contributions					
Ectrl Early Projects	0,0	7,0	0,0		7,0
AUs, NSAs, Mil, Staff	3,0	25,0	0,0		28,0
Industrial Support	60,0	0,0	0,0		60,0
Running Costs of the SJU	35,0	35,0	29,7		99,7
<b>Total Other Cash Contributions</b>	<b>98,0</b>	<b>67,0</b>	<b>29,7</b>	<b>0,0</b>	<b>194,7</b>
<b>TOTAL</b>	<b>700,0</b>	<b>663,4</b>	<b>623,2</b>	<b>76,8</b>	<b>2.063,4</b>
			<b>700,0</b>		

\* This estimated amount includes the activities realized by other Industrial and Research entities, which are not Members of the SJU and are co-financed between 50% and 100% taking into account their correspondence to eligibility criteria. The In-Kind activities realized by these entities are not accounted for in the SJU Annual Accounts.

WP	Member	Ibaf0		Reallocation		Commitments 2008 - 2011	Pre-fin+ Co-fin 2011	Cost by nature	Ibaf0
		In-Kind	Max Co-financing	In-Kind	Max Co-financing				
03.	aena	8,9	4,5	8,6	4,3	3,4	1,1	Direct Labour Costs	48,5
	dfs	5,5	2,8	4,9	2,4	2,1	0,8	Other Direct Costs	6,8
	dsna	2,5	1,2	2,6	1,3	1,0	0,3	Subcontract	18,3
	enav	12,1	6,1	12,8	6,4	4,9	1,6	Use of Facilities	1,0
	nats	4,4	2,2	4,0	2,0	1,8	0,4	<b>Direct Costs</b>	<b>74,63</b>
	noracon	6,6	3,3	7,4	3,7	2,6	0,4	Indirect Costs	24,2
	seac							<b>Total</b>	<b>98,85</b>
	frequentis							Deductions	(0,2)
	indra	5,0	2,5	7,0	3,5	1,9	0,5	<b>Total Eligible Costs</b>	<b>98,69</b>
	natmig								
	selex	5,0	2,5	4,8	2,4	1,7	0,7		
	thales	12,6	6,3	13,4	6,7	4,4	1,5		
	airbus	5,0	2,5	4,9	2,4	1,7	0,7		
	alenia	2,1	1,1	2,3	1,1	0,7	0,1		
	honeywell								
	<b>Sub Total</b>	<b>69,7</b>	<b>34,8</b>	<b>72,7</b>	<b>36,3</b>	<b>26,2</b>	<b>8,2</b>		
	eurocontrol	29,0		19,9					
	<b>Total</b>	<b>98,7</b>		<b>92,6</b>					
04.	aena	9,4	4,7	9,4	4,7	3,6	1,2	Direct Labour Costs	76,8
	dfs	12,2	6,1	12,1	6,0	4,2	1,7	Other Direct Costs	7,9
	dsna	22,8	11,4	24,5	12,3	8,3	3,6	Subcontract	14,8
	enav	8,4	4,2	9,2	4,6	3,3	1,2	Use of Facilities	2,0
	nats	16,7	8,3	16,1	8,1	6,1	2,3	<b>Direct Costs</b>	<b>101,47</b>
	noracon	4,5	2,2	2,8	1,4	1,6	0,1	Indirect Costs	29,7
	seac							<b>Total</b>	<b>131,17</b>
	frequentis							Deductions	(0,6)
	indra	2,4	1,2	1,8	0,9	0,8	0,2	<b>Total Eligible Costs</b>	<b>130,58</b>
	natmig								
	selex	2,7	1,3	2,6	1,3	0,9	0,3		
	thales	8,4	4,2	6,7	3,4	2,7	1,2		
	airbus	9,1	4,6	7,2	3,6	2,8	1,0		
	alenia	2,6	1,3	1,9	1,0	0,7	0,2		
	honeywell	2,3	1,1	1,9	0,9	0,6	0,3		
	<b>Sub Total</b>	<b>101,3</b>	<b>50,7</b>	<b>96,2</b>	<b>48,0</b>	<b>35,6</b>	<b>13,2</b>		
	eurocontrol	29,2		31,8					
	<b>Total</b>	<b>130,6</b>		<b>128,0</b>					
05.	aena	16,6	8,3	16,1	8,1	6,3	2,3	Direct Labour Costs	93,8
	dfs	6,8	3,4	6,8	3,4	2,4	0,6	Other Direct Costs	10,8
	dsna	5,6	2,8	6,4	3,2	2,5	0,7	Subcontract	10,6
	enav	15,2	7,6	15,5	7,7	6,1	2,5	Use of Facilities	1,6
	nats	27,4	13,7	27,8	13,9	10,4	2,8	<b>Direct Costs</b>	<b>116,82</b>
	noracon	13,6	6,8	13,4	6,7	5,2	0,9	Indirect Costs	29,5
	seac							<b>Total</b>	<b>146,34</b>
	frequentis	1,1	0,6	1,1	0,6	0,4	0,1	Deductions	(0,9)
	indra	3,2	1,6	2,5	1,2	1,0	0,4	<b>Total Eligible Costs</b>	<b>145,42</b>
	natmig	0,6	0,3	0,4	0,2	0,2	0,0		
	selex	2,8	1,4	1,9	0,9	0,8	0,3		
	thales	7,9	3,9	5,8	2,9	3,1	1,3		
	airbus	4,6	2,3	3,8	1,9	1,6	0,6		
	alenia	1,5	0,7	1,5	0,7	0,5	0,1		
	honeywell								
	<b>Sub Total</b>	<b>106,8</b>	<b>53,4</b>	<b>103,0</b>	<b>51,4</b>	<b>40,5</b>	<b>12,6</b>		
	eurocontrol	38,6		26,7					
	<b>Total</b>	<b>145,4</b>		<b>129,7</b>					

WP	Member	Ibafo		Reallocation		Commitments 2008 - 2011	Pre-fin+ Co-fin 2011	Cost by nature	Ibafo
		In-Kind	Max Co-financing	In-Kind	Max Co-financing				
06.	aena	13,4	6,7	14,2	7,1	4,8	2,1	Direct Labour Costs	79,6
	dfs	4,6	2,3	6,3	3,1	1,9	0,7	Other Direct Costs	8,9
	dsna	10,0	5,0	10,4	5,2	3,6	1,4	Subcontract	12,0
	enav	10,4	5,2	10,9	5,4	3,6	1,2	Use of Facilities	0,6
	nats	3,0	1,5	3,3	1,7	1,1	0,4	<b>Direct Costs</b>	<b>101,10</b>
	noracon	8,1	4,1	9,7	4,8	3,2	0,6	Indirect Costs	23,3
	seac	13,8	6,9	13,7	6,8	5,2	0,1	<b>Total</b>	<b>124,42</b>
	frequentis	0,5	0,3	0,5	0,3	0,2	0,1	Deductions	(0,1)
	indra	3,2	1,6	2,9	1,4	1,1	0,5	<b>Total Eligible Costs</b>	<b>124,32</b>
	natmig	1,1	0,6	1,1	0,6	0,4	0,2		
	selex	2,9	1,5	2,4	1,2	0,9	0,4		
	thales	6,3	3,2	6,4	3,2	2,1	0,9		
	airbus	5,5	2,7	5,2	2,6	1,8	0,7		
	alenia	0,9	0,4	1,1	0,5	0,3	0,0		
	honeywell	0,3	0,1	0,2	0,1	0,1	0,0		
	<b>Sub Total</b>	<b>84,0</b>	<b>42,0</b>	<b>88,3</b>	<b>44,1</b>	<b>30,3</b>	<b>9,2</b>		
	eurocontrol	40,3		37,1					
	<b>Total</b>	<b>124,3</b>		<b>125,3</b>					
07.	aena	4,9	2,5	4,9	2,5	1,7	0,5	Direct Labour Costs	64,8
	dfs	3,4	1,7	4,3	2,1	1,4	0,5	Other Direct Costs	4,8
	dsna	2,8	1,4	3,0	1,5	1,0	0,3	Subcontract	6,0
	enav	3,8	1,9	3,6	1,8	1,3	0,4	Use of Facilities	
	nats	4,5	2,2	4,5	2,2	1,6	0,5	<b>Direct Costs</b>	<b>75,62</b>
	noracon	1,6	0,8	1,8	0,9	0,6	0,0	Indirect Costs	11,0
	seac	0,6	0,3	0,5	0,2	0,2		<b>Total</b>	<b>86,66</b>
	frequentis							Deductions	(0,2)
	indra	2,5	1,2	0,5	0,2	0,7	0,3	<b>Total Eligible Costs</b>	<b>86,50</b>
	natmig								
	selex								
	thales	1,9	0,9	1,9	0,9	0,6	0,2		
	airbus	0,5	0,2	0,3	0,1	0,1	0,1		
	alenia								
	honeywell								
	<b>Sub Total</b>	<b>26,4</b>	<b>13,2</b>	<b>25,1</b>	<b>12,5</b>	<b>9,2</b>	<b>2,8</b>		
	eurocontrol	60,1		62,1					
	<b>Total</b>	<b>86,5</b>		<b>87,2</b>					
08.	aena	0,6	0,3	0,6	0,3	0,2	0,1	Direct Labour Costs	37,1
	dfs	7,3	3,6	7,1	3,5	2,5	1,0	Other Direct Costs	5,1
	dsna	3,1	1,5	2,8	1,4	1,1	0,5	Subcontract	7,2
	enav	2,1	1,1	2,1	1,1	0,8	0,4	Use of Facilities	0,7
	nats							<b>Direct Costs</b>	<b>50,04</b>
	noracon	11,7	5,8	11,6	5,8	4,0	1,3	Indirect Costs	10,5
	seac	0,2	0,1	0,2	0,1	0,1		<b>Total</b>	<b>60,53</b>
	frequentis	2,3	1,1	2,3	1,2	0,9	0,4	Deductions	
	indra	2,3	1,2	2,4	1,2	0,8	0,3	<b>Total Eligible Costs</b>	<b>60,53</b>
	natmig	2,8	1,4	2,2	1,1	0,9	0,3		
	selex	1,8	0,9	1,8	0,9	0,6	0,3		
	thales	3,0	1,5	2,5	1,3	0,9	0,4		
	airbus								
	alenia								
	honeywell								
	<b>Sub Total</b>	<b>37,1</b>	<b>18,6</b>	<b>35,6</b>	<b>17,7</b>	<b>12,9</b>	<b>5,0</b>		
	eurocontrol	23,4		23,9					
	<b>Total</b>	<b>60,5</b>		<b>59,5</b>					
09.	aena							Direct Labour Costs	69,2
	dfs							Other Direct Costs	11,2
	dsna	0,4	0,2	0,4	0,2	0,1		Subcontract	32,6
	enav							Use of Facilities	6,1
	nats							<b>Direct Costs</b>	<b>119,11</b>
	noracon	0,3	0,1	0,3	0,1	0,1		Indirect Costs	70,7
	seac							<b>Total</b>	<b>189,81</b>
	frequentis							Deductions	
	indra	0,1	0,1	0,1	0,1	0,0	0,0	<b>Total Eligible Costs</b>	<b>189,81</b>
	natmig								
	selex	5,8	2,9	5,5	2,8	2,8	1,1		
	thales	52,3	26,2	55,4	27,7	22,4	8,7		
	airbus	58,6	29,3	63,5	31,7	24,0	9,6		
	alenia	24,9	12,4	26,0	13,0	9,8	3,3		
	honeywell	36,7	18,3	37,4	18,7	14,1	5,1		
	<b>Sub Total</b>	<b>179,0</b>	<b>89,5</b>	<b>188,6</b>	<b>94,3</b>	<b>73,4</b>	<b>27,8</b>		
	eurocontrol	10,8		12,4					
	<b>Total</b>	<b>189,8</b>		<b>201,0</b>					

WP	Member	Ibafo		Reallocation		Commitments 2008 - 2011	Pre-fin+ Co-fin 2011	Cost by nature	Ibafo
		In-Kind	Max Co-financing	In-Kind	Max Co-financing				
10.	aena	3,0	1,5	3,0	1,5	1,1	0,4	Direct Labour Costs	75,0
	dfs	3,3	1,6	3,3	1,6	1,3	0,5	Other Direct Costs	13,5
	dsna	4,6	2,3	3,9	2,0	1,6	0,6	Subcontract	6,9
	enav	5,2	2,6	4,1	2,0	1,8	0,7	Use of Facilities	3,9
	nats	1,0	0,5	1,0	0,5	0,4	0,2	<b>Direct Costs</b>	<b>99,34</b>
	noracon	3,8	1,9	3,6	1,8	1,5	0,1	Indirect Costs	55,5
	seac							<b>Total</b>	<b>154,84</b>
	frequentis	1,5	0,7	1,5	0,7	0,6	0,3	Deductions	(0,0)
	indra	36,6	18,3	37,7	18,8	14,1	4,7	<b>Total Eligible Costs</b>	<b>154,81</b>
	natmig	6,8	3,4	6,5	3,3	2,4	0,7		
	selex	23,5	11,8	24,2	12,1	9,1	3,1		
	thales	50,8	25,4	53,3	26,6	19,3	7,4		
	airbus	0,5	0,2	0,5	0,2	0,2	0,1		
	alenia								
	honeywell								
	<b>Sub Total</b>	<b>140,7</b>	<b>70,3</b>	<b>142,5</b>	<b>71,2</b>	<b>53,2</b>	<b>18,8</b>		
	eurocontrol	14,1		19,2					
	<b>Total</b>	<b>154,8</b>		<b>161,8</b>					
12.	aena	0,8	0,4	0,7	0,4	0,3	0,1	Direct Labour Costs	64,5
	dfs	7,7	3,8	6,3	3,1	2,5	1,1	Other Direct Costs	14,5
	dsna	6,0	3,0	3,6	1,8	1,8	0,7	Subcontract	12,4
	enav	1,2	0,6	1,0	0,5	0,4	0,2	Use of Facilities	2,4
	nats	0,5	0,2	0,3	0,1	0,2	0,1	<b>Direct Costs</b>	<b>93,75</b>
	noracon	2,3	1,1	2,3	1,1	0,9	0,1	Indirect Costs	45,5
	seac	0,7	0,3	0,7	0,3	0,2		<b>Total</b>	<b>139,21</b>
	frequentis	5,8	2,9	5,8	2,9	2,2	0,8	Deductions	(0,0)
	indra	31,7	15,8	30,6	15,3	11,0	4,4	<b>Total Eligible Costs</b>	<b>139,19</b>
	natmig	12,2	6,1	12,6	6,3	4,8	1,2		
	selex	25,2	12,6	26,3	13,2	8,9	3,7		
	thales	32,5	16,3	31,7	15,8	11,0	4,2		
	airbus								
	alenia	0,6	0,3	0,6	0,3	0,2			
	honeywell								
	<b>Sub Total</b>	<b>127,1</b>	<b>63,6</b>	<b>122,4</b>	<b>61,2</b>	<b>44,3</b>	<b>16,5</b>		
	eurocontrol	12,1		7,0					
	<b>Total</b>	<b>139,2</b>		<b>129,4</b>					
13.	aena	0,2	0,1	0,2	0,1	0,1	0,0	Direct Labour Costs	36,3
	dfs	0,4	0,2	0,4	0,2	0,1	0,0	Other Direct Costs	3,2
	dsna							Subcontract	3,2
	enav	0,7	0,3	0,7	0,3	0,2	0,1	Use of Facilities	0,2
	nats	0,9	0,4	1,0	0,5	0,3	0,1	<b>Direct Costs</b>	<b>42,85</b>
	noracon	0,1	0,1	0,1	0,1	0,0	0,0	Indirect Costs	8,6
	seac							<b>Total</b>	<b>51,41</b>
	frequentis	2,6	1,3	2,9	1,4	1,0	0,3	Deductions	(0,0)
	indra	6,2	3,1	9,0	4,5	2,5	0,7	<b>Total Eligible Costs</b>	<b>51,38</b>
	natmig								
	selex	3,2	1,6	3,5	1,8	1,1	0,4		
	thales	3,6	1,8	4,3	2,1	1,3	0,5		
	airbus								
	alenia								
	honeywell								
	<b>Sub Total</b>	<b>17,7</b>	<b>8,9</b>	<b>22,1</b>	<b>11,1</b>	<b>6,6</b>	<b>2,1</b>		
	eurocontrol	33,7		41,6					
	<b>Total</b>	<b>51,4</b>		<b>63,7</b>					
14.	aena							Direct Labour Costs	43,1
	dfs	0,3	0,1	0,3	0,1	0,1	0,1	Other Direct Costs	6,1
	dsna	0,5	0,3	0,4	0,2	0,2	0,1	Subcontract	4,4
	enav	0,3	0,1	0,3	0,1	0,1	0,0	Use of Facilities	1,8
	nats							<b>Direct Costs</b>	<b>55,38</b>
	noracon	1,7	0,9	1,7	0,8	0,6	0,1	Indirect Costs	24,2
	seac							<b>Total</b>	<b>79,57</b>
	frequentis	8,5	4,3	8,2	4,1	3,4	1,2	Deductions	
	indra	15,9	7,9	14,8	7,4	5,4	1,8	<b>Total Eligible Costs</b>	<b>79,57</b>
	natmig	2,8	1,4	2,5	1,3	1,3	0,7		
	selex	3,6	1,8	3,6	1,8	1,2	0,5		
	thales	25,6	12,8	25,0	12,5	8,9	3,4		
	airbus	0,3	0,2	0,3	0,2	0,1	0,0		
	alenia								
	honeywell	0,4	0,2	0,4	0,2	0,1	0,0		
	<b>Sub Total</b>	<b>59,9</b>	<b>29,9</b>	<b>57,5</b>	<b>28,7</b>	<b>21,3</b>	<b>7,9</b>		
	eurocontrol	19,7		18,0					
	<b>Total</b>	<b>79,6</b>		<b>75,5</b>					



WP	Member	Ibafo		Reallocation		Commitments 2008 - 2011	Pre-fin+ Co-fin 2011	Cost by nature	Ibafo
		In-Kind	Max Co-financing	In-Kind	Max Co-financing				
15.	aena	4,4	2,2	4,3	2,2	1,8	0,6	Direct Labour Costs	74,8
	dfs	3,8	1,9	4,1	2,0	1,7	0,6	Other Direct Costs	9,8
	dsna	3,9	1,9	3,9	1,9	1,6	0,3	Subcontract	11,5
	enav	3,1	1,6	1,8	0,9	1,0	0,3	Use of Facilities	1,0
	nats	0,6	0,3	0,6	0,3	0,2	0,1	<b>Direct Costs</b>	<b>97,08</b>
	noracon	3,0	1,5	2,5	1,3	1,4	0,3	Indirect Costs	49,3
	seac							<b>Total</b>	<b>146,42</b>
	frequentis	6,3	3,1	6,3	3,2	3,2	2,4	Deductions	(0,0)
	indra	18,8	9,4	19,4	9,7	8,4	2,4	<b>Total Eligible Costs</b>	<b>146,40</b>
	natmig	11,2	5,6	9,0	4,5	3,9	1,4		
	selex	21,7	10,8	21,4	10,7	8,6	3,2		
	thales	38,4	19,2	37,2	18,6	14,8	6,5		
	airbus	2,4	1,2	2,4	1,2	0,9	0,5		
	alenia	4,4	2,2	4,0	2,0	1,9	0,6		
	honeywell	0,8	0,4	0,6	0,3	0,4	0,1		
	<b>Sub Total</b>	<b>122,8</b>	<b>61,4</b>	<b>117,5</b>	<b>58,7</b>	<b>49,7</b>	<b>19,2</b>		
	eurocontrol	23,6		27,7					
	<b>Total</b>	<b>146,4</b>		<b>145,2</b>					
16.	aena	4,7	2,3	4,7	2,3	1,8	0,5	Direct Labour Costs	70,7
	dfs	5,7	2,8	4,5	2,2	1,9	0,8	Other Direct Costs	6,0
	dsna	1,0	0,5	1,1	0,5	0,4	0,1	Subcontract	9,9
	enav	4,2	2,1	5,0	2,5	1,8	0,6	Use of Facilities	0,1
	nats	4,0	2,0	4,2	2,1	1,5	0,4	<b>Direct Costs</b>	<b>86,70</b>
	noracon	1,6	0,8	1,6	0,8	0,7	0,0	Indirect Costs	18,4
	seac	0,6	0,3	0,7	0,3	0,3		<b>Total</b>	<b>105,13</b>
	frequentis	1,8	0,9	1,8	0,9	0,8	0,3	Deductions	(0,1)
	indra	3,3	1,7	3,6	1,8	1,3	0,4	<b>Total Eligible Costs</b>	<b>104,98</b>
	natmig	2,3	1,1	2,3	1,2	1,0	0,2		
	selex	1,6	0,8	1,6	0,8	0,6	0,2		
	thales	5,6	2,8	5,4	2,7	2,0	0,7		
	airbus	14,0	7,0	14,2	7,1	5,2	1,9		
	alenia	0,6	0,3	0,4	0,2	0,2	0,0		
	honeywell								
	<b>Sub Total</b>	<b>51,0</b>	<b>25,5</b>	<b>50,9</b>	<b>25,4</b>	<b>19,5</b>	<b>6,2</b>		
	eurocontrol	54,0		49,4					
	<b>Total</b>	<b>105,0</b>		<b>100,4</b>					
B.0	aena	3,8	1,9	3,7	1,9	1,3	0,5	Direct Labour Costs	56,8
	dfs	9,1	4,6	10,2	5,1	3,4	1,7	Other Direct Costs	5,2
	dsna	2,1	1,0	2,4	1,2	0,8	0,3	Subcontract	4,1
	enav	2,3	1,2	2,3	1,2	0,8	0,3	Use of Facilities	0,5
	nats	6,2	3,1	6,1	3,1	2,2	1,0	<b>Direct Costs</b>	<b>66,65</b>
	noracon	3,8	1,9	3,9	2,0	1,3	0,7	Indirect Costs	15,0
	seac	0,4	0,2	0,5	0,2	0,2		<b>Total</b>	<b>81,64</b>
	frequentis	0,8	0,4	0,9	0,4	0,3	0,1	Deductions	(0,2)
	indra	1,6	0,8	1,2	0,6	0,5	0,3	<b>Total Eligible Costs</b>	<b>81,41</b>
	natmig								
	selex	2,7	1,3	2,7	1,3	0,9	0,4		
	thales	4,4	2,2	3,6	1,8	1,3	0,6		
	airbus	4,3	2,1	3,7	1,9	1,3	0,6		
	alenia	0,4	0,2	0,5	0,2	0,1	0,0		
	honeywell								
	<b>Sub Total</b>	<b>41,8</b>	<b>20,9</b>	<b>41,7</b>	<b>20,8</b>	<b>14,4</b>	<b>6,6</b>		
	eurocontrol	39,6		32,5					
	<b>Total</b>	<b>81,4</b>		<b>74,2</b>					
C.0	aena	2,0	1,0	2,2	1,1	0,7	0,2	Direct Labour Costs	44,4
	dfs	2,0	1,0	2,0	1,0	0,7	0,3	Other Direct Costs	3,4
	dsna	2,0	1,0	2,0	1,0	0,7	0,2	Subcontract	5,4
	enav	2,0	1,0	2,0	1,0	0,7	0,2	Use of Facilities	
	nats	2,0	1,0	1,9	1,0	0,7	0,2	<b>Direct Costs</b>	<b>53,17</b>
	noracon	2,0	1,0	2,2	1,1	0,7	0,0	Indirect Costs	8,8
	seac	0,5	0,3	0,7	0,3	0,2		<b>Total</b>	<b>61,97</b>
	frequentis							Deductions	(0,1)
	indra	2,8	1,4	2,1	1,1	0,8	0,3	<b>Total Eligible Costs</b>	<b>61,90</b>
	natmig								
	selex								
	thales	3,1	1,6	2,8	1,4	1,0	0,4		
	airbus	4,1	2,1	3,0	1,5	1,2	0,4		
	alenia	0,6	0,3	0,5	0,2	0,2	0,0		
	honeywell	0,2	0,1	0,2	0,1	0,0	0,0		
	<b>Sub Total</b>	<b>23,7</b>	<b>11,8</b>	<b>21,7</b>	<b>10,8</b>	<b>7,7</b>	<b>2,3</b>		
	eurocontrol	38,2		37,4					
	<b>Total</b>	<b>61,9</b>		<b>59,1</b>					

## PROGRAMME FINANCIALS 31 DECEMBER 2011

Annexe I.b

WP	Member	Ibaf0		Reallocation		Commitments 2008 - 2011	Pre-fin+ Co-fin 2011	Cost by nature	Ibaf0
		In-Kind	Max Co-financing	In-Kind	Max Co-financing				
Total	aena	72,8	36,4	72,8	36,4	27,1	9,7	Direct Labour Costs	935,4
	dfs	71,9	36,0	72,6	36,0	26,2	10,4	Other Direct Costs	117,2
	dsna	67,4	33,7	67,4	33,7	24,8	9,1	Subcontract	159,4
	enav	71,0	35,5	71,4	35,5	26,9	9,9	Use of Facilities	21,8
	nats	71,1	35,5	70,8	35,4	26,6	8,4	<b>Direct Costs</b>	<b>1.233,72</b>
	noracon	64,7	32,3	64,7	32,3	24,3	4,6	Indirect Costs	424,3
	seac	16,8	8,4	16,8	8,4	6,3	0,1	<b>Total</b>	<b>1.657,98</b>
	frequentis	31,3	15,7	31,3	15,7	13,0	5,9	Deductions	(2,5)
	indra	135,6	67,8	135,6	67,8	50,1	17,4	<b>Total Eligible Costs</b>	<b>1.655,48</b>
	natmig	39,8	19,9	36,7	18,4	14,9	4,7		
	selex	102,3	51,2	102,3	51,2	38,0	14,6		
	thales	256,2	128,1	255,4	127,7	95,8	37,9		
	airbus	108,8	54,4	108,8	54,4	40,9	16,1		
	alenia	38,6	19,3	38,6	19,3	14,5	4,3		
	honeywell	40,6	20,3	40,7	20,3	15,4	5,5		
	<b>Sub Total</b>	<b>1.189,0</b>	<b>594,5</b>	<b>1.185,9</b>	<b>592,4</b>	<b>444,8</b>	<b>158,6</b>		
	eurocontrol	466,5		446,6					
	<b>Total</b>	<b>1.655,5</b>		<b>1.632,5</b>					

**Nota Bene****IBAFO** Amounts resulting from IBAFO I and II**Reallocation** Amounts resulting from IBAFO I and II Reallocation as approved by the ADB on 15.12.11.**Commitments****2008 - 2011** commitments as at 31.12.11, excluding re-allocation adjustments**Prefin+Cofin** cumulative payments for Pre-Financing and Interim Payments (executed or in the pipeline) as at 31.12.11

## List of deliverables delivered to the SJU in 2011

## Work Package 03

Project	Deliverable Code	Deliverable Name	Deliverable Description	Deliverable Handover Date	Assessment Decision
03.00	D01-001	WP3 Coordination Meeting Report	This deliverable provides the synthesis of the discussion, actions and decisions taken during the coordination meetings (e.g. management panels, ad-hoc WP3 coordination meetings) in order to have a clear understanding of the status of WP3 and identify and track any problem that may arise.	17/10/2011	No reservation (P)
03.00	D12-001	WP3 Communication Plan	The WP3 Communication Plan will describe the process and timeline to be implemented at WP3 level to guarantee a proper and consolidated communication strategy both in term of roles and in term of schedule. This Plan will be used to put in place and manage all the interactions with WP/projects external to WP3 within SESAR Program.	22/09/2011	No reservation (P)
03.01.01	D04	V&V Roadmap Version 2	This deliverable represents an updated version of the coherent and detailed overview of the validation activities foreseen in Step 1 provided as a result of the Early Task, thus allowing detection of issues and inconsistencies among projects. The main improvements to be made will be based on the direct contact with the projects, instead of the analysis of the PIRs, therefore obtaining more reliable information.	18/03/2011	No reservation (P)
03.01.01	D07	STEP 1 V&V User Requirements Document	This naming comes from PIR	26/09/2011	No reservation (P)
03.01.02	D03	Step 1 - Final V&V User Requirements Document	The V&V URD will include, for the STEP 1 Projects: * Detailed description of User Requirements related to V&V Infrastructure tools organized per thematic section (stimulation, measurement and data post-processing); * Results of the cross-analysis (mainly for consolidation purposes); * ANNEX with an elicitation of both the technical and operational Acceptance Criteria; * Other (to be defined in the early stages of execution phase).	08/09/2011	No reservation (P)
03.01.03	D09	Technical Guidelines for the V&VP Engineering Data Management	The deliverable provides the technical guidelines for the management of the V&VP engineering data, addressing data identification, formats, storage and accessibility issues, selection of the tools, change management process.	11/03/2011	No reservation (P)
03.02.01	D05	STEP1 - IBPs and Tools Baseline Documentation		26/07/2011	No reservation (P)
03.02.02	D01	Inputs definition	Production of the detailed list of elements expected from P03.01.01 , P03.01.02 and P03.02.01. • the exhaustive and detailed list of the necessary elements for the description of the Users requirements for validation exercises using IBP's; • the exhaustive and detailed list of the necessary elements for the description of the Users requirements for V&V preparation/analysis supporting tools; • the exhaustive and detailed list of the necessary elements for the description of the capabilities of the available IBP's.	06/05/2011	No reservation (P)
03.02.02	D02	Outputs definition	Production of the detailed list of elements to be provided to P03.01.01 and P03.01.03: • The detailed content of the platform allocation matrix to be delivered to P03.01.01; • And the detailed content of the IBP evolution plans and gap analysis UR's to be delivered to P03.01.03. In particular, special emphasis will be given to UR's traceability with respect to: o the associated domain o the IBP which has to implement that UR o the validation exercise having generated that UR o and the expected delivery date.	23/03/2011	No reservation (P)
03.03.01	D02	V&VP Architecture and Specification Methodology	This document provides the project methodology to be used in the V&VP architecture Description, V&V/Tools Specifications and V&VP integration support. An intermediate delivery will ensure a preliminary input for Step1 activities.	30/09/2011	to be assessed
03.03.02	D100	Integration Report for R1 vs ENR-TMA	This deliverable will relate for EnRoute/TMA domain in the scope of Release One: - what has been deployed in the scope of the R1 - what is the status of the associated integration testing - what are the remaining problems	23/11/2011	to be assessed
03.03.02	D102	Integration Report for R1 vs Aircraft		15/12/2011	to be assessed
03.03.02	D104	Integration Report for R1 vs Airport		15/12/2011	to be assessed
03.03.02	D106	Integration Report for R1 vs Network	This deliverable will relate for Network domain in the scope of Release One: - what has been deployed in the scope of the R1 - what is the status of the associated integration testing - what are the remaining problems	28/11/2011	to be assessed
03.03.03	D02	Preparatory Task for IM	The Information Management task should have been finished and agreed at this moment, thus providing a solid and stable input for the project.	02/11/2011	No reservation (P)
03.03.03	D03	IBP V&VP Technical Acceptance Report (Step 1)	Report produced as a consequence of the performance of the IBP V&VP Technical Acceptance. This report summarises the findings of the Technical Acceptance process through the description of the tests passed, their conditions and the requirements under assessment.	30/11/2011	to be assessed
03.03.03	D04	IBP V&VP Operational Acceptance Review Report (Step 1)	Summarise the received information and the criteria used to Accept / Not Accept the IBP V&VP(s). It intends to track the activities performed regarding operational acceptance as well as to manage the issues identified during the operational acceptance process.	15/12/2011	to be assessed

## Work Package 04

Project	Deliverable Code	Deliverable Name	Deliverable Description	Deliverable Handover Date	Assessment Decision
04.02	D06	D01-02-1-2 WP4 Detailed Operational Descriptions (DOD) Step1-draft1	A high level description of the operational concept of the En-route Operations: it will include Detailed Operational Descriptions (DODs), as well as the EA models for the description of a high level operational overview / business architecture. This deliverable also summarises the recommendations and guidelines on changes to be brought to the Concept of Operations as a result of the validation activities in WP4 to be issued to WP5.2. The WP4 DODs should contain: o A description of the scope in terms of SESAR step, ATM Phase and ATM Services, Conops Process Model, Ols, KPAs/KPIs addressed; o Current operating method and main changes; o Mapping of the ATM Services within the scope of WP4; o Operational scenarios: description of sub-processes working together in the target concept of WP4; o Characteristics of the target environment in the scope of DOD e.g. airspace and traffic characteristics; Operational and performance requirements; Potential issues.	04/03/2011	Major reservation/s
04.02	D58	D02-01-1-2 En Route Concept Validation Strategy document Step1- draft1	This draft describes and provides the WP4 projects with the strategy to apply in order to validate the En Route Concept from the operational requirements specified in the DOD and detailed in INTEROP and SPR documents. The validation strategy document contains: concept and assumptions, stakeholders needs and expectations, levels of maturity, validation expectations and objectives in KPA, validation infrastructure and tools requirements, schedule of validation exercises (i.e. validation plan). It provides with the description of the cross and integrated validation infrastructure and tools needed by WP4 projects and collected from them, and hands these needs in to WP3.	25/02/2011	Clarifications required

04.03	D07	IOP OSED & Requirements	This deliverable is a documental deliverable. It contains the OSED in compliance with Eurcontrol OFG containing:á- The OSED itself; á- The Operational Requirements;á- Safety and Performance Requirementsá- INTEROP Requirementsáfor the IOP quick wins.ált collects results from any relevant input that could affect the content of the project deliverables and/or the scope of the validation activities (ICOG results in a first instance).	21/06/2011	No reservation (P)
04.03	D104	i4D Validation Plan	This deliverable will detail all the information needed to perform the validation of the i4D quick win; in particular the following information/data related to i4D will be described: - the Stakeholders Needs ; - the Levels of Maturity of the concept; - the description of the Stakeholders expectations in term of Validation; - the Validation Objectives, with associated criteria and links with Requirements; - the validation scenarios; - the validation environment needs; - the list of planned validation exercises with selected validation techniques; - The detailed description of each planned validation exercise. Considering that this is a Step 1 activities (bottom-up approach) this deliverable will be consolidated by SWP4.2 in order to produce a WP4 Validation Strategy for Step 1. In addition this deliverable will describe the planning of the validation activities for the so-called "Step A" phase. If required this document will be updated to cover validation exercises foreseen in the "	15/09/2011	to be assessed
04.03	D117	CDM & Sector Team OpsValidation plan	This deliverable will detail all the information needed to perform the validation of the CDM & sector Team Operations (ERATO EoE) quick win; in particular the following information/data related to CDM & sector Team Operations will be described: - the Stakeholders Needs ; - the Levels of Maturity of the concept; - the description of the Stakeholders expectations in term of Validation; - the Validation Objectives, with associated criteria and links with Requirements; - the validation scenarios; - the validation environment needs; - the list of planned validation exercises with selected validation techniques; - The detailed description of each planned validation exercise. Considering that this is a Step 1 activities (bottom-up approach) this deliverable will be consolidated by SWP4.2 in order to produce a WP4 Validation Strategy for Step 1.	15/10/2011	No reservation
04.03	D12	i4D OSED & Requirements	This deliverable is a documental deliverable. It contains the OSED in compliance with Eurcontrol OFG containing:á- The OSED itself; á- The Operational Requirements;á- Safety and Performance Requirementsá- INTEROP Requirementsáfor the Initial 4D quick wins.ált collects results from any relevant input that could affect the content of the project deliverables and/or the scope of the validation activities (4DTRANS results in a first instance).	31/05/2011	No reservation (P)
04.03	D13	i4D Integration Plan	The i4D Integration plan will detail and plan all the activities needed to have the i4D validation platform provided by P9.1, P10.7.1 ready to run the validation exercises. In addition it will describe the technical and operational tests to be executed and all the steps related to the training of the validation exercise participants.	15/09/2011	No reservation (P)
04.03	D14	i4D Validation Exercise Plan	The i4D Validation Exercise Plan will contain:á- refined validation strategyá- Detailed exercise validation objectivesá- indicators and metrics according to the characteristics of the concepts under analysis and the specific validation objectivesá- specification of validation scenariosá- detailed planning of the validation exercises.	27/09/2011	No reservation
04.03	D22	CM OSED & Requirements	This deliverable is a documental deliverable. It contains the OSED in compliance with Eurcontrol OFG containing:á- The OSED itself; á- The Operational Requirements;á- Safety and Performance Requirementsá- INTEROP Requirementsáfor the IOP quick wins.ált collects results from any relevant input that could affect the content of the project deliverables and/or the scope of the validation activities.	15/10/2011	No reservation (P)
04.03	D27	CDM & Sector Team Ops OSED & Requirements	This deliverable is a documental deliverable. It contains the OSED in compliance with Eurcontrol OFG containing:á- The OSED itself; á- The Operational Requirements;á- Safety and Performance Requirementsá- INTEROP Requirementsáfor the IOP quick wins.ált collects results from any relevant input that could affect the content of the project deliverables and/or the scope of the validation activities.	29/06/2011	No reservation (P)
04.05	D03	S1 Template V2 Preliminary OSED document set:	Step 1 template set of preliminary OSED documentation defining the initial operational requirements for the creation, amendment and distribution of the RBT/MT for step 1 time-based operation for en-route.	18/03/2011	No reservation (P)
04.05	D04	S1 Interim Contribution to AIRM	Step 1 Initial AIRM Model contribution with respect to the process and framework of SESAR WP 8. It describes the trajectory data in terms of content, structure, flight path behaviour and services.	13/06/2011	No reservation (P)
04.05	D08	S1 i4D-CTA contribution to V3 Preliminary OSED	Step 1 OSED section to be integrated within overall V2 preliminary OSED document. This contribution deals with the requirements for initial 4D involving a single CTA constraint.	13/06/2011	Major reservation/s
04.05	D09	S1 i4D-CTA contribution to V3 Validation Plan	Step 1 Validation plan section to be integrated within overall V2 validation plan. It describes the validation objectives, scenarios and needs specific to i4D/CTA.	03/10/2011	to be assessed
04.05	D11	S1 RNAV-ADD contribution to V2 Preliminary OSED	Step 1 OSED section to be integrated within overall V2 preliminary OSED document. This contribution deals with the requirements for the use of precision RNAV clearances and Aircraft derived data in TP.	13/06/2011	Major reservation/s
04.05	D12	S1 RNAV-ADD contribution to V2 Validation Plan	Step 1 Validation plan section to be integrated within overall V2 validation plan. It describes the validation objectives, scenarios and needs specific to RNAV/ADD.	27/09/2011	to be assessed
04.05	D14	S1 ATFCM-FUA contribution to V3 Preliminary OSED	Step 1 OSED section to be integrated within overall V2 preliminary OSED document. This contribution deals with ATFCM assessment of flight creation/change on sector capacity and load, and with FUA implementation.	13/06/2011	Major reservation/s
04.05	D15	S1 ATFCM-FUA contribution to V3 Validation Plan	Step 1 Validation plan section to be integrated within overall V2 validation plan. It describes the validation objectives, scenarios and needs specific to ATFCM/FUA.	01/12/2011	to be assessed
04.07.01	D03	STEP 1 Final Operational Concept (version 1)	This document will be built on the consolidation of the previous studies developing (if necessary) some of its parts.	03/03/2011	No reservation (P)
04.07.01	D05	STEP 1 Final Operational Requirements (version 1)	This document provides the operational requirements of Step 1. It will be build on previous studies, on the final operational concept developed in P471 and on the requirement analysis that P10.8.1 will perform.	03/03/2011	No reservation (P)
04.07.01	D07	STEP 1 Final Safety and Performance Requirements (SPR) (version 1)	This document provides the safety and performance requirements of Step 1. It will be build on previous studies, on the final operational concept developed in P471 and on the requirement analysis that P10.8.1 will perform.	03/03/2011	No reservation (P)
04.07.01	D09	STEP 1 Final Interoperability Requirements (INTEROP) (version 1)	This document provides the interoperability requirements of Step 1. It will be build on previous studies, on the final operational concept developed in P471 and on the requirement analysis that P10.8.1 will perform.	03/03/2011	No reservation (P)
04.07.01	D11	STEP 1 V3 Validation plan	This document describes the validation activity that will be performed in V3	15/07/2011	No reservation
04.07.02	D06	Preliminary V2 OSED_1	In phase EOCVM V2 of P472 Build1, preliminary definition of operational concept, operational requirements, operational services, actors, their main characteristics, constraints and context of use. (identification of OSED)	21/04/2011	Clarifications required
04.07.03	D02	Preliminary OSED, SPR and Interoperability report	The preliminary OSED will dictate the shape and extent of the work within phase 1 of the project in that it will provide a baseline OSED to be used as the basis for the subsequent validation exercises. It is anticipated that at the same time, SPRs and an interoperability statement will also be produced.	23/05/2011	Major reservation/s
04.07.03	D03	Validation 1 exercise plan	This deliverable will set out in detail the proposed work that it is intended will be carried out in the first validation exercise. It will provide direction as to how that validation exercise and will dictate the objectives of the validation exercise in order to meet the requirements of the project.	14/10/2011	Clarifications required
04.07.04.b	D06	Validation Strategy	This document will outline the validation work that will be performed by 4.7.4b to validate the ASEP, ITF and ASEP-ITM procedures. It will provide input to WA3 and WA4 to guide their validation planning.	12/09/2011	to be assessed

			The validation strategy is based on the validation strategy guidelines provided by WP4.2 and is designed to ensure that the 3 validation work streams are fully complementary. It will contain: - the Stakeholders Needs; - the Level of Maturity (current and target) of the concept; - the description of the stakeholders validation expectations; - the Validation Objectives, with Initial Validation Requirements (including a list of the planned validation exercises); - the selected validation techniques to be used.		
04.07.06	D06	4.7.6 Validation Strategy		17/06/2011	No reservation (P)
04.07.07	D03	Initial OSED	Interim OSED based on SJU Template.	08/06/2011	No reservation (P)
04.07.07	D04	V2 Validation Plan	It describes the initial validation plan taking into account the following aspects: - Initial maturity level of the concepts - The Transition Criteria to be defined for V1-V2 transitioning and V2-V3 transitioning - Validation activities in V2 (operational scenarios, use cases, Performance Indicators, mock ups) - Coordination of timescales amongst dependant projects	29/07/2011	Clarifications required
04.07.07	D05	Initial SPR	Interim SPR based on SJU Template.	29/07/2011	to be assessed
04.07.08	D04	State of the Art Information Paper	A paper that collects all of the current thinking on MSP as a concept and presents a study of the state of the art of the ATM actors, responsibilities and roles. By incorporating all the results already obtained in different experiments and workshops concerning the role and the organization of the controller team, an initial background document will be produced. This work will present recommendations and pitfalls concerning the aforementioned items.	27/07/2011	No reservation (P)
04.08.01	D03	SPR-STCA-V2 Consolidated baseline framework for safety and performance		02/03/2011	No reservation (P)
04.08.01	D04	VP-TMA-STCA-V3 Final validation plan -V3- for enhanced STCA for TMA specific operations		29/06/2011	No reservation
04.08.01	D12	VR-Feasibility-DAP-G-SNET-V2 Feasibility and options for use of DAP in G-SNETs		21/01/2011	No reservation (P)
04.08.01	D13	VR-Benefits-DAP-STCA-V2 Model-based performance evaluation of STCA using DAP		02/12/2011	to be assessed
04.08.01	D21	DP-3-4D-G-SNET-V1 Initial development plan for G-SNETs evolution for 3-4D TRAJ		27/09/2011	No reservation (P)
04.08.02	D03	VR-TCAP Validation report for new possible altitude capture laws	A report synthesising the evaluations of the new possible altitude capture laws, describing the performance of each envisaged solution and proposing a validated best compromise solution	02/05/2011	Clarifications required
04.08.02	D04	SPR-TCAP Safety & Performance Requirements for altitude capture laws	The final deliverable will provide the required elements for an appropriate derivation of detailed minimum system requirements for altitude capture laws. It will provide a sound basis for future standardisation	03/10/2011	No reservation
04.08.02	D06	VR- APFD Validation report for automatic responses to ACAS RA	A report synthesising the evaluations, quantifying the overall safety gain obtained when automatic response feature is deployed on the whole ACAS-equipped fleet and identifying the best option for the ACAS AP/FD solution	04/05/2011	Clarifications required
04.08.02	D07	SPR-APFD Safety & Performance Requirements for automatic responses to ACAS RA	The final deliverable will provide the required elements for an appropriate derivation of detailed minimum system requirements for automatic responses to ACAS RA. It will provide a sound basis for future standardisation	03/10/2011	No reservation
04.08.03	D07	OCD-RADL-1 ATC operations including the display of ACAS RA downlinked information to the controller - initial version	A report describing the operational concept that will support the use the ACAS RA information displayed on the controller working position and including INTEROP considerations	30/05/2011	Clarifications required

## Work Package 05

Project	Deliverable Code	Deliverable Name	Deliverable Description	Deliverable Handover Date	Assessment Decision
05.02	D101	Step 1 DOD Report - Second Release Milestone	Step 1 DOD following review by stakeholders. (The term "Release" here does NOT relate to the Releases being discussed elsewhere in the programme - it only refers to releases of this document)	06/12/2011	to be assessed
05.02	D51	Initial WP Time Based Validation Strategy Report available	A validation strategy to guide WP 5 level 3 projects in their validation activities, ensuring that all processes are kept in line with the overarching SESAR WP methodology and concept. The Validation Strategy will include specific scenarios identified from the operational requirements of the TMA DOD. In addition the Validation Strategy will also outline high level validation objectives for the validation activities for the level 3 projects, integrated validation within 5.3 and cross domain validation.	06/07/2011	No reservation
05.03	D07	Validation Exercise Plan VA1 (step 1)	This deliverable will contain for exercise VA1 the Validation Exercise Plan, specifying: - detailed exercise validation objectives - indicators and metrics according to the characteristics of the concepts under analysis and the specific validation objectives - specification of validation scenarios - detailed design and planning of the validation exercises - V&V requirements (specially for the Industrial-Based Platform)	24/10/2011	to be assessed
05.05.01	D01	Phase 1 TMA Trajectory Management Framework Initial OSED	This deliverable is a documental deliverable. It contains the OSED in compliance with Eurcontrol OFG containing: - The OSED itself; - The Operational Requirements; - Safety and Performance Requirements defined in Initial SPR - INTEROP Requirements defined in the initial INTEROP For the phase 1. It collects results form: - any relevant input that could affect the content of the project deliverables and/or the scope of the validation activities; - The results of the initial SPR and Interop assessment.	12/02/2011	Clarifications required
05.05.01	D02	Phase 1 - Initial SPR	Synthesis of the Performance & Safety assessment and the modelling studies. It contains the initial set of the Safety and Performance Requirements and allocation of them on the services.	12/02/2011	Clarifications required
05.05.01	D03	Phase 1 - Initial INTEROP	This deliverable contains: a) The interoperability requirements; b) Traceability of interoperability to operational services.	16/02/2011	Clarifications required
05.05.01	D04	Phase 1 - Initial Modelling Result	Feasibility report of some requirements (potentially where there are different options to achieve the same operational effect) and to required accuracies on some of the data items	16/02/2011	No reservation (P)
05.05.01	D05	Phase 1 - V2 Validation Plan	This deliverable shows the detailed validation planning including the choices of the correct validation techniques, scenarios and evidence of the compliance with WP 5.2 high level validation strategy. In particular, it contains: - the validation technique for the addressed E-OCVM phase; - the detailed preparation of the exercises and the scenarios; - the planning of the operational people training and availability. for both the exercises foreseen in step 1, V2 maturity level.	02/08/2011	to be assessed
05.05.01	D07	Phase 1 Interim Contribution to AIRM	Initial AIRM Model contribution with respect to the process and framework of SESAR WP 8. It describes the trajectory data in terms of content, structure, flight path behaviour and services.	25/08/2011	No reservation (P)
05.05.01	D09	Phase 1 TMA Trajectory Management Framework Advanced OSED	TMA Trajectory Management Framework OSED updated with - V2 validation cycle results; - advanced requirements from other operational projects (mainly Wp 5 and alignment with WP 4 and 6); - advanced phase 1 Interop assessment; - advanced phase 1 SPR assessment; - advance modelling studies results.	19/08/2011	to be assessed
05.05.01	D10	Phase 1 Advanced SPR	Synthesis of the Performance & Safety assessment and the modelling studies. It contains an advanced set of the Safety and Performance Requirements and allocation of them on the services for the phase 1.	25/08/2011	to be assessed

05.05.01	D11	Phase 1 Advanced INTEROP	This deliverable contains: a) The interoperability requirements; b) Traceability of interoperability to operational services.	22/08/2011	to be assessed
05.05.02	D02	Validation Strategy and Plan for Enhanced TP using AOC data	This plan will define the strategy for validating the AOC data enhanced TP through V2 level activities. This will take a two stage approach, validating first at TP level, and then assessing the benefits at the level of the ATC tools (automation) using TP . It will identify the validation tools and the scenarios and data needed for the validation activities, the analysis approach and reporting.	21/01/2011	No reservation (P)
05.05.02	D06	Interim operational Requirements	During the early V2 activities, an interim set of operational requirements will be delivered for use by 5.2 and by WP10. These requirements will be passed to P5.5.1 which will include them within the consolidated set of operational requirements for the TMA Trajectory Management Framework (interim version), i.e. within the interim OSED deliverable for P5.5.1. The requirements will be provided to 10.2.1.	21/01/2011	No reservation
05.06.02	D01	Step 1 State of the art	The deliverable will report on current practices, address the outcomes of projects dealing with the issue of vertical profiles, identify needs and blocking points and propose initial propositions of improvements (procedures and systems)	26/04/2011	No reservation (P)
05.06.03	D07	LPV Procedures Identification Report	Local airports selection for LPV implementation justification document. This document will provide a list of airports in Italy, Norway, Spain and United Kingdom where LPV will be implemented, a cohesive plan as to when such airports would wish to deploy LPV procedures (road-map and roll-out plan) and the reasons why they were selected following the defined common requirements.	24/02/2011	No reservation (P)
05.06.03	D09	European Regulatory Processes for LPV Implementation Report - Phase LPV	This document summarizes all the common (ECAC) and local (Italy, Norway, Spain and UK) regulatory processes required for LPV implementation and approval. The objective is to develop/clarify the steps to be followed so as to achieve LPV certification and operational approval. This report could help to propose updates of the LPV Regulatory Processes to the appropriate Regulatory Bodies.	09/05/2011	No reservation (P)
05.06.03	D10	Common Criteria for Procedure Design, Coding and Flight Verification Report	Common criteria to implement LPV procedures in Europe. Design, coding and verification guidelines. ICAO criteria are high level recommendations that we will use as an input. With this deliverable we will share our local experiences and try to see what rocks we hit on the way when we implement in practice, which problems were not identified in ICAO criteria, how to resolve those problems, etc.	30/06/2011	Clarifications required
05.06.03	D14	NOTAM Implementation Report	Specification of NOTAM implementation requirements for LPV procedures.	07/11/2011	No reservation (P)
05.06.03	D15	Common Safety Criteria Report	Common safety criteria/requirements to implement LPV procedures in Europe. Definition of the approach for the development of common criteria and guidelines for the implementation of Local Safety Cases in line with SAM methodology.	27/09/2011	to be assessed
05.06.04	D06	V1 Initial OSED (Stream A)	Development of Initial OSED based on the output provided by 5.2 DoD and the operational environment analysed in V1 Reports by Operational Streams	06/01/2011	No reservation (P)
05.06.04	D07	V2 Validation Plan stream B (internal)	Identification of the objectives of the validation activities to be performed in streamB: Advanced Techniques. Definition of the exercises to be performed together with tools and techniques to be used (MBS) - part of V2 Validation Plan (package)	26/07/2011	No reservation (P)
05.06.04	D09	V2 Validation Plan stream C (internal 2)	Identification of the objectives of the validation activities to be performed in streamC: Arrival Management Extended Horizon on ANSP2 facilities. Definition of the exercises to be performed together with tools and techniques to be used (MBS) - part of V2 Validation Plan (package)	15/04/2011	No reservation (P)
05.06.04	D10	V2 Validation Plan stream C (internal 3)	Identification of the objectives of the validation activities to be performed in streamC: Arrival Management Extended Horizon on ANSP3 facilities. Definition of the exercises to be performed together with tools and techniques to be used (MBS) - part of V2 Validation Plan (package)	15/04/2011	No reservation (P)
05.06.04	D11	V2 Validation Plan stream C (internal 4)	Identification of the objectives of the validation activities to be performed in streamC: Arrival Management Extended Horizon on ANSP1 facilities. Definition of the exercises to be performed together with tools and techniques to be used (Prototyping Human in the loop) - part of V2 Validation Plan (package)	19/03/2011	No reservation (P)
05.06.04	D12	V2 Validation Plan stream C (internal 5)	Identification of the objectives of the validation activities to be performed in streamC: Arrival Management Extended Horizon on ANSP2 facilities. Definition of the exercises to be performed together with tools and techniques to be used (Prototyping Human in the loop) - part of V2 Validation Plan (package)	19/03/2011	No reservation (P)
05.06.04	D13	V2 Validation Plan stream C (internal 6)	Identification of the objectives of the validation activities to be performed in streamC: Arrival Management Extended Horizon on ANSP3 facilities. Definition of the exercises to be performed together with tools and techniques to be used (Prototyping Human in the loop) - part of V2 Validation Plan (package)	19/03/2011	No reservation (P)
05.06.04	D15	V2 Validation Plan Stream E (internal)	Identification of the objectives of the validation activities to be performed in streamE: Aircraft Derived Data. Definition of the exercises to be performed together with tools and techniques to be used - part of V2 Validation Plan (package)	15/04/2011	No reservation (P)
05.06.04	D16	V2 Validation Plan (Package)	Consistent official package for SJU containing all internal V2 Validation Plans designed by operational streams	07/11/2011	to be assessed
05.06.04	D29	V2 Preliminary Operational Requirements	Definition of Operational Requirements for prototype 10.9.x based on the output from operational workstreams and preliminary OSED (early deliverables will be produced for 10.9.x Benefits - initial and update requirements)	25/07/2011	Clarifications required
05.06.06	D02	IT1 - OSED	It will include the description of the S&M application, the description of the tasks, roles and responsibilities of the controllers and flight crews, and the description of the operational performance expectations and the characteristics of the intended operational environment (airspace, CNS etc.). It will also include the initial set of operational requirements and procedures.	07/03/2011	No reservation (P)
05.06.06	D03	IT1 - SPR	It contains the initial set of the Safety and Performance Requirements.	09/05/2011	Clarifications required
05.06.06	D04	IT1 - INTEROP	The deliverable contains the initial interoperability requirements of the selected functions and technologies needed to support the ASPA S&M identified in the OSED.	09/05/2011	Clarifications required
05.06.06	D05	IT1 - VPLAN	The deliverable contains the validation plan for the iteration1 and includes: ù the determination of stakeholders/E acceptance criteria and performance requirements; ù the identification of project and exercise validation objectives, refined validation requirements; ù the identification of indicators and metrics; ù the specification of validation scenarios; ù the validation exercise plan The Validation Plan is based on the validation strategy provided by 5.2.	21/06/2011	No reservation (P)
05.06.06	D06	IT1 - Mock-up specification	The deliverable will contain the specifications of the specific S&M features (e.g. HMI) developed as part of the mock-ups in order to allow new requirements validation activities.	10/06/2011	No reservation



05.06.06	D07	IT1 - VREP	This deliverable will describe the IT1 validation exercises results. It also contains issues and recommendations for the Iteration2.	13/06/2011	Clarifications required
05.06.07	D04	Preliminary Operational Concept REVIEW and preliminary OSED part 1 - Step 1	Review the operational concept under the aspect of activity 5a and 7, doing the refinement and prepare the OSED. Initial operational concept is further developed and refined using various validation results.	12/07/2011	to be assessed
05.07.02	D05	i4D - Separation operational requirements and procedures identification	This document will address the Separation Management for Initial 4D navigation (i4D) issues identified in P5.6.1 and P5.6.4. This document will include an initial description of the operational requirements and high level identifications of system support functions.	22/11/2011	to be assessed
05.07.04	D10	P5.7.4 Publish Project Validation Plan	The document will include the validation strategy and the experimental plans for all validation activities to be undertaken in the project. Updates will be performed at certain points. The main update foreseen will be after V2 activities completion.	08/04/2011	No reservation (P)
05.07.04	D11	P5.7.4 Publish Preliminary Validation Report for Point Merge	The validation report of V2 will include all validation results and conclusions from the different validation exercises. Integration and consolidation to provide general results on progresses achieved regarding Point Merge and other P-RNAV implementation issues will be illustrated in this document.	10/11/2011	No reservation
05.09	D80	VP148 En-Route Initial Operational and SPR Requirements Step 1	This activity aims at identifying and detailing CWP operational and SPR requirements for the En-Route environment, starting from the DoD produced by WP 4.2 as well as by getting input from other relevant level 3 projects whose activities have an impact on the ATCo HMI	23/05/2011	No reservation (P)
05.09	D81	VP148 En-Route Initial Human Factor Requirements Step 1	This activity aims at addressing, for the En-Route environment, requirements concerning mainly: ò Human vs Machine workload sharing and balancing; ò Ergonomic design of the working environment (i.e. working position layout) An initial set of HF requirements are produced once DoD is made available by WP 4.2	23/05/2011	No reservation (P)
05.09	D82	VP148 En-Route Initial Use Cases Step 1	The purpose of this deliverable is to produce, by taking in input the preliminary list of the Ops, SPR and HF requirements for the en-Route environment, as many examples as possible of the proposed interactions between system and user (i.e. ATCo).	08/06/2011	No reservation (P)
05.09	D83	VP356 TMA Initial Operational & SPR Requirements Step 1	This activity aims at identifying and detailing CWP operational and SPR requirements for a TMA environment, starting from the DoD produced by WP 5.2 as well as by getting input from other relevant level 3 projects whose activities have an impact on the ATCo HMI	23/05/2011	No reservation (P)
05.09	D84	VP356 TMA Initial Human Factor Requirements Step 1	This activity aims at addressing, for a TMA environment, requirements concerning mainly: ò Human vs Machine workload sharing and balancing; ò Ergonomic design of the working environment (i.e. working position layout) An initial set of HF requirements are produced once DoD is made available by WP 5.2	23/05/2011	No reservation (P)
05.09	D85	VP356 TMA Initial Use Cases Step 1	The purpose of this deliverable is to produce, by taking in input the preliminary list of the Ops, SPR and HF requirements for the TMA environment, as many examples as possible of the proposed interactions between system and user (i.e. ATCo)	08/06/2011	No reservation (P)
05.09	D86	VP148 Detailed Validation Strategy Step 1 - V2 and V3	Practices, principles and assumptions of the initial overall validation strategy issued by WPX.2 are expanded and detailed here. It is a necessary step to ensure an appropriate and consistent interpretation and following implementation of the overall WP validation strategy for the development of project validation exercise plans. The deliverable is produced under coordination and consultation with WPX.2 and will address both V2 and V3.	30/06/2011	Clarifications required
05.09	D87	VP148 Validation Exercise Plans Step 1 - V2 and V3	The deliverable describes the way each Step 1 (both V2 & V3) validation exercise is to be prepared and executed, detailing: ò context; ò objectives, with underlying assumptions and hypotheses ò description of the exercise process (what is to be done); ò description of the resources required; ò indicators and metrics.	27/07/2011	to be assessed
05.09	D90	VP356 Detailed Validation Strategy Step 1 - V2 and V3	Practices, principles and assumptions of the initial overall validation strategy issued by WPX.2 are expanded and detailed here. It is a necessary step to ensure an appropriate and consistent interpretation and following implementation of the overall WP validation strategy for the development of project validation exercise plans. The deliverable is produced under coordination and consultation with WPX.2 and will address both V2 and V3.	30/06/2011	Clarifications required
05.09	D91	VP356 Validation Exercise Plans Step 1 - V2 and V3	The deliverable describes the way each Step 1 (both V2 & V3) validation exercise is to be prepared and executed, detailing: ò context; ò objectives, with underlying assumptions and hypotheses ò description of the exercise process (what is to be done); ò description of the resources required; ò indicators and metrics.	24/06/2011	Clarifications required

05.09	D93	VP143 Detailed Validation Strategy Step 1 - V2 and V3	Practices, principles and assumptions of the initial overall validation strategy issued by WPX.2 are expanded and detailed here. It is a necessary step to ensure an appropriate and consistent interpretation and following implementation of the overall WP validation strategy for the development of project validation exercise plans. The deliverable is produced under coordination and consultation with WPX.2 and will address both V2 and V3.	30/06/2011	Clarifications required
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## Work Package 06

Project	Deliverable Code	Deliverable Name	Deliverable Description	Deliverable Handover Date	Assessment Decision
06.02	D06	D01-01-02 WP6 Detailed Operational Descriptions Step1 - Draft	A high level description of the operational concept as well as of the business architecture of the Airport Operations: it will include Detailed Operational Descriptions (DODs), as well as the EA models for the description of a high level operational overview / business architecture. This deliverable also summarises the recommendations and Guidelines on changes to be brought to the Concept of Operations as a result of the validation activities in WP6 to be issued to WPB4.2. The DODs/E template and content will be agreed between Industrial Support (IS) and X.2 projects in order to guarantee that DODs properly capture SESAR Enterprise Architecture (EA) dimension. Before the DOD template is finally agreed, the WP6 DODs could contain: <ul style="list-style-type: none"> <li>o A description of the scope in terms of SESAR step, ATM Phases and Concept Components, Conops Process Model, Ols, KPAs/KPIs addressed;</li> <li>o Current operating method and main changes;</li> <li>o Mapping of the ATM Services within the scope of WP6;</li> <li>o Operational scenarios:</li> </ul>	11/04/2011	No reservation
06.02	D07	D01-01-03 WP6 Detailed Operational Descriptions Step1 - Final	A high level description of the operational concept as well as of the business architecture of the Airport Operations: it will include Detailed Operational Descriptions (DODs), as well as the EA models for the description of a high level operational overview / business architecture. This deliverable also summarises the recommendations and Guidelines on changes to be brought to the Concept of Operations as a result of the validation activities in WP6 to be issued to WPB4.2. The DODs/E template and content will be agreed between Industrial Support (IS) and X.2 projects in order to guarantee that DODs properly capture SESAR Enterprise Architecture (EA) dimension. Before the DOD template is finally agreed, the WP6 DODs could contain: <ul style="list-style-type: none"> <li>o A description of the scope in terms of SESAR step, ATM Phases and Concept Components, Conops Process Model, Ols, KPAs/KPIs addressed;</li> <li>o Current operating method and main changes;</li> <li>o Mapping of the ATM Services within the scope of WP6;</li> <li>o Operational scenarios:</li> </ul>	18/11/2011	No reservation
06.02	D08	D01-02-01 WP6 Detailed Operational Descriptions Step 2 - Draft	A high level description of the operational concept as well as of the business architecture of the Airport Operations: it will include Detailed Operational Descriptions (DODs), as well as the EA models for the description of a high level operational overview / business architecture. This deliverable also summarises the recommendations and Guidelines on changes to be brought to the Concept of Operations as a result of the validation activities in WP6 to be issued to WPB4.2. The DODs/E template and content will be agreed between Industrial Support (IS) and X.2 projects in order to guarantee that DODs properly capture SESAR Enterprise Architecture (EA) dimension. Before the DOD template is finally agreed, the WP6 DODs could contain: <ul style="list-style-type: none"> <li>o A description of the scope in terms of SESAR step, ATM Phases and Concept Components, Conops Process Model, Ols, KPAs/KPIs addressed;</li> <li>o Current operating method and main changes;</li> <li>o Mapping of the ATM Services within the scope of WP6;</li> <li>o Operational scenarios:</li> </ul>	06/05/2011	No reservation
06.02	D11-001	D01-03-01 WP6 Detailed Operational Descriptions Step 3 - Draft	A high level description of the operational concept as well as of the business architecture of the Airport Operations: it will include Detailed Operational Descriptions (DODs), as well as the EA models for the description of a high level operational overview / business architecture. This deliverable also summarises the recommendations and Guidelines on changes to be brought to the Concept of Operations as a result of the validation activities in WP6 to be issued to WPB4.2. The DODs/E template and content will be agreed between Industrial Support (IS) and X.2 projects in order to guarantee that DODs properly capture SESAR Enterprise Architecture (EA) dimension. Before the DOD template is finally agreed, the WP6 DODs could contain: <ul style="list-style-type: none"> <li>o A description of the scope in terms of SESAR step, ATM Phases and Concept Components, Conops Process Model, Ols, KPAs/KPIs addressed;</li> <li>o Current operating method and main changes;</li> <li>o Mapping of the ATM Services within the scope of WP6;</li> <li>o Operational scenarios:</li> </ul>	29/07/2011	No reservation
06.02	D32	D04-01-03 WP6 Validation Strategy and Framework Step1 - Final	The WP6 Validation Strategy will address both the top-down and bottom-up approach therefore reducing the potential deviation between the top-down priorities and the bottom-up work done at the level of third level projects, per step of the concept story board. On one hand, this deliverable will describe, per operational step, the validation objectives at Airport Operations area. On the other, the Validation Strategy will include a consistent and coherent analysis, description and integration of the WP6 third level projects validation plans. The gap/overlaps analysis between both approaches will also be part of D04 as well as those recommendations to WP6 third level projects to align their validation approach to the Programme objectives. This document also includes the recommendations and Guidelines on changes to be brought to the SESAR Overall Validation and Verification Strategy and Framework as a result of the findings provided by WP6 third level validation activities. This deliverabl	18/05/2011	No reservation
06.02	D33	D04-02-01 WP6 Validation Strategy and Framework Step 2 - Draft	The WP6 Validation Strategy will address both the top-down and bottom-up approach therefore reducing the potential deviation between the top-down priorities and the bottom-up work done at the level of third level projects, per step of the concept story board. On one hand, this deliverable will describe, per operational step, the validation objectives at Airport Operations area. On the other, the Validation Strategy will include a consistent and coherent analysis, description and integration of the WP6 third level projects validation plans. The gap/overlaps analysis between both approaches will also be part of D04 as well as those recommendations to WP6 third level projects to align their validation approach to the Programme objectives. This document also includes the recommendations and Guidelines on changes to be brought to the SESAR Overall Validation and Verification Strategy and Framework as a result of the findings provided by WP6 third level validation activities. This deliverabl	27/10/2011	No reservation
06.02	D49	D06-02-01 Consolidated WP6 Business Case Step 2 - Draft	D06 will include the consolidation of the individual business cases performed within each WP6 projects, contributing therefore to the overall concept level assessment. As this deliverable will be produced in close coordination with WP16, support and guidance of this WP is assumed as a condition to ensure this task is performed at best. This deliverable's scope is Validation phase V1 within Conops Step2	08/02/2011	No reservation (P)



06.02	D72	D10-01-02 Methodology and Guidelines Step1	An interface document summarising: ò Coordination with WPB4.2 on all aspects related to Airport Operations and SESAR concept: guidelines for completing DODs, OSEDs, requirements, etc. ò Coordination with WPB4.1 and WPB5 on performance assessment issues; ò General recommendations for performing the validation activities after the coordination activities where project 6.2 is involved as representative of the WP6 projects. ò the coordination between this WP and WP16, the coordination with the SJU as well as the proposed methodology for addressing the transversal Key Performance Areas at WP6 third level projects; This deliverable's scope is Validation phase V2 within Conops Step1	17/02/2011	No reservation (P)
06.05.01	D09	Airport Performance Monitoring Service document	A document defining how the airport performance framework, developed under T6.5.1-003 through T6.5.1-007 is monitored and presented in the AOP, including airport performance outputs, their associated performance drivers and clear indication of their influencing relationships	28/02/2011	No reservation
06.05.01	D10	AOP decision support mechanisms document	A document defining how the AOP is used in the decision making process to allocate the available airport resources and /or limit the traffic demand, using the performance framework, the stakeholders agreed airport objectives and ensuring appropriate interface with the NOP.	06/06/2011	No reservation
06.05.01	D11	AOP management document	A document identifying the scenarios and use cases under which the AOP will be prepared and updated in a way which covers the roles and responsibilities of the involved parties. This is an initial and vital building block looking at the key activities undertaken on airports and hence aligns with the ATM component òAsset and Resource Managementò.	06/06/2011	No reservation
06.05.01	D12	AOP demonstrator (theoretical Mock-Up) requirements specification document	A document summarizing requirements, information flow specifications and associated use cases / scenarios for a òtheoreticalò demonstrator, based on the airport performance framework and AOP content as defined in tasks T6.5.1-003 through T6.5.1-011, taking into account the identified actors and interfaces.	20/07/2011	No reservation
06.05.02	D02	AOP Update concept document	Document describing the operational concept behind the process associated with the updating of the AOP.	27/05/2011	No reservation (P)
06.05.02	D03	AOP Update scenarios and Use Cases	Description of the processes of updating the AOP within a number of pre-determined scenarios. The scenarios will be agreed with stakeholders based on an assessment of the circumstances under which a common airport operational plan can be particularly beneficial.	12/08/2011	No reservation (P)
06.05.02	D04	Mock-up requirements capture	A technical note describing the activities required to adapt the THALES ACT Centre to provide a functional mock-up of the AOP	08/09/2011	Clarifications required
06.05.03	D01	6.5.3.D001 DCB Baseline-Analysis Report	This report contains a collection report on relevant inputs to the project as well as currently available methodologies regarding demand and capacity.	01/02/2011	No reservation (P)
06.05.03	D02	6.5.3.D002 DCB Initial OCD	This document commences on deliverables provided by SWP6.2, i.e. CONOPS or DoD. This document describes the Operational Concept for Airport Capacity and Flow Management related issues: Demand&Capacity Balancing (DCB). This document describes the initial business requirements, analyses strengths&weaknesses of assessed DCB-procedures, identifies the gaps and produces an initial idea of the future concept (incl. Operational procedures and Operational Requirements).	08/12/2011	to be assessed
06.05.04	D01	Initial Operational Concept Document (V1)	Initial Concept document based on 6.2 Concept of Operations (CONOPS), developed along 3 operational themes (a) the vision associated to an Airport Operations Centre, operational services, actors and responsibilities (b) the creation/revision/synchronisation/distribution of business/mission trajectories applicable to airports, (c) the collaborative management of the AOP.	03/03/2011	Clarifications required
06.05.04	D02	Validation Plan (V1)	Document outlining the validation strategy and the scope of activities to be done in V1 related to P6.5.4, including responsibilities and the approach to be taken.	01/07/2011	No reservation
06.05.04	D03	Initial Technical Feasibility Report (V1)	Document describing the mock-up requirements that will support V1 validation activities for the 3 themes addressed by the project, and assessing the technical feasibility.	25/03/2011	Clarifications required
06.05.04	D04	Mock Up Availability Note (V1)	A short document stating the availability of the APOC mock-up against mock-up requirements for operational validation V1 purpose.	05/09/2011	No reservation (P)
06.05.04	D05	Initial Validation Report (V1)	Document summarising results and interpretation related to V1 validation activities related to the 3 themes supported by P6.5.4 project: Airport Operations Centre, Management of business/mission trajectories applicable to airports, Collaborative management of the AOP.	07/11/2011	No reservation (P)
06.05.05	D03	initial OCD	ATM-interpretation scheme for MET-data (includes airline and airport input)	09/05/2011	Major reservation/s
06.05.05	D04	MET-HMI mock-up technical description	validation of data set and interpretation scheme	13/12/2011	to be assessed
06.06.01	D01	Gap Analysis Report	This document will identify the scope of adverse weather and exceptional operating conditions to be considered in the project according to their occurrence and impact on the airport and ATM performance. It will also give a state of the art of implementation of the IP1 Airport CDM Adverse Condition Concept Element in Europe, identifying the possible deviations from the concept and providing where and how the existing concepts need to be modified to fit into the overall SESAR Concept.	11/08/2011	No reservation (P)
06.06.02	D01	De-icing Step 1 V2 OSED	This first version of the de-icing OSED will be a result of existing material and initial development. The deliverable will include the operational concept elements of the WP6 Airport Detailed Operational Description (DOD) document provided by SWP6.2 that will be further developed in the OSED; the detailed operational environment for the operational processes and services that will be covered in the OSED; their operational characteristics; the roles and responsibilities of the actors involved; the detailed operating method; detailed operational scenarios and use cases; operational requirements. The deliverable will serve as input for P12.6.2.	08/07/2011	No reservation
06.06.02	D06	De-icing Step1 V2 SPR	This deliverable corresponds to the operational process and service covered in the de-icing OSED V2. It will include safety requirements, performance requirements and their allocation to system functions identified in project B.4.3.	10/08/2011	No reservation
06.06.02	D07	De-icing Step1 V2 INTEROP	An Interoperability document defining, on the basis of the OSED and the SPR, the interoperability requirements from an operational use point of view.	16/09/2011	Clarifications required
06.07.01	D03	Operational concept for the integration of the safety support tools: initial OCD	OCD (Operational Concept Document) which gathers the various safety support tools studied in P6.7.1, to keep an overall and consistent view on the solutions that will be defined and validated to improve airport safety, and address the issue of integration of alerts, both inside each domain (i.e. cockpit, ATC and vehicle) and between domains.	24/02/2011	No reservation
06.07.01	D07	RWSL OSED to support V3 trials	Development of the first description of the operational service for RWSL (including operational procedures for controllers and pilots, and operational requirements) and environment.	07/06/2011	No reservation
06.07.01	D12	Preliminary OSED for "Conflicting ATC Clearances"	Development of the preliminary description of the operational service for "Conflicting ATC Clearances" (including operational procedures for controllers and operational requirements) and environment.	28/03/2011	No reservation

06.07.01	D13	Preliminary SPR for "Conflicting ATC Clearances"	Determination of preliminary safety and performance requirements on the ATC domain for "Conflicting ATC Clearances" based on the preliminary OSED and development of a document including these requirements	17/05/2011	Major reservation/s
06.07.01	D14	V2 Validation Plan for "Conflicting ATC Clearances"	Description of the validation activity to take place at the end of V2, including the means (mock-up and prototypes), operational scenarios, use-cases, and performance indicators	19/07/2011	No reservation
06.07.01	D22	Preliminary OSED for "Conformance Monitoring"	Development of the preliminary description of the operational service for "Conformance Monitoring" (including operational procedures for pilots and controllers, and operational requirements) and environment.	18/11/2011	No reservation
06.07.01	D34	Preliminary OSED for "Alerts for vehicle drivers"	Development of the preliminary description of the operational service for "Alerts for vehicle drivers" (including operational procedures for controllers and vehicle drivers, and operational requirements) and environment.	23/05/2011	Clarifications required
06.07.01	D35	Preliminary SPR for "Alerts for vehicle drivers"	Determination of preliminary safety and performance requirements on the ATC and vehicle domains for "Alerts for vehicle drivers" based on the preliminary OSED and development of a document including these requirements	04/10/2011	No reservation
06.07.01	D37	V2 Validation Plan for "Alerts for vehicle drivers"	Description of the validation activity to take place at the end of V2, including the means (mock-up and prototypes), operational scenarios, use-cases, and performance indicators	21/10/2011	Major reservation/s
06.07.02	D03	V1 Validation Plan		24/01/2011	No reservation
06.07.02	D04	Initial OSED		12/04/2011	No reservation (P)
06.07.02	D05	Routing and planning controller interface (V1)		28/04/2011	No reservation (P)
06.07.02	D06	Route generation integrated with planning information (V1)		16/05/2011	No reservation (P)
06.07.02	D07	Data link routing information (V1)		14/06/2011	No reservation (P)
06.07.02	D10	V2 Integration Plan		17/05/2011	No reservation (P)
06.07.03	D02	Preliminary OSED and Preliminary Operational Procedures Step 1	Identification of baseline for the guidance function (i.e. state of the art). It represents the cornerstone for identifying what is available and which solutions can be implemented for Step 1 - Time Based Operations related OIs. Generally, it is worth noticing that the OSED will define Preliminary Operational Procedures in a dedicated section to ease their revision from pertinent bodies.	17/11/2011	No reservation
06.07.03	D03	Preliminary SPR and Operational Requirements Step 1	Preliminary Operational Requirements and Preliminary Safety and Performance Requirements (SPR) are elaborated on the basis of the Preliminary OSED and consolidated thanks to the results from V2 validation activities. Operational requirements will be collected in a dedicated section to ease their revision from pertinent bodies.	14/12/2011	to be assessed
06.07.03	D05	Preliminary Validation Plan Step 1	Description of the validation resources, activities and performance indicators to be assessed within the project for V2 phase.	30/11/2011	to be assessed
06.07.03	D07	Preliminary technical feasibility and interoperability Step 1	Merging and consolidation of the results, mainly in terms of interoperability requirements, matured into technical sub-tasks, taking into account - The preliminary output of the verification of the technical feasibility of AGL as guidance on airport surface and the elaboration of the layout of the light system. - Preliminary new HMI functionalities and requirements necessary for the ATCO to perform its task in the future environment. - The preliminary output of the verification of the technical feasibility of datalink taxi clearances services on airport surface, covering start-up, push-back, taxi clearances and revisions. - The preliminary output of the verification of the technical feasibility of mock-ups or early prototypes in the vehicles and aircraft to display the guidance information according to the route emitted from the ground server. - The preliminary output of the assessment of the feasibility of enhanced vision concept for improving taxi phase in low visibility conditions.	22/12/2011	to be assessed
06.08.01	D04	OSED - v0	High-level Operational Services and Environment Description (OSED) document, covering all three phases of the project (incl. TBS, WDS, PWS)	26/01/2011	No reservation (P)
06.08.01	D06	Safety and Performance Requirements (SPR) - s1	Summary of the OSA (Operational Safety Assessment), OHA (Operational Hazard Assessment), ASOR (Allocation of the Safety Operational Requirements), OPA (Operational Performance Assessment) and the Table for Allocation of Safety and Performance Requirements.	01/12/2011	to be assessed
06.08.01	D07	Validation strategy and plan - s1	Validation strategy and plan for phase 1 - TBS	08/09/2011	Clarifications required
06.08.03	D02	S1 V1 OSED	High-level Operational Services and Environment Description (OSED) document	29/09/2011	No reservation
06.08.04	D06	6.8.4-S01V1 State of the Art Analysis	Report on current state of the art Arrival and Departure Management with respect to operational procedures and research activities	14/02/2011	No reservation (P)
06.08.04	D07	6.8.4-S01V1 Initial OSED	Initial Operational Service and Environment Document for Basic Coupled Arrival and Departure Management including operational procedures and operational requirements	06/06/2011	No reservation
06.08.04	D08	6.8.4-S01V2 Validation Plan for V2	Integrated Validation Plan for all Validation activities for Basic Coupled Arrival and Departure Management in V2	20/10/2011	No reservation
06.08.04	D32	6.8.4-OSED basic DMAN	Final Operational Service and Environment Description for basic DMAN including operational procedures and operational requirements.	08/04/2011	Clarifications required
06.08.05	D01	Generic Operational Implementation Plan for GBAS CAT I draft version	Generic operational implementation plan to be followed by any ANSP from the European airport network interested in implementing GBAS CAT I operations according to SES regulation. Draft/first version.	16/09/2011	No reservation
06.08.05	D09	GBAS CAT II/III Operational Requirements Position Paper	This position paper to WP9.12, WP15.3.6 and WP15.3.7 will provide the operational justification for CAT II/III operation requirements. It will in particular help identify whether current CAT II/III requirement are build on operational need or on existing system constraint. Finally it will show if a new system such as GBAS could be developed on different performance requirements.	08/03/2011	No reservation (P)
06.08.07	D01	Initial OSED - enhanced cloud base detection V1-Step 1	Initial OSED enhanced cloud base detection V1-Step 1	20/09/2011	No reservation (P)
06.08.07	D02	Initial Technical Feasibility Report (enhanced cloud base detection technology) V1-Step 1	Initial Technical Feasibility Report (enhanced cloud base detection technology) V1-Step 1	20/09/2011	No reservation (P)
06.08.07	D03	Initial SPR - enhanced cloud base detection V1-Step 1	Initial SPR (enhanced cloud base detection technology) V1-Step 1	07/11/2011	No reservation (P)

06.09.03	D02	Operational concept description part 3	Operational concept documents for the Multiple TWR/AFIS concept applications (Part 2) and the Contingency TWR applications (Part 3). They will be compliant in content and structure with the overall WP6 Detailed Operational Description (DOD) as described above.	18/07/2011	Clarifications required
06.09.03	D24	Operational concept description part 2		14/04/2011	Clarifications required
06.09.03	D26	Functional specifications for the project concept applications - Multiple		31/10/2011	No reservation (P)

### Work Package 07

Project	Deliverable Code	Deliverable Name	Deliverable Description	Deliverable Handover Date	Assessment Decision
07.00	D01	WP Management Plan	The WPMP will capture the WP development approach: major tasks of the WP, identification of the major dependencies within the WP and outside the WP, definition of the dynamic sequence of logical steps with for example several validation cycles and/or synchronization between operational and system threads, synchronization of the major projects activities, identification of WP milestones acting as major synchronisation events between projects within WP and outside WP.	07/06/2011	No reservation (P)
07.02	D02	Step1 Operational Description and Requirements	This documents represents a light version of the Detailed Operational Description tailored to the needs of WP13 to define system architecture and industry validation platform needs in the shortest possible time frame. The document concentrates on the definition of δShort-termδ Network Operational Specification and Requirements targeting initial operating capability of 2013+; Scope : advanced IP2 Short-term ATFCM Measures (STAM) functions complemented by arrival-based flow management principles, hereby including the entire flight phase into the network management horizon, and from the current target parameter CTOT (Off Block Time) to TTA (Target Time of Arrival). Step 1 will be focussing on the dissemination of information to the actors concerned, the definition of roles and responsibilities and the impact on network performances; Detailed step1 content pending 7.x.x PIRs; The document integrates WP7 projects operational descriptions, detect and solve inconsistencies at concept level	07/11/2011	No reservation
07.02	D03	Step1 Integrated Validation Plan	This document outlines the WP7 Network Validation Plan for Step 1 "Time-based Operations". The Integrated Validation Plan will include a consistent and coherent analysis, description and integration of the WP7 third level projects validation plans. The document provides measurement strategies & practises, calibration reference techniques; it identifies gaps and overlaps, detects inconsistencies and solution strategies; The document concludes with a list of consolidated validation needs ready for hand over to all relevant system WPs in particular WP13 for updating the industrial platforms; The Validation Plan is continuously updated based on findings e.g. performance assessments obtained by the projects; This document also includes the recommendations and Guidelines on changes to be brought to the SESAR Overall Validation and Verification Strategy and Framework as a result of the findings provided by WP7 third level validation activities.	26/07/2011	No reservation
07.06.05	D02	STEP1 VALIDATION PLAN - V3 delivered	Validation Plan for V3 maturity of Step 1 including validation exercises, planned dates and platforms to be used.	07/11/2011	to be assessed

### Work Package 08

Project	Deliverable Code	Deliverable Name	Deliverable Description	Deliverable Handover Date	Assessment Decision
08.01.01	D06	External Legal Expert Material - Draft Report	This will be a text document reporting on the draft results of a study commissioned from a leading legal IT/aviation expert (or legal office) on the governance issues surrounding the common IM functions. The objective of this study will be to back up the expertise of the partners with legal knowledge to ensure that the proper issues have been taken account of. The legal expert will be tasked with reviewing the project inputs identified in Section 1.4 of the PIR in the light of legal practice, and will be expected to draw conclusions on the basis of best practice.	11/02/2011	No reservation (P)
08.01.01	D07	External Legal Expert Material - Final Report	This will be a text document reporting on the final results of a study commissioned from a leading legal IT/aviation expert (or legal office) on the governance issues surrounding the common IM functions.	10/06/2011	Clarifications required
08.01.01	D08	Common IM Functions for which Governance Specifications are Needed	This will be a text document that proposes the set of common IM Functions for which governance specifications are required. The objective of the document is to finalise the scope of the governance specifications. The document will define fully the selected common IM functions and justify the choices made. Where differences are identified according to different OC Steps 1, 2 and 3 this will be noted, allowing for a progressive implementation. The choices will have been based on the results of D04. An initial expectation of the functions that will be addressed is given in Section 2.1.1 of this PIR.	22/06/2011	Clarifications required
08.01.01	D09	Governance Needs for Common IM Functions	This will be a text document that captures the governance needs for the common IM functions. This will primarily be drawn from the output of D04-D09. The governance needs will be identified according to each of the common IM Functions.	30/09/2011	to be assessed
08.01.01	D11	Draft IM Governance Scope, Problems and Issues for OC Step 1	This will be a text document that details the problems and issues around the different governance needs of the different common IM functions captured respectively in D10. The objective of the deliverable is to document on the potential issues and problems. This analysis will provide a means for reasoned decision making when writing the governance specifications.	30/09/2011	Major reservation/s
08.01.01	D39	IM Concept of Operations version 1	This document is the first version of the SWIM concept of operations, including the definitions of SWIM.	13/07/2011	Major reservation/s
08.01.03	D04	Report Concerning information constructs that require further analyses	This will form the Gap Analysis in that it will be used to:á1. identify domains that are not yet covered by the AIRMá2. identify those areas of the AIRM that need to be further consideredá3. identify changes that could occur to make the AIRM more logical and improve the foundation.	19/01/2011	No reservation
08.01.03	D05	Second Major Release of the AIRM	This is a major release of the AIRM. It will be v2.0.0. It provides the baseline for Step 1.áIt will include updated versions of the five components of the AIRM:á1. The Primerá2. The Information Modelá3. The Glossaryá4. The Consolidated Logical Data Modelá5. The FoundationáIt will build on v1.0.0 of the AIRM and any intermediate and hot-fix releases that have occurred since v1.0.0 was released.	30/09/2011	No reservation
08.01.03	D12-001	Intermediate Release for v1	There may be a need for a faster clock-cycle than the 2 years between major releases. Intermediate releases are intended to fill that gap. Intermediate Releases are seen as optional in that they will not be needed if no new requirements are identified between major releases. The need for an Intermediate release will be determined by the Review Forum.ááThey will be composed of the five components of the AIRM:á1. The Primerá2. The Information Modelá3. The Glossaryá4. The Consolidated Logical Data Modelá5. The FoundationáHowever, it is expected that the changes will be less intense than those for a major release. ááThere can be one (or exceptionally two) intermediate release between v1.0.0 and v2.0.0 of the AIRM. For example, v1.0.0 will be incremented to v1.1.0 at the first intermediate release.	30/03/2011	No reservation (P)
08.01.03	D12-002	Intermediate Release for v1	There may be a need for a faster clock-cycle than the 2 years between major releases. Intermediate releases are intended to fill that gap. Intermediate Releases are seen as optional in that they will not be needed if no new requirements are identified between major releases. The need for an Intermediate release will be determined by the Review Forum.ááThey will be composed of the five components of the AIRM:á1. The Primerá2. The Information Modelá3. The Glossaryá4. The Consolidated Logical Data Modelá5. The FoundationáHowever, it is expected that the changes will be less intense than those for a major release. ááThere can be one (or exceptionally two) intermediate release between v1.0.0 and v2.0.0 of the AIRM. For example, v1.0.0 will be incremented to v1.1.0 at the first intermediate release.	14/06/2011	No reservation (P)
08.01.03	D19-001	Governance - Annual Report		10/11/2011	No reservation (P)

08.01.03	D20-002	Report 2	Repetitive report to be bundled into Project Report	07/04/2011	No reservation (P)
08.01.03	D20-003	Report 3	Repetitive report to be bundled into Project Report	09/09/2011	No reservation (P)
08.01.03	D20-005	Report 5	Repetitive report to be bundled into Project Report	16/12/2011	to be assessed
08.01.04	D02-002	Project Management Documentation	Documents to cover such matters as configuration management, which tools are to be used and how, which formats are to be used for data exchange, how the modelling work will be distributed and integrated etc.	23/05/2011	No reservation (P)
08.01.04	D09	Version 1.x Intermediate Release Validation Report	A report of the validation activities that have taken place when producing the version 1.x intermediate domain model.	04/02/2011	No reservation (P)
08.01.04	D11	Version 2.0 Domain Model Requirements	Specification of requirements for the version 2.0 domain model release.	29/07/2011	No reservation (P)
08.01.04	D12	Version 2.0 Domain Model	The Information, Logical Data and Physical Data models for the version 2.0 domain model release.	29/07/2011	No reservation (P)
08.01.04	D13	Version 2.0 Domain Model Validation Report	A report of the validation activities that have taken place when producing the version 2.0 domain model release.	02/08/2011	No reservation (P)
08.01.04	D14	Version 2.0 Domain Model AIRM Contribution	The Information and Logical Models that represent the version 2.0 domain model release AIRM contribution.	29/07/2011	No reservation (P)
08.01.04	D35-001	AIXM CCB Activity Report	A report on the activities of the AIXM CCB, including issues addressed at CCB meetings, information on new AIXM releases, and any other information that is relevant to the activities of P8.1.4	22/09/2011	No reservation (P)
08.01.04	D36-003	EUROCAE WG44 / RTCA SC217 Activity Report	A report on the activities of EUROCAE WG44 / RTCA 217, including issues addressed at meetings, information on new releases of interchange standards for terrain, obstacle and aerodrome mapping data, and any other information that is relevant to the activities of P8.1.4	23/05/2011	No reservation (P)
08.01.04	D36-004	EUROCAE WG44 / RTCA SC217 Activity Report	A report on the activities of EUROCAE WG44 / RTCA 217, including issues addressed at meetings, information on new releases of interchange standards for terrain, obstacle and aerodrome mapping data, and any other information that is relevant to the activities of P8.1.4	28/10/2011	No reservation (P)
08.01.04	D37-003	eTOD WG Activity Report	A report on the activities of the eTOD Working Group, including issues addressed at meetings, information on new releases of terrain and obstacle data requirements and other documents, and any other information that is relevant to the activities of P8.1.4	17/06/2011	No reservation
08.01.04	D37-004	eTOD WG Activity Report	A report on the activities of the eTOD Working Group, including issues addressed at meetings, information on new releases of terrain and obstacle data requirements and other documents, and any other information that is relevant to the activities of P8.1.4	02/12/2011	No reservation (P)
08.01.04	D38-003	ICAO AIS-AIM Study Group Activity Report	A report on the activities of the ICAO AIS-AIM Study Group, including issues addressed at Study Group meetings, information on new document or standards releases, and any other information that is relevant to the activities of P8.1.4	16/06/2011	No reservation
08.01.04	D38-004	ICAO AIS-AIM Study Group Activity Report	A report on the activities of the ICAO AIS-AIM Study Group, including issues addressed at Study Group meetings, information on new document or standards releases, and any other information that is relevant to the activities of P8.1.4	29/11/2011	No reservation (P)
08.01.04	D39-001	OGC Web Services Testbed Activity Report	A report on the outcome of OWS testbed, AIM thread activities	17/01/2011	No reservation
08.01.04	D39-002	OGC Web Services Testbed Activity Report	A report on the outcome of OWS testbed, AIM thread activities	14/12/2011	to be assessed
08.01.04	D40-002	INSPIRE Thematic WGs Activity Report	A report on the activities of the INSPIRE Thematic Working Groups, including issues addressed at meetings, information on new INSPIRE specifications and other documents, and any other information that is relevant to the activities of P8.1.4	11/05/2011	No reservation (P)
08.01.06	D02	Information Model for Aeronautical Meteorological Information domain, Major Release v1	Information Model for Aeronautical Meteorological Information presented in class diagrams using the Unified Modelling Language (UML). It is the Meteorological component of NAF v3 OV-7 within SESAR. The version 1 is the baseline for the MET component of the AIRM and as such uploaded in the AIRM v1	26/01/2011	No reservation (P)
08.01.06	D03	Logical Data Model for Aeronautical Meteorological Information domain, Major Release v1	Logical Data Model for Aeronautical Meteorological Information presented in class diagrams using the Unified Modelling Language (UML). It is a 'type' SV-11a Logical Data Model using NAF v3 terminology.	26/01/2011	No reservation (P)
08.01.06	D13	Logical Data Model for Aeronautical Meteorological Information domain, Major Release v2	Logical Data Model for Aeronautical Meteorological Information presented in class diagrams using the Unified Modelling Language (UML). It is a 'type' SV-11a Logical Data Model using NAF v3 terminology.	14/10/2011	No reservation (P)
08.01.06	D16	AIRM glossary and MET domain dictionary aspects, Major Release v2	This contains general terms and definitions and the common terminology used in the Domain and identifies the components of the domain dictionary that should be uploaded into the AIRM glossary.	14/10/2011	No reservation (P)
08.01.06	D18	Intra WBS and Inter MET-ATM Regional and Global Interoperability Report, Major Release v2	A report on the interrelationship between the core deliverables of the project and AIRM, ISRM, Service Definitions and WP14 packages and on the interrelationship between the core deliverables of the project and projects outside the scope and remit of SESAR, developing meteorological information models. This will comprise clear advice to tasks of WP8.1.6 responsible for the development of core model components, on directions to take, identifying issues and propose initial resolutions for the development/maintenance of affected meteorological information models. Furthermore, the report will be made available to the leadership of the AIRM and ISRM projects to potentially improve the overall interoperability with respect to AIRM and ISRM.	14/10/2011	No reservation (P)
08.01.07	D02-001	Surveillance AIRM contribution Version 1	<p>This deliverable contains the Surveillance PIM that will be integrated with models from other data domains to form the AIRM in the first step of the Storyboard, i.e.:</p> <ul style="list-style-type: none"> <li>- Surveillance Information Model (SurIM). It contributes to NAF OV-7;</li> <li>- the Surveillance Logical Model (SurLM). It contributes to NAF SV-11a;</li> <li>- the dictionary of terms used in the surveillance models which feeds the AIRM Glossary.</li> </ul> <p>The deliverable will be created on the basis of existing models (mainly ASTERIX) and adapted to comply with the modeling guidelines of the AIRM. The first release is the baseline for the Surveillance component of the AIRM and as such uploaded in the AIRM V2.0</p>	10/08/2011	No reservation (P)
08.01.08	D01-001	AIRM Delivery - Increment 1		09/02/2011	No reservation
08.01.08	D26	Internal Delivery: Requirements - Increment 2		09/02/2011	No reservation (P)
08.01.09	D04-001	Flight AIRM Contribution Version 2	<p>An update of the Flight models to support V2 of the AIRM. i.e. an update of the Flight Subset of the AIRM Information Model, the Flight Logical Data Model and Flight Glossary.</p> <p>Subsumes Information Model (NOV-7) and Dictionary Aspects (Increment 2)</p> <p>Represents NAF view SV-11a (Increment 2)</p> <p>Submission to AIRM, containing Information Model, Logical Data Model and Dictionary Aspects (Increment 2)</p> <p>Contains validation as well as verification results (Increment 2)</p>	14/10/2011	No reservation (P)
08.01.10	D04-001	I2 - Requirements documentation		29/07/2011	No reservation (P)
08.01.10	D05-002	I2 - Logical Data Model		29/07/2011	No reservation (P)
08.01.10	D07-001	I2 - Domain model	<p>This will be the first draft document of the Registry Concept of Operations. It is a consolidated document that will be derived from the Domain Specific Requirements reports (i.e. Airports, ATC Operations, meteo, AIS, etc) and merged into one main deliverable, i.e. the SWIM Registry Concept of Operations. It will describe the high-level Registry requirements such as: general objectives and contents of the ATM Domain Specific Registries; stakeholders involved (producers, consumers and administration and responsibilities); services (Registry Services, interfaces, access, topology (FAB, EU, local), operations to preserve safety); Specific governance needs (e.g. regulations, access, security,a) ; Roadmap (tactical, strategic timeline for implementation in the view of SESAR implementation)</p> <p>Will describe service models for the step 1 services.</p> <p>Will describe and report activities to Verify, Validate and Demonstrate service models for the step 3 services. For the demonstrator activities a set of use cases identified will be addressed for end-to-end validation.</p> <p>Will contain 8.3.3 feedback to AIRM</p> <p>Will contain 8.3.3 feedback to ATM Dictionary</p>	29/07/2011	No reservation (P)
08.01.10	D08-001	I2 - Validation Report		11/08/2011	No reservation (P)
08.03.02	D03	D8.3.2.D03 SWIM Registry Concept of Operations V1		27/06/2011	No reservation (P)
08.03.03	D04-002	Service Development Documentation, Increment 1	Will describe service models for the step 1 services.	21/02/2011	No reservation (P)
08.03.03	D05-002	Verification and Validation report for Step 1 services	Will describe and report activities to Verify, Validate and Demonstrate service models for the step 3 services. For the demonstrator activities a set of use cases identified will be addressed for end-to-end validation.	01/08/2011	No reservation
08.03.03	D07-002	8.3.3 AIRM 0.x feedback report	Will contain 8.3.3 feedback to AIRM	14/01/2011	No reservation (P)
08.03.03	D08-002	8.3.3 ATM Dictionary 0.x feedback report	Will contain 8.3.3 feedback to ATM Dictionary	15/07/2011	No reservation (P)

08.03.04	D01-002	ATC Information Services requirements specification STEP1	Specification of ATC Information Services STEP1	06/06/2011	No reservation
08.03.04	D01-003	ATC Information Services requirements specification STEP1 - OFA	ATC Information Services requirements specification: third iteration, 4 OFA documents	15/11/2011	to be assessed
08.03.04	D02-002	ATC Information Services Models STEP1	Modelisation of ATC Information Services STEP1	14/07/2011	No reservation
08.03.04	D03-001	Validated ATC Information Services Models STEP1	Validated ATC Information Services Models STEP1 delivered to P8.3.10	03/02/2011	No reservation (P)
08.03.04	D04-001	Report on refined ATC Information Services by 8.10.3 STEP1	Report on refined ATC Information Services by 8.10.3 STEP1	15/04/2011	No reservation (P)
08.03.04	D04-002	Report on refined ATC Information Services by 8.10.3 STEP1	Report on refined ATC Information Services by 8.10.3 STEP1	19/10/2011	No reservation (P)
08.03.04	D05-002	Modifications proposal for ATC AIRM STEP1	Contribution from 8.3.4 for AIRM STEP1 modification	22/06/2011	No reservation
08.03.04	D06-001	Modifications proposal for ATC ATM Dictionary STEP1	Contribution from 8.3.4 for ATM dictionary STEP1 modification	29/03/2011	No reservation (P)
08.03.05	D01-001	1 Demand and Capacity Balance Updates	The domain service model delivered to project 08.03.10 for iterative refinement, approval and integration into the ISRM. It comprises the domain model views conformant to SOV-1.5 (Information Service Model, expressed in SOAML), the AIRM update and data dictionary update in the DCB area of work.	28/01/2011	No reservation (P)
08.03.05	D01-002	1 Demand and Capacity Balance Updates	The domain service model delivered to project 08.03.10 for iterative refinement, approval and integration into the ISRM. It comprises the domain model views conformant to SOV-1.5 (Information Service Model, expressed in SOAML), the AIRM update and data dictionary update in the DCB area of work.	29/07/2011	No reservation (P)
08.03.05	D02-001	1 KPI & CM Support Updates	The domain service model delivered to project 08.03.10 for iterative refinement, approval and integration into the ISRM. It comprises the domain model views conformant to SOV-1.5 (Information Service Model, expressed in SOAML), the AIRM and Data Dictionary updates in the KPI & CM area of work.	28/01/2011	No reservation (P)
08.03.05	D02-002	1 KPI & CM Support Updates	The domain service model delivered to project 08.03.10 for iterative refinement, approval and integration into the ISRM. It comprises the domain model views conformant to SOV-1.5 (Information Service Model, expressed in SOAML), the AIRM and Data Dictionary updates in the KPI & CM area of work.	29/07/2011	No reservation (P)
08.03.05	D03-001	1 DCB/AM Scenario Management Updates	The domain service model delivered to project 08.03.10 for iterative refinement, approval and integration into the ISRM. It comprises the domain model views conformant to SOV-1.5 (Information Service Model, expressed in SOAML), the AIRM and Data Dictionary updates in the DCB/AM Scenario Management area of work.	28/01/2011	No reservation (P)
08.03.05	D03-002	1 DCB/AM Scenario Management Updates	The domain service model delivered to project 08.03.10 for iterative refinement, approval and integration into the ISRM. It comprises the domain model views conformant to SOV-1.5 (Information Service Model, expressed in SOAML), the AIRM and Data Dictionary updates in the DCB/AM Scenario Management area of work.	29/07/2011	No reservation (P)
08.03.05	D04-001	1 Airspace Management Updates	The domain service model delivered to project 08.03.10 for iterative refinement, approval and integration into the ISRM. It comprises the domain model views conformant to SOV-1.5 (Information Service Model, expressed in SOAML), the AIRM and Data Dictionary updates in the Airspace Management area of work.	28/01/2011	No reservation (P)
08.03.05	D04-002	1 Airspace Management Updates	The domain service model delivered to project 08.03.10 for iterative refinement, approval and integration into the ISRM. It comprises the domain model views conformant to SOV-1.5 (Information Service Model, expressed in SOAML), the AIRM and Data Dictionary updates in the Airspace Management area of work.	29/07/2011	No reservation (P)
08.03.05	D05-001	1 B/M Trajectory Management Updates	The domain service model delivered to project 08.03.10 for iterative refinement, approval and integration into the ISRM. It comprises the domain model views conformant to SOV-1.5 (Information Service Model, expressed in SOAML), the AIRM and Data Dictionary updates in the B/M Trajectory Management area of work.	28/01/2011	No reservation (P)
08.03.05	D05-002	1 B/M Trajectory Management Updates	The domain service model delivered to project 08.03.10 for iterative refinement, approval and integration into the ISRM. It comprises the domain model views conformant to SOV-1.5 (Information Service Model, expressed in SOAML), the AIRM and Data Dictionary updates in the B/M Trajectory Management area of work.	29/07/2011	No reservation (P)
08.03.05	D16-007	1 Project Management	Progress Reports etc	14/10/2011	No reservation (P)
08.03.05	D19-007	1 SESAR Technical Coordination	Technical agreements with other SESAR WP. These to include services and data required by 8.3.5 to be provided by external WP and demands on WP 8.3.5 by external projects.	10/10/2011	No reservation (P)
08.03.06	D01-003	Input assessment report increment 1	Report on the assessment of available input: Operational requirements and existing solutions	15/07/2011	No reservation (P)
08.03.06	D02-002	Airport services input to ISRM and ATM dictionary in increment 1	Input to ISRM and ATM Dictionary for respective iteration and increment	21/02/2011	No reservation (P)
08.03.06	D02-003	Airport services input to ISRM and ATM dictionary in increment 1	Input to ISRM and ATM Dictionary for respective iteration and increment	28/07/2011	No reservation (P)
08.03.06	D03-002	Airport services project V&V results increment 1	Results of respective V&V exercises	28/02/2011	No reservation (P)
08.03.06	D03-003	Airport services project V&V results increment 1	Results of respective V&V exercises	31/08/2011	No reservation (P)
08.03.06	D04-003	Airport services input to AIRM increment 1	Requirements for SWP08.01 derived during service definition and V&V	31/08/2011	No reservation (P)
08.03.07	D01	D - Written Requirements (internal) increment 1	This internal delivery of the domain specific information requirements is derived from operational requirements provided by operational workpackages and workpackage B as well as operational services specification provided by workpackage B. It comprises a revised OV-3 and information requirements in textual form.	28/07/2011	No reservation (P)
08.03.07	D02	D - AIRM Feedback Aspects increment 1	Project ATM Information Reference Model (AIRM) aspects giving feedback to WP 8.1 regarding AIRM from a service provision point of view.	28/07/2011	No reservation (P)
08.03.07	D03	D - Domain Service Model (internal) increment 1	The internal domain service model as a result of information services development. It comprises the domain model views conformant to SOV-1.5 (Information Service Model, expressed in SOAML)	28/07/2011	No reservation (P)
08.03.07	D05	D - Dictionary Aspects increment 1	Comprises a list (conformant to AV-2) of updates or changes to the common ATM Dictionary proposed from the Airspace Users information service perspective.	28/07/2011	No reservation (P)
08.03.07	D06	D - Revised Domain Service Model (internal) increment 1	The revised domain service model as a result of performing iterative refinement, approval and integration into the ISRM. Created in close cooperation with P 08.03.10 during feedback loop. It comprises the domain model views conformant to SOV-1.5 (Information Service Model, expressed in SOAML)	06/10/2011	No reservation (P)
08.03.07	D20	D - Written Requirements (internal) Iteration 0.4		22/12/2011	
08.03.10	D04	ISRM Iteration #2	The ISRM v. 0.2 based on the deliveries from the WP 8.3.x projects. The Package will contain following artefacts: ò Consolidated ISRM ò Glossary AV-2 ò ISRM Issue Iteration Report	11/04/2011	No reservation (P)
08.03.10	D05	ISRM Iteration #3	The ISRM v. 0.3 based on the deliveries from the WP 8.3.x projects. The Package will contain following artefacts: ò Consolidated ISRM ò Glossary AV-2 ò ISRM Issue Iteration Report	01/10/2011	to be assessed

## Work Package 09

Project	Deliverable Code	Deliverable Name	Deliverable Description	Deliverable Handover Date	Assessment Decision
09.01	D04-001	Technical Verification & Validation Scenarios - Mainline Aircraft - step 1 - Issue 01 (WA2.1)	This document will contain detailed operational scenarios for step 1. They will be used for validation and verification purpose.	10/06/2011	No reservation (P)
09.01	D15-001	Yearly synthesis of standardisation contributions (WA1)		15/02/2011	No reservation (P)



09.01	D16	Delivery form and description of Aircraft behaviour model - Mainline Aircraft - step 1 (WA2.1)	This document will inform the SJU that the aircraft behaviour model has been developed and delivered to the relevant operational projects, and will provide a short explanation on what is this model and how it should be used. With a set of scenario data provided as an input, the Aircraft behaviour model will output in particular the 4D trajectory predictions computation and the time constraint (RTA) guidance loop including the effect of meteorological uncertainties. This model will run on a desktop PC and provide its output in textual format that can be post-processed for instance in an Excel spreadsheet.	17/11/2011	No reservation (P)
09.01	D19	Integration simulator delivery form - Mainline Aircraft - step 1 (WA2.1)	This document will inform the SJU that all the relevant Initial 4D prototypes have been integrated in the integration simulator and that this simulator is now ready for test. The document will notably include a short description of the integrated prototypes. This simulator will contain modified FMS (FMS Thales and FMS Honeywell), ATSU and EIS prototypes.	22/11/2011	No reservation (P)
09.01	D25	Preliminary studies Report - Regional Aircraft - Issue 01 (WA2.2)	Report of the result of the studies that will analyse how the Initial 4D solution could be implemented on Alenia and Thales research simulator	30/03/2011	No reservation
09.03	D01	WA1 - Phase #1 - Technical Note; Assessment on Interoperability of existing military platforms - Issue #1	Preliminary study on mission & trajectory management interoperability based on results and evidences coming from the data gathering	17/10/2011	No reservation (P)
09.05	D08	Verification & Validation Plan - issue 1	functional, performance and interop aspects to be tested - first step on integration test bench - second step on cockpit integration test bench (A/C0) for operational and functional evaluation with flight crews - third step on flight test aircraft for technical and operational tests including operational scenario freeze for lab tests with project 5.6.6	04/02/2011	Major reservation/s
09.05	D11	TCAS, FG, FMS, ATSU & EIS2 prototype delivery forms - step 1	TCAS, FG, FMS, ATSU & EIS2 prototypes detailed specifications and development - step 1	28/03/2011	No reservation (P)
09.05	D12	Aircraft Integration Simulator ready for evaluation form - step 1	Aircraft Integration Simulator ready for evaluation form	13/12/2011	to be assessed
09.05	D21	Functional requirement definition of ASPA S&M - issue 1 (Business Jet and regional)	Functional requirements definition for regional and business aircraft - issue 1	28/02/2011	No reservation (P)
09.06	D15	Verification & Validation Plan - issue 1	Description of the Verification and Validation strategy and of the activities planned for the Verification and Validation of ASEP applications with a focus on V1 activities.	30/09/2011	to be assessed
09.09	D01	High Level Functional Requirements - Operational	This delivery will enclose the requirements gathered on the operational analysis. This means that a complete analysis of the operational behavior expected in terminal and approach area, either in normal and abnormal situation, will be performed.	08/11/2011	No reservation
09.10	D01	High Level APV Functional Requirements - V0	This document will enclose a complete set of requirements issued from operational analysis, technical analysis, final user need, maintainability. Most of these data will be gathered from the state of the art (IP-1 background). Then operational requirement around future APV enhancement (e.g. Steep App, LPV200...) would be gathered (on Mainline, Regional as well as on Bizjet).	06/06/2011	No reservation
09.10	D02	High Level APV Functional Requirements - V1	This deliverable will first gather current APV technology requirements (e.g. GNSS equipped with SBAS to allow LPV) then the technology basis that might be required to implement APV future operational need such as LPV200, Steep App, SBAS loss of coverage.	26/09/2011	to be assessed
09.10	D04	Standardisation report - V0	Safety and certification criteria/requirements to implement APV in Europe. This version of the Standardisation report deliverable will mainly enclose data issued from APV-BARO certification/standardisation requirements. (AMC 20-27, DO236B...) and follow potential evolution of the standards.	26/08/2011	No reservation
09.10	D17	Yearly APV-SBAS Standardisation report - V1	Safety and certification criteria/requirements to implement APV in Europe. This deliverable will mainly enclose data issued from APV-SBAS certification/standardisation requirements. (AMC 20-28, AC20-138, DO229...). Sum up EGNOS certification possible requirements within aircraft segment. As well as other standardisation criteria to implement SBAS compatibility with other country (USA, India, China...)/ systems (GAGANa). Sum up any GALILEO standardisation requirements to ensure a full compatibility with defined high level architecture in WA1.3.	09/12/2011	to be assessed
09.11	D01	System Interoperability Options and Choices		22/12/2011	to be assessed
09.11	D02	System Certification Roadmap		23/11/2011	to be assessed
09.11	D06	WEPS Baseline Architecture		06/07/2011	No reservation (P)
09.11	D21	Evaluation of existing solutions for wake encounter avoidance		18/07/2011	No reservation (P)
09.11	D35-001	Yearly synthesis of standardisation contributions		22/12/2011	to be assessed
09.12	D01	WA1 - Technical note airborne impact analysis - Definition of the high level system architecture	This report will provide a critical analysis of the initial GBAS Cat II/III high level system architecture as defined by ICAO and as defined by Project 15.3.6. In particular, it will identify new allocation of functional and performance (accuracy, integrity, continuity) requirements by comparison with GBAS Cat I high level system architecture. It will thus identify hard points where adaptation on airborne side is needed and perform a preliminary assessment of their feasibility. Finally, it will identify a list of preliminary candidates for airborne architecture.	11/02/2011	No reservation (P)
09.12	D02	WA1 - Technical note airborne impact analysis - Qualitative & quantitative functional, performance and safety requirement	This report will define aircraft functional, performance and safety requirements and thus identify performance margins, when applying Initial GBAS Cat II/III new high level architecture to Mainline and Business aircraft. This report will select one or several airborne candidate architectures according to aircraft type for Mainline and Business aircraft.	17/02/2011	No reservation (P)
09.12	D03	WA1 - Technical note airborne impact analysis - Definition of the new airborne functionalities	This report will identify and detail new aircraft and receiver requirements compared to existing GBAS Category I aircraft and receiver architecture.	29/04/2011	No reservation
09.12	D05	WA2.1 - Technical validation plan for mainline aircraft - Mainline aircraft simulation tools upgrade	This deliverable will provide the delivery forms of several tools modifications/upgrade concerning: Mainline aircraft autoland simulation tools (SIMPAT) to include GBAS GAST D noise model and potential law adaptations Receiver simulator for aircraft integration simulator in order to run GBAS failure modes cases. GBAS PEGASUS validation tool.	28/02/2011	No reservation (P)
09.12	D07	WA2.1 - Technical Validation Plan for Mainline A/C - Specification Definition	This deliverable will provide all the airborne receiver requirements for mainline aircraft. It will constitute a specification based on existing MMR specification and Mainline aircraft guidelines to write such a specification. Themes covered by this specification will be functional, interface, performance, safety, maintainability, quality assurance, airworthiness, environmental, testability requirements.	31/08/2011	to be assessed
09.12	D11	WA2 - Technical Validation Report for mainline & business - Local availability	GBAS GAST D local availability report. The report will establish the operationally acceptable availability requirement, identify local considerations relevant in calculation of GAST-D availability, assess the GAST D availability at selected airports in Europe and finally compare this required availability to the operationally acceptable availability requirement.	30/06/2011	No reservation (P)
09.12	D17	WA2.2 - Technical Validation Report for Business A/C - Business A/C simulation tools development and upgrade	This document will provide detailed description of the developed simulation models for generic business aircraft and their upgrade to a specific business aircraft. It will also contain an overview of autoland simulation tool and receiver simulator for CAT II/III requirements. Validation plan providing scenarios for autoland simulations and failure mode simulations will be also included. It will provide an availability delivery form informing SJU that simulations models were developed.	30/11/2011	No reservation (P)
09.12	D19	WA3 - Technical Note - Certification Issues - New aircraft airworthiness requirements	Impact assessment of GBAS GAST-D rulemaking based on WP15.3.6 activity WP: This WP will present any new features that could affect the GAST-D airworthiness regulations (D30.2) based on WP15.3.6 and 15.3.7 outcomes.	12/12/2011	to be assessed
09.13	D02	WA1 High level Functional Requirement Definition (FRD) for D-Taxi - Initial Package	Definition of high level functional requirements for runway clearances step	02/11/2011	to be assessed
09.13	D05	WA2.1 High level Architecture Definition Assumptions (ADA) for D-Taxi - Initial Package	Mainline aircraft : Definition of high level functional architecture assumptions for runway clearances step	19/07/2011	No reservation
09.13	D07	WA2.2 Technical Validation Plan (TVP) for D-Taxi - Initial Package validation	Mainline aircraft : Definition of validation plan for runway clearances step	23/06/2011	No reservation (P)

09.13	D10	WA2.3 High Level Architecture Definition Assumptions (ADA) for taxiway clearances (Initial Package)	Integration of prototypes in cockpit simulator (for taxiway clearances step).	14/04/2011	No reservation (P)
09.13	D18	WA2.2 Mock-up of D-Taxi - Early Validation WG78 delivery form	Mainline aircraft :ßDelivery form of Mock-up of Taxi Clearances.	12/04/2011	No reservation (P)
09.13	D19	WA2.2 Status report on mock-up trials (Early Validation WG78)	Mainline aircraft :ßStatus report on mock-up trials on Research simulators (Taxi Clearances) : global achievements.	19/07/2011	to be assessed
09.13	D20	WA2.2 Mock-up of D-Taxi - Initial Package delivery form	Mainline aircraft :ßDelivery form of mock-ups of Runway Clearances.	30/09/2011	No reservation (P)
09.13	D21	WA2.2 Status report on mock-up trials (D-Taxi - Initial Package)	Mainline aircraft :ßStatus report on mock-up trials on Research simulators (Runway Clearances) : global achievements.	13/12/2011	to be assessed
09.13	D30	WA2.3 Taxi clearances Requirements specification (initial package)	Regional aircraft :ßTaxi clearances Requirements specification ßSpecification Requirement Definition (Taxi clearances)	06/06/2011	No reservation
09.14	D02	WA1 High Level Functional Requirements Definition (FRD) - issue 2 - update with WP6 inputs	Update of high level functional requirements using first inputs from project 6.7.1	18/11/2011	to be assessed
09.14	D05	WA2.1 High Level Architecture Definition Assumptions (ADA) - issue 2	Mainline Aircraft : Update of the Definition of High Level Architecture Assumptions for mainline Aircraft - based on FRD issue 2	28/10/2011	No reservation
09.14	D08	WA2.1 Technical Validation Plan (TVP) - issue 2	Mainline Aircraft : Update of the Technical Validation Plan for Mainline Aircraft based on FRD/ADA issue 2	19/10/2011	to be assessed
09.14	D13	WA2.2 High Level Architecture Definition Assumptions - release 2 (ADA2_R2)	Regional Aircraft : This deliverable will be updating the ADA-R1 document. It will follow changes stated in the second release of the FRD document.	03/11/2011	to be assessed
09.14	D14	WA2.3 High Level Architecture Definition Assumptions (ADA) -Issue 2	Regional Aircraft : Definition of Architecture Assumptions for regional Aircraft - based on FRD issue 2	13/10/2011	to be assessed
09.14	D18	WA2.1 Delivery form of mock-up for initial step of alerts on research simulator	Mainline Aircraft : Delivery form of mock-up for initial step of alerts on research simulator	01/12/2011	No reservation (P)
09.14	D25	WA2.2 Technical Validation Plan - release 1 (TVP_R1)	Business Aircraft : This deliverable will be updating the first release of the TVP1 document. It will follow changes stated in the second releases of the FRD and ADA documents.	28/10/2011	No reservation
09.14	D31	WA2.3 High Level Architecture Definition Assumptions (ADA) Issue 1	Regional Aircraft : Definition of Architecture Assumptions for regional Aircraft - based on FRD issue 1	07/06/2011	No reservation (P)
09.16	D01	Proposed technologies and functional scope for the Airborne Aeromax prototype	Initial proposal for the definition of the prototype, including description of the proposed antenna, coaxial and tranceiver, of their characteristics and functional scope, with possible pros/cons discussion on possible alternatives or rational for the choices	14/03/2011	No reservation (P)
09.16	D02	Aeromax System/Equipment Installation and Wiring Requirements Dossier	This dossier includes the specifications of what would be the selected placement of the components (Antenna, tranceiver) of a certified Aeromax System on an Airbus A/C, the installation requirements (directives for installation in FAL), the wiring diagrams and wiring directives.	08/04/2011	No reservation (P)
09.19	D01-001	D9.19 - 00 WA1 White Paper contributions to SWIM OSEDs SPRs and Interoperability specifications	Annual whitepaper synthesis on: - SWIM OSED, SPR and Interoperability specifications - global technical roadmap and migration scenarios - overall data link security approach (with WP16) - overall validation approach (with WP3), MASPS, MOPS Including a	24/02/2011	No reservation (P)
09.19	D01-002	D9.19 - 00 WA1 White Paper contributions to SWIM OSEDs SPRs and Interoperability specifications	Annual whitepaper synthesis on: - SWIM OSED, SPR and Interoperability specifications - global technical roadmap and migration scenarios - overall data link security approach (with WP16) - overall validation approach (with WP3), MASPS, MOPS Including a	15/12/2011	to be assessed
09.19	D02-002	D9.19 - 01 WA1 - SWIM A-G requirement specification and high-level system architecture definition version 1		07/04/2011	No reservation (P)
09.19	D04	D9.19 -02 WA2.1 Air-ground data link security context definition, risk assessment and security requirements version 1	Data link security context definition, risk assessment, and data link security technical requirements. Focus on basic data sharing and interoperability with legacy data link systems.	30/09/2011	No reservation
09.19	D06	D 9.19 - 03: WA2.1 ð SWIM A-G System Architecture, Functional Specification and Technical Requirement Specification - version 1	SWIM A-G architecture, technology evaluation, impact on legacy systems, SWIM A-G functional specification and technical requirements. Focus on basic data sharing and interoperability with legacy data link systems.	30/09/2011	No reservation
09.20	D03	WA1.2 - Feasibility assessment (1st release)	Analysis of how existing airborne military technologies may be exploited for satisfying information exchange requirements in the new network centric SESAR context. The attention will be put on MIDS/Link 16 technologies considering its wide availability in many European military aircraft and for which, based on the new operational concept defined by SESAR, it is possible to devise some possible re-utilization to support:á- CPDLC, initial 4D and trajectory management considering point to point data link communication; á- Some surveillance ADS-B OUT applications where the communication (broadcast) latency may be considered acceptable.	16/05/2011	No reservation (P)
09.21	D01	ADS-B transmission technique assessment	The deliverable will describe current 1090 MHz ADS-B transmission technique performance, based on airborne modelling and lab observations.	06/01/2011	No reservation
09.21	D02	Requirements on the future ADS-B from application point of view	This deliverable will include two sections : 1. The baseline of future ADS-B applications considered in the project 2. The list of ADS-B requirements to support the future applications	01/02/2011	No reservation
09.21	D03	Techniques comparison and solution selection	The deliverable will be description of the proposed mitigation techniques candidates and the rationale for selection of the most appropriate solution.	08/04/2011	No reservation
09.21	D04	Preliminary specification of the selected solution for the future 1090MHz ADS-B	High level specification of the selected solution. The objective of this document is to support potential subsequent standardization activities.	30/11/2011	No reservation (P)
09.24	D02	WA1.1 - Functions and requirements analysis document (2nd release)	Definition of ADS-B functions and requirements starting from operational WPs outcomes.	23/05/2011	Clarifications required
09.24	D03	WA1.2 - Feasibility assessment (1st release)	Feasibility assessment of usage of existing military technologies to meet SESAR need in terms of ADS-B information sharing.	23/02/2011	No reservation (P)
09.24	D04	WA1.2 - Feasibility assessment (2nd release)	Revision of feasibility assessment to include both a feedback from validation phase and inputs from Operational WPs.	14/10/2011	No reservation (P)
09.24	D05	WA1.3 - System interface document	Definition of system interface	25/07/2011	No reservation (P)
09.24	D06	WA1.4 - Target a/c and configuration document	Definition of target a/c and its configuration to be used for following phases.	05/10/2011	No reservation (P)
09.24	D07	WA2.1 - Aircraft system interface document	Definition of interfaces between target a/c and validation equipments.	03/11/2011	Major reservation/s
09.24	D08	WA2.2 - Installation report	Definition of the demonstration configuration to be introduced in military aircraft in order to demonstrate the ADS-B In/Out.	21/12/2011	to be assessed
09.27	D01	D1.1-1 Studies for future MCR standardisation report v 1.0	This deliverable will gather results of the following subtasks: - Interoperability with military aircrafts phase 1 (Eurocontrol) - Support to Standard phase 1 (Thales + Honeywell) - Concept of Operations and combination techniques phase 1 (Thales + Honeywell + Eurocontrol)	25/01/2011	No reservation
09.27	D07	D2.3-1 Report on low-cost technologies for future receivers v1.0	This deliverable will detail the results of the evaluation of new low-cost techniques and technology for future multi constellation receivers applications. (Thales + Honeywell)	09/11/2011	No reservation (P)
09.28	D04	Sensor evaluation	Technology evaluation of front looking passive and active sensors integrated into Vision System architecture. The process will follow Decision Analysis and Resolution (DAR) process and the result will be formularized as classified list of eligible sensors towards identified criteria	08/04/2011	No reservation (P)
09.28	D05	Initial system definition	The document will include definition of system modes, states and definition of transitions between them. The functions and relations between them will be defined, including interface of the functions to and from the system. The initial architecture design to be elaborated with proposal of sensor integration as a part of the system. The further expanding of the system into Combined Vision System will be kept as the key aspect.	01/05/2011	No reservation
09.28	D06	Mock-up description	This document will include the Report of mock-up architecture and software plug-ins development, description of mock-up integration and initial integration tests. The preparation of validation will be also elaborated with proposed operational scenarios kept in the mind.	28/06/2011	No reservation (P)
09.29	D04	Database evaluation		30/11/2011	to be assessed

09.30	D04	Wake vortex models for sensor evaluation in flight dynamics simulations		22/12/2011	to be assessed
09.30	D12	Verification of accuracy of wake prediction		26/10/2011	No reservation
09.30	D33-001	Yearly synthesis of standardisation contributions		22/12/2011	to be assessed
09.31	D05	WA0 - Data Definitions and Requirements - Navigation Database (updated issue)		04/07/2011	No reservation (P)
09.31	D06	WA0 - Data Definitions and Requirements - Airport Database (updated issue)		04/07/2011	No reservation (P)
09.31	D07	WA0 - Data Definitions and Requirements - Terrain & Obstacle Databases (updated issue)		04/07/2011	No reservation (P)
09.31	D08	WA0 - Data Definitions and Requirements - AIS and data chain (updated issue)		04/07/2011	No reservation (P)
09.31	D17	WA2 - Database standards and associated tools - AIS and data chain (first batch)		31/08/2011	No reservation (P)
09.31	D18	WA2 - Database standards and associated tools - Navigation and Airport Databases (first batch)		31/08/2011	No reservation (P)
09.31	D21	WA2 - Report on database prototype scenarios definition - Navigation and Airport Databases (first batch)		11/10/2011	No reservation (P)
09.31	D22	WA2 - Report on database prototype scenarios definition - AIS and Data Chain (first batch)		17/08/2011	No reservation (P)
09.31	D28	Delivery Notification Form: Navigation database prototype for integration and verification activities in project STEP1		18/08/2011	No reservation (P)
09.31	D29	Delivery Notification Form: Airport database prototype for integration and verification activities in project STEP1		10/10/2011	No reservation (P)
09.31	D30	Delivery Notification Form: AIS database prototype for integration and verification activities in project STEP1		14/10/2011	No reservation (P)
09.31	D34	Platform Readiness Note: Integration platform for verification activities in project STEP1		17/08/2011	No reservation (P)
09.31	D37	WA0 - Data Definitions and Requirements (updated issue)		04/07/2011	No reservation (P)
09.31	D40	WA2 - Database standards and associated tools (first batch)		31/08/2011	No reservation (P)
09.31	D43	WA1 - Database definitions and requirements at airborne level - Navigation Database (updated issue Y11)		20/12/2011	to be assessed
09.31	D45	WA1 - Database definitions and requirements at airborne level - Airport Database (updated issue Y11)		20/12/2011	to be assessed
09.31	D47	WA1 - Database definitions and requirements at airborne level - Terrain & Obstacle Database (updated issue Y11)		20/12/2011	to be assessed
09.31	D49	WA1 - Database definitions and requirements at airborne level - AIS Database (updated issue Y11)		20/12/2011	to be assessed
09.31	D51	WA2 - Report on database prototype technical validation - Navigation and Airport Databases (first batch Y11)		11/10/2011	No reservation
09.33	D01-001	WA1 - Standard 1 - Aircraft Functional Definition Assumptions Document	"High Level functional definitionWe foresee to include all assumptions and in particular operational concept assumptions within this Standard 1 document."	14/04/2011	No reservation
09.33	D03	WA2.2 - Standard 1 - Technical Note on Avionics System Definition	"for regional A/Cya system level definition adapted to the regional architectures.Functions allocation on several avionics systems.HMI definition."	08/02/2011	No reservation (P)
09.33	D04	WA2.1 - Standard 1 - Technical Validation Plan	"for mainline A/Cya plan describing the technical validation activities scheduledThis document will give overall validation and verification strategy within 9.33It will detail the V&V general objectives, the V&V activities which will be performed and how the different V&V means will be used to tackle the different validation objectives.It will also clarify the links with the V&V activities of related operational and ATC system projects"	14/04/2011	No reservation
09.33	D05	WA2.2 - Standard 1 - Technical Validation Plan	"for regional A/Cya plan describing the technical validation activities scheduledThis document will give overall validation and verification strategy within 9.33It will detail the V&V general objectives, the V&V activities which will be performed and how the different V&V means will be used to tackle the different validation objectives.It will also clarify the links with the V&V activities of related operational and ATC system projects"	13/09/2011	No reservation
09.33	D06	WA2.1 - Standard 1 - Technical Validation Report	"for mainline A/Cya synthesis of the technical validation conclusionThis document will contain a synthesis of all the V&V results, on Standard 1, on all the test means including performance assessment and full flight test results, as well as conclusions and recommendations regarding the maturity of aircraft functions."	23/11/2011	No reservation (P)
09.39	D04	D9.39 Cost&Benefit Analysis		14/12/2011	to be assessed
09.39	D05	D9.39 Operational Safety Analysis		10/11/2011	to be assessed
09.44	D02	Report on the assessment of candidate technologies for future communication Avionics Systems		30/05/2011	No reservation
09.49	D01	Working together memo	The document will present how to make use of the collected input data, and how the 9.49 project team will work with the SESAR Projects feeding 9.49 with a view to building the Consolidated Functional Airborne Architecture. The document will contain: - the summary of all inputs to be collected (e.g. from WP9.X, B4.3) for building the Consolidated Functional Airborne Architecture. - the assumptions made (e.g. what project produces which deliverables) to define the coordination needed between 9.49 and other SESAR projects - ways proceeding if the necessary inputs are not available	02/11/2011	to be assessed
09.49	D02	Step 1 - Consolidated functional airborne architecture	The document will present the Consolidated Functional Airborne Architecture for Step 1, resulting from the analysis of WP9.X and B4.3 results and considering the level of details of individual airframe manufacturer's physical architectures (as the consolidated functional airborne architecture will then be validated against the physical architectures). A single functional architecture will be defined for all platforms, assuming that all aviation segments will be capable of all the operations introduced by the Step of interest.	02/12/2011	to be assessed

## Work Package 10

Project	Deliverable Code	Deliverable Name	Deliverable Description	Deliverable Handover Date	Assessment Decision
10.01.07	D01	Requirements for Initial Baseline	Requirements to constitute the IP 1 baseline.	10/01/2011	Clarifications required
10.01.07	D32	Methodology and Requirements Management Principles (Initial)	Description of the methodology to be used by 10.1.7 for the functional decomposition, requirements allocation and requirements consolidation tasks	26/01/2011	No reservation (P)



10.01.07	D37	Pilot ATC System Architecture Document	Pilot phase ATC System Functional Decomposition and recommendations	12/07/2011	No reservation
10.01.07	D38	Pilot Baseline	Baseline requirements for pilot project	10/01/2011	No reservation (P)
10.01.09	D02	Preliminary User Requirements Development Report	Preliminary self defined operational/user requirements for technical supervision	07/04/2011	No reservation (P)
10.01.09	D03	Technical System Analysis Report S2	Description of the current services provided by airport systems, as well as of the QoS metrics to take into account .	28/07/2011	No reservation (P)
10.02.01	D01-001	High Level Trajectory Management Design for release 1	This document will provide an initial high level TM design to facilitate the integration of contributions of other projects and it will explain how the ATC systems will support the TM services. The design will show the various systems/subsystems that are involved in TM, what their functional responsibilities are, how they achieve the overall concept, what information they exchange between each other, and also identify the proposed standards/messages. It will contain a high level description of the ATM TM system while staying at the technical level. It will identify actors and TM services required by the TM system at functional level. The focus will be on Initial 4D TM	29/03/2011	Clarifications required
10.02.01	D02-001	Trajectory Management preliminary Step1 Roadmap	This document will provide a roadmap for trajectory management which will show the main phases of implementation from today's situation to the final trajectory management design. It aims to define a Business Trajectory / Mission ATC trajectory roadmap, in coordination with the other system WPs, identifying if possible implementation steps consolidating incrementally the different BT/MT different partners needs and OI step implementation (e.g. 2D/3D/4D, fixed routes/user preferred routes, etc.).	29/03/2011	No reservation (P)
10.02.01	D03-001	ATC TM System Requirements for release 1	This document, in the light of the high level TM design and the roadmap, will summarize the ATC TM system requirements which potentially can be used as an input in other projects (e.g. 10.1.7) and it will include the definition of the trajectory information to be exchanged, requirements for technical performance and information access and it will contribute to Interface Control Document for the ATC part, for Release 1.	29/04/2011	No reservation
10.02.01	D04-001	Prototype 1 for release 1	The project will develop a prototype that will be used to validate the activities of the TM design , the exchange formats (WP10.2.2) and the ATC system support to TM (WP10.2.3). According to the result of the TM roadmap, several integrated validation steps will be defined. The initial objective is to evaluate early ATM TM concept like 4DTRAD and to perform limited validation activities using this early prototype. This deliverable is linked to requirements coming from operational projects and it will benefit from prototypes already developed by industry or in the frame of related projects.	01/07/2011	Clarifications required
10.02.01	D05-001	Prototype 2 step1 for release 2	The project will develop a prototype that will be used to validate the activities of the TM design , the exchange formats (WP10.2.2) and the ATC system support to TM (WP10.2.3). According to the result of the TM roadmap, several integrated validation steps will be defined. The initial objective is to evaluate early ATM TM concept like 4DTRAD and to perform limited validation activities using this early prototype. This deliverable is linked to requirements coming from operational projects and it will benefit from prototypes already developed by industry or in the frame of related projects.	28/10/2011	No reservation (P)
10.02.01	D06-001	Test cases and scenarios for release 1	This document will define the test cases and scenarios which will be executed on the prototype. The tests must ensure that the prototype fulfils the requirements defined by ATC system requirements.	29/06/2011	Clarifications required
10.02.01	D07-001	Verification Plan (Prototype 1) for release 1	This document will explain the verification plan regarding the development of Prototype 1.	29/06/2011	Clarifications required
10.02.01	D08-001	Verification Plan (Prototype 2) step1 for release 2	This document will explain the verification plan regarding the development of Prototype 2.	29/07/2011	to be assessed
10.02.01	D09-001	Technical Verification Report (Prototype 1) step1 for release 1	This document will include the results of the tests, containing the status along with any other information which might be of interest such as incidences, improvement opportunities, etc. for Prototype 1	28/10/2011	to be assessed
10.02.01	D10-001	Technical Verification Report (Prototype 2) step1 for release 2	This document will include the results of the tests, containing the status along with any other information which might be of interest such as incidences, improvement opportunities, etc. for Prototype 2	29/11/2011	No reservation (P)
10.02.01	D72	High Level Trajectory Management Design step1 for release 2	This document will provide an initial high level TM design to facilitate the integration of contributions of other projects and it will explain how the ATC systems will support the TM services. The design will show the various systems/subsystems that are involved in TM, what their functional responsibilities are, how they achieve the overall concept, what information they exchange between each other, and also identify the proposed standards/messages. It will contain a high level description of the ATM TM system while staying at the technical level. It will identify actors and TM services required by the TM system at functional level. The focus will be on Initial 4D TM	29/11/2011	to be assessed
10.02.01	D73	Trajectory Management Step1 Roadmap	This document will provide a roadmap for trajectory management which will show the main phases of implementation from today's situation to the final trajectory management design. It aims to define a Business Trajectory / Mission ATC trajectory roadmap, in coordination with the other system WPs, identifying if possible implementation steps consolidating incrementally the different BT/MT different partners needs and OI step implementation (e.g. 2D/3D/4D, fixed routes/user preferred routes, etc.).	29/11/2011	to be assessed
10.02.01	D76	Test cases and scenarios step1	This document will define the test cases and scenarios which will be executed on the prototype. The tests must ensure that the prototype fulfils the requirements defined by ATC system requirements.	28/10/2011	No reservation
10.02.01	D77	Verification Plan (Prototype 1) step1 for release 2	This document will explain the verification plan regarding the development of Prototype 1.	28/10/2011	No reservation (P)
10.02.02	D01	Assessment of needs and feasibility study for step 1	This document will provide an assessment of what is needed to support phase 1 TM exchanges and a feasibility study limited to phase 1 ATM environment (i4D)	07/04/2011	No reservation (P)
10.02.02	D02	Initial Specification of SESAR Trajectory Management Exchange Formats and TM process modelling and design for step 1	This document contains the specification of the formats required for phase 1	29/06/2011	Major reservation/s
10.02.02	D03	Indra Encoder-Decoders for TM for step 1	This deliverables include the encoders/decoders necessary to support the phase 1 verification activities	28/10/2011	No reservation (P)
10.02.02	D04	Safety and security report for step 1	This deliverable covers a safety and security analysis applied to phases 1	30/09/2011	No reservation (P)
10.02.02	D05	THALES Testing platform and tools specification for release 1	The testing platform will be the same as in 10.2.1. However, specific testing tools need to be specified to support Phase 1 verification, focused on i4D.	29/06/2011	No reservation (P)
10.02.02	D06	Test plan, test cases and scenario definition for release 1	This documents contains a first draft of the test plan and the scenarios and test cases for phase 1	29/06/2011	Major reservation/s
10.02.02	D07	INDRA Test reports for step 1	This document will include the results of the tests perform in phase 1	29/11/2011	No reservation (P)
10.02.02	D26	THALES Encoder-Decoders for TM for release 1	This deliverables include the encoders/decoders necessary to support the phase 1 verification activities	01/07/2011	No reservation (P)
10.02.02	D29	INDRA Testing platform and tools specification for step 1	The testing platform will be the same as in 10.2.1. However, specific testing tools need to be specified to support Phase 1 verification, focused on i4D.	30/06/2011	No reservation (P)
10.02.02	D32	THALES Test reports for release 1	This document will include the results of the tests perform in phase 1	28/10/2011	No reservation (P)
10.02.02	D71	Preliminary assessment of needs and feasibility study for step 2		29/11/2011	No reservation (P)
10.02.02	D74	Test plan, test cases and scenario definition for release 2	This documents contains a first draft of the test plan and the scenarios and test cases for phase 1	28/10/2011	No reservation
10.02.05	D04	Coherent AIM and MET dataset for Phase 1 Prototypes	Definition of the geographical area that will form the IOP area in Phase 1 as well as the data types and values required that is to be shared by all the prototypes in that IOP area.	01/09/2011	No reservation (P)
10.02.05	D13	Test Cases Specification - Phase 1	Detailed verification test cases specifications to be executed in Phase 1 prototypes. They will be provided at the same detail level than the system requirements to be tested. Test cases will be referred to the three prototypes interactions and therefore described in a neutral fashion. In addition it will contain the concrete instantiation of the test cases on each prototype since it depends on the tools and components available for each ATC platform.	21/06/2011	Clarifications required
10.02.05	D26	IOP ATC System Requirements - Final Release for Phase 1	Final release of the IOP ATC System Requirements used to build the phase 1 prototypes. This release is started from the IOP ATC System Requirements baseline for Phase 1 and it contains any updates on the system requirements that could be detected during the prototypes development.	01/12/2011	to be assessed

10.03.02	D03	System Requirements delivery Phase 1	Description of the Phase 1 system requirements on the basis of the initial operational requirements from the 5.6.6 project.	30/06/2011	Clarifications required
10.03.02	D05	Architecture Assessment Report Phase 1	Description of the Phase 1 analysis of the system architecture requirements received from 10.1.7 and delivery of subsystem(s) architecture	08/07/2011	Clarifications required
10.03.02	D06	Technology Report Phase 1	Description of the Phase 1 analysis of the available technologies suitably to realize the project	20/06/2011	No reservation (P)
10.04.01	D04	Initial baseline for Conflict Detection and Resolution Tools	Initial system requirements (IP1) regarding Conflict Detection and Resolution Tools.	20/05/2011	No reservation (P)
10.04.02	D06	Conformance Monitoring System Requirements Phase 1		27/06/2011	No reservation (P)
10.04.02	D15	Common Verification Plan Phase 1	High level description. Part of test cases and scenarios description done in collaboration with project members	07/11/2011	No reservation (P)
10.04.03	D01	Preliminary Definition Report for Phase 1 (Enhance STCA)	This deliverable gather : -Preliminary Architecture part -Preliminary System Requirement part - Preliminary Logical Interfaces Specification part	11/03/2011	No reservation (P)
10.04.03	D02	Preliminary Operational - System requirements Synthesis Report for Phase 1 (Enhance STCA)	This deliverable gather : -Preliminary Report on translation from Operational to System Requirement -Preliminary Traceability between Operational and System Requirement -Preliminary Report on architecture and logical interfaces -Preliminary Report on support provided to Ground Industry partners to understand Operational needs and requirement	11/03/2011	No reservation (P)
10.04.03	D03	Test Plan and Description for Phase 1 (Enhance STCA)	This deliverable gather : - Test plan -High level test cases definition One deliverable for all the prototypes	04/07/2011	Clarifications required
10.04.03	D04	Partner 1 Verification Tests report for Phase 1 (enhance STCA)	This report will contain all verification tests result obtained when unfolding verification test cases on the STCA function developed by Partner 1 on prototype 1. Traceability from test cases with system requirement will be highlighted in the document.	03/10/2011	to be assessed
10.04.03	D05	Partner 1 Phase 1 : STCA function delivery sheet	This delivery sheet will identify the release of the Partner 1 STCA for phase 1.	30/09/2011	No reservation (P)
10.05.01	D03	Baseline System Requirements	Baseline delivery of the System Requirements	27/05/2011	Clarifications required
10.05.01	D05	Final System Requirements	Final delivery of System Requirements	25/11/2011	to be assessed
10.05.01	D11	Baseline documentation analysis outcome	Identification of the available material, mainly based on the current application of MVPA/VGA in certain countries in the ECAC area, and the material from the definition phase and EP3	31/01/2011	No reservation (P)
10.07.01	D02	D10.7.1-1 - AGDL System Requirements - Phase 1	Preliminary AGDL System requirements based on the existing AGDL Air Servers System Requirements, on the project scope of Enhanced Datalink Services (directly derived from EUROCAE WG-78/RTCA SC-214 "Interim Draft Standard": Data Communications SPR and INTEROP Rev H that comprises Operational and Technical requirements), as well as on the close coordination with WP9, WP10 and WP12 data link related activities and inputs.	29/04/2011	No reservation (P)
10.07.01	D03	D10.7.1-2 - AGDL System Architecture Design - Phase 1	Preliminary AGDL System Architecture Design based on the AGDL Air Servers Architecture, on the project scope of Enhanced Datalink Services (directly derived from EUROCAE WG-78/RTCA SC-214 "Interim Draft Standard": Data Communications SPR and INTEROP Rev H that comprises Operational and Technical requirements), as well as on the close coordination with WP9, WP10 and WP12 data link related activities and inputs.	30/06/2011	No reservation (P)
10.07.01	D04	D10.7.1-3 - AGDL Data Requirements - Phase 1	Preliminary AGDL Data Requirements based on the existing AGDL Air Servers Data Requirements, on the project scope of Enhanced Datalink Services (directly derived from EUROCAE WG-78/RTCA SC-214 "Interim Draft Standard": Data Communications SPR and INTEROP Rev H that comprises Operational and Technical requirements), as well as on the close coordination with WP8, WP9, WP10 and WP12 data link related activities and inputs.	15/04/2011	No reservation (P)
10.07.01	D05	D10.7.1-4 - AGDL Initial Safety Assessment - Phase 1	Preliminary Safety Analysis based on the existing AGDL Air Servers Safety Analysis, on the project scope of Enhanced Datalink Services (directly derived from EUROCAE WG-78/RTCA SC-214 "Interim Draft Standard": Data Communications SPR and INTEROP Rev H that comprises Operational and Technical requirements), as well as on the close coordination with WP9, WP10 and WP12 data link related activities and inputs.	07/12/2011	to be assessed
10.07.01	D07	D10.7.1-6 - Common Test Cases - Phase 1	These Test Cases intent to capture what system elements should be verified (e.g. functional requirements, non-fonctional, safety requirements) as part of the verification scheme for Phase 1 of this project.	18/07/2011	No reservation (P)
10.07.01	D08	D10.7.1-6 - Specific Test Scenarios for Prototype 1 - Phase 1	Instantiation of the Phase 1 Test Cases in the form of specific Test Scenarios for the Prototype 1 developed and verified by Indra/Selex. 10.7.1 D08	30/09/2011	No reservation (P)
10.07.01	D09	D10.7.1-6 - Specific Test Scenarios for Prototype 2 - Phase 1	Instantiation of the Phase 1 Test Cases in the form of specific Test Scenarios for the Prototype 2 developed and verified by Thales.	15/07/2011	No reservation (P)
10.07.01	D13	D10.7.1-9 - Testing Platform - Tools Requirements for Prototype 1 - Phase 1	Testing Platform and tools requirements for Prototype 1 - Phase 1 (Indra/Selex part)	29/11/2011	No reservation (P)
10.07.01	D14	D10.7.1-9 - Testing Platform - Tools Requirements for Prototype 2 - Phase 1	Testing Platform and tools requirements for Prototype 2 - Phase 1 (Thales) D14	20/07/2011	No reservation (P)
10.07.01	D42	D10.7.1-6 - Specific Test Scenarios for MUAC ATC System - Phase 1	Instantiation of the Phase 1 Test Cases in the form of specific Test Scenarios for the MUAC ATC System Upgrade (part of Prototype 1) developed and verified by EUROCONTROL in coordination with Indra.	15/09/2011	to be assessed
10.07.01	D44	D10.7.1-8 - Delivery Sheet for MUAC ATC System - Phase 1	Delivery Sheet for Prototype 1 - Phase 1 (EUROCONTROL MUAC System Upgrade part) 10.7.1D44 in PIR	15/12/2011	to be assessed
10.07.01	D50	D10.7.1-11 - Test Report for MUAC ATC System - Phase 1	Test Report for Prototype 1 - Phase 1 (EUROCONTROL MUAC System Upgrade part) D50	15/12/2011	to be assessed
10.08.01	D02	Step 1 system requirements	This document gathers the system requirements that specify the prototype delivered by the project phase 1.	02/03/2011	No reservation (P)
10.08.01	D03	Step 1 verification test cases	Specification of the test cases to be executed to verify the Phase 1 prototypes. They are the same detail level than the system requirements to be tested. They are applicable to both prototypes and therefore described in a neutral way.	11/03/2011	No reservation (P)
10.08.01	D04	Step 1 verification plan for prototype 1	Describes how the prototype 1 is going to be verified. It describes the necessary infrastructure and the successive steps to be carried out in order to ensure the verification.	06/06/2011	No reservation (P)
10.08.01	D05	Step 1 verification plan for prototype 2	Describes how the prototype 2 is going to be verified. It describes the necessary infrastructure and the successive steps to be carried out in order to ensure the verification.	17/05/2011	No reservation (P)
10.08.01	D06	Step 1 prototype 1 release notes	These release notes contain information useful for integration and the use of the prototype 1.	31/08/2011	No reservation (P)
10.08.01	D08	Step 1 prototype 1 verification report	Prototype 1 verification tests results and test coverage matrix.	29/11/2011	No reservation (P)
10.09.01	D02	D10.9.1 - Phase 1 - System requirement - V3 - Step 1	Final System requirements derived from operational requirements for Step 1.	31/05/2011	Clarifications required
10.09.01	D03	D10.9.1 - Phase 1 - INDRA Prototype - V3 - Step 1	The prototype implements System Requirements defined for Step 1 (V3)	15/11/2011	No reservation (P)
10.09.01	D05	D10.9.1 - Phase 1 - INDRA Test plan - V3 - Step 1	The Verification Plan includes:1- Verification strategy2- Verification platform specification	08/11/2011	No reservation (P)
10.09.01	D06	D10.9.1 - Phase 1 - Test cases - V3 - Step 1	Definition of a set of test cases and scenarios which will be used to verify the built prototype in Step 1 (V3)	28/10/2011	No reservation (P)
10.09.01	D07	D10.9.1 - Phase 1 - INDRA Test execution report - V3 - Step 1	This report includes the result in Step 1 for the Indra-s prototype verification.	15/12/2011	to be assessed
10.09.01	D31	D10.9.1 - Phase 1 - Architecture assessment - V3 - Step 1	Architecture assessment for Step 1 (V3)	13/10/2011	No reservation (P)
10.09.02	D02-002	10.9.2-D02-System requirement - Phase A	System requirement - First preliminary from state of the art and on-going studies - Then Consolidation with OPS project inputs and Tracability to OPS requirements	30/05/2011	No reservation (P)
10.09.02	D03-002	10.9.2-D03-architecture definition report - phase A	Architecture report contains ( according to the needs of the project phase) logical architecture definition, logical interface definition, technical feasibility study report	07/07/2011	Clarifications required
10.09.02	D04	10.9.2-D04-Verification test cases definition Phase A	Common Test case definition	28/07/2011	to be assessed
10.09.02	D05	10.9.2-D05-Indra phase A verification plan	Prototype verification plan	15/11/2011	No reservation (P)
10.09.02	D07	10.9.2-D07-Indra phase A prototype availability notice	The prototype is not a deliverable but is made available to the operational projects for validation	15/11/2011	No reservation (P)

10.09.02	D10	10.9.2-D10-Indra phase A verification report	Verification test results on common test cases	16/12/2011	to be assessed
10.09.04	D10	System requirements definition for ATC support to CDA-CCD - Phase 1 - DEL	Definition of the system requirements based on pre-SESAR initiatives (10.9.4 phase 1) with close collaboration with 5.6.1 and 5.6.2 to prototype necessary ATC tools in order to perform CDA/CCD operations in high density traffic.	31/05/2011	Clarifications required
10.09.04	D12	Verification Strategy - DEL	Set up of Verification & Validation Strategy (in terms of verification objectives) to be carried out on the pre-industrial prototypes.	01/07/2011	No reservation (P)
10.09.04	D13	Verification Exercise Plan Phase 1 - DEL	Deliverable describing the elaboration of the exercises to be performed on the prototypes developed in the project phase 1 in order to check their alignment with the system requirements phase 1	09/08/2011	No reservation (P)
10.09.04	D19	Indra prototype developed (for phase 1) - DEL	PROJECT OUTPUT/INFORMAL DELIVERABLE	29/11/2011	to be assessed
10.09.04	D21	Indra - Specific Tests cases and scenarios phase 1 - DEL	PROJECT OUTPUT/INFORMAL DELIVERABLE: Definition of exercise plan, resources and test cases to carry out the verification activities on Indra's pre-industrial prototype developed within 10.9.4 phase 1, taking into account specific aspects of Indra/Es ATC system.	08/12/2011	to be assessed
10.09.04	D25	Indra - Specific Integration & Verification Tests Report phase 1 - DEL	PROJECT OUTPUT/INFORMAL DELIVERABLE: Execution of the integration & verification tests on Indra's pre-industrial prototype built within 10.9.4 phase 1. Production of a test report related to Indra's pre-industrial prototype.	16/12/2011	to be assessed
10.09.04	D33	Thales prototype developed (for phase 1) - DEL	The deliverable D33 is not a pre-industrial prototype like mentioned in PIR part 2 but states that step 1 Thales' prototype is developed and integration and verification activities can start. Thales's pre-industrial prototype will be available for operational validation at the end of T039 and T041 (verification). The name of the deliverable is changed from "Thales Pre-industrial prototype (for phase 1)" to "Thales prototype developed (for phase 1)".	05/07/2011	No reservation (P)
10.09.04	D35	Thales - Specific Tests cases and scenarios phase 1 - DEL	PROJECT OUTPUT/INFORMAL DELIVERABLE: Definition of exercise plan, resources and test cases to carry out the verification activities on Thales's pre-industrial prototype developed within 10.9.4 phase 1, taking into account specific aspects of Thales/Es ATC system.	18/08/2011	No reservation (P)
10.09.04	D37	Thales - Testing platform & tools requirements-development phase 1 - DEL	PROJECT OUTPUT/INFORMAL DELIVERABLE: Definition and development of testing platforms and tools necessary to carry out the verification activities on Thales's pre-industrial prototype developed within 10.9.4 phase 1, taking into account specific aspects of Thales/Es ATC system.	18/08/2011	No reservation (P)
10.09.04	D39	Thales - Specific Integration & Verification Tests Report phase 1 - DEL	PROJECT OUTPUT/INFORMAL DELIVERABLE: Execution of the integration & verification tests on Thales's pre-industrial prototype built within 10.9.4 phase 1. Production of a test report related to Thales's pre-industrial prototype.	15/11/2011	No reservation (P)
10.10.02	D02	Available Technology Screening Document	This document provides a list of available technologies, where specifications and recommendations of the use of technologies with TMA/ACC are included.	24/02/2011	No reservation (P)
10.10.03	D01	Input Requirements Assessment report - Step 1	Document summarizing the outcome of the step 1 input requirements assessment activity. This document will summarize findings and decisions regarding the impact of the applicable iCWP system requirements (from 10.1.7 and 10.X.Y), HF design requirement, UI design requirement, Style Guide guidelines	14/07/2011	Clarifications required
10.10.03	D02	Common test Case and scenario specification - Step 1	The Common Case and scenario specification defines the common verification approach applicable to all iCWP prototypes for step 1 .it also includes the test case specifications and associated scenarios, the test & measurement methods and identifies the required tools	12/07/2011	No reservation (P)
10.10.03	D03	Delivery sheet and User documentation-INDRA prototype - Step1	This delivery formalizes the end of the INDRA step1 iCWP prototype's development phase and its availability for further use by WP3 and project 5.9. The delivery sheet identifies the prototype software version, and the user documentation provides the necessary information to use the prototype in validation exercises	09/12/2011	to be assessed
10.10.03	D04	Delivery sheet and User documentation-SELEX prototype - Step1	This delivery formalizes the end of the SELEX step1 iCWP prototype's development phase and its availability for further use by WP3 and project 5.9. The delivery sheet identifies the prototype software version, and the user documentation provides the necessary information to use the prototype in validation exercises	07/10/2011	No reservation (P)
10.10.03	D05	Delivery sheet and User documentation-THALES prototype - Step1	This delivery formalizes the end of the THALES step1 iCWP prototype's development phase and its availability for further use by WP3 and project 5.9. The delivery sheet identifies the prototype software version, and the user documentation provides the necessary information to use the prototype in validation exercises	15/11/2011	No reservation (P)
10.10.03	D06	Verification report - INDRA prototype - Step1	This deliverable collect the result of the verification tests performed on the INDRA step1 iCWP prototype. It identifies failed tests and reservations. This report will be used to assess the readiness of the prototype for use in validation platforms	12/12/2011	to be assessed
10.10.03	D07	Verification report- SELEX prototype - Step1	This deliverable collect the result of the verification tests performed on the SELEX step1 iCWP prototype. It identifies failed tests and reservations. This report will be used to assess the readiness of the prototype for use in validation platforms	07/10/2011	to be assessed
10.10.03	D08	Verification report-THALES prototype - Step1	This deliverable collect the result of the verification tests performed on the THALES step1 iCWP prototype. It identifies failed tests and reservations. This report will be used to assess the readiness of the prototype for use in validation platforms	21/11/2011	No reservation (P)

## Work Package 12

Project	Deliverable Code	Deliverable Name	Deliverable Description	Deliverable Handover Date	Assessment Decision
12.01.09	D02	Preliminary User Requirements Development Report	Preliminary self defined operational/user requirements for technical supervision	07/04/2011	No reservation (P)
12.01.09	D03	Technical System Analysis Report S2	Description of the current services provided by airport systems, as well as of the QoS metrics to take into account .	22/07/2011	No reservation (P)
12.02.02	D03	System Requirements V1 (Time Based Separation)	Initiated from the preliminary system requirements, this deliverable will be refined, in close cooperation with the P6.8.1, in order to ensure consistency between operational and system requirements for TBS. Contribution to SEMP Session #29 Critical Design Review (CDR)	16/12/2011	to be assessed
12.02.02	D04	Recommendations on sensor technologies	As a result of the sensors assessment campaign, it will provide recommendations on the type of sensors to be included in the system in the following phases Contribution to SEMP Session #27 Operational Acceptance Review (OAR)	14/10/2011	No reservation (P)
12.03.01	D02	Phase1 -Architecture Design	This document describes the system architecture. It includes interface descriptions with other components of the A-SMGCS and with external systems. Iterative versions of this deliverable will be produced (one per each phase) and will be used as basis for prototypes development in the same phase.	28/01/2011	No reservation (P)
12.03.01	D03	Phase1 -Technological study Report	It will provide the results from theoretical study and performance and integrity data analysis on: -the existing MSDF capability -existing surveillance sensors and processing systems. - the effect of weather on the quality of surveillance sensor data, In each phase the outcome from the performance analysis sessions will be used as terms of comparison to refine the system architecture and the system specification in the next phases.	29/04/2011	No reservation (P)
12.03.01	D04	Phase1 -Prototype Documentation (Thales)	The first Thales research prototype will provide user manual and integration plan.	17/11/2011	No reservation (P)
12.03.01	D05	Phase1 -Prototype Documentation (INDRA)	The first INDRA research prototype will provide user manual and integration plan.	30/11/2011	to be assessed
12.03.01	D06	Phase1 -Prototype Documentation (DFS)	The first DFS research prototype will provide user manual and integration plan.	31/10/2011	No reservation
12.03.01	D07	Phase1- Specific Verification Strategy (Thales)	The document will include the Verification Plan, the testing platform and testing tools requirements, and test cases and scenarios specific for Thales prototype verification session. This deliverable (one per phase) will be produced as iterative versions in each phase and will be used as basis for the relevant prototype verification session in the same phase.	01/09/2011	No reservation
12.03.01	D08	Phase1 - Specific Verification Strategy (INDRA)	The document will include the Verification Plan, the testing platform and testing tools requirements, and test cases and scenarios specific for INDRA prototype verification session. This deliverable (one per phase) will be produced as iterative versions in each phase and will be used as basis for the relevant prototype verification session in the same phase.	01/08/2011	No reservation

12.03.01	D09	Phase1 - Specific Verification Strategy (DFS)	The document will include the Verification Plan, the testing platform and testing tools requirements, and test cases and scenarios specific for DFS prototype verification session. This deliverable (one per phase) will be produced as iterative versions in each phase and will be used as basis for the relevant prototype verification session in the same phase.	29/07/2011	No reservation
12.03.01	D10	Phase1 -Specific Test Reports (Thales)	Test reports coming out from Phase 1 Thales prototype verification session.	17/11/2011	No reservation (P)
12.03.01	D11	Phase1 -Specific Test Reports (INDRA)	Test reports coming out from Phase 1 INDRA prototype verification session.	30/11/2011	No reservation (P)
12.03.01	D12	Phase1 -Specific Test Reports (DFS)	Test reports coming out from Phase 1 DFS prototype verification session.	31/10/2011	No reservation (P)
12.03.01	D16	Phase1 -Common Verification strategy	This document will describe the verification principles, commonly agreed between project members and will apply to all prototypes independently from the internal verification tests executions. It will explain how the different prototypes will cover all the system requirements. It includes common description of test procedures, scenarios, metrics and measurement tools. Traceability between common test cases and the system requirement to be verified is also included.	19/04/2011	No reservation (P)
12.03.02	D01	Phase1 - System specification Baseline	Technical requirements based on the analysis of operational requirements coming from Research initiatives external to SESAR (in phase 1), and first operational requirements available from project 6.7.1. Iterative versions of this deliverable will be produced (one per each project phase) and will be used for the verification of the prototypes coming out from the same phase.	10/06/2011	Clarifications required
12.03.02	D02	Phase1 - Architecture Assessment	This document describes the system architecture. It includes interface descriptions with other components of the A-SMGCS and with external systems. Iterative versions of this deliverable will be produced (one per each phase) and will be used as basis for prototypes development in the same phase.	10/06/2011	Clarifications required
12.03.02	D03	Phase1 - Technical study Report	It will provide the results from theoretical study for the development of new enhanced algorithms. In phase 1, it will provide report of technical assessment over existing operational and technical requirements.	19/07/2011	No reservation (P)
12.03.02	D16	Phase1 -Common Verification strategy	This document will describe the verification principles, commonly agreed between project members and will apply to all prototypes independently from the internal verification tests executions. It will explain how the different prototypes will cover all the system requirements. It includes common description of test procedures, scenarios, metrics and measurement tools. The document will also include the traceability between test procedures and System specifications.	07/10/2011	No reservation
12.03.03	D05	Phase 1- Test definition	This document defines how the prototype will be tested to verify that it meets the technical specifications. It describes the indicators, metrics and measurement procedures to be used, the test case scenarios, the test platform and test tools, and the test schedule	30/05/2011	No reservation (P)
12.03.04	D02	D12.3.4-01s1v3 Surface guidance requirements	Consolidated Surface guidance requirements that will include the integration and trade-off framework for coherence and consistency of System Requirements Surface guidance Requirements allocated to functions (level of decomposition to be further clarified) for system 12.x.y projects	29/03/2011	No reservation (P)
12.03.04	D03	D12.3.4-02s1v3 Surface guidance architecture report	Definition of candidate technologies or technical proposals to be used Proposed technology Possible assessment to system Definition tasks with new architectural approaches due to new technology Analysis of incoming architectural requirements Analysis of introduced new functionality and its dependencies Identification of architectural changes (if any) which might be necessary Architectural assessment, which may include recommendations and proposal	19/07/2011	No reservation
12.03.04	D04	D12.3.4-03s1v3 Surface guidance data requirements	The study of the data requirements of the system, in coordination with other A-SMGCS projects - The production of the data requirements - The coordination with the federating project to help the consolidation of the system requirements	03/08/2011	Clarifications required
12.03.05	D02	D12.3.5.D02 - Phase 1 - System Requirements Specification	Preliminary System requirements derived from operational requirements and other technical projects for Step 1 (V3)	01/07/2011	Clarifications required
12.03.05	D04	D12.3.5.D04 - Phase 1 - Test Plan	The Final Verification Plan includes: - Final Verification strategy - Final Verification platform specification	12/07/2011	No reservation
12.04.01	D03	Thread 1 - Requirement Specification	This deliverable describes the system requirements for the first validation performed at Southampton during Q1 2011. The delivery dates includes requirement updates after validation.	26/05/2011	Clarifications required
12.04.01	D04	Architecture and interface specification	See architecture analysis task	26/05/2011	Clarifications required
12.04.01	D05	Prototype	See prototype implementation task	18/11/2011	No reservation (P)
12.04.01	D06	Verification Plan	See verification plan task	26/07/2011	Clarifications required
12.04.01	D07	Verification report	See technical verification task	06/09/2011	to be assessed
12.04.01	D08	Validation Plan	See integration plan task	26/07/2011	Clarifications required
12.04.01	D09	Thread 1 - Validation Report	This deliverable describes the result of the first validation performed at Southampton during Q1 2011.	26/05/2011	Clarifications required
12.04.01	D10	Concept of Operation	This delivery describes the concept of operation for the developments in 12.4.1 where this is not available elsewhere. This will better describe the operational purpose of the tools and act as a good starting point for coordination. The document is drafted by NATS.	17/12/2011	to be assessed
12.04.01	D12	Thread 3 - Requirement Specification	This deliverable describes the system requirements for a number of validation activities performed during Q3-Q4 2011 outside the project. The requirements extends the content of D03 Thread 1 - Requirement Specification and D11 Thread 2 - Requirement Specification. The delivery date includes requirement updates after validation.	17/12/2011	to be assessed
12.04.03	D01	Phase 1 - Technical specifications	Phase 1: Specification of the system requirements related to the full develop, including functional and non-functional ones	13/10/2011	No reservation
12.04.04	D01	System requirements definition STEP 1 (Phase 1)	This document describes the system technical requirements. It will be based on the analysis of operational requirements coming from previous projects (EMMA2...), as well as operational requirements available at this stage from projects 6.8.4 and 6.7.2. It is the starting point for the development of the Phase 1 prototypes and will be used for writing the verification strategy document. It will be updated iteratively based on the prototype feedback, which will allow to refine the requirements.	28/06/2011	Clarifications required
12.04.04	D02	Technical Architecture report STEP 1 (Phase 1)	This document describes the technical architecture impact analysis.	28/06/2011	Clarifications required
12.04.04	D03	Verification Strategy STEP1 (Phase 1)	This document describes the strategy for the verification of the prototypes produced in phase 1. It defines how the prototypes will be tested to verify that it meets the technical specifications. It includes the definition of the metrics and measurement procedures to be used, the test case scenarios, the test platform and test tools.	25/07/2011	Clarifications required
12.04.06	D02	Technical Feasibility Report		19/04/2011	No reservation (P)
12.04.06	D05	Network Design technology prototype V2		28/10/2011	No reservation
12.04.09	D01	Report on possible operational use of 3D airport models	The report will address possible future operational use of 3D airport models such as fusion of sensor data and 3D models, wind and noise predictions and planning of sensor deployment. The main priority will be operational aspects, e.g., reliable automated detection and suitable presentation of emergent safety/security situations.	19/12/2011	to be assessed
12.04.09	D02	Function requirements	The specification will address the requirements for the definition of 3D airport models of certified quality built from heterogeneous data sources (Satellite data, Map terrain data, LIDAR/Laser measurements, and Existing 3D models of human made structures). Relevant issues are for example tolerance hierarchies between different data sources, efficient update of models when new data becomes available, efficient data harvesting for future operational and administrative airport systems, and visualization of 3D airport models.	29/06/2011	No reservation
12.04.09	D03	Technology report on 3D airport model	The report will assess technology for registration, processing, modelling, representation and visualization of 3D airport models built from heterogeneous data sources.	14/11/2011	No reservation (P)
12.05.02	D01	System Requirements for Phase 1	This document describes the system technical requirements for Phase 1. It will be based on the analysis of operational requirements coming from previous projects (EMMA2, a.), as well as operational requirements.	10/06/2011	Major reservation/s
12.05.02	D02	System Technical Architecture for Phase 1	This document describes the technical architecture impact analysis for Phase 1	10/06/2011	Clarifications required



12.05.02	D03	Technical Study Report for Phase 1	This document reports technical assessment for the first prototype implementation the analysis of weather phenomena that impact on airport safety and operations, and the resulting alert messages. This document will be based on the findings of P15.4.9a	14/10/2011	No reservation (P)
12.05.03	D01	System requirements definition STEP 2 (Phase 1)	This document describes the system technical requirements. It will be based on the analysis of operational requirements coming from previous projects (EMMA2...), as well as operational requirements available at this stage from project 6.7.2, 6.7.3 (for functional requirements on 4D trajectory management) and 6.9.2 (for HMI aspects). It is the starting point for the development of the Phase 1 mock-up, and will be used for writing the verification strategy document. It will be updated iteratively based on the Mock-up feedback, which will allow to refine the requirements.	03/06/2011	Clarifications required
12.05.03	D02	Technical Architecture report STEP 2 (Phase 1)	This document describes the technical architecture impact analysis.	03/06/2011	Clarifications required
12.05.04	D02	System requirements - Step1	System requirements, functional and non-functional ones, not included in deliverables produced 12.1.7, 12.5.5 and 12.X.Y projects, such as standard iCWP functions, "core" functionality of the AiCWP, etc.	28/09/2011	to be assessed
12.05.04	D03	Technical assessment - Step1	Definition of candidate technologies or technical proposals to be used Proposed technology Possible assessment to system Definition tasks with new architectural approaches due to new technology	13/05/2011	Major reservation/s
12.05.04	D04	Architecture assessment - Step1	Analysis of incoming architectural requirements provided by WPB and P12.1.7 Analysis of introduced new functionality and its dependencies Identification of architectural changes (if any) which might be necessary Architectural assessment, which may include recommendations and proposals	01/07/2011	Clarifications required
12.05.05	D03	Technology Screening Report for Step 2	This report combines the results coming out of the various technology screenings performed within this project. It gives recommendations for the selection of the best suited technology in regard of the roles/functionality. It will generate a list of technologies which shall be taken into account within the screening and analyse those technologies in regards of a possible use within an airport/ATC environment. The combination of the user feedback and the technology specification will result in recommendations of the best suited technology. The task contains a technology screening of monitors, a technology screening of touch displays, a technology screening of input devices, a technology screening of other interaction devices, a technology screening of computers to be used within the airport/ATC specific iCWP and a technology screening of future technologies (e.g. multitouch devices, head up displays, a).	11/04/2011	No reservation (P)
12.05.07	D02	Key Performance Indicators Assessment Report	Within this report Key Performance Indicators for PBM+DSTs are defined and analysed to assess the benefits of the new tools to be delivered by this project. To apply the overall performance indicators stated in the SESAR ATM Master plan to the working environment of the iCWP a set of practical and measurable, iCWP-specific indicators has to be defined to clearly demonstrate the added value of the new tools. The indicators are expected to be based on input from the operational projects. If this input is not received the indicators will be defined by this project.	21/02/2011	No reservation (P)
12.05.07	D03	Analysis Report on Performance Issues for step 2	This document contains the outcome of the analysis of current performance issues related to the CWP solutions, presently in use. It states potential areas of improvement through the introduction of decision support tools and will be completed by recommendations of areas for potential improvement where the introduction of performance monitoring and decision support tools is indicated in order to bring additional benefits to the controller. This report also includes the results of an analysis of workflows as this is needed to clearly identify the performance issues not only related to the current systems, but also to the operational procedures.	18/04/2011	No reservation (P)
12.05.07	D04	Technology Screening Report	The technology screening report includes the results of an analysis of the best suited decision support technology currently available or emerging (available in the near future) as well as an analysis for the best suited technology for the supported roles/working positions when considering decision support tools in combination with other applications. It gives recommendations on the technology to be used for the performance based monitoring and decision support tools.	16/04/2011	No reservation (P)
12.06.03	D01	System requirements definition	This document describes the system technical requirements for Phase 1. It will be based on the analysis of operational requirements.	21/07/2011	Clarifications required
12.06.03	D02	Technical architecture analysis and interface specification.	This document describes the technical architecture impact analysis for Phase 1 and also assess and/or define existing/new necessary interfaces	13/10/2011	No reservation
12.07.03	D06	Phase 1 - System Technical Requirements		12/08/2011	Clarifications required
12.07.05	D02	Phase 1 - Improved Weather Information System Requirements	System Requirements definition taking into account input from ConOPS.	05/08/2011	Clarifications required
12.07.05	D03	Phase 1 - Improved Weather Information System Architecture	Initial analysis and description of the system architecture starting from the requirements provided by P12.1.7.	05/08/2011	Clarifications required

### Work Package 13

Project	Deliverable Code	Deliverable Name	Deliverable Description	Deliverable Handover Date	Assessment Decision
13.01.01	D02	S1: NIMS Integration Strategy	WP13 Integration Strategy for Step1	16/12/2011	to be assessed
13.02.02	D01	Step 1 OSED	Contribution to stand-alone OFA OSED or common OFA	14/09/2011	to be assessed
13.02.02	D02	FB-2.11 TS	Will describe system requirements for the FB-2.11	14/09/2011	to be assessed
13.02.02	D03	Contribution to WP13 TAD	Will describe the System Architecture needed for Step1 and coordinate the incorporation to the TAD which is in the responsibility of the federating Project 13.1.1	14/09/2011	No reservation (P)
13.02.02	D40	FB-2.12 TS	Will describe system requirements for the FB-2.12	14/09/2011	to be assessed
13.02.04	D06	SPV. INDRA Baseline Solution and Architecture Step2	Baseline Solution and Architecture for the NIMS Supervision for local, sub-regional and regional levels for Step2.	21/10/2011	No reservation (P)
13.02.04	D13	SeNOP Baseline Solution and Architecture Step2	Baseline Solution and Architecture for the SWIM enabled NOP for Step2.	19/10/2011	No reservation (P)

### Work Package 14

Project	Deliverable Code	Deliverable Name	Deliverable Description	Deliverable Handover Date	Assessment Decision
14.00	D15-001	Work Package Management Plan (WMP)	Work Package Management Plan	02/05/2011	No reservation
14.01.02	D04	Ground/Ground Technology & Service Option Survey (Step2)		14/04/2011	No reservation (P)
14.01.02	D05	Technology Evaluation Methodology & Evaluation Criteria		08/04/2011	No reservation (P)
14.01.02	D06	Ground/Ground Technology & Service Option Evaluation (Step2)		01/12/2011	to be assessed
14.01.03	D03	SWIM Architecture principles V1.0	Guidelines and high level view of architecture. And tools compendium	22/06/2011	Major reservation/s
14.01.03	D06	Swim-Profiles V1.0	SWIM User profiles	22/06/2011	Critically Deficient
14.01.03	D20	Initial SWIM design concepts V1.0	Very High view of SWIM Architecture for V1 on Step2	24/06/2011	Clarifications required
14.01.04	D01	Consolidated information models and requirements for Step 1	This deliverable shall describe a consolidated specification "logical" service descriptions and requirements provided by WP8 and WP9. As described into PIR part 1, WP14 in Step 1 will adopt a bottom-up approach focussing on the following SWIM profiles: - ICOG / ED-133 (ATC-ATC En-route) - the rich peer-to-peer Flight Object (FO) exchanges which shall be prototyped to V3 in SESAR. - CFMU NOP B2B - a rich infrastructure and set of Web Services in operation today, and to be further extended during IP1. Some SESAR prototyping in WP13 is expected for step1. - EAD B2B Web - in a similar manner to the NOP, the EAD will have in operation in 2011 (i.e. IP1) a rich infrastructure and set of web services. Some SESAR prototyping in WP13 is expected for step1. The Airport-CDM profile mentioned into WP14 revision framework will be considered in Step 2. All A/G SWIM segments aspects (A/G WIRE-ICD and A/G technical requirements, etc.) will be considered only during the Step 2 and 3.	07/04/2011	Clarifications required

14.01.04	D02	SWIM interfaces specification for Step 1	This deliverable shall provide the specification of the SWIM interfacing layers (refer to PIR part 1). yAs described into PIR part 1, WP14 in Step 1 will adopt a bottom-up approach focussing on the following SWIM profiles: y- ICOG / ED-133 (ATC-ATC En-route) - the rich peer-to-peer Flight Object (FO) exchanges which shall be prototyped to V3 in SESAR. y- CFMU NOP B2B - a rich infrastructure and set of Web Services in operation today, and to be further extended during IP1. Some SESAR prototyping in WP13 is expected for step1. y- EAD B2B Web - in a similar manner to the NOP, the EAD will have in operation in 2011 (i.e. IP1) a rich infrastructure and set of web services. Some SESAR prototyping in WP13 is expected for step1 yThe Airport-CDM profile mentioned into WP14 revision framework will be considered in Step 2. yAll A/G SWIM segments aspects (A/G WIRE-ICD and A/G technical requirements, etc. ) will be considered only during the Step 2 and 3. y	06/05/2011	Clarifications required
14.01.04	D03	SWIM technical requirements specification for Step 1	This deliverable shall provide a consolidated set of technical requirement (e.g. middleware configuration, multicast support, communication protocols support and configuration, etc) to complement the SWIM requirements provided by WP8 and WP9. yAs described into PIR part 1, WP14 in Step 1 will adopt a bottom-up approach focussing on the following SWIM profiles: y- ICOG / ED-133 (ATC-ATC En-route) - the rich peer-to-peer Flight Object (FO) exchanges which shall be prototyped to V3 in SESAR. y- CFMU NOP B2B - a rich infrastructure and set of Web Services in operation today, and to be further extended during IP1. Some SESAR prototyping in WP13 is expected for step1. y- EAD B2B Web - in a similar manner to the NOP, the EAD will have in operation in 2011 (i.e. IP1) a rich infrastructure and set of web services. Some SESAR prototyping in WP13 is expected for step1 yThe Airport-CDM profile mentioned into WP14 revision framework will be considered in Step 2. yAll A/G SWIM segments aspects (A/	15/04/2011	Clarifications required
14.02	D09-001	Work Package Management Plan (WMP)	Work Package Management Plan	02/05/2011	No reservation
14.02.02	D02	SWIM Security Framework - preliminary	SWIM security engineering approach, SWIM security V&V approach, standards for SWIM security (in case of lack of inputs from WP16 security, open points will be raised in the document)) Input to security risk assessment	01/03/2011	No reservation (P)
14.02.02	D03	Security context and needs analysis	Needs to secure ATM services via SWIM, needs for security incident management, needs for civil-military security solutions (expressed in high level needs requirements), security criteria for technology assessment	11/02/2011	No reservation (P)
14.02.02	D04	SWIM security framework - updated	Update taking into account WP16 security inputs Input to security risk assessment Input to P14.2.9 for V&V	21/10/2011	No reservation (P)
14.02.03	D03	Results on the Technical Study Step1	Results of a trade study on the available Supervision COTS in order to research the feasibility of using one of them.	19/01/2011	No reservation (P)
14.02.03	D04	Prototype for the V1.0.0 (V2)	As a result of the trade study and based upon the local system definition, local SWIM Technical Supervision prototypes will have been integrated and tested. These are deliverables to the 14.2.9 project Artifacts in the delivery include: -Software package (executable runtime only). In case the software package includes a COTS or an open source component that require a non free of charge licence, information will be notified to the SJU. -User Guides including Integration, configuration and maintenance guides for the given COTS/FLOSS .	01/07/2011	No reservation (P)
14.02.03	D05	Technical Supervision Test Platform Requirements and Development for the V.1.0.0 (V2)	Deliver of the tools developed for verifying v1.0.0 and the requirements of the testing platform.	08/07/2011	No reservation (P)
14.02.03	D06	System verification report for the V1.0.0	Deliver of the report on the verification activities for the v1.0.0.	13/07/2011	No reservation
14.02.09	D03	V1.x SWIM technical infrastructure definition	SWIM technical infrastructure definition. It will describe the SWIM core services, the SWIM access services and the SWIM added value services needed for ATC. It will also include how these services support the SWIM profiles description supported for step1	09/03/2011	Major reservation/s
14.02.09	D04-001	V1.0.0 SWIM technical infrastructure prototype from Frequentis	Runtime software delivery including SWIM core services apart from governance and security.	29/06/2011	No reservation (P)
14.02.09	D04-002	V1.0.0 SWIM technical infrastructure prototype from Indra		01/07/2011	No reservation (P)
14.02.09	D04-003	V1.0.0 SWIM technical infrastructure prototype from Thales		01/07/2011	No reservation (P)
14.02.09	D05-001	V1.0.0 Packaging - Frequentis	Packaged software delivery including user and installation manual	29/06/2011	No reservation (P)
14.02.09	D05-002	V1.0.0 Packaging - Indra		01/07/2011	No reservation (P)
14.02.09	D05-003	V1.0.0 Packaging - Thales		01/07/2011	No reservation (P)
14.02.09	D06	V1.0.0 Test tools, test data and test scenarios	Test software that is able to stimulate the SWIM technical infrastructure. This software will be used by WP3.2 and WP3.3 to perform verification activities. This deliverable also includes test data and test scenarios.	26/09/2011	No reservation (P)
14.02.09	D07-001	V1.0.0 SWIM technical infrastructure prototype with governance - Frequentis	Runtime software delivery including SWIM core services apart from security.	30/06/2011	No reservation (P)
14.02.09	D07-002	V1.0.0 SWIM technical infrastructure prototype with governance - Indra		01/07/2011	No reservation (P)
14.02.09	D07-003	V1.0.0 SWIM technical infrastructure prototype with governance - Thales		01/07/2011	No reservation (P)
14.02.09	D08-001	V1.1.0 SWIM technical infrastructure prototype- Frequentis	Runtime software delivery including all SWIM services.	30/06/2011	No reservation (P)
14.02.09	D08-002	V1.1.0 SWIM technical infrastructure prototype - Indra		01/07/2011	No reservation (P)
14.02.09	D08-003	V1.1.0 SWIM technical infrastructure prototype - Thales		01/07/2011	No reservation (P)
14.02.09	D09-001	V1.1.0 Packaging - Frequentis	Packaged software delivery including user and installation manual	30/06/2011	No reservation (P)
14.02.09	D09-002	V1.1.0 Packaging - Indra		01/07/2011	No reservation (P)
14.02.09	D09-003	V1.1.0 Packaging - Thales		01/07/2011	No reservation (P)
14.02.09	D12	V1.1.0 SWIM technical infrastructure verification plan	Verification plan	27/09/2011	to be assessed
14.04	D02	Roadmap and deployment plan template	Description of the scope and boundaries of the SWIM roadmap and deployment plan; and developing template(s) so that we get an agreement about the content of this deliverable as an input to step 1, 2 and 3	03/02/2011	No reservation
14.04	D03	Institutional rules template	Description of the scope and boundaries of the SWIM Institutional Policy and Guidelines; and developing a template so that we get an agreement about the content of this deliverable as an input to step 1, 2 and 3	14/02/2011	No reservation (P)
14.04	D10	Pre-Integration methodology	List of prerequisites and requirements a project has to fulfil in order to enable/ease the pre-integration activity. These prerequisites will be mandatory for a project to be eligible for pre-integration support;	03/02/2011	No reservation (P)
14.04	D76-002	SWIM Communication management plan (annual) 2	Detailed description of SWIM Com processes y	23/12/2011	to be assessed
14.04	D77-002	SWIM Communication action plan (quarterly) 2	Detailed description of quarterly actions y	12/04/2011	No reservation
14.04	D77-003	SWIM Communication action plan (quarterly) 3	Detailed description of quarterly actions	08/07/2011	No reservation
14.04	D77-004	SWIM Communication action plan (quarterly) 4	Detailed description of quarterly actions	27/09/2011	No reservation (P)
14.04	D77-005	SWIM Communication action plan (quarterly) 5	Detailed description of quarterly actions	23/12/2011	to be assessed
14.04	D78-001	SWIM Communication execution (annual) 1		23/12/2011	to be assessed
14.04	D79-001	SWIM Communication monitoring (annual) 1		23/12/2011	to be assessed
14.04	D80-001	SJU Websites / SWIM Web Mastering 1		23/12/2011	to be assessed

## Work Package 15

Project	Deliverable Code	Deliverable Name	Deliverable Description	Deliverable Handover Date	Assessment Decision
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15.01.06	D07	LDACS1&2 Compatibility Report Deliverable	Report on the analyses for LDACS1&2 compatibility with other systems using the same spectrum	30/07/2011	No reservation (P)
15.01.06	D08	Final LDACS1&2 Compatibility Report Deliverable	Final report on LDACS1&2 spectrum compatibility	25/11/2011	No reservation (P)
15.01.06	D13	1030/1090 Simulation Model Description Deliverable	Report on update of 1030/1090 Simulation Model	05/11/2011	No reservation (P)
15.01.06	D18	Multistatic Radar Report Deliverable	Report on analysis and justification of spectrum needs for future ATM multistatic surveillance radars	22/07/2011	No reservation (P)
15.02.07	D02	Channel models and propagation analysis	Study and characterization of the traffic model in the airport, Channel models and propagation analysis	01/07/2011	No reservation (P)
15.02.07	D03	IEEE 802.16e/aero Profile	System and Certification profile definition, System and Certification profile evaluation and validation process, Report on Modeling & Performance simulation	11/11/2011	to be assessed
15.02.08	D02	Feasibility Study on Military Data Link Usage in SESAR	The deliverable will deal with:- result of feasibility study on ATM functions segregation from military messages on the basis of network separation using different frequency hopping patterns - result of feasibility study on packed transmission options - result of feasibility study on required levels of data rate/bandwidth, latency limits, TSDF and QoS parameters for estimated levels of traffic load - result of feasibility study on security solution that do not compromise the use of crypto variables - result of feasibility study on use of the MIDS technology evolution - result of feasibility study on cost evaluation - result of feasibility study on institutional considerations	05/08/2011	No reservation (P)
15.02.08	D03-001	Report on Civil-Military Consultation Activities	periodic report that will contain the status, evolution and results of consultation of military authorities, international organizations (e.g. NATO, EJC) and civil-military focus groups (e.g. CNS FG)	18/02/2011	No reservation (P)
15.02.10	D08	First Test Report on multicast-functionality		30/06/2011	No reservation
15.02.10	D11	Draft Report on Verification of VoIP Technology for G/G & A/G Communications		21/12/2011	to be assessed
15.03.01	D03-001	D3. SESAR Navigation Operational requirements	The deliverable that will be submitted by June 2010 will capture the range of scenarios and cases to be considered in the project. These scenarios will be structured according to their attributes and defined in a matrix in terms of - Timeframe (IP 2 and preliminary requirements for IP 3) - Application domain and support service - Phase of flight/airport operation for airport types. - Aircraft platform types for Civil and state aircraft. = Nominal and degraded modes.	16/04/2011	No reservation (P)
15.03.01	D03-002	D3. SESAR Navigation Operational requirements	The deliverable that will be submitted by June 2010 will capture the range of scenarios and cases to be considered in the project. These scenarios will be structured according to their attributes and defined in a matrix in terms of - Timeframe (IP 2 and preliminary requirements for IP 3) - Application domain and support service - Phase of flight/airport operation for airport types. - Aircraft platform types for Civil and state aircraft. = Nominal and degraded modes.	28/02/2011	No reservation
15.03.02	D03	D1.2. Guidelines for rationalisation of conventional nav aids during IP2	This deliverable will define operational and technical requirements on Nav aids subsystems during IP2. These requirements will be classified in two main categories: - Requirements for the progressive decommissioning of conventional En-route and TMA Nav aids and for the use of the remaining infrastructure (DME/DME) for GNSS-based Navigation backup. - Requirements for the decommissioning of NP and precision landing Nav aids and for the use of ILS/MLS as backup to the new GBAS cat II/III technique.	27/05/2011	No reservation
15.03.02	D04	D1.3. Simulation tools for phase 1.	This deliverable will define modelling, simulation and evaluation tools and methods to be considered in the simulation task 1.4 during phase 1.	27/05/2011	No reservation
15.03.04	D03	Overall GNSS Requirements Summary	The document will summarise the overall ATM requirements on GNSS performance and robustness in a manner that is independent of the specific application type (Navigation, Surveillance, Timing).	27/05/2011	Major reservation/s
15.03.04	D04	Cofiguration Report	The report will present and justify the configurations (constellations, augmentations, frequencies, and communities) that are candidates for the GNSS baseline and are proposed for further analysis.	23/03/2011	No reservation (P)
15.03.06	D02-001	LATO and IGWG meeting reports 1		07/04/2011	No reservation (P)
15.03.06	D02-002	LATO and IGWG meeting reports 2		30/06/2011	No reservation (P)
15.03.06	D03	TN: High level performance allocation and split of responsibilities between air and ground.	This document will define GBAS high level requirements pertaining to airborne part and ground part. It will identify most impacting requirements in terms of accuracy, integrity and continuity based on ICAO SARPS in draft version as well as RTCA GBAS MOPS and FAA ground specification. This document will also provide elements of requirements validation based on existing analysis or complementary analysis. Finally, it will identify any new needs of functionalities at system level for the airborne or the ground part. This report will contain a traceability matrix between ICAO SARPS requirements and requirements defined within this document. An intermediate deliverable internally to the members of the project and towards 9.12 project members, will be issued to enable initial feasibility assessment from air and ground manufacturers.	05/07/2011	to be assessed
15.03.06	D11	PT2 Requirements and traceability GBAS CON OPS (including CAT II/III L1 specificities)	This report describes the particular implementation of the SARPS for ground station Prototype2, in that manufacturer specific requirements have been identified and traced to the SARPS in order to show coverage and compliance.	10/08/2011	No reservation
15.03.06	D20-001			11/10/2011	No reservation
15.03.06	D23-001	Report on submissions to and activities of relevant GBAS standardisation groups 1		12/04/2011	No reservation (P)
15.03.06	D24	Contributions to update ICAO SARPS GBAS VDB frequency coordination criteria	The report will provide draft frequency coordination criteria for GBAS - ILS and GBAS - VHF Com to fill the gaps in ICAO Annex 10 Chapter 3.7.3.5.4. and support appropriate update of ICAO EUR DOC 011	01/12/2011	No reservation (P)
15.04.01	D01	Baseline of European surveillance report	This report will summarise the current Surveillance requirements. It will identify the source of the requirements such as the 1997 publication "Eurocontrol Standard Document for Radar Surveillance in En-Route Airspace and Major Terminal Areas/E" and explain how the availability of new Surveillance techniques such as Mode S, WAM and ADS-B have introduced a need for a review of the document. It will then address how the Surveillance Standards are evolving to address these new Surveillance techniques. The report will also produce a description of the current Surveillance sensor infrastructure i.e. a description of current deployment of Surveillance sensors (civil and military, cooperative and non-cooperative across all ECAC states) and summarise how implementation plans are foreseen for Europe. Note that D01, D02 and D03 will be delivered together. Thus the partners may move information from one of the three deliverables to another one to improve the consistency of the overall message.	04/03/2011	No reservation
15.04.01	D02	Drivers for rationalisation report	This report will describe the need and the fundamental drivers for rationalisation of cost, capacity and safety. It will describe the impact of regulatory aspects such as the SPI and ACID IRs and how these will influence the rationalisation of the future Surveillance infrastructure and provide windows of opportunity/E in the rationalisation process. This report will illustrate areas where there are high degrees of overlapping Surveillance coverage (cooperative and non-cooperative and will include both civil and military sensors). Note that D01, D02 and D03 will be delivered together. Thus the partners may move information from one of the three deliverables to another one to improve the consistency of the overall message.	02/03/2011	No reservation (P)

15.04.01	D03	Enabling system rationalisation report	This report will document the opportunities and constraints regarding the rationalisation process of the Surveillance infrastructure. It will include a high level description of the criteria that a service provider would need to consider when looking to derive data from a third party e.g Service Level Agreements, performance considerations etc. Criteria described will include: ò Safety, ò Performance, ò Interoperability issues, ò Security, ò Cost efficiency, ò Spectrum efficiency Note that D01, D02 and D03 will be delivered together. Thus the partners may move information from one of the three deliverables to another one to improve the consistency of the overall message.	02/03/2011	No reservation
15.04.01	D04	Assessment of new surveillance technologies report	Deliverable D4 will include:â- An overview of new candidate Surveillance technologies, including US background.â- An assessment of promising new technologies (ADS-B, WAM and MSPSR). For each technology, the project will:â + Summarize general characteristics,â + Assess performances with relation to the identified rationalisation criteria described in task 003,â + Identify deployment constraints.	18/03/2011	No reservation (P)
15.04.01	D05	Generic surveillance infrastructure report	Definition of a typical architecture combining new and existing sensors to meet the targeted requirements over a generic FAB. The generic Surveillance infrastructure will contain a physical and a technical description of a possible Surveillance architecture. The first step will be a generic architecture for whole Germany taking into account all new and existing types of sensors to fulfil the required surveillance performance criteriaEs. In a second step this generic Surveillance architecture will be expanded for the whole FABEC area.	01/06/2011	Critically Deficient
15.04.01	D06	Application Case 1 report	The Deliverable will document the case study of a dense traffic area, e.g. (Frankfurt". This case study refines the instantiation of the defined generic surveillance architecture over the selected traffic area. Options for infrastructure reduction and consequences will be analyzed, and the impact of these surveillance infrastructure changes will be assessed. Verification will be supported by a simulation task of the subcontracted company ESG. The deliverable will now include a CBA of several infrastructure scenarios instead of comparing different moment in time of one scenario as described in the PIR. This modification impacts the project schedule. The rest of the deliverable content remains unchanged.	02/12/2011	No reservation (P)
15.04.01	D07	Application Case 2 report	The Deliverable will document the case study of a mountainous area, e.g. (Geneva". It will include:â- An analysis of available options for infrastructure reduction and consequences including an instantiation of the defined generic surveillance architecture over the selected area. â- The results of simulations comparing the technical performances of three possible Surveillance infrastructures. The deliverable will now include a CBA of several infrastructure scenarios instead of comparing different moment in time of one scenario as described in the PIR. This modification impacts the project schedule. The rest of the deliverable content remains unchanged.	24/11/2011	No reservation (P)
15.04.01	D08	Application Case 3 report	The Deliverable will document the case study of a medium density area. It will include:â- An analysis of available options for infrastructure reduction and consequences including an instantiation of the defined generic surveillance architecture over the selected area. â- The results of simulations comparing the technical performances of three possible Surveillance infrastructures. . The deliverable will now include a CBA of several infrastructure scenarios instead of comparing different moment in time of one scenario as described in the PIR. This modification impacts the project schedule. . Additional material has to be developed to explain the simulation results due to the non-acceptance of the D05 deliverable. The impact on task effort is detailed in the previous sheet. The rest of the deliverable content remains unchanged.	01/12/2011	No reservation (P)
15.04.03	D07	Background System	Provision of ACAS Monitoring background system installed on two sites within German airspace. System will be used for first collection and evaluation of RA information.	09/06/2011	No reservation (P)
15.04.03	D08	Preliminary Data Evaluation Report	Preliminary Data Evaluation report will be created by the project team on the end of the Initial data collection and evaluation task. The collection will be performed on the background system. Main focus is the first evaluation of RA information. Further topics are the analysis of the system performance and the attempt to classify RA conflicts. Internal deliverable	08/08/2011	No reservation (P)
15.04.05.a	D05	ADS-B Ground Station Specifications for the first prototype iteration (Time Based Operations)	ADS-B Ground Station technical specifications for Step 1 to be used for the first ADS-B Ground Station prototype iteration. These specifications will be derived from available Operational Requirements for ATM Service capabilities for Time Based Operations.	25/03/2011	No reservation
15.04.05.a	D06	First iteration of SDPDS Specifications (for Time Based Operations)	Time Based Operations specifications for Surveillance Data Processing and Distribution Systems. These specifications will be derived from available Operational Requirements for ATM Service capabilities for Time Based Operations.	15/03/2011	No reservation
15.04.05.a	D07	First iteration of Interface Specifications (for Time Based Operations)	Time Based Operations Surveillance Data Interface Specifications. These specifications will be derived from available Operational Requirements for ATM Service capabilities for Time Based Operations.	18/03/2011	No reservation
15.04.05.a	D08	First iteration of ADS-B Ground Station Test Specifications (for Time Based Operations)	ADS-B GS Test Specifications for the first iteration of specifications. These Test Specifications are to be used by Project 15.4.5.b for the verification of the corresponding ADS-B Ground Station Prototype.	13/04/2011	No reservation
15.04.05.a	D09	Second iteration of ADS-B Ground Station Specifications( for Trajectory Based Operations)	ADS-B Ground Station specifications for Step 2 to be used for the second ADS-B Ground Station prototype iteration. These specifications will be derived from available Operational Requirements for ATM Service capabilities for Trajectory Based Operations.	29/09/2011	No reservation
15.04.05.a	D10	Second iteration of SDPDS Specifications (for Trajectory Based Operations)	Second iteration of specifications for Surveillance Data Processing and Distribution System. These specifications will be derived from available Operational Requirements for ATM Service capabilities for Trajectory Based Operations.	05/10/2011	to be assessed
15.04.05.a	D11	Second Iteration of Interface Specifications (for Trajectory Based Operations)	Second iteration of Surveillance Data Interface Specifications. These specifications will be derived from available Operational Requirements for ATM Service capabilities for Trajectory Based Operations.	07/10/2011	No reservation
15.04.05.a	D18	First iteration of ADS-B Surveillance System Specifications	ADS-B Surveillance System Specifications for Step 1 to be used for the requirement mapping for the first iteration of specifications	04/03/2011	No reservation
15.04.05.a	D19	Second iteration of ADS-B Surveillance System Specifications	ADS-B Surveillance System Specifications for Step 2 to be used for the requirement mapping for the second iteration of specifications	03/10/2011	No reservation
15.04.05.b	D02	First Iteration - Baseline Report/Matrix	Prototype provider define their compliance to the specification baseline. Baseline will delivered by Project 15.4.5.a and contains the ADS-B Ground Station Specifications, SDPD Specifications, Interface Specifications and Test Specifications for the first prototype iteration (Time Based Operations). The baseline reports will indicate for this development phase mandatory and optional requirements.	05/07/2011	No reservation (P)
15.04.09.a	D04	Report on Satellite MET products and processing techniques	Deliverable will summarize available and potential new MET products based on satellite technology. Results will include algorithm assessment, data processing and data integration possibilities with respect to retrievable MET products. New techniques and therefore new MET products will be summarised to give an outlook about upcoming possibilities.	29/03/2011	No reservation (P)
15.04.09.a	D05	Report on Ground sensor investigations	The report summarizes the detailed results for each investigated sensor including measurement description, data characteristics, available MET product, operational and cost issues etc.âThe deliverable will be a catalogue divided into three sections: MET application, MET hazards and aerodrome area and with sensor lists and their descriptions per section if applicable.	16/09/2011	No reservation
15.04.09.a	D06	Report on applications of satellite technology & MET products for aviation community	Comprises results of Task 2 + 4 and link them to each other to provide conclusions on the best usage of satellite technology and MET products with respect to airport weather sensing and current and future ATM systems.	01/06/2011	No reservation (P)
15.04.09.a	D07	Airport system concepts	The deliverable will comprise system concepts (combination of sensors) for different airport categories (CAT I, II, III) and for different airport needs due to special locations or special weather phenomena.	09/09/2011	No reservation

## Work Package 16

Project	Deliverable Code	Deliverable Name	Deliverable Description	Deliverable Handover Date	Assessment Decision
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16.01.01	D07	Proofs of concept (AIM USE)	The timescales of the development of AIM from IRP makes it clear that in order to support 16.6.1 in the assessment of Primary Projects an early delivery of the IRP model is required. The final AIM is not programmed for delivery until the end of 2010. This early proof of concept will use an updated version of the IRP, based on review with ANSPs and industry and provide an assessment of the Primary projects.	22/07/2011	No reservation (P)
16.01.03	D02	Chapter Identified DRM	(Internal deliverable-Interim report) A chapter providing an overview of DRM methods based on existing published material	13/10/2011	No reservation (P)
16.01.03	D03	Chapter SESAR SRM needs and criteria	(Internal deliverable-Interim report) A chapter consolidating SESAR needs in terms of DRM assessment and criteria for DRM selection	12/12/2011	to be assessed
16.01.04	D02	Guidance Material to execute proof of concept - DRAFT 1	Description of the generic method for preliminary acceptance by competent authorities.	28/06/2011	Clarifications required
16.02.01	D03	SESAR ATM Security Risk Assessment Method, version 0	The preliminary SESAR ATM Security Risk Assessment Method addresses an immediate research and development requirement to provide early guidance to WP4-15 projects on how to conduct their security risk assessment activities.	30/05/2011	No reservation (P)
16.02.04	D02	Report - analysis of methods and tools for SESAR security validation	This report identify the methods and tools for the different aspects of security validation: Security Risk Assessment validation, Security requirements and controls list assessment, Security requirements verification (system threat), Security User Requirements validation on IBP, Security User Requirements validation on V&VP	03/10/2011	No reservation (P)
16.03.01	D04-001	LAQ Modelling Improvement Requirements Document	This deliverable will constitute the reference document providing all the improvement requirements for the components of the ERM directly related to LAQ modelling (e.g. LAQ model & associated guidance material). It will be updated regularly to address additional improvement specifications arising from 16.06.03 during the first 18 months of the Execution Phase of 16.03.01	22/08/2011	No reservation
16.04.01	D02-001	Process Requirements Register	The register will capture all the required properties of the HP assessment process, mapped against V-phases and TA assessment steps. It will also track whether process requirements are satisfied by a delivered version and module of the HP assessment process.	25/03/2011	No reservation (P)
16.04.01	D03	HP Assessment Process Development Plan	The deliverable will describe general principles of the HP assessment process development that have to be applied for all three modules.	25/03/2011	No reservation (P)
16.04.01	D04-001	Module 1 of the HP Assessment Process	Module 1 will describe the HP assessment process for one of the V-phases. Two versions will be delivered: an initial and a final version. The initial version will be used for the test application. The final version will include more detailed user guidance and templates.	28/10/2011	No reservation (P)
16.05.01	D02	Identification of Issues in Human Performance Automation Support	The aims of the deliverable are: - to review the issues regarding human performance in automation support identified during the SESAR Definition Phase in order to refine their description based on both literary review and consideration of the ConOps elements that will be defined in the various x.2 federating projects and in WP B4.2 during the 16.5.1 timeframe. - to identify possible additional automation issues with respect to those identified during the SESAR Definition Phase, based on both literary review and consideration of the ConOps elements that will be defined in the various x.2 federating projects and in WP B4.2 during the 16.5.1 timeframe.	13/05/2011	No reservation (P)
16.05.01	D03	Framework for HP Automation Related Good Practices	This document describes a framework that links the automation issues identified in Task 16.5.1-002 with the good practices to be identified in Task 16.5.1-004. The framework is intended to play two different roles in the project: ò To provide 16.5.1 with a common reference structure to allow consistency in the collection of good practices by different project contributors ò To become part of the guidelines addressed to WP4-15 projects and help the users to orient themselves in the choice of the good practice to be considered. In order to serve the two different purposes the framework will integrate different classification elements, such as: the automation issue being addressed, the ATM roles actually involved in the automation support, the different levels at which the automation support may be given, the different ATM Services to be considered, the contextual elements to be considered in the operational environment in which the automation support is offered, etc.	25/10/2011	No reservation (P)
16.05.03	D02	Information needs - Baseline Report	This report summarizes information gained through a screening of existing guidelines and/or standards and information from previous research or development projects (also outside of SESAR) and existing standards (HF related, certification requirementsa) and HCI literature.	21/02/2011	No reservation (P)
16.05.03	D03	Information needs - Analysis Findings	The report describes the results of the analysis of information needs of controllers and pilots. Hereby the project puts also a focus on information related to automation processes and regarding presentation. It also contains information about the state of the art of existing and new facilities and equipment. This document is an updated document of the Information Needs - Baseline Report plus additional information from the described subtasks..	25/10/2011	No reservation (P)
16.06.01	D02-002	SCF - SESAR Safety Policy and Principles	Description of the Safety Policy and Principles. Includes the Safety policy itself, its monitoring and update, and potentially the scope of the Safety Case Reference Material and the approach to consolidating projects' Safety assessment results. Includes opportunity for periodic revision.	17/03/2011	Clarifications required
16.06.01	D04-001	SCF - Safety Regulatory Interface Reviews	The Safety Regulatory Interface will be established and reports will be compiled reviewing the results of the review by the safety regulatory platform of relevant project safety deliverables and the resulting follow-up action.	15/12/2011	to be assessed
16.06.01	D06-002	SESAR Safety Reference Material	This material will enable a common Safety assessment approach across all work packages (WP4-15) that is essential for the integration of the individual assessments (at project level) into the SESAR Safety Cases (at package level).	15/12/2011	to be assessed
16.06.01	D07-001	Report on the support to Projects Safety Assessments, including Front Office Operation	This report will present the activities related to the delivery of the Safety Reference Material and the front line support ("trouble tickets", guidance, coaching, etc.) to the WP4-15 projects.	15/12/2011	to be assessed
16.06.01	D12	Interim Time-Based Operations (Step 1) Safety Cases and Contributions to Business Cases - OAR	Interim Step 1 Safety Case Reports will be developed for the different packages. This interim version will provide the evidence to support the related (V2) and relevant strands of the Argument. In addition, the 16.06.01 team will consolidate the information required for the Step 1 Business Case Reports and then support the 16.06.06 team in developing the Business Cases for the packages concerned.	15/12/2011	to be assessed
16.06.02	D02-001	SCF - SESAR ATM Security Policy and Principles	Description of the ATM Security Policy and Principles. Includes the ATM Security policy itself, its monitoring and update, and potentially the scope of the ATM Security Case Reference Material and the approach to consolidating projects' Safety assessment results. Includes opportunity for periodic revision.	09/06/2011	Major reservation/s
16.06.02	D05-001	SCF - ATM Security and Cross-TA Output Communication and Outreach	This will detail the communication plan and report on the result of communication activities of 16.06.02, disseminating findings and recommendations for the SJU, within SESAR, and externally to the wider aviation community, under the direction of the SJU.	07/06/2011	No reservation (P)
16.06.02	D10-001	Project and Package Impacts / Benefits Mechanisms	This deliverable will represent the results of a review of the ATM changes that are expected to be implemented in the SESAR Concept of Operations in the period up to 2020 (to start off with we should make a high level first cut, but it is expected that the understanding of the benefits/impact mechanisms relative to each ATM change will be developed progressively during the course of the work). From a safety standpoint, in addition to informing the initial version of the Business Case, its purpose is to establish how to model them in the 16.01.01 AIM/STAR (once and if 16.01.01 is transferred into the Safety Reference Material). The ATM changes (OI, OI steps, enablers) will be grouped according to the main elements of ATM and/or ATM Services (L2) and/or packages. The following information will be provided for, for example, each OI step: (1) Description; (2) Timescale; (3) Benefit focus; (4) Safety benefits; (5) high level Safety hazards; (6) Overall effects; (7) Representation in the AI	07/06/2011	No reservation (P)
16.06.02	D12	Interim Time-Based Operations (Step 1) ATM Security Cases and Contributions to Business Cases - OAR	Interim Step 1 ATM Security Case Reports will be developed for the different packages. This interim version will provide the evidence to support the related (V2) and relevant strands of the Argument. In addition, the 16.06.02 team will consolidate the information required for the Step 1 Business Case Reports and then support the 16.06.06 team in developing the Business Cases for the packages concerned.	01/07/2011	Major reservation/s

16.06.02	D22-001	Report on the applicability of P16.02.01-05 outputs to meet 16.06.02 requirements	For each of 16.02.01-05, when the material has reached maturity targets, reports on the outputs of the application on a trial basis on a few WP4-15 projects to confirm its applicability. If satisfactory, it will be used to update the ATM Security Reference Material.	26/05/2011	No reservation (P)
16.06.03	D07-001	Report on the support to Projects ENV Assessments	This report will present the activities related to the delivery of the ENV Reference Material and the first-line support ("trouble tickets", guidance, coaching, etc.) to the WP4-15 projects.	14/04/2011	Clarifications required
16.06.03	D20-001	ENV and cross-TA Awareness and Training Material	ENV-specific awareness and training material will be focussed on the use of the ENV Reference Material and will be used as input to cross-TA awareness material. The training material (modules) will be prepared in a systematic way, identifying the target audience(s) to define the expertise level, the material will be tested on small scale prior to roll-out and feedback in use will be monitored. Depending on the objectives and targeted population, different training modules will be proposed using different formats: face-to-face, webinar and e-learning.	14/04/2011	No reservation
16.06.03	D21-001	ENV and cross-TA Training and Coaching	Reports on the cross-TA and ENV training material delivery to WP4-15 through coaching, webinar and e-learning. It will present the status of all ENV training activities (ENV Training Plan) and will provide an overview of what has been achieved during the period in question, and will reference the outputs that have been produced by the 16.06.03 team in relation to coaching of WP4-15 personnel.	14/04/2011	No reservation
16.06.05	D02-001	SESAR HP Management System (HPMS) Policy and Principles	Description of the HPMS Policy and Principles. Will include the HP Policy itself, its monitoring and update, and potentially the scope of the HP Case Reference Material and the approach to consolidating projects' HP assessment results through the HP Plan. The HP Policy and Principles will be aligned with the scope of SESAR and will cover up to V3, excluding deployment and operational issues. The Plan will specify the HP assessment activities for each phase of the lifecycle that are to be carried out by projects in WP4-15 in order to create necessary and sufficient evidence for the production of the HP Cases for the defined packages (see 16.06.05 D03). The Plan will be a tool to monitor the ongoing WP4-15 projects assessments and to steer them using the SEMP events and other ad-hoc coordination to ensure that the required assessments (and associated evidence) are delivered. It will be periodically updated taking into account the outcomes of the cross-TA prioritisation process.	21/07/2011	No reservation
16.06.05	D04-001	Regulatory Interface Reviews	Production of a report on HP contributions incorporating all the regulatory issues resulting from the ongoing 16.06.05 activities, that will help the EU & the National Supervisory Bodies to identify potential impacts on regulation and to prepare new regulatory requirements.	21/12/2011	to be assessed
16.06.05	D07-001	Report on the support to Projects HP Assessments	This report will present the activities related to the delivery of the HP Reference Material and the first-line support ("trouble tickets", guidance, coaching, etc.) to the WP4-15 projects.	03/03/2011	No reservation (P)
16.06.05	D20-001	HP and cross-TA Awareness and Training Material	HP-specific awareness and training material will be focussed on the use of the HP Reference Material and will be used as input to cross-TA awareness material. The training material (modules) will be prepared in a systematic way, identifying the target audience(s) to define the expertise level, the material will be tested on small scale prior to roll-out and feedback in use will be monitored. Depending on the objectives and targeted population, different training modules will be proposed using different formats: face-to-face, webinar and e-learning.	03/03/2011	No reservation (P)
16.06.06	D02-002	SCF - SESAR Business Case & CBA Process Specification	Description of the Business Case & CBA Process Specification. Includes the Business Case & CBA role in the work program, its monitoring and update, the scope of the Business Case & CBA Case Reference Material and the approach to consolidating projects' TA assessment results. Includes opportunity for periodic revision.	23/09/2011	to be assessed
16.06.06	D06-001	SESAR Business Case and CBA Reference Material	The deliverable will present a clear, complete, coherent and integrated approach to the CBA & Business Case of SESAR. It will include the description of the existing CBA & Business Case processes and the associated methods, tools and techniques, explaining their purposes and relationships.	07/01/2011	No reservation (P)
16.06.06	D07-001	Report on the support to Projects BC & CBA Assessments, including Front Office Operation	The Report will include: 1) Support to Projects BC & CBA assessments: a periodically updated record of the current status of the support activities (guidance, coaching) provided on request to the WP4-15 projects. 2) ad-hoc project CBA on a limited basis as requested by the SJU 2/ Front Office Operation: -> Development of material for the SJU Extranet, providing: ò General information on the Front Office: purpose, role, organisation, options for requesting support and coaching. ò For each TA a guided tour showing how the area fits within SESAR requirements ò Direct access to all existing documents (guidance material, existing methods, tools and templates, available trainings) ò Advice on how projects can organise and conduct assessments, (e.g. identification of project maturity, of assessment objectives, requirements, and metrics, analysis of results and their integration to meet stakeholder needs and SESAR Case requirements) ò Frequently Asked Question ò Ongoing and planned support	03/03/2011	No reservation (P)
16.06.06	D12	Interim Time-Based Operations (Step 1) CBA and Business Cases - OAR	Interim Step 1 Cost Benefit Analysis & Business Case Reports will be developed for up to 2 packages. This includes: -> the production of CBA per group of stakeholders (Airports, ANSP, Airlines...) -> an independent review process provided by independent CBA & BC experts. This interim version will provide the evidence to support the related (V2) and relevant strands of the Argument. In addition, the 16.06.06 team will consolidate the information required for the Step 1 Business Case Reports.	28/04/2011	No reservation (P)
16.06.06	D20-001	Cross-TA, CBA and Business Case Awareness and Training Material	Input to cross-TA and CBA & Business Case specific awareness and training material focussed on the use of the Reference Material. The Training Material (modules) will be prepared in a systematic way, identifying the target audience(s) to define the expertise level, the material will be tested on small scale prior to roll-out and feedback in use will be monitored.	16/03/2011	Clarifications required
16.06.06	D21-001	Cross-TA, CBA and Business Case Training and Coaching	Reports on the cross-TA and CBA & Business Case Training Material delivery to WP4-15 through training webinar and e-learning. It will present the status of all CBA & Business Case training activities (TA Training Plan) and will provide an overview of what has been achieved during the period in question, and will reference the outputs that have been produced by the 16.06.06 team in relation to coaching of WP4-15 personnel.	11/03/2011	No reservation (P)
16.06.06	D22-001	Validated improvements to BC & CBA practices	Validated CBA & BC R&D improvements (Methodology, processes, tools...) following the identification of CBA & BC R&D needs (see 16.06.06.D04) and their prioritisation and implementation). The assessment of the macro-economic and societal benefits of SESAR is included in this deliverable. This assessment is to be completed in 2011.	11/03/2011	No reservation (P)

## Work Package B

Project	Deliverable Code	Deliverable Name	Deliverable Description	Deliverable Handover Date	Assessment Decision
B.04.02	D04	ConOps: Accompanying documents, version 1	Accompanying documents that describe in more detail certain areas of special interest, e.g. CNS procedures (use of CNS capabilities) etc.	21/10/2011	Clarifications required
B.04.03	D32	ADD Step 1		30/11/2011	to be assessed
B.04.03	D33	ADD Step 2-3		30/11/2011	to be assessed
B.04.03	D35	Service Approach Report		18/11/2011	Clarifications required
B.05	D10	Review of 1st Ed Performance Framework	This document will set out the reviewed Performance Framework developed by WP B4.1.	20/06/2011	No reservation

## Work Package C

Project	Deliverable Code	Deliverable Name	Deliverable Description	Deliverable Handover Date	Assessment Decision
C.02	D01	Process for performance/deployment planning, financial incentives and reporting [DC.2.01] produced by T3.1 ù Process description and maintenance	Process description and maintenance, will describe the overall C.2 process and relationships within WP C with C.1, C.3 and with B1.4 and 16.6.6.	29/07/2011	to be assessed

C.02	D06-001	European Deployment Plan for Short/Medium Term Scenario (pan-European, Regional and National) per stakeholder group	This deliverable at ATM Master Plan level 3 will as a starting point, correspond to the scope of the current ESSIP European Implementation Plan.	18/08/2011	No reservation (P)
C.03	D02	Standardisation Roadmap Development and Maintenance Process	Describes the process necessary to identify standardisation material considered as necessary to support timely implementation of the objectives described in the European ATM Master Plan. Addresses the process necessary both the development of the Standardisation Roadmap and Standards Development Plan.	28/07/2011	Clarifications required
C.03	D03	Regulatory Roadmap Development and Maintenance Process	Describes the process necessary to identify regulatory material considered as necessary to support timely implementation of the objectives describe int he European ATM Master Plan. Addresses the process necessary both the development of the Regulatory Roadmap and Regulatory Development Plan.	28/07/2011	No reservation