

The background is a dark blue sky with a faint, glowing map of Europe. A large commercial airplane is shown in the upper right, flying towards the top right corner, leaving three thick, white, parallel smoke trails that stretch diagonally across the lower half of the image. Several yellow stars of varying sizes are scattered across the upper left and center. Two green stars are in the upper right. The text 'SESAR' is in large, white, bold, sans-serif capital letters. Below it, 'DEPLOYMENT MANAGER' is in smaller, white, bold, sans-serif capital letters.

# SESAR

DEPLOYMENT MANAGER

**PROPOSAL  
FOR UPDATE**

**DEPLOYMENT  
PROGRAMME 2016  
ANNEXES**

30<sup>th</sup> September 2016

LET'S DELIVER TOGETHER





# **Deployment Programme 2016 (DP 2016)**

**Annex A  
Annex B  
Annex C  
Annex D**

**FPA MOVE/E2/2014-717/SESAR FPA  
SGA MOVE/E2/SUB/2015-467/SI2.724359  
Milestone M1.3**

**30<sup>th</sup> September 2016**

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# PROJECT VIEW PROJECTS' DETAILS



## Annex A – Project view - Projects' details

### 1. CEF Call 2014

#### AF 1 Extended Arrival Management & PBN in high density TMA

The following table encompasses the list of implementation initiatives associated to ATM Functionality #1 that were awarded under the 2014 CEF Transport Calls for Proposal.

2014 CEF Call Designator	Title	Family	IP Description Page Number
083AF1	AMAN extended to en-route	1.1.2	4
104AF1	Lower Airspace Optimization	1.1.2	5
007AF1	Performance Based Navigation (PBN) implementation in Vienna (LOWW)	1.2.1	6
013AF1	Implementation of RNP Approaches with Vertical Guidance at the Belgian civil aerodromes within the Brussels TMA	1.2.1	6
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061AF1a	RNP APCH Implementation in Palma de Mallorca	1.2.1	8
060AF1	ENAIRe reference geographic database	1.2.2	9
065AF1	ENAV Geographic DB for Procedure Design	1.2.2	9
091AF1	Enhanced Terminal Airspace (TMA) using RNP-Based Operations	1.2.3	10
107AF1	First phase of RNAV1 and RNP-APCH approaches Amsterdam Schiphol (EHAM)	1.2.3	11
119AF1	Manchester TMA Re-Development	1.2.3	12
120AF1	London Airspace Management Programme (LAMP)	1.2.3	13

**Family 1.1.2 – AMAN upgrade to include Extended Horizon function**

<b>083AF1 – AMAN extended to en-route</b>			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	30/06/2017
<b>Project Leader</b>	EUROCONTROL / Network Manager		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.1	Family 1.1.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Upgrade NM systems to cope with extended AMAN requirements.</li> <li>• Introduce in the network view and the collaborative NOP, the information managed and shared with NM system by local extended AMAN systems (from airports / ANSP's where available)</li> <li>• Support the network coordination of extended AMAN functions and provide, if necessary, the network view on extended AMAN measures.</li> </ul> <p>The project is a key contributor to the following Strategic Objectives mentioned in the Network Strategy Plan (NSP):</p> <ul style="list-style-type: none"> <li>• SO 4: Plan optimum capacity and flight efficiency</li> <li>• SO 5: Facilitate business trajectories and cooperative traffic management</li> <li>• SO 6: Fully integrate airport and network operations</li> </ul>		
<b>Interdependencies</b>	-		
<b>Synchronisation</b>	With Airspace Users, ANSPs, EUROCONTROL, ECTL/NM		
<b>Links</b>	AF4 NOP		
<b>NM Links</b>	<b>NSP:</b> Not assessed <b>NOP:</b> Not assessed		



104AF1 – Lower Airspace optimization			
<b>Start Date</b>	01/02/2015	<b>End Date</b>	30/06/2016
<b>Project Leader</b>	LFV		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.1	Family 1.1.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• This project aims to contribute to the PCP AF-1 Extended AMAN and PBN in high density TMAs, through the development and implementation of short term improvements for Stockholm TMA and the development of a roadmap for long term implementation.</li> <li>• A complete set up of requirements for the design and use of the future terminal airspace for Stockholm</li> <li>• A baseline and a defined long term forecast</li> <li>• Well defined KPIs for the baseline and the future</li> <li>• Implementation of short term measures within Stockholm TMA</li> <li>• A long term implementation Plan (What, When) with the main purpose to:               <ul style="list-style-type: none"> <li>◦ Increase the general efficiency of operations in lower airspace (more efficient route structure, better use of the available space, better planning of movements)</li> <li>◦ Specifically increase efficiency by the removal of sub-optimal solutions currently required to ensure safety, e.g. during missed approaches</li> <li>◦ Reduce environmental impact</li> </ul> </li> </ul>		
<b>Interdependencies</b>	Subsequent Project for the long term optimization of the Lower Airspace		
<b>Synchronisation</b>	With Airspace Users, Airports, ANSPs, Military		
<b>Links</b>	AF1, Sub AF 1.2, Family 1.2.3 AF 3		
<b>NM Links</b>	<b>NSP:</b> SO 6/5 <b>NOP:</b> None		

**Family 1.2.1 – RNP APCH with vertical guidance**

<b>007AF1 – Performance Based Navigation (PBN) implementation in Vienna (LOWW)</b>			
<b>Start Date</b>	01/03/2014	<b>End Date</b>	30/12/2016
<b>Project Leader</b>	Austro Control		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.2	Family 1.2.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• 2014 RNP AR Procedures to Runway 16 LOWW for noise abatement purposes implemented</li> <li>• 2015 feasibility study for open PBN transitions to final approach conducted</li> <li>• 2015 night SIDs on PBN basis implemented</li> <li>• 2016 one LPV (SBAS) approach in LOWW implemented</li> </ul>		
<b>Interdependencies</b>	006AF5 ATM Data Quality (ADQ)		
<b>Synchronisation</b>	With Airspace Users, Airports, ANSPs, Military		
<b>Links</b>	AF1, Sub AF 1.2 Family 1.2.2, Family 1.2.3		
<b>NM Links</b>	<p><b>NSP:</b> SO 6/5</p> <p><b>NOP:</b> Capacity constraints due to environmental obligations with regard to RWY usage plan and SID routings. Enhanced DEP spacing.</p>		

<b>013AF1 – Implementation of RNP Approaches with Vertical Guidance at the Belgian civil aerodromes within the Brussels TMA</b>			
<b>Start Date</b>	01/01/2015	<b>End Date</b>	13/09/2018
<b>Project Leader</b>	Belgocontrol		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.2	Family 1.2.1
<b>Project Objective</b>	<p>The main objective of this project is to:</p> <ul style="list-style-type: none"> <li>• Achieve compliancy with ICAO AR37.11, EC Part-AUR (currently being developed at EASA) and Commission Implementing Regulation (EU) No 716/2014 Annex 1.</li> <li>• Implement Required Navigation Performance (RNP) Approaches (Lateral Navigation/Vertical Navigation (LNAV/VNAV) and Localizer Performance with Vertical guidance (LPV) minima) on all instrument runway ends of Brussels Airport and Antwerp Airport</li> </ul>		



<b>Interdependencies</b>	-
<b>Synchronisation</b>	With Airspace Users, Airports, ANSPs, Military
<b>Links</b>	AF1, Sub AF 1.2, Family 1.2.2
<b>NM Links</b>	<b>NSP:</b> SO 6/5, SO 9/4 <b>NOP:</b> None

<b>051AF1 – Required Navigation Performance Approaches at CDG Airport with vertical guidance</b>			
<b>Start Date</b>	01/07/2014	<b>End Date</b>	01/10/2017
<b>Project Leader</b>	DSNA		
<b>Contributors</b>	Société Air France		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.2	Family 1.2.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>To implement RNP APCH with LPV minima and with LNAV/VNAV minima for Runway 08L/26R</li> <li>To equip 51 B777 aircraft of Air France with LNAV/VNAV capability</li> <li>To implement RNP APCH with LPV minima and with LNAV/VNAV minima for Runway 09L/27R</li> <li>To maintain maximum CDG Airport Runway Throughput when one ILS equipment is not available by ensuring independent triple parallel approaches capability between CDG and Le Bourget airports</li> </ul> <p>The associated indicators are :</p> <ul style="list-style-type: none"> <li>For objective 1 : Publication of the procedures (source : French AIP)</li> <li>For objective 2 : Number of flights/h in case of ILS outage compared to the flight average</li> </ul>		
<b>Interdependencies</b>	Subsequent Projects for Required Navigation Performance Approaches at other French airports		
<b>Synchronisation</b>	With Airspace Users, Airports, ANSPs, Military		
<b>Links</b>	AF1, Sub-AF 1.2, Family 1.2.2 AF1, Sub-AF 1.2, Family 1.2.3 AF1, Sub-AF 1.2, Family 1.2.4		
<b>NM Links</b>	<b>NSP:</b> SO 6/5, SO 9/4 <b>NOP:</b> None		

061AF1a – Required Navigation Performance Approach Implementation in Palma de Mallorca			
<b>Start Date</b>	01/11/2015	<b>End Date</b>	03/07/2017
<b>Project Leader</b>	ENAIRE		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.2	Family 1.2.1
<b>Project Objective</b>	<p>The main objective of this project is to improve the precision of the approach trajectories and to develop and implement fuel efficient and environmental friendly procedures for approach in this high density TMA airport. The new RNP APCH procedures will help increase the accessibility by means of RNP APCH to LPV minima procedures (using SBAS), in combination with LNAV and LNAV/VNAV minima for those operators not equipped with SBAS technology. These procedures will make operations at these sites more efficient and profitable, thus enhancing the use of the airports and saving operational costs, both for aircraft and airport operators (AENA).</p> <p>Specifically, the objectives of this project are:</p> <ul style="list-style-type: none"> <li>• Reduce the missed-approach rate when using non-precision approach runway headers for landing.</li> <li>• Increase safety by enabling straight approach procedures when not possible by means of current nav aids infrastructure.</li> <li>• Reduce costs for Aircraft Operators (AOs) whenever an airport change must be done due to operational restrictions at destination airport.</li> <li>• Enhance airports and AOs business types by means of allowing broader kinds of flying activities at the airports.</li> </ul> <p>Phase 1:</p> <ul style="list-style-type: none"> <li>• Implementation of RNP Approaches in Palma de Mallorca</li> </ul> <p>Phase 2:</p> <ul style="list-style-type: none"> <li>• Implementation of RNP Approaches in Barcelona</li> <li>• Implementation of RNP Approaches in Madrid</li> </ul>		
<b>Interdependencies</b>	060AF1 ENAIRE reference Geographic Database		
<b>Synchronisation</b>	With Airspace Users, Airports, ANSPs, Military		
<b>Links</b>	-		
<b>NM Links</b>	<b>NSP:</b> SO 6/5 <b>NOP:</b> None		



**Family 1.2.2 – Geographic Database for procedure design**

<b>060AF1 – ENAIRE reference geographic database (Family 1.2.2)</b>			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	31/12/2017
<b>Project Leader</b>	ENAIRE		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.2	Family 1.2.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>The project will generate an ENAIRE reference dataset structure and set up the managing processes to maintain the information up to date with authoritative sources reference data.</li> <li>Procedure design tools will be updated to make use of this database content; digital cartography (terrain and obstacles) and aeronautical data defining instrumental manoeuvres from authoritative sources with required quality and integrity.</li> <li>To achieve the required high levels of integrity the Spanish AIS provider will participate in the data provision and management processes.</li> <li>To populate the database with full datasets for LEMD, LEBL and LEPA TMA's.</li> </ul>		
<b>Interdependencies</b>	061AF1 - RNP APCH Implementation in Palma de Mallorca		
<b>Synchronisation</b>	No		
<b>Links</b>	AF5 ITY ADQ		
<b>NM Links</b>	<b>NSP:</b> SO 6/5 <b>NOP:</b> Not applicable		

<b>065AF1 – ENAV Geographic DB for Procedure Design</b>			
<b>Start Date</b>	02/01/2014	<b>End Date</b>	31/12/2016
<b>Project Leader</b>	ENAV		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.2	Family 1.2.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>To upgrade the ENAV geographic database for procedure design suite based on two products developed by IDS (SIPRO and eTOD).</li> <li>To implement improvements to the solution currently used and help to execute the Electromagnetic Compatibility analyses to determine the expected radio-</li> </ul>		

	<p>electric performances of the new nav aids equipment (SIPRO).</p> <ul style="list-style-type: none"> <li>• To validate a new technique for automatic feature extraction from Digital Orthophoto with the tool Electronic Terrain and Obstacle Database (eTOD).</li> <li>• To use the tools above to implement with priority RNP operations over the geographic applicability area identified within the PCP: LIRF and LIMC.</li> </ul>
<b>Interdependencies</b>	Subsequent Projects for RNP Approach Implementation at LIRF and LIMC
<b>Synchronisation</b>	-
<b>Links</b>	AF5 ITY ADQ
<b>NM Links</b>	<p><b>NSP:</b> SO 6/5</p> <p><b>NOP:</b> No reported plan for RNP operations.</p>

### Family 1.2.3 – RNP 1 Operations in high density TMAs (ground capabilities)

091AF1 – Enhanced Terminal Airspace (TMA) using RNP-Based Operations			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	31/03/2018
<b>Project Leader</b>	Gatwick Airport Limited		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.2	Family 1.2.2
<b>Project Objective</b>	<p>The objectives of the project for Gatwick Airport are as follows:</p> <ul style="list-style-type: none"> <li>• Introduce point merge</li> <li>• Efficient BOGNA Standard Instrument Departure (SID) Route</li> <li>• Dual Precision Area Navigation (P-RNAV) routes with easterly and westerly arrival and departure routes to runway (RWY) 26 and 08, providing rolling respite</li> <li>• Increase RWY capacity by introducing ADNID SID</li> <li>• Re-design SIDs and STARs to meet RNP specifications</li> </ul> <p>As a result of these changes, the project would deliver the following benefits:</p> <ul style="list-style-type: none"> <li>• Improvements in arrivals and departures stability</li> <li>• Significant improvement in operational resilience</li> <li>• Reduced fuel burn for airlines</li> <li>• Reduced CO2 emissions (reduced track mileage) – in line with Gatwick Airport and NATS carbon reduction targets</li> <li>• Reduced noise impact for people on the ground through provision of rotating respite</li> <li>• Delivery against requirements of S106 Legal Agreement</li> </ul>		



	<ul style="list-style-type: none"> <li>Support the delivery of NATS 10% carbon emissions reduction target</li> </ul> <p>The project is divided into two Phases:</p> <ul style="list-style-type: none"> <li>Phase 1: Enhanced terminal airspace using P-RNAV for all Standard Instrument Routes.</li> <li>Phase 2: Enhanced terminal airspace to meet RNP specifications (out of scope of this INEA Call).</li> </ul>
<b>Interdependencies</b>	<p>Phase 2 of this project</p> <p>117AF5 Implementation of Initial SWIM Capability (AF5) across NATS, task 4</p> <p>120 AF1 London Airspace Management Program (LAMP)</p>
<b>Synchronisation</b>	With Airspace Users, ANSPs
<b>Links</b>	<p>AF1, s-AF 1.2, Family 1.2.2</p> <p>AF1, s-AF 1.2, Family 1.2.4</p>
<b>NM Links</b>	<p><b>NSP:</b> SO 6/5, SO 9/4</p> <p><b>NOP:</b> ERNIP indirectly mentions this project.</p>

107AF1 – First phase of RNAV1 and RNP-APCH approaches Amsterdam Schiphol			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	01/03/2017
<b>Project Leader</b>	LVNL		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.2	Family 1.2.3
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Publication and operational implementation of an RNAV1 fixed inbound route to RWY 36R from ARTIP.</li> <li>Publication and operational implementation of an RNAV1 fixed inbound route to RWY 18C from ARTIP to be flown as CDO.</li> <li>Publication and operational implementation of an RNP APCH procedure to RWY 22 with vertical guidance.</li> </ul>		
<b>Interdependencies</b>	Second phase of RNAV1 and RNP-APCH approaches Amsterdam Schiphol (EHAM)		
<b>Synchronisation</b>	With Airspace Users, Airports, ANSPs		
<b>Links</b>	AF 1; Sub AF 1.2; Family 1.2.3		
<b>NM Links</b>	<p><b>NSP:</b> SO 6/5, SO 9/4</p> <p><b>NOP:</b> None</p>		

119AF1 – Manchester TMA Re-Development			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	30/11/2018
<b>Project Leader</b>	NATS		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.2	Family 1.1.2
<b>Project Objective</b>	<p>Introduction of RNAV1 SIDs (Standard Instrument Departure) and STARs (Standard Arrival Route) within the existing Manchester Terminal Manoeuvring Area (MTMA) in order to systemise the airspace infrastructure.</p> <p>The systemised airspace will :</p> <ul style="list-style-type: none"> <li>• Exploit existing and future aircraft capabilities to fly precise trajectories (through use of Performance Based Navigation – PBN), enabling greater flexibility in airspace design through closely spaced arrival and departure routes independent of ground-based navigation aids.</li> <li>• Offer greater resilience against human error (pilot or controller), with fewer interactions between routes and a reduction in tactical interaction by controllers. <ul style="list-style-type: none"> <li>◦ Reduced tactical intervention will offer a corresponding increase in capacity</li> </ul> </li> <li>• Locate routes where they best meet the needs of airports and flight profiles, making far better use of finite terminal airspace.</li> <li>• Save fuel and reducing noise by enabling continuous descent approaches (CDAs) and continuous climb departures (CCDs) to be flown from/to significantly higher altitudes than available today</li> </ul> <p>The revised RNAV route infrastructure will align with LAMP (London Airspace Management Programme) requirements and maximise the benefits within the majority of the UK TMA.</p> <p>The Project is split into two phases:  <u>Phase 1: Project Definition (PD) from Jan 2012 – December 2016</u>  Goal: Develop PBN designs for the Manchester TMA airspace, and surrounded impacted areas for Consultation in November 2015 and validation by December 2016  <u>Phase 2: Implementation from December 2016 – Q4 2018.</u>  Goal: Implement the revised NTCA designs into Operations subject to approval of CAA Consultation</p>		
<b>Interdependencies</b>	117AF5 Implementation of Initial SWIM Capability (AF5) across NATS, task 4 120 AF1 London Airspace Management Program (LAMP)		
<b>Synchronisation</b>	With Airspace Users, Airports, ANSPs		

<b>Links</b>	-
<b>NM Links</b>	<b>NSP:</b> SO 6/5; SO 9/4 <b>NOP:</b> Airport capacity constrained by TMA/Approach

<b>120AF1 – London Airspace Management Programme (LAMP)</b>			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	31/04/2016
<b>Project Leader</b>	NATS		
<b>Contributors</b>	British Airways, Heathrow Airport Limited		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.2	Family 1.2.3
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Produce systemised airspace design for the London TMA by using PBN-based procedures and STARs facilitating RNP-1 SIDs where required at London Airports</li> <li>Introduce greater efficiencies in the design of airspace to accommodate forecast demand and also facilitate Continuous Climb and Descent Operations minimising delay and realising fuel savings</li> </ul> <p>This application concerns the first implementation of the LAMP programme (Phase 1a), implementing that part of the London TMA affecting London City Airport and higher level re-sectorization and airspace modification within the TMA.</p> <p>The LAMP project will be delivered in a phased approach; the first deployment (Phase 1a) being delivered prior to the implementation of the key enabling project of raising the Transition Altitude (TA) to 18,000 feet from the current 6,000 feet. Subsequent phases of LAMP will be deployed after the TA change in 2018.</p>		
<b>Interdependencies</b>	Subsequent Phases of this Project		
<b>Synchronisation</b>	With Airspace Users, Airports, ANSPs, Military		
<b>Links</b>	<ul style="list-style-type: none"> <li>117AF5 Implementation of Initial SWIM Capability (AF5) across NATS, task 4</li> <li>091AF1 Enhanced Terminal Airspace using RNP based Operations (Gatwick)</li> </ul>		
<b>NM Links</b>	<b>NSP:</b> SO 6/5; SO 9/4 <b>NOP:</b> LAMP project is contained in NOP. The project introduces RNAV 1 in preparation of future RNP1 introduction.		

## AF2 Airport integration and throughput

The following table encompasses the list of implementation initiatives associated to ATM Functionality #2 that were awarded under the 2014 CEF Transport Calls for Proposal.

2014 CEF Call Designator	Title	Family	IP Description Page Number
008AF2	External Gateway System (EGS) implementation	2.1.2	16
048AF2	SYSAT@CDG	2.1.2	16
049AF2	SYSAT@NCE	2.1.2	17
050AF2	SYSAT@ORY	2.1.2	18
057AF2a	Fulfillment of the prerequisite EFS for the PCP AF2 Subfunctionality: Airport Integration and Throughput (2014-2016)	2.1.2	18
108AF2	Electronic Flight Strips at Schiphol TWR	2.1.2	20
011AF2	Decision Management (CDM) fully implemented	2.1.3	21
025AF2	TSAT to the Gate	2.1.3	21
026AF2	Evolution CDM-CDG	2.1.3	22
031AF2	Data exchanges with the Air Navigation Service Provider	2.1.3	23
032AF2	Data exchanges with the Network Manager Operations Center	2.1.3	23
033AF2	Data exchanges with COHOR	2.1.3	24
086AF2	A-CDM Extension	2.1.3	25
109AF2	Airport CDM implementation Schiphol	2.1.3	25
129AF2	CDM-ORLY	2.1.3	26
136AF2	A-CDM Optimization	2.1.3	27
024AF2	SAIGA	2.1.4	28
099AF2	Preparation for AOP	2.1.4	29
023AF2	SMAN-Vehicle	2.2.1	30
042AF2a	A-SMGCS Düsseldorf	2.2.1	30
058AF2a	Fulfillment of the prerequisite A-SMGCS 2 for the PCP AF2 Subfunctionality: Airport Integration and Throughput (2014-2016)	2.2.1	31
064AF2	ENAV Airport System upgrade	2.2.1	32
103AF2	FT 2.2.1 Standardization of A-SMGCS	2.2.1	33
115AF2	A-SMGCS Renewal of the Surface Movement Radar (BORA)	2.2.1	34



<b>2014 CEF Call Designator</b>	<b>Title</b>	<b>Family</b>	<b>IP Description Page Number</b>
<b>130AF2</b>	<b>BOREAL-Orly</b>	<b>2.2.1</b>	<b>35</b>
<b>137AF2</b>	<b>Enhancement of Airport Safety Nets at Stockholm Arlanda Airport</b>	<b>2.2.1</b>	<b>35</b>
<b>094AF2</b>	<b>Time-based separation for Final Approach</b>	<b>2.3.1</b>	<b>36</b>
<b>097AF2</b>	<b>Time Based Separation</b>	<b>2.3.1</b>	<b>37</b>
<b>027AF2</b>	<b>SMAN-Airport</b>	<b>2.4.1</b>	<b>38</b>
<b>087AF2</b>	<b>Apron Controller Working Position (Part 1 of 2 )</b>	<b>2.4.1</b>	<b>39</b>
<b>018AF2</b>	<b>Enhancement of Airport Safety Nets for Brussels Airport (EBBR)</b>	<b>2.5.1</b>	<b>40</b>
<b>054AF2</b>	<b>CDG2020 Step1</b>	<b>2.5.1</b>	<b>41</b>
<b>088AF2</b>	<b>Airport Safety Net Mobile Detection of Air Crash Tenders</b>	<b>2.5.1</b>	<b>42</b>
<b>092AF2</b>	<b>Enhanced Departure Management integrating airfield surface assets</b>	<b>2.5.1</b>	<b>42</b>
<b>100AF2</b>	<b>Preparation for SMAN</b>	<b>2.5.1</b>	<b>43</b>
<b>022AF2</b>	<b>Vehicle Tracking System (VTS)</b>	<b>2.5.2</b>	<b>44</b>
<b>030AF2</b>	<b>Equipment of ground vehicles to supply the A-SMGCS</b>	<b>2.5.2</b>	<b>44</b>
<b>135AF2</b>	<b>Ryanair RAAS Programme</b>	<b>2.5.2</b>	<b>45</b>

**Family 2.1.2 – Electronic Flight Strips (EFS)**

<b>008AF2 – External Gateway System (EGS) implementation</b>			
<b>Start Date</b>	25/02/2014	<b>End Date</b>	10/12/2015
<b>Project Leader</b>	Austro Control		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.2
<b>Project Objective</b>	<p>EGS (External Gateway System) will connect the Tower and Approach ATS Units' subsystems DIFLIS (Digital Flight Strip System) and ASTOS (A-SMGCS – Airport Surface Movement and Guidance Control System) to the ATM Data Processing System.</p> <p>The EGS implementation contributes to AF2 of the PCP implementing rule as an enabler for future Electronic Flight Strip, DMAN, CDM and A-SMGCS enhancements.</p> <p>The former ATM Data processing system VAS will be removed for end of life (EOL) reasons.</p>		
<b>Interdependencies</b>	-		
<b>Synchronisation</b>	No		
<b>Links</b>	AF 2; Sub AF 2.2; Family 2.2.1		
<b>NM Links</b>	<b>NSP:</b> SO6/4 & SO6/6 <b>NOP:</b> Yes (Annex 5)		

<b>048AF2 – SYSAT@CDG</b>			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	DSNA		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.2
<b>Project Objective</b>	<p>In all CDG tower facilities (3 ATC + 2 apron cab) and Approach control room</p> <ul style="list-style-type: none"> <li>• introduce Electronic Flight Strip</li> <li>• provide new ASMGCS level 2 tracker with enhanced ground situation display including some level 3/4 functionalities</li> <li>• provide new Air Situation Display</li> <li>• provide new weather information, synoptic display and electronic documentation</li> </ul>		

	<ul style="list-style-type: none"> <li>increase information sharing among ATC actors and Airport handler especially regarding DMAN and CDM processes</li> <li>be ready for SESAR evolution</li> </ul> <p>Phase 1 (2014-2016) : product acquisition and installation preparation Phase 2 (2017-2018): installation in operational rooms</p>
<b>Interdependencies</b>	<ul style="list-style-type: none"> <li>023AF2 - SMAN-Vehicle;</li> <li>026AF2 - Evolutions CDM-CDG;</li> <li>027AF2 - SMAN-Airport;</li> <li>054AF2 - CDG2020 Step1</li> </ul>
<b>Synchronisation</b>	With: Airspace Users; Airports: ANSPs
<b>Links</b>	AF 2; Sub AF 2.1; Family 2.1.1 AF 2; Sub AF 2.2; Family 2.2.1 AF 2; Sub AF 2.3; Family 2.1.2; Family 2.3.1 AF 2; Sub AF 2.4; Family 2.1.2; Family 2.2.1; Family 2.4.1 AF 2; Sub AF 2.5; Family 2.5.1; Family 2.1.2; Family 2.2.1
<b>NM Links</b>	<b>NSP:</b> SO6/6 <b>NOP:</b> A-SMGCS (level 2): Available in TWR and APCH

<b>049AF2 – SYSAT@NCE</b>			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	01/07/2019
<b>Project Leader</b>	DSNA		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.2
<b>Project Objective</b>	<p>In the Tower cab and Approach control room</p> <ul style="list-style-type: none"> <li>provide ASMGCS level 1 capability before full SYSAT deployment</li> <li>introduce Electronic Flight Strip</li> <li>evolve ASMGCS to level 2 with enhanced ground situation display including some level 3/4 functionalities,</li> <li>provide new Air Situation Display,</li> <li>provide new weather information, synoptic display and electronic documentation,</li> <li>be ready for SESAR evolution.</li> </ul> <p>Phase 1 (2014-2016): Acquisition, Deployment preparation Phase 2 (2017-2019): Deployment, Training and transition</p>		
<b>Interdependencies</b>	030AF2 - Equipment of ground vehicles to supply the A-SMGCS		
<b>Synchronisation</b>	With: ANSPs, Airport		
<b>Links</b>	AF 2; Sub AF 2.1; Family 2.1.1 AF 2; Sub AF 2.2; Family 2.2.1 AF 2; Sub AF 2.3; Family 2.1.2; Family 2.3.1		

	AF 2; Sub AF 2.4; Family 2.1.2; Family 2.2.1; Family 2.4.1 AF 2; Sub AF 2.5; Family 2.5.1; Family 2.1.2; Family 2.2.1
<b>NM Links</b>	<b>NSP:</b> SO6/6 <b>NOP:</b> A-SMGCS (level 1): Ongoing Implementation.

050AF2 – SYSAT@ORY			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	01/07/2019
<b>Project Leader</b>	DSNA		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.2
<b>Project Objective</b>	<p>In Tower cab and Approach control room</p> <ul style="list-style-type: none"> <li>• introduce Electronic Flight Strip,</li> <li>• provide new ASMGCS level 2 tracker with enhanced ground situation display including some level 3/4 functionalities,</li> <li>• provide new Air Situation Display,</li> <li>• provide new weather information, synoptic display and electronic documentation,</li> <li>• increase information sharing among ATC actors and Airport handler especially regarding DMAN and CDM processes,</li> <li>• be ready for SESAR evolution.</li> </ul> <p>Phase 1 (2014-2016)</p> <ul style="list-style-type: none"> <li>• ACQUISITION</li> <li>• SYSTEM ADAPTATION</li> </ul> <p>Phase 2 (2017-2019): IMPLEMENTATION</p>		
<b>Interdependencies</b>	<ul style="list-style-type: none"> <li>• 023AF2 – SMAN-Vehicle;</li> <li>• 129AF2 – CDM-Only;</li> <li>• 130AF2 – BOREAL-Only</li> </ul>		
<b>Synchronisation</b>	With Airspace Users, Airports, ANSPs		
<b>Links</b>	AF 2; Sub AF 2.1; Family 2.1.1 AF 2; Sub AF 2.2; Family 2.2.1 AF 2; Sub AF 2.3; Family 2.1.2; Family 2.3.1 AF 2; Sub AF 2.4; Family 2.1.2; Family 2.2.1; Family 2.4.1 AF 2; Sub AF 2.5; Family 2.5.1; Family 2.1.2; Family 2.2.1		
<b>NM Links</b>	<b>NSP:</b> SO 6/6 <b>NOP:</b> A-SMGCS not reported.		

057AF2a – Fulfillment of the prerequisite EFS for the PCP AF2 Sub-Functionality: Airport Integration and Throughput (Phase A)			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	31/12/2016
<b>Project Leader</b>	ENAIRE		



<b>Contributors</b>	-
<b>Main AF/Sub-AF/Family</b>	AF2                      S-AF 2.1                      Family 2.1.2
<b>Project Objective</b>	<p>Partial fulfillment of the IR 716/2014 “Pilot common project”, and in special the AF2 functionality which identifies the use of EFS (“Electronic Flight Strip” in the Tower domain) as a prerequisite for the following functions:</p> <ul style="list-style-type: none"> <li>• Departure management synchronized with pre-departure sequencing</li> <li>• Departure management integrating surface management constraints</li> <li>• Time based separation</li> <li>• Automated assistance to controller for surface movement planning and routing</li> <li>• Airport safety nets</li> </ul> <p>Family 2.1.2 Electronic Flight Strip (EFS). Electronic Strip where all the information regarding instructions controller/pilot about flight plan, surveillance, etc., are integrated. The tool will ease the data input and display for the use of advanced tools like DMAN, A-SMGCS and CDM.” There will be two EFS operation modes, according to the operational complexity of the airport:</p> <ol style="list-style-type: none"> <li>1. Based on lists. The information contained in the flight strip will be available in different lists and windows of the system</li> <li>2. Based on labels. In airports with surface surveillance systems, the relevant flight strip information will be displayed (apart from the lists and windows) in the corresponding flight label</li> </ol> <p>It will require the development of a dynamic simulation system for training purposes.</p> <p>The following Spanish airports will implement Electronic Flight Strip:</p> <ol style="list-style-type: none"> <li>1. Adolfo Suárez Madrid-Barajas</li> <li>2. Barcelona El Prat</li> <li>3. Palma de Mallorca</li> </ol> <p>This proposal includes all the development activities, to be carried out from 2014 to 2016, prior to the operational validation of the new function. The operational validation and deployment of the functionality in the above mentioned airports will be performed 2017 onwards.</p>
<b>Interdependencies</b>	-
<b>Synchronisation</b>	With Airspace Users, Airports, ANSPs
<b>Links</b>	AF 2; Sub AF 2.2; Sub AF 2.3; Sub AF 2.4; Sub AF 2.5; Family 2.4.1
<b>NM Links</b>	<b>NSP:</b> SO 6/5 & SO 6/6 <b>NOP:</b> None

108AF2 – Electronic Flight Strips at Schiphol TWR			
<b>Start Date</b>	01/09/2014	<b>End Date</b>	01/01/2018
<b>Project Leader</b>	LVNL		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Digital flight data processing at Schiphol Towers and the Tower simulator</li> <li>Safer and more efficient handling of ground traffic</li> <li>Efficient and flexible data distribution and data sharing</li> <li>Enabler for safety support systems</li> <li>Enabler for CDM extension of functionalities</li> </ul> <p><b>Description:</b></p> <ul style="list-style-type: none"> <li>Work Package 1: Project Management</li> <li>Work Package 2: Tender Organisation</li> <li>Work Package 3: Electronic Flight Strip Application</li> <li>Work Package 4: Console Adjustments</li> <li>Work Package 5: Transition</li> </ul> <p>The overall expected results after EFS is operational with particular reference to the ATM Performance contribution:</p> <ul style="list-style-type: none"> <li>A 'digital' tower environment with a digital data flow (so without paper flight strips);</li> <li>Identical tower working positions with cleaned up and simplified consoles;</li> <li>A flexibility gain in allocating functions to working positions and extending the amount of working positions;</li> <li>A quieter working environment (speechless co-ordination, less standing up and walking in the tower, printing noises, etc.).</li> </ul> <p>These results will lead to less working errors (thus an increase in safety) and a more efficient use of both data and ATC personnel in the ATM process at the tower. It is an enabler for a lot of planned future activities like safety net functions, conflict detection, data sharing, enhanced CDM, automation of specific functions, enhanced A-SMGCS, etc.</p>		
<b>Interdependencies</b>	109AF2 - Airport CDM implementation Schiphol		
<b>Synchronisation</b>	With Airports		
<b>Links</b>	AF 2; Sub AF 2.1; Sub AF 2.3; Sub AF 2.2; Sub AF 2.5; Family 2.1.1; Family 2.1.3; Family 2.2.1; Family 2.5.1		
<b>NM Links</b>	<b>NSP:</b> SO6/5 & SO6/6 <b>NOP:</b> Electronic Strips: Ongoing Implementation in TWR		

**Family 2.1.3 – Basic A-CDM**

<b>011AF2 – Collaborative Decision Management (CDM) fully implemented</b>			
<b>Start Date</b>	17/07/2014	<b>End Date</b>	29/08/2016
<b>Project Leader</b>	Austro Control		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.3
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• CDM fully implemented in LOWW and certified by Eurocontrol</li> <li>• Process organisation established, considering all stakeholders involved and guaranteeing a sustainable CDM operation</li> <li>• Meaningful KPIs are constantly measured and used for improvement</li> <li>• Additional tasks contain Enhanced De-icing and the guarantee of a Degraded Mode in case of partial system failure</li> </ul>		
<b>Interdependencies</b>	077AF4 - Interactive Rolling NOP		
<b>Synchronisation</b>	With: ECTL/NM		
<b>Links</b>	AF 2; AF 4; Sub AF 2.1; Sub AF 4.2; Family 2.1.1; Family 2.1.4; Family 4.2.2; Family 4.2.3		
<b>NM Links</b>	<b>NSP:</b> SO6/4 <b>NOP:</b> Yes (Annex 5)		

<b>025AF2 – TSAT to the Gate</b>			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	31/12/2016
<b>Project Leader</b>	Aéroports de Paris: CDG Airport & ORLY Airport		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.3
<b>Project Objective</b>	<p>The use of VDGS/Displays is driven by 2 types of needs:</p> <ul style="list-style-type: none"> <li>• Consolidate the Pre-departure Sequence and enhance predictability by implementing highly recommended milestones: In-bloc (AIBT - milestone n°7 - Airport CDM Manual V4) and Off-bloc (AOBT - milestone n°15 - Airport CDM Manual V4).</li> <li>• Display key A-CDM information, such as TSAT, to all stakeholders located at the Gate: Airlines crews, Ground handler and Airport operator.</li> </ul> <p>Visual Display Guidance System (VDGS) units and Displays</p>		

address sub AF 2.1 and associated Families: <ul style="list-style-type: none"> <li>• 2.1.1 Consolidate Initial DMAN capabilities</li> <li>• 2.1.3 Enhance Basic A-CDM</li> <li>• 2.1.4 Consolidate Initial Airport Operational Plan (AOP)</li> </ul> Number of stands concerned:					
	<table> <tr> <th>First Phase (2014 – 2016)</th><th>Second phase (2017 – 2019)</th></tr> <tr> <td> <ul style="list-style-type: none"> <li>• CDG               <ul style="list-style-type: none"> <li>◦ 64 VDGS</li> <li>◦ 34 Displays</li> </ul> </li> <li>• ORLY               <ul style="list-style-type: none"> <li>◦ 36 VDGS</li> <li>◦ 16 Displays</li> </ul> </li> </ul> </td><td> <ul style="list-style-type: none"> <li>• CDG               <ul style="list-style-type: none"> <li>◦ 256 VDGS</li> <li>◦ 136 Displays</li> </ul> </li> <li>• ORLY               <ul style="list-style-type: none"> <li>◦ 144 VDGS</li> <li>◦ 64 Displays</li> </ul> </li> </ul> </td></tr> </table>	First Phase (2014 – 2016)	Second phase (2017 – 2019)	<ul style="list-style-type: none"> <li>• CDG               <ul style="list-style-type: none"> <li>◦ 64 VDGS</li> <li>◦ 34 Displays</li> </ul> </li> <li>• ORLY               <ul style="list-style-type: none"> <li>◦ 36 VDGS</li> <li>◦ 16 Displays</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• CDG               <ul style="list-style-type: none"> <li>◦ 256 VDGS</li> <li>◦ 136 Displays</li> </ul> </li> <li>• ORLY               <ul style="list-style-type: none"> <li>◦ 144 VDGS</li> <li>◦ 64 Displays</li> </ul> </li> </ul>
First Phase (2014 – 2016)	Second phase (2017 – 2019)				
<ul style="list-style-type: none"> <li>• CDG               <ul style="list-style-type: none"> <li>◦ 64 VDGS</li> <li>◦ 34 Displays</li> </ul> </li> <li>• ORLY               <ul style="list-style-type: none"> <li>◦ 36 VDGS</li> <li>◦ 16 Displays</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• CDG               <ul style="list-style-type: none"> <li>◦ 256 VDGS</li> <li>◦ 136 Displays</li> </ul> </li> <li>• ORLY               <ul style="list-style-type: none"> <li>◦ 144 VDGS</li> <li>◦ 64 Displays</li> </ul> </li> </ul>				
<b>Interdependencies</b>	<ul style="list-style-type: none"> <li>• 024AF2 - SAIGA;</li> <li>• 026AF2 - Evolutions CDM-CDG;</li> <li>• 027AF2 - SMAN-Airport;</li> <li>• 129AF2 - CDM-Only</li> </ul>				
<b>Synchronisation</b>	With: Airspace Users, Airports, ANSPs, ECTL/NM				
<b>Links</b>	AF 2; Sub AF 2.1; Family 2.1.1; Family 2.1.4 AF 2; Sub AF 2.5; Family 2.5.1				
<b>NM Links</b>	<b>NSP:</b> SO 6/2 & SO 6/4 <b>NOP:</b> None				

026AF2 – Evolutions CDM-CDG			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	31/12/2016
<b>Project Leader</b>	Aéroports de Paris: Paris CDG Airport		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.3
<b>Project Objective</b>	Upgrade CDM@CDG airport tools (PDS and De-icing tool) to be more efficient and to enhance actual functionalities to respond to the requirements of operational staff. It directly responds to the pre requisite S-AF 2.1 though Family 2.1.1 ("initial DMAN capability") and Family 2.1.3 (Basic A-CDM) <ul style="list-style-type: none"> <li>• DPI improvements</li> <li>• TSAT stabilization</li> <li>• PLN / Airport slot reconciliation</li> <li>• PDS/DMAN interface</li> <li>• Training infrastructure</li> <li>• Variable Taxi Time calculation</li> <li>• De-icing tool improvements</li> </ul>		
<b>Interdependencies</b>	<ul style="list-style-type: none"> <li>• 024AF2 - SAIGA;</li> <li>• 025AF2 - TSAT to the Gate;</li> <li>• 027AF2 - SMAN-Airport;</li> <li>• 048AF2 - SYSAT@CDG;</li> </ul>		



<ul style="list-style-type: none"> <li>077AF4 - Interactive Rolling NOP</li> </ul>	
<b>Synchronisation</b>	With: Airspace Users, Airports, ANSPs, ECTL/NM
<b>Links</b>	AF 2; Sub AF 2.1; Family 2.1.1; Family 2.1.2 AF 2; Sub AF 2.2; Family 2.2.1 AF 4; Sub AF 4.2; Family 4.2.2; Family 4.2.3
<b>NM Links</b>	<b>NSP:</b> SO 6/4 <b>NOP:</b> None

031AF2 – Data exchanges with the Air Navigation Service Provider			
<b>Start Date</b>	25/11/2014	<b>End Date</b>	04/07/2017
<b>Project Leader</b>	Aéroports de la Cote d’Azur		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.3
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Implement a new channel for data exchanges between us and the ANSP</li> <li>Improve the data exchanges (quality and quantity)</li> <li>Create a common awareness of all operational situations</li> <li>Through the improvement of the awareness, improve the management of adverse conditions and make the operations more efficient</li> </ul>		
<b>Interdependencies</b>	-		
<b>Synchronisation</b>	With: Airports, ANSPs		
<b>Links</b>	AF 2; Sub AF 2.1; Family 2.1.1; Family 2.1.4		
<b>NM Links</b>	<b>NSP:</b> SO 6/4 <b>NOP:</b> Advanced ATC Tower Implementation planned for 2015; DMAN not available; AMAN available. No reported CDM basic.		

032AF2 – Data exchanges with the Network Manager Operations Center			
<b>Start Date</b>	04/02/2015	<b>End Date</b>	06/05/2016
<b>Project Leader</b>	Aéroports de la cote d’Azur		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.3

<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Be part of the European Network</li> <li>• Improve the real time data exchanges</li> <li>• Improve the operations efficiency at a local level and at a European one</li> <li>• Facilitate the flow and capacity management</li> <li>• Improve the situational awareness</li> <li>• Better anticipation of the different situations</li> <li>• Improve the management of normal and adverse conditions</li> </ul>
<b>Interdependencies</b>	077AF4 - Interactive Rolling NOP
<b>Synchronisation</b>	With: Airports, ANSPs, ECTL/NM
<b>Links</b>	AF 2; Sub AF 2.1; Family 2.1.1; Family 2.1.4 AF 4; Sub AF 4.2; Family 4.2.2; Family 4.2.3
<b>NM Links</b>	<b>NSP:</b> SO 6/4, SO 6/2 <b>NOP:</b> Advanced ATC Tower Implementation planned for 2015; DMAN not available; AMAN available. No reported CDM basic.

### 033AF2 – Data exchanges with COHOR

<b>Start Date</b>	15/09/2014	<b>End Date</b>	15/04/2016
<b>Project Leader</b>	Aéroports de la Cote d’Azur		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.3
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Obtain correct and on-time information for general aviation flights</li> <li>• Make the operations easier in order to better anticipate the management of the resources</li> <li>• Make the whole operations more efficient through an easier way to obtain automatically the information</li> <li>• As general aviation traffic is a big part of our whole traffic, the improvement of the management of this part allow a gain in the management efficiency for the whole traffic</li> </ul>		
<b>Interdependencies</b>	-		
<b>Synchronisation</b>	With: Airports		
<b>Links</b>	AF 2; Sub AF 2.1; Family 2.1.1; Family 2.1.3		
<b>NM Links</b>	<b>NSP:</b> SO 6/4 <b>NOP:</b> Advanced ATC Tower Implementation planned for 2015; DMAN not available; AMAN available. No reported CDM basic.		

086AF2 – A-CDM Extension			
<b>Start Date</b>	01/03/2014	<b>End Date</b>	12/02/2016
<b>Project Leader</b>	Fraport		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.3
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Enhancement of the pre-departure sequencing (PDP Family 2.1.3 Basic A -CDM) by:               <ul style="list-style-type: none"> <li>Considering minimum departure intervals (MDI) on standard instrument departures (SID)</li> <li>Facilitating a demand &amp; capacity balance capability</li> </ul> </li> <li>Implementation of a “de-icing” element enabling Airport CDM for adverse conditions (PDP Family 2.1.3 Basic A-CDM)</li> </ul>		
<b>Interdependencies</b>	077AF4 - Interactive Rolling NOP		
<b>Synchronisation</b>	With ANSP, ECTL / NM		
<b>Links</b>	AF 4; Sub AF 4.2; Family 4.2.2; Family 4.2.3		
<b>NM Links</b>	<b>NSP:</b> SO6/4 <b>NOP:</b> A-CDM available		

109AF2 – Airport CDM implementation Schiphol			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	31/12/2016
<b>Project Leader</b>	Schiphol Nederland B.V. (AAS)		
<b>Contributors</b>	LVNL, KLM		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.3
<b>Project Objective</b>	Airport CDM implementation according to Eurocontrol guidelines consisting of 2 major parts:  Local Airport CDM <ul style="list-style-type: none"> <li>Real time CDM data presentation to pilots and handlers</li> <li>CDM for adverse conditions</li> <li>Development of an HMI presentation for SUC</li> <li>CDM Trials</li> <li>Process and procedure development and implementation</li> <li>(Local) CDM information sharing</li> </ul>		

	Connection to Eurocontrol NMOC <ul style="list-style-type: none"> <li>Connecting the local CDM process to the NMOC</li> <li>allow exchange of DPI messages in accordance with Eurocontrol specifications</li> </ul>
<b>Interdependencies</b>	077AF4 - Interactive Rolling NOP
<b>Synchronisation</b>	With ANSP, ECTL/NM
<b>Links</b>	AF 2; AF 4; AF 5; Sub AF 2.1; Sub AF 2.5; Sub AF 4.2; Sub AF 5.5; Family 2.1.1; Family 2.1.4; Family 2.5.1; Family 4.2.2; Family 4.2.3; Family 5.5.1
<b>NM Links</b>	<b>NSP:</b> SO 6/5 & SO 6/6 <b>NOP:</b> CDM Local Project Manager (PM) established Gap Analysis: completed Memorandum of Understanding: Done Implementation: not finalised

129AF2 – CDM-Only			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	31/12/2016
<b>Project Leader</b>	Airports de Paris: Orly Airport		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.3
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Upgrade PDS for sharing information with DMAN,</li> <li>Implement De-icing tool for improving operational efficiency</li> <li>Share essential information, such TSAT, on the CDM Website for all stakeholders</li> </ul> These functionalities contribute directly to the pre-requisite S-AF 2.1 "Departure Management synchronized with Pre Departure sequencing", through Family 2.1.1 "Initial DMAN capability" and Family 2.1.3 "Basic A-CDM" : <ul style="list-style-type: none"> <li>PDS upgrades / DMAN/PDS interface integration</li> <li>De-icing manager tool upgrades</li> <li>CDM Website upgrades</li> </ul>		
<b>Interdependencies</b>	<ul style="list-style-type: none"> <li>050AF2 - SYSAT@ORY</li> <li>077AF4 - Interactive Rolling NOP</li> </ul>		
<b>Synchronisation</b>	With Airspace Users, Airports, ANSPs, ECTL/NM		
<b>Links</b>	AF 2; Sub AF 2.1; Family 2.1.1; Family 2.1.2 AF 2; Sub AF 2.2; Family 2.2.1 AF 4; Sub AF 4.2; Family 4.2.2; Family 4.2.3		
<b>NM Links</b>	<b>NSP:</b> SO 6/4; SO 6/6 <b>NOP:</b> Advanced ATC Tower implemented. NM will continue to provide support towards A-CDM implementation - planned for Q2 2016.		

136AF2 – A-CDM Optimization			
<b>Start Date</b>	01/01/2015	<b>End Date</b>	31/12/2016
<b>Project Leader</b>	Swedavia		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.3
<b>Project Objective</b>	<p>Although Airport Collaborative Decision Making Optimization Project covers several areas that can be attributed to basic A-CDM the focus is primarily on optimization of "Information Sharing" which is one of the cornerstones in the milestone approach process described in the A-CDM Manual.</p> <p>The detailed purpose of the project is</p> <ul style="list-style-type: none"> <li>• to facilitate cooperation between different organizations while raising the quality of information dissemination at Stockholm Arlanda Airport and at Network Manager Operations Centre (NMOC).</li> <li>• The distribution of information will only be recorded once</li> <li>• Online information will replace the estimated values.</li> <li>• The quality of operational flight data will increase by making data available online</li> <li>• Improve the quality of "Departure Progress Information" to NMOC</li> </ul> <p>The main steps are:</p> <ul style="list-style-type: none"> <li>• Development and introduction a WEB-interface.</li> <li>• Development and introduction of an Flight Operational APP</li> <li>• Develop and introduce a CDM portal</li> <li>• System integration</li> <li>• Introducing Flight information at GATE and STAND</li> </ul>		
<b>Interdependencies</b>	077AF4 - Interactive Rolling NOP		
<b>Synchronisation</b>	With: ECTL/NM		
<b>Links</b>	AF 2; AF 4; AF 5; Sub AF 2.1; Sub AF 2.5; Sub AF 4.2; Sub AF 5.5; Family 2.1.1; Family 2.1.4; Family 2.5.1; Family 4.2.2; Family 4.2.3; Family 5.5.1		
<b>NM Links</b>	<p><b>NSP:</b> SO 6/3 &amp; SO 6/4</p> <p><b>NOP:</b> Local Airport CDM Implementation: Yes.</p> <p>Integration of Airports into the network (DPI, FUM): FUMs are used.</p> <p>DPI Operational Evaluation (testing):</p> <p>Current Status for DPI: Short Delay. Planned for Q1 2015.</p>		



**Family 2.1.4 – Initial Airport Operational Plan (AOP)**

<b>024AF2 – SAIGA</b>			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	31/12/2015
<b>Project Leader</b>	Aéroports de Paris: CDG Airport & ORLY Airport		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.4
<b>Project Objective</b>	Extend the capabilities of the airport resources management system : Stands, Gates, bridges, and Baggage claims, to : <ul style="list-style-type: none"> <li>• Consolidate the Airport Operational Plan</li> <li>• Consolidate the Pre-departure sequencing and DMAN capability</li> <li>• Optimize and increase the efficiency and performances of operations</li> <li>• Better support crisis situation and faster recovering</li> </ul>		
<b>Interdependencies</b>	<ul style="list-style-type: none"> <li>• 025AF2 - TSAT to the Gate;</li> <li>• 026AF2 - Evolutions CDM-CDG;</li> <li>• 027AF2 - SMAN-Airport;</li> <li>• 129AF2 - CDM-Orly</li> </ul>		
<b>Synchronisation</b>	With: Airspace Users, Airports, ANSPs, ECTL/NM		
<b>Links</b>	AF 2; Sub AF 2.1; Family 2.1.1 AF 4; Sub AF 4.2; Family 4.2.1 & Family 4.2.2		
<b>NM Links</b>	<b>NSP:</b> SO 6/2 & SO 6/4 <b>NOP:</b> None		

099AF2 – Preparation for AOP			
<b>Start Date</b>	01/09/2014	<b>End Date</b>	01/12/2015
<b>Project Leader</b>	Heathrow Airport Limited		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.4
<b>Project Objective</b>	<p><u>Airfield Flow Management</u></p> <p>The key improvement area is the production of a rolling airfield plan with added layers or resilience and architectural consolidations. The AOP is an up-to-date plan or “on the day schedule” with pre-tactical provisions from the pre-tactical DCB (covered under another call submission within AF4). It is the airfield part of the Airport Operations Plan (AOP), known here as the ‘airfield plan’. The solution builds on the pre-requisite ACDM Concept and tooling and expands inline with the future SESAR APOC/AOP concept.</p> <p>By sharing this rolling plan with the Airport Operations Centre (APOC) and other stakeholders, the use of resources can be optimized.</p> <p>The production of a common and optimized rolling airfield plan will cover three main steps:</p> <ul style="list-style-type: none"> <li>• The ability to create a plan (based initially on the schedule, updated with the latest information) that can be shared among all stakeholders.</li> <li>• The ability to evaluate and then update the airfield plan using different scenarios (known as Demand Capacity Balancing, DCB) to optimise it.</li> <li>• The ability to take into account user preferences – in all operational circumstances and not only during disruptions, as is the case today. This is known as User Driven Prioritisation Process (UDPP).</li> </ul> <p>The vision for the airport and stakeholders to operate in line with a rolling airfield plan which is up to-date and reflects external factors and user preferences will be a major cultural change.</p> <p>In Summary an AOP is:</p> <ul style="list-style-type: none"> <li>• An integrated operating environment to improve efficiency, effectiveness and resilience against disruptions</li> <li>• A common shared truth to facilitate timely and focused collaborative decision making</li> <li>• Empowering the workforce to make a real difference with the right information at the right time</li> </ul> <p>Why AOP?</p> <ul style="list-style-type: none"> <li>• To aide decision making in complex landscape of airport operations</li> <li>• To optimise allocation of limited Airport resources</li> </ul>		

	<ul style="list-style-type: none"> <li>To support enhanced passenger experience</li> </ul>
<b>Interdependencies</b>	<ul style="list-style-type: none"> <li>073AF5 - SWIM Common Components</li> <li>082AF5 - SWIM compliance of NM systems</li> </ul>
<b>Synchronisation</b>	With Airspace Users, Airports, ANSPs, EUROCONTROL/NM
<b>Links</b>	AF 4; AF 5; Sub AF 4.2; Sub AF 5.5; Family 4.2.1; Family 4.2.2; Family 4.2.3; Family 4.2.4
<b>NM Links</b>	<p><b>NSP:</b> SO 6/2;</p> <p><b>NOP:</b> There are currently no agreed plans for capacity expansion at Heathrow. Opportunities to increase the resilience (as opposed to the capacity) of the Heathrow operation continue to be explored;</p>

### Family 2.2.1 – A-SMGCS Level 1&2

023AF2 – SMAN-Vehicle			
<b>Start Date</b>	01/08/2014	<b>End Date</b>	30/08/2017
<b>Project Leader</b>	Aéroports de Paris: CDG Airport & ORLY Airport		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.2	Family 2.2.1
<b>Project Objective</b>	Upgrade and Extend the A-SMGCS L2 for all relevant ground vehicles moving on the manoeuvring area by providing new functionalities for the drivers: alerts, geo-fencing.		
<b>Interdependencies</b>	<ul style="list-style-type: none"> <li>027AF2 - SMAN-Airport</li> <li>048AF2 - SYSAT@CDG</li> <li>050AF2 - SYSAT@ORLY</li> </ul>		
<b>Synchronisation</b>	With: Airports, ANSPs		
<b>Links</b>	AF 2; Sub AF 2.5; Family 2.5.1 AF 2; Sub AF 2.4; Family 2.2.1		
<b>NM Links</b>	<p><b>NSP:</b> SO 6/6</p> <p><b>NOP:</b> None</p>		

042AF2a – A-SMGCS Düsseldorf			
<b>Start Date</b>	30/04/2013	<b>End Date</b>	31/12/2019
<b>Project Leader</b>	DFS		
<b>Contributors</b>	Flughafen Düsseldorf GmbH (Düsseldorf Airport)		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.2	Family 2.2.1

<b>Project Objective</b>	<p>The A-SMGCS-Düsseldorf project comprises the implementation of an A-SMGCS Level 2, including RIM function, at Düsseldorf Airport to improve runway safety and throughput and to support the provision of air traffic services and apron services. The project covers the following activities:</p> <ul style="list-style-type: none"> <li>• Replacing/exchanging the current primary sensor</li> <li>• Setting up the new cooperative sensor (MLAT)</li> <li>• Provision of the required infrastructure</li> <li>• Implementation of a tracker and a ground situation display</li> <li>• Safety assessments</li> </ul> <p>The realisation of this project will be the preparatory work for the further A-SMGCS Level 3 and 4. Implementation of the routing function is not part of the described project.</p>
<b>Interdependencies</b>	-
<b>Synchronisation</b>	With: Airports
<b>Links</b>	AF 2; Sub AF 2.4; Family 2.4.1
<b>NM Links</b>	<b>NSP:</b> SO6/6 <b>NOP:</b> None

#### 058AF2a – Fulfillment of the prerequisite A-SMGCS 2 for the PCP AF2 Sub-Functionality: Airport Integration and Throughput (Phase A)

<b>Start Date</b>	01/01/2014	<b>End Date</b>	31/12/2016
<b>Project Leader</b>	ENAIRE		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.2	Family 2.2.1
<b>Project Objective</b>	<p>Partial fulfillment of the IR 716/2014 "Pilot common project", and in special the AF2 functionality which identifies the implementation and deployment of A-SMGCS 2 as a prerequisite for the Airport Safety Nets function. ENAIRE's Family 2.2.1 A-SMGCS 2 will focus on Runway Incursion Alerts.</p> <p>The function shall integrate the surveillance information (regarding all relevant aircraft and vehicles on the area) and controller runway related clearances, to generate and distribute the appropriate alerts.</p> <p>The following Spanish airports will implement Runway Incursion Alerts based on A-SMGCS 2:</p> <ol style="list-style-type: none"> <li>1. Adolfo Suárez Madrid-Barajas</li> <li>2. Barcelona El Prat</li> <li>3. Palma de Mallorca</li> </ol> <p>This proposal includes all the development activities, to be</p>		

	carried out from 2014 to 2016, prior to the operational validation of the new function. The operational validation and deployment of the functionality in the above mentioned airports will be performed 2017 onwards.
<b>Interdependencies</b>	-
<b>Synchronisation</b>	With: Airspace Users, Airports, ANSPs
<b>Links</b>	AF2 ; Sub AF 2.3 ; Sub AF 2.4 ; Sub AF 2.5
<b>NM Links</b>	<b>NSP:</b> SO 6/6 <b>NOP:</b> ASMGCS Level 1 available in LEMD; On-going implementation Level 1 in LEBL; ASMGCS Level 1 available in LEPA

064AF2 – ENAV Airport System upgrade			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	31/12/2016
<b>Project Leader</b>	ENAV		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.2	Family 2.2.1
<b>Project Objective</b>	<p>The main objective is to increase the efficiency and safety of operations at Malpensa and Fiumicino, the two main Italian airports, by improving the surveillance coverage, quality and accuracy in order to extend its capabilities over the all movement area (including most of the suitable apron areas), with a view to implement functionalities that shall facilitate and enable the deployment of Airport Safety Nets as requested within Reg. 716/2014</p> <p>The enhancement of surveillance is needed in order to fully satisfy the requirements for ASMGCS level 1 and for laying down the bases for ASMGCS Level 2. In particular, the aim of this project is to achieve the Implementation of A-SMGCS level 2 at Malpensa airport and full A-SMGCS level 1 at Fiumicino airport. The project modularity will reflect the different requirements at airport level, allowing each working package to be further decomposed in different modules.</p> <p>In particular the surveillance functionality will be improved through:</p> <ul style="list-style-type: none"> <li>• The implementation of a new multi-sensor data fusion that will be able to integrate all the contributions coming from different surveillance sensors (ADS-B, Multilateration, SMR,)</li> <li>• The enhancement of the current Surface Movement Radar (SMR)</li> <li>• the upgrade of the Multilateration system (MLAT),</li> </ul>		

	<p>enhancing the actual coverage by adding and integrating other MLAT ground stations.</p> <p>The new tower system will provide the :</p> <ul style="list-style-type: none"> <li>• Electronic Flight Progress Strips (EFPS).</li> <li>• New Airport Surveillance Data presentation</li> </ul> <p>Basic safety (Conflicting clearances through the use of EFPS).</p>
<b>Interdependencies</b>	NO
<b>Synchronisation</b>	With Airport, ANSPs
<b>Links</b>	AF 2; Sub AF 2.5; Family 2.5.1
<b>NM Links</b>	<p><b>NSP</b> : SO 6/5 &amp; SO 6/6</p> <p><b>NOP</b>: In LIMC, A-SMGCS (level 1): Ongoing Implementation. WIP in progress with Italian CAA to define A-SMGCS level 1. In LIRF, ASMGCS not reported</p>

103AF2 – Standardization of A-SMGCS			
<b>Start Date</b>	01/12/2014	<b>End Date</b>	16/11/2016
<b>Project Leader</b>	Københavns Lufthavne A/S		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.2	Family 2.2.1
<b>Project Objective</b>	<p>With this project Copenhagen Airport will upgrade the existing A-SMGCS to a newer and standardized version. The standardization of the existing A-SMGCS will facilitate the future procurement of ad-on modules necessary for the implementation of the A-SMGCS advanced functions, cf. point 2 of the Annex to the PCP regulation 716/2014. Furthermore, it will enable Copenhagen Airport to enter into a partnership with other EU airports, which are also looking to upgrade to the standardized expansion module to A-SMGCS.</p> <p>The project is also part of Copenhagen Airport's strategy "Expanding CPH", which objective is to facilitate the expected future growth in operations at Copenhagen Airport.</p>		
<b>Interdependencies</b>	-		
<b>Synchronisation</b>	With ANSPs		
<b>Links</b>	-		
<b>NM Links</b>	<p><b>NSP</b>: SO6/6</p> <p><b>NOP</b>: A-SMGCS (level 2): Available in TWR and APP.</p>		



Electronic Strips: Available in TWR and APP

**115AF2 – A-SMGCS Renewal of the Surface Movement Radar (BORA)**

<b>Start Date</b>	24/01/2014	<b>End Date</b>	31/12/2015
<b>Project Leader</b>	Munich Airport		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.2	Family 2.2.1
<b>Project Objective</b>	<p>The Surface Movement Radar enables exact positioning including identification of all aircraft and other vehicles on all relevant operation areas. The original system was purchased and installed in 2003 and has thus concluded an uninterrupted operating time of 10 years. Main parts of this much differentiated technology are no longer available to order, which means a continued and operationally necessary maintenance can no longer be guaranteed. Only the specified modernization will enable a continuous availability of the operationally essential SMR, and thus avoid security relevant gaps in the service.</p> <p>In the short term and long term, the Surface Movement Radar shall enable the following objectives:</p> <ul style="list-style-type: none"> <li>• The departure sequence at the runway shall be optimized according to the real traffic situation reflecting any change off-gate or during taxi to the runway.</li> <li>• Thus enabled, A-SMGCS shall provide optimized taxi by monitoring of real surface traffic and by considering updated taxi times in departure management regardless of meteorological or other impacting conditions.</li> </ul> <p>In a further step, planned routing and planning function free as possible of conflicts which permits the aircraft to go from stand to runway, from runway to stand or any other surface movement. This protect supports Family 2.2.1 A-SMGCS Level 1/2.</p>		
<b>Interdependencies</b>	-		
<b>Synchronisation</b>	With ANSPs		
<b>Links</b>	-		
<b>NM Links</b>	<p><b>NSP:</b> SO 6/3 &amp; SO 6/4</p> <p><b>NOP:</b> Basic SMR is available in TWR and APP. A-SMGCS (level 1) available in TWR and APP</p>		

130AF2 – BOREAL- Only			
<b>Start Date</b>	01/02/2015	<b>End Date</b>	31/12/2016
<b>Project Leader</b>	Aéroports de Paris: Orly Airport		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.2	Family 2.2.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Improve safety by upgrading knowledge of surface state and reaction time.</li> <li>Enabler to sub-functionalities defined into the IR 716/2014: A-SMGCS Level 1/2 (2.2.1) SAF 2.5/2.4</li> </ul> <p>Boreal is the control and visualization station of the state of the runways and taxiways lights in Paris-Orly. Replacement of existing equipment is designed to enhance the robustness and the level of knowledge of information on state of the lights, in order to improve the reaction time of operational maintenance team and to upgrade or extend the tools which allow managing and monitoring information of the airfield area.</p>		
<b>Interdependencies</b>	<ul style="list-style-type: none"> <li>050AF2 - SYSAT@ORY</li> <li>077AF4 - Interactive Rolling NOP</li> </ul>		
<b>Synchronisation</b>	With Airports, ANSPs		
<b>Links</b>	AF 2; Sub AF 2.5; Family 2.5.1		
<b>NM Links</b>	<b>NSP:</b> SO 6/6 <b>NOP:</b> A-SMGCS not reported.		

137AF2 – Enhancement of Airport Safety Nets at Stockholm Arlanda Airport			
<b>Start Date</b>	01/08/2015	<b>End Date</b>	01/06/2017
<b>Project Leader</b>	Swedavia		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.2	Family 2.2.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Improve the performance of the surveillance function of the A-SMGCS system at Stockholm Arlanda airport, in order to enable to provision of high-quality, reliable surveillance data for integration in the advanced Airport Safety Nets function.</li> <li>Keep the implementation of the surveillance function up-to-date to enable future expansion of the</li> </ul>		

	<p>ASMGCS system, to enable future functionality of the A-SMGCS system and to ensure interoperability with new components in the future.</p> <p>The main steps to reach this objective are:</p> <ul style="list-style-type: none"> <li>• Upgrade of SMR stations</li> <li>• Enhancement of Airport Safety Nets</li> <li>• Operational validation and introduction of Airport Safety Nets</li> </ul>
<b>Interdependencies</b>	136AF2 - A-CDM Optimization
<b>Synchronisation</b>	With ANSPs
<b>Links</b>	AF2; Sub AF 2.1; Sub AF 2.5; Family 2.1.1; Family 2.1.3; Family 2.5.1
<b>NM Links</b>	<p><b>NSP:</b> SO 6/6</p> <p><b>NOP:</b> A-SMGCS (level 1) is available in TWR A-SMGCS (level 2) implementation is on-going. Electronic Strips: Available in TWR and APP.</p>

### Family 2.3.1 – Time Based Separation (TBS)

094AF2 – Time-Based Separation for Final Approach			
<b>Start Date</b>	30/01/2014	<b>End Date</b>	31/12/2016
<b>Project Leader</b>	Gatwick Airport Limited		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.3	Family 2.3.1
<b>Project Objective</b>	<p>The high-level objectives of the project are as follows:</p> <ul style="list-style-type: none"> <li>• Implement initial spacing monitor to support air traffic controller to deliver optimum separation between arriving aircraft</li> <li>• Improve utilization of existing RWY capacity</li> <li>• Increase landing rates, especially during strong headwind conditions and reduce arrival and knock-on delays</li> </ul>		
<b>Interdependencies</b>	120AF1 - London Airspace Management Programme (LAMP)		
<b>Synchronisation</b>	With: Airspace Users, Airports, ANSPs		
<b>Links</b>	AF 1; Sub AF 1.1; Family 1.1.1		
<b>NM Links</b>	<p><b>NSP:</b> SO 6/5</p> <p><b>NOP:</b> Not available</p>		

097AF2 – Time Based Separation			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	01/12/2015
<b>Project Leader</b>	Heathrow Airport Limited		
<b>Contributors</b>	NATS, British Airways		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.3	Family 2.3.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Deployment of Time-based separation (TBS) at Heathrow Airport in order to address the biggest single cause of delay to Heathrow arrivals - strong headwinds on final approach.</li> <li>Time Based Separation is expected to reduce this delay by as much as 50% of all strong wind regulations applied at Heathrow (equating to c.20% reduction in overall Heathrow ATFM delay) with a projected benefit to the airlines in the range £6m to £7.5m per annum. Any reduction in spacing during strong wind conditions will not result in aircraft being closer than minimum radar separation of 2.5nm.</li> </ul> <p>As noted by Eurocontrol the European Network Manager, London Heathrow airport remained a delay hot spot in 2013 due to our significant impact to aircraft operations under adverse weather conditions. Strong winds is the most impacting condition to Heathrow flights operations thus knocking on to wider global operations. The TBS concept aims to improve resilience to the impact of high head wind conditions by:</p> <ul style="list-style-type: none"> <li>Reducing the cost of wind-related arrival delay</li> <li>Improving the consistency of spacing (for wake pairs)</li> </ul> <p>(TBS) is a pioneering new system plus operational methodology aimed at organizing the separation of arriving aircraft at Heathrow by time instead of distance. This will radically cut flight delays and reduce cancellations due to high headwinds. Supported in the Airports Commission's interim report in December 2013, the delivery of TBS comes after three years of exhaustive analysis from co-members of the Single European Sky Research ATM Research and development programme (SESAR).</p> <p>The introduction of a time-based separation method at Heathrow will help maintain the landing rate under strong headwind conditions and thus deliver an average improvement of 4 flights per hour beyond today's rate. Every year halving the current delay figure under strong wind conditions while significantly reducing the need for airlines to cancel flights due to the effects of strong headwinds.</p>		

<b>Interdependencies</b>	120AF1 - London Airspace Management Programme (LAMP)
<b>Synchronisation</b>	With: Airspace Users, Airports, ANSPs
<b>Links</b>	AF 1; Sub AF 1.1; Family 1.1.1
<b>NM Links</b>	<b>NSP:</b> SO 6/5 <b>NOP:</b> Not available

### Family 2.4.1 – A-SMGCS Routing and Planning Functions

027AF2 – SMAN-Airport			
<b>Start Date</b>	01/01/2015	<b>End Date</b>	31/12/2016
<b>Project Leader</b>	Aéroports de Paris: CDG Airport & ORLY Airport		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.4	Family 2.4.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Develop and integrate Airport Surface Management Tool which allows managing and monitoring information of the airfield area under the responsibility of the airport operator. <ul style="list-style-type: none"> <li>Enhance Initial AOP to airfield area</li> <li>Improve Airport Safety Nets functionalities</li> <li>Facilitate A-SMGCS planning functions by improving predictability of Take-Off times</li> </ul> </li> <li>The system will share information with all stakeholders/Systems and in particular with the ATC ASMGCS</li> <li>The system is currently used by the ATC tower supervisor and apron managers.</li> </ul>		
<b>Interdependencies</b>	<ul style="list-style-type: none"> <li>024AF2 - SAIGA;</li> <li>025AF2 - TSAT to the Gate;</li> <li>026AF2 - Evolutions CDM-CDG;</li> <li>048AF2 - SYSAT@CDG</li> <li>050AF2 - SYSAT@ORLY</li> <li>129AF2 - CDM-Only</li> </ul>		
<b>Synchronisation</b>	With: Airspace users, Airports, ANSPs		
<b>Links</b>	AF 2; Sub AF 2.4; Family 2.2.1; Family 2.1.2; Family 2.4.1		
<b>NM Links</b>	<b>NSP</b> : SO 6/2 & SO 6/4 <b>NOP</b> : None		

087AF2a – Apron Controller Working Position			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	31/12/2016 (Part 1)
<b>Project Leader</b>	FRAPORT		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.4	Family 2.4.1
<b>Project Objective</b>	<p>Fraport AG is responsible for apron management services at Frankfurt Airport and as such subject to a number of provisions in Commission Implementing Regulation (EU) No 716/2014 ("Pilot Common Project").</p> <p>These are:</p> <ul style="list-style-type: none"> <li>• Departure Management Synchronised with Pre-Departure Sequencing (in particular with regard to 'variable taxi-times'),</li> <li>• Departure Management integrating Surface Management Constraints ('routing'),</li> <li>• Automated Assistance to Controller for Surface Movement Planning and Routing,</li> <li>• Airport Safety Nets and</li> <li>• 2.5 Essential prerequisites. The latter concern particularly A-SMGCS Level 1 and 2, EFS and DMAN.</li> </ul> <p>Consequently, the implementation project is linked to the following sections of the Preliminary Deployment Programme (PDP):</p> <ul style="list-style-type: none"> <li>• SMGCS Level 1 (Surveillance) (Family 2.2.1 (A-SMGCS Level 1/2)),</li> <li>• SMGCS Level 2 (Alerting) (Family 2.2.1 (A-SMGCS Level 1/2) and Family 2.5.1 (Airport Safety Nets Associated with A-SMGCS Level 2)),</li> <li>• A-SMGCS Level 2+ (Routing) (S-AF 2.4 (Automated Assistance to Controller for Surface Movement Planning and Routing)) and</li> <li>• —as a prerequisite—EFS (Family 2.1.2 Electronic Flight Strips (EFS)).</li> </ul> <p>Underlying objectives of the project are:</p> <ul style="list-style-type: none"> <li>• The implementation of an Advanced Surface Movement Guidance and Control System (A-SMGCS) providing routing, guidance and surveillance for the control of aircraft and vehicles in order to maintain the declared surface movement rate under all weather conditions while maintaining the required level of safety.</li> <li>• The routing and planning function shall calculate the most operationally relevant route as free as possible of conflicts which permits the aircraft to go from stand to runway, from runway to stand or any other surface movement.</li> </ul>		



	<ul style="list-style-type: none"> <li>The apron controller working position shall allow the controller to manage surface route trajectories.</li> <li>The flight data processing system shall be able to receive planned and cleared routes assigned to aircraft and vehicles and manage the status of the route for all concerned aircraft and vehicles.</li> <li>The system shall also be complemented by a function providing controllers with appropriate alerts when potential conflicts primarily on taxiways and intrusions to restricted areas are detected. Conflicts on runways are of secondary interest in this implementation project as the runway system is controlled by the local Air Navigation Service Provider.</li> <li>The controller working position shall host warnings and alerts with an appropriate human-machine interface (HMI) including support for cancelling the alert.</li> </ul> <p>Digital systems, such as electronic flight strips (EFSs), shall integrate the instructions given by the controller with other data such as flight plan, surveillance, routing, published rules and procedures</p>
<b>Interdependencies</b>	-
Synchronisation	With: ANSP
<b>Links</b>	AF 2; Sub AF 2.1; Sub AF 2.2; Sub AF 2.5; Family 2.1.1; Family 2.1.2; Family 2.5.1; Family 2.4.1
<b>NM Links</b>	<b>NSP:</b> SO6/6 <b>NOP:</b> A-SMGCS (level 1): Available in TWR. Electronic Strips: Available in TWR and APP

### Family 2.5.1 – Airport Safety Nets associated with A-SMGCS level 2

018AF2 – Enhancement of Airport Safety Nets for Brussels Airport (EBBR)			
<b>Start Date</b>	02/06/2014	<b>End Date</b>	31/12/2016
<b>Project Leader</b>	BELGOCONTROL		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.5	Family 2.5.1
<b>Project Objective</b>	<p>The main objective of this project is to upgrade the existing Airport Safety Nets function, associated with the A-SMGCS system at Brussels Airport (EBBR), to obtain (or even exceed) the level of performance as envisaged under ATM functionality AF 2 as defined in the PCP Regulation (see ANNEX, section 2.1.5).</p> <p>Two related sub-projects are defined:</p> <ul style="list-style-type: none"> <li>Sub-project 1: Validation and Operational introduction of the Advanced Safety Nets function,</li> </ul>		

	developed by Belgocontrol, at Brussels Airport (Control Tower). <ul style="list-style-type: none"> <li>Sub-project 2: Further enhancement (by Belgocontrol) of the Advanced Safety Nets function by adding a "Taxi Route conformance monitoring" functionality.</li> </ul>
<b>Interdependencies</b>	NO
<b>Synchronisation</b>	With ANSPs
<b>Links</b>	AF 2; Sub AF 2.2; Family 2.2.1
<b>NM Links</b>	<b>NSP:</b> SO6/6; <b>NOP:</b> None;

054AF2 – CDG2020 Step1			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	01/03/2017
<b>Project Leader</b>	DSNA		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.5	Family 2.5.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Improve runway safety against runway intrusion</li> <li>Improve runway throughput at peak arrival period</li> </ul> <p>A 2020 action plan has been set up to improve performance at CDG, following a balanced approach in the areas of safety and capacity. Step1 of the action plan is targeting improvement of the performance level at the horizon of 2017 by implementing new systems and procedures identified as quick wins. The deployment of those actions is coordinated with Aéroport de Paris (ADP) and the airport users.</p>		
<b>Interdependencies</b>	048AF2 - SYSAT@CDG		
<b>Synchronisation</b>	With Airspace Users, Airports, ANSPs, EUROCONTROL		
<b>Links</b>	AF 1; Sub AF 1.1; Family 1.1.1 AF 2; Sub AF 2.3; Family 2.3.1		
<b>NM Links</b>	<b>NSP :</b> SO6/6 <b>NOP:</b> A-SMGCS (level 2): Available in TWR and APCH		

088AF2 – Airport Safety Net: Mobile Detection of Air Crash Tenders			
<b>Start Date</b>	01/07/2014	<b>End Date</b>	31/12/2016
<b>Project Leader</b>	FRAPORT		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.5	Family 2.5.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Equipage of Air Crash Tenders with a Moving Map based on A-SMGCS surveillance data</li> <li>• Identification of deviations from routes and procedures of Air Crash Tenders (PDP Family 2.5.1 Airport Safety Nets associated with A-SMGCS Level 2)</li> <li>• Improvement of situational awareness of Air Crash Tenders (PDP Family 2.5.1 Airport Safety Nets associated with A-SMGCS Level 2)</li> <li>• Early prediction of situations that would end up in hazardous situations (PDP Family 2.5.1 Airport Safety Nets associated with A-SMGCS Level 2)</li> </ul>		
<b>Interdependencies</b>	-		
<b>Synchronisation</b>	-		
<b>Links</b>	-		
<b>NM Links</b>	<b>NSP:</b> SO6/6 <b>NOP:</b> A-SMGCS (level 1): Available in TWR. Electronic Strips: Available in TWR and APP		

092AF2 – Enhanced Departure Management integrating airfield surface assets			
<b>Start Date</b>	01/03/2015	<b>End Date</b>	31/12/2016
<b>Project Leader</b>	Gatwick Airport Limited		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.5	Family 2.5.1
<b>Project Objective</b>	The high-level objectives of the project are as follows: <ul style="list-style-type: none"> <li>• Achieve 100% equipage of ground service vehicles with tracking technology</li> <li>• Increase airside safety by providing visibility of appropriate vehicles and equipment to Air Traffic Control Tower</li> <li>• Enable further implementation of Airport Safety Nets (ATM Sub-Functionality 2.5)</li> <li>• Improve taxi conflict prediction to reduce number of</li> </ul>		

	<ul style="list-style-type: none"> <li>stop-and-go taxiing</li> <li>Improve efficiency of airside operations by providing real-time information about location of ground service equipment and vehicles to Ground Handling Agents (GHAs) and Airport Flow Centre</li> </ul>
<b>Interdependencies</b>	-
<b>Synchronisation</b>	With: Airports
<b>Links</b>	AF 2; Sub AF 2.2; Family 2.2.1
<b>NM Links</b>	<b>NSP:</b> SO 6/6 <b>NOP:</b> A-CDM fully implemented

<b>100AF2 – Airport Safety Nets associated with A-SMGCS Level 2 - Preparation for SMAN</b>			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	31/12/2015
<b>Project Leader</b>	Heathrow Airport Limited		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.5	Family 2.5.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Concept of Operation has been developed to clarify the AGL and field infrastructure component design and architecture requirements for an integrated ASMGCS level 4/5 Surface manager (SMAN).</li> <li>A holistic Options analysis and selection process is being undertaken to assess the functional and safety integrity requirement of the Ground Movement Control System as a system design that is fully congruent and potentially pre-integrated with the ASMGSC4/5 Surface Manager.</li> <li>Primary Cable specification, distribution and operational architecture is being surveyed to scope design and installation of an airfield-wide GMCS primary cabling matrix to allow floating separation and necessary system integrity for automatic/.semi-automatic operation.</li> <li>Existing AGL system architecture is undergoing resilience and communication architecture modification to allow for validation testing of floating separation and seamless operational transition to the new GMCS/SMAN function.</li> </ul>		
<b>Interdependencies</b>	NO		
<b>Synchronisation</b>	With: Airports, ANSPs		
<b>Links</b>	AF 2; AF 2.2; Sub AF 2.2.1		

<b>NM Links</b>	<b>NSP:</b> SO 6/6 <b>NOP:</b> A-SMGCS (level 2) is available in TWR
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### Family 2.5.2 – Implement vehicle and aircraft systems contributing to Airport Safety Nets

022AF2 – Vehicle Tracking System (VTS)			
<b>Start Date</b>	01/01/2008	<b>End Date</b>	31/12/2016
<b>Project Leader</b>	Brussels Airport		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.5	Family 2.5.2
<b>Project Objective</b>	<p><u>Goal</u> Display position and identification of all vehicles entering maneuvering area on a regular basis on the groundradar display to controller.</p> <p><u>Motivation</u></p> <ul style="list-style-type: none"> <li>• Improve safety airport ground movements (additional safety net)</li> <li>• Comply with Level-1 A-SMGCS requirement (SES Legislation – ESSIP initiative)</li> </ul>		
<b>Interdependencies</b>	NO		
<b>Synchronisation</b>	With: ANSPs		
<b>Links</b>	AF 2; Sub AF 2.2; Sub AF 2.4; Family 2.2.1		
<b>NM Links</b>	<b>NSP:</b> SO6/6 <b>NOP:</b> None		

030AF2 – Equipment of ground vehicles to supply the A-SMGCS			
<b>Start Date</b>	28/02/2014	<b>End Date</b>	30/10/2015
<b>Project Leader</b>	Aéroports de la Cote d’Azur		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.5	Family 2.5.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Supply the A-SMGCS with accurate information</li> <li>• Allow the efficient deployment of the A-SMGCS Level 1 &amp; 2 by providing the location of the vehicle and the identification</li> <li>• Improve the safety on the platform with knowing the location of the vehicles and the possibility to</li> </ul>		

	identify runway incursion <ul style="list-style-type: none"> <li>• Be compliant with the regulation</li> </ul>
<b>Interdependencies</b>	049AF2 - SYSAT@NCE
<b>Synchronisation</b>	With: Airports, ANSPs
<b>Links</b>	AF 2; Sub AF 2.5; Family 2.5.1 AF 2; Sub AF 2.4; Family 2.2.1
<b>NM Links</b>	<b>NSP</b> : SO 6/6 <b>NOP</b> : Advanced ATC Tower Implementation planned for 2015; DMAN not available; AMAN available. No reported CDM basic.

135AF2 – Ryanair RAAS Programme			
<b>Start Date</b>	01/01/2015	<b>End Date</b>	31/12/2016
<b>Project Leader</b>	Ryanair		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.5	Family 2.5.2
<b>Project Objective</b>	<p>Implement aircraft systems contributing to airport safety nets. (ref: Family 2.5.2)</p> <p>The objective is to equip all Ryanair aircrafts with Honeywell Runway Awareness and Advisory Systems (RAAS) to improve situational awareness, reduce the risks of runway incursion, runway confusion and runway excursions and thus contribute to the overall airport safety net for high-density airports. Airport safety nets consist of the detection and alerting of conflicting ATC clearances to aircraft and deviation of vehicles and aircraft from their instructions, procedures or routing which may potentially put the vehicles and aircraft at risk of a collision.</p> <p>The main benefit is related to the increase of runway usage awareness, and consequently an increase of runway safety. On-board systems and technology uses airport data coupled with on-board sensors to monitor the movement of an aircraft around the airport and provide relevant information to the flight crew.</p> <p>Further applications of on-board systems are related to continuous monitoring of aircraft landing performance, providing pilots with a real-time, constantly updated picture. The on-board systems detect potential and actual risk of collision with other traffic during runway operations and provide the Flight Crew with the appropriate alert.</p> <p>An on-board airport safety net will improve safety in runway operations, mostly at airports where no safety net is provided to controllers.</p>		
<b>Interdependencies</b>	NO		



<b>Synchronisation</b>	With Airspace Users
<b>Links</b>	NO
<b>NM Links</b>	<b>NSP:</b> SO 6/6 <b>NOP:</b> None

## AF3 Flexible ASM and Free Route

The following table encompasses the list of implementation initiatives associated to ATM Functionality #3 that were awarded under the 2014 CEF Transport Calls for Proposal.

2014 CEF Call Designator	Title	Family	IP Description Page Number
056AF3	ASM tool implementation	3.1.1	48
122AF3	Family 3.1.1 NAV Portugal - Initial ASM tool to support AFUA	3.1.1	48
015AF3	LARA integration in CANAC 2	3.1.2	50
080AF3	ASM AFUA Implementation	3.1.3	51
004AF3	Traffic Flow Restriction (TFR) – LIDO planning system	3.2.1	51
005AF3	FREE FLIGHT- DIRECT OPTIMIZATION	3.2.1	52
053AF3	4-Flight deployment in DSN pilot ACCs	3.2.1	53
081AF3	NM DCT/FRA Implementation and support	3.2.1	54
131AF3	1st part of the upgrade of the P_21 PEGASUS system to SESAR functionalities - Test and Validation Platform	3.2.1	55
020AF3	Implementation Project 2.6 - Borealis Free Route Airspace (Part 1)	3.2.4	57
063AF3	ENAV implementation of Free Route	3.2.4	58
095AF3	Implementation of FRA in Greece	3.2.4	59
102AF3	Free Route Airspace from the Black Forest to the Black Sea	3.2.4	60

**Family 3.1.1 – (Initial) ASM Tool to support AFUA**

056AF3 – ASM tool Implementation			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	30/12/2017
<b>Project Leader</b>	EANS		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.1	Family 3.1.1
<b>Project Objective</b>	<p>Air Space Management (ASM) tool implementation is a prerequisite for Free Route Airspace Implementation of AF3 – Flexible Airspace Management and Free Route of the Commission Implementing Regulation (EU) No 716/2014 on the establishment of the Pilot Common Project (PCP) supporting the implementation of the European Air Traffic Management Master Plan. The EUROCONTROL LARA ASM tool will:</p> <ul style="list-style-type: none"> <li>• enhance Civil-Military ATM performance;</li> <li>• provide real-time exchange of airspace management data;</li> <li>• enhance situational awareness</li> <li>• facilitates collaborative decision-making</li> <li>• improve safety</li> </ul>		
<b>Interdependencies</b>	-		
<b>Synchronisation</b>	With Airspace Users, ECTL/NM		
<b>Links</b>	AF 4; Sub AF 4.2		
<b>NM Links</b>	<p><b>NSP</b> : SO 3/2 (Implement Advanced Flexible Use of Airspace)  SO 3/3 (Implement appropriate cross-border airspace structures, enabling a flexible use of airspace - to achieve the flight efficiency targets and ensure appropriate cross-border sectorization).  <b>NOP</b>: This project is addressed by NOP Annex 5 (ACC TRAFFIC FORECAST &amp; CAPACITY PLANS) as the procedural measures for capacity enhancement in 2016.</p>		

122AF3 – Family 3.1.1 NAV Portugal - Initial ASM tool to support AFUA			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	31/12/2016
<b>Project Leader</b>	Nav Portugal		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.1	Family 3.1.1

**Project Objective**

Airspace Management (ASM) and Advanced Flexible Use of Airspace (A-FUA) aims to provide the possibility to manage airspace reservations more flexibly in response to airspace user requirements. Changes in airspace status shall be shared with all concerned users, in particular Network Manager, air navigation service providers and airspace users (Flight Operations Centre/Wing Operations Centre (FOC/WOC)). ASM procedures and processes shall cope with an environment where airspace is managed dynamically with no fixed-route network.

Data-sharing shall be enhanced by the availability of airspace structures in support of a more dynamic ASM and Free Routing Airspace (FRA) implementation. FRA is the airspace defined laterally and vertically, allowing free routing with a set of entry/exit features. Within this airspace, flights remain subject to air traffic control.

ASM solutions shall support all airspace users, including enabling the alignment of FRA, Conditional Route (CDR) and published Direct Routing (DCT). These ASM solutions shall be based on forecast demand received from the local Air Traffic Flow and Capacity Management (ATFCM) function and/or the Network Manager. Establish a collaborative civil-military airspace planning at Lisbon FIR integrated on the European Network level through an integrated Airspace Management/Air Traffic Flow Capacity Management (ASM/ATFCM) process and an extended planning phase into the day of operations.

Ensure full exploitation of capacity becoming available through the identification of efficient combinations of areas allocation, routes availability, including CDRs, and Lisbon ACC sector configurations able to cope with traffic demand. The process will be applied also for improving the planning activities related to the updates to airspace status. Foster a consistent application of the Flexible Use of Airspace (FUA) Concept across the European network, and support a safe, efficient and accurate flow of ASM data. The improved planning process refers to the use of specific procedures allowing Airline Operators (AOs) to optimise their flight planning in order to achieve a more efficient utilization of available airspace through more dynamic responses to specific short notice or real-time airspace status changes, requirements and route optimization at the pre-tactical and/or tactical levels.

Develop, validate and implement ASM/ATFCM processes, procedures and supporting tools at national, subregional and the European Network level to ensure that airspace is used more flexibly, capacity is better balanced and predictability is enhanced through greater adherence to planned activities as a result of better planning and notification.

Ultimately, the ASM operations continue until the real-time activation of airspaces in the Lisbon ACC or routes (below FL 240, since above that level the FIR airspace is full free route). The alignment between both ASM/ATFCM processes shall continue to ensure the assessment of the network

	impact, the identification of flights affected by real-time modifications, as well as the timely dissemination of the decisions. Airspace uses (allocations, activations, deactivations) are issued from the ASM tools (LARA,) via B2B.
<b>Interdependencies</b>	-
<b>Synchronisation</b>	With Airspace Users, ECTL/NM
<b>Links</b>	AF3; Sub AF 3.2; Family 3.2.1 AF4 AF5, sub AF5.3; Family 5.3.3
<b>NM Links</b>	<p><b>NSP:</b> direct links with SO 3/2 (Implement Advanced Flexible Use of Airspace); SO 3/3 (Implement appropriate cross-border airspace structures, enabling a flexible use of airspace - to achieve the flight efficiency targets and ensure appropriate cross-border sectorization).</p> <p><b>NOP:</b> This project that aims to deploy LARA tool by the end of 2016 is not addressed by NOP Annex 5 (ACC TRAFFIC FORECAST &amp; CAPACITY PLANS).</p>

### Family 3.1.2 – ASM management of real time data

015AF3 – LARA integration in CANAC 2			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	01/01/2016
<b>Project Leader</b>	BELGOCONTROL		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.1	Family 3.1.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Providing ATCO's (Air Traffic Controller) with military information about areas reservation in order to optimise the use of airspace</li> <li>• Automate the display of airspace reservation in the EUROCAT (in the ODS (Operational input and Display System) of the FDP (Flight Data Processing) system)</li> <li>• Provide information about status of airspace reservation in the ADIDS-c (Aeronautical Data Information Display System)</li> </ul>		
<b>Interdependencies</b>	-		
<b>Synchronisation</b>	-		
<b>Links</b>	-		
<b>NM Links</b>	<p><b>NSP:</b> direct links with SO 3/2 (Implement Advanced Flexible Use of Airspace), SO 3/3 (Implement appropriate cross-border airspace structures, enabling a flexible use of</p>		

airspace - to achieve the flight efficiency targets and ensure appropriate cross-border sectorization)

**NOP:** It is addressed by NOP Annex 5 (ACC TRAFFIC FORECAST & CAPACITY PLANS) as the airspace management (advanced FUA) measure and Technical Measures (minor upgrades of CANAC 2 system) for capacity enhancement in 2015/2016

### Family 3.1.3 – Full rolling ASM/ATFCM process and ASM information sharing

080AF3 – ASM and A-FUA implementation			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	30/06/2017
<b>Project Leader</b>	EUROCONTROL / Network Manager		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.1	Family 3.1.3
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Improve Network performance and support a better utilisation of the Free Route Airspace and fixed route structure through enhanced ASM processes and tools</li> <li>• Enhance performance driven ASM/ATFCM processes (including those ATS processes that are linked to the ASM/ATFCM processes);</li> <li>• Introduce more dynamic and flexible ASM/ATFCM/ATS processes;</li> <li>• Production of key performance indicators for AFUA</li> </ul>		
<b>Interdependencies</b>	-		
<b>Synchronisation</b>	With Airspace Users, ANSPs, Military		
<b>Links</b>	AF 3.1; AF 3.2		
<b>NM Links</b>	<b>NSP:</b> SO 3; SO 4; SO 5 <b>NOP:</b>		

### Family 3.2.1 – Upgrade of ATM systems (NM, ANSPs, AUs) to support Direct Routings (DCTs) and Free Route Airspace (FRA)

004AF3 – AZA Traffic Flow Restriction (TFR) – LIDO planning system			
<b>Start Date</b>	01/05/2014	<b>End Date</b>	01/04/2016
<b>Project Leader</b>	Alitalia		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.2	Family 3.2.1



<b>Project Objective</b>	<p>TFR (Traffic Flow Restriction) is a LIDO FLIGHT LUFTHANSA SYSTEMS module that allows integrating traffic flow restriction document (RAD) and the EUP/UUP into the flight planning process within Lido/Flight. The RAD is the document published by Central Flow management Unit (CFMU) of EUROCONTROL and describes routes on which restrictions are imposed for a specific period.</p> <p>By this Lido tool Alitalia will be able to plan usually closed segments (CDR) obtaining in this way important optimization to company routes and also be able to catch the opportunity to plan over new segments whose availability will be unveiled day by day.</p> <p>The main objectives are:</p> <ul style="list-style-type: none"> <li>• Improve the route efficiency pursuing the minimum cost (Total cost = fuel costs + ATC costs + time cost).</li> <li>• Automation on the research of the best routing</li> <li>• Research of the best routing looking at the daily availability of DCT and RAD restriction removal</li> <li>• Reduction of CO2 and other emissions due to optimized flight plans.</li> </ul>
<b>Interdependencies</b>	-
<b>Synchronisation</b>	-
<b>Links</b>	-
<b>NM Links</b>	<p><b>NSP:</b> direct link with: SO 5/1 Enable 4D trajectories at planning level, in cooperation with airspace users and ANSPs an indirect link with SO 3/1 (Deploy full free route airspace throughout the European ATM network, to the maximum extent possible).</p> <p><b>NOP:</b> The Network Operation Plan (NOP) does not directly address the requirements and plans for Airspace Users.</p>

005AF3 – AZA Free Flight – Direct Optimization			
<b>Start Date</b>	01/05/2015	<b>End Date</b>	01/05/2017
<b>Project Leader</b>	Alitalia		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.2	Family 3.2.1
<b>Project Objective</b>	<p>The feature “Free Flight – Direct Optimization” lets users define arbitrary waypoints by their coordinates and dynamically trigger a calculation of the missing segment between the newly defined Free Flight waypoint and any other Free Flight or system-known waypoint, or between two systems known waypoints. The feature can be used as part of the regular flight planning process. It is also suitable for the modification of reclearance procedures or</p>		

	<p>as in flight assistance.</p> <p>With the aid of graphical maps, flight dispatchers can visualize and evaluate a given calculated route, select a waypoint, replace it with a Free Flight waypoint, eliminate waypoints deemed superfluous and reconnect the Free Flight waypoint with existing route objects. The application plots the missing segment between a designated Free Flight waypoint and the designated next waypoint.</p> <p>Main objective is:</p> <ul style="list-style-type: none"> <li>• Improve the route efficiency pursuing the minimum cost (Total cost = fuel costs + ATC costs + time costs).</li> </ul> <p>Reduction of CO2 and other emissions due to optimized flight plans.</p>
<b>Interdependencies</b>	-
<b>Synchronisation</b>	-
<b>Links</b>	-
<b>NM Links</b>	<p><b>NSP</b>: direct link with: SO 5/1 Enable 4D trajectories at planning level, in cooperation with airspace users and ANSP; an indirect link with SO 3/1 (Deploy full free route airspace throughout the European ATM network, to the maximum extent possible).</p> <p><b>NOP</b> : The Network Operation Plan (NOP) does not directly address the requirements and plans for Airspace Users</p>

053AF3 – 4-Flight deployment in DSN A pilot ACCs			
<b>Start Date</b>	01/07/2014	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	DSNA		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.2	Family 3.2.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Replace the current operational CAUTRA ATM System for Reims and Marseille ACCs and major APP, by a modern SESAR compliant and interoperable full ATM system based on the brand new Coflight Flight Data Processing System (FDPS), in order to increase DSN A's performance</li> <li>• Support the implementation of the European ATM Master Plan for France and of the SESAR concept</li> <li>• Comply with the Single European Sky (SES) and FABEC rules</li> <li>• Switch to "stripless" environment and up-to-date technologies</li> <li>• Reduce total cost of ownership, by sharing development and evolution costs and risks for the new system, with other ANSP partners</li> </ul>		

<b>Interdependencies</b>	-
<b>Synchronisation</b>	-
<b>Links</b>	-
<b>NM Links</b>	<p><b>NSP:</b> direct links with SO 4/1 (Modernise the local/FAB system capabilities including ATC planning functions and Controller tools procedures).</p> <p><b>NOP:</b> This project is addressed by NOP Annex 5 (ACC TRAFFIC FORECAST &amp; CAPACITY PLANS) as Technical measure for capacity enhancement by the deployment of new ATM system (4-flight) by Reims and Marseille ACCs in 2019.</p>

081AF3 – NM DCT/FRA Implementation and support			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	30/06/2017
<b>Project Leader</b>	EUROCONTROL/NETWORK MANAGER		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.2	Family 3.2.1
<b>Project Objective</b>	<p>This project contributes directly to the implementation of AF3 / S-AF3.2 Free Route:</p> <ul style="list-style-type: none"> <li>Family 3.2.2 Upgrade NM Systems to support Direct Routing Operation (DCT)</li> <li>Family 3.2.3 Implement Direct Routes</li> </ul> <p>The project allows to :</p> <ul style="list-style-type: none"> <li>Ensure and co-ordinate the gradual implementation, in a harmonized way, of Free Route Airspace, including DCT based, throughout the European airspace.</li> <li>Adapt NM systems to cope with Free route developments</li> </ul> <p>The project is a key contributor to the following Strategic Objectives mentioned in the Network Strategy Plan (NSP):</p> <ul style="list-style-type: none"> <li>SO 3 : Implement a seamless and flexible airspace</li> <li>SO 4: Plan optimum capacity and flight efficiency</li> <li>SO 5: Facilitate business trajectories and cooperative traffic management</li> </ul>		
<b>Interdependencies</b>	-		
<b>Synchronisation</b>	With Airspace Users, ANSPs		
<b>Links</b>	AF 4; Sub AF 4.2		
<b>NM Links</b>	NM inputs provided through the normal channels as any other implementing stakeholder.		

131AF3 – 1st part of the upgrade of the P_21 PEGASUS system to SESAR functionalities - Test and Validation Platform			
<b>Start Date</b>	01/09/2015	<b>End Date</b>	28/02/2017
<b>Project Leader</b>	PANSA		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.2	Family 3.2.1
<b>Project Objective</b>	<p>The P_21 system transition to iTEC has the following objectives:</p> <ul style="list-style-type: none"> <li>• Deployment of Preliminary Deployment Plan functionalities of the ATM System, mostly the ATM. Functionality 3 - Flexible Airspace Management and Free Route (Family 3.2.1), with references to: <ul style="list-style-type: none"> <li>◦ Pilot Common Project – Technical Annex for the AF 03: <ul style="list-style-type: none"> <li>• 3.1.1. Airspace Management and Advanced Flexible Use of Airspace: <ul style="list-style-type: none"> <li>▪ The ATC system shall support flexible configuration of sectors so that their dimensions and operating hours can be optimized according to the demands of the NOP</li> <li>▪ The system shall allow a continuous assessment of the impact of changing airspace configurations on the network</li> <li>▪ ATC systems shall correctly depict the activation and de-activation of configurable airspace reservations and the change of a volume of airspace from a fixed route network to FRA</li> <li>▪ The ASM, ATFCM and ATC systems shall securely interface in a way that allows the provision of air navigation services based on a common understanding of the airspace and traffic environment. The ATC systems shall be modified to enable this functionality to the extent necessary to comply with Regulation (EC) No 552/2004, point 4 of Part A of Annex II.</li> </ul> </li> <li>• 3.2.1. Free Route - ATC systems shall implement the following: <ul style="list-style-type: none"> <li>▪ Flight data processing system, including HMI, to manage trajectory/flight planning without reference to the fixed ATS network</li> <li>▪ Flight planning systems to support FRA and cross-border operations</li> <li>▪ ASM/ATFCM to manage FRA — for FRA, Medium Term Conflict Detection (MTCD) including Conflict Detection Tools (CDT), Conflict Resolution Assistant (CORA),</li> </ul> </li> </ul> </li> </ul> </li> </ul>		

	<p>Conformance Monitoring, and APW for dynamic airspace volumes/sectors; Trajectory prediction and de-confliction shall support an automated MTCD tool adapted to operate in FRA airspace and, when required, on DCT</p> <ul style="list-style-type: none"> <li>▪ Flight Data Processing System (FDPS) shall support FRA, DCT and A-FUA</li> <li>▪ The controller working position shall support the operating environments, as appropriate</li> </ul> <ul style="list-style-type: none"> <li>○ Baltic FAB CONOPS <ul style="list-style-type: none"> <li>• 3.3.6 FRA (Free Route Airspace) <ul style="list-style-type: none"> <li>▪ The deployment of FRA will initially require the introduction of a number of key enablers - System support – enhancement for the purposes of flight planning, flight data processing, flight data display and exchange, coordination, conflict detection and resolution;</li> </ul> </li> </ul> </li> </ul> <ul style="list-style-type: none"> <li>• Deployment at the same time of elements of other ATM Functionalities: <ul style="list-style-type: none"> <li>• Enable the ATM System to support RNP operations (Family 1.2.3)</li> <li>• Electronic Flight Strips (Family 2.1.2)</li> <li>• Interface to NMS (Family 4.2.3)</li> <li>• FDP system adaptation to interface with NOP (Family 4.4.1)</li> <li>• ATM system adaptation to support AIXM 5.1 (Family 5.3.2)</li> <li>• FDPS upgrade preparing for IOP Flight Object exchanges (Family 5.6.1)</li> </ul> </li> <li>• Alignment of the PEGASUS ATM system to further joint development within the iTEC cooperation and with the FAB partner</li> </ul>
<b>Interdependencies</b>	-
<b>Synchronisation</b>	With ANSPs, ECTL/NM
<b>Links</b>	AF3; Sub AF3.1, Family 3.1.1 AF 1, AF 4, AF 5; Family 1.2.3, Family 2.1.2, Family 4.2.3, Family 4.4.1, Family 5.3.2, Family 5.6.1
<b>NM Links</b>	<p><b>NSP:</b> The project has direct links with SO 3/1 (Deploy full free route airspace throughout the European ATM network, to the maximum extent possible); SO 3/2 (Implement Advanced Flexible Use of Airspace); SO 4/1 (Modernise the local/FAB system capabilities including ATC planning functions and Controller tools procedures);</p> <p><b>NOP:</b> This project is not addressed by NOP Annex 5 (ACC TRAFFIC FORECAST &amp; CAPACITY PLANS) as the PANSA listed only the data link system improvement as the technical measures for capacity enhancement.</p>

**Family 3.2.4 – Implement Free Route Airspace**

<b>020AF3– Borealis Free Route Airspace (Part 1)</b>			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	31/12/2016
<b>Project Leader</b>	BOREALIS Alliance		
<b>Contributors</b>	Avinor, EANS, Finavia, IAA, LFV, LGS, NATS, NAVIAIR		
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.2	Family 3.2.4
<b>Project Objective</b>	<p>The Borealis Alliance will implement Free Route Airspace (FRA) within the NEFRA region that consists of the two functional airspace blocks (FAB) of Denmark-Sweden and North European Functional Airspace Block (Estonia, Finland, Latvia, Norway). Free Route Airspace is a key element of the Pilot Common Project and NEFRA is a cross-border inter-FAB region of Europe.</p> <p>This project will be broken down into airspace design, fast and real-time simulations and finally implementation. A second part is planned at a later stage to cover also the airspaces of UK, Ireland and Iceland</p>		
<b>Interdependencies</b>	-		
<b>Synchronisation</b>	With Airspace Users, ANSPs, ECTL/NM		
<b>Links</b>	AF3; Sub AF3.2, Family 3.2.1 AF3; Sub AF3.2, Family 3.2.3 AF4; Sub AF 4.1, Family 4.1.1 AF4; Sub AF 4.2, Family 4.2.2 AF4; Sub AF 4.2, Family 4.2.3 AF4; Sub AF 4.4; Family 4.4.1		
<b>NM Links</b>	<p><b>NSP:</b> SO 3/1 (Deploy full free route airspace throughout the European ATM network, to the maximum extent possible) ; SO 3/3 (Implement appropriate cross-border airspace structures, enabling a flexible use of airspace - to achieve the flight efficiency targets and ensure appropriate cross-border sectorization as required for FRA deployment) ; SO 3/4 (Coordinate the development and implementation of airspace design and airspace management improvements to achieve the flight efficiency targets and ensure appropriate network connectivity and coordination) ; SO 4/1 (Modernise the local/FAB system capabilities including ATC planning functions and Controller tools procedures) for AVINOR and LGS.</p> <p><b>NOP:</b> This project is addressed by NOP Annex 5 (ACC TRAFFIC FORECAST &amp; CAPACITY PLANS) as the airspace/free route airspace measure for capacity enhancement in 2015-2019 time slot by NAVIAIR, EANS, Finavia, IAA, AVINOR, LFV and NATS ; the technical measures for capacity enhancements in 2015-2019 time slot by NAVIAIR, EANS, LGS, IAA, AVINOR, LFV and NATS</p>		

063AF3 – ENAV implementation of Free Route			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	31/12/2017
<b>Project Leader</b>	ENAV		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.2	Family 3.2.4
<b>Project Objective</b>	<p>The project aims to implement free route operations in Italy through a seamless integration of the four Italy ACCs enabling airspace users to flight-plan their preferred trajectories within the whole Italian airspace. The deployment will address both technical systems and operational airspace design and procedures.</p> <p>ENAV and BLUE MED FAB partners have been implementing Free Route Airspace concept according to the agreed BLUE MED FAB Implementation Programme, within which the Free Route Airspace concept will be applied in all its stages: from the implementation of night DCTs, up to more ambitious Free Route scenarios on regional scale.</p> <p>The project aims to implement free route operations in Italy through a seamless integration of the four Italy ACCs enabling airspace users to flight-plan their preferred trajectories within the whole Italian airspace. The deployment will cover technical systems, operational airspace design and procedures addressing the following objectives:</p> <ul style="list-style-type: none"> <li>• Enable users preferred trajectories within whole Italian airspace</li> <li>• Upgrade of ATM Systems</li> <li>• Seamless integration of four Italy ACCs</li> <li>• ATS-route network optimization, including arrival and departure procedures</li> <li>• Sectors adaptation to accommodate the changes in traffic flows where needed</li> </ul>		
<b>Interdependencies</b>	095AF3 – Implementation of FRA in Greece		
<b>Synchronisation</b>	With Airspace Users, ANSPs, ECTL/NM		
<b>Links</b>	AF3; Sub AF 3.1, Family 3.1.1 AF3; Sub AF3.2; Family 3.2.1 AF 4; Sub AF4.1; Family 4.1.1		
<b>NM Links</b>	<b>NSP:</b> direct links with SO 3/1 (Deploy full free route airspace throughout the European ATM network, to the maximum extent possible); SO 3/4 (Coordinate the development and implementation of airspace design and airspace management improvements to achieve the flight efficiency targets and ensure appropriate network connectivity and coordination); SO 4/1 (Modernise the local/FAB system capabilities including ATC planning functions and Controller tools procedures).		



**NOP:** This project is addressed by NOP Annex 5 (ACC TRAFFIC FORECAST & CAPACITY PLANS) as free route airspace measure for capacity enhancement in 2015-2017 time slot by 4 Italian ACCs Technical measure by the deployment of MTCD by 4 Italian ACCs in 2016.

### 095AF3 – Implementation of FRA in Greece

<b>Start Date</b>	01/11/2015	<b>End Date</b>	31/12/2016
<b>Project Leader</b>	HCAA		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.2	Family 3.2.4
<b>Project Objective</b>	<p>HANSP and BLUE MED FAB partners have been implementing Free Route Airspace concept according to the agreed BLUE MED FAB Implementation Program, within which the Free Route Airspace concept will be applied in all its stages: from the implementation of night DCTs, up to more ambitious Free Route scenarios on regional scale. The project aims to implement free route operations in Greece through a seamless integration of the two Greek ACCs enabling airspace users to flight-plan their preferred trajectories within the airspace of HELLAS UIR. The deployment will cover technical systems, operational airspace design and procedures addressing the following objectives:</p> <ul style="list-style-type: none"> <li>• Enable users preferred trajectories within the airspace of HELLAS UIR</li> <li>• Upgrade of ATM Systems</li> <li>• Seamless integration of two Greek ACCs</li> <li>• ATS-route network optimization, including arrival and departure procedures</li> <li>• Sectors adaptation to accommodate the changes in traffic flows where needed</li> </ul>		
<b>Interdependencies</b>	063AF3 - ENAV implementation of flexible ASM and Free Route		
<b>Synchronisation</b>	With Airspace Users, ANSPs, ECTL/NM		
<b>Links</b>	AF3, Sub AF3.2, Family 3.2.1 AF 4; Sub AF 4.2		
<b>NM Links</b>	<p><b>NSP:</b> direct links with SO 3/1 (Deploy full free route airspace throughout the European ATM network, to the maximum extent possible); SO 3/4 (Coordinate the development and implementation of airspace design and airspace management improvements to achieve the flight efficiency targets and ensure appropriate network connectivity and coordination); SO 4/1 (Modernise the local/FAB system capabilities including ATC planning functions and Controller tools procedures).</p> <p><b>NOP:</b> This project is addressed by NOP Annex 5 (ACC</p>		

TRAFFIC FORECAST & CAPACITY PLANS) as free route airspace measure for capacity enhancement in 2016-2019 time slot by Athens and Makedonia ACCs; Technical measure by the deployment of a new ATM system by Athens and Makedonia ACCs( 2015-2017).

### 102AF3 – Free route airspace from the Black Forest to the Black Sea

<b>Start Date</b>	01/09/2015	<b>End Date</b>	21/04/2017
<b>Project Leader</b>	Hungarocontrol		
<b>Contributors</b>	Austro Control, BHANSA, Croatia Control, ANS CR, LPS SR, Slovenia Control		
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.2	Family 3.2.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• development of the cross-border FRA concept within FAB CE</li> <li>• validation of the cross-border FRA concept within FAB CE</li> <li>• development of the FRA concept intra-FAB CE (throughout the FAB)</li> <li>• validation of the FRA concept intra-FAB CE (throughout the FAB)</li> <li>• increase airspace capacity</li> <li>• reduce the environmental footprint</li> <li>• via flexible/shorter routes improve the sustainability of aviation</li> </ul>		
<b>Interdependencies</b>	063AF5 - ENAV implementation of flexible ASM and Free Route		
<b>Synchronisation</b>	With Airspace Users, ANSPs, ECTL/NM		
<b>Links</b>	AF3; Sub AF3.2, Family 3.2.1 AF 4; Sub AF 4.2		
<b>NM Links</b>	<p><b>NSP:</b> This project has indirect links with NSP SO, as it does not address the deployment but the preparatory activities for deployment: SO 3/1 (Deploy full free route airspace throughout the European ATM network, to the maximum extent possible); SO 3/3 (Implement appropriate cross-border airspace structures, enabling a flexible use of airspace - to achieve the flight efficiency targets and ensure appropriate cross-border sectorization as required for FRA deployment) ; SO 3/4 (Coordinate the development and implementation of airspace design and airspace management improvements to achieve the flight efficiency targets and ensure appropriate network connectivity and coordination) ; SO 4/1 (Modernise the local/FAB system capabilities including ATC planning functions and Controller tools procedures).</p> <p><b>NOP:</b> This project is addressed by NOP Annex 5 (ACC TRAFFIC FORECAST &amp; CAPACITY PLANS) as Free route airspace measure for capacity enhancement in 2015-2019 time slots by Austro Control, Croatia Control, ANS CR, LPS</p>		

SE and Slovenia Control. HungaroControl already deployed fully FRA within The Budapest FIR airspace but did not refer in their capacity plans for FABCE FRA deployment. BHANSA capacity plans are not addressed by NOP as ATS provision above FL 325 is delated to Serbia and Croatia and their respective ANSPs; the technical measures for capacity enhancements in 2015-2019 time slot by Austro Control, Croatia Control, ANS CR, LPS SE and Slovenia Control.

## AF4 Network Collaborative Management

The following table encompasses the list of implementation initiatives associated to ATM Functionality #4 that were awarded under the 2014 CEF Transport Calls for Proposal.

2014 CEF Call Designator	Title	Family	IP Description Page Number
078AF4	ATFCM measures (STAM)	4.1.1	63
077AF4	Interactive Rolling NOP	4.2.2	64
062AF4	ENAV initiative for the identification of Network Collaborative Management requirements	4.2.3	64
123AF4	Family 4.2.3 NAV Portugal Interface to NMS AFP	4.2.3	65
079AF4	Trajectory accuracy and traffic complexity	4.4.2	66

**Family 4.1.1 – STAM Phase 1**

<b>078AF4 – ATFCM measures (STAM)</b>			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	30/06/2017
<b>Project Leader</b>	EUROCONTROL/NETWORK MANAGER		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF4	S-AF 4.1	Family 4.1.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Minimizing ATFCM delay by reducing the need for ATFCM regulations and its impact on operations.</li> <li>Improve the balance between demand and available capacity through cooperation between ATFCM and ATS processes, through targeted measures on (an) individual flight(s).</li> <li>Delivery of a complete package of system support and operational procedures, to enable the harmonised and effective deployment of Short Term ATFCM Measures throughout the European airspace.</li> <li>Support the network coordination between stakeholders and provide the network view for the elaboration, decision and execution of STAM measures.</li> <li>Provide the collaborative environment to stakeholders during the elaboration, decision and execution of STAM measures.</li> </ul> <p>The project is a key contributor to the following Strategic Objectives mentioned in the Network Strategy Plan (NSP):</p> <ul style="list-style-type: none"> <li>SO 4: Plan optimum capacity and flight efficiency</li> <li>SO 5: Facilitate business trajectories and cooperative traffic management</li> </ul>		
<b>Interdependencies</b>	<ul style="list-style-type: none"> <li>077AF4 - Interactive Rolling NOP</li> <li>062AF4 - ENAV initiative for the identification of Network Collaborative Management requirements</li> <li>083AF1 - AMAN extended to en-route</li> </ul>		
<b>Synchronisation</b>	With Airspace Users, Airports, ANSPs		
<b>Links</b>	AF4;SubAF4.2; Family 4.2.2 AF1; Sub AF 1.1; Family 1.1.3		
<b>NM Links</b>	<b>NSP:</b> SO4/ SO5 <b>NOP:</b> Yes		

**Family 4.2.2 – Interactive Rolling NOP**

<b>077AF4 – Interactive Rolling NOP</b>			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	30/06/2017
<b>Project Leader</b>	EUROCONTROL/NETWORK MANAGER		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF4	S-AF 4.2	Family 4.2.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Extension and improvement of the process referred to as the interactive rolling NOP.</li> <li>• Replacing the existing interfaces (NOP Portal, CHMI and EHMI) into a single interface</li> <li>• Provision of the common interface to all Stakeholders to enable the collaborative decision making processes used to build and execute the Network Operations Plan.</li> </ul> <p>The project is a key contributor to the following Strategic Objectives mentioned in the Network Strategy Plan (NSP):</p> <ul style="list-style-type: none"> <li>• SO 4: Plan optimum capacity and flight efficiency</li> <li>• SO 5: Facilitate business trajectories and cooperative traffic management</li> </ul>		
<b>Interdependencies</b>	<ul style="list-style-type: none"> <li>• 078AF4 – ATFCM measures (STAM)</li> <li>• 081AF3 - NM DCT/FRA Implementation and support</li> <li>• 082AF5 - SWIM compliance of NM systems</li> </ul>		
<b>Synchronisation</b>	With Airspace Users; Airports; ANSPs; EUROCONTROL; MET		
<b>Links</b>	AF4;SubAF4.2; Family 4.2.3 AF4;SubAF4.1; Family 4.1.1 AF3;Sub AF 3.2; Family 3.2.3 AF3Sub AF 3.2; Family 3.2.4 AF5;Sub AF 5.3; Family 5.3.1		
<b>NM Links</b>	<b>NSP:</b> SO4, SO5 <b>NOP:</b> Yes		

**Family 4.2.3 – Interface ATM systems to NM systems**

<b>062AF4 – ENAV initiative for the identification of Network Collaborative Management requirements</b>			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	31/12/2017
<b>Project Leader</b>	ENAV		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF4	S-AF 4.2	Family 4.2.3
<b>Project Objective</b>	ENAV will develop a study in order to identify all requirements and provisions to meet the demands set for		

	<p>AF4 under Reg. 716/2014. The study will identify measures in order to implement:</p> <ul style="list-style-type: none"> <li>• Optimized management of traffic demand, including high-level/peak hours traffic requests. Some enhancement through reduction in controller workload.</li> <li>• Enhanced by improved sharing of the network situation</li> <li>• Better use of the available network capacity</li> <li>• Increased through suppression of flight ATFM regulations thanks to local ATFCM measures with the same ATC sector manning</li> <li>• Small benefits through improved use of the airport and airspace capacity resulting from a better knowledge of the airspace availability and of the traffic demand.</li> <li>• Reduction of costs induced by delays</li> <li>• Reduction of flight delays Enhanced through use of cost effective tools to access network information instead of expensive local tools or procedures and through the improved capacity</li> </ul>
<b>Interdependencies</b>	<ul style="list-style-type: none"> <li>• 063AF3 - ENAV implementation of flexible ASM and Free Route</li> <li>• 066AF5 - ENAV AIS system Upgrade to support AIXM5.1</li> <li>• 078AF4 - ATFCM measures (STAM)</li> <li>• 079AF4 - Trajectory accuracy and traffic complexity</li> </ul>
<b>Synchronisation</b>	With ANSPs, NM
<b>Links</b>	<p>AF4,SubAF4.1, Family 4.1.1  AF4,SubAF4.2, Family 4.2.2  AF4,SubAF4.4, Family 4.4.1  AF4,SubAF4.4, Family 4.4.2  AF3,SubAF3.1, Family 3.1.1  AF3,SubAF3.2, Family 3.2.1  AF3,SubAF3.2, Family 3.2.3  AF5,SubAF5.3, Family 5.3.1</p>
<b>NM Links</b>	<p><b>NSP</b> : SO4/1, SO4/2, SO4/3, SO5/1, SO5/4  <b>NOP</b>:Marginal with NOP annex 5 (ACC traffic forecast and capacity plan) with a reference to the improved ATFCM process (including STAM) by 4 Italian ACCs</p>

### 123AF4 – Family 4.2.3 NAV Portugal Interface to NMS AFP

<b>Start Date</b>	01/05/2015	<b>End Date</b>	31/03/2017
<b>Project Leader</b>	Nav Portugal		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF4	S-AF 4.2	Family 4.2.3



<b>Project Objective</b>	<ul style="list-style-type: none"> <li>The purpose of this national project (action), on the Lisbon FIR, is to contribute for the European wide objectives of the IR 716/2014 AF#4, namely on the Improvement of the collaboration between the NM and ANS providers, airports and airspace users in flight plan filing.</li> <li>The Lisbon FIR ATM system should automatically provide AFP message for: <ul style="list-style-type: none"> <li>Missing flight plan</li> <li>Change of route</li> <li>Diversion</li> <li>Change of flight rules or flight type</li> <li>Change of requested cruising level</li> <li>Change of aircraft type</li> <li>Change of aircraft equipment.</li> </ul> </li> <li>The APL and ACH messages sent by IFPS and AFP messages are automatically processed</li> </ul>
<b>Interdependencies</b>	-
<b>Synchronisation</b>	NM
<b>Links</b>	-
<b>NM Links</b>	<b>NSP:</b> S04/1, S04/2 <b>NOP:</b> Annex 5

#### Family 4.4.2 – Traffic Complexity Tools

079AF4 – Trajectory accuracy and traffic complexity			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	30/06/2017
<b>Project Leader</b>	EUROCONTROL/NETWORK MANAGER		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF4	S-AF 4.4	Family 4.4.2
<b>Project Objective</b>	<p>This IP addresses the Family 4.4.1 'FDP System adaptation and EFD (EFTMS flight data message)' and contributes to the S-AF4.4 'Automated Support for Traffic Complexity Assessment'.</p> <ul style="list-style-type: none"> <li>The accuracy of demand assessment will be significantly improved by the use of the Extended Flight Plan (EFPL) in the planning phase, meaning a Flight Plan enriched with detailed trajectory and flight performance information. This will also positively impact the ETFMS flight data (EFD) messages process.</li> <li>The better accuracy of the initial trajectory information provided by NM will improve traffic predictability in general, and more specifically facilitate the traffic complexity assessment both at</li> </ul>		

	<p>local and central level.</p> <ul style="list-style-type: none"> <li>• The implementation of Network Traffic Scenario management tools at NM level will also directly contribute to manage traffic complexity.</li> <li>• Improved trajectory/constraint accuracy/awareness will also result in potential improvements to flight efficiency.</li> </ul>
<b>Interdependencies</b>	062AF4 - ENAV initiative for the identification of Network Collaborative Management requirements
<b>Synchronisation</b>	With Airspace Users, Airports, ANSPs, EUROCONTROL
<b>Links</b>	AF4,SubAF4.1, Family 4.1.1
<b>NM Links</b>	<b>NSP:</b> S05 <b>NOP:</b> Yes

## AF 5 Initial SWIM

The following table encompasses the list of implementation initiatives associated to ATM Functionality #5 that were awarded under the 2014 CEF Transport Calls for Proposal.

2014 CEF Call Designator	Title	Family	IP Description Page Number
073AF5	SWIM Common Components	5.1.3	69
014AF5	MPLS WAN Project	5.2.1	70
059AF5	Implementation of an IP-based G/G data communication network in ENAIRE	5.2.1	71
127AF5	National WAN Infrastructure - CANDI-IP preparation project	5.2.1	71
117AF5	Implementation of Initial Capability SWIM across NATS	5.2.2	72
006AF5	ATM Data Quality (ADQ)	5.3.1	73
009AF5	Integrated Briefing System New (IBSN)	5.3.1	74
040AF5	ADQ - Aeronautical Data Quality	5.3.1	75
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**Family 5.1.3 – Common SWIM Infrastructure Components**

<b>073AF5 – SWIM Common Components</b>			
<b>Start Date</b>	01/01/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	EUROCONTROL		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.1	Family 5.1.3
<b>Project Objective</b>	<p>The objective of this project is twofold:</p> <p><u>1. SWIM Data Models - deployment toolkit:</u> The goal is to have common rules for the data capturing/mapping/interpretation. It will include:</p> <ul style="list-style-type: none"> <li>• Development of an AIXM Coding Guidelines Service. This service will update the AIXM 5.1 coding guidelines better reflecting the needs of a wider range of stakeholders, such as NM sub-systems, ATC, procedure designers, etc.</li> <li>• Provide AIXM Data Validation Services, ensuring that data sets are syntactically valid (against the XML Schema) and semantically correct and can be used in confidence for a particular application. The initial set of AIXM 5.1 Business Rules needs to be maintained and enhanced, considering the feedback from the implementations and the needs of the various stakeholder groups.</li> <li>• Provide a Web Based Training (WBT) Service for the latest AIXM version. The existing AIXM 4.5 WBT is outdated and there is a strong need for a new AIXM 5.1 WBT Service.</li> </ul> <p>The deployment toolkits will be updated based on further versions of the following specifications:</p> <ul style="list-style-type: none"> <li>• Aeronautical Information Exchange Model (AIXM) version 5.2</li> <li>• Weather Exchange Model (WXXM) and ICAO Weather Exchange Model (IWXXM) version 3</li> <li>• Flight Information Exchange Model (FIXM) version 4</li> </ul> <p><u>2. Registry:</u> The SWIM Registry will provide a platform for the service providers to find information about SWIM (SWIM Reference Management) and will provide a limited support for the end-users, including minor changes to the look and feel of the SWIM registry and allow updates of the SWIM references when needed.</p>		
<b>Interdependencies</b>	-		
<b>Synchronisation</b>	With Airports, ANSPs, Airspace Users, NM, MET		

<b>Links</b>	AF 2/Sub AF 2.1/ Family 2.1.3; AF 2/Sub AF 2.1/ Family 2.1.4 AF 4/ Sub AF 4.2/;; Family 4.2.1 ; AF 4/ Sub AF 4.2/ Family 4.2.3; AF 4/ Sub AF 4.2/ Family 4.2.4 AF 5/Sub AF 5.1/ Family 5.1.1; AF 5/Sub AF 5.4; AF 5/Sub AF 5.5 AF 5/Sub AF 5.6
<b>NM Links</b>	NM inputs provided through the normal channels as any other implementing stakeholder

### Family 5.2.1 – Stakeholder Internet Protocol Compliance

014AF5 – MPLS WAN project			
<b>Start Date</b>	17/11/2014	<b>End Date</b>	07/06/2018
<b>Project Leader</b>	BELGOCONTROL		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.2	Family 5.2.1
<b>Project Objective</b>	<p>In the context of the Common Backbone Network Group (Germany, Belgium, Luxembourg and the Netherlands), the RAPNET (Regional Aeronautical Packet switched NETwork) is currently used by these ANSP's to connect to the PENS (Pan-European Network System). The evolution of this inter-ANSP network is based on MPLS (MultiProtocol Label Switching) and Belgocontrol needs to implement a compatible networking infrastructure. The specific goals of MPLS WAN project are:</p> <ul style="list-style-type: none"> <li>• to create a secure and performing IP-based Ground-Ground communication network for the transfer of both operational data (Radar, Voice, Meteo, Aeronautical and Flight Information) and administrative data (LAN and Telephony)...</li> <li>• to share the different Belgocontrol applications on the network with the required data integrity;</li> <li>• to replace current SDH (Synchronous Digital Hierarchy) based by an MPLS based Wide Area Network (WAN).</li> </ul> <p>The project will allow compliance with EU 409/2013 and 716/2014</p>		
<b>Interdependencies</b>	-		
<b>Synchronisation</b>	With Airports, ANSPs, MET		
<b>Links</b>	-		
<b>NM Links</b>	<p><b>NSP:</b> SO 6/5, SO 9/4  <b>NOP:</b> AMAN projects are mentioned in NOP for many FABEC ANSPs.</p>		

059AF5 – Implementation and operation of an IP-based G/G data communication network in ENAIRE			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	31/12/2017
<b>Project Leader</b>	ENAIRE		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.2	Family 5.2.1
<b>Project Objective</b>	<p>Evolution of the existing ENAIRE's aeronautical data network (REDAN) in order to ensure an agreed level of Ground-Ground interconnectivity between ENAIRE ATSUs and stakeholders as required to facilitate information exchange with the communication requirements of new applications (SWIM based). This evolution will include voice and data integration and Alignment of REDAN technology with the current and future state-of-the-art. Benefits are expected through Reduction of maintenance and operation costs.</p> <p>The scope of the project includes deployment of the new network infrastructure in ACCs and remote sites (TWRs, radar and radio stations, etc.), user integration into new infrastructure, training and Safety studies and continuous supervision of the deployed network infrastructure.</p>		
<b>Interdependencies</b>	-		
<b>Synchronisation</b>	With Airspace Users, Airports, ANSPs, MET		
<b>Links</b>	-		
<b>NM Links</b>	<b>NSP:</b> SO 8/3 <b>NOP:</b> No link		

127AF5 – National WAN Infrastructure - CANDI-IP preparation project			
<b>Start Date</b>	03/02/2014	<b>End Date</b>	27/04/2015
<b>Project Leader</b>	NAVIAIR		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.2	Family 5.2.1
<b>Project Objective</b>	<p>The project aims at providing requirements for an adequate WAN infrastructure that will be compliant with the requirements of an IP g/g communications network is available. This WAN infrastructure will:</p> <ul style="list-style-type: none"> <li>• Ensure continuous availability of WAN data transport in EKDK FIR</li> <li>• Ensure logical and physical segregation of operationally critical data</li> </ul>		

	<ul style="list-style-type: none"> <li>• Ensure that requirements on VoIP data transport are fulfilled</li> <li>• Ensure that rules and requirements on IPv6 data transport are fulfilled</li> <li>• Interface to PENS</li> </ul>
<b>Interdependencies</b>	-
<b>Synchronisation</b>	No
<b>Links</b>	-
<b>NM Links</b>	<b>NSP:</b> S08/3; <b>NOP:</b> None;

### Family 5.2.2 – Stakeholder SWIM Infrastructure components

117AF5 – Implementation of Initial SWIM Capability (AF5) across NATS			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	31/07/2018
<b>Project Leader</b>	NATS		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.2	Family 5.2.2
<b>Project Objective</b>	<p>The objective is to enable iSWIM as an enabler for other PCP elements that deliver benefits in safety, capacity, cost-effectiveness and environment. Initial System Wide Information Management (iSWIM) supports information exchanges that are built on standards and delivered through an internet protocol (IP)-based network by SWIM enabled systems and will be delivered in the following blocks: Common Infrastructure Components (Sub AF 5.1); SWIM Technical Infrastructure and Profiles (Sub AF 5.2); Aeronautical information exchange (Sub AF 5.3); Meteorological information exchange (Sub AF 5.4); Cooperative network information exchange (Sub AF 5.5) and Flight information exchange (Sub AF 5.6) NATS proposal is to deliver a core Enterprise Information Service (EIS) capability to interconnect ATM services within centres, with Airports and other users and to underpin and enable later stages of information exchange by Flight Object. Delivery of the core EIS is the prime action in this 2014 funding call to enable information exchanges of this nature, a number of NATS core systems (primarily Networks, FDP, AIS and Meteo) also require update and enhancement. By their nature, these enhancements need to be carried out first and form the other sub-action elements of this 2014 funding call. Provision of full Flight Object exchange and IOP are expected to be part of future funding requests.</p>		



<b>Interdependencies</b>	-
<b>Synchronisation</b>	With Airspace Users, Airports, ANSPs, ECTL/NM, MET
<b>Links</b>	AF 1, AF 3, AF 4, AF 6; AF 5/Sub AF 5.1/ Family 5.1.1 AF5/Sub AF 5.2, AF5/ Sub AF 5.3/ Family 5.3.1 AF5/ Sub AF 5.3/ Family 5.3.2 AF 5/Sub AF 5.5, AF 5/ Sub AF 5.6
<b>NM Links</b>	<b>NSP:</b> "SO2/1; SO2/5; SO2/4; <b>NOP:</b> NO;

### Family 5.3.1 – Upgrade/Implement Aeronautical Information Exchange System/Service

006AF5 – ATM Data Quality (ADQ)			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	15/12/2015
<b>Project Leader</b>	AUSTROCONTROL		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.3	Family 5.3.1
<b>Project Objective</b>	<p>The project aims to migrate Austro Control's aeronautical data base to support AIXM 5.1, ensuring the data quality to be high enough to be compatible with System Wide Information Management (SWIM). This migration will support the enhancement of security, data integrity and capacity, as well as promotion of ATM automation. The proposed action is therefore instrumental to the fulfilment of the requirements according to ICAO Annex15 and ESSIP INF05, as well as for creating the basis for a smooth implementation of SES/ADQ, more specifically aiming at:</p> <ul style="list-style-type: none"> <li>• Compliance to ICAO Annex 15 and Commission Regulation (EU) No 73/2010 ensured</li> <li>• Validation and integrity checks introduced</li> <li>• Workflow management system introduced to the service delivery management domain (SDM)</li> <li>• Stream for internal and external data delivery digitalized</li> <li>• National legislation aligned</li> </ul>		
<b>Interdependencies</b>	-		
<b>Synchronisation</b>	With Airports		
<b>Links</b>	AF 1/Sub AF 1.2/ Family 1.2.1 AF 1/Sub AF 1.2/ Family 1.2.2 AF 1/Sub AF 1.2/ Family 1.2.3		

	AF 3/ Sub AF 3.2/ Family 3.2.1 AF 3/ Sub AF 3.2/ Family 3.2.3 AF 4/Sub AF 4.2/ Family 4.2.2 AF5/Sub AF 5.3/ Family 5.3.1
<b>NM Links</b>	<b>NSP:</b> SO 2/5 <b>NOP:</b> No link

009AF5 – Integrated Briefing System New (IBSN)			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	30/11/2015
<b>Project Leader</b>	Austro Control		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.3	Family 5.3.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• AIDA (Aeronautical Information Data-handling-system Austria)/Integrated Briefing System (IBS) Legacy System (technology end of life as well as software architecture) replaced</li> <li>• "EAD customized" (EAD - European Aeronautical Database) implemented</li> <li>• Connection to existing Austro Control infrastructure (network, working positions, ECITs – EAD Connection Interface Terminal, BF (Briefing Facility)-Box, IBS Web services etc.) ensured</li> <li>• Data from legacy system transferred</li> <li>• AIDA/IBS legacy system cut out and sub-provider contracts cancelled</li> <li>• OPS (operations) training (AIM/VFSS) and briefing of technical personnel (ACG Service Control Center and experts) conducted</li> <li>• Nagios and Trouble Ticket System inserted</li> <li>• "EAD customized" set in operation after successful FAT and SAT</li> </ul> <p>Austro Control's Integrated Briefing Legacy System has reached end of life (of the technological product cycle) and needs to be replaced. The new briefing service will be prepared to be compliant with the System-Wide Information Management (SWIM) architecture. The upgrade of AIS services shall be seen as a SWIM prerequisite by using EAD core services (reference is made to ESSIP INF 05)</p> <p>New briefing functions introduced by the new system include:</p> <ul style="list-style-type: none"> <li>• Graphical display (FPL – Flight Plan &amp; NOTAM – Notification to airman)</li> <li>• Mobile devices</li> <li>• Meteorological (MET) web interface</li> <li>• Webshop</li> </ul>		

<b>Interdependencies</b>	-
<b>Synchronisation</b>	With Airspace Users, ANSPs, ECTL / NM, MET
<b>Links</b>	AF 4; Sub AF 4.2; Family 4.2.3
<b>NM Links</b>	<b>NSP:</b> SO 2/5 <b>NOP:</b> No link

040AF5 – ADQ – Aeronautical Data Quality			
<b>Start Date</b>	01/10/2013	<b>End Date</b>	31/12/2016
<b>Project Leader</b>	DFS		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.3	Family 5.3.1
<b>Project Objective</b>	<p>The project consists of DFS migration of their relevant IT systems to AIXM5.1. The Project ADQ is the focal point for all technical issues Reg.73/2010 and establishing AIXM5.1-ability, which will allow:</p> <ul style="list-style-type: none"> <li>• receiving in conformity with Reg. 73/2010 aeronautical data in AIXM5.1 format,</li> <li>• exchange data between internally databases in AIXM5.1 format and also</li> <li>• providing external entities with aeronautical data in the AIXM5.1 format.</li> </ul> <p>In consultation with the German authority BAF, the implementation will be proved by ECTL Specification as Means of Compliance (MoC). One of these ECTL specifications for compliance of AIXM5.1 is the documentation of - Aeronautical information Exchange (Aix)</p>		
<b>Interdependencies</b>	<ul style="list-style-type: none"> <li>• 041AF5 - EASI - EAD AIM System Integration</li> <li>• 084AF5 - Implementation of Prerequisites for the Provision of Aerodrome Mapping Data and Airport Maps as Data Originator (Aeronautical Information Exchange)</li> </ul>		
<b>Synchronisation</b>	With Airports		
<b>Links</b>	AF 1; Sub AF 1.2; Family 1.2.2, Family 5.3.1		
<b>NM Links</b>	<b>NSP:</b> SO 2/5 <b>NOP:</b> No		

041AF5 – EASI - EAD AIM System Integration			
<b>Start Date</b>	05/08/2013	<b>End Date</b>	31/07/2018
<b>Project Leader</b>	DFS		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.3	Family 5.3.1
<b>Project Objective</b>	<p>The DFS project EASI will replace the current DFS system DIAS by the centrally provided EAD system in the context of AIS/ARO functions. This step to a centralised system enables the direct provision of DFS NOTAM and flight plan information via this centralised service. As soon as implemented on the EAD, this DFS information will be available in AIXM-5.1-format and DFS will directly input this data in AIXM-5.1.</p> <p>The abdication of a DFS-specific AIS-system reduces the complexity for the launch of AIXM-5.1 as the number of interfaces and especially parallel AIXM-5.1-implementations is limited. The effort to implement AIXM-5.1 on an internal system can then be spent to support the AIXM-5.1-implementation by EUROCONTROL on the central system.</p> <p>The migration to the central EAD-system is performed by the usage of standard-EAD-terminal-clients and EAD-standard-interfaces.</p>		
<b>Interdependencies</b>	040AF5 - ADQ – Aeronautical Data Quality		
<b>Synchronisation</b>	With Airspace Users, ANSPs, EURO CONTROL ,ECTL / NM		
<b>Links</b>	AF 4/ Sub AF 4.2/ Family 4.2.2, AF 5/ Sub AF 5.3/ Family 5.3.2		
<b>NM Links</b>	<b>NSP:</b> SO 2/5 <b>NOP:</b> No link		

066AF5 – ENAV AIS system Upgrade to support AIXM5.1			
<b>Start Date</b>	01/04/2014	<b>End Date</b>	30/06/2016
<b>Project Leader</b>	ENAV		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.3	Family 5.3.1
<b>Project Objective</b>	The Aeronautical Information Exchange Model (AIXM) is designed to enable the management and distribution of Aeronautical Information Services (AIS) data in digital		

	<p>format.</p> <p>ENAV uses an IDS suite called AERODB for AIS static data storage, exchange, manipulation and AIP and Charts production, the actual DB use AIXM 4.5 protocol.</p> <p>The PIB producing system (AOIS Web) is actually based on a non-standard format environmental DB.</p> <p>The project will complete the AERODB migration to the new information exchange model and will change from AOIS web to a new application called EWADs, in order to ensure fully capability AIS system to support AIXM 5.1 data format,</p>
<b>Interdependencies</b>	-
<b>Synchronisation</b>	With Airports, ANSPs
<b>Links</b>	-
<b>NM Links</b>	<b>NSP:</b> SO 8/3 <b>NOP:</b> No link

#### 084AF5 – Implementation of Prerequisites for the Provision of Aerodrome Mapping Data and Airport Maps as Data Originator (Aeronautical Information Exchange)

<b>Start Date</b>	01/01/2014	<b>End Date</b>	31/03/2016
<b>Project Leader</b>	FRAPORT		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.3	Family 5.3.1
<b>Project Objective</b>	<p>This implementation project will ensure that Frankfurt Airport can fulfil its role as data originator for aerodrome mapping data and airport maps as required by 5.1.3 Aeronautical Information Exchange, bullet point “provide aerodrome mapping data and airport maps” of Commission Regulation (EU) No 716/2014.</p> <p>The implementation of this project will allow the provision of aerodrome mapping data and airport maps by standard XML schema as per AIXM 5.1.</p> <p>In order to implement Regulation (EU) No 73/2010 and to be able to fulfil their role as data originator for aerodrome mapping data and airport maps German airports, their associations ADV and IDRF and DFS agreed upon a common process for the aeronautical data chain and the definition of the interface between airports and the air navigation services provider, DFS. The interface dealing with data and information provided by the originators (airports) to the receiver (DFS) will use the AIXM 5.x format (Aeronautical Information Exchange Model).</p> <p>Therefore, a tool is required which transforms the data formats used at airports in such a way that they are accepted by the interface provided by DFS and that they</p>		

	comply with the requirements of Commission Regulation (EU) No 73/2010 and Commission Implementing Regulation (EU) No 716/2014 ("Pilot Common Project"). The implementation project is a prerequisite for the exchange of information among operational stakeholders as required by Commission Regulation (EU) 716/2014.
<b>Interdependencies</b>	041AF5 - EASI - EAD AIM System Integration
<b>Synchronisation</b>	With Airports
<b>Links</b>	-
<b>NM Links</b>	<b>NSP</b> : SO2/5 <b>NOP</b> : None

#### Family 5.4.1 – Upgrade/Implement Meteorological Information Exchange System/Service

016AF5 – Initial WXXM Implementation on Belgocontrol systems			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	11/11/2016
<b>Project Leader</b>	BELGOCONTROL		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.4	Family 5.4.1
<b>Project Objective</b>	<p>The main objectives of this project are:</p> <ul style="list-style-type: none"> <li>Enabling the Brussels Regional OPMET DataBank (RODB) to: <ul style="list-style-type: none"> <li>Receive and store ICAO OPMET data in IWXXM (ICAO Meteorological Information Exchange) format;</li> <li>handle requests from users and to exchange ICAO OPMET data in IWXXM format;</li> </ul> </li> <li>Enabling the issuance of Belgian OPMET data in IWXXM format to ensure conformity with the envisaged Amendment 77 to ICAO Annex 3;</li> <li>Enabling the Belgocontrol ATS Messages Handling system (AMHS) to support exchange of messages in XML (Extensible Markup Language) data formats (IWXXM, ...)</li> </ul>		
<b>Interdependencies</b>	-		
<b>Synchronisation</b>	With Airspace Users, ANSPs, MET		
<b>Links</b>	-		
<b>NM Links</b>	<b>NSP</b> : SO 2/5 <b>NOP</b> :No		

110AF5 – Meteorological Information Exchange by MET ANSP KNMI			
<b>Start Date</b>	01/06/2015	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	KNMI		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.4	Family 5.4.1
<b>Project Objective</b>	<p>The project aims at:</p> <ul style="list-style-type: none"> <li>• Implementation of a flexible and cost-effective interoperable exchange of MET information for Amsterdam TMA and ACC, Amsterdam Airport Schiphol, Airspace Users, Military and Network Manager compliant with the iSWIM data formats and interfaces.</li> <li>• Demonstration and verification of the operational deployment of iSWIM for MET information, and to provide feedback on the principles, standards and specifications currently defined for iSWIM in AF5 and the information and exchange models and schemes of ICAO (WXXM), WMO (METCE) and the EUROCONTROL/FAA (WXCM-WXXM-WXXS).</li> <li>• The implementation and verification covers the standard MET products: TAFs for civil airports in Amsterdam TMA and ACC (WP1); AIRMETs and SIGMETs for the Amsterdam FIR (WP2); METARs and AUTO METARs for civil airports in Amsterdam TMA and ACC (WP4); (AUTO) MET reports and warnings for civil airports in Amsterdam TMA and ACC (WP5). It covers the provision of continuous sensor information for all available runways in Amsterdam TMA and ACC.</li> <li>• The development and implementation of a central database and web services to make the iSWIM compliant MET information easily available to users (WP3).</li> <li>• The realization of a cost-effective, secure and standard interface (PENS) for dissemination of safety critical MET information to ATM (WP6).</li> <li>• The development and implementation of (geo)graphical user interfaces to facilitate the generation and monitoring of the MET products and the efficient maintenance of these data formats.</li> <li>• The embedding of the systems/applications (new and/or extended) for the above mentioned provision of MET information in the operational production and monitoring chains of KNMI.</li> </ul>		
<b>Interdependencies</b>	-		
<b>Synchronisation</b>	With Airspace Users, Airports, ANSPs, EURO CONTROL, ECTL/NM, MET		



<b>Links</b>	-
<b>NM Links</b>	<b>NSP</b> : SO2/5 <b>NOP</b> : None

<b>134AF5 – PILOT PLATFORM for access services to OPMET (worldwide/ECAC) data (METAR, TAF, SIGMET) in WXXM format</b>			
<b>Start Date</b>	02/03/2015	<b>End Date</b>	01/09/2017
<b>Project Leader</b>	ROMATSA		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.4	Family 5.4.1
<b>Project Objective</b>	<p>Upgrade Meteo service to provide reliable actual and forecast Meteo data, wherever required across the ATM network, in WXXM format.</p> <p>The project consists in the achievement of a pilot platform as WEB Service for access to OPMET (worldwide/ECAC) data (METAR, TAF, SIGMET) in WXXM format</p>		
<b>Interdependencies</b>			
<b>Synchronisation</b>	With Airspace Users, ANSPs, ECTL/NM, MET		
<b>Links</b>	AF 5/Sub AF 5.1/ Family 5.1.1		
<b>NM Links</b>	<b>NSP</b> : SO2/5; <b>NOP</b> : None;		

#### **Family 5.5.1 – Upgrade/Implement Cooperative Network Information Exchange System/Service**

<b>082AF5 – SWIM compliance of NM systems</b>			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	30/06/2017
<b>Project Leader</b>	EUROCONTROL/NETWORK MANAGER		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.5	Family 5.5.1
<b>Project Objective</b>	<p>The project aims at extending NM systems technical capabilities to initiate SWIM compliance and at developing/deploying new NM B2B services to exchange network / flight plan information with the operational stakeholders. It aims compliance with the requirements of SWIM Yellow Profile and it includes:</p> <ul style="list-style-type: none"> <li>the exchange of network / flight plan information using the Yellow SWIM TI Profile;</li> </ul>		

	<ul style="list-style-type: none"> <li>the new NM B2B services.</li> </ul> <p>This IP addresses the following Family (ies):</p> <ul style="list-style-type: none"> <li>Family 5.5.1 Interface and Data requirements</li> <li>Family 5.6.1 FDPS Upgrade preparing for IOP Flight Object Exchanges</li> </ul>
<b>Interdependencies</b>	-
<b>Synchronisation</b>	With Airspace Users, Airports, ANSPs, ECTL/NM
<b>Links</b>	AF 2/Sub AF 2.1/ Family 2.1.3 AF 2/Sub AF 2.1/ Family 2.1.4 AF 3/Sub AF 3.2/ Family 3.2.4 AF 4/Sub AF 4.2/ Family 4.2.3 AF 4/Sub AF 4.2/ Family 4.2.4 AF5/ Sub AF 5.2 AF5/ Sub AF 5.3 AF5/ Sub AF 5.6/ Family 5.6.1
<b>NM Links</b>	NM inputs provided through the normal channels as any other implementing stakeholder.

### Family 5.6.2 – Upgrade/Implement Flights Information Exchange System/Service supported by Blue Profile

067AF5 – Coflight-eFDP System Development			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	31/12/2016
<b>Project Leader</b>	ENAV/DSNA		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.6	Family 5.6.2
<b>Project Objective</b>	<p>The Coflight-eFDP System is the Flight Data Processing (FDP) System of new generation designed to meet the needs of European Air Navigation Service Providers (ANSPs) for the next decade, satisfying the need for the harmonisation and interoperability of air traffic management systems in Europe.</p> <p>The Coflight Programme is part of a wider programme that involves the renewal of the whole National ATM System, called 4-Flight, for ENAV and DSNA, through which they will develop their completely brand new ATM system to meet all the requirements from the SES performance scheme as well as from all the relevant regulations for the coming years.</p> <p>4-Flight will guarantee the optimal performances in terms of safety, capacity, environmental impact and cost efficiency, contributing to a significant improvement of the network performances in Europe.</p> <p>The 4-Flight's system core and infrastructure will be made available by the Coflight Programme, which will provide an</p>		

	<p>overall ATM System Oriented architecture and sockets for the other internal components that will be developed according to SESAR compliant user requirements. Coflight will provide also the connections with most of the external systems through SESAR standardised Flight Object based Gate-To-Gate IOP.</p> <p>This project will focus on the development of the successive upgrading software versions (V2R1, V3+ and V4) from requirements to functional tests and reports</p>
<b>Interdependencies</b>	053AF3 - 4-Flight deployment in DSN pilot ACCs
<b>Synchronisation</b>	With Airports, ANSPs, EUROCONTROL, NM
<b>Links</b>	AF 3; Sub AF 3.2
<b>NM Links</b>	<b>NSP:</b> SO5/1 <b>NOP:</b> No

## 2. CEF Call 2015

### AF 1 Extended Arrival Management & PBN in high density TMA

The following table encompasses the list of candidate implementation initiatives associated to ATM Functionality #1 that were awarded under the 2015 CEF Transport Calls for Proposal.

2015 CEF Call Designator	Title	Family	IP Description Page Number
2015_165_AF1	Amsterdam Schiphol AMAN 1.0	1.1.1	84
2015_166_AF1	Amsterdam Schiphol AMAN 2.0	1.1.1	84
2015_188_AF1	Deploy AMAN - Arrival Management at Düsseldorf and Berlin International	1.1.1	84
2015_234_AF1	AMAN LOWW initial	1.1.1	85
2015_073_AF1	AMAN upgrade for extended horizon at DSNB airports	1.1.2	86
2015_101_AF1	Network Support to extended Arrival Management	1.1.2	86
2015_196_AF1	XMAN - Cross-centre arrival management (A) Extended AMAN in Czech Airspace (B)	1.1.2	87
2015_203_AF1	AMAN Extended Horizon	1.1.2	88
2015_186_AF1	RNP approaches to three main landing runways Amsterdam Schiphol	1.2.1	88
2015_215_AF1	RNP APCH Implementation in Madrid and Barcelona	1.2.1	88
2015_272_AF1	SESAR PCP. CECAF RNP Procedures Implementation	1.2.1	89
2015_309_AF1	Implementation of GBAS	1.2.1	89
2015_139_AF1	GEOGRAPHIC DATABASE - AIM TOOL	1.2.2	90
2015_271_AF1	SESAR PCP. CECAF RNP Procedures Design	1.2.2	90
2015_193_AF1	Implementation of RNP Based Departure Operations in High Density TMAs in FRA, DUS, BER and MUC	1.2.3	91
2015_248_AF1	Search & rescue helicopter DAUPHIN compliance with RNP	1.2.4	92
2015_251_AF1	French Air Force FALCON 900 compliance with RNP	1.2.4	92
2015_253_AF1	RNP 1.0, RNP 0.3 & SBAS FOR E3A AWACS	1.2.4	93
2015_258_AF1	A400M Strategic Transport aircraft compliance with RNP	1.2.4	93
2015_270_AF1	Deliver C17 Training for RNP and CPDLC/VDL2	1.2.4	94
2015_278_AF1	C-130H RNP-1 Avionics Upgrade for 5 A/C	1.2.4	94
2015_279_AF1	Falcon 50 RNP-1 Avionics Upgrade for 3 A/C	1.2.4	95

**Family 1.1.1 – Basic AMAN**

2015_165_AF1 - Amsterdam Schiphol AMAN 1.0			
<b>Start Date</b>	01/07/2016	<b>End Date</b>	31/12/2017
<b>Project Leader</b>	LVNL		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.1	Family 1.1.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Implementation of improved Trajectory Predictor (TP)</li> <li>• Implementation of Delta-T indication</li> <li>• Implementation of Preview Window</li> </ul>		

2015_166_AF1 - Amsterdam Schiphol AMAN 2.0			
<b>Start Date</b>	01/01/2017	<b>End Date</b>	20/12/2019
<b>Project Leader</b>	LVNL		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.1	Family 1.1.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Implementing high resolution meteo data to improve trajectory prediction</li> <li>• Implementing speed advisories</li> <li>• Implementing flexible trajectory prediction to support optimised descent profiles</li> </ul>		

2015_188_AF1 - Deploy AMAN - Arrival Management at Düsseldorf and Berlin International			
<b>Start Date</b>	16/02/2016	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	DFS		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.1	Family 1.1.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• The deployment of an Arrival Management System (AMAN) at EDDL, EDDK (both AMAN NRW) and EDDB (AMAN BER) will close two of the gaps identified in the 2015 Deployment Programme as well as deploy up to three so called Families as laid down by the SESAR Deployment Manager within the Deployment Programme 2015 on the basis of implementing the Pilot-Common-Project Regulation EU No. 716/2014. Therewith, deploying advanced operational concepts such as but not</li> </ul>		

limited to continuous calculation of arrival sequences and automated sequence support in a timely, coordinated and synchronized effort to raise capacity and improve safety while minimizing aviation's environmental footprint by reduced holdings

- The deployment of AMAN NRW and AMAN BER shall:
  - Improve sequencing and metering of arriving aircraft incl. control of approaching aircraft and reduce overloads
  - Continuously calculate arrival sequences and times for flights, taking into account the locally defined landing rate, the required spacing for flights arriving to the runway and other critical criteria
  - Provide automated sequencing support for the Air Traffic Controllers (ATCOs) handling traffic arriving to an airport
  - Provide as a minimum simple Time To Lose / Time To Gain
- AMAN NRW and AMAN BER will support the ATCOs in times of holding or delay, e.g. with the display of holdingtimes
- AMAN NRW and AMAN BER will reduce the coordination effort between approach and centre sectors in terms of the flow of approaching aircrafts and therewith increasing ATCOs productivity
- AMAN NRW and AMAN BER will provide the ATCOs with a tool-based support in the arrival process especially to accomplish air traffic increase and with a display of the predicted "Remaining Trackmiles" for each aircraft
- AMAN NRW and AMAN BER will also implement the technical capability for the implementation of the Extended Horizon Function for EDDL and EDDB
- In addition, AMAN NRW is a first-mover project with regard to deploying "New Essential" Operational Changes" of the European ATM Master Plan Edition 2015 with regard to implementing a baseline capable of AMAN integration for multiple airports.

2015_234_AF1_A – AMAN LOWW initial 2015_234_AF1_B – AMAN LOWW initial			
<b>Start Date</b>	01/03/2016	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	Austro Control		
<b>Contributors</b>	The project implementation scope depends on the coordinated work of all 4 partners (Austro Control GmbH, Hungarocontrol, LPS, ANS/CR) and is split into a cohesion and non-cohesion part		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.1	Family 1.1.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Deploying Basic Arrival Manager (AMAN) function (allowing evolution to extended AMAN) for Terminal Area Vienna</li> <li>• Attaching ACC Vienna to the Vienna AMAN</li> </ul>		

- Integrating AMAN functionality with the training and simulation environment ("BEST")
- Ensuring Interaction with adjacent units

### Family 1.1.2 – AMAN upgrade to include Extended Horizon function

2015_073_AF1 - AMAN upgrade for extended horizon at DSN airports			
<b>Start Date</b>	16/02/2016	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	DSNA		
<b>Contributors</b>	Aéroports de Paris (ADP), Air France		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.1	Family 1.1.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Extending planning horizon of AMAN for cross border flights at LFPG/LFPO/LFMN</li> <li>• Improving arrival management within LFFF and LFMM ACC for LFPG/LFPO/LFMN</li> <li>• Integrating collaborative process with airport and airlines (iStream results)</li> <li>• Preparing AMAN capability to export sequence to cross border systems</li> </ul>		

2015_101_AF1 - Network Support to extended Arrival Management			
<b>Start Date</b>	01/10/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	EUROCONTROL / Network Manager		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.1	Family 1.1.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Supporting the network coordination of extended AMAN functions and providing, as appropriate, the network view on extended AMAN measures</li> <li>• Continuing upgrading NM systems to cope with extended AMAN requirements</li> <li>• Introducing in the network view and in the collaborative NOP, the information managed and shared with NM system by local extended AMAN systems ( from airports / ANSP's where available)</li> </ul>		

<b>2015_196_AF1_A – XMAN – Cross-centre arrival management</b> <b>2015_196_AF1_B – Extended AMAN in Czech Airspace</b>			
<b>Start Date</b>	15/02/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	DFS		
<b>Contributors</b>	<p>DSNA, EUROCONTROL (MUAC), LVNL, Belgocontrol, Skyguide, ANS CR</p> <p>The project implementation scope depend on the coordinated work of all partners (DFS, MUAC, DSNA, Skyguide, LVNL, Belgocontrol, ANS CR) and is split into a cohesion and non-cohesion part.</p>		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.1	Family 1.1.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• The overall objective is to deploy - in the European core area - the Family 1.1.2 "AMAN upgrade to include Extended Horizon function" of the Deployment Programme 2015 on the basis of the Pilot-Common-Project Regulation EU No. 716/2014. The IP covers: <ul style="list-style-type: none"> <li>◦ the implementation of Extended Arrival Management (E-AMAN) in Enroute Control Centers adjacent to PCP-relevant airports Frankfurt, Munich, Zürich and London (LHR) based on a commonly developed Concept of Operations and System requirements in a timely, coordinated and synchronized effort, using currently available systems and technology</li> <li>◦ the development and validation of a common service for E-AMAN to share data, to achieve common awareness and consistent and coherent application of E-AMAN actions and to enable appropriate interactions among all actors involve</li> </ul> </li> <li>• Generation of considerable improvements in various performance areas such as environment (CO2 and fuel-burn reduction), safety (reduction in stack holding) and capacity (reduction in traffic bunching/workload). Provide economic benefits to airspace users (though reduced fuel burn / improved flight efficiency)</li> <li>• Introduction of a common operational concept (CONOPS) and standardized systems requirements to provide a harmonized and coordinated approach to extended arrival management in the European core area</li> <li>• Consideration of existing technologies for early implementations and quick-wins as well as validated SESAR results and technologies for further evolution</li> <li>• Promotion of interoperability through automated Inter-Centre coordination by the use of system to system communication using standards (OLDI AMA Message or SWIM Webservice)</li> </ul>		



2015_203_AF1 - AMAN Extended Horizon			
<b>Start Date</b>	25/07/2016	<b>End Date</b>	08/10/2018
<b>Project Leader</b>	ENAV		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.1	Family 1.1.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Designing, develop and operational deployment of AMAN with management horizon function extended to the Enroute Airspace</li> <li>• Optimizing traffic sequencing operations in high density TMAs minimising delay</li> <li>• Reducing the environmental impact</li> </ul>		

### Family 1.2.1 – RNP APCH with vertical guidance

2015_186_AF1 - RNP approaches to three main landing runways Amsterdam Schiphol			
<b>Start Date</b>	08/03/2017	<b>End Date</b>	12/05/2019
<b>Project Leader</b>	LVNL		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.1	Family 1.1.1
<b>Project Objective</b>	Implementing RNP APCH to three main landing runways (06, 18C and 36R) at Amsterdam Schiphol using Performance Based Navigation as required by the Pilot-Common-Project (PCP)		

2015_215_AF1 - RNP APCH Implementation in Madrid and Barcelona			
<b>Start Date</b>	04/07/2017	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	ENAIRES		
<b>Contributors</b>	EBAA declare that the EBAA interest in the ENAIRES project regarding the RNP approach implementation at Madrid. EBAA does not request any grant from the Commission with a view to implementing the action on the terms laid down in this application."		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.1	Family 1.1.2
<b>Project Objective</b>	The main objective of this project is to improve the precision of the approach trajectories and to develop and implement fuel efficient and environmental friendly procedures for approach in these high density TMA		

airports. The new RNP APCH procedures will help increase the accessibility by means of RNP APCH to LPV minima procedures (using SBAS), in combination with LNAV and LNAV/VNAV minima for those operators not equipped with SBAS technology. These procedures will make operations at this site more efficient and profitable, thus enhancing the use of the airport and saving operational costs, both for aircraft and airport operators (AENA). Specifically, the objectives of this project are:

- Reducing the missed-approach rate when using non-precision approach runway headers for landing
- Increasing safety by enabling straight approach procedures when not possible by means of current nav aids infrastructure
- Reducing costs for Aircraft Operators (AOs) whenever an airport change must be done due to operational restrictions at destination airport
- Enhance airports and AOs business types by means of allowing broader kinds of flying activities at the airports.

### 2015\_272\_AF1 - SESAR PCP. CECAF RNP Procedures Implementation

<b>Start Date</b>	01/06/2016	<b>End Date</b>	31/07/2017
<b>Project Leader</b>	Spanish Air Force		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.1	Family 1.1.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• To improve the civil-military interoperability, establishing RNP approaches in Spanish Air Force Bases opened to civil traffic as well as in joint use Bases/Airports.</li> <li>• Ensure civil-military ANSPs coordination. To be able to validate LEMD, LEBL and LEPA procedures design. To enable CECAF for manoeuvres design and subsequent integration. To enable CECAF (Spanish Air Force Cartographic and Photographic Centre) for RNP procedures design validation in any civil or military ECAC airport.</li> <li>• To enable CECAF for verification of new civil or military systems and manoeuvres associated to any civil or military ECAC airport.</li> </ul>		

### 2015\_309\_AF1 - Implementation of GBAS

<b>Start Date</b>	01/01/2017	<b>End Date</b>	31/07/2017
<b>Project Leader</b>	Nova Airlines AB		
<b>Contributors</b>			

Main AF/Sub-AF/Family	AF1	S-AF 1.1	Family 1.1.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Implementation of GBAS</li> <li>• Preparation of GBAS operation in the Flight Operations Department</li> <li>• Training of flight crew in GBAS operation</li> </ul>		

### Family 1.2.2 – Geographic Database for procedure design

2015_139_AF1 - GEOGRAPHIC DATABASE - AIM TOOL			
<b>Start Date</b>	15/02/2016	<b>End Date</b>	01/10/2020
<b>Project Leader</b>	DSNA		
<b>Contributors</b>	Aéroports de Paris (ADP)		
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Providing updated databases including aeronautical information and geographical data on LFPG, LFPO and LFMN. These databases will be shared by DSNA and airports operators and will be used in a collaborative way on LFPG, LFPO and LFMN</li> <li>• Using databases for procedure design and cartographic needs on LFPG, LFPO and LFMN. DSNA and airports operators will use the databases for their respective needs (procedure design, cartography...). For these needs, existing tools will be updated and a common AIM Tool used by local DSNA units and airports operators at LFPG, LFPO and LFMN will be developed to enhance the collaboration between ANSP and Airport operator in the AIM domain and to enhance aeronautical publication on these airports.</li> </ul>		

2015_271_AF1 - SESAR PCP. CECAP RNP Procedures Design			
<b>Start Date</b>	01/04/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	Spanish Air Force		
<b>Contributors</b>			
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Ensuring civil-military ANSPs coordination. To continue compiling, producing and sharing information between ENAIRE and military</li> <li>• Ensuring civil-military ANSPs coordination. To complete the full data exchange implementation at national level</li> <li>• Ensuring civil-military interoperability, using the same reference geographic database</li> </ul>		

- Ensuring civil-military AIS providers integrity. To provide aeronautical data in the required format
- Ensuring civil-military ANSPs coordination. To provide ENAIRE with LEMD, LEBL and LEPA aeronautical data for procedures design
- Establishing synchronisation and harmonisation of AIS at national level
- Providing up-to-date terrain and obstacle information and data for aeronautical information provision (procedures, airport and environment)
- Complying with ICAO Annex 15 and ADQ rules. eTOD Areas 1 to 4
- Providing interoperability information and data ready to feed geospatial aeronautical database
- Being able to survey the airports surrounding in a period-basis strategy information relevant for aeronautical purposes
- Becoming an asset of eTOD for SESAR successful
- Providing a geospatial database for aeronautical data and information AIXM 5.1 format
- Storing aeronautical entities, terrain and obstacle relevant for aviation
- Providing interoperability information and data ready to feed geospatial aeronautical database
- Accessing and retrieving aeronautical information and data from the data base
- Becoming an asset of database for SESAR successful
- Providing interoperability information and data ready to feed geospatial aeronautical database
- Migrating AIXM 4.5 Database to AIXM 5.1
- Producing AIXM 5.1 XML from AIXM 5.1 xsd
- Developing web services based upon AIXM 5.1 data base
- Becoming an asset of migration for SESAR successful

### Family 1.2.3 – RNP 1 Operations in high density TMAs (ground capabilities)

2015_193_AF1 - Implementation of RNP Based Departure Operations in High Density TMAs in FRA, DUS, BER and MUC			
<b>Start Date</b>	16/02/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	DFS		
<b>Contributors</b>	Fraport AG, Deutsche Lufthansa AG		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.2	Family 1.2.3
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• The overall objective is to deploy first elements of the so called Family "1.2.3 RNP 1 Operations in high density TMAs (ground capabilities)" as laid down by the SESAR Deployment Manager within the Deployment Programme 2015 on the basis of implementing the Pilot-Common-Project Regulation EU No. 716/2014. In that context, the Implementation of RNP Based Departure Operations in the High Density and PCP-related TMAs FRA, DUS, BER</li> </ul>		

and MUC in a timely, coordinated and synchronized effort will have a significant impact on the raise of capacity, the improvement of safety and the further reduction of costs while minimizing aviation's environmental footprint
<ul style="list-style-type: none"> <li>• Mutual deployment by local lead carrier, ANSP and airport of RNP-based routes including Radius to Fix-functionality for departure procedures (Standard Instrument Departure: SIDs) and transitions</li> <li>• Reduction in spread of flight tracks during turns, and thereby reducing the noise footprint in the highly populated areas surrounding the major airports in Germany as well as reduction in CO2 emissions and an increase in flight efficiency</li> <li>• Implementation of flexible and environmentally friendly procedures for departure using PBN/RNP in high density TMAs, as specified in RNP1 specifications</li> <li>• Implementation of the requirements set out in the SESAR ATM Master Plan moving towards the goal of the Single European Sky</li> <li>• Deploy elements of the PBN Implementation Plan</li> </ul>

#### Family 1.2.4 – RNP 1 Operations in high density TMAs (aircraft capabilities)

2015_248_AF1 - Search & rescue helicopter DAUPHIN compliance with RNP			
<b>Start Date</b>	31/12/2016	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	French Ministry of Defence		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.2	Family 1.2.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Implementing LPV on Search and Rescue Dauphin helicopters</li> </ul>		

2015_251_AF1 - French Air Force FALCON 900 compliance with RNP			
<b>Start Date</b>	01/01/2016	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	French Ministry of Defence		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.2	Family 1.2.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Offering ability to the crews to select the most efficient flight-plan to reduce travel duration for MEDEVAC missions</li> <li>• Reducing the effort on ATCOs by allowing a more cost-effective approach, while keeping the highest level of safety</li> </ul>		

- Reducing fuel consumption by allowing users to flight-plan their preferred trajectories

**2015\_253\_AF1\_A – RNP 1.0, RNP 0.3 & SBAS FOR E3A AWACS FOR CEF  
ELIGIBLE NATIONS AND THIRD PARTY**  
**2015\_253\_AF1\_B – RNP 1.0, RNP 0.3 & SBAS FOR E3A AWACS FOR COHESION  
ELIGIBLE STATES**

<b>Start Date</b>	15/02/2016	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	NATO Airborne Early Warning and Control Programme Management Organisation (NAPMO/NAPMA)		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.2	Family 1.2.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Production and Retrofit Phase for the fleet (13 aircraft) Updating of Flight Training device and Full Flight Simulator for RNP functionalities</li> <li>• Air Crew RNP Training</li> <li>• RNP equipage of the multinational E3 aircraft will ensure that they are not hampered in their day-to-day operations.</li> <li>• RNP Upgrade will permit safe operation in Free Route Airspace and in high density TMAs without detriment to the Performance and Capacity of ANSPs and Airports throughout Europe.</li> <li>• Greater flight efficiency with time reduction and associated fuel and CO2 reductions due to ability to fly optimized routes.</li> <li>• Reducing noise footprint for approaches using PBN in high density TMAs</li> </ul>		

**2015\_258\_AF1 - A400M Strategic Transport aircraft compliance with RNP**

<b>Start Date</b>	01/03/2016	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	UK Ministry of Defence		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.2	Family 1.2.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Providing UK with nine A400M aircraft with RNP capabilities capable of accessing and operating in high density TMAs across Europe</li> <li>• Training 27 crews (81 personnel) in RNP procedures</li> <li>• The UK's A400M fleet must be capable of deconflicting with all civilian traffic arriving and departing into London.</li> <li>• PBN capabilities will offer a greater set of routing possibilities that could reduce potential congestion on trunk routes and at busy crossing points. PBN capability helps to reduce route spacing and aircraft separation.</li> <li>• RNP upgrade will allow A400M to fly optimized routes</li> </ul>		

through high density TMAs, generating reduction in flight time; therefore, fuel reductions and associated CO2 reductions. A typical A400M flight RNP equipped is calculated to save up to 48 minutes of flight time which equates to 2.304 tonnes of fuel; 7.26 tonnes of CO2 reduction, and approximately 2000 Euro fuel cost saving per flight.

### 2015\_270\_AF1 - Deliver C17 Training for RNP and CPDLC/VDL2

<b>Start Date</b>	01/03/2016	<b>End Date</b>	31/12/2016
<b>Project Leader</b>	UK MOD		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.2	Family 1.2.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• RNP 0.3 Approach (Family 1.2.1) and RNP 1 for TMA access (Family 1.2.4) Aircrew Operator Training for 54 personnel</li> <li>• CPDLC/VDL2 (Family 6.1.2) Aircrew Operator Training for 54 personnel</li> <li>• All 8 UK C17 Globemaster aircraft have been modified during BLOCK Upgrade with the necessary interfaces and systems to support RNP 0.3 Approach (Family 1.2.1), RNP 1 for TMA access (Family 1.2.4) and multifrequency CPDLC/VDL2 (Family 6.1.2)</li> <li>• The UK's C17 fleet must be capable of deconflicting with all civilian traffic arriving and departing into London.</li> <li>• PBN capabilities will offer a greater set of routing possibilities that could reduce potential congestion on trunk routes and at busy crossing points. PBN capability helps to reduce route spacing and aircraft separation.</li> <li>• C17 RNP and CPDLC Upgrade will permit safe operation in Free Route Airspace and in high density TMAs without detriment to the Performance and Capacity of ANSPs and Airports.</li> </ul>		

### 2015\_278\_AF1 - C-130H RNP-1 Avionics Upgrade for 5 A/C

<b>Start Date</b>	01/07/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	Portuguese Air Force		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.2	Family 1.2.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• C-130H Full Civil Required Navigation Compliance RNP-1 Capability</li> </ul>		

2015_279_AF1 - Falcon 50 RNP-1 Avionics Upgrade for 3 A/C			
<b>Start Date</b>	01/07/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	Portuguese Air Force		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF1	S-AF 1.2	Family 1.2.4
<b>Project Objective</b>	Falcon 50 Full Civil Required Navigation Compliance RNP-1 Capability		



## AF2 Airport Integration and Throughput

The following table encompasses the list of candidate implementation initiatives associated to ATM Functionality #2 that were awarded under the 2015 CEF Transport Calls for Proposal.

2015 CEF Call Designator	Title	Family	IP Description Page Number
2015_044_AF2	Implementation of initial DMAN and AOP at Copenhagen Airport	2.1.1	98
2015_085_AF2	DMAN and Pre-departure sequence (PDS) implementations for the CDM implementation	2.1.1	98
2015_161_AF2	Initial implementation of DMAN	2.1.1	99
2015_162_AF2	Electronic Flight Strip (EFS) Implementation	2.1.2	99
2015_212_AF2	Fulfillment of the prerequisite EFS for the PCP AF2 Subfunctionality: Airport Integration and Throughput (2017-2019)	2.1.2	99
2015_286_AF2	Introduction of Electronic Flight Strips	2.1.2	100
2015_074_AF2	Display TOBT TSAT at the Gate	2.1.3	100
2015_076_AF2	Aerial Visual Display A-CDM Phase 2	2.1.3	100
2015_077_AF2	Universal Mobile Display System (UMDS) solution to support A-CDM Implementation	2.1.3	101
2015_078_AF2	A-CDM Enhancements EIDW	2.1.3	101
2015_133_AF2	Initial AirPort Operational Centre (iAPOC)	2.1.3	101
2015_294_AF2	Implementation of OTP	2.1.3	102
2015_060_AF2	Airport Operating Plan AOP	2.1.4	102
2015_083_AF2	iAOP implementation	2.1.4	102
2015_135_AF2	CDG and ORLY - Initial Airport Operational Plan (AOP)	2.1.4	103
2015_178_AF2	Implementation of AOP Schiphol Airport	2.1.4	103
2015_225_AF2	Initial Airport Operations Plan @ FRA	2.1.4	103
2015_244_AF2	APOC implementation	2.1.4	104
2015_245_AF2	AIRSTAT	2.1.4	104
2015_282_AF2	Initial AOP	2.1.4	104
2015_290_AF2	Initial AOP	2.1.4	105
2015_292_AF2	DMAN Stockholm Arlanda Airport	2.1.4	105
2015_299_AF2	Integrated Ground Management (GMAN)	2.1.4	105

<b>2015 CEF Call Designator</b>	<b>Title</b>	<b>Family</b>	<b>IP Description Page Number</b>
<b>2015_016_AF2</b>	<b>ASMGCS Level 1 &amp; 2</b>	<b>2.2.1</b>	<b>106</b>
<b>2015_211_AF2</b>	<b>Fulfillment of the prerequisite A-SMGCS 2 for the PCP AF2 Subfunctionality: Airport Integration and Throughput (2017-2019)</b>	<b>2.2.1</b>	<b>106</b>
<b>2015_291_AF2</b>	<b>A-SMGCS Level 2 implementation</b>	<b>2.2.1</b>	<b>107</b>
<b>2015_220_AF2</b>	<b>AF2_MET-Compliance-Program</b>	<b>2.3.1</b>	<b>107</b>
<b>2015_232_AF2</b>	<b>TBS4LOWW (Time Based Separation for Vienna Airport)</b>	<b>2.3.1</b>	<b>107</b>
<b>2015_043_AF2</b>	<b>AF2.4 A-SMGCS - Routing &amp; Planning</b>	<b>2.4.1</b>	<b>108</b>
<b>2015_046_AF2</b>	<b>AF 2.5 A-SMGCS - Safety Nets</b>	<b>2.5.1</b>	<b>108</b>
<b>2015_187_AF2</b>	<b>TWR System at Amsterdam Schiphol</b>	<b>2.5.1</b>	<b>108</b>
<b>2015_298_AF2</b>	<b>A-SMGCS upgrade to provide airport safety nets and routing &amp; planning functions</b>	<b>2.5.1</b>	<b>109</b>
<b>2015_031_AF2</b>	<b>Vehicle Transponder A-SMGCS Düsseldorf</b>	<b>2.5.2</b>	<b>110</b>
<b>2015_222_AF2</b>	<b>Advanced Airport Moving Map (AAMM) Prototype Implementation</b>	<b>2.5.2</b>	<b>110</b>
<b>2015_226_AF2</b>	<b>Airport Safety Net: Mobile Detection of Marshall Vehicles</b>	<b>2.5.2</b>	<b>111</b>

**Family 2.1.1 – Initial DMAN**

<b>2015_044_AF2 - Implementation of initial DMAN and AOP at Copenhagen Airport</b>			
<b>Start Date</b>	01/04/2016	<b>End Date</b>	30/06/2018
<b>Project Leader</b>	Københavns Lufthavne (Copenhagen Airports AS)		
<b>Contributors</b>	Naviair		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Implementing Basic Departure Management (DMAN) at Copenhagen Airport in order to ensure efficient usage of the runway capacity, increasing predictability and improving departure flows at the airport</li> <li>Introducing a Demand and Capacity Balancing process for the AOP in order to improve common situational awareness and form a common basis for decisionmaking amongst all airport stakeholders. This includes the creation of a formalized Ground Coordinator function in order to coordinate both internally and with the Network Manager</li> </ul>		

<b>2015_085_AF2 - DMAN and Pre-departure sequence (PDS) implementations for the CDM implementation</b>			
<b>Start Date</b>	18/02/2015	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	Aéroports de la Côte d'Azur		
<b>Contributors</b>	DSNA		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Implementing the requested tool in SESAR</li> <li>Improving operations predictability</li> <li>Optimizing resources management and increase capacity</li> <li>Providing a common tool between all stakeholders</li> <li>Sharing a common situational awareness between all stakeholders</li> <li>Decreasing environmental impact</li> <li>Enhancing resilience (better disruption management)</li> </ul>		

2015_161_AF2 - Initial implementation of DMAN			
<b>Start Date</b>	01/01/2016	<b>End Date</b>	31/03/2017
<b>Project Leader</b>	Irish Aviation Authority		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Contributing to the implementation of A-CDM at Dublin Airport</li> <li>• Enhancing information sharing between IAA and A-CDM partners</li> <li>• Implementation of the DMAN as a component of the Electronic Flight Strip system.</li> </ul>		

### Family 2.1.2 – Electronic Flight Strips (EFS)

2015_162_AF2 - Electronic Flight Strip (EFS) Implementation			
<b>Start Date</b>	01/01/2016	<b>End Date</b>	06/12/2018
<b>Project Leader</b>	Irish Aviation Authority		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Implementation of an Electronic Flight Strip system.</li> <li>• Enhancing information sharing between IAA and A-CDM partners</li> <li>• Contributing to the implementation of A-CDM at Dublin Airport</li> </ul>		

2015_212_AF2 - Fulfillment of the prerequisite EFS for the PCP AF2 Subfunctionality: Airport Integration and Throughput (2017-2019)			
<b>Start Date</b>	01/01/2017	<b>End Date</b>	31/12/2019
<b>Project Leader</b>	ENAIRE		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Operational validation, specification, development and technical verification of changes for EFS based on lists</li> <li>• Operational validation, specification, development and technical verification of changes for EFS based on labels</li> <li>• Deployment in Madrid, Barcelona and Palma de Mallorca airports</li> </ul>		

2015_286_AF2 - Introduction of Electronic Flight Strips			
<b>Start Date</b>	01/01/2014	<b>End Date</b>	28/02/2018
<b>Project Leader</b>	NATS		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Introducing electronic flight data for the London TC approach function</li> <li>Permitting controllers to conduct screen to screen coordination within their unit and with "neighbouring" units in the process chain reducing workload associated with coordination, integration and identification tasks</li> </ul>		

### Family 2.1.3 – Basic A-CDM

2015_074_AF2 - Display TOBT TSAT at the Gate			
<b>Start Date</b>	01/04/2016	<b>End Date</b>	31/12/2017
<b>Project Leader</b>	DAA		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.3
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Consolidating the Pre-departure Sequence and enhancing predictability by implementing highly recommended milestones: In-bloc (AIBT - milestone n°7 - Airport CDM Manual V4) and Off-bloc (AOBT- milestone n°15 - Airport CDM Manual V4)</li> <li>Displaying key A-CDM information eg TOBT, TSAT to all stakeholders located at the Gate: Pilots, Ground Handler and AO</li> </ul>		

2015_076_AF2 - Aerial Visual Display A-CDM Phase 2			
<b>Start Date</b>	01/04/2016	<b>End Date</b>	01/04/2017
<b>Project Leader</b>	DAA		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.3
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Improving Situational Awareness</li> <li>Assisting A-CDM by automatically capturing On and Off block times;</li> <li>Tracking aircraft on the ground, vehicles</li> </ul>		

- Allowing graphic representation of availability of stands during winter operations
- Allowing playback of events for incident investigation
- Alerting if vehicles enter a closed area (eg. closed taxiway, construction site etc)

### 2015\_077\_AF2 - Universal Mobile Display System (UMDS) solution to support A-CDM Implementation

<b>Start Date</b>	01/04/2016	<b>End Date</b>	31/01/2017
<b>Project Leader</b>	DAA		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.3
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Sharing A-CDM information with all A_CDM partners at the airport on mobile devices</li> <li>• Providing powerful functionalities to integrate, operate and monitor information distribution</li> </ul>		

### 2015\_078\_AF2 - A-CDM Enhancements EIDW

<b>Start Date</b>	01/04/2016	<b>End Date</b>	31/03/2017
<b>Project Leader</b>	DAA		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.3
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Delivering functionality enhancements to basic A-CDM package to cater for EIDW specific requirements</li> <li>• Additional integrations with Airlines and Ground Handlers of A-CDM related data this was initially anticipated to be entered directly into the A-CDM (AOS) platform</li> <li>• Enhancing information sharing between daa and all A-CDM partners thus providing improved information to the network</li> </ul>		

### 2015\_133\_AF2 - Initial AirPort Operational Centre (iAPOC)

<b>Start Date</b>	01/01/2016	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	Aéroports de Paris		
<b>Contributors</b>	DSNA, Air France		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.3
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Initial APOC realisation</li> <li>• Reinforcing Collaborative Decision Making with all</li> </ul>		

- |  |
|--|
| stakeholders<br>• Demand Capacity Balancing monitoring |
|--|

2015_294_AF2 - Implementation of OTP			
<b>Start Date</b>	01/03/2016	<b>End Date</b>	31/12/2017
<b>Project Leader</b>	Swedavia		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.3
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Establishing a robust operational environment needed for PCP implementation</li> <li>Reducing/eliminating IT blocking points and establish reduced resolution time of IT incidents</li> </ul>		

#### Family 2.1.4 – Initial Airport Operational Plan (AOP)

2015_060_AF2 - Airport Operating Plan AOP			
<b>Start Date</b>	03/02/2016	<b>End Date</b>	12/12/2017
<b>Project Leader</b>	Heathrow Airport limited		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>AOP</li> <li>Sharing the plan with the airports' operational stakeholders (Airlines, Ground Handlers, APOC)</li> <li>Consuming the plan generated by the DCB system:</li> <li>Ensuring that exchanged data is being processed for better predictability and improving rolling plans on NM and Airport Sides</li> <li>Assisting NMOC provide guidance material for other airports for later implementation of AOP-NOP link and on Collaborative Decision Making in order to provide quality input data</li> <li>Setting up B2B AOP-NOP (as will be defined in 2016 call) Interfacing for data exchange with NMOC (NOP)</li> </ul>		

2015_083_AF2 - iAOP implementation			
<b>Start Date</b>	07/09/2015	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	Aéroports de la Côte d'Azur		
<b>Contributors</b>			

Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Making the systems more reliable and efficient</li> <li>• Adapting the tools to the operations changes</li> <li>• Developing an iAOP perspective for the SESAR Deployment</li> <li>• Improving the management of data and resources</li> </ul>		

### 2015\_135\_AF2 - CDG and ORLY - Initial Airport Operational Plan (AOP)

<b>Start Date</b>	01/03/2016	<b>End Date</b>	31/12/2019
<b>Project Leader</b>	Aéroports de Paris		
<b>Contributors</b>	Air France		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Airside and Landside Plan/Operational data collection</li> <li>• MET data collection</li> <li>• Operational Repository MDM</li> <li>• Data warehouse / Big data</li> <li>• AOP data exchange with NOP &amp; Centralized Services</li> </ul>		

### 2015\_178\_AF2 - Implementation of AOP Schiphol Airport

<b>Start Date</b>	01/01/2016	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	Amsterdam Airport Schiphol		
<b>Contributors</b>	KLM, KNMI		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Preparing execute and monitor the AOP (Airport Operations Plan)</li> <li>• Optimizing the information exchange between airport stakeholders and network management (NMOC)</li> </ul>		

### 2015\_225\_AF2 - Initial Airport Operations Plan @ FRA

<b>Start Date</b>	01/03/2016	<b>End Date</b>	31/12/2019
<b>Project Leader</b>	Fraport AG		
<b>Contributors</b>			
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Providing a common picture of the actual flight operation at Frankfurt airport</li> <li>• Providing common parameters for monitoring and</li> </ul>		



examination

- Supporting the decision-making-process of stakeholders
- improving predictability and resilience

### 2015\_244\_AF2 - APOC implementation

<b>Start Date</b>	01/03/2016	<b>End Date</b>	15/12/2016
<b>Project Leader</b>	Operations Department Brussels Airport		
<b>Contributors</b>	Brussels Airport Company NV/SA		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Implementation of the Airport Operations Center with all stakeholders to increase the punctuality of passengers &amp; bags flows</li> <li>• Process alignment with all stakeholders</li> <li>• Determination of common Performance Indicators</li> </ul>		

### 2015\_245\_AF2 – AIRSTAT

<b>Start Date</b>	01/03/2016	<b>End Date</b>	01/04/2019
<b>Project Leader</b>	Brussels Airport Company NV/SA		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Status and availability of the stand equipment such as boarding bridges, DGS, 400Hz, PCA and fuel pits. This can be an added value for handlers, and will improve handling activities at the aircraft.</li> <li>• The Vehicle Tracking System (VTS) is already in use at ANSP, and analysis of the use of the data should be investigated in order to use it in Airstat</li> </ul>		

### 2015\_282\_AF2 - Initial APOC and AOP

<b>Start Date</b>	21/03/2016	<b>End Date</b>	28/02/2017
<b>Project Leader</b>	Munich Airport		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Unifying Baggage handling, Passenger and Aircraft processes and resources</li> <li>• Developing joint communication and decision making tools and structures</li> </ul>		

- Enabling efficient and timely congruent information sharing
- Preparing initial AOP structures for NOP integration

**2015\_290\_AF2 - Initial AOP**

<b>Start Date</b>	01/10/2016	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	Swedavia		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Creation of an Airport Operation Plan based initially updated with the latest information regarding KPI in airport processes, that can be shared among all stakeholders</li> <li>• Ability to evaluate and then update the airport plan using different scenarios (known as Demand Capacity Balancing, DCB) to optimise it.</li> </ul>		

**2015\_292\_AF2 - DMAN Stockholm Arlanda Airport**

<b>Start Date</b>	01/04/2016	<b>End Date</b>	30/06/2018
<b>Project Leader</b>	Swedavia		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Definition of operational conditions</li> <li>• Development of algorithms and interfaces towards other systems</li> <li>• Flight safety assessment and operational implementation</li> </ul>		

**2015\_299\_AF2 - Integrated Ground Management (GMAN)**

<b>Start Date</b>	01/04/2016	<b>End Date</b>	31/10/2017
<b>Project Leader</b>	Gatwick Airport		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.1	Family 2.1.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Optimising airside ground management performance by integrating and dynamically allocating stands</li> <li>• Delivering improvements in stand utilization, On-Time Arrival (OTA) and On-Time Departure (OTD) performance</li> <li>• Providing a critical architectural component to subsequently deliver optimized flow management enabled by integrated A-SMGCS Routing &amp; Planning</li> </ul>		

function
<ul style="list-style-type: none"> <li>• Providing relevant operational data in easy to consume formats that include mobile device offerings for information access at users' fingertips</li> <li>• Delivering a solution that enables the integration of data feeds from movement tracking devices used on airside assets</li> <li>• Optimising airside ground management performance by integrating and dynamically allocating critical resources (stands, coaching, towing, PRM, arrival baggage carousels)</li> </ul>

### Family 2.2.1 – A-SMGCS Level 1&2

2015_016_AF2 - ASMGCS Level 1 & 2			
<b>Start Date</b>	01/03/2016	<b>End Date</b>	07/04/2018
<b>Project Leader</b>	Heathrow Airport limited		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.2	Family 2.2.1
<b>Project Objective</b>	ASMGCS Level 1 & 2 baseline		

2015_211_AF2 - Fulfillment of the prerequisite A-SMGCS 2 for the PCP AF2 Subfunctionality: Airport Integration and Throughput (2017-2019)			
<b>Start Date</b>	01/01/2017	<b>End Date</b>	31/12/2019
<b>Project Leader</b>	ENAIRE		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.2	Family 2.2.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Partial fulfilment of the IR 716/2014 "Pilot common project", and in particular the AF2 functionality, which identifies the implementation and deployment of A-SMGCS 2 as a prerequisite for the Airport Safety Nets function</li> <li>• This project will focus on Runway Incursion Alerts</li> <li>• The function shall integrate the surveillance information (regarding all relevant aircraft and vehicles on the area) and controller runway related clearances, to generate and distribute the appropriate alerts</li> </ul>		

2015_291_AF2 - A-SMGCS Level 2 implementation			
<b>Start Date</b>	01/01/2017	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	Swedavia		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.2	Family 2.2.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Upgrading A-SMGCS for Level 2 incl training and changes of procedures</li> <li>• Upgrading MLAT to fulfill requirements for Level 2</li> <li>• Identifying potential need for additional sensors to reduce false incursion alarms</li> <li>• Installed and fully operational Solid State SMR</li> </ul>		

### Family 2.3.1 – Time Based Separation (TBS)

2015_220_AF2 - AF2_MET-Compliance-Program			
<b>Start Date</b>	01/03/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	Austro Control		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.3	Family 2.3.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Developing distance-based separation to time-based separation</li> <li>• Recovering and improving loss of capacity due to bad weather conditions</li> <li>• Supporting automatic observer functions</li> <li>• Improve exchange of meteorological information</li> </ul>		

2015_232_AF2 - TBS4LOWW (Time Based Separation for Vienna Airport)			
<b>Start Date</b>	22/02/2016	<b>End Date</b>	31/05/2018
<b>Project Leader</b>	Austro Control		
<b>Contributors</b>	EUROCONTROL		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.3	Family 2.3.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Establishing Procedural Time Based Separation concept (P-TBS)</li> <li>• Preparation of Safety, HP and Business Cases supporting full TBS System Based deployment</li> </ul>		

**Family 2.4.1 – A-SMGCS Routing and Planning Functions**

2015_043_AF2 - AF2.4 A-SMGCS - Routing & Planning			
<b>Start Date</b>	01/04/2016	<b>End Date</b>	30/09/2020
<b>Project Leader</b>	Københavns Lufthavne (Copenhagen Airports AS)		
<b>Contributors</b>	Naviair		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.4	Family 2.4.1
<b>Project Objective</b>	Implementing routing and planning functions in A-SMGCS, which will provide ATC with optimized route designation for each aircraft or vehicle within the movement area, as well as preventing route conflicts on the movement area and improve capacity, predictability, and safety		

**Family 2.5.1 – Airport Safety Nets associated with A-SMGCS level 2**

2015_046_AF2 - AF 2.5 A-SMGCS - Safety Nets			
<b>Start Date</b>	01/04/2016	<b>End Date</b>	30/09/2020
<b>Project Leader</b>	Københavns Lufthavne (Copenhagen Airports AS)		
<b>Contributors</b>	Naviair		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.5	Family 2.5.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Implementing EFS conflict detection</li> <li>• Implementing runway clearance monitoring</li> <li>• Implementing holding point monitoring</li> <li>• Implementing route adherence monitoring</li> </ul>		

2015_187_AF2 - TWR System at Amsterdam Schiphol			
<b>Start Date</b>	16/02/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	LVNL		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.5	Family 2.5.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Deploying a state-of-the-Art tower system at Schiphol Airport to support the implementation of the European ATM Master Plan and the Pilot-Common-Project (PCP) in accordance with the deployment plan of the SESAR Deployment Manager</li> <li>• Realising PCP requirements in the TWR domain with a due date in 2021 namely S-AF 2.1 Departure Management Synchronised with Pre-departure</li> </ul>		

sequencing, S-AF 2.2 Departure Management integrating Surface Management Constraints and S-AF 2.5 Airport Safety Nets

- Enabling the extension of the TWR System with remaining PCP requirements

### 2015\_298\_AF2 - A-SMGCS upgrade to provide airport safety nets and routing & planning functions

<b>Start Date</b>	01/07/2016	<b>End Date</b>	31/12/2019
<b>Project Leader</b>	Gatwick Airport		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.5	Family 2.5.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Increasing safety on the manouvering area - reducing the risk of runway incursions and conflicts / incidents on the manouvering area whilst maintaining declared ground movement rates</li> <li>• Reducing controllers' workload by providing system support for monitoring of traffic and its conformance to clearances on the manouvering area, and by providing automated routing and planning functions</li> <li>• Reducing potential conflicting routing for arrivals, departures and other ground movements and thus increase efficiency of ground operations</li> <li>• Optimising controller working position by more advanced integration of systems and improving Human Machine Interface (HMI)</li> <li>• Implementing airport safety nets associated with A-SMGCS (Level 2) (Family 2.5.1) in line with Commission Regulation (EU) No 716/2014 and SESAR Deployment Programme</li> <li>• Implementing A-SMGCS routing and planning functions (Family 2.4.1) in line with Commission Regulation (EU) No 716/2014 and SESAR Deployment Programme</li> </ul>		

## Family 2.5.2 – Implement vehicle and aircraft systems contributing to Airport Safety Nets

2015_031_AF2 - Vehicle Transponder A-SMGCS Düsseldorf			
<b>Start Date</b>	01/06/2016	<b>End Date</b>	30/06/2017
<b>Project Leader</b>	Flughafen Düsseldorf GmbH		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.5	Family 2.5.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Transponder for vehicles A-SMGCS Level 2 Düsseldorf</li> </ul>		

2015_222_AF2 - Advanced Airport Moving Map (AAMM) Prototype Implementation			
<b>Start Date</b>	17/02/2016	<b>End Date</b>	29/09/2017
<b>Project Leader</b>	Fraport AG		
<b>Contributors</b>	Deutsche Lufthansa AG		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.5	Family 2.5.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Performing a joint study by an airport and an airline to extend the currently static Airport Moving Map functionalities into a real-time dynamic data traffic information application.</li> <li>• Developing a new innovative solution and testing its feasibility and suitability as well as its added value before deploying it on a larger scale. These pilot activities of the study include the deployment of prototype software extensions on a limited scale to test and validating the viability.</li> <li>• Improving Airport Moving Map application as part of a safety system helps to detect risk of collision with other traffic in the manoeuvring area and alert the cockpit by consuming and displaying real-time airport traffic information (A-SMGCS Data) to improve pilots situational awareness.</li> <li>• Enhancing taxi efficiency, especially during low-visibility, heavy rain, snow and nighttime operations. Therefore, AAMM represents a contribution to an environmentally friendly and safe operation</li> <li>• Contributing to the standardisation of the ATM infrastructure in Europe by know how transfer to all relevant SESAR (SJU/SDM) and EUROCAE projects led or under the participation of project contributors.</li> </ul>		

2015_226_AF2 - Airport Safety Net: Mobile Detection of Marshaller Vehicles			
<b>Start Date</b>	17/02/2016	<b>End Date</b>	30/06/2018
<b>Project Leader</b>	Fraport AG		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF2	S-AF 2.5	Family 2.5.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Equipage of Marshaller Vehicles with a Moving Map based on A-SMGCS surveillance data</li> <li>• Implementation of a new allocation tool</li> <li>• Improvement of situational awareness</li> </ul>		



## AF3 Flexible ASM and Free Route

The following table encompasses the list of candidate implementation initiatives associated to ATM Functionality #3 that were awarded under the 2015 CEF Transport Calls for Proposal.

2015 CEF Call Designator	Title	Family	IP Description Page Number
2015_202_AF3	ASM tool Implementation	3.1.1	114
2015_239_AF3	Flexible ASM and Free Route	3.1.1	114
2015_058_AF3	Romatsa ATM2020+ Programme	3.1.2	114
2015_051_AF3	VARP - VoIP ATC Radio Project	3.1.4	115
2015_132_AF3	VoIP Programme	3.1.4	115
2015_159_AF3	Deployment of IP/VOIP technology to enable Management of Dynamic Airspace Configurations	3.1.4	115
2015_195_AF3	Deployment of next Generation and VoIP Capable Centre Voice Communication System	3.1.4	116
2015_221_AF3	Implementation of Voice over IP (VoIP) systems and services in ENAIRE	3.1.4	117
2015_236_AF3	VHF Concept Implementation 2020	3.1.4	117
2015_320_AF3	Implementation of VoIP	3.1.4	117
2015_029_AF3	Procurement of new DPS/ATM and VCRS systems to support DCTs and FRA	3.2.1	118
2015_034_AF3	ATM System (MATIAS) upgrade for cross-border free route operation	3.2.1	118
2015_062_AF3_I	4-Flight Deployment in PARIS Area, Upgrade in Marseille and Aix ACCs - Phase I	3.2.1	118
2015_062_AF3_II	4-Flight Deployment in PARIS Area, Upgrade in Marseille and Aix ACCs - Phase II	3.2.1	119
2015_107_AF3	NM Systems upgrades in support of DCTs and FRA	3.2.1	119
2015_190_AF3	Deployment of Air Traffic Control System iCAS: Implementation of ATM PCP Functionalities at LVNL and DFS	3.2.1	120
2015_204_AF3_I	4-Flight deployment in Italy - Phase I	3.2.1	121
2015_204_AF3_II	4-Flight deployment in Italy - Phase II	3.2.1	121
2015_207_AF3	Harmonisation of Technical ATM Platform in 5 ANSP including support of free Route Airspace and preparation of PCP program. (COOPANS B3.3 , B3.4 and B4.1)	3.2.1	122
2015_242_AF3	Free Route implementation into ATM system of ANS CR	3.2.1	122
2015_247_AF3	4Flight deployment in military En-route ACC (CMCC)	3.2.1	122
2015_269_AF3	Mil MTCD Advanced Controller Tools (FOURSIGHT)	3.2.1	123

<b>2015 CEF Call Designator</b>	<b>Title</b>	<b>Family</b>	<b>IP Description Page Number</b>
<b>2015_050_AF3</b>	<b>SIMULATION SEAFRA H24</b>	<b>3.2.4</b>	<b>123</b>
<b>2015_189_AF3</b>	<b>Free Route Airspace (Full FRA) in German and SWISS Airspace</b>	<b>3.2.4</b>	<b>124</b>
<b>2015_227_AF3</b>	<b>Borealis FRA Implementation (Part 2)</b>	<b>3.2.4</b>	<b>125</b>

**Family 3.1.1 – (Initial) ASM Tool to support AFUA**

2015_202_AF3 - ASM tool Implementation			
<b>Start Date</b>	01/02/2016	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	ENAV		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.1	Family 3.1.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Enhancing the civil-military collaborative decision-making process</li> <li>• Enhancing ASM process and National procedures</li> <li>• Enhancing situational awareness and increasing safety</li> </ul>		

2015_239_AF3 - Flexible ASM and Free Route			
<b>Start Date</b>	01/03/2016	<b>End Date</b>	01/12/2020
<b>Project Leader</b>	ANS/CR		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.1	Family 3.1.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Increasing airspace capacity due to better airspace organisation and planning</li> <li>• Reducing the effort on ATCOs by allowing a more cost-effective approach, while keeping the highest level of safety</li> <li>• New tool to be implemented will lead to better awareness of airspace users via NM service provided</li> </ul>		

**Family 3.1.2 – ASM management of real time airspace data**

2015_058_AF3 – Romatsa ATM2020+ Programme			
<b>Start Date</b>	22/02/2016	<b>End Date</b>	12/03/2019
<b>Project Leader</b>	ROMATSA		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.1	Family 3.1.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Improving inter-operability with other flight data processing systems;</li> <li>• Supporting the use of advanced tools and flexible use of airspace that will improve overall quality of service</li> <li>• Improving aircraft - controller communication by means of data link</li> </ul>		

- Providing trajectory prediction to provide a four-dimensional flight path and map it onto the airspace structure
- Improving the co-ordination process and in particular the transfer phase.

#### Family 3.1.4 – Management of Dynamic Airspace Configurations

2015_051_AF3 - VARP - VoIP ATC Radio Project			
<b>Start Date</b>	15/02/2016	<b>End Date</b>	05/11/2020
<b>Project Leader</b>	Croatia Control		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.1	Family 3.1.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Implementation of modern IP-based VHF/UHF radio network</li> </ul>		

2015_132_AF3 - VoIP Programme			
<b>Start Date</b>	01/03/2016	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	Naviair		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.1	Family 3.1.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Main VCS upgrading to support VoIP thereby enabling flexible Air Space Management (ASM)</li> <li>• Replacing existing VHF radios by VoIP capable VHF radios thereby enabling flexible ASM</li> </ul>		

2015_159_AF3 - Deployment of IP/VOIP technology to enable Management of Dynamic Airspace Configurations			
<b>Start Date</b>	07/09/2015	<b>End Date</b>	07/06/2019
<b>Project Leader</b>	Irish Aviation Authority		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.1	Family 3.1.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Deploying VOIP technology for all IAA VHF / UHF transmitters and receivers to enable the Air/GND role allocation adoption of the VOIP 4G VCS in order to facilitate the Management of Dynamic Airspace configurations</li> </ul>		

- Deploying a new VOIP 4G VCS for the new Enroute Contingency Centre to enable dynamic role allocation adoption in order to facilitate the Management of Dynamic Airspace configurations
- Deploying a new IAA IP Data Communications network for inter-connecting of VHF Radio sites and ATC Centres to enable the Management of Dynamic Airspace configurations
- Deploying enhancements to existing operational voice communications switches to enable VOIP connectivity between all IAA ATC Centres and Towers to enable dynamic role allocation adoption in order to facilitate the Management of Dynamic Airspace configurations across all IAA sites

### 2015\_195\_AF3 - Deployment of next Generation and VoIP Capable Centre Voice Communication System

<b>Start Date</b>	16/02/2016	<b>End Date</b>	30/09/2018
<b>Project Leader</b>	DFS		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.1	Family 3.1.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Deploying a new state-of-the-art Voice-over-IP capable Voice Communication System as a technical prerequisite in line with the Interoperability IR (EU No. 552/2004 incl. its amendment by EU No. 1070/2009) for the implementation of dynamic airspace</li> <li>• Enabling the introduction of advanced operational concepts of the PCP (EU No. 716/2014) for flexible airspace management and dynamic airspace management to enable a higher cost effectiveness of the air navigation service provision for airspace users and to increase operational performance. The deployment project will contribute (enabler project) to closing the Gap for Family 3.1.4 identified by the SESAR Deployment Manager within the Deployment Programme 2015.</li> <li>• The dedicated deployment objectives of the technical prerequisites are: <ul style="list-style-type: none"> <li>◦ Deployment of Primary Voice-Communication System (VCS) for ACC Bremen</li> <li>◦ Deployment of a last-resort VCS for ACC Munich and renewing of related radio sites</li> <li>◦ Deployment of a last-resort VCS for ACC Bremen and renewing of related radio sites</li> <li>◦ Deployment of a last-resort VCS for UAC Karlsruhe and renewing of related radio sites</li> </ul> </li> </ul>		

2015_221_AF3 - Implementation of Voice over IP (VoIP) systems and services in ENAIRE			
<b>Start Date</b>	01/03/2016	<b>End Date</b>	30/06/2020
<b>Project Leader</b>	ENAIRE		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.1	Family 3.1.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Evolution of the ENAIRE Voice Communication Systems and Air to Ground radio equipment to comply with EUROCAE specifications</li> <li>• Integration of the ATC Voice over IP networks</li> <li>• Reductions of maintenance and operation costs</li> </ul>		

2015_236_AF3 - VHF Concept Implementation 2020			
<b>Start Date</b>	01/03/2016	<b>End Date</b>	30/11/2020
<b>Project Leader</b>	Austro Control		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.1	Family 3.1.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Implementing Voice COM System as an enabler for PCP AF3 regards to Regulation No 716/2014 - Flexible Airspace Management and Free Route</li> <li>• Validating and verifying system safety</li> </ul>		

2015_320_AF3 - Implementation of VoIP			
<b>Start Date</b>	01/01/2016	<b>End Date</b>	31/12/2019
<b>Project Leader</b>	LFV		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.1	Family 3.1.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Enabling dynamic sectorisation and therefore flexible AirSpace Management within LFV through the implementation of a VoIP compliant system</li> <li>• Developing and implementing VoIP capable end-systems within LFV</li> <li>• Upgrading the VCS within Arlanda's terminal and terminal control centre and of backup VCCS to support VoIP</li> <li>• Enabling the implementation of a VoIP compliant system via the implementation of an IP based network</li> </ul>		

### Family 3.2.1 – Upgrade of ATM systems (NM, ANSPs, AUs) to support Direct Routings (DCTs) and Free Route Airspace (FRA)

2015_029_AF3 – Procurement of new DPS/ATM and VCRS systems to support DCTs and FRA			
<b>Start Date</b>	01/01/2017	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	HCAA		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.2	Family 3.2.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• New DPS/ATM system</li> <li>• New VCRS System</li> <li>• Sectors adaptation to accommodate the changes in traffic flows where needed</li> </ul>		

2015_034_AF3 - ATM System (MATIAS) upgrade for cross-border free route operation			
<b>Start Date</b>	04/01/2016	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	HungaroControl		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.2	Family 3.2.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Achieving the prerequisites for cross-border free route operation at a local level</li> <li>• Contributing to the future FAB CE wide FRA implementation</li> <li>• Improving the controllers effectiveness and increase safety with enhanced functionalities</li> <li>• Contributing to the reduction of fuel consumption by allowing airspace users to plan and fly their preferred trajectories</li> </ul>		

2015_062_AF3_Phase I – 4-Flight Deployment in PARIS Area, Upgrade in Marseille and Aix ACCs – Phase I			
<b>Start Date</b>	01/01/2015	<b>End Date</b>	31/10/2018
<b>Project Leader</b>	DSNA		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.2	Family 3.2.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Replacing the current operational CAUTRA System for PARIS ACC by a modern SESAR compliant interoperable line of product, in order to increase DSNA Performance,</li> </ul>		

	<p>upgrade already operational 4-Flight sites (Marseille and Aix ACC), deploy civil military coordinations in all 4-Flight sites</p> <ul style="list-style-type: none"> <li>• Supporting the implementation of the European ATM Master Plan for France and of the SESAR concept</li> <li>• Respecting the Single European Sky (SES) and FABEC rules</li> <li>• Switching to “stripless” environment and up-to-date technologies in Paris-ACC</li> <li>• Reducing total cost of ownership, by sharing development and evolution costs and risks for the new system, with ANSP partners</li> </ul>
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### 2015\_062\_AF3\_Phase II – 4-Flight Deployment in PARIS Area, Upgrade in Marseille and Aix ACCs – Phase II

<b>Start Date</b>	03/07/2017	<b>End Date</b>	30/04/2020
<b>Project Leader</b>	DSNA		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.2	Family 3.2.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Replacing the current operational CAUTRA System for PARIS ACC by a modern SESAR compliant interoperable line of product, in order to increase DSNA Performance , upgrade already operational 4-Flight sites (Marseille and Aix ACC), deploy civil military coordinations in all 4-Flight sites</li> <li>• Supporting the implementation of the European ATM Master Plan for France and of the SESAR concept</li> <li>• Respecting the Single European Sky (SES) and FABEC rules</li> <li>• Switching to “stripless” environment and up-to-date technologies in Paris-ACC</li> <li>• Reducing total cost of ownership, by sharing development and evolution costs and risks for the new system, with ANSP partners</li> </ul>		

### 2015\_107\_AF3 - NM Systems upgrades in support of DCTs and FRA

<b>Start Date</b>	01/03/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	EUROCONTROL / Network Manager		
<b>Contributors</b>	Swiss International Airlines Ltd., Sabre		
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.2	Family 3.2.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Adapting NM systems in line with FRA requirements contained in DP 2015 family 3.2.1</li> <li>• Implementing and using Free Route Airspace in Flight Planning system</li> </ul>		



2015_190_AF3 - Deployment of Air Traffic Control System iCAS: Implementation of ATM PCP Functionalities at LVNL and DFS			
<b>Start Date</b>	16/02/2016	<b>End Date</b>	Phase A 31/12/2018 Phase B 31/12/2020
<b>Project Leader</b>	DFS		
<b>Contributors</b>	LVNL		
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.2	Family 3.2.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>iCAS will deploy up to 18 so-called Families as laid down by the SESAR Deployment Manager within the Deployment Programme 2015 on the basis of implementing the Pilot-Common-Project Regulation EU No. 716/2014. Therewith, deploying advanced operational concepts such as but not limited to Free Route, Extended Arrival Management and extended information exchange with other systems / partners in a timely, coordinated and synchronized effort to raise capacity, improve safety and cutting costs and thus enabling a significant performance increase at DFS and LVNL. Furthermore, iCAS enables improved flight efficiencies in fuel and in time for the airspace users.</li> <li>iCAS is the deployment of a new State-of-the-Art, harmonized and interoperable ATS system at DFS and LVNL which is compatible and supports the deployment of the SESAR and Single European Sky concept in Germany and the Netherlands.</li> <li>In addition to the current mandatory implementing scope of the Pilot-Common-Project Regulation EU No. 716/2014, iCAS implements the European ATM Master Plan within the rules of the Single European Sky regulations.</li> <li>iCAS will be deployed within the framework of reduce total cost of ownership by sharing costs and risks for the new ATS system amongst DFS, LVNL and the iTEC Consortium Partners within which the iCAS project is embedded. By means of the iTEC Consortium, which includes the ANSPs of Spain (ENAIRE) and United Kingdom (NATS), the implementing partners ensure that the future iCAS/iTEC ATS system is also fully in line with the Interoperability Regulation EU No. 552/2004 (incl. its amendment by EU No. 1070/2009). Several European ANSPs have shown a keen interest to join the iTEC Consortium and currently iTEC partners are talking with PANSA (Poland), Oro Navegacia (Lithuania) and two additional ANSPs in order to explore their iTEC interest and to elaborate the best way to join iTEC.</li> <li>It is the objective of DFS and LVNL to deploy iCAS in accordance with the deployment plan of this coordinated 2015 CEF funding application through the SESAR Deployment Manager. The potential utilization of funding through the Connecting Europe Facilities (CEF) will offset</li> </ul>		

additional deployment cost for DFS and LVNL which result from an effort to enable a timely implementation of Pilot-Common-Project Functionalities and therewith facilitating an early realization of benefits for airspace users.

### 2015\_204\_AF3\_Phase I – 4-Flight deployment in Italy - Phase I

<b>Start Date</b>	01/01/2016	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	ENAV		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.2	Family 3.2.1
<b>Project Objective:</b>	<ul style="list-style-type: none"> <li>• Designing, developing and provide operational deployment of a modern interoperable ATM system fully SESAR compliant and based on the brand new Coflight FDPS</li> <li>• Enabling the implementation of free route operations in the whole Bluemed FAB Airspace</li> <li>• Allowing Airspace Users to fly preferred trajectories on regional/Bluemed FAB basis</li> </ul>		

### 2015\_204\_AF3\_Phase II – 4-Flight deployment in Italy – Phase II

<b>Start Date</b>	01/01/2019	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	ENAV		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.2	Family 3.2.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Designing, developing and provide operational deployment of a modern interoperable ATM system fully SESAR compliant and based on the brand new Coflight FDPS</li> <li>• Enabling the implementation of free route operations in the whole Bluemed FAB Airspace</li> <li>• Allowing Airspace Users to fly preferred trajectories on regional/Bluemed FAB basis</li> </ul>		

**2015\_207\_AF3\_A – Harmonisation of Technical ATM Platform in 5 ANSP including support of free Route Airspace and preparation of PCP program. (COOPANS B3.3 , B3.4 and B4.1)**
**2015\_207\_AF3\_B – Harmonisation of Technical ATM Platform in 5 ANSP including support of free Route Airspace and preparation of PCP program. (COOPANS B3.3 , B3.4 and B4.1)**

<b>Start Date</b>	01/01/2016	<b>End Date</b>	31/12/2019
<b>Project Leader</b>	COOPANS		
<b>Contributors</b>	Austro Control, Irish Aviation Authority, LFV, Naviar. The project implementation scope depend on the coordinated work of all 5 partners (ACG, Croatia Control, IAA, LFV and Naviar) and is split into a cohesion and non-cohesion part.		
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.2	Family 3.2.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Harmonisation of ATM platforms in 5 ANSP's to gain economy of scale for PCP implementations</li> <li>• Platform support for AF3 Free Route Airspace</li> <li>• Preparation of other PCP related implementations</li> </ul>		

**2015\_242\_AF3 - Free Route implementation into ATM system of ANS CR**

<b>Start Date</b>	01/03/2016	<b>End Date</b>	31/03/2020
<b>Project Leader</b>	ANS/CR		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.2	Family 3.2.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Implementation of system functions and tools allowing safe and efficient cross-border Free Route operations</li> </ul>		

**2015\_247\_AF3 - 4Flight deployment in military En-route ACC (CMCC)**

<b>Start Date</b>	01/01/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	French Ministry of Defence		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.2	Family 3.2.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Replacing the current operational system for military EnRoute ATC services, by a modern SESAR compliant and interoperable line of product</li> <li>• Enhancing full interoperability of civilian and military En Route ATC systems</li> <li>• Allowing co-location of Civilain and military En Route ATC services</li> </ul>		

- Implementing ground/ground automated coordination process between civilian and military En Route Systems
- Switching to stripless environment and up to date technologie
- Implementing the tools which would allow the Free Route in French Airspace

### 2015\_269\_AF3 – Mil MTCD Advanced Controller Tools (FOURSIGHT)

<b>Start Date</b>	01/03/2016	<b>End Date</b>	31/12/2019
<b>Project Leader</b>	UK Ministry of Defence		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.2	Family 3.2.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Providing Flight Path Monitoring (FPM), Trajectory Prediction (TP) and Medium Term Conflict Detection (MTCD) Tools within all UK Sovereign Airspace to the same geographic boundaries as UK Civil ATM En-Route Operations</li> </ul>		

### Family 3.2.4 – Implement Free Route Airspace

### 2015\_050\_AF3 - SIMULATION SEAFRA H24

<b>Start Date</b>	01/09/2015	<b>End Date</b>	28/02/2017
<b>Project Leader</b>	Croatia Control		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.2	Family 3.2.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Proving safe implementation of SEAFRA H24</li> <li>• Assessing and validate the cross border H24 Free Route Airspace;</li> <li>• Validating the new and existing sector configuration</li> <li>• Validating ATC procedures with regard to new and existing configuration and ATM system capabilities</li> <li>• Validating ATC procedures with regard to technical shortcomings of the ATM system(MTCD Area)</li> <li>• Safety assesment</li> </ul>		

2015_189_AF3 – Deploy free Route Airspace (Full FRA) in German and SWISS Airspace			
<b>Start Date</b>	16/02/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	DFS		
<b>Contributors</b>	Skyguide		
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.2	Family 3.2.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• The Free Route Airspace (FRA) project will implement the operational functionalities of Family 3.2.4 Free Route Airspace as laid down by the SESAR Deployment Manager within the Deployment Programme 2015 on the basis of implementing the Pilot-Common-Project Regulation EU No. 716/2014. Therewith, deploying advanced operational concepts in a timely, coordinated and synchronized effort to raise capacity, improve safety and cutting costs and thus enabling a significant performance increase at DFS and skyguide. Furthermore, the Free Route Airspace (FRA) project enables improved flight efficiencies in fuel and in time for the airspace users thus, also reducing the environmental footprint of commercial aviation.</li> <li>• It is the objective of DFS and skyguide to deploy Free Route Airspace in German and Swiss airspace in accordance with the deployment plan of this coordinated 2015 CEF funding application through the SESAR Deployment Manager. The potential utilization of funding through the Connecting Europe Facilities (CEF) will enable DFS and skyguide to pursue a timely implementation of Free Route Airspace and therewith facilitating an early realization of benefits for airspace users. The DFS and skyguide Free Route Airspace project is also set-up as a first mover project with regard to deploying the Free Route Airspace functionalities within high-traffic and complex airspaces at Europe's core a full four years prior to the formal requirements as set out by the European Commission within the PCP IR.</li> <li>• Deploying Free Route Airspace (FRA) in DFS AoR (UIR Rhein, FIR Muenchen, parts of FIR Wien), available during night from FL305 (or lower) and above, as from 1.1.2018.</li> <li>• Deploying Free Route Airspace (FRA), available H24 from FL285 (or lower) and above in NE Germany (parts of UIR Rhein), as from 1.1.2018.</li> <li>• Deploying Free Route Airspace (FRA) in DFS AoR (UIR Rhein, parts of FIR Wien), available H24 from FL385 (or lower) and above, as from 1.1.2019.</li> <li>• Deploying Free Route Airspace (FRA) in DFS AoR (UIR Rhein, parts of FIR Wien), available H24 from further lowered vertical limits, as from 1.1.2020 and 1.1.2021 respectively.</li> </ul>		

- Deploying Free Route Airspace (FRA) in Skyguide AOR during night from FL245+ and above as from 1.1.2020.

2015_227_AF3_A – Borealis FRA Implementation (Part 2) 2015_227_AF3_B – Borealis FRA Implementation (Part 2)			
<b>Start Date</b>	15/02/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	Borealis		
<b>Contributors</b>	<p>Avinor Flysikring AS, Finavia, Irish Aviation Authority, LFV, NATS, Naviair, Ryanair, LGS, EANS, Isavia</p> <p>The project implementation scope depend on the coordinated work of all 9 partners (Avinor Flysikring AS, Finavia, IAA, LFV, LGS, NATS, Naviair, EANS, Isavia, Ryanair) and is split into a cohesion and non-cohesion part.</p>		
<b>Main AF/Sub-AF/Family</b>	AF3	S-AF 3.2	Family 3.2.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Implementing FRA, which is a key element of ATM Functionality (AF3) - Flexible Airspace Management and Free Route, across three functional airspace blocks (FABs). Namely, NEFAB, DK-SE FAB and UK-IRE FAB</li> <li>• The implementation will support the achievement of the flight efficiency targets for RP2 of the performance scheme. The Performance Review Body (PRB) and the Network Manager (NM) has highlighted the need to pay particular attention to interfaces between the Functional Airspace Blocks (FABs) and the deployment of FRA initiatives to achieve these targets</li> <li>• Reducing fuel consumption by allowing users to flight-plan their preferred trajectories</li> <li>• Introducing seamless integration among ACCs</li> <li>• Reducing the effort on ATCOs by allowing a more cost-effective approach, while keeping the highest level of safety</li> <li>• The implementation also includes EANS (Estonia) who are applying for funding their contribution towards implementation through the Cohesion fund</li> </ul>		

## AF4 Network Collaborative Management

The following table encompasses the list of candidate implementation initiatives associated to ATM Functionality #4 that were awarded under the 2015 CEF Transport Calls for Proposal.

2015 CEF Call Designator	Title	Family	IP Description Page Number
2015_110_AF4	STAM Phase 2 (NM)	4.1.2	127
2015_105_AF4	Interactive Rolling Network Operations Planning	4.2.2	127
2015_179_AF4	Implementation of APOC Schiphol Airport	4.2.2	128
2015_021_AF4	Slot Manager for PCP airports	4.2.3	128
2015_106_AF4	Flight evolution and upgrade of interfaces with NM stakeholders	4.2.3	128
2015_113_AF4	AOP-NOP Integration	4.2.4	129
2015_114_AF4	Implementation of Target Times for ATFCM purposes (NM)	4.3.1	129
2015_115_AF4	Traffic Complexity Management	4.4.2	130
2015_167_AF4	Workload model for Amsterdam Area Control and Approach Control operations	4.4.2	130
2015_217_AF4	tCAT implementation in Sofia ACC	4.4.2	131
2015_240_AF4	Traffic Complexity Tools	4.4.2	131

**Family 4.1.2 – STAM Phase 2**

2015_110_AF4 - STAM Phase 2 (NM)			
<b>Start Date</b>	01/10/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	EUROCONTROL / Network Manager		
<b>Contributors</b>	Swiss International Airlines Ltd., Sabre		
<b>Main AF/Sub-AF/Family</b>	AF4	S-AF 4.1	Family 4.1.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Delivering a complete package of system support and operational procedures, to enable the harmonised and effective deployment of Short Term ATFCM Measures (pahse 2) throughout the European airspace</li> <li>• Implementing NM System changes necessary to support the STAM phase 2 Operations</li> <li>• STAM connection between Airline NOC and NM</li> <li>• Integrating STAM input (TTA/TTO) in FPM/FE and PROVIDENCE product</li> <li>• Pre-tactical - Slot Management and reaction to TTA coming from STAM</li> <li>• Tactical adapted CI or rerouting based on STAM phase 2 requirements</li> </ul>		

**Family 4.2.2 – Interactive Rolling NOP**

2015_105_AF4 - Interactive Rolling Network Operations Planning			
<b>Start Date</b>	01/03/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	EUROCONTROL / Network Manager		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF4	S-AF 4.2	Family 4.2.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Improving Network situational awareness and increasing operational CDM efficiency for all network stakeholders</li> <li>• Providing a common HMI for all Network Stakeholders (NMOC and external), customisable and flexible enough to meet the needs of the different user roles and different organisations' ways of working</li> <li>• Enabling the timely implementation of the NM service interfaces required by the NM Strategic Projects, addressing both their functional and non-functional requirements, thus supporting the PCP deployment in the short term and paving the way for the longer term evolutions</li> <li>• NSP-SO2 Deploying interoperable and effective information management systems</li> </ul>		



2015_179_AF4 - Implementation of APOC Schiphol Airport			
<b>Start Date</b>	01/01/2016	<b>End Date</b>	31/12/2019
<b>Project Leader</b>	Amsterdam Airport Schiphol		
<b>Contributors</b>	KNMI, KLM		
<b>Main AF/Sub-AF/Family</b>	AF4	S-AF 4.2	Family 4.2.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Optimizing the information exchange between airport stakeholders (A-CDM)</li> <li>• Optimizing the information exchange between airport stakeholders and network management (NMOC)</li> <li>• Preparing, executing and monitoring the AOP (Airport Operations Plan)</li> </ul>		

### Family 4.2.3 – Interface ATM systems to NM systems

2015_021_AF4 - Slot Manager for PCP airports			
<b>Start Date</b>	01/03/2016	<b>End Date</b>	31/12/2019
<b>Project Leader</b>	Deutsche Lufthansa AG		
<b>Contributors</b>	Swiss International Airlines Ltd., Sabre, Brussel Airlines Ltd.		
<b>Main AF/Sub-AF/Family</b>	AF4	S-AF 4.2	Family 4.2.3
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Removing bottlenecks by closing missing information exchange links between NM and airlines for SWIM compliance.</li> <li>• Contributing to a high performing ATM by improving an essential prerequisite capacity and delay management with an improved slot and arrival management.</li> <li>• Supporting tactical replanning, by considering airway restrictions based on additional real time information delivered via NM increasing the capacity in the European airspace and safety level.</li> <li>• Support in the establishment of governance by executing SWIM compliance activities: e.g. AIRM, ISRM rules; B2B over PENS (yellow profile)</li> <li>• Contributing to the standardisation of the ATM infrastructure in Europe by know how transfer to all relevant SESAR (SJU/SDM) and EUROCAE projects led by or with participation of LH Group.</li> </ul>		

2015_106_AF4 - Flight evolution and upgrade of interfaces with NM stakeholders			
<b>Start Date</b>	01/03/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	EUROCONTROL / Network Manager		

<b>Contributors</b>	Swiss International Airlines Ltd., Sabre		
<b>Main AF/Sub-AF/Family</b>	AF4	S-AF 4.2	Family 4.2.3
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Integrating 4DT into pre-departure flight planning operations</li> <li>• Implementing functions associated to FF-ICE/1</li> <li>• Harmonising military OAT flight planning procedures</li> <li>• Supporting mixed mode operations</li> <li>• FO Implementation Strategy</li> <li>• NSP SO5: Facilitating business trajectories and cooperative traffic management</li> </ul>		

#### Family 4.2.4 – AOP/NOP Information Sharing

2015_113_AF4 – AOP-NOP Integration			
<b>Start Date</b>	01/03/2016	<b>End Date</b>	31/12/2019
<b>Project Leader</b>	EUROCONTROL / Network Manager		
<b>Contributors</b>	Heathrow Airport Ltd., Aéroports de Paris, Fraport AG		
<b>Main AF/Sub-AF/Family</b>	AF4	S-AF 4.2	Family 4.2.4
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Setting up B2B AOP-NOP Interfacing for data exchange with selected airports</li> <li>• Ensuring that exchanged data is being processed for better predictability and improved rolling plans on NM and Airport Sides</li> <li>• Providing guidance material for other airports for later implementation of AOP-NOP link and on Collaborative Decision Making in order to provide quality input data</li> </ul>		

#### Family 4.3.1 – Target Time for ATFCM purposes

2015_114_AF4 - Implementation of Target Times for ATFCM purposes (NM)			
<b>Start Date</b>	01/03/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	EUROCONTROL / Network Manager		
<b>Contributors</b>	Swiss International Airlines Ltd., Sabre		
<b>Main AF/Sub-AF/Family</b>	AF4	S-AF 4.3	Family 4.3.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Refining the elements of Concept of operations for Target Time Operations (TTO) for ATFCM purposes and develop associated procedures</li> <li>• Adapting NM Systems to implement TTO</li> <li>• Pre-tactical: preparing and delivering requested TTA/TTO (like iStream) according pre-tactical request of airline</li> <li>• Inflight transmission of tactical informations and</li> </ul>		

- exchange of TTA/TTO between airline NOC (and/or aircrafts) with NM
- cision from the airline NOC and/or aircrafts to NM
- AFLEX procedure if necessary (SWAP inside the company or Deutsche Lufthansa AG)

#### Family 4.4.2 – Traffic Complexity Tools

2015_115_AF4 – Traffic Complexity Management			
<b>Start Date</b>	01/10/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	EUROCONTROL / Network Manager		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF4	S-AF 4.4	Family 4.4.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Enhancing the network scenario management in support of the collaborative planning</li> <li>Supporting local tools in the traffic complexity assessment</li> <li>Supporting local actors in decision making by providing simulation facilities at network level</li> <li>Providing facilities for complexity management at network level to support FMPs not having local tools</li> </ul>		

2015_167_AF4 – Workload model for Amsterdam Area Control and Approach Control operations			
<b>Start Date</b>	16/02/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	LVNL		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF4	S-AF 4.4	Family 4.4.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Introduction of WLM to support ATFC Measures decisionmaking</li> <li>Advanced simulations features for predicting workload to support staffing and ATFC Measures decision making</li> <li>Advanced workload assesment tools to support the use of Short Term ATFC Measures (STAM) and Flexible Use of Airspace (FUA)</li> <li>Integrated WLM infrastructure and interoperable with operational ATC-systems</li> <li>Support tool for runway configuration and capacity planning Schiphol Airport</li> <li>Workload methodology for APP operations</li> </ul>		

2015_217_AF4 – tCAT implementation in Sofia ACC			
<b>Start Date</b>	04/04/2016	<b>End Date</b>	01/10/2020
<b>Project Leader</b>	BULATSA		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF4	S-AF 4.4	Family 4.4.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Monitoring sector air traffic demand and evaluating traffic complexity (by applying complexity metrics) according to a qualitative scale</li> <li>• Allowing timely action to adjust capacity, or request the traffic profile changes in coordination with NM</li> <li>• Allowing effective capacity management of sectors and their dynamic management by means of different suitable configurations having taken into account the complexity of expected traffic situation</li> <li>• Allowing effective planning of ATCO resources</li> <li>• Allowing effective management of ATCO workload</li> <li>• Providing additional mitigation measures for unplanned/unprecedented increase of traffic volume/workload (e.g. airspace restrictions in adjacent airspace, weather avoidance, etc.)</li> </ul>		

2015_240_AF4 - Traffic Complexity Tools			
<b>Start Date</b>	15/02/2016	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	ANS/CR		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF4	S-AF 4.4	Family 4.4.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Reducing traffic complexity over LKAA FIRs</li> <li>• Reducing workload on LKAA Sectors</li> <li>• Eliminating the use of regulations</li> </ul>		

## AF5 Initial SWIM

The following table encompasses the list of candidate implementation initiatives associated to ATM Functionality #5 that were awarded under the 2015 CEF Transport Calls for Proposal.

2015 CEF Call Designator	Title	Family	IP Description Page Number
2015_174_AF5	NewPENS Stakeholders contribution for the procurement and deployment of NewPENS	5.1.2	134
2015_319_AF5	SWIM Common Components - Phase 2	5.1.3	134
2015_035_AF5	LAN network upgrade	5.2.1	135
2015_047_AF5	Modernization of IP based G/G Data Network in CCL - CaRT/iWAN-NG	5.2.1	135
2015_049_AF5	CCL cyber security architecture - ExCO-NG	5.2.1	136
2015_098_AF5	Implementing redundant WAN	5.2.1	136
2015_131_AF5	CANDI-IP (execution phase)	5.2.1	136
2015_192_AF5	RAPNET NG	5.2.1	137
2015_038_AF5	The ECG Communication System upgrade	5.2.2	137
2015_117_AF5	Improve NM SWIM Infrastructure	5.2.2	138
2015_197_AF5	Centralized DFS "Yellow Profile" SWIM Node	5.2.2	138
2015_198_AF5	Implementation of ENAV "LAN Servizi"	5.2.2	139
2015_210_AF5	AMHS/SWIM gateway	5.2.2	139
2015_249_AF5	PATRUS	5.2.2	140
2015_099_AF5	DK-SE FAB Aeronautical Data Quality (ADQ)	5.3.1	140
2015_112_AF5	Integrate the Aeronautical Information Exchange Services in NM Systems	5.3.1	141
2015_138_AF5	5.3.1 NAV Portugal - Implementation of a solution for electronic Terrain and Obstacle Data management	5.3.1	141
2015_145_AF5	AIM Deployment Toolkit	5.3.1	141
2015_160_AF5	Aeronautical Information exchange and management	5.3.1	142
2015_168_AF5	Implementation of Aeronautical Data Quality (ADQ) at LVNL	5.3.1	142
2015_194_AF5	STANLY_ACOS iSWIM for Free-Route and NM	5.3.1	142
2015_201_AF5	Transition of current Aeronautical Information Management System to EAD	5.3.1	144
2015_230_AF5	AF5 AIM Compliance Program	5.3.1	144

<b>2015 CEF Call Designator</b>	<b>Title</b>	<b>Family</b>	<b>IP Description Page Number</b>
2015_243_AF5	Aeronautical Information Distribution Service	5.3.1	144
2015_262_AF5	Aeronautical Data Quality and Exchange	5.3.1	145
2015_288_AF5	ADQ implementation Stockholm Arlanda	5.3.1	145
2015_025_AF5	Sub-regional SWIM MET deployment to support NEFRA	5.4.1	145
2015_067_AF5	European Weather Radar Composite of Convection Information Service	5.4.1	146
2015_068_AF5	European Harmonised Forecasts of Adverse Weather (Icing, Turbulence, Convection and Winter weather)	5.4.1	147
2015_069_AF5	European MET Information Exchange (MET-GATE)	5.4.1	147
2015_137_AF5	European Meteorological Aircraft Derived Data Center (EMADDC)	5.4.1	148
2015_169_AF5	Initial (I)WXXM implementation on CCIS Amsterdam ACC and Schiphol	5.4.1	148
2015_231_AF5	METSW-DB PCP Evolution	5.4.1	149
2015_241_AF5	Meteorological Information Exchange Service	5.4.1	149
2015_045_AF5	AF5 iSWIM	5.5.1	149
2015_118_AF5	More efficient Flight Planning	5.5.1	150
2015_143_AF5	Improve Cooperative Network Information Exchange Services	5.5.1	150
2015_141_AF5	Improve NM Flight Information Exchange Services	5.6.1	150

**Family 5.1.2 – Future PENS: Future Pan-European Network Service**

2015_174_AF5_A – NewPENS Stakeholders contribution for the procurement and deployment of NewPENS – Part A: General Call			
2015_174_AF5_B – NewPENS Stakeholders contribution for the procurement and deployment of NewPENS – Part B: Cohesion Call			
<b>Start Date</b>	15/02/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	EUROCONTROL		
<b>Contributors</b>	<p>Austro Control, Avinor Flysikring AS, DSNA, ENAIRE, Finavia, Irish Aviation Authority, LFV, LVNL, MNAV, NATS, Naviar, SMATSA, NAV Portugal, Aéroports de Paris, Belgocontrol, Slovenia Control, BULATSA, ROMATSA</p> <p>The project implementation scope depend on the coordinated work of all 19 partners (EUROCONTROL, AUSTROCONTROL (Austria), Avinor Flysikring AS (Norway), DSNA (France), ENAIRE (Spain), FINAVIA (Finland), IAA (Ireland), LFV (Sweden), LVNL (The Netherlands), MNAV (Macedonia), NATS (UK), NAVAIR(Denmark), SMATSA (Serbia &amp; Montenegro), NAV Portugal (Portugal), Aéroports de Paris (France), Belgocontrol (Belgium), SLOVENIA CONTROL (Slovenia), BULATSA (Bulgaria), ROMATSA (Romania)) and is split into a cohesion and non-cohesion part.</p>		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.1	Family 5.1.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Deploying an Internet Protocol (version6 and version4) Network Service necessary to support the SWIM Exchanges</li> <li>Deploying within the ICAO EUR/NAT Region a unique Pan European Network Service to support the information exchange needs of all ATM stakeholders, ANSPs (almost users of PENS1) but also Airports, Airspace Users, MET Providers and Military</li> <li>Replacing PENS1 terminating in June 2018</li> </ul>		

**Family 5.1.3 – Common SWIM Infrastructure Components**

2015_319_AF5 - SWIM Common Components - Phase 2			
<b>Start Date</b>	16/02/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	EUROCONTROL		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.1	Family 5.1.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Providing “deployment toolkits” in order to enable a harmonised implementation of the SWIM data exchange models (AIXM/(I)WXXM/FIXM). The goal is to have common rules for the data</li> </ul>		

	<p>capturing/mapping/interpretation. Real data interoperability is only possible if all involved parties adhere to both same structure (provided by the XM) and same semantics (data capturing rules)</p> <ul style="list-style-type: none"> <li>• Update the deployment toolkits based on further versions of the following specifications: <ul style="list-style-type: none"> <li>◦ Aeronautical Information Exchange Model (AIXM)</li> <li>◦ Weather Exchange Model (WXXM) and ICAO Weather Exchange Model (IWXXM)</li> <li>◦ Flight Information Exchange Model (FIXM)</li> </ul> </li> <li>• The SWIM Registry will provide a platform for the service providers to find information about SWIM (SWIM Reference Management).</li> <li>• Supporting partial mitigation (for the part associated with the exchange of Aeronautical Information and data) of the PCP implementation gap mainly in Family 5.3.1, but also others, ultimately benefitting operational stakeholders across the entire PCP applicability area.</li> </ul>
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### Family 5.2.1 – Stakeholder Internet Protocol Compliance

2015_035_AF5 - LAN network upgrade			
<b>Start Date</b>	01/01/2015	<b>End Date</b>	30/06/2019
<b>Project Leader</b>	Polish Air Navigation Services Agency (PANSa)		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.2	Family 5.2.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Redesigning LAN in ACC building. Splitting of operational and non-operational services, based on network environment.</li> <li>• Improving network services for operational users by upgrading reliability and stability level.</li> </ul>		

2015_047_AF5 - Modernization of IP based G/G Data Network in CCL - CaRT/iWAN-NG			
<b>Start Date</b>	15/02/2016	<b>End Date</b>	28/04/2017
<b>Project Leader</b>	Croatia Control		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.2	Family 5.2.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Redesigning existing national IP-based ground-ground data communications network to support SWIM and VoIP based voice communications</li> <li>• Validating the design through Proof of Concept</li> </ul>		



**2015\_049\_AF5 - CCL cyber security architecture - ExCO-NG**

<b>Start Date</b>	02/03/2015	<b>End Date</b>	24/02/2017
<b>Project Leader</b>	Croatia Control		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.2	Family 5.2.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Implementation of the cyber security architecture which would enable acceptable level of security while supporting iSWIM information exchanges via IP based network by SWIM enabled ATM systems</li> </ul>		

**2015\_098\_AF5 - Implementing redundant WAN**

<b>Start Date</b>	01/01/2016	<b>End Date</b>	31/12/2019
<b>Project Leader</b>	LFV		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.2	Family 5.2.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Ensuring SWIM capability within LFV's communication systems</li> <li>Ensuring redundancy in LFV's communication systems via the implementation of additional WAN services</li> <li>Commissioning Second national WAN</li> <li>Commissioning Third national WAN</li> </ul>		

**2015\_131\_AF5 - CANDI-IP (execution phase)**

<b>Start Date</b>	22/02/2016	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	Naviar		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.2	Family 5.2.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Implementation of fully IP4- and IP6-based, dual redundant ground-to-ground communication network</li> <li>Implementation of fully IP4- and IP6-based, separate back-up network</li> <li>Implementation of the communication infrastructure required for Voice over IP communication (VoIP) and SWIM</li> <li>Implementation of the infrastructure required for information exchange and services via PENS and NewPENS</li> </ul>		

- Ensuring continuous availability of WAN data transport in EKDK FIR
- Ensuring logical and physical segregation of operationally critical data

2015_192_AF5 - RAPNET NG			
<b>Start Date</b>	16/02/2016	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	DFS		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.2	Family 5.2.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Deploying up to four so called Families as laid down by the SESAR Deployment Manager within the Deployment Programme 2015 on the basis of implementing the Pilot-Common-Project Regulation EU No. 716/2014. By this, deploying internet protocol compliant infrastructure for exchange of information as an interoperable baseline/prerequisite for the future deployment of SWIM functionalities and ATM system information exchange all the while ensuring further conformity to EU No. 633/2007</li> <li>• Providing a common WAN infrastructure for all DFS sites to ensure future IP communications compliance with external stakeholders. This fulfills the provision of stakeholder SWIM Infrastructure components as required in AF 5.2.1. DFS external partners like Airlines, Airports, Military and MET will be connected to RAPNET NG utilizing gateways to the RAPNET NG infrastructure (PENS or bilateral connections)</li> <li>• Ensuring cost efficiency of SWIM deployment by replacement of the current and end-of-life Ericsson PPX based Multiservice WAN Infrastructure at all DFS sites by a state-of-the-art MPLS based WAN infrastructure</li> </ul>		

### Family 5.2.2 – Stakeholder SWIM Infrastructure components

2015_038_AF5 - The ECG Communication System upgrade			
<b>Start Date</b>	01/01/2016	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	Polish Air Navigation Services Agency (PANSa)		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.2	Family 5.2.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Improving reliability level for AMHS.</li> <li>• Upgrading AMHS functionality for Warsaw AMHS COM Center</li> </ul>		

2015_117_AF5 - Improve NM SWIM Infrastructure			
<b>Start Date</b>	01/03/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	EUROCONTROL / Network Manager		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.2	Family 5.2.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Enhancing NM SWIM Yellow Profile infrastructure components</li> <li>• Upgrading security management, infrastructure and processes</li> <li>• NSP - SO2 Deploying interoperable and effective information management systems</li> <li>• NSP - SO7 Ensuring network safety, security and robustness</li> </ul>		

2015_197_AF5 - Centralized DFS "Yellow Profile" SWIM Node			
<b>Start Date</b>	01/04/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	DFS		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.2	Family 5.2.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Deploying the Family 5.2.2 as laid down by the SESAR Deployment Manager within the Deployment Programme 2015 on the basis of implementing the Pilot-Common-Project Regulation EU No. 716/2014. Therewith, deploying stakeholder SWIM infrastructure components for information exchange in a timely, coordinated and synchronized effort to raise capacity, improve safety and cutting costs while minimizing aviation's environmental footprint</li> <li>• Ensuring that the operational benefits of SWIM are realised by enabling DFS systems to provide and consume SWIM services deployed on the "Yellow profile" SWIM infrastructure</li> <li>• Ensure that DFS is able to satisfy the legal provisions of EU No. 716/2014 by               <ul style="list-style-type: none"> <li>◦ providing the DFS contribution to the SWIM service infrastructure subject to the requirements and standards in the PCP Implementing Rule</li> <li>◦ subjecting all industrialization and operations to pertinent requirements of the Interoperability Implementing Rule EU No. 552/2004</li> <li>◦ fully integrating with the SWIM "Common Components" applicable to the "Yellow Profile"</li> </ul> </li> </ul>		

- Ensuring cost efficiency of SWIM deployment by
  - providing a single DFS implementation of SWIM "Yellow Profile" technology that
    - integrates into the DFS systems operations infrastructure and
    - minimises integration cost by providing an open standard integration platform to the DFS ATM systems
  - coordinating the DFS internal SWIM deployment activities to realise synergies
  - ensuring efficient and effective communications with DFS in "Yellow Profile" matters by establishing a clear DFS unique point of access (gateway) to external SWIM Stakeholders.
- Minimizing risk and contributing to timeliness of the European SWIM implementation effort by continuous coordination of deployment activities with all external implementation initiative stakeholders:
  - SWIM service partners (NM, ANSPs, MET providers, ...)
  - SWIM Governance
  - SWIM "Common Components" providers

This includes activities ranging from planning coordination to day-to-day cooperation during technical integration and transition.

#### 2015\_198\_AF5 - Implementation of ENAV "LAN Servizi"

<b>Start Date</b>	01/06/2016	<b>End Date</b>	30/06/2018
<b>Project Leader</b>	ENAV		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.2	Family 5.2.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Identification of interventions required for the implementation of a new "LAN Servizi" at Rome ACC</li> <li>• Upgrade FDP operational systems</li> <li>• Upgrade RDP operational systems</li> </ul>		

#### 2015\_210\_AF5 - AMHS/SWIM gateway

<b>Start Date</b>	16/02/2016	<b>End Date</b>	30/06/2017
<b>Project Leader</b>	ENAIRe		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.2	Family 5.2.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Developing a gateway that allows routing/converting AMHS messages into SWIM messages (based in Web</li> </ul>		

Services)

- Updating Spanish COM Center in order to be ready to receive new messages (based in Web Services) and to manage them appropriately

### 2015\_249\_AF5 – PATRUS (Secured real time gateway) for data exchange between civil and military systems

<b>Start Date</b>	31/12/2013	<b>End Date</b>	31/10/2019
<b>Project Leader</b>	French Ministry of Defence		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.2	Family 5.2.2
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Implementing Internet Protocol for military control centers</li> <li>• Allowing interoperability between military controls centers, civilian centers and SWIM</li> <li>• Implementing a secured gateway between from civilian centers to military control centers</li> <li>• Studying for a bidirectionnal secured gateway</li> <li>• Implementing a secured bidirectionnal gateway between military and civilian control center</li> </ul>		

### Family 5.3.1 – Upgrade/Implement Aeronautical Information Exchange System/Service

#### 2015\_099\_AF5 – DK-SE FAB Aeronautical Data Quality (ADQ)

<b>Start Date</b>	01/03/2016	<b>End Date</b>	01/03/2018
<b>Project Leader</b>	LFV		
<b>Contributors</b>	Naviar		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.3	Family 5.3.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Migrating LFV's and Naviar's aeronautical data to support AIXM 5.1</li> <li>• Ensuring compliance to ICAO Annex 15 and Commission Regulation (EU) No 73/2010</li> <li>• Enabling the first set of aeronautical SWIM compliant services;</li> <li>• Seeking efficiency improvements within DK-SE FAB in-line with SES objectives</li> </ul>		

2015_112_AF5 – Integrate the Aeronautical Information Exchange Services in NM Systems			
<b>Start Date</b>	01/03/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	EUROCONTROL / Network Manager		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.3	Family 5.3.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Improving data quality</li> <li>• Reducing NMOC workload</li> </ul>		

2015_138_AF5 - 5.3.1 NAV Portugal - Implementation of a solution for electronic Terrain and Obstacle Data management			
<b>Start Date</b>	01/11/2014	<b>End Date</b>	30/05/2018
<b>Project Leader</b>	NAV Portugal		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.3	Family 5.3.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Implementing a centralised solution for all electronic terrain and obstacles data (eTOD) management in accordance with SWIM principles</li> <li>• Exchanging Aeronautical Information in compliance with the yellow SWIM TI Profile</li> <li>• Collecting, exchanging, managing and distributing the digital terrain (geoTIFF) and obstacles information (AIXM)</li> </ul>		

2015_145_AF5_A – AIM Deployment Toolkit 2015_145_AF5_B – AIM Deployment Toolkit			
<b>Start Date</b>	01/04/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	EUROCONTROL		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.3	Family 5.3.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Ensuring a harmonised and coordinated deployment implementation by all European States for required AIS/AIM services to support the integration of airports into the aeronautical data provision</li> <li>• Contributing to the establishment of a framework enabling provision of Digital NOTAM pre-encoded data</li> <li>• Managing underlying aeronautical airport data and data products, including the airport mapping, terrain and obstacle aspect</li> <li>• Performing SWIM data translations (e.g. between AMDB</li> </ul>		

- and Digital NOTAM format)
- Enabling stakeholder compliance with Aeronautical Data Quality (ADQ) regulations
- Supporting partial mitigation (for the part associated with the exchange of Aeronautical Information and data) of the PCP implementation gap mainly in Family 5,3,1, but also others, ultimately benefitting operational stakeholders across the entire PCP applicability area.

### 2015\_160\_AF5 - Aeronautical Information exchange and management

<b>Start Date</b>	01/01/2016	<b>End Date</b>	01/01/2020
<b>Project Leader</b>	Irish Aviation Authority		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.3	Family 5.3.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Automating the existing AIS functionality including eAIP publication and D-NOTAM management</li> <li>• Implementing an eTOD database for EISN</li> <li>• Migrating to AIXM/Swim Yellow format for all data exchanges</li> <li>• Meeting the requirements of 5.3.1 on an incremental basis</li> </ul>		

### 2015\_168\_AF5 – Implementation of Aeronautical Data Quality (ADQ) at LVNL

<b>Start Date</b>	16/02/2016	<b>End Date</b>	31/10/2017
<b>Project Leader</b>	LVNL		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.3	Family 5.3.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Increasing the quality and integrity of the publication of static and dynamic aeronautical data</li> <li>• Increasing the productivity by automating data transfer</li> </ul>		

### 2015\_194\_AF5 – STANLY\_ACOS iSWIM for Free-Route and NM

<b>Start Date</b>	15/04/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	DFS		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.3	Family 5.3.1

**Project Objective**

- Deploying up to four so called Families as laid down by the SESAR Deployment Manager within the Deployment Programme 2015 on the basis of implementing the Pilot-Common-Project Regulation EU No. 716/2014. The main objective of this project is to deploy services for exchange of aeronautical information in a timely, coordinated and synchronized effort in order to raise capacity, improve safety and cutting costs while minimizing aviation's environmental footprint by providing an integrated airspace management tool within the iCAS system environment and connecting to Network Manager systems as well as neighbouring ANSPs systems.
- Ensuring that DFS is able to satisfy the legal provisions of EU No. 716/2014 by
  - providing the DFS contribution to the SWIM service infrastructure subject to the requirements and standards in the PCP Implementing Rule
  - subjecting all development and operations to pertinent requirements of the Interoperability Implementing Rule EU No. 552/2004.
  - implementing aeronautical information services using the "Yellow SWIM TI Profile"
- Ensuring cost efficiency of SWIM deployment by:
  - providing a single DFS implementation of SWIM "Yellow Profile" technology that
    - integrates into the DFS systems operations infrastructure and
    - minimises integration cost by providing an open standard integration platform to the DFS ATM systems
  - coordinating the DFS internal SWIM deployment activities to realise synergies
  - ensuring efficient and effective communications with DFS in "Yellow Profile" matters by establishing a clear DFS unique point of access (gateway) to external SWIM Stakeholders
- Minimizing risk and contributing to timeliness of the European SWIM implementation effort by continuous coordination of deployment activities with all external implementation initiative stakeholders
  - SWIM service partners (NM, ANSPs, Airspace Users, ...)
  - SWIM Governance
  - SWIM "Common Components" providers

This includes activities ranging from planning coordination to day-to-day cooperation during technical integration and transition
- Contributing to the deployment of AF 5.3.1 by connection of DFS-Systems (Airspace management, Flight Data Processing systems, Airspace Management Tools) via temporal SWIM-Node to Network Manager



2015_201_AF5 – Transition of current Aeronautical Information Management System to EAD			
<b>Start Date</b>	01/01/2016	<b>End Date</b>	28/02/2017
<b>Project Leader</b>	ENAV		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.3	Family 5.3.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Replacing the current ENAV NOTAM System with the centrally provided EAD System</li> <li>• Using of AIXM5.1 as standard exchange data format</li> <li>• Provision of PIBs compliant with ADQ requirements</li> </ul>		

2015_230_AF5 – AF5 AIM Compliance Program			
<b>Start Date</b>	01/03/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	Austro Control		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.3	Family 5.3.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Analysing, developing and upgrading or implementing AIM infrastructure to comply with iSWIM requirements</li> <li>• Ensuring continuous improvement of data distribution and aeronautical data quality according to iSWIM requirements</li> <li>• Upgrading and/or implementing and continuously improving the AMSS to comply with iSWIM requirements</li> <li>• Implementing ongoing enhancements to the AIMP</li> </ul>		

2015_243_AF5 – Aeronautical Information Distribution Service			
<b>Start Date</b>	01/06/2016	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	ANS/CR		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.3	Family 5.3.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Allowing direct digital aeronautical information exchange to enable ADQ IR 73/2010 implementation (distribution from AIS to users inside and outside the ANSP)</li> <li>• Allowing flexible on-demand aeronautical data provision and distribution</li> <li>• Reducing the effort on AIS staff for digital data provision and distribution</li> <li>• Introducing seamless AIM/SWIM operation by the AIS</li> </ul>		

2015_262_AF5 – Aeronautical Data Quality and Exchange			
<b>Start Date</b>	01/01/2016	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	Portuguese Air Force		
<b>Contributors</b>	-		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.3	Family 5.3.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• This project is paramount to accomplish the required level of data quality established by EC Regulation 73/2010.</li> <li>• Improving civil/military coordination towards Flexible Use of Airspace</li> <li>• Allowing Portuguese Air Force (PRTAF) to perform GROUND-GROUND coordination between military and adjacent ATC Units</li> <li>• Compliance with 73/2010 includes the implementation of ADQ levels when needed to sustain SESAR Deployment Programme families as it is the case with 1.2.2 and also for exchanges with EAD and other data repositories</li> </ul>		

2015_288_AF5 – ADQ implementation Stockholm Arlanda			
<b>Start Date</b>	01/03/2016	<b>End Date</b>	31/12/2017
<b>Project Leader</b>	Swedavia		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.3	Family 5.3.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Stockholm Arlanda Airport ADQ compliant</li> <li>• Implementing Quality control</li> </ul>		

#### Family 5.4.1 – Upgrade/Implement Meteorological Information Exchange System/Service

2015_025_AF5_A - Sub-regional SWIM MET deployment to support NEFRA (A) 2015_025_AF5_B - Sub-regional SWIM MET deployment to support NEFRA (B)			
<b>Start Date</b>	01/11/2016	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	Finnish Meteorological Institute		
<b>Contributors</b>	<p>Swedish Meteorological and Hydrological Institute, Danish Meteorological Institute</p> <p>The project implementation scope depend on the coordinated work of all 3 partners (Finnish Meteorological Institute ,Swedish Meteorological and Hydrological Institute , Danish Meteorological Institute) and is split into a cohesion and non-cohesion part.</p>		

Main AF/Sub-AF/Family	AF5	S-AF 5.4	Family 5.4.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Implementation of a flexible and cost-effective interoperable production and exchange of MET information for Northern European MET service providers compliant with the SWIM data formats and interfaces</li> <li>• Demonstration and verification of cost-effective multi-stakeholder operational deployment of SWIM for MET information</li> <li>• Implementation and verification covering TAFs and METARs for civil airports within the geographical scope of the project, AIRMETs and SIGMETs for Söndrestrom, København, Sweden and Finland (part A) and Tallinn and Riga FIRs (part B), METARs and AUTO-METARs for civil airports and Significant Weather Charts (SWCs) for Sweden and Finland (part A) and Estonia and Latvia (part B) covering the Scandinavian footprint</li> <li>• Development and implementation of a central database and web services for the exchange of MET information in SWIM compliant format and easy availability to users</li> <li>• Development and implementation of common user interfaces to facilitate the generation and monitoring of harmonised and coherent MET information</li> <li>• Embedding and implementing the systems/applications in the operational production and monitoring chains of all project contributors</li> </ul>		

2015_067_AF5 – European Weather Radar Composite of Convection Information Service			
<b>Start Date</b>	01/04/2016	<b>End Date</b>	30/09/2019
<b>Project Leader</b>	EUMETNET EIG		
<b>Contributors</b>	Met Office (UK), DWD, Météo-France, EUROCONTROL		
Main AF/Sub-AF/Family	AF5	S-AF 5.4	Family 5.4.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Originating resilient, single source real-time 3-dimensional (3D) weather radar information of convective weather events for high density TMA and Airport with 1) Departure Management Synchronised with Pre-departure sequencing, 2) Departure Management integrating Surface Management Constraints, or 3) Time-Based Separation for Final Approach</li> <li>• Originating resilient, single source real-time weather radar information of convective weather events for the European geographical footprint</li> <li>• Distributing weather radar information of convective weather events in a SWIM compliant format through the MET-GATE (069-AF5) service by applying SWIM compliant protocols, standards and governance principles</li> <li>• Enabling all aviation stakeholders (including ATC, NM, Airlines, Airports) to base decisions on a common</li> </ul>		

reference and representation of convective weather events for the European geographical footprint

- Raising awareness of new MET capabilities among stakeholder groups

### 2015\_068\_AF5 – European Harmonised Forecasts of Adverse Weather (Icing, Turbulence, Convection and Winter weather)

<b>Start Date</b>	01/07/2016	<b>End Date</b>	30/06/2020
<b>Project Leader</b>	EUMETNET EIG		
<b>Contributors</b>	Met Office (UK), Météo France, Finnish Meteorological Institute, EUROCONTROL, DWD		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.4	Family 5.4.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Providing resilient, single source (with robust backup capability) and harmonized adverse weather forecast products (including convection, icing, turbulence and winter conditions) within the European domain. In particular the MET information will cover high density TMA and Airports, as well as pan European network applications</li> <li>• Enabling all stakeholders (ATC, Airlines, Airports, AU, supporting actors) to base decisions on a common representation of adverse weather situations, thereby increasing safety in complex scenarios and facilitating collaborative reactions to hazardous weather events</li> <li>• Distributing forecast information of adverse weather via the MET-GATE (069-AF5) service, using protocols and governance compatible with SWIM architecture and principles</li> <li>• Enabling comprehensive assessments of the impact of adverse weather on all aspects of industry operations, providing a high degree of confidence and accuracy. A clearer understanding of uncertainty will assist in operational decision making</li> <li>• Raising awareness of new MET capabilities among stakeholder groups</li> </ul>		

### 2015\_069\_AF5 – European MET Information Exchange (MET-GATE)

<b>Start Date</b>	01/07/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	EUMETNET EIG		
<b>Contributors</b>	Météo-France, Met Office (UK), DWD, EUROCONTROL, DFS		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.4	Family 5.4.1
<b>Project Objective</b>	<p>Single source to request and receive customized MET information tailored for user's needs by applying smart functionalities</p> <p>Point of contact for requesting MET information services,</p>		

using protocols and governance compatible with SWIM architecture and principles  
Enabling all stakeholders (ATC, Airlines, Airports, supporting actors) to base decisions on a common representation of meteorological situations

### 2015\_137\_AF5 – European Meteorological Aircraft Derived Data Center (EMADDC)

<b>Start Date</b>	01/03/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	Royal Netherlands Meteorological Institute (KNMI)		
<b>Contributors</b>	Met Office (UK)		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.4	Family 5.4.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Setting up a governance model, in line with EU Open Data regulations, for collection of surveillance data/aircraft derived data and dissemination of obtained or derived meteorological information</li> <li>• Deploying operational European meteorological aircraft derived data center</li> <li>• Realising a collection of aircraft derived data from surveillance service providers or via deployment of local ADS-B/Mode-S receivers including the necessary infrastructure to maintain and operate these local receivers operationally</li> <li>• Providing service and disseminating derived meteorological information via services and PENS/(New)PENS</li> </ul>		

### 2015\_169\_AF5 – Initial (I)WXXM implementation on CCIS Amsterdam ACC and Schiphol

<b>Start Date</b>	01/01/2017	<b>End Date</b>	31/12/2018
<b>Project Leader</b>	LVNL		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.4	Family 5.4.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Implementation of the (I)WXXM model in the meteo gateway of LVNL, CCISv2</li> <li>• Demonstration and verification of the operational deployment of iSWIM for MET information, in collaboration with the dutch MET office KNMI</li> <li>• Receiving and storing MET information coming from the dutch MET office KNMI, compliant with the iSWIM data formats and interfaces.</li> <li>• Simultaneously supporting legacy messaging exchanges</li> </ul>		

2015_231_AF5 – METSW-DB PCP Evolution			
<b>Start Date</b>	01/12/2014	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	Austro Control		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.4	Family 5.4.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Implementing a new METSW as technical enabler for iSWIM and ACG AF5 MET Compliance Program</li> <li>Ensuring compliance through continuous system upgrades to ensure functionality and required performance needs</li> <li>Evolutions will react on changes in developments and ensure fulfillment of new requirements</li> </ul>		

2015_241_AF5 – Meteorological Information Exchange Service			
<b>Start Date</b>	01/03/2016	<b>End Date</b>	01/12/2020
<b>Project Leader</b>	ANS/CR		
<b>Contributors</b>	CHMI (Czech Hydrometeorological Institute)		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.4	Family 5.4.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Generation of SWIM compliant MET information (IWXXM) from the Czech Republic - FIR LKAA</li> <li>Building of communication interface for MET information exchange service (Yellow SWIM TI profile)</li> <li>Provision of IWXXM MET information for ATM systems and international exchange</li> </ul>		

#### Family 5.5.1 – Upgrade/Implement Cooperative Network Information Exchange System/Service

2015_045_AF5 – AF5 iSWIM			
<b>Start Date</b>	01/02/2016	<b>End Date</b>	30/09/2019
<b>Project Leader</b>	Københavns Lufthavne (Copenhagen Airports AS)		
<b>Contributors</b>	–		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.5	Family 5.5.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>Becoming part of the NOP and having a better basis for decision making, planning and execution of airport operations, short-term as well as long-term</li> <li>Reducing CAPEX and OPEX by using standard</li> </ul>		

- infrastructure components, e.g. yellow profile
- Gaining better quality of aeronautical data by being part of a pan-european network of extended stakeholders

### 2015\_118\_AF5 - More efficient Flight Planning

<b>Start Date</b>	01/10/2015	<b>End Date</b>	31/12/2019
<b>Project Leader</b>	LFV		
<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.5	Family 5.5.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Implementing an integration platform within Sweden, allowing for more efficient flight planning</li> <li>• Ensuring the necessary technology is in place for LFV's transition to SWIM Services</li> <li>• Supporting the streamlining of LFV AIM function and the introduction of ADQ</li> <li>• Establishing the strategic ability to effectively utilize information in both operational and administrative systems</li> </ul>		

### 2015\_143\_AF5 – Improve Cooperative Network Information Exchange Services

<b>Start Date</b>	01/10/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	EUROCONTROL / Network Manager		
<b>Contributors</b>	Swiss International Airlines Ltd.		
<b>Main AF/Sub-AF/Family</b>	AF5	S-AF 5.5	Family 5.5.1
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Improving quality and timeliness of the information exchange with NM stakeholders</li> <li>• NSP SO2: Deploying interoperable and effective information management system</li> <li>• NSP/SO5: 5: Facilitating business trajectories and cooperative traffic management</li> <li>• NSP/SO6: Integrating airport and network operations</li> </ul>		

### Family 5.6.1 – Upgrade/Implement Flights Information Exchange System/Service

#### 2015\_141\_AF5 – Improve NM Flight Information Exchange Services

<b>Start Date</b>	01/10/2016	<b>End Date</b>	31/12/2020
<b>Project Leader</b>	EUROCONTROL / Network Manager		

<b>Contributors</b>			
<b>Main AF/Sub-AF/Family</b>	<b>AF5</b>	<b>S-AF 5.6</b>	<b>Family 5.6.1</b>
<b>Project Objective</b>	<ul style="list-style-type: none"> <li>• Improving quality and timeliness of the information exchange with NM stakeholders</li> <li>• Improving predictability thru the automatic exchange of 4D trajectory</li> <li>• NSP SO2: Deploying interoperable and effective information management system</li> <li>• NSP SO5: Facilitating business trajectories and cooperative traffic management</li> </ul>		



# STANDARDISATION AND REGULATION ROADMAPS

## Annex B – Standardization and Regulation Roadmaps

**Standardization and Regulation Roadmaps** represent a key Annex to the Deployment Programme 2016.

They are developed with the primary objective of providing an accurate **snapshot** of the current **state of play of Standards and Regulation** mapped with the 48 Families in the Deployment Programme. They also provide information on the ongoing work related to supporting material and regulation.

Annex B is intended to be used as a common reference for the implementation of the Deployment Programme and a useful instrument for liaising with organizations and bodies responsible for developing guidance material, specifications, standards (all normally referred to as "standards"), certification documents, Acceptable Means of Compliance as well as regulations. Furthermore, in order to provide a complete set of information in support of the deployment of each DP's family, the information reported in the roadmaps are also included in the Family Descriptions in Chapter 3.

The presentation of information included within Annex B follows the "ATM Concept Lifecycle Model", where V0-V3 are covered by R&D under responsibility of SESAR Joint Undertaking (SJU). The subsequent V4 (Industrialisation) includes development of material supporting deployment and development of products by manufacturing industry. Very Large Scale Demonstrations (VLD) are part of V3 but conducted during V4 as support to industrialisation. Deployment starts during or after V4 and its coordination is under SESAR Deployment Manager (SDM) responsibility.

The content of Annex B is based on:

- the Pilot Common Project itself (Commission Implementing Regulation (EU) No 716/2014, and especially the related indicative Roadmap with respect to standardization and regulation needs);
- the ATM Master Plan references including the Integrated Roadmap Dataset #16;
- SESAR Solutions, i.e. deliverables from SESAR R&D mapped to Operational Improvements (OIs);
- related plans or further development according to SESAR 2020 plans; and
- the Rolling Work Plan developed by the European ATM Standardisation Coordination Group (EASCG), summarising on-going activities within bodies involved in development of standards and regulation.

Guidance material/Specification/Standards can be considered as appropriate and recommended for support to implementation. They can also be referenced in Means of compliance or Regulation. Means of compliance listed in tables are non-binding standards adopted by EASA or ESOs to illustrate means to establish compliance with regulations and implementing rules. However, alternative means for compliance can be applied if accepted by the relevant National Supervisory Authority (NSA). Regulations listed in the tables are binding instruments considered as relevant for the family implementation.

This information was elaborated and analysed by SDM in coordination with **EASA, EDA, NM and SJU**, as well as with **EUROCAE** which contribution and inputs were pivotal towards the finalization of the Annex B. The Annex B is a **living document that will be regularly updated** throughout Deployment Programme's life time. In order to limit the volume and increase the readability of Annex B, some high level reference documents setting up the "legislative" framework are not included in the following tables. It should be noted that these documents are however always applicable and should be taken into account when introducing new and changing existing services. Such high-level reference documents include - amongst others:

- ICAO Annexes to the Chicago Convention;
- ICAO Doc 4444 PANS ATM;
- Single European Sky (SES) legislation, with a specific focus on (EC) No 552/2004 Interoperability Regulation;
- EASA Basic Regulation (EC) No 216/2008;
- DM Implementing Regulation (EU) No 409/2013;
- PCP Implementing Regulation (EU) No 716/2014;
- Directive 2013/40/EU of the European Parliament and of the Council of 12 August 2013 on attacks against information systems;
- Directive of the European Parliament and of the Council concerning measures to ensure a high common level of network and information security across the Union (NIS Directive);
- EN 16495 Air Traffic Management - Information security for organizations supporting civil aviation operations;
- ISO 27005 Information technology – Security techniques – Information security risk management; and
- ISO 28000 Specification for security management systems for the supply chain.

It should also be mentioned that Airlines Electronic Engineering Committee (AEEC) is developing material defining "*form, fit and function*" of airborne equipment published as ARINC documents. Not all of these documents are included in Annex B. The ARINC 660-B "*CNS/ATM Avionics Architectures Supporting NEXTGEN/SESAR Concepts*" provides an overview of the expected impact on airborne equipment when deploying the SESAR solutions.

With regard to the naming of material and references in the V3 part, the following mapping has to be noted:

<b>SESAR Release 1</b>	<b>SESAR Solutions delivered 2011</b>
<b>SESAR Release 2</b>	<b>SESAR Solutions delivered 2012</b>
<b>SESAR Release 3</b>	<b>SESAR Solutions delivered 2013</b>
<b>SESAR Release 4</b>	<b>SESAR Solutions delivered 2014</b>
<b>SESAR Release 5</b>	<b>SESAR Solutions delivered 2015-2016</b>
<b>SESAR Release 7</b>	<b>SESAR Solutions delivered 2017</b>
<b>SESAR Release 8</b>	<b>SESAR Solutions delivered 2018</b>
<b>SESAR Release 9</b>	<b>SESAR Solutions delivered 2019</b>
<b>Second wave</b>	<b>SESAR Solutions delivered 2020 onwards</b>

Furthermore, considering that global interoperability is a paramount for aviation, SESAR deployment is strongly linked to the Global Air Navigation Plan (GANP) defined by ICAO. For each family, the references to the relevant ASBU modules from the ICAO Global Air Navigation Plan are mentioned in the Project View of the Programme.

# AF1 - Extended AMAN and PBN in high density TMA

## Family 1.1.1.1 – Basic AMAN

V3 – Development Phase				
SESAR Solution	OIs	V3 End	VLD	
N/A	TS-0102	Available	Release 7	N/A
			Release 8	N/A
			Release 9	N/A
			Second Wave	N/A

V4 – Industrialization Phase				
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification	
References	Organization	Delivery	References	Organization
Arrival Manager - Implementation Guidelines and Lessons Learned; Edition 0.1, 17/12/2010	Eurocontrol	Published		

V5 – Deployment Phase		SDM view	
Initial Operational Capability	Before 2014	AMAN is one component within a local ATM system, therefore not subject to further standardisation activities.	
Full Operational Capability	01/2021		

### Family 1.1.2 – AMAN Upgrade to include Extended Horizon function

V3 – Development Phase				
SESAR Solution	OIs	V3 End	VLD	
N/A	TS-0305	Available	Release 7	N/A
			Release 8	N/A
			Release 9	N/A
			Second Wave	N/A
#05 "Extended Arrival Management (AMAN) horizon"	TS-0305-A	Available (SESAR Release 4)	Release 7	PJ.25 PJ.31
			Release 8	PJ.25 PJ.31
			Release 9	PJ.25 PJ.31
			Second Wave	N/A

V4 – Industrialization Phase				
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification	
References	Organization	Delivery	References	Organization
Guidance Manual on Airport Traffic Synchronisation	ICAO	2018		
Doc 9426 Air Traffic Services	ICAO	2018		
Standard covering the Extended horizon AMAN upstream coordination service (AMAN SWIM Service)	EUROCAE WG-104	2017		
AMAN Information Extension to En Route Sectors - Concept of Operations; Edition 1.0, 5/06/2009	Eurocontrol	Published		
Extended AMAN implementation guidance documentation	Eurocontrol	2018		
Eurocontrol Concept of Operations for Network Manager Support to Advanced Arrival Management Edition 1.0; Edition date: 24/10/2014	Network Manager	Published		
Eurocontrol Specifications On-Line Data Interchange (OLDI) Ed. 4.2.	Eurocontrol	Published		



V5 – Deployment Phase		SDM view
Initial Operational Capability	01/2015	
Full Operational Capability	01/2024	<p>V3 achieved but VLDs are planned until 2020. Update supporting material needs to be considered. OLDI AMA message supports initial implementations without need for additional standards. Initial deployment is based on bilateral agreements. Further guidance material could be useful for supporting coordination between ATS units (that can be located in different States) and in situations when more than one airport is affected. Stakeholders identified a need to update the OLDI specification. Especially there is a need to include representative examples on how to use the OLDI messages.</p>

### Family 1.2.1 – RNP Approaches with vertical guidance

V3 – Development Phase				
SESAR Solution	OIs	V3 End	VLD	
N/A	AOM-0602	Available	Release 7	N/A
			Release 8	N/A
			Release 9	N/A
			Second Wave	N/A
N/A	AOM-0604	Available	Release 7	N/A
			Release 8	N/A
			Release 9	N/A
			Second Wave	N/A
#09 "Enhanced terminal operations with automatic RNP transition to ILS/GLS"	AOM-0605	SESAR Release 5	Release 7	N/A
			Release 8	N/A
			Release 9	N/A
			Second Wave	N/A

V4 – Industrialization Phase				
Guidance Material / Specifications / Standards		Means of Compliance and/or Certification		
References	Organization	Delivery	References	Regulation
Doc 9613, Performance-based Navigation (PBN) Manual edition 4	ICAO	Published	Provision of requirements for airworthiness approval in support of global PBN operations in CS-ACNS	Organization EASA
Doc 9992 Manual on the use of PBN in Airspace Design	ICAO	Published	Technical requirement and operation procedures for Airspace design including procedure design	Delivery 2016
NOP 2014-2018/2019	Network Manager	Published	AMC 20-28 (SBAS)	Organization EASA
Doc 8168 (PANS-OPS Vol. 1 & 2)	ICAO	Published	AMC 20-27 (APV Baro)	Delivery Published

V5 – Deployment Phase		SDM view	
Initial Operational Capability	Before 2014	<p>The EASA Opinion No 10/2006 defines the basis of PBN implementation in Europe. It proposes regulative actions to EC expected to be published 2017/Q1.</p> <p>The PCP regulation (EU) No 716/2014 defines more stringent requirements for the 25 busiest airports/TMAs as defined in the geographical scope.</p> <p>Development of further supporting material needs to be considered.</p> <p>A certification process for military performance equivalence (Alternative Means of Compliance) is being defined by EDA, Eurocontrol and NATO.</p>	
Full Operational Capability	01/2021		



### Family 1.2.2 – Geographical Database for Procedure Design

V3 – Development Phase				
SESAR Solution	OIs	V3 End	VLD	
N/A	AOM-0602	Available	Release 7	N/A
			Release 8	N/A
			Release 9	N/A
			Second Wave	N/A
N/A	AOM-0604	Available	Release 7	N/A
			Release 8	N/A
			Release 9	N/A
			Second Wave	N/A

V4 – Industrialization Phase					
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		
References	Organization	Delivery	References	Organization	Delivery
Doc 9613, Performance-based Navigation (PBN) Manual edition 4	ICAO	Published	Terrain Avoidance and Warning System (ETSO-C151B)	EASA	Published
Doc 9906 Quality assurance manual for flight procedure design	ICAO	Published	EASA AMC/GM 2014/012R	EASA	Published
Doc 9888 Noise Abatement Procedures	ICAO	Published	Technical requirements and operational procedures for aeronautical information services and aeronautical information management	EASA RMT.0477	2017
Doc 9997 PBN Operational Approval Manual	ICAO	Published			
Doc 9992 Manual on the use of PBN in Airspace Design	ICAO	Published			
			Opinion 02/2015, Technical requirements and operating procedures for the provision of data to airspace users for the purpose of air navigation	EASA	Published
			Commission Regulation (EU) 73/2010 (ADQ IR) as amended by Commission Implementing Regulation (EU) 1029/2014	European Commission	Published
			Commission Regulation (EU) No 139/2014 laying down requirements and administrative procedures related to aerodromes pursuant to Regulation (EC) No 216/2008	European Commission	Published

ED-76 / DO-200B  Doc 8168 (PANS-OPS Vol. 1 & 2)	EUROCAE / RTCA	Published							
	ICAO	Published							
V5 – Deployment Phase									
Initial Operational Capability	01/2014								
Full Operational Capability	01/2019								
SDM view									
No further supporting material needed other than what is already existing/being developed.									

### Family 1.2.3 – RNP1 Operations in high density TMAs (ground capabilities)

V3 – Development Phase				
SESAR Solution	OIs	V3 End	VLD	
#62 "P-RNAV in a complex TMA"	AOM-0603	SESAR Release 2	Release 7	N/A
			Release 8	N/A
			Release 9	N/A
			Second Wave	N/A
#09 "Enhanced terminal operations with automatic RNP transition to ILS/GLS"	AOM-0605	SESAR Release 5	Release 7	N/A
			Release 8	N/A
			Release 9	N/A
			Second Wave	N/A
N/A	AOM-0602	Available	Release 7	N/A
			Release 8	N/A
			Release 9	N/A
			Second Wave	N/A
N/A	AOM-0601	Available	Release 7	N/A
			Release 8	N/A
			Release 9	N/A
			Second Wave	N/A

### V4 – Industrialization Phase

Guidance Material / Specifications / Standards			Means of Compliance and/or Certification			Regulation		
References	Organization	Delivery	References	Organization	Delivery	References	Organization	Delivery
Doc 9613, Performance-based Navigation (PBN) Manual edition 4	ICAO	Published	Technical requirement and operation procedures for Airspace design including procedure design	EASA RMT.0445	2016	PBN Regulation – EASA Opinion No 10/2016	EASA	2016
Doc 9992 Manual on the use of PBN in Airspace Design	ICAO	Published						
Doc 8168 (PANS-OPS Vol. 1 & 2)	ICAO	Published						
European Airspace Concept Handbook for PBN Implementation; Edition 3.0	ICAO	Published						
ED-76A /DO-200B	EUROCAE / RTCA	Published						

## Deployment Programme 2016 – Annexes

Guidance Manual on Airport Traffic Synchronisation	ICAO	2018				
Doc 9426 Air Traffic Services Planning Manual	ICAO	Published				
Doc 9689 Manual on Airspace Planning Methodology for the Determination of Separation Minima	ICAO	Published				
Doc 4444 PANS ATM, PBN Separation Standards	ICAO	2018				
V5 – Deployment Phase			SDM view			
Initial Operational Capability	V3 ends in 2016 (AOM0605). Further supporting material might be needed.					
Full Operational Capability	The EASA Opinion No 10/206 defines the basis of PBN implementation in Europe. It proposes regulative actions to EC expected to be published 2017/Q1. The PCP regulation (EU) No 716/2014 defines more stringent requirements for the 25 busiest airports/TMAs as defined in the geographical scope. Development of further supporting material needs to be considered.					

### Family 1.2.4 – RNP1 Operations in high density TMAs (aircraft capabilities)

V3 – Development Phase				
SESAR Solution	OIs	V3 End	VLD	
#09 "Enhanced terminal operations with automatic RNP transition to ILS/GLS"	AOM-0605	SESAR Release 5	Release 7	N/A
			Release 8	N/A
			Release 9	N/A
			Second Wave	N/A
#51 "Enhanced terminal operations with LPV procedures"	AOM-0603	SESAR Release 2	Release 7	N/A
			Release 8	N/A
			Release 9	N/A
			Second Wave	N/A

V4 – Industrialization Phase				
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification	
References	Organization	Delivery	References	Organization
Doc 9613, Performance-based Navigation (PBN) Manual edition 4	ICAO	Published	Provision of requirements for airworthiness approval in support of global PBN operations in CS-ACNS	EASA RMT.0519
ED-76 / DO-200B	EUROCAE / RTCA	Published		
			References	Delivery
			PBN Regulation – EASA Opinion No 10/2016	2016

V5 – Deployment Phase		SDM view	
Initial Operational Capability	01/2015	<p>V3 ends in 2016 (AOM0605). Further supporting material might be needed.</p> <p>The EASA Opinion No 10/206 defines the basis of PBN implementation in Europe. It proposes regulatory actions to EC expected to be published 2017/Q1.</p> <p>The PCP regulation (EU) No 716/2014 defines more stringent requirements for the 25 busiest airports/TMAs as defined in the geographical scope.</p> <p>Development of further supporting material needs to be considered.</p>	
Full Operational Capability	01/2024		

### Family 1.2.5 – Advanced RNP routes below Flight Level 310

V3 – Development Phase					
SESAR Solution	OIS	V3 End	VLD		
#62 “P-RNAV in a complex TMA”	AOM-0603	SESAR Release 2	Release 7	N/A	
			Release 8	N/A	
			Release 9	N/A	
			Second Wave	N/A	
			Release 7	PJ.25	
#10 Optimised Route Network using Advanced RNP	AOM-0404	SESAR Release 5	Release 8	PJ.25	
			Release 9	PJ.25	
			Second Wave	N/A	
			Second Wave	N/A	

V4 – Industrialization Phase						
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		Regulation	
References	Organization	Delivery	References	Organization	Delivery	Delivery
Network Strategy Plan (NSP): SO 3/2 and SO 3/3	Network Manager	Published	Technical requirement and operation procedures for Airspace design including procedure design	EASA RMT.0445	2016	2016
Doc 9613, Performance-based Navigation (PBN) Manual edition 4	ICAO	Published	Provision of requirements for airworthiness approval in support of global PBN operations in CS-ACNS	EASA RMT.0519	2016	
Doc 4444 PANS ATM for RNAV/RNP, BRNAV	ICAO	Published				
Doc 9992 Manual on the use of PBN in Airspace Design	ICAO	Published				
Doc 8168 (PANS-OPS Vol. 1 & 2)	ICAO	Published				
ED-76A / DO-200B	EUROCAE / RTCA	Published				
Doc 9426 Air Traffic Services Planning Manual	ICAO	Published				
Doc 9689 Manual on Airspace Planning methodology for the Determination of Separation Minima	ICAO	Published				
Doc 4444 PANS ATM, PBN Separation Standards	ICAO	2018				

V5 – Deployment Phase		SDM view
Initial Operational Capability	01/2021	<p>V3 ends in 2016 (AOM0404) and VLDs are planned until 2020. Updates of supporting material need to be considered before the IOC of the Family.</p> <p>The EASA Opinion No 10/206 defines the basis of PBN implementation in Europe. It proposes regulative actions to EC expected to be published 2017/Q1.</p> <p>The PCP regulation (EU) No 716/2014 defines more stringent requirements for the 25 busiest airports/TMAs as defined in the geographical scope.</p> <p>Development of further supporting material needs to be considered.</p>
Full Operational Capability	01/2024	

## AF2 - Airport Integration and Throughput

### Family 2.1.1.1 – Initial DMAN

V3 – Development Phase				
SESAR Solution	OIs	V3 End	VLD	
N/A	AO-0602	Available	Release 7	N/A
			Release 8	N/A
			Release 9	N/A
			Second Wave	N/A

V4 – Industrialization Phase					
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		
References	Organization	Delivery	References	Organization	Delivery
ED-141 Minimum Technical Specification for the Airport Collaborative Decision Making (Airport-CDM)	EUROCAE	Published	ETSI EN 303 212 (CS on A-CDM)	ETSI	Published
ED-145 Airport-CDM Interface Specification	EUROCAE	Published	Communication 2010/C 168/04 A-CDM Community Specification Update on EN 303 212 v1.1.1	ETSI	2019
Guidance Manual on Airport Traffic Synchronisation	ICAO	2018			
Doc 9426 Air Traffic Services Planning Manual	ICAO	2018			
Doc 9830, Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Manual	ICAO	2018			
Updated Eurocontrol Airport CDM Manual	Eurocontrol	2017			
Airport CDM Implementation Manual Version 4	Eurocontrol	Published			

V5 – Deployment Phase		SDM view	
Initial Operational Capability	Before 2014	No further supporting material needed other than already existing/being developed.	
Full Operational Capability	01/2021		



## Family 2.1.1.2 – Electronic Flight Strips (EFS)

V3 – Development Phase						
SESAR Solution	OIs	V3 End	VLD			
N/A	AO-0201 (only AERODROME-ATC-36 enabler)	Available	Release 7	N/A		
			Release 8	N/A		
			Release 9	N/A		
			Second Wave	N/A		
V4 – Industrialization Phase						
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		Regulation	
References	Organization	Delivery	References	Organization	Delivery	Delivery
V5 – Deployment Phase						
Initial Operational Capability	Before 2014					
Full Operational Capability	01/2021					
SDM view						
No specific supporting material required other than the one listed in this Annex B introductory text.						

### Family 2.1.3 – Basic A-CDM

V3 – Development Phase					
SESAR Solution	OIs	V3 End	VLD		
N/A	AO-0501	Available	Release 7	N/A	
			Release 8	N/A	
			Release 9	N/A	
			Second Wave	N/A	
N/A	AO-0601	Available	Release 7	N/A	
			Release 8	N/A	
			Release 9	N/A	
			Second Wave	N/A	
N/A	AO-0602	Available	Release 7	N/A	
			Release 8	N/A	
			Release 9	N/A	
			Second Wave	N/A	
N/A	AO-0603	Available	Release 7	N/A	
			Release 8	N/A	
			Release 9	N/A	
			Second Wave	N/A	

V4 – Industrialization Phase					
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		
References	Organization	Delivery	References	Organization	Delivery
ED-141 Minimum Technical Specification for Airport-CDM	EUROCAE	Published	Communication 2010/C 168/04 A-CDM Community Specification Update on EN 303 212 v1.1.1	ETSI	2019
ED-145 Airport CDM Interface Specification	EUROCAE	Published	ETSI EN 303 212 (CS on A-CDM)	ETSI	Published
ED-146 Guidelines for Test and Validation related to A-CDM interoperability	EUROCAE	Published			
Airport CDM Implementation Manual Version 4	Eurocontrol	Published			
Updated Eurocontrol Airport CDM Manual	Eurocontrol	2017			

Doc 9971 Manual on Collaborative Air Traffic Flow Management (CDM part)	ICAO	Published				
Aeronautical Information Exchange Model (AIXM) v5.1	Eurocontrol	Published				
FIXM 3.0 Flight Information Exchange Model	FIXM development team	Published				
Meteorological Information Exchange Model (IWXXM)	ICAO	2016				
Doc 9971 Manual on Collaborative Air Traffic Flow Management (3rd part Airport CDM)	ICAO	2018				
Doc 10003 Manual on the digital exchange of aeronautical information	ICAO	2016				
Doc 8896 Manual of Aeronautical Meteorological Practice	ICAO	2016				
Doc 9328 Manual of Runway Visual Range Observing and Reporting Practices	ICAO	2016				
Doc 9377 Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services	ICAO	2016				
Doc 9817 Manual on Low-level Wind Shear	ICAO	2016				
Doc 9837 Manual on Automatic Meteorological Observing Systems at Aerodromes	ICAO	2016				

V5 – Deployment Phase	
Initial Operational Capability	Before 2014
Full Operational Capability	01/2021

## SDM view

No further supporting material required other than what is already existing/being developed. Stakeholders identified a need to review the AIXM v5.1 specification.

### Family 2.1.4 – Initial Airport Operational Plan (AOP)

V3 – Development Phase						
SESAR Solution	OIs	V3 End	Release 7	Release 8	Release 9	VLD
#21 "Airport Operations Plan and AOP-NOP Seamless Integration"	AO-0801-A (AIRPORT-03)	SESAR Release 5	PJ.28	PJ.28	PJ.28	
			Second Wave			N/A

V4 – Industrialization Phase						
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		Regulation	
References	Organization	Delivery	References	Organization	References	Delivery
Updated Eurocontrol Airport CDM Manual	Eurocontrol	2017	EN 303 212 (CS on A-CDM) Communication 2010/C 168/04 A-CDM Community Specification	ETSI		
Airport CDM Implementation Manual Version 4	Eurocontrol	Published	Communication 2010/C 168/04 A-CDM Community Specification Update on EN 303 212 v1.1.1	ETSI		
Guidance Manual on Airport Traffic Synchronisation	ICAO	2018				
Doc 9426 Air Traffic Services Planning Manual	ICAO	2018				
Doc 9830, Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Manual	ICAO	2018				
Aeronautical Information Exchange Model (AIXM) v5.1	Eurocontrol	Published				
FIXM 3.0 Flight Information Exchange Model	FIXM development team	Published				
Meteorological Information Exchange Model (WXMXM)	ICAO	2016				
Doc 9971 Manual on Collaborative Air Traffic Flow Management (3rd part Airport CDM)	ICAO	2018				
Doc 10003 Manual on the digital exchange of	ICAO	2016				



**Family 2.2.1 – A-SMGCS Level 1 and 2**

<b>V3 – Development Phase</b>				
<b>SESAR Solution</b>	<b>OIs</b>	<b>V3 End</b>	<b>VLD</b>	
N/A	AO-0201	Available	<b>Release 7</b>	N/A
			<b>Release 8</b>	N/A
			<b>Release 9</b>	N/A
			<b>Second Wave</b>	N/A
N/A	AO-0102	Available	<b>Release 8</b>	N/A
			<b>Release 8</b>	N/A
			<b>Release 9</b>	N/A
			<b>Second Wave</b>	N/A

<b>V4 – Industrialization Phase</b>						
<b>Guidance Material / Specifications / Standards</b>			<b>Means of Compliance and/or Certification</b>		<b>Regulation</b>	
<b>References</b>	<b>Organization</b>	<b>Delivery</b>	<b>References</b>	<b>Organization</b>	<b>References</b>	<b>Delivery</b>
ED-87C A-SMGCS MASPS	EUROCAE	Published	A-SMGCS; Part 1: Community Specification EN 303 213-1-1	ETSI		
Update of ED-87C to include the new functions: routing & planning and additional safety nets (ED-87D)	EUROCAE WG-41	2017	Update of EN 303 213-1 Part 1 on the basis of the EUROCAE A-SMGCS MASPS (ED-87 C)	ETSI		2017
ED-117A MOPS for MLAT	EUROCAE WG-41	2016	Update of EN 303 213-1 Part 1 on the basis of the EUROCAE A-SMGCS MASPS (ED-87 D)	ETSI		2019/2020
ED-116A MOPS for Surface Movement Radar Sensor Systems for Use in A-SMGCS	EUROCAE WG-41	2018	A-SMGCS; Part 2: Community Specification EN 303 213-2-2	ETSI		Published
ED-128A Guidelines for Surveillance Data Fusion in A-SMGCS	EUROCAE WG-41	2018	Update of EN 303 213-2 Part 2 on the basis of the EUROCAE A-SMGCS MASPS (ED-87 C)	ETSI		2017
Updated Eurocontrol A-SMGCS Manual	Eurocontrol	2016	Update of EN 303 213-2 Part 2 on the basis of the EUROCAE A-SMGCS MASPS (ED-87 D)	ETSI		2019/2020
Doc 9830 A-SMGCS Manual, First Edition	ICAO	Published	A-SMGCS; Part 3: Community Specification for a deployed cooperative sensor including its interfaces EN 303 213-3	ETSI		Published

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Guidance Manual on Airport Traffic Synchronisation Doc 9426 Air Traffic Services Planning Manual	ICAO	2018	A-SMGCS; Part 4: Community Specification for a deployed non-cooperative sensor including its interfaces; Sub-part 1: Generic requirements for non-cooperative sensor EN 303 213-4-1	ETSI	Published	
Doc 9830, Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Manual	ICAO	2018	A-SMGCS; Part 4: Community Specification for a deployed non-cooperative sensor including its interfaces; Sub-part 2: Specific requirements for a deployed Surface Movement Radar sensor EN 303 213-4-2	ETSI	Published	
ED-102A / DO-260B MOPS for 1090 MHz Extended Squitter Automatic Dependent Surveillance – Broadcast (ADS-B) and Traffic Information Services — Broadcast (TIS-B)	EUROCAE / RTCA	Published	A-SMGCS; Part 5: Harmonized EN covering the essential requirements of article 3.2 of the Directive 2014/53/EU for multilateration equipment; Sub-part 1: receivers and interrogators EN 303 213-5-1	ETSI	2017	
Doc 9871 Technical Provisions for Mode S Services and Extended Squitter	ICAO	Published	A-SMGCS; Part 5: Harmonized EN covering the essential requirements of article 3.2 of the Directive 2014/53/EU for multilateration equipment; Sub-part 2: reference and vehicle transmitters EN 303 213-5-2	ETSI	2017	
ED-163 Safety, Performance and Interoperability Requirements document for ADS-B Airport Surface surveillance application (ADS-B APT)	EUROCAE	Published	A-SMGCS; Part 6: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive for deployed surface movement radar sensors; Sub-part 1: X-band sensors using pulsed signals and transmitting power up to 100 kW EN 303 213-6-1	ETSI	2016	
Doc 7030/5, (EUR/NAT) Regional Supplementary Procedures, Section 6.5.6 and 6.5.7	ICAO	Published				
Doc 9924, Aeronautical Surveillance Manual	ICAO	Published				

V5 – Deployment Phase		SDM view
Initial Operational Capability	Before 2014	
Full Operational Capability	01/2021	Activities are on-going to include support for vehicles in A-SMGCS. No further supporting material required other than what is already existing / being developed.



### Family 2.3.1 – Time Based Separation (TBS)

V3 – Development Phase						
SESAR Solution	OIs	V3 End	Release 7	Release 8	Release 9	VLD
#64 “Time Based Separation”	AO-0303	SESAR Release 2	PJ.28	PJ.28	PJ.28	
			Second Wave			N/A

V4 – Industrialization Phase						
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		Regulation	
References	Organization	Delivery	References	Organization	References	Delivery
Time Based Operation (TBS) Specification for Final Approach	Eurocontrol	2016				
Meteorological Information Exchange Model (IWXXM)	ICAO	Published				
Doc 10003 Manual on the digital exchange of aeronautical information	ICAO	Published				
Doc 8896 Manual of Aeronautical Meteorological Practice	ICAO	2016				
Doc 9328 Manual of Runway Visual Range Observing and Reporting Practices	ICAO	2016				
Doc 9377 Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services	ICAO	2016				
Doc 9817 Manual on Low-level Wind Shear	ICAO	2016				
Doc 9837 Manual on Automatic Meteorological Observing Systems at Aerodromes	ICAO	2016				

V5 – Deployment Phase	
Initial Operational Capability	01/2015
Full Operational Capability	01/2024

SDM view	
V3 achieved but VLDs are planned until 2020. Update supporting material needs to be considered. Need for standards, possibly at ICAO level. Need to develop EASA AMC as soon as possible, to cover the safety-related aspects. Best practices from stakeholders (NATS' operations at London Heathrow) could possibly be taken in consideration for standards and AMC development.	

### Family 2.4.1.1 – A-SMGCS Routing and Planning Functions

V3 – Development Phase				
SESAR Solution	OIs	V3 End	VLD	
#22 “Automated Assistance to Controller for Surface Movement Planning and Routing”	AO-0205	SESAR Release 5	Release 7	PJ.28
			Release 8	PJ.28
			Release 9	PJ.28
			Second Wave	N/A
			Release 7	PJ.28
#106 “DMAN Baseline for integrated AMAN DMAN”	TS-0202	SESAR Release 4	Release 8	PJ.28
			Release 9	PJ.28
			Second Wave	N/A
#14 “Departure Management integrating Surface Management constraints”	TS-0203	SESAR Release 5	Release 7	PJ.28
			Release 8	PJ.28
			Release 9	PJ.28
			Second Wave	N/A

V4 – Industrialization Phase				
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification	
References	Organization	Delivery	References	Organization
Updated Eurocontrol Airport CDM Manual	Eurocontrol	2017	Update of ETSI EN 303 213-1 and -2 on the basis of the EUROCAE A-SMGCS MASPS (ED-87 C)	ETSI
Updated A-SMGCS Eurocontrol specification	Eurocontrol	2016	Update of ETSI EN 303 213-1 and -2 on the basis of the EUROCAE A-SMGCS MASPS (ED-87 D)	ETSI
ED-87C A-SMGCS MASPS	EUROCAE	Published	A-SMGCS; Part 1: Community Specification EN 303 213-1-1	ETSI
Update of ED-87C to include the new functions: routing & planning and additional safety nets (ED-87D)	EUROCAE WG-41	2017	A-SMGCS; Part 2: Community Specification EN 303 213-2-2	ETSI
Guidance Manual on Airport Traffic Synchronisation	ICAO	2018		
Doc 9426 Air Traffic Services Planning Manual	ICAO	2018		

Doc 9830, Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Manual	ICAO	2018				
	SDM view					
	V3 ends in 2016 and VLDs are planned until 2020. Updates of supporting material need to be considered. Initial deployment started. Need to accelerate the delivery of supporting material, including safety-related aspects.					

V5 – Deployment Phase	
Initial Operational Capability	01/2016
Full Operational Capability	01/2024

### Family 2.5.1.1 – Airport Safety Nets associated with A-SMGCS (Level 2)

V3 – Development Phase					
SESAR Solution	OIs	V3 End	Release 7	VLD	
#02 “Airport Safety Nets for controllers: conformance monitoring alerts and detection of conflicting ATC clearances”	AO-0104-A	SESAR Release 5	PJ.28		
			PJ.28		
			PJ.28		
			Second Wave	N/A	

V4 – Industrialization Phase					
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		
References	Organization	Delivery	References	Organization	Delivery
ED-87C A-SMGCS MASPS	EUROCAE	Published	A-SMGCS; Part 2: Community Specification EN 303 213-2-2	ETSI	Published
Update of ED-87C to include the new functions: routing & planning and additional safety nets (ED-87D)	EUROCAE WG-41	2017	Update of ETSI EN 303 213 -2 on the basis of the EUROCAE A-SMGCS MASPS (ED-87 C)	ETSI	2017
Updated A-SMGCS Eurocontrol Specification	Eurocontrol	2016	Update of EN 303 213-2 on the basis of the EUROCAE A-SMGCS MASPS (ED-87 D)	ETSI	2019
Guidance Manual on Airport Traffic Synchronisation	ICAO	2018			
Doc 9426 Air Traffic Services Planning Manual	ICAO	2018			
Doc 9830, Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Manual	ICAO	2018			
ED-163 Safety, Performance and Interoperability Requirements document for ADS-B Airport Surface surveillance application (ADS-B APT)	EUROCAE	Published			
Avionics standards developed by RTCA SC-186/EUROCAE WG-51 for ADS-B	EUROCAE	Published			

Doc 7030/5, (EUR/NAT) Regional Supplementary Procedures, Section 6.5.6 and 6.5.7		ICAO	Published												
Doc 9830, Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Manual		ICAO	Published												
Doc 9871, Technical Provisions for Mode S Services and Extended Squitter		ICAO	Published												
Doc 9924, Aeronautical Surveillance Manual		ICAO	Published												
V5 – Deployment Phase										SDM view					
Initial Operational Capability		Before 2014								V3 ends in 2016 and VLDs are planned until 2020. Updates of supporting material need to be considered. Initial deployment started. Need to accelerate the delivery of supporting material, including safety-related aspects.					
Full Operational Capability		01/2021													

### Family 2.5.2 – Aircraft and vehicle systems contributing to Airport Safety Nets

V3 – Development Phase					
SESAR Solution	OIs	V3 End	VLD		
#02 "Airport Safety Nets for controllers: conformance monitoring alerts and detection of conflicting ATC clearances"	AO-0104-A	SESAR Release 5	Release 8	PJ28	
			Release 8	PJ28	
			Release 9	PJ28	
			Second Wave	N/A	
#04 "Enhanced Traffic Situational Awareness and Airport Safety Nets for the vehicle drivers"	AO-0105	SESAR Release 5	Release 8	N/A	
			Release 8	N/A	
			Release 9	N/A	
			Second Wave	N/A	
#04 "Enhanced Traffic Situational Awareness and Airport Safety Nets for the vehicle drivers"	AO-0204	SESAR Release 5	Release 8	N/A	
			Release 8	N/A	
			Release 9	N/A	
			Second Wave	N/A	
N/A	AUO-0401	Available	Release 8	N/A	
			Release 8	N/A	
			Release 9	N/A	
			Second Wave	N/A	

### V4 – Industrialization Phase

Guidance Material / Specifications / Standards				Means of Compliance and/or Certification			Regulation	
References	Organization	Delivery		References	Organization	Delivery	References	Organization
Update of ED-87C to include the new functions: routing & planning and additional safety nets (ED-87D)	EUROCAE	2017		Update of ETSI EN 303 213-2 on the basis of the EUROCAE A-SMGCS MASPS (ED-87 D) (Vehicles only)	ETSI	2019		
ED-179B / DO-315B MASPS for Enhanced Vision Systems, Synthetic Vision Systems, Combined Vision Systems and Enhanced Flight Vision Systems	EUROCAE	Published						
ED-194A / DO-317A, MOPS for Aircraft Surveillance Applications (ASA) System	EUROCAE	Published						

<b>V5 – Deployment Phase</b>		<b>VSDM view</b>					
<b>Initial Operational Capability</b>	Before 2014	<i>V3 ends in 2016 and VLDs are planned until 2020. Updates of supporting material need to be considered. Initial deployment started. Need to accelerate the delivery of supporting material, including safety-related aspects.</i>					
<b>Full Operational Capability</b>	01/2021						
<i>ED-165 / DO-322 Safety, Performance and Interoperability Requirements Document For ATSA-SURF Application</i>	<i>EUROCAE</i>	<i>Published</i>					
<i>Doc 9994 Manual on Airborne Surveillance Applications (Edition 1) (SURF)</i>	<i>ICAO</i>	<i>Published</i>					
<i>Doc 8168 PANS OPS (SURF IA)</i>	<i>ICAO</i>	<i>Published</i>					



## AF3 - Airspace Management and Free Route

### Family 3.1.1 – ASM Tool to support AFUA

V3 – Development Phase				
SESAR Solution	OIs	V3 End	VLD	
N/A	AOM-0202	Available	Release 7	N/A
			Release 8	N/A
			Release 9	N/A
			Second Wave	N/A

V4 – Industrialization Phase					
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		
References	Organization	Delivery	References	Organization	Delivery
Network Strategy Plan (NSP): SO 3/2 and SO 3/3	Network Manager	Published	Communication 2009/C 2196/05 Community Specification for the application of the Flexible Use of Airspace (FUA)	Eurocontrol	Published
ERNIP Part 3 - Handbook for Airspace Management - Guidelines for Airspace Management; (Nov. 2015)	Network Manager	Published			
LARA Local and sub-Regional Airspace Management Support System: edition 23/01/2015	Eurocontrol	Published			
Advanced FUA Concept edition 1.0 24/07/2015	Eurocontrol	Published			
Aeronautical Information Exchange Model (AIXM) v5.1	Eurocontrol	Published			
			Commission Regulation (EC) 2150/2005	European Commission	Published
			Commission Regulation (EC) 677/2011 as amended by Commission Implementing Regulation (EU) 970/2014	European Commission	Published

V5 – Deployment Phase		SDM view	
Initial Operational Capability	Before 2014	No further supporting material required other than what is already existing. Stakeholders identified a need to review the AIXM v5.1 specification.	
Full Operational Capability	01/2019		

### Family 3.1.2 – ASM management of real time airspace data

V3 – Development Phase				
SESAR Solution	OIS	V3 End	VLD	
#31 "Variable profile military reserved areas and enhanced (further automated) civil-military collaboration"	AOM-0206-A	SESAR Release 5	Release 7	N/A
			Release 8	N/A
			Release 9	N/A
			Second Wave	N/A
			Release 7	N/A
#31 "Variable profile military reserved areas and enhanced (further automated) civil-military collaboration"	AOM-0202-A	SESAR Release 5	Release 8	N/A
			Release 9	N/A
			Second Wave	N/A
			Second Wave	N/A

V4 – Industrialization Phase					
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		
References	Organization	Delivery	References	Organization	Delivery
Network Strategy Plan (NSP): SO 3/2 and SO 3/3	Network Manager	Published	Communication 2009/C 2196/05 Community Specification for the application of the Flexible Use of Airspace (FUA)	Eurocontrol	Published
Directions of work for enhancing the ASM/ATFCM/ATS processing in the short and medium term 2012-2017; Edition 1.0 Edition Date 14/11/11	Network Manager	Published			
Eurocontrol Specification for ASM Systems Interfaces Supporting Advanced Flexible Use of Airspace	Eurocontrol	2016			
LARA Local and sub-Regional Airspace Management Support System: edition 23/01/2015	Eurocontrol	Published			
Advanced FUA Concept edition 1.0 24/07/2015	Eurocontrol	Published			
ERNIP Part 3 - Handbook for Airspace Management - Guidelines for Airspace Management; November 2015	Network Manager	Published			
			Commission Regulation (EC) 2150/2005	European Commission	Published
			Commission Regulation (EC) 677/2011 as amended by Commission Implementing Regulation (EU) 970/2014	European Commission	Published

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Aeronautical Information Exchange Model (AIXM) v5.1	Eurocontrol	Published					
V5 – Deployment Phase			SDM view				
Initial Operational Capability	01/2017	V3 ends in 2016. Update of supporting material needs to be considered before the IOC of the Family. Stakeholders identified a need to review the AIXM v5.1 specification.					
Full Operational Capability	01/2022						

### Family 3.1.3 – Full rolling ASM/ATFCM process and ASM information sharing

V3 – Development Phase						
SESAR Solution		OIs	V3 End	VLD		
#31 “Variable profile military reserved areas and enhanced (further automated) civil-military collaboration”		AOM-0202-A	SESAR Release 5	Release 7	N/A	
				Release 8	N/A	
				Release 9	N/A	
				Second Wave	N/A	

V4 – Industrialization Phase						
Guidance Material / Specifications / Standards				Means of Compliance and/or Certification		
References	Organization	Delivery		References	Organization	Delivery
Eurocontrol Specification for ASM Systems Interfaces Supporting Advanced Flexible Use of Airspace	Eurocontrol	2016		Communication 2009/C 2196/05 Community Specifications for the application of the Flexible Use of Airspace (FUA)	Eurocontrol	Published
Network Strategy Plan (NSP): SO 3/2 and SO 3/3	Network Manager	Published				
ERNIP Part 3 - Handbook for Airspace Management - Guidelines for Airspace Management; November 2015	Network Manager	Published				
NOP User Guide; Edition: 19.0-92 Date:25/03/2015	Network Manager	Published				
Responsibilities Document for the application of Air Traffic Flow Management (ATFM); Edition 1.0; Edition Date: 25/10/2012	Network Manager	Published				
Advanced FUA Concept edition 1.0 24/07/2015	Eurocontrol	Published				
Aeronautical Information Exchange Model (AIXM) v5.1	Eurocontrol	Published				
				Commission Regulation (EC) 2150/2005	European Commission	Published
				Commission Regulation (EC) 677/2011 as amended by Commission Implementing Regulation (EU) 970/2014	European Commission	Published

V5 – Deployment Phase		SDM view
Initial Operational Capability	Before 2014	
Full Operational Capability	01/2022	
V3 ends in 2016. Initial deployment started. Update of supporting material needs to be considered. Stakeholders identified a need to review the AIXM v5.1 specification.		

### Family 3.1.4 – Management of Dynamic Airspace configurations

V3 – Development Phase				
SESAR Solution	OIs	V3 End	VLD	
#66 “Automated Support for Dynamic Sectorisation”	CM-0102-A	SESAR Release 2	Release 7	N/A
			Release 8	N/A
			Release 9	N/A
			Second Wave	N/A
PJ.08-01 “Management of Dynamic Airspace configurations”	AOM-0805	SESAR 2020 Second Wave	Release 7	N/A
			Release 8	N/A
			Release 9	N/A
			Second Wave	N/A
PJ.08-01 “Management of Dynamic Airspace configurations”	AOM-0809	SESAR 2020 Second Wave	Release 7	N/A
			Release 8	N/A
			Release 9	N/A
			Second Wave	N/A

V4 – Industrialization Phase				
Guidance Material / Specifications / Standards		Means of Compliance and/or Certification		
References	Organization	Delivery	References	Regulation
ED-136 VoIP ATM System Operational and Technical Requirements	EUROCAE	Published		European Commission
ED137B Interop Standards for VoIP ATM Components	EUROCAE	Published		
Update of ED137B Part 2 Network Design Guideline	EUROCAE WG-67	2016		
ED-138 Network requirements and Performance for VoIP ATM Systems	EUROCAE	Published		
Network Strategy Plan (NSP): SO 3/2 and SO 3/3	Network Manager	Published		
Advanced FUA Concept edition 1.0 24/07/2015	Eurocontrol	Published		
ERNIP Part 3 - Handbook for Airspace Management - Guidelines for Airspace Management; November 2015	Network Manager	Published		

V5 – Deployment Phase		SDM view
Initial Operational Capability	01/2018	
Full Operational Capability	01/2022	<p>V3 reached only for CM-0102A. For the other Ols, activities are expected to continue in Second Wave of SESAR 2020. Delivery expected after IOC.</p> <p>Update of supporting material needs to be considered.</p>

### Family 3.2.1.1 – Upgrade of ATM systems (NM, ANSPs, AUs) to support Direct Routings (DCTs) and Free Routing Airspace (FRA)

V3 – Development Phase					
SESAR Solution	OIs	V3 End	VLD		
N/A	CM-0202	Available	Release 7	N/A	
			Release 8	N/A	
			Release 9	N/A	
			Second Wave	N/A	
N/A	CM-0203	Available	Release 7	N/A	
			Release 8	N/A	
			Release 9	N/A	
			Second Wave	N/A	
#32 "Free Route through the use of Direct Routing"	AOM-0500	SESAR Release 5	Release 7	N/A	
			Release 8	N/A	
			Release 9	N/A	
			Second Wave	N/A	
#33 "Free Route through Free Routing for Flights both in cruise and vertically evolving above a specified Flight Level"	AOM-0501	SESAR Release 5	Release 7	N/A	
			Release 8	N/A	
			Release 9	N/A	
			Second Wave	N/A	
PJ.06-01 "Optimized traffic management to enable Free Routing in high and very high complexity environments"	AOM-0505	SESAR Release 8	Release 7	N/A	
			Release 8	N/A	
			Release 9	N/A	
			Second Wave	N/A	
#66 "Automated Support for Dynamic Sectorisation"	CM-0102-A	SESAR Release 2	Release 7	N/A	
			Release 8	N/A	
			Release 9	N/A	
			Second Wave	N/A	



V4 – Industrialization Phase									
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification			Regulation			
References	Organization	Delivery	References	Organization	Delivery	References	Organization	Delivery	
Updated Eurocontrol Extended MTCD Specification	Eurocontrol	2017	Community Specifications for On-Line Data Interchange (OLDI) edition 4.2	Eurocontrol	Published	Commission Regulation (EC) No 2150/2005	European Commission	Published	
Updated Eurocontrol Monitoring Aids (MONA) Specification	Eurocontrol	2016				Commission Regulation (EU) No 677/2011, as amended by Commission Implementing Regulation (EU) No 970/2014	European Commission	Published	
Eurocontrol Trajectory Prediction Specification	Eurocontrol	2016							
Eurocontrol Area Proximity Warning (APW) Guidelines	Eurocontrol	2016							
Network Strategy Plan (NSP): SO 3/1 SO 4/1	Network Manager	Published							
IFPS USERS MANUAL Edition: 19.0.1 (20 March 2015)	Network Manager	Published							
Doc 9426 Air Traffic Services Planning Manual	ICAO	Published							
Doc 4444 PANS ATM, PBN Separation Standards	ICAO	2018							
V5 – Deployment Phase									
Initial Operational Capability	Before 2014								
Full Operational Capability	01/2022								
V3 reached for CM-0203 and CM-0204 and they are ready for deployment. For the rest of OIs, V3 will end between 2016 and 2019. Initial deployment started. Update of supporting material needs to be considered in order to support full Free Route implementation.									

### Family 3.2.3 – Implement Published Direct Routings (DCTs)

V3 – Development Phase				
SESAR Solution	OIs	V3 End	VLD	
#32 "Free Route through the use of Direct Routing" #65 "User Preferred Routing"	AOM-0500	SESAR Release 5	Release 7	N/A
			Release 8	N/A
			Release 9	N/A
			Second Wave	N/A

V4 – Industrialization Phase				
Guidance Material / Specifications / Standards		Means of Compliance and/or Certification		Regulation
References	Organization	Delivery	References	Organization
Network Strategy Plan (NSP): SO 3/1	Network Manager	Published		European Commission
European Route Network Improvement Plan (ERNIP) Part 1 Edition June 2015	Network Manager	Published		European Commission
European Route Network Improvement Plan (ERNIP) Part 2 - European ATS Route Network - Edition June 2015	Network Manager	Published		European Commission
European Route Network Improvement Plan (ERNIP) Part 4 - Route Availability Document User's Manual; Edition November 2014	Network Manager	Published		
European Airspace Design Methodology - Guidelines; Edition June 2015	Network Manager	Published		
Doc 9426 Air Traffic Services Planning Manual	ICAO	Published		
Doc 4444 PANS ATM, PBN Separation Standards	ICAO	2018		

V5 – Deployment Phase		SDM view
Initial Operational Capability	Before 2014	V3 ends in 2016. Deployment already started. Update of supporting material needs to be considered, potentially for cross border DCT.
Full Operational Capability	01/2018	

### Family 3.2.4 – Implement Free Route Airspace

V3 – Development Phase					
SESAR Solution	OIs	V3 End	VLD		
#33 “Free Route through Free Routing for Flights both in cruise and vertically evolving above a specified Flight Level”	AOM-0501	SESAR Release 5	Release 7	N/A	
			Release 8	N/A	
			Release 9	N/A	
			Second Wave	N/A	
#65 “User Preferred Routing”	AOM-0500	SESAR Release 5	Release 7	N/A	
			Release 8	N/A	
			Release 9	N/A	
			Second Wave	N/A	
PJ.06-01 “Optimized traffic management to enable Free Routing in high and very high complexity environments”	AOM-0505	SESAR Release 8	Release 7	N/A	
			Release 8	N/A	
			Release 9	N/A	
			Second Wave	N/A	

V4 – Industrialization Phase								
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification			Regulation		
References	Organization	Delivery	References	Organization	Delivery	References	Organization	Delivery
Network Strategy Plan (NSP): SO 3/1	Network Manager	Published				Commission Regulation (EC) 2150/2005	European Commission	Published
European Route Network Improvement Plan (ERNIP) Part 1 Edition June 2015	Network Manager	Published				Commission Regulation (EC) 677/2011 as amended by 970/2014	European Commission	Published
European Route Network Improvement Plan (ERNIP) Part 2 - European ATS Route Network - Edition June 2015	Network Manager	Published						
European Route Network Improvement Plan (ERNIP) Part 4 - Route Availability Document User's Manual; Edition November 2014	Network Manager	Published						
European Airspace Design Methodology - Guidelines; Edition June 2015	Network Manager	Published						
Doc 4444 PANS ATM, PBN Separation Standards	ICAO	2018						

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Doc 9426 Air Traffic Services Planning Manual	ICAO	Published					
V5 – Deployment Phase		SDM view					
Initial Operational Capability	Before 2014	V3 ends in 2019. Deployment already started. Update of supporting material needs to be considered, potentially for cross border operations in FRA.					
Full Operational Capability	01/2022						

## AF4 – Network Collaborative Management

### Family 4.1.1.1 – STAM Phase 1

V3 – Development Phase				
SESAR Solution	OIs	V3 End	VLD	
N/A	DCB-0205	Available	Release 7	N/A
			Release 8	N/A
			Release 9	N/A
			Second Wave	N/A

V4 – Industrialization Phase					
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		
References	Organization	Delivery	References	Organization	Delivery
Network Strategy Plan (NSP): SO 4/3 SO 5/4	Network Manager	Published			
ATFCM Operations Manual; Edition 19, 1 (Date 29 April 2015)	Network Manager	Published			
Doc 9971 Manual on Collaborative Air Traffic Flow Management (ATFM part)	ICAO	Published			

V5 – Deployment Phase		SDM view	
Initial Operational Capability	Before 2014	No further supporting material required other than what is already existing.	
Full Operational Capability	11/2017		

### Family 4.1.2 – STAM Phase 2

V3 – Development Phase						
SESAR Solution	OIs	V3 End	VLD			
#17 “Advanced Short A TFCM Measures (STAM)”	DCB-0308	SESAR Release 5	Release 7	PJ.24		
			Release 8	PJ.24		
			Release 9	PJ.24		
			Second Wave	N/A		
V4 – Industrialization Phase						
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		Regulation	
References	Organization	Delivery	References	Organization	Delivery	
Enhanced Short Term ATFCM guidance material	Network Manager	Published				
Network Strategy Plan (NSP): SO 4/3 SO 5/4	Network Manager	Published				
Doc 9971 Manual on Collaborative Air Traffic Flow Management (ATFM part)	ICAO	Published				
V5 – Deployment Phase						
Initial Operational Capability	11/2017	SDM view				
Full Operational Capability	01/2022					
V3 ends in 2016 and VLDs are planned until 2020.. Update of supporting material needs to be considered.						

### Family 4.2.2 – Interactive Rolling NOP

V3 – Development Phase					
SESAR Solution	OIS	V3 End	VLD		
#20 “Collaborative NOP for Step 1”	DCB-0103-A	SESAR Release 5	Release 7	PJ.24	
			Release 8	PJ.24	
			Release 9	PJ.24	
			Second Wave	N/A	
			Release 7	N/A	
N/A	DCB-0102	Available	Release 8	N/A	
			Release 9	N/A	
			Second Wave	N/A	
			Second Wave	N/A	

V4 – Industrialization Phase					
Means of Compliance and/or Certification			Regulation		
	References	Organization	Delivery	References	Organization
Collaborative NOP					
Network Strategy Plan (NSP): SO 2/1 SO 2/2 SO 2/3 and SO 2/4					
NOP User Guide; Edition: 19.0-92 Date: 25/03/2015					

V5 – Deployment Phase		SDM view	
Initial Operational Capability	Before 2014	V3 ends in 2016 and VLDs are planned until 2020.. Deployment already started. Update of supporting material needs to be considered.	
Full Operational Capability	01/2022		

### Family 4.2.3 – Interface ATM systems to NM systems

V3 – Development Phase					
SESAR Solution	OIS	V3 End	VLD		
N/A	IS-0102	Available	Release 7	N/A	
			Release 8	N/A	
			Release 9	N/A	
			Second Wave	N/A	
#37 "Extended Flight Plan"	AUO-0203	SESAR Release 5	Release 7	N/A PJ.24	
			Release 8	N/A PJ.24	
			Release 9	N/A PJ.24	
			Second Wave	N/A	
PJ.18-01 "Mission Trajectories"	AUO-0215	SESAR Release 7	Release 7	N/A	
			Release 8	N/A	
			Release 9	N/A	
			Second Wave	N/A	

V4 – Industrialization Phase					
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		
References	Organization	Delivery	References	Organization	Delivery
Network Strategy Plan (NSP): SO 4/2 and SO 5/1	Network Manager	Published	Community Specifications 0101 Edition 1.1 Specification for the Initial Flight Plan	Eurocontrol	Published
NM Flight Progress Messages Document – Edition 2.1 (03/2015)	Network Manager	Published			

V5 – Deployment Phase		SDM view	
Initial Operational Capability	Before 2014	V3 ends in 2017 and VLDs planned until 2020. Deployment already started. Update of supporting material needs to be considered. Community Specifications to be updated with EFPL and Improved OAT FPL. Need to update guidelines for Harmonised & Improved OAT FPL.	
Full Operational Capability	01/2022		



### Family 4.2.4 – AOP/NOP Information Sharing

V3 – Development Phase				
SESAR Solution	OIs	V3 End	VLD	
#20 “Collaborative NOP for Step 1”	DCB-0103-A	SESAR Release 5	Release 7	PJ.24
			Release 8	PJ.24
			Release 9	PJ.24
			Second Wave	N/A
#21 “Airport Operations Plan and AOP-NOP Seamless Integration”	AO-0801–A	SESAR Release 5	Release 7	PJ.28
			Release 8	PJ.28
			Release 9	PJ.28
			Second Wave	N/A

V4 – Industrialization Phase				
Guidance Material / Specifications / Standards		Means of Compliance and/or Certification		Regulation
		References	Organization	Delivery
AOP/NOP interface specifications and guidance material	Network Manager	Published		
Collaborative NOP	Network Manager	Published		
Network Strategy Plan (NSP): SO 4/3 SO 06/2; and SO 6/4	Network Manager	Published		
Doc 9971 Manual on Collaborative Air Traffic Flow Management (ATFM part)	ICAO	Published		

V5 – Deployment Phase		SDM view	
Initial Operational Capability	Before 2014	V3 ends in 2016 and VLDs are planned until 2020. Deployment already started. Update of supporting material needs to be considered.  Technical Specification for AOP/ NOP exchange of information need to be developed by 2017, based on needs in Family 2.1.4.	
Full Operational Capability	01/2022		

### Family 4.3.1 – Target Times for ATFCM purposes

V3 – Development Phase							
SESAR Solution	OIs	V3 End	VLD				
#18 “CTOT and TTA”	DCB-0208	SESAR Release 5	Release 7	PJ24			
			Release 8	PJ24			
			Release 9	PJ24			
			Second Wave	N/A			
V4 – Industrialization Phase							
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification			Regulation	
			References	Organization	Delivery	References	Organization
Network Strategy Plan (NSP): SO 4/3, SO 5/4	Network Manager	Published					
Doc 9971 Manual on Collaborative Air Traffic Flow Management (ATFM part)	ICAO	Published					
V5 – Deployment Phase			SDM view				
Initial Operational Capability	01/2017						
Full Operational Capability	01/2022						
V3 ends in 2016 and VLDs are planned until 2020. Update of supporting material needs be considered.							
Target Times must be included.							

### Family 4.3.2 – Reconciled Target Times for ATFCM and arrival sequencing

V3 – Development Phase						
SESAR Solution	OIs	V3 End	Release 7	Release 8	Release 9	VLD
PJ.09-02 “Integrated Local DCB Processes”	DCB-0213	SESAR Release 9	N/A	N/A	N/A	
			N/A	N/A	N/A	
			N/A	N/A	N/A	
			Second Wave	N/A	N/A	
#18 “CTOT and TTA”	DCB-0208	SESAR Release 5	N/A	N/A	N/A	
			N/A	N/A	N/A	
			N/A	N/A	N/A	
			Second Wave	N/A	N/A	

V4 – Industrialization Phase						
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		Regulation	
References	Organization	Delivery	References	Organization	Delivery	
CTOT to TTA for ATFCM	Network Manager	Published				
Network Strategy Plan (NSP): SO 4/3, SO 5/4, SO 6/5	Network Manager	Published				

V5 – Deployment Phase		SDM view
Initial Operational Capability	01/2019	V3 ends in 2019. Update of supporting material needs to be considered before IOC. Standards, guidance material and potentially CS are needed before the start of deployment.
Full Operational Capability	01/2022	

### Family 4.4.2 – Traffic Complexity Tools

V3 – Development Phase					
SESAR Solution	OIS	V3 End	VLD		
#19 “Automated support for Traffic Complexity Detection and Resolution”	CM-0103-A	SESAR Release 5	Release 7	PJ.24	
			Release 8	PJ.24	
			Release 9	PJ.24	
			Second Wave	N/A	
N/A	CM-0101	Available	Release 7	N/A	
			Release 8	N/A	
			Release 9	N/A	
			Second Wave	N/A	
N/A	IS-0102	Available	Release 7	N/A	
			Release 8	N/A	
			Release 9	N/A	
			Second Wave	N/A	

V4 – Industrialization Phase					
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		
References	Organization	Delivery	References	Organization	Delivery
Automated Support for Traffic Complexity Assessment guidance material	Network Manager	Published			
Network Strategy Plan (NSP): SO 4/3 and SO 5/4	Network Manager	Published			
NM Flight Progress Messages Document; Edition 2.1 (March 2015)	Network Manager	Published			

V5 – Deployment Phase		SDM view	
Initial Operational Capability	Before 2014	V3 ends in 2016 and VLDs are planned until 2020. Deployment already started. Update of supporting material needs to be considered.	
Full Operational Capability	01/2022		

## AF5 - iSWIM

### Family 5.1.1.1 – PENS 1: Pan-European Network Service version 1

V3 – Development Phase				
SESAR Solution	OIS	V3 End	VLD	
N/A	CTE-C06a — PENS - Phase 1	Available	Release 7	N/A
			Release 8	N/A
			Release 9	N/A
			Second Wave	N/A

V4 – Industrialization Phase				
Guidance Material / Specifications / Standards		Means of Compliance and/or Certification		
References	Organization	Delivery	References	Organization
ATM information security EN 16495 (Version 2)	CEN	2017		
PENS1 documents	PSSG	Published		
Internet Protocol version 4 and 6 for Unicast and Multicast (RFC)	IETF	Published		
Stand/Spec on TI SWIM Yellow Profile definition	Eurocontrol	2017		
Stand/Spec on TI SWIM Blue Profile Definition	Eurocontrol	2020		
Doc 10039 Manual on System Wide Information Management (SWIM) concept	ICAO	Published		

V5 – Deployment Phase		SDM view	
Initial Operational Capability	Before 2014	Already deployed. No further supporting material required other than what is already existing/being developed. Possible need for updates when SWIM profile definitions become available.	
Full Operational Capability	06/2018		

### Family 5.1.2 – NewPENS: New Pan-European Network Service

V3 – Development Phase				
SESAR Solution	OIs	V3 End	VLD	
N/A	CTE-C06b — PENS - Phase 2	SESAR Release 5	Release 7	N/A PJ.24 PJ.27
			Release 8	N/A PJ.24 PJ.27
			Release 9	N/A PJ.24 PJ.27
			Second Wave	N/A

V4 – Industrialization Phase					
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		
References	Organization	Delivery	References	Organization	Delivery
ATM information security EN 16495 (Version 2)	CEN	2017			
NewPENS documents	PENS Executive Board	2018			
Internet Protocol version 4 and 6 for Unicast and Multicast (RFC)	IETF	Published			
Stand/Spec on TI SWIM Yellow Profile definition	Eurocontrol	2017			
Stand/Spec on TI SWIM Blue Profile Definition	Eurocontrol	2020			
Doc 10039 Manual on System Wide Information Management (SWIM) concept	ICAO	Published			

V5 – Deployment Phase		SDM view	
Initial Operational Capability	06/2018	V3 ends in 2016 and VLDs are planned until 2020. Updates of supporting material need to be considered.  Sufficient supporting material is currently available to launch a CFT in 2016 for implementing NewPENS mid-2018, supporting SWIM communications. Possible need for updates when SWIM profile definitions become available.	
Full Operational Capability	01/2025		

### Family 5.1.3 – Common SWIM Infrastructure Components

V3 – Development Phase				
SESAR Solution	OIs	V3 End	VLD	
#46 “Initial SWIM”	IS-0901-A	SESAR Release 5	Release 7	PJ24 PJ27
			Release 8	PJ24 PJ27
			Release 9	PJ24 PJ27
			Second Wave	N/A

V4 – Industrialization Phase						
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		Regulation	
References	Organization	Delivery	References	Organization	References	Organization
ATM information security EN 16495 (Version 2)	CEN	2017				
SWIM Foundation material	Eurocontrol	2017				
AIRM	Eurocontrol	2017				
AIRM Rulebook	Eurocontrol	2017				
ATM Information Service Rulebook	Eurocontrol	2017				
Compliance framework	Eurocontrol	2017				
Stand/Spec on TI SWIM Yellow Profile definition	Eurocontrol	2017				
Stand/Spec on TI SWIM Blue Profile Definition	Eurocontrol	2020				
Doc 10039 Manual on System Wide Information Management (SWIM) concept	ICAO	Published				

V5 – Deployment Phase		SDM view	
Initial Operational Capability	06/2016	V3 ends in 2016 and VLDs are planned until 2020. Updates of supporting material need to be considered.  The current outputs of SESAR1 regarding SWIM are sufficient to set-up an initial SWIM Governance during Spring 2017, tasked to steer development of the necessary SWIM supporting material to start the deployment of the common SWIM Infrastructure Components and its evolution.	
Full Operational Capability	01/2025		

### Family 5.1.4 – Common SWIM PKI and cyber security

V3 – Development Phase						
SESAR Solution	OIs	V3 End	VLD			
#46 “Initial SWIM”	IS-0901-A	SESAR Release 5	Release 7	PJ24 PJ27		
			Release 8	PJ24 PJ27		
			Release 9	PJ24 PJ27		
			Second Wave	N/A		
V4 – Industrialization Phase						
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		Regulation	
References	Organization	Delivery	References	Organization	Delivery	
ATM information security EN 16495 (Version 2)	CEN	2017				
SWIM Foundation material	Eurocontrol	2017				
AIRM	Eurocontrol	2017				
AIRM Rulebook	Eurocontrol	2017				
ATM Information Service Rulebook	Eurocontrol	2017				
Compliance framework	Eurocontrol	2017				
Stand/Spec on TI SWIM Yellow Profile definition	Eurocontrol	2017				
Stand/Spec on TI SWIM Blue Profile Definition	Eurocontrol	2020				
Doc 10039 Manual on System Wide Information Management (SWIM) concept	ICAO	Published				
V5 – Deployment Phase			SDM view			
Initial Operational Capability	06/2017		V3 ends in 2016 and VLDs are planned until 2020. Updates of supporting material need to be considered.			
Full Operational Capability	01/2025		The current SWIM outputs of SESAR1 regarding common SWIM PKI and cyber security need to be refined and approved within the community to be established SWIM Governance in order to become common deployment specifications.			



### Family 5.2.1.1 – Stakeholders Internet Protocol Compliance

V3 – Development Phase						
SESAR Solution	OIs	V3 End	VLD			
N/A	CTE-C06	Available	Release 7	N/A		
			Release 8	N/A		
			Release 9	N/A		
			Second Wave	N/A		
V4 – Industrialization Phase						
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		Regulation	
References	Organization	Delivery	References	Organization	Delivery	
ATM information security EN 16495 (Version 2)	CEN	2017				
Stand/Spec on TI SWIM Yellow Profile definition	Eurocontrol	2017				
Stand/Spec on TI SWIM Blue Profile Definition	Eurocontrol	2020				
Internet Protocol version 4 and 6 for Unicast and Multicast (RFC)	IETF	Published				
Doc 10039 Manual on System Wide Information Management (SWIM) concept	ICAO	Published				
V5 – Deployment Phase			SDM view			
Initial Operational Capability	IP already deployed. No further supporting material required other than what is already existing.					
Full Operational Capability	Update of supporting material needs to be considered when SWIM material will become available.					

### Family 5.2.2 – Stakeholder SWIM Infrastructure components

V3 – Development Phase						
SESAR Solution	OIS	V3 End	VLD			
#46 “Initial SWIM”	IS-0901-A	SESAR Release 5	Release 7	PJ24 PJ27		
			Release 8	PJ24 PJ27		
			Release 9	PJ24 PJ27		
			Second Wave	N/A		
			Release 7	N/A PJ27		
#28 “Initial Ground-Ground Interoperability”	CM-0201-A	SESAR Release 5	Release 8	N/A PJ27		
			Release 9	N/A PJ27		
			Second Wave	N/A		
V4 – Industrialization Phase						
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		Regulation	
References	Organization	Delivery	References	Organization	Delivery	
ATM information security EN 16495 (Version 2)	CEN	2017				
SWIM Foundation material	Eurocontrol	2017				
AIRM	Eurocontrol	2017				
AIRM Rulebook	Eurocontrol	2017				
ATM Information Service Rulebook	Eurocontrol	2017				
Compliance framework	Eurocontrol	2017				
Stand/Spec on TI SWIM Yellow Profile definition	Eurocontrol	2017				
Stand/Spec on TI SWIM Blue Profile Definition	Eurocontrol	2020				
Doc 10039 Manual on System Wide Information Management (SWIM) concept	ICAO	Published				

V5 – Deployment Phase	
Initial Operational Capability	Before 2014
Full Operational Capability	01/2025

SDM view	
V3 ends in 2016 and VLDs are planned until 2020. Deployment already started. Update of supporting material needs be considered.	

### Family 5.2.3 – Stakeholders’ SWIM PKI and cyber security

V3 – Development Phase				
SESAR Solution	OIs	V3 End	VLD	
#46 “Initial SWIM”	IS-0901-A	SESAR Release 5	Release 7	PJ24 PJ27
			Release 8	PJ24 PJ27
			Release 9	PJ24 PJ27
			Second Wave	N/A
#28 “Initial Ground-Ground Interoperability”	CM-0201-A	SESAR Release 5	Release 7	N/A PJ27
			Release 8	N/A PJ27
			Release 9	N/A PJ27
			Second Wave	N/A

V4 – Industrialization Phase				
Guidance Material / Specifications / Standards		Means of Compliance and/or Certification		
References	Organization	Delivery	References	Organization
ATM information security EN 16495 (Version 2)	CEN	2017		
Stand/Spec on TI SWIM Yellow Profile definition	Eurocontrol	2017		
Stand/Spec on TI SWIM Blue Profile Definition	Eurocontrol	2020		
x.509	ITU	Published		
Doc 10039 Manual on System Wide Information Management (SWIM) concept	ICAO	Published		

V5 – Deployment Phase		SDM view	
Initial Operational Capability	Before 2014	V3 ends in 2016 and VLDs are planned until 2020. Deployment already started. Update of supporting material needs be considered when common specifications provided in the framework of Family 5.1.4 will be available.	
Full Operational Capability	01/2025		

### Family 5.3.1 – Upgrade / Implement Aeronautical Information Exchange System / Service

V3 – Development Phase					
SESAR Solution	OIs	V3 End	VLD		
#46 "Initial SWIM"	IS-0901-A	SESAR Release 5	Release 7	PJ.31	
			Release 8	PJ.31	
			Release 9	PJ.31	
			Second Wave	N/A	

V4 – Industrialization Phase								
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		Regulation			
References	Organization	Delivery	References	Organization	Delivery			
SWIM Foundation material	Eurocontrol	2017				Commission Regulation (EU). 73/2010 (ADQ IR) as amended by Commission Implementing Regulation (EU) 1029/2014	European Commission	Published
ATM information security EN 16495 (Version 2)	CEN	2017						
AIRM	Eurocontrol	2017						
AIRM Rulebook	Eurocontrol	2017						
ATM Information Service Rulebook	Eurocontrol	2017						
Stand/Spec on TI SWIM Yellow Profile definition	Eurocontrol	2017						
Aeronautical Information Exchange Model (AIXM) v5.1	Eurocontrol	Published						
SARPs on AIRM	ICAO IMP	2018						
Electronic e-AIP Specification	Eurocontrol	Published						
Standard for processing aeronautical data ED-76A / DO-200B	EUROCAE / RTCA	Published						
ED-98C TS User Requirements for terrain & obstacle data	EUROCAE	Published						
ED-99D TS User Requirements for Mapping information	EUROCAE	Published						

ED-119C Terrain, obstacles and aerodrome maps AIS Data Exchange Standard	EUROCAE	Published				
For interoperability with NM: NM B2B technical documentation	Network Manager	Published				
Doc 10039 Manual on System Wide Information Management (SWIM) concept	ICAO	Published				
PANS AIM	ICAO	2016				
Doc 8126 Aeronautical Information Services Manual	ICAO	2018				
GML Profile for Aviation Data	OGC Aviation Domain WG	Published				
Web Feature Service (WFS)	OGC/ISO	Published				

V5 – Deployment Phase		SDM view				
Initial Operational Capability	Before 2014	V3 ends in 2016 and VLDs are planned until 2020. Deployment already started. Update of supporting material needs to be considered. Stakeholders identified a need to review the AIM v5.1 specification.				
Full Operational Capability	01/2025					

### Family 5.4.1 – Upgrade / Implement Meteorological Information Exchange System / Service

V3 – Development Phase					
SESAR Solution	OIS	V3 End	VLD		
#35 "MET Information Exchange"	MET-0101	SESAR Release 5	Release 7	PJ.31	
			Release 8	PJ.31	
			Release 9	PJ.31	
			Second Wave	N/A	
#46 "Initial SWIM"	IS-0901-A	SESAR Release 5	Release 7	PJ.24 PJ.27	
			Release 8	PJ.24 PJ.27	
			Release 9	PJ.24 PJ.27	
			Second Wave	N/A	

V4 – Industrialization Phase					
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		
References	Organization	Delivery	References	Organization	Delivery
ATM information security EN 16495 (Version 2)	CEN	2017			
ED-119C Terrain, obstacles and aerodrome maps AIS Data Exchange Standard	EUROCAE	Published			
SWIM Foundation material	Eurocontrol	2017			
AIRM	Eurocontrol	2017			
AIRM Rulebook	Eurocontrol	2017			
ATM Information Service Rulebook	Eurocontrol	2017			
Compliance framework	Eurocontrol	2017			
Stand/Spec on TI SWIM Yellow Profile definition	Eurocontrol	2017			
SARPs on AIRM	ICAO IMP	2018			
MET SWIM Service	EUROCAE	2020			
IWXXM v1.1	ICAO/WMO	Published			
WXMM v2.0	Eurocontrol/FAA	Published			
GRIB2: WMO-No. 306, Manual on Codes Volume I.2	WMO	Published			

HDF5 <a href="https://www.hdfgroup.org/HDF5/doc/H5.format.html">https://www.hdfgroup.org/HDF5/doc/H5.format.html</a>	HDF Group	Published			
Doc 10003 Manual on the digital exchange of aeronautical information	ICAO	Published			
Doc 8896 Manual of Aeronautical Meteorological Practice	ICAO	2016			
Doc 9328 Manual of Runway Visual Range Observing and Reporting Practices	ICAO	2016			
Doc 9377 Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services	ICAO	2016			
Doc 9691 Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds	ICAO	2016			
Doc 9766 Handbook on the International Airways Volcano Watch (IAVW) Operational Procedures	ICAO	2016			
Doc 9817 Manual on Low-level Wind Shear	ICAO	2016			
Doc 9837 Manual on Automatic Meteorological Observing Systems at Aerodromes	ICAO	2016			
Doc 10039 Manual on System Wide Information Management (SWIM) concept	ICAO	Published			
GML Profile for Aviation Data	OGC Aviation Domain WG	Published			
Web Feature Service (WFS)	OGC/ISO	Published			
Web Map Service Interface (WMS)	OpenGIS	Published			
Web Coverage Service (WCS)	OGC	Published			



V5 – Deployment Phase	
Initial Operational Capability	01/2016
Full Operational Capability	01/2025

SDM view	
V3 ends in 2016 and VLDs are planned until 2020. Initial deployment started. Update of supporting material needs to be considered.	

### Family 5.5.1.1 – Upgrade/Implement Cooperative Network Information Exchange System / Service

V3 – Development Phase				
SESAR Solution	OIs	V3 End	Release 7	VLD
#46 "Initial SWIM"	IS-0901-A	SESAR Release 5	PJ24 PJ27	
			Release 8	PJ24 PJ27
			Release 9	PJ24 PJ27
			Second Wave	N/A

Guidance Material / Specifications / Standards			Means of Compliance and/or Certification			Regulation		
References	Organization	Delivery	References	Organization	Delivery	References	Organization	Delivery
ATM information security EN 16495 (Version 2)	CEN	2017						
SWIM Foundation material	Eurocontrol	2017						
AIRM	Eurocontrol	2017						
AIRM Rulebook	Eurocontrol	2017						
ATM Information Service Rulebook	Eurocontrol	2017						
Stand/Spec on TI SWIM Yellow Profile definition	Eurocontrol	2017						
FIXM v4 including flow Management	Eurocontrol	2016						
NM B2B Reference Manuals	Network Manager	Published						
NM Technical roadmap available in the Network Operations Plan	Network Manager	Published						
Network Strategy Plan (NSP): SO 2/2, SO 2/4, SO 5/2, SO5/4, SO5/5, SO6, SO7/6	Network Manager	Published						
Global Air Navigation Plan (GANP)	ICAO	Published						

# Deployment Programme 2016 – Annexes

Doc 10039 Manual on System Wide Information Management (SWIM) concept	ICAO	Published					
V5 – Deployment Phase			SDM view				
Initial Operational Capability	Before 2014		V3 ends in 2016 and VLDs are planned until 2020. Deployment already started. Update of supporting material needs to be considered. Existing NM and local systems need to be gradually upgraded to comply with the above mentioned standards.				
Full Operational Capability	01/2025						

### Family 5.6.1 – Upgrade/Implement Flight Information Exchange System / Service supported by Yellow Profile

V3 – Development Phase				
SESAR Solution	OIs	V3 End	VLD	
#46 “Initial SWIM”	IS-0901-A	SESAR Release 5	Release 7	PJ.24 PJ.27
			Release 8	PJ.24 PJ.27
			Release 9	PJ.24 PJ.27
			Second Wave	N/A
#28 “Initial Ground-Ground Interoperability”	CM-0201-A	SESAR Release 5	Release 7	N/A PJ.27
			Release 8	N/A PJ.27
			Release 9	N/A PJ.27
			Second Wave	N/A

V4 – Industrialization Phase					
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		
References	Organization	Delivery	References	Organization	Delivery
ATM information security EN 16495 (Version 2)	CEN	2017	Community specification on FDP	CEN	2019
SWIM Foundation material	Eurocontrol	2017			
AIRM	Eurocontrol	2017			
AIRM Rulebook	Eurocontrol	2017			
ATM Information Service Rulebook	Eurocontrol	2017			
FIXM v4	Eurocontrol	2016			
Stand/Spec on TI SWIM Yellow Profile definition	Eurocontrol	2017			
NM B2B Reference Manuals	Network Manager	Published			
NM Technical roadmap available in the Network Operations Plan	Network Manager	Published			
Doc 10039 Manual on System Wide Information Management (SWIM) concept	ICAO	Published			

V5 – Deployment Phase	
Initial Operational Capability	Before 2014
Full Operational Capability	01/2025

SDM view	
V3 ends in 2016 and VLDs are planned until 2020. Deployment already started. Update of supporting material needs to be considered. Existing NM and local systems need to be gradually upgraded to comply with the above mentioned standards.	

## Family 5.6.2 – Upgrade/Implement Flight Object Information Exchange System / Service supported by Blue Profile

V3 – Development Phase				
SESAR Solution	OIs	V3 End	VLD	
#46 “Initial SWIM”	IS-0901-A	SESAR Release 5	Release 7	PJ24 PJ27
			Release 8	PJ24 PJ27
			Release 9	PJ24 PJ27
			Second Wave	N/A
#28 “Initial Ground-Ground Interoperability”	CM-0201-A	SESAR Release 5	Release 7	N/A PJ27
			Release 8	N/A PJ27
			Release 9	N/A PJ27
			Second Wave	N/A

V4 – Industrialization Phase				
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification	
References	Organization	Delivery	References	Organization
ATM information security EN 16495 (Version 2)	CEN	2017	Update of TS 16071 to an EN when ED-133A is available Community specification on FDP	CEN
SWIM Foundation material	Eurocontrol	2017		
AIRM	Eurocontrol	2017		
AIRM Rulebook	Eurocontrol	2017		
ATM Information Service Rulebook	Eurocontrol	2017		
ED-133: Flight object interoperability specification	EUROCAE	Published		
ED-133A and potential future revisions	EUROCAE WG-59	2020		
Stand/Spec on TI SWIM Blue Profile definition	Eurocontrol	2017		
NM B2B Reference Manuals	Network Manager	Published		
Interoperability of Flight Data Processing (FDP) (TS 16071)	CEN	Published		
Doc 10039 Manual on System Wide Information Management	ICAO	Published		



## AF6 - Initial Trajectory Information Sharing

### Family 6.1.1.1 – ATN B1 based services in ATSP domain

V3 – Development Phase				
SESAR Solution	OIS	V3 End	VLD	
N/A	AUX-0301	Available	Release 7	N/A
			Release 8	N/A
			Release 9	N/A
			Second Wave	N/A

V4 – Industrialization Phase					
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		
References	Organization	Delivery	References	Organization	Delivery
Network Strategy Plan (NSP): SO 8.3	Network Manager	Published	Data Link Services (DLS) System; Community Specification; Requirements for ground constituents and system testing EN 303214 (v. 1.2.1)	ETSI	Published
ED-100A / DO-258A, Interoperability Requirements for ATS Applications using ARINC 622 Data Communications.	EUROCAE	Published	Data Link Services	EASA RMT.0524	Planned
ED-110B / DO-280B, Interoperability Requirements Standard for Aeronautical Telecommunication Network Baseline 1 (Interop ATN B1).	EUROCAE	Published			
ED-154A / DO-305A, Future Air Navigation System 1/A - Aeronautical Telecommunication Network Interoperability Standard (FANS 1/A – ATN B1 Interop Standard)	EUROCAE	Published			
ED-120 / DO-290, Safety and Performance Requirements Standard For Initial Air Traffic Data Link Services In	EUROCAE	Published			
			Commission Regulation (EC) 1032/2006 amended by (C) 30/2009	European Commission	Published
			Commission Regulation (EC) n. 29/2009 amended by (EC) 2015/310	European Commission	Published
			Updated regulatory package on DL Operations	EASA	TBD

Continental Airspace (SPR IC)	EUROCAE	Published					
ED-93, Minimum Aviation System Performance Specification for CNS/ATM message recording systems							
Doc 10037 ICAO GOLD edition 2	ICAO	Published					
Doc 9694 Manual of Air Traffic Services Data Link Applications	ICAO	Published					
Doc 9880, Manual on Detailed Technical Specifications for the Aeronautical Telecommunication Network (ATN) using ISO/OSI Standards and Protocols, Part II — Ground-Ground Applications — Air Traffic Services Message Handling Services (ATSMHS).	ICAO	Published					
Specification for On-Line Data Interchange (OLDI) Edition 4.2	Eurocontrol	Published					
Specification on Data Link Services, Eurocontrol Specification 0116, Edition 2.1	Eurocontrol	Published					
ATC Data Link Operational Guidance Edition 6.0 17 December 2012	Eurocontrol	Published					
Link 2000+ Guidance to Ground Implementers edition 2.3 14 Oct 2014	Eurocontrol	Published					
SDM view							
Ready for deployment. The ELSA Study recommends a number of actions that includes update of existing reference documents. The relevant documents should be identified together with the standards making bodies. One example is the recommended requirement for end-to-end certification.							

## V5 – Deployment Phase

Initial Operational Capability	Before 2014
Full Operational Capability	02/2018



### Family 6.1.2 – ATN B2 based services in ATSP domain

V3 – Development Phase				
SESAR Solution	OIs	V3 End	VLD	
N/A	IS-0303-A (ER APP ATC 149a, ER APP ATC 119, ER APP ATC 100)	SESAR Release 5	Release 7	PJ24 PJ25 PJ31
			Release 8	PJ24 PJ25 PJ31
			Release 9	PJ24 PJ25 PJ31
			Second Wave	N/A

V4 – Industrialization Phase						
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		Regulation	
References	Organization	Delivery	References	Organization	Delivery	References
ED-228A / DO-350A ATN B2 standard	EUROCAE / RTCA	Published	Updated CS on DL	ETSI	2020 (not planned)	
ED-229A / DO-351A ATN B2 standard	EUROCAE / RTCA	Published				
ED-230A / DO-352A ATN B2 standard	EUROCAE / RTCA	Published				
ED-231A / DO-353A ATN B2 standard	EUROCAE / RTCA	Published				
ED-133 Flight object interoperability specification	EUROCAE	Published				
ED-133A and potential future revisions	EUROCAE	2020				
Network Strategy Plan (NSP): SO 5.1, SO 5.5 and SO 8.3	Network Manager	Published				
Doc 9880 Manual on Detailed Technical Specifications for the Aeronautical Telecommunication Network (ATN) using ISO/OSI Standards and Protocols	ICAO	Published				
Doc 10037 ICAO GOLD edition 2	ICAO	Published				
Update Doc 9869 Manual on Required Communication	ICAO CP	Published				

Performance (RCP) ED-75D/DO-236D MASPS: Required Navigation Performance for Area Navigation)	EUROCAE	Published				
Doc 9925 - Manual on the Aeronautical Mobile Satellite (Route) Service Edition 2	ICAO	Published				
<b>V5 – Deployment Phase</b>						
Initial Operational Capability	01/2020	<b>SDM view</b>				
Full Operational Capability	01/2025	V3 ends in 2016 and VLDs are planned until 2020. Updates of supporting material need to be considered. Not mature for deployment. The ELSA Study recommends a number of actions that includes update of existing reference documents. The relevant documents should be identified together with the standards making bodies. One example is the recommended requirement for end-to-end certification.				

## Deployment Programme 2016 – Annexes

V3 – Development Phase				
SESAR Solution	OIs	V3 End	VLD	
N/A	N/A	N/A	Release 7	N/A
			Release 8	N/A
			Release 9	N/A
			Second Wave	N/A

V4 – Industrialization Phase						
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification			
References	Organization	Delivery	References	Organization	Delivery	
SJULC/0109-CFT – D1602 "VDL Mode 2 Measurement, Analysis and Simulation Campaign", Deliverable D11 – Final Report	SJU	Published	VHF air-ground Digital Link (VDL) Mode 2; Technical characteristics and methods of measurement for ground-based equipment; Part 1: Physical layer and MAC sub-layer - EN 301 841-1	ETSI	Published	Commission Regulation (EC) n. 29/2009 amended by (EC) 2015/310
ED-92B - MOPS for an Airborne VDL Mode-2 System Operating in the Frequency Range 118-136.975 MHz	EUROCAE	Published	VHF air-ground Digital Link (VDL) Mode 2; Technical characteristics and methods of measurement for ground-based equipment; Part 2: Upper Layers; EN 301 841-2	ETSI	Published	
ED-92C	EUROCAE WG-92	TBD	VHF air-ground Digital Link (VDL) Mode 2, Part 3: Harmonized EN covering the essential requirements of the Directive 2014/53/EU	ETSI	2016	
Doc 9776 Manual on VDL Mode 2 Technical Specifications	ICAO	Published	EN 301 841-3			
ARINC Specification 631-6	ARINC	Published				

V5 – Deployment Phase	
Initial Operational Capability	01/2017
Full Operational Capability	01/2022

SDM view

Ready for deployment.

The ELISA Study recommends a number of actions that includes update of existing reference documents. The relevant documents should be identified together with the standards making bodies. One example is the recommended requirement for end-to-end certification.

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## ANNEX B

(FANS 1/A – ATN B1 Interop Standard).	EUROCAE / RTCA	Published				
ED-120 / DO-290, Safety and Performance Requirements Standard For Initial Air Traffic Data Link Services In Continental Airspace (SPR IC)	EUROCAE	Published				
ED-93, Minimum Aviation System Performance Specification for CNS/ATM message recording systems	ICAO	Published				
Doc 10037 ICAO GOLD edition 2	ICAO	Published				
Doc 9694 Manual of Air Traffic Services Data Link Applications	ICAO	Published				
Doc 9776 Manual on VDL Mode 2 Technical Specifications	ICAO	Published				
ARINC Specification 631-6	ARINC	Published				
Doc 9880, Manual on Detailed Technical Specifications for the Aeronautical Telecommunication Network (ATN) using ISO/OSI Standards and Protocols, Part II — Ground-Ground Applications — Air Traffic Services Message Handling Services (ATSMHS).	ICAO	Published				
SDM view						
Ready for deployment. The ELSA Study recommends a number of actions that includes update of existing reference documents. The relevant documents should be identified together with the standards making bodies. One example is the recommended requirement for end-to-end certification.						
V5 – Deployment Phase						
Initial Operational Capability	09/2016					
Full Operational Capability	02/2020					

### Family 6.1.5 – ATN B2 in aircraft domain

V3 – Development Phase				
SESAR Solution	OIs	V3 End	VLD	
N/A	IS-0303-A (A/C-37a)	SESAR Release 5	Release 7	PJ.24 PJ.25 PJ.31
			Release 8	PJ.24 PJ.25 PJ.31
			Release 9	PJ.24 PJ.25 PJ.31
			Second Wave	N/A

V4 – Industrialization Phase					
Guidance Material / Specifications / Standards			Means of Compliance and/or Certification		
References	Organization	Delivery	References	Organization	Delivery
ED-228A/DO350 ATN B2 Standard	EUROCAE / RTCA	Published	Update CS on DL	ETSI	2020 (not planned)
ED-229A/DO351 ATN B2 Standard	EUROCAE / RTCA	Published			
ED-230A/DO352 ATN B2 Standard	EUROCAE / RTCA	Published			
ED-231A/DO353 ATN B2 Standard	EUROCAE / RTCA	Published			
ED-75D/DO-236D MASPS: Required Navigation Performance for Area Navigation	EUROCAE / RTCA	Published			
Update Doc 9869 Manual on Required Communication Performance (RCP)	ICAO CP	2016			
Doc 9880 Manual on Detailed Technical Specifications for the Aeronautical Telecommunication Network (ATN) using ISO/OSI Standards and Protocols	ICAO	Published			
Doc 10037 ICAO GOLD edition 3	ICAO CP	2018			
Doc 995-Manual on the	ICAO	Published			

## Deployment Programme 2016 – Annexes

Aeronautical Mobile Satellite (Route) Service Edition 2 ARINC Specification 631-6	ARINC	Published				
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V5 – Deployment Phase		SDM view				
Initial Operational Capability	01/2020	V3 ends in 2016 and VLDs are planned until 2020. Updates of supporting material need to be considered. Expected to be ready for deployment in 2019.. The ELSA Study recommends a number of actions that includes update of existing reference documents. The relevant documents should be identified together with the standards making bodies. One example is the recommended requirement for end-to-end certification.				
Full Operational Capability	01/2026					



# PCP IMPLEMENTATION STATUS BY MEMBER STATE



## Annex C – PCP Implementation status by Member State

The present Annex illustrates the **current status of the Pilot Common Project deployment organized on a geographical basis scope**. More specifically, it details the situation for each of the countries included within the PCP geographical scope, as defined by the Regulation (EU) n. 716/2014 and by the Deployment Programme. Such Annex will be **fed by the same information used in the Monitoring View**, gathered through the dedicated monitoring exercise, started on March 4<sup>th</sup>, as well as by the information stemming from the Implementation Projects currently under the coordination of SDM.

The tables included in the following pages include, for each of the applicable Families, detailed information:

- **Gap coverage:** the current **percentage of coverage of the Family in the country** (i.e. which part of the gap has been already implemented). As the AF1 and AF2 are not directly linked to States but to the 25 PCP airports, for the relevant countries, the relevant airports will be explicitly listed and mentioned, as in the Regulation (EU) n.716/2014.
- **Associated CEF Projects:** the 2014 CEF Call and 2015 CEF Calls awarded projects associated to the relevant Family.

The charts in the following pages show **different colors for each Family of the Programme**, aiming at providing a quick and effective indication of the overall implementation status of the Family. Different colors represent **different percentage of completion of the Family and correspond to the current percentage of deployment** (i.e. which part of the gap has been already covered by May 2016), integrating all inputs coming from local operational stakeholders. The detail per operational stakeholders is featured within section 5.1 of the DP 2016.

### Chart Key – Overall Implementation Status

The chart reflects the overall implementation status of the Family, taking into account all inputs coming from involved Stakeholders



It is worth noting that – considering that the goal of the monitoring exercise is to ascertain the current PCP implementation status – this percentage does not include those activities which are already planned within CEF-awarded IPs, but have not been executed yet. For a clearer picture of the current coverage of the gaps (including the upcoming opportunities that could be tackled through CEF Call 2016, stakeholders are invited to check both such Annex and the WBSs included in the Project View of the document.



## Austria

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1		0%	2.1.1		100%	3.1.1		0%
1.1.2		0%	2.1.2		0%	3.1.2		0%
1.2.1		0%	2.1.3		0%	3.1.3		0%
1.2.2		0%	2.1.4		0%	3.1.4		0%
1.2.3		0%	2.2.1		100%	3.2.1		0%
1.2.4		-	2.3.1		0%	3.2.3		100%
1.2.5		0%	2.4.1		0%	3.2.4		0%
			2.5.1		-			
			2.5.2		-			
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		<p><i>Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.</i></p> <p><i>AF1 and AF2 to be implemented in Vienna Schwechat</i></p>		
4.1.1		0%	5.1.1		100%			
4.1.2		-	5.1.2		-			
4.2.2		-	5.1.3		0%			
4.2.3		0%	5.1.4		0%			
4.2.4		0%	5.2.1		-			
4.3.1		-	5.2.2		-			
4.3.2		-	5.2.3		-			
4.4.2		0%	5.3.1		-			
			5.4.1		-			
			5.5.1		-			
			5.6.1		-			
			5.6.2		0%			



## Belgium

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1	<div></div>	55%	2.1.1	<div></div>	100%	3.1.1	<div></div>	85%
1.1.2	<div></div>	0%	2.1.2	<div></div>	75%	3.1.2	<div></div>	85%
1.2.1	<div></div>	70%	2.1.3	<div></div>	100%	3.1.3	<div></div>	0%
1.2.2	<div></div>	70%	2.1.4	<div></div>	0%	3.1.4	<div></div>	0%
1.2.3	<div></div>	0%	2.2.1	<div></div>	100%	3.2.1	<div></div>	-
1.2.4	<div></div>	-	2.3.1	<div></div>		3.2.3	<div></div>	-
1.2.5	<div></div>	0%	2.4.1	<div></div>	10%	3.2.4	<div></div>	-
			2.5.1	<div></div>	25%			
			2.5.2	<div></div>	0%			
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		<p><i>Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.</i></p> <p><i>AF1 and AF2 to be implemented in Brussels Zaventem</i></p>		
4.1.1	<div></div>	0%	5.1.1	<div></div>	100%			
4.1.2	<div></div>	0%	5.1.2	<div></div>	0%			
4.2.2	<div></div>	0%	5.1.3	<div></div>	0%			
4.2.3	<div></div>	0%	5.1.4	<div></div>	0%			
4.2.4	<div></div>	0%	5.2.1	<div></div>	30%			
4.3.1	<div></div>	-	5.2.2	<div></div>	0%			
4.3.2	<div></div>	0%	5.2.3	<div></div>	0%			
4.4.2	<div></div>	0%	5.3.1	<div></div>	0%			
			5.4.1	<div></div>	0%			
			5.5.1	<div></div>	0%			
			5.6.1	<div></div>	0%			
			5.6.2	<div></div>	0%			



## Bulgaria

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1			2.1.1			3.1.1		95%
1.1.2			2.1.2			3.1.2		55%
1.2.1			2.1.3			3.1.3		0%
1.2.2			2.1.4			3.1.4		0%
1.2.3			2.2.1			3.2.1		0%
1.2.4			2.3.1			3.2.3		100%
1.2.5			2.4.1			3.2.4		60%
			2.5.1					
			2.5.2					
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.		
4.1.1		-	5.1.1		10%			
4.1.2		-	5.1.2		0%			
4.2.2		0%	5.1.3		0%			
4.2.3		27%	5.1.4		0%			
4.2.4			5.2.1		0%			
4.3.1		-	5.2.2		0%			
4.3.2		0%	5.2.3		0%			
4.4.2		0%	5.3.1		0%			
			5.4.1		0%			
			5.5.1		0%			
			5.6.1		0%			
			5.6.2		0%			



## Croatia

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1			2.1.1			3.1.1		0%
1.1.2			2.1.2			3.1.2		0%
1.2.1			2.1.3			3.1.3		0%
1.2.2			2.1.4			3.1.4		0%
1.2.3			2.2.1			3.2.1		0%
1.2.4			2.3.1			3.2.3		100%
1.2.5			2.4.1			3.2.4		20%
			2.5.1					
			2.5.2					
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.		
4.1.1		0%	5.1.1		100%			
4.1.2		0%	5.1.2		0%			
4.2.2		0%	5.1.3		0%			
4.2.3		0%	5.1.4		0%			
4.2.4			5.2.1		0%			
4.3.1		-	5.2.2		0%			
4.3.2		0%	5.2.3		0%			
4.4.2		0%	5.3.1		0%			
			5.4.1		0%			
			5.5.1		0%			
			5.6.1		0%			
			5.6.2		0%			



## Cyprus

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1			2.1.1			3.1.1		95%
1.1.2			2.1.2			3.1.2		95%
1.2.1			2.1.3			3.1.3		0%
1.2.2			2.1.4			3.1.4		0%
1.2.3			2.2.1			3.2.1		0%
1.2.4			2.3.1			3.2.3		0%
1.2.5			2.4.1			3.2.4		0%
			2.5.1					
			2.5.2					
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.		
4.1.1		0%	5.1.1		100%			
4.1.2		0%	5.1.2		0%			
4.2.2		0%	5.1.3		0%			
4.2.3		0%	5.1.4		0%			
4.2.4			5.2.1		0%			
4.3.1		-	5.2.2		0%			
4.3.2		0%	5.2.3		0%			
4.4.2		0%	5.3.1		0%			
			5.4.1		0%			
			5.5.1		0%			
			5.6.1		0%			
			5.6.2		0%			



## Czech Republic

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1			2.1.1			3.1.1		0%
1.1.2			2.1.2			3.1.2		0%
1.2.1			2.1.3			3.1.3		0%
1.2.2			2.1.4			3.1.4		0%
1.2.3			2.2.1			3.2.1		0%
1.2.4			2.3.1			3.2.3		100%
1.2.5			2.4.1			3.2.4		0%
			2.5.1					
			2.5.2					
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.		
4.1.1		-	5.1.1		100%			
4.1.2		0%	5.1.2		0%			
4.2.2		0%	5.1.3		0%			
4.2.3		0%	5.1.4		0%			
4.2.4			5.2.1		100%			
4.3.1		-	5.2.2		0%			
4.3.2		0%	5.2.3		0%			
4.4.2		0%	5.3.1		0%			
			5.4.1		0%			
			5.5.1		0%			
			5.6.1		0%			
			5.6.2		0%			



## Denmark

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1	<div></div>	0%	2.1.1	<div></div>	0%	3.1.1	<div></div>	0%
1.1.2	<div></div>	0%	2.1.2	<div></div>	45%	3.1.2	<div></div>	0%
1.2.1	<div></div>	0%	2.1.3	<div></div>	100%	3.1.3	<div></div>	0%
1.2.2	<div></div>	0%	2.1.4	<div></div>	0%	3.1.4	<div></div>	0%
1.2.3	<div></div>	0%	2.2.1	<div></div>	40%	3.2.1	<div></div>	0%
1.2.4	<div></div>	-	2.3.1	<div></div>	0%	3.2.3	<div></div>	100%
1.2.5	<div></div>	0%	2.4.1	<div></div>	0%	3.2.4	<div></div>	100%
			2.5.1	<div></div>	100%			
			2.5.2	<div></div>	0%			
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		<p><i>Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.</i></p> <p><i>AF1 and AF2 to be implemented in Copenhagen Kastrup</i></p>		
4.1.1	<div></div>	-	5.1.1	<div></div>	100%			
4.1.2	<div></div>	0%	5.1.2	<div></div>	0%			
4.2.2	<div></div>	0%	5.1.3	<div></div>	0%			
4.2.3	<div></div>	0%	5.1.4	<div></div>	0%			
4.2.4	<div></div>	0%	5.2.1	<div></div>	0%			
4.3.1	<div></div>	-	5.2.2	<div></div>	0%			
4.3.2	<div></div>	0%	5.2.3	<div></div>	0%			
4.4.2	<div></div>	-	5.3.1	<div></div>	0%			
			5.4.1	<div></div>	0%			
			5.5.1	<div></div>	0%			
			5.6.1	<div></div>	0%			
			5.6.2	<div></div>	0%			





## Estonia

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1			2.1.1			3.1.1		95%
1.1.2			2.1.2			3.1.2		30%
1.2.1			2.1.3			3.1.3		0%
1.2.2			2.1.4			3.1.4		0%
1.2.3			2.2.1			3.2.1		0%
1.2.4			2.3.1			3.2.3		100%
1.2.5			2.4.1			3.2.4		100%
			2.5.1					
			2.5.2					
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.		
4.1.1		0%	5.1.1		100%			
4.1.2		0%	5.1.2		0%			
4.2.2		0%	5.1.3		0%			
4.2.3		0%	5.1.4		0%			
4.2.4			5.2.1		0%			
4.3.1		-	5.2.2		0%			
4.3.2		0%	5.2.3		0%			
4.4.2		0%	5.3.1		0%			
			5.4.1		0%			
			5.5.1		0%			
			5.6.1		0%			
			5.6.2		0%			



## Finland

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1			2.1.1			3.1.1		0%
1.1.2			2.1.2			3.1.2		0%
1.2.1			2.1.3			3.1.3		0%
1.2.2			2.1.4			3.1.4		0%
1.2.3			2.2.1			3.2.1		0%
1.2.4			2.3.1			3.2.3		100%
1.2.5			2.4.1			3.2.4		0%
			2.5.1					
			2.5.2					
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.		
4.1.1		0%	5.1.1		100%			
4.1.2		0%	5.1.2		0%			
4.2.2		0%	5.1.3		0%			
4.2.3		0%	5.1.4		0%			
4.2.4			5.2.1		0%			
4.3.1		-	5.2.2		0%			
4.3.2		0%	5.2.3		0%			
4.4.2		0%	5.3.1		0%			
			5.4.1		0%			
			5.5.1		0%			
			5.6.1		0%			
			5.6.2		0%			



## France

## ATM Functionality # 1

Family	Gap coverage					
	Paris CDG		Paris Orly		Nice Cote D'Azur	
1.1.1	<div></div>	100%	<div></div>	100%	<div></div>	100%
1.1.2	<div></div>	0%	<div></div>	0%	<div></div>	0%
1.2.1	<div></div>	0%	<div></div>	100%	<div></div>	100%
1.2.2	<div></div>	0%	<div></div>	0%	<div></div>	0%
1.2.3	<div></div>	0%	<div></div>	0%	<div></div>	0%
1.2.4	<div></div>	-	<div></div>	-	<div></div>	-
1.2.5	<div></div>	0%	<div></div>	0%	<div></div>	0%

## ATM Functionality # 2

Family	Gap coverage					
	Paris CDG		Paris Orly		Nice Cote D'Azur	
2.1.1	<div></div>	0%	<div></div>	0%	<div></div>	0%
2.1.2	<div></div>	0%	<div></div>	0%	<div></div>	0%
2.1.3	<div></div>	35%	<div></div>	5%	<div></div>	0%
2.1.4	<div></div>	0%	<div></div>	0%	<div></div>	0%
2.2.1	<div></div>	0%	<div></div>	0%	<div></div>	0%
2.3.1	<div></div>		<div></div>	0%	<div></div>	
2.4.1	<div></div>	0%	<div></div>	0%	<div></div>	0%
2.5.1	<div></div>	0%	<div></div>	0%	<div></div>	0%
2.5.2	<div></div>	0%	<div></div>	0%	<div></div>	0%

## ATM Functionality # 3

Family	Gap coverage	
3.1.1	<div></div>	50%
3.1.2	<div></div>	0%
3.1.3	<div></div>	0%
3.1.4	<div></div>	0%
3.2.1	<div></div>	0%
3.2.3	<div></div>	15%
3.2.4	<div></div>	0%

## ATM Functionality # 4

Family	Gap coverage	
4.1.1	<div></div>	100%
4.1.2	<div></div>	0%
4.2.2	<div></div>	95%
4.2.3	<div></div>	0%
4.2.4	<div></div>	0%
4.3.1	<div></div>	-
4.3.2	<div></div>	0%
4.4.2	<div></div>	0%

## ATM Functionality # 5

Family	Gap coverage	
5.1.1	<div></div>	100%
5.1.2	<div></div>	0%
5.1.3	<div></div>	0%
5.1.4	<div></div>	0%
5.2.1	<div></div>	0%
5.2.2	<div></div>	0%
5.2.3	<div></div>	0%
5.3.1	<div></div>	0%
5.4.1	<div></div>	0%
5.5.1	<div></div>	0%
5.6.1	<div></div>	0%
5.6.2	<div></div>	0%

## ATM Functionality # 6

Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.



## Germany

## ATM Functionality # 1

Family	Gap coverage							
	Frankfurt Int.		Munich J.F. Strauss		Dusseldorf Int.		Berlin Airport	
1.1.1	<div></div>	100%	<div></div>	100%	<div></div>	0%	<div></div>	0%
1.1.2	<div></div>	0%	<div></div>	10%	<div></div>	0%	<div></div>	0%
1.2.1	<div></div>	0%	<div></div>	0%	<div></div>	0%	<div></div>	0%
1.2.2	<div></div>	100%	<div></div>	100%	<div></div>	100%	<div></div>	100%
1.2.3	<div></div>	0%	<div></div>	0%	<div></div>	0%	<div></div>	0%
1.2.4	<div></div>	-	<div></div>	-	<div></div>	-	<div></div>	-
1.2.5	<div></div>	0%	<div></div>	0%	<div></div>	0%	<div></div>	0%

## ATM Functionality # 2

Family	Gap coverage							
	Frankfurt Int.		Munich J.F. Strauss		Dusseldorf Int.		Berlin Airport	
2.1.1	<div></div>	100%	<div></div>	100%	<div></div>	100%	<div></div>	0%
2.1.2	<div></div>	100%	<div></div>	100%	<div></div>	100%	<div></div>	0%
2.1.3	<div></div>	100%	<div></div>	100%	<div></div>	100%	<div></div>	0%
2.1.4	<div></div>	0%	<div></div>	0%	<div></div>	0%	<div></div>	0%
2.2.1	<div></div>	0%	<div></div>	0%	<div></div>	0%	<div></div>	0%
2.3.1	<div></div>	0%	<div></div>	0%	<div></div>	0%	<div></div>	
2.4.1	<div></div>	0%	<div></div>	0%	<div></div>	0%	<div></div>	0%
2.5.1	<div></div>	0%	<div></div>	0%	<div></div>	0%	<div></div>	0%
2.5.2	<div></div>	0%	<div></div>	0%	<div></div>	0%	<div></div>	0%

## ATM Functionality # 3

Family	Gap coverage	
3.1.1	<div></div>	0%
3.1.2	<div></div>	0%
3.1.3	<div></div>	0%
3.1.4	<div></div>	0%
3.2.1	<div></div>	0%
3.2.3	<div></div>	0%
3.2.4	<div></div>	0%

## ATM Functionality # 4

Family	Gap coverage	
4.1.1	<div></div>	100%
4.1.2	<div></div>	0%
4.2.2	<div></div>	0%
4.2.3	<div></div>	0%
4.2.4	<div></div>	0%
4.3.1	<div></div>	-
4.3.2	<div></div>	0%
4.4.2	<div></div>	0%

## ATM Functionality # 5

Family	Gap coverage	
5.1.1	<div></div>	100%
5.1.2	<div></div>	0%
5.1.3	<div></div>	0%
5.1.4	<div></div>	0%
5.2.1	<div></div>	0%
5.2.2	<div></div>	0%
5.2.3	<div></div>	0%
5.3.1	<div></div>	0%
5.4.1	<div></div>	0%
5.5.1	<div></div>	0%
5.6.1	<div></div>	0%
5.6.2	<div></div>	0%

## ATM Functionality # 6

Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.



## Greece

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1			2.1.1			3.1.1		0%
1.1.2			2.1.2			3.1.2		0%
1.2.1			2.1.3			3.1.3		0%
1.2.2			2.1.4			3.1.4		0%
1.2.3			2.2.1			3.2.1		0%
1.2.4			2.3.1			3.2.3		0%
1.2.5			2.4.1			3.2.4		0%
			2.5.1					
			2.5.2					
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.		
4.1.1		0%	5.1.1		0%			
4.1.2		0%	5.1.2		0%			
4.2.2		0%	5.1.3		0%			
4.2.3		0%	5.1.4		0%			
4.2.4			5.2.1		0%			
4.3.1		-	5.2.2		0%			
4.3.2		0%	5.2.3		0%			
4.4.2		0%	5.3.1		0%			
			5.4.1		0%			
			5.5.1		0%			
			5.6.1		0%			
			5.6.2		0%			



## Hungary

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1			2.1.1			3.1.1		95%
1.1.2			2.1.2			3.1.2		50%
1.2.1			2.1.3			3.1.3		0%
1.2.2			2.1.4			3.1.4		0%
1.2.3			2.2.1			3.2.1		0%
1.2.4			2.3.1			3.2.3		100%
1.2.5			2.4.1			3.2.4		0%
			2.5.1					
			2.5.2					
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.		
4.1.1		100%	5.1.1		100%			
4.1.2		0%	5.1.2		0%			
4.2.2		0%	5.1.3		0%			
4.2.3		0%	5.1.4		0%			
4.2.4			5.2.1		100%			
4.3.1		-	5.2.2		0%			
4.3.2		0%	5.2.3		0%			
4.4.2		0%	5.3.1		0%			
			5.4.1		0%			
			5.5.1		0%			
			5.6.1		0%			
			5.6.2		0%			



## Ireland

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1	<div></div>	40%	2.1.1	<div></div>	0%	3.1.1	<div></div>	0%
1.1.2	<div></div>	0%	2.1.2	<div></div>	0%	3.1.2	<div></div>	0%
1.2.1	<div></div>	10%	2.1.3	<div></div>	0%	3.1.3	<div></div>	0%
1.2.2	<div></div>	100%	2.1.4	<div></div>	0%	3.1.4	<div></div>	0%
1.2.3	<div></div>	0%	2.2.1	<div></div>	100%	3.2.1	<div></div>	0%
1.2.4	<div></div>	-	2.3.1	<div></div>	0%	3.2.3	<div></div>	100%
1.2.5	<div></div>	-	2.4.1	<div></div>	0%	3.2.4	<div></div>	100%
			2.5.1	<div></div>	0%			
			2.5.2	<div></div>	0%			
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.		
4.1.1	<div></div>	100%	5.1.1	<div></div>	100%			
4.1.2	<div></div>	0%	5.1.2	<div></div>	0%			
4.2.2	<div></div>	0%	5.1.3	<div></div>	0%			
4.2.3	<div></div>	0%	5.1.4	<div></div>	0%			
4.2.4	<div></div>	0%	5.2.1	<div></div>	0%			
4.3.1	<div></div>	-	5.2.2	<div></div>	0%			
4.3.2	<div></div>	0%	5.2.3	<div></div>	0%			
4.4.2	<div></div>	0%	5.3.1	<div></div>	0%			
			5.4.1	<div></div>	0%			
			5.5.1	<div></div>	0%			
			5.6.1	<div></div>	0%			
			5.6.2	<div></div>	0%			

AF1 and AF2 to be implemented in Dublin Airport



## Italy

ATM Functionality # 1					ATM Functionality # 2				
Family	Gap coverage				Family	Gap coverage			
	Rome Fiumicino		Milan Malpensa			Rome Fiumicino		Milan Malpensa	
1.1.1	<div></div>	0%	<div></div>	0%	2.1.1	<div></div>	0%	<div></div>	0%
1.1.2	<div></div>	0%	<div></div>	0%	2.1.2	<div></div>	100%	<div></div>	100%
1.2.1	<div></div>	65%	<div></div>	40%	2.1.3	<div></div>	100%	<div></div>	100%
1.2.2	<div></div>	10%	<div></div>	10%	2.1.4	<div></div>	0%	<div></div>	0%
1.2.3	<div></div>	0%	<div></div>	0%	2.2.1	<div></div>	0%	<div></div>	0%
1.2.4	<div></div>	-	<div></div>	-	2.3.1	<div></div>	0%	<div></div>	0%
1.2.5	<div></div>	0%	<div></div>	0%	2.4.1	<div></div>	0%	<div></div>	0%
					2.5.1	<div></div>	0%	<div></div>	0%
					2.5.2	<div></div>	0%	<div></div>	0%

ATM Functionality # 3			ATM Functionality # 4			ATM Functionality # 5		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
3.1.1	<div></div>	0%	4.1.1	<div></div>	100%	5.1.1	<div></div>	100%
3.1.2	<div></div>	0%	4.1.2	<div></div>	0%	5.1.2	<div></div>	0%
3.1.3	<div></div>	0%	4.2.2	<div></div>	0%	5.1.3	<div></div>	0%
3.1.4	<div></div>	0%	4.2.3	<div></div>	0%	5.1.4	<div></div>	0%
3.2.1	<div></div>	0%	4.2.4	<div></div>	0%	5.2.1	<div></div>	100%
3.2.3	<div></div>	100%	4.3.1	<div></div>	-	5.2.2	<div></div>	0%
3.2.4	<div></div>	0%	4.3.2	<div></div>	0%	5.2.3	<div></div>	0%
			4.4.2	<div></div>	0%	5.3.1	<div></div>	0%
						5.4.1	<div></div>	0%
						5.5.1	<div></div>	0%
						5.6.1	<div></div>	0%
						5.6.2	<div></div>	0%

ATM Functionality # 6	
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Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.





## Latvia

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1			2.1.1			3.1.1		0%
1.1.2			2.1.2			3.1.2		0%
1.2.1			2.1.3			3.1.3		0%
1.2.2			2.1.4			3.1.4		0%
1.2.3			2.2.1			3.2.1		0%
1.2.4			2.3.1			3.2.3		100%
1.2.5			2.4.1			3.2.4		100%
			2.5.1					
			2.5.2					
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.		
4.1.1		-	5.1.1		100%			
4.1.2		-	5.1.2		0%			
4.2.2		0%	5.1.3		0%			
4.2.3		0%	5.1.4		0%			
4.2.4			5.2.1		0%			
4.3.1		-	5.2.2		0%			
4.3.2		0%	5.2.3		0%			
4.4.2		0%	5.3.1		0%			
			5.4.1		0%			
			5.5.1		0%			
			5.6.1		0%			
			5.6.2		0%			



## Lithuania

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1			2.1.1			3.1.1		0%
1.1.2			2.1.2			3.1.2		0%
1.2.1			2.1.3			3.1.3		0%
1.2.2			2.1.4			3.1.4		0%
1.2.3			2.2.1			3.2.1		30%
1.2.4			2.3.1			3.2.3		100%
1.2.5			2.4.1			3.2.4		100%
			2.5.1					
			2.5.2					
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.		
4.1.1		0%	5.1.1		100%			
4.1.2		0%	5.1.2		0%			
4.2.2		0%	5.1.3		0%			
4.2.3		0%	5.1.4		0%			
4.2.4			5.2.1		0%			
4.3.1		-	5.2.2		0%			
4.3.2		0%	5.2.3		0%			
4.4.2		0%	5.3.1		0%			
			5.4.1		0%			
			5.5.1		0%			
			5.6.1		0%			
			5.6.2		0%			



## Luxembourg

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1			2.1.1			3.1.1		95%
1.1.2			2.1.2			3.1.2		-
1.2.1			2.1.3			3.1.3		-
1.2.2			2.1.4			3.1.4		-
1.2.3			2.2.1			3.2.1		-
1.2.4			2.3.1			3.2.3		-
1.2.5			2.4.1			3.2.4		-
			2.5.1					
			2.5.2					
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		<p><i>Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.</i></p>		
4.1.1		-	5.1.1		100%			
4.1.2		-	5.1.2		0%			
4.2.2		-	5.1.3		0%			
4.2.3		-	5.1.4		0%			
4.2.4			5.2.1		0%			
4.3.1		-	5.2.2		0%			
4.3.2		-	5.2.3		0%			
4.4.2		-	5.3.1		0%			
			5.4.1		0%			
			5.5.1		-			
			5.6.1		0%			
			5.6.2		0%			



## Malta

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1			2.1.1			3.1.1		0%
1.1.2			2.1.2			3.1.2		0%
1.2.1			2.1.3			3.1.3		0%
1.2.2			2.1.4			3.1.4		0%
1.2.3			2.2.1			3.2.1		0%
1.2.4			2.3.1			3.2.3		100%
1.2.5			2.4.1			3.2.4		0%
			2.5.1					
			2.5.2					
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.		
4.1.1		0%	5.1.1		100%			
4.1.2		0%	5.1.2		0%			
4.2.2		0%	5.1.3		0%			
4.2.3		0%	5.1.4		0%			
4.2.4			5.2.1		0%			
4.3.1		-	5.2.2		0%			
4.3.2		0%	5.2.3		0%			
4.4.2		0%	5.3.1		0%			
			5.4.1		0%			
			5.5.1		0%			
			5.6.1		0%			
			5.6.2		0%			



## Netherlands

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1		0%	2.1.1		0%	3.1.1		0%
1.1.2		0%	2.1.2		0%	3.1.2		0%
1.2.1		0%	2.1.3		35%	3.1.3		0%
1.2.2		0%	2.1.4		0%	3.1.4		0%
1.2.3		0%	2.2.1		0%	3.2.1		0%
1.2.4		0%	2.3.1		0%	3.2.3		-
1.2.5		0%	2.4.1		0%	3.2.4		-
			2.5.1		0%			
			2.5.2		0%			
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		<p><i>Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.</i></p> <p><i>AF1 and AF2 to be implemented in Amsterdam Schiphol</i></p>		
4.1.1		0%	5.1.1		100%			
4.1.2		0%	5.1.2		0%			
4.2.2		0%	5.1.3		0%			
4.2.3		0%	5.1.4		0%			
4.2.4		0%	5.2.1		0%			
4.3.1		-	5.2.2		0%			
4.3.2		0%	5.2.3		0%			
4.4.2		0%	5.3.1		0%			
			5.4.1		0%			
			5.5.1		0%			
			5.6.1		0%			
			5.6.2		0%			



## Norway

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1	<div></div>	100%	2.1.1	<div></div>	100%	3.1.1	<div></div>	0%
1.1.2	<div></div>	0%	2.1.2	<div></div>	100%	3.1.2	<div></div>	0%
1.2.1	<div></div>	100%	2.1.3	<div></div>	100%	3.1.3	<div></div>	0%
1.2.2	<div></div>	100%	2.1.4	<div></div>	0%	3.1.4	<div></div>	0%
1.2.3	<div></div>	100%	2.2.1	<div></div>	100%	3.2.1	<div></div>	0%
1.2.4	<div></div>	-	2.3.1	<div></div>	0%	3.2.3	<div></div>	100%
1.2.5	<div></div>	0%	2.4.1	<div></div>	0%	3.2.4	<div></div>	100%
			2.5.1	<div></div>	0%			
			2.5.2	<div></div>	0%			
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		<p><i>Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.</i></p> <p><i>AF1 and AF2 to be implemented in Oslo Gardermoen</i></p>		
4.1.1	<div></div>	-	5.1.1	<div></div>	100%			
4.1.2	<div></div>	0%	5.1.2	<div></div>	0%			
4.2.2	<div></div>	0%	5.1.3	<div></div>	0%			
4.2.3	<div></div>	0%	5.1.4	<div></div>	0%			
4.2.4	<div></div>	0%	5.2.1	<div></div>	0%			
4.3.1	<div></div>	-	5.2.2	<div></div>	0%			
4.3.2	<div></div>	0%	5.2.3	<div></div>	0%			
4.4.2	<div></div>	0%	5.3.1	<div></div>	0%			
			5.4.1	<div></div>	0%			
			5.5.1	<div></div>	0%			
			5.6.1	<div></div>	0%			
			5.6.2	<div></div>	0%			



## Poland

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1			2.1.1			3.1.1		0%
1.1.2			2.1.2			3.1.2		0%
1.2.1			2.1.3			3.1.3		0%
1.2.2			2.1.4			3.1.4		0%
1.2.3			2.2.1			3.2.1		0%
1.2.4			2.3.1			3.2.3		100%
1.2.5			2.4.1			3.2.4		0%
			2.5.1					
			2.5.2					
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.		
4.1.1		100%	5.1.1		100%			
4.1.2		0%	5.1.2		0%			
4.2.2		0%	5.1.3		0%			
4.2.3		0%	5.1.4		0%			
4.2.4			5.2.1		0%			
4.3.1		-	5.2.2		0%			
4.3.2		0%	5.2.3		0%			
4.4.2		0%	5.3.1		0%			
			5.4.1		0%			
			5.5.1		0%			
			5.6.1		0%			
			5.6.2		0%			



## Portugal

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1			2.1.1			3.1.1		95%
1.1.2			2.1.2			3.1.2		0%
1.2.1			2.1.3			3.1.3		0%
1.2.2			2.1.4			3.1.4		0%
1.2.3			2.2.1			3.2.1		0%
1.2.4			2.3.1			3.2.3		100%
1.2.5			2.4.1			3.2.4		100%
			2.5.1					
			2.5.2					
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.		
4.1.1		100%	5.1.1		100%			
4.1.2		0%	5.1.2		0%			
4.2.2		0%	5.1.3		0%			
4.2.3		0%	5.1.4		0%			
4.2.4			5.2.1		0%			
4.3.1		-	5.2.2		0%			
4.3.2		0%	5.2.3		0%			
4.4.2		0%	5.3.1		0%			
			5.4.1		0%			
			5.5.1		0%			
			5.6.1		0%			
			5.6.2		0%			





## Romania

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1			2.1.1			3.1.1		95%
1.1.2			2.1.2			3.1.2		30%
1.2.1			2.1.3			3.1.3		0%
1.2.2			2.1.4			3.1.4		0%
1.2.3			2.2.1			3.2.1		95%
1.2.4			2.3.1			3.2.3		100%
1.2.5			2.4.1			3.2.4		100%
			2.5.1					
			2.5.2					
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.		
4.1.1		-	5.1.1		100%			
4.1.2		-	5.1.2		0%			
4.2.2		0%	5.1.3		0%			
4.2.3		58%	5.1.4		0%			
4.2.4		-	5.2.1		0%			
4.3.1		-	5.2.2		0%			
4.3.2		0%	5.2.3		0%			
4.4.2		0%	5.3.1		0%			
			5.4.1		0%			
			5.5.1		0%			
			5.6.1		0%			
			5.6.2		0%			



## Slovak Republic

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1			2.1.1			3.1.1		0%
1.1.2			2.1.2			3.1.2		0%
1.2.1			2.1.3			3.1.3		0%
1.2.2			2.1.4			3.1.4		0%
1.2.3			2.2.1			3.2.1		0%
1.2.4			2.3.1			3.2.3		100%
1.2.5			2.4.1			3.2.4		0%
			2.5.1					
			2.5.2					
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.		
4.1.1		100%	5.1.1		100%			
4.1.2		0%	5.1.2		0%			
4.2.2		0%	5.1.3		0%			
4.2.3		0%	5.1.4		0%			
4.2.4			5.2.1		100%			
4.3.1		-	5.2.2		0%			
4.3.2		0%	5.2.3		0%			
4.4.2		0%	5.3.1		0%			
			5.4.1		0%			
			5.5.1		0%			
			5.6.1		0%			
			5.6.2		0%			



## Slovenia

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1			2.1.1			3.1.1		0%
1.1.2			2.1.2			3.1.2		0%
1.2.1			2.1.3			3.1.3		0%
1.2.2			2.1.4			3.1.4		0%
1.2.3			2.2.1			3.2.1		0%
1.2.4			2.3.1			3.2.3		100%
1.2.5			2.4.1			3.2.4		0%
			2.5.1					
			2.5.2					
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.		
4.1.1		0%	5.1.1		100%			
4.1.2		0%	5.1.2		0%			
4.2.2		0%	5.1.3		0%			
4.2.3		0%	5.1.4		0%			
4.2.4			5.2.1		100%			
4.3.1		-	5.2.2		0%			
4.3.2		0%	5.2.3		0%			
4.4.2		0%	5.3.1		0%			
			5.4.1		0%			
			5.5.1		0%			
			5.6.1		0%			
			5.6.2		0%			



## Spain

## ATM Functionality # 1

Family	Gap coverage					
	Madrid Barajas		Barcelona El Prat		Palma de Mallorca	
1.1.1	<div></div>	100%	<div></div>	100%	<div></div>	100%
1.1.2	<div></div>	0%	<div></div>	0%	<div></div>	0%
1.2.1	<div></div>	0%	<div></div>	0%	<div></div>	40%
1.2.2	<div></div>	0%	<div></div>	0%	<div></div>	0%
1.2.3	<div></div>	0%	<div></div>	0%	<div></div>	0%
1.2.4	<div></div>	-	<div></div>	-	<div></div>	-
1.2.5	<div></div>	0%	<div></div>	0%	<div></div>	0%

## ATM Functionality # 2

Family	Gap coverage					
	Madrid Barajas		Barcelona El Prat		Palma de Mallorca	
2.1.1	<div></div>	100%	<div></div>	100%	<div></div>	100%
2.1.2	<div></div>	20%	<div></div>	20%	<div></div>	20%
2.1.3	<div></div>	100%	<div></div>	100%	<div></div>	0%
2.1.4	<div></div>	0%	<div></div>	0%	<div></div>	0%
2.2.1	<div></div>	30%	<div></div>	0%	<div></div>	30%
2.3.1	<div></div>	0%	<div></div>		<div></div>	
2.4.1	<div></div>	0%	<div></div>	0%	<div></div>	0%
2.5.1	<div></div>	0%	<div></div>	0%	<div></div>	0%
2.5.2	<div></div>	0%	<div></div>	0%	<div></div>	0%

## ATM Functionality # 3

Family	Gap coverage	
3.1.1	<div></div>	0%
3.1.2	<div></div>	0%
3.1.3	<div></div>	0%
3.1.4	<div></div>	0%
3.2.1	<div></div>	0%
3.2.3	<div></div>	0%
3.2.4	<div></div>	0%

## ATM Functionality # 4

Family	Gap coverage	
4.1.1	<div></div>	0%
4.1.2	<div></div>	0%
4.2.2	<div></div>	0%
4.2.3	<div></div>	0%
4.2.4	<div></div>	0%
4.3.1	<div></div>	-
4.3.2	<div></div>	0%
4.4.2	<div></div>	0%

## ATM Functionality # 5

Family	Gap coverage	
5.1.1	<div></div>	100%
5.1.2	<div></div>	0%
5.1.3	<div></div>	0%
5.1.4	<div></div>	0%
5.2.1	<div></div>	0%
5.2.2	<div></div>	0%
5.2.3	<div></div>	0%
5.3.1	<div></div>	0%
5.4.1	<div></div>	0%
5.5.1	<div></div>	0%
5.6.1	<div></div>	0%
5.6.2	<div></div>	0%

## ATM Functionality # 6

Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.



## Sweden

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1	<div></div>	100%	2.1.1	<div></div>	100%	3.1.1	<div></div>	0%
1.1.2	<div></div>	0%	2.1.2	<div></div>	100%	3.1.2	<div></div>	0%
1.2.1	<div></div>	0%	2.1.3	<div></div>	0%	3.1.3	<div></div>	0%
1.2.2	<div></div>	0%	2.1.4	<div></div>	0%	3.1.4	<div></div>	0%
1.2.3	<div></div>	0%	2.2.1	<div></div>	0%	3.2.1	<div></div>	0%
1.2.4	<div></div>	-	2.3.1	<div></div>		3.2.3	<div></div>	100%
1.2.5	<div></div>	0%	2.4.1	<div></div>	0%	3.2.4	<div></div>	0%
			2.5.1	<div></div>	0%			
			2.5.2	<div></div>	0%			
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		<p><i>Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.</i></p> <p><i>AF1 and AF2 to be implemented in Stockholm Arlanda</i></p>		
4.1.1	<div></div>	-	5.1.1	<div></div>	100%			
4.1.2	<div></div>	0%	5.1.2	<div></div>	0%			
4.2.2	<div></div>	0%	5.1.3	<div></div>	0%			
4.2.3	<div></div>	0%	5.1.4	<div></div>	0%			
4.2.4	<div></div>	0%	5.2.1	<div></div>	0%			
4.3.1	<div></div>	-	5.2.2	<div></div>	0%			
4.3.2	<div></div>	0%	5.2.3	<div></div>	0%			
4.4.2	<div></div>	0%	5.3.1	<div></div>	0%			
			5.4.1	<div></div>	0%			
			5.5.1	<div></div>	0%			
			5.6.1	<div></div>	0%			
			5.6.2	<div></div>	0%			



## Switzerland

ATM Functionality # 1			ATM Functionality # 2			ATM Functionality # 3		
Family	Gap coverage		Family	Gap coverage		Family	Gap coverage	
1.1.1	<div></div>	100%	2.1.1	<div></div>	100%	3.1.1	<div></div>	0%
1.1.2	<div></div>	0%	2.1.2	<div></div>	0%	3.1.2	<div></div>	0%
1.2.1	<div></div>	0%	2.1.3	<div></div>	100%	3.1.3	<div></div>	0%
1.2.2	<div></div>	100%	2.1.4	<div></div>	100%	3.1.4	<div></div>	0%
1.2.3	<div></div>	100%	2.2.1	<div></div>	100%	3.2.1	<div></div>	0%
1.2.4	<div></div>	-	2.3.1	<div></div>	0%	3.2.3	<div></div>	0%
1.2.5	<div></div>	0%	2.4.1	<div></div>	0%	3.2.4	<div></div>	0%
			2.5.1	<div></div>	0%			
			2.5.2	<div></div>	0%			
ATM Functionality # 4			ATM Functionality # 5			ATM Functionality # 6		
Family	Gap coverage		Family	Gap coverage		<p><i>Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.</i></p> <p><i>AF1 and AF2 to be implemented in Zurich Kloten</i></p>		
4.1.1	<div></div>	100%	5.1.1	<div></div>	100%			
4.1.2	<div></div>	0%	5.1.2	<div></div>	0%			
4.2.2	<div></div>	0%	5.1.3	<div></div>	0%			
4.2.3	<div></div>	0%	5.1.4	<div></div>	0%			
4.2.4	<div></div>	0%	5.2.1	<div></div>	100%			
4.3.1	<div></div>	-	5.2.2	<div></div>	0%			
4.3.2	<div></div>	0%	5.2.3	<div></div>	0%			
4.4.2	<div></div>	0%	5.3.1	<div></div>	0%			
			5.4.1	<div></div>	0%			
			5.5.1	<div></div>	0%			
			5.6.1	<div></div>	0%			
			5.6.2	<div></div>	0%			



## United Kingdom

### ATM Functionality # 1

Family	Gap coverage							
	London Heathrow		London Gatwick		London Stansted		Manchester Ringway	
1.1.1	<div></div>	100%	<div></div>	100%	<div></div>	0%	<div></div>	0%
1.1.2	<div></div>	95%	<div></div>	0%	<div></div>	0%	<div></div>	0%
1.2.1	<div></div>	0%	<div></div>	0%	<div></div>	0%	<div></div>	0%
1.2.2	<div></div>	0%	<div></div>	0%	<div></div>	0%	<div></div>	0%
1.2.3	<div></div>	0%	<div></div>	0%	<div></div>	0%	<div></div>	100%
1.2.4	<div></div>	-	<div></div>	-	<div></div>	-	<div></div>	-
1.2.5	<div></div>	-	<div></div>	-	<div></div>	-	<div></div>	-

### ATM Functionality # 2

Family	Gap coverage							
	London Heathrow		London Gatwick		London Stansted		Manchester Ringway	
2.1.1	<div></div>	100%	<div></div>	100%	<div></div>	0%	<div></div>	0%
2.1.2	<div></div>	0%	<div></div>	0%	<div></div>	0%	<div></div>	100%
2.1.3	<div></div>	100%	<div></div>	100%	<div></div>	0%	<div></div>	0%
2.1.4	<div></div>	0%	<div></div>	0%	<div></div>	0%	<div></div>	0%
2.2.1	<div></div>	0%	<div></div>	100%	<div></div>	100%	<div></div>	0%
2.3.1	<div></div>	100%	<div></div>	0%	<div></div>		<div></div>	0%
2.4.1	<div></div>	0%	<div></div>	0%	<div></div>	0%	<div></div>	0%
2.5.1	<div></div>	0%	<div></div>	0%	<div></div>	0%	<div></div>	0%
2.5.2	<div></div>	0%	<div></div>	0%	<div></div>	0%	<div></div>	0%

### ATM Functionality # 3

Family	Gap coverage	
3.1.1	<div></div>	95%
3.1.2	<div></div>	0%
3.1.3	<div></div>	0%
3.1.4	<div></div>	0%
3.2.1	<div></div>	0%
3.2.3	<div></div>	100%
3.2.4	<div></div>	0%

### ATM Functionality # 4

Family	Gap coverage	
4.1.1	<div></div>	100%
4.1.2	<div></div>	0%
4.2.2	<div></div>	-
4.2.3	<div></div>	0%
4.2.4	<div></div>	0%
4.3.1	<div></div>	-
4.3.2	<div></div>	0%
4.4.2	<div></div>	0%

### ATM Functionality # 5

Family	Gap coverage	
5.1.1	<div></div>	100%
5.1.2	<div></div>	0%
5.1.3	<div></div>	0%
5.1.4	<div></div>	0%
5.2.1	<div></div>	100%
5.2.2	<div></div>	0%
5.2.3	<div></div>	0%
5.3.1	<div></div>	0%
5.4.1	<div></div>	0%
5.5.1	<div></div>	0%
5.6.1	<div></div>	0%
5.6.2	<div></div>	0%

### ATM Functionality # 6

Please refer to the DLS Survey, as published in the Monitoring View of the Deployment Programme 2016.



# PERFORMANCE ASSESSMENT AND COST BENEFIT ANALYSIS METHODOLOGY



## Annex D – Performance Assessment and Cost Benefit Analysis Methodology

### 1. Introduction

The translation of PCP into DP and then into projects induces a significant refinement of the costs compared to the assumptions used for the PCP CBA defined in 2013 by the SESAR Joint Undertaking (SJU). At the same time, additional inputs, from the implementing stakeholders and new analysis from the SDM or the SJU, in close cooperation with Network Manager, allow refining the benefits side.

Therefore, it is SDM's intention to analyse refined costs and expected benefits based on performance related data to be collected through CEF Calls for Proposals, and relevant inputs from the Network Manager (e.g. National Operational Plan (NOP) and European Route Network Improvement Plan (ERNIP)). These analysis and subsequent monitoring once projects are awarded and running are to be done with the methodology defined in this document.

This methodology is elaborated for the purpose of compliance with Commission Implementing Regulation (EU) No 409/2013 and more specifically to assess the effectiveness of coordination and synchronisation of the deployment program (DP).

While the PCP CBA and the underlying methodology constitute the general reference for performance expectations at AF level, it is clear that, at the time the projects are submitted, their contribution to performance shall be identified and possibly quantified at a much greater level of detail. Later on, at the time the projects are awarded, the CBAs of the projects shall be calculated and finally, the global CBA of the deployment program shall be built up summing the different parts being actually deployed or that will be deployed.

The methodology covers the process of identifying and quantifying the benefits. It does also explain how projects could be combined into threads to facilitate the calculation of CBA and how the consolidation both on benefits and on costs shall occur to build a global CBA for the Deployment Program.

The methodology also defines rules of monitoring benefits and costs and considerations in terms of estimating accuracy.

Through 2015, this methodology has been tested and improved. It is expected that it would be updated every year to take on board the lessons learnt while operating performance assessments and CBA.

## 2. Benefits

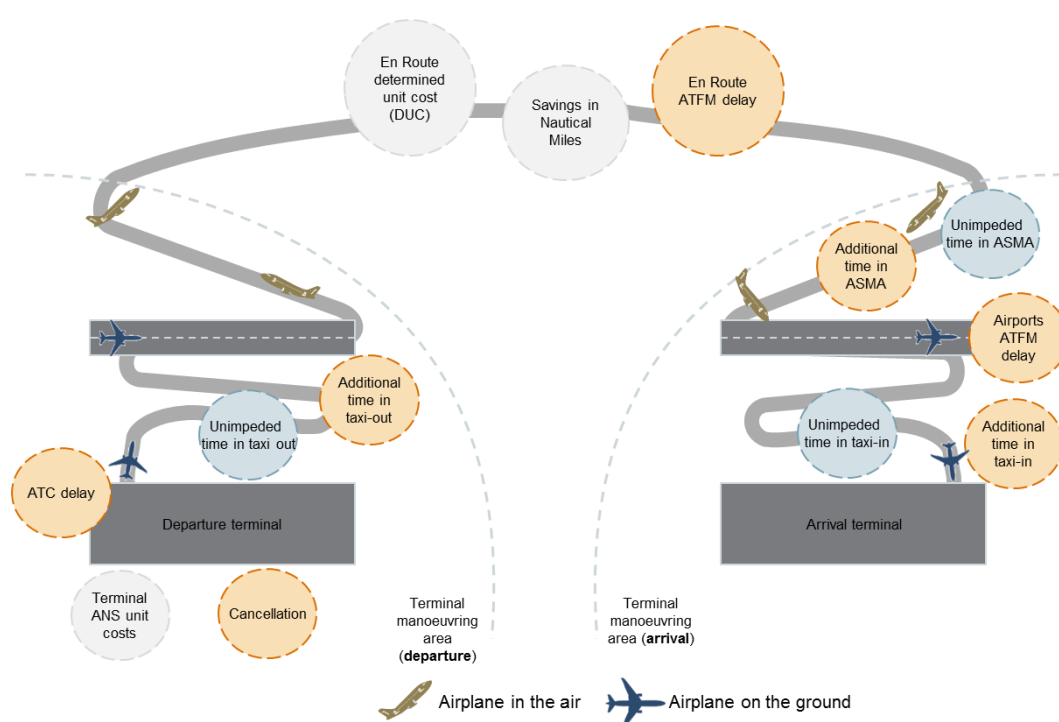
### 2.1 Identifying benefits

#### 2.1.1 Key Performance Areas (KPA), Performance Indicators and CBA metrics

The KPAs that are monitored at deployment level are those of the SES performance regulation (EU IR 390/2013) and from those reflected in the ATM Master Plan (Edition 2015).

The KPAs are Cost Efficiency, Capacity, Operational Efficiency and Environment.

The following picture and corresponding grids give the definition of the Performance Indicators used and their relation with KPAs.



**Fig. 1 – Performance Indicators**

- In light blue, Performance Indicators refer to “strategic” inefficiencies, for example due to airspace design, that is to say which refer to the reduction of delay that is included in airline schedules (flight plan).
- In light pink, Performance Indicators refer to “tactical” inefficiencies that is to say inefficiencies referring to the unpredictable delays on the day of operations that exceeds the delay buffer foreseen in the flight plan.

**Airport ATFM delay<sup>1</sup>**

Definition	Comment	KPA	Formula	Unit	Delay
Arrival Airport ATFM delay per flight attributable to terminal and airport air navigation services and caused by landing restrictions at the destination airport.	None	Capacity	Arrival ATFM delay per inbound IFR flight attributable to terminal and airport air navigation services	Minutes per arrival flights	Tactical Ground

**ATC delay<sup>1</sup>**

Definition	Comment	KPA	Formula	Unit	Delay
All IFR flights taking off at the departure airport and covers delays in start-up due to air traffic control constraints when the aircraft is ready to leave the departure stand	The ATC delay (or ATC pre-departure delay) is the additional time that the aircraft is held at the stand to avoid queuing at the departure runway. It is a proxy of the delay which an aircraft ready to leave its gate can be subject to, at its origin airport, due to airports constraints, demand/capacity imbalances known prior to off-blocks, take-off restrictions and/or traffic intensity at the time of operations.	Ops efficiency	Air traffic control delay per outbound IFR flight caused by take-off restrictions at the departure airport. The causes for ATC pre-departure delay means the standard IATA delay codes as defined in Section F of Digest Annual 2011 'Delays to Air Transport in Europe', with the duration of the delay. These delay causes relate to IATA delay Code 89 that aims at capturing off-block delays due to local ATC and pushback when the aircraft is ready to leave its stand. More specifically, these codes aim at reporting restrictions at airport of departure, including Air Traffic Services, start-up and pushback, airport and/or runway closed due to obstruction or weather, industrial action, staff shortage, political unrest, noise abatement, night curfew, special flights	Minutes per departure flights	Tactical Ground

**Unimpeded taxi-out time<sup>1</sup>**

Definition	Comment	KPA	Formula	Unit	Delay
The actual taxi-out time of a flight is the time elapsed between the off-block time of this flight and its take-off time. The unimpeded taxi-out time is the taxi-out time in non- congested conditions at airports. Taxi-out time includes possible push-day delay, possible remote de-icing time, and departure runway occupancy time.	The unimpeded taxi-out time which is related to the airport layout (gates, runways...). This time are considered as "strategic" because it is included in the flight time calculated by the Airlines. Engines are on.	Ops efficiency	Based on taxi-out times in low periods of traffic. A different unimpeded taxi-out time is determined for each combination: departure runway; and, departure stand (or group of stands).	Minutes per departure flights	Strategic – airborne

<sup>1</sup> Reference to IR 390/2013

**Additional taxi-out time<sup>2</sup>**

Definition	Comment	KPA	Formula	Unit	Delay
The additional taxi-out time is a proxy for the average departure runway queuing time on the outbound traffic flow, during congestion periods at airports.	The additional time in taxi-out due to congestion on the airport, bad weather conditions... engines are on. those delays are considered as tactical	Ops efficiency	It is the difference between the actual taxi-out time of a flight and a statistically determined based on taxi-out times in periods of low traffic demand.	Minutes per departure flights	Tactical - airborne

**Unimpeded time in taxi-in<sup>3</sup>**

Definition	Comment	KPA	Formula	Unit	Delay
Refers to the period between the time when the aircraft landed and the time it arrives at the stand.	The unimpeded taxi-in time which is related to the "structure" of the airport (gates, runways). This time are considered as "strategic" because it is included in the flight time calculated by the Airlines, engines are on.	Ops efficiency	Reference taxi-in time based on the 20th percentile of the associated stand-runway combination.	Minutes per arrival flights	Strategic - airborne

**Additional time in taxi-in<sup>2</sup>**

Definition	Comment	KPA	Formula	Unit	Delay
Refers to the period between the time when the aircraft landed and the time it arrives at the stand.	The additional time in taxi-in due to congestion on the airport, bad weather conditions... Engines are on; those delays are considered as tactical.	Ops efficiency	For each arrival, the additional time is computed as the difference between its actual taxi- in time and the unimpeded taxi-in time. In case the actual taxi- in time is equal or less than the reference taxi- in time, the additional time is set to zero	Minutes per arrival flights	Tactical - airborne

**Unimpeded ASMA time<sup>1</sup>**

Definition	Comment	KPA	Formula	Unit	Delay
The unimpeded ASMA time is the ASMA transit time in non-congested conditions at arrival airports.	The unimpeded ASMA time, which is related to the "structure" of the ASMA (~TMA). This time is considered as "strategic" because it is included in the flight time calculated by the Airlines. Engines are on.	Ops efficiency	It is determined for each group of flights with the same parameters (i.e. aircraft class, ASMA entry sector, arrival runway) and represents the transit time in non-congested conditions	Minutes per arrival flights	Strategic - airborne

**Additional ASMA time<sup>1</sup>**

Definition	Comment	KPA	Formula	Unit	Delay
The additional ASMA time is a proxy for airport inefficiencies in the approach phase, proxy for the average arrival runway queuing time on the inbound traffic flow, during congestion periods at airports	The additional time in ASMA due to congestion in ASMA... Engines are on; those delays are considered as tactical.	Ops efficiency	The indicator is the difference between the actual ASMA (Arrival Sequencing and Metering Area) transit time and the unimpeded ASMA time calculated for non-congested conditions	Minutes per arrival flights	Tactical - airborne

<sup>2</sup> Reference to IR 390/2013<sup>3</sup> Reference to Performance Review Report 2014

**En-route ATFM delay<sup>4</sup>**

Definition	Comment	KPA	Formula	Unit	Delay
Minutes of en route ATFM (Air Traffic Flow Management) delays per flight attributable to air navigation services. Note: en route ATFM delays take into account delays, which is due to congestion in the EnRoute part and in the TMA part.	ANS-related holding at gate due to En Route Airspace = En Route ATFM delays. Engines are off, those delays are considered as tactical	Capacity	The en route ATFM delay is the delay calculated by the central unit of ATFM as defined in Commission Regulation (EU) No 255/2010 laying down common rules on air traffic flow management. It is expressed as the difference between the estimated take-off time requested by the aircraft operator in the last submitted flight plan and the calculated take-off time allocated by the central unit of ATFM.	Minutes per flights	Tactical – ground

**Determined Unit Cost for en-route ANS<sup>1</sup>**

Definition	Comment	KPA	Formula	Unit	Delay
The en-route ANS Determined Unit Rate is defined as the en-route determined costs (in) divided by the total en-route service units.	The measure addresses the costs for the provision of en route air navigation services. The yearly values of the determined costs are fixed in advance, for the entire reference period. While monitoring performance, the en route actual unit cost (en route actual costs/actual en route service units) is compared against the determined unit rate.	Cost Efficiency	The indicator is the ratio between the en route determined costs and the en route forecast traffic, expressed in en-route service units, expected during the period at Union level.	expressed in euro and in real terms also expressed in nominal terms	N/A

**Terminal ANS Unit Cost<sup>1</sup>**

Definition	Comment	KPA	Formula	Unit	Delay
The terminal ANS Unit Cost is defined as the terminal costs (in real terms) divided by the total terminal service units	None	Cost Efficiency	the indicator is the result of the ratio between the determined costs and the forecast traffic, expressed in terminal service units	expressed in euro and in real terms also expressed in nominal terms	N/A

**Cancellation<sup>5</sup>**

Definition	Comment	KPA	Formula	Unit	Delay
In accordance with Regulation (EC) 691/2010, a flight is considered to be cancelled if the following conditions apply: – The flight received an airport slot; – The flight was confirmed by the air carrier the day before operations and/or it was contained in the daily list of flight schedules produced by the airport operator the day before operations; but, – The actual landing or take-off never occurred.	Flight cancelled due to ANS process	Capacity	Flight cancelled due to ANS process	Number of flights	N/A

<sup>4</sup> Reference to IR 390/2013<sup>5</sup> Reference to Performance Review Report 2014

In addition, the SDM introduces the CBA metric that is the result (in minutes for instance) of the performance indicator multiplied by the number of relevant flights. For example, the CBA metric “enroute ATFM delay” is the KPI “enroute ATFM delay” multiplied by the number of flights. The SDM would multiply the number of flights by a corrective factor of 50% if, for instance, it would only address arrival flights.

The CBA metrics is a parameter that can be easily monetized depending on the valorization reference (see chapter 2.2.3.4).

The following grid gives the CBA metrics used in relation to their KPAs.

KPAs	CBA metrics
Cost Efficiency	Savings linked to DUC for en-route ANS
	Savings linked to Terminal ANS Unit Cost
Capacity	Airport ATFM Delay
	En-Route ATFM Delay
	Cancellations
Operational Efficiency	ATC Delay
	Unimpeded ASMA Time
	Additional ASMA Time
	Unimpeded Taxi-in Time
	Additional Taxi-in Time
	Unimpeded Taxi-out Time
	Additional Taxi-out Time
	Minutes related to fuel reduction
Environment	Savings linked to fuel consumption
	Savings linked to CO <sup>2</sup> reduction

**Fig. 2: KPAs and CBA metrics**

- In light blue, CBA metrics refer to “strategic” inefficiencies, for example due to airspace design, that is to say which refer to the reduction of delay that is included in airline schedules (flight plan).
- In light pink, CBA metrics refer to “tactical” inefficiencies that is to say inefficiencies referring to the unpredictable delays on the day of operations that exceeds the delay buffer foreseen in the flight plan.
- In white, CBA metrics refer to additional savings of different nature.

Considerations for CBA metrics:

#### **Nautical Miles:**

Nautical Miles saved are not directly a CBA metrics but are translated in the following CBA metrics: “Minutes related to fuel reduction” and/or “Savings linked to fuel consumption” according to the nature of the project.

#### **Cost Efficiency:**

The savings linked to DUC for en-route ANS and the savings linked to Terminal ANS Unit Cost cover the “ANS Gate-to-Gate Cost”. Additionally, the SDM identified also savings on investment or running costs that have been monetized and related to cost efficiency.

**Operational Efficiency:**

The monetization of the CBA metrics (time in minutes) takes into account all the operational impact (for instance maintenance, crew...) including the cost of fuel.

**Environment:**

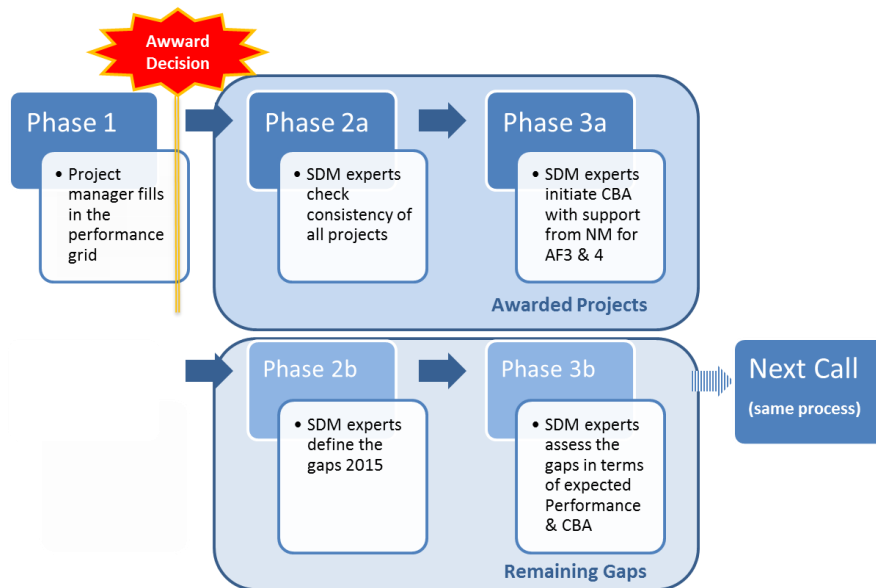
"Savings linked to fuel consumption" and "Saving linked to CO<sup>2</sup> reduction" are used in CBA metrics to valorize projects that have an impact on fuel consumption only and not in relation to the Operational Efficiency.

Safety and Security are not developed with CBA metrics at this stage. However, and first concerning Safety, SDM would develop the methodology with some metrics for DP2017. The purpose is to find a way to quantify safety benefits in order to better compare IPs which contribute to safety only with IPs which contribute to other KPAs.

Additionally SDM included and asked for assessments concerning predictability and resilience aspects, which may be of adding value in the assessment of capacity or operational efficiency on the local situation and, consequently and possibly, at network level.

**2.1.2 Initial Assessment approach**

The initial assessment approach is as follows:



**Fig. 3 – Identifying benefits**

**Phase 1**

The performance assessment grid<sup>6</sup> of the Project Template allows collecting the initial information and expectations of benefits from the project managers for all projects before submission to the call. This grid is based on the identification of improvements of Key Performance Areas (KPA) and related information to support a quantitative analysis. The SDM would rely on the projects information submitted by the project manager to identify the KPAs where benefits are expected.

### **Phase 2a**

Once the projects awarded, the SDM reviews the qualitative information and the initial quantitative assessment where a percentage of improvement is identified or when other data are available. The SDM pays attention to the consistency of the data between projects.

### **Phase 2b**

Once the projects awarded, the SDM identifies the remaining gaps comparing the awarded projects and the PCP.

### **Phase 3a**

AF1; AF2; AF5 and AF6: SDM experts initiate CBA according to its top-down approach and share with the Project Manager (PM) directly through the STAR tool.

AF3 & AF4: SDM shares with the Network Manager to ensure consistency with the yearly-published Network Operations Plan and European Route Network Improvement Plan. The review takes into consideration a geographical perspective based on the projects included in the NOP and European Route Network Improvement Plan (ERNIP) and their agreed evaluation in terms of capacity and flight efficiency. It is to be noted that the evaluations made in the ERNIP are consistent, in relative terms, with the improvement required based on KPI on Environment that is based on the actual trajectory.

Additionally, the SDM relies on the EDA to check whether the military impact was assessed.

In any case, where questions have to be clarified, SDM requests the respective project managers for additional information.

### **Phase 3b**

The SDM's experts also assess the expected benefits and costs of the remaining gaps.

## **2.2 Measuring expected benefits**

<sup>6</sup> A "Performance grid" is included in the IP template of all Projects submitted to a CEF Call. This grid allows recording the Implementation Project leader view on its own performance assessment. The Project Leader is requested to fill in the grid according to the relevant performance indicators. The guidance material provided by SDM explains all fields of the grid. Finally, among the different pieces of information, SDM would take special attention to the areas of expected benefits, the percentages of improvement (any figure), the rational and associated facts as key inputs for the CBA calculation.



### 2.2.1. Scope of Initial Costs and Benefits Analysis (CBA)

The first question in the methodology is to assess if an Implementation Project can sustain or not an independent CBA. If it does, then the analysis is straightforward. However, if the project is dependent of other projects to deliver most of its benefits, or, if the project benefits cannot be isolated from other projects, then it is identified that it does not sustain an independent CBA.

In this case the decision is to group it with relevant other projects. This grouping is called a thread. It is based on the information included in the NOP and the ERNIP, whenever relevant. These threads shall be of the smallest possible dimension to generate tangible quantifiable benefits.

Grouping projects into threads, a distinction shall be made between the awarded projects and those projects not yet awarded which could fit in a thread bringing additional value. In this last case, the methodology allows to identify the missing projects (gaps), measure their expected additional value and consequently prioritize the gaps in the existing gap analysis of the Deployment Program.

For instance, projects that would affect one airport and for which the same KPIs would be impacted, would be possibly grouped into a thread.

The scope of the CBAs would therefore depend on whether the project is a standalone one or grouped with others.

### 2.2.2. From KPAs to CBA metrics

The quantification of benefits is based on the estimation of improvement of Key Performance Areas compared with a baseline scenario. The estimation would be assessed considering the relevant CBA metrics associated to the KPAs.

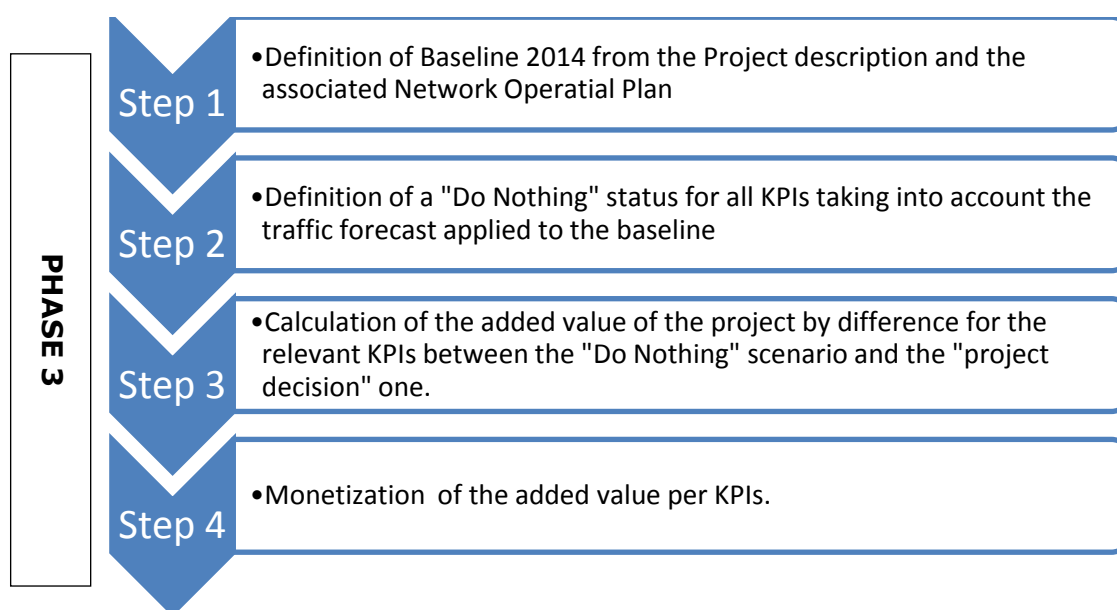
### 2.2.3. Process description

As a rule, it has been decided to calculate benefits comparing two decisions, “doing-nothing” or “project decision”. There are two alternatives of measuring the benefits through the process, the “Bottom Up” approach and the “Top Down” one.

The 2 approaches are used systematically.

The “Bottom Up” approach is a way to associate the Project Manager and to measure the benefits in the most realistic way taking into account the context and the specificities of the project. It is time consuming and requires a good preparation to present an initial assessment that is fine-tuned according to the discussion. The SDM concludes on the final assessment and records the agreement or not of the Project Manager.

The “Top Down” is a simplified way to operate the process to measure the benefits of the remaining gaps of the DP. It may also be used to make the initial assessment for the bottom up approach.



**Fig. 4 – Measuring the expected benefits**

The process is a systematic way to address any project or thread of projects. It defines four steps:

### **Step 1: Baseline 2014**

Referring to the existing traffic situation in the area (airport, airspace) and using official public documentation such as the ones used by PRB or by NM, SDM generates the so-called "Baseline 2014".

The baseline 2014 describes the performance and traffic situation in 2014 of the geographical scope of the project (airport, airspace) within the Deployment Program. The base year is 2014 and the 2014 NOP/ERNIP or other relevant data define in principle this baseline.

Whether "Top Down" or "Bottom Up", this step is the same.

### **Step 2: "Do nothing" scenario**

In order to build a "Do Nothing" scenario, the SDM needs to project the performance into the future according to the traffic forecast growth.

Concerning En-route airspace and TMA airspace, when applicable (AF3, AF4, AF5, AF6 projects), the NOP capacity assessment and planning process is the most validated and recognised methodology to project En-route ATFM delay (Capacity) and Flight Efficiency (Environment) performance into the future.

Concerning TMA or airports (AF1, AF2 projects), it is widely recognised that runway-related performance depends on variables which are factored in queuing formulae (runway utilisation, exposition to external events, traffic variability). However, each airport has its own specificity that prevent from using generic parameters. SDM seeks the support of each airport in defining the "Do Nothing" scenario. The input of the airport would then be crosschecked with the NOP data.

Concerning TMA capacity the “Do Nothing” scenario is elaborated on a case-by-case basis depending on what are the objectives of the Project.

Finally, applied to all relevant KPIs, a “Do Nothing” performance evaluation is made based on the latest traffic forecast, which in nearly every case leads to an increase of delays and insufficient ATM results.

#### Top Down approach

- The SDM does not operate step 2 at project level or thread level. Based on a yearly calculation on 2014 data, the Top Down approach includes an assumption of growth of traffic as a corrective factor to simulate the “Do Nothing” scenario.

### **Step 3: Benefit as the difference between “Do-nothing” and “Project Decision”**

The “Project Decision” scenario is qualified with an expected improvement level of the CBA metrics that, afterwards, is translated into the expected performance benefits.

#### Bottom Up approach

- The Project Manager and SDM discuss the assumptions to take for the relevant improvement levels with the Project Manager. SDM ensures consistency between the different similar projects or validate with the Network Manager according to the NOP/ERNIP documents when applicable.
- SDM considers the ability of the project to deal with adverse weather conditions, resilience and robustness.
- TMA related project would require a case-by-case assessment depending on:
  - If its contribution is mainly directed to improve the runway queuing at a given airport, then the TMA related project could be combined with AF1 and AF2 projects at that airport.
  - If its contribution is mainly directed to improve the TMA capability to handle multiple queuing at different airports, then the TMA related project could be treated separately.
  - If its contribution were mainly directed to improve the ATC sector capacity, then the TMA related project would be considered in the appropriate en-route / network AFs.

#### Top Down approach

- For AF1 and AF2, the SDM has defined improvement percentages (see Fig. 5), for each family and each relevant CBA metric, based on different sources: SJU SESAR Deliverables, Flights Demo Reports, Expert judgement....
- The benefits are then calculated on a yearly basis as:

$$YB = \%I \times CBA \times VEUR$$

Where YB stands for the “yearly benefit”, %I for the percentage of improvement, CBA for the CBA metric, VEUR the valorisation in Euros.

The yearly benefit is then used to calculate a total undiscounted or discounted benefit on the reference period (2014-2030) according to an assumption of ramp-up over time (how the benefits progressively reach 100% of the yearly benefit).

- Top-down AF1 and AF2 improvement assumptions are defined by family and performance indicator:

Improvement assumptions per family and performance indicator	AF1						AF2									
	1.1.1 - Basic AMAN	1.1.2 - E-AMAN	1.2.1 - RNP APCH with vert. guid.	1.2.2 - Geo. DB for procedure design	1.2.3 - RNP1 (ground capa.)	1.2.4 - RNP1 (aircraft capa.)	1.2.5 - A-RNP below FL 310	2.1.1 - Initial DMAN	2.1.2 - Elec. Flt Strips	2.1.3 - Basic A-CDM	2.1.4 - Initial Apt Op. Plan	2.2.1 - A-SMGCS Level 1&2	2.3.1 - Time-based Separation	2.4.1 - A-SMGCS Routing & Planning	2.5.1 - Apt. Safety Net with A-SMGCS	2.5.2 - Aircraft & vehicle systems
Unimpeded time in ASMA	1.5%	1.5%	1.5%		3.0%		1.5%				0.1%		0.3%			
Additional time in ASMA	0.5%	0.5%	1.5%		3.0%		1.5%				0.3%		16.7%			
Airport ATFM Delay	0.5%	0.5%									0.1%		8.3%			
Additional time in taxi-in											0.1%			0.5%		
Unimpeded time in taxi-out								0.3%	0.3%	0.3%	0.6%			0.3%		
Additional time in taxi-out								3.0%	1.0%	3.0%	3.0%	0.5%		0.4%		
ATC Delay								0.3%	0.3%	0.3%	0.3%	0.5%		0.5%		
Terminal ANS Cost								0.3%	0.3%	0.3%	0.3%	0.5%		0.3%		
KEA																
ER ATFM Delays	0.0%	0.0%														
EnRoute DUC																
Operational Cancellations								4.1%		18.4%	18.4%					
<b>Correction factors</b>																
Unimpeded time in ASMA	50%	50%	50%		50%		50%				50%		3%			
Additional time in ASMA	50%	50%	50%		50%		50%				50%		3%			
Airport ATFM Delay	50%	50%									50%					
Additional time in taxi-in											50%			50%		
Unimpeded time in taxi-out								50%	50%	50%	50%	50%		50%		
Additional time in taxi-out								50%	50%	50%	50%	50%		50%		
ATC Delay								50%	50%	50%	50%	50%		50%		
Terminal ANS Cost								50%	50%	50%	50%	50%		50%		
KEA																
ER ATFM Delays	50%	50%														
EnRoute DUC																
Operational Cancellations								1.55%		1.55%	1.55%					

Fig. 5 – Improvement assumptions

- The assessments made by the Network Manager of the operational performance of AF#3 and AF#4 took into consideration a harmonised network approach. The Network Manager ensured the consistency between the Network Operations Plan, the European Route Network Improvement Plan Part 2 and the relevant projects proposed in the context of the AF#3 and AF#4. This consistency must be maintained for all the subsequent updates of the Deployment Programme and the gaps identification.
- Capacity Assessment with respect to the AF#3 and AF#4 projects:
  - The capacity assessment is based, for the capacity part, on the Capacity Assessment and Planning Guidance document that has been approved by the Network Manager Board in June 2013, as part of the Network Operations Plan Approval. The reference to this document is given in all the successive editions of the Network Operations Plan.
  - The Network Manager ensured a full consistency between the Network Operations Plan 2015-2019 and the evaluation of the operational performance potential of the AF#3 and AF#4 projects. This potential is covered either by the projects proposed by various operational stakeholders as part of the CEF Call or is included in the gap analysis.
  - The Network Manager developed a do nothing scenario that was then compared to the potential of the various AF#3 and AF#4 related projects listed in the Network Operations Plan 2015-2019. Projects proposed for the CEF call and listed in the Network Operations Plan 2015-2019 have been then evaluated in this context to their individual potential. The assessments made took into consideration a harmonized network approach.
- Flight Efficiency with respect to the AF#3 and AF#4 projects:
  - The flight efficiency assessment is based, for the flight efficiency part, on the overall flight efficiency evaluations made in the context of the European Route Network Improvement Plan, Part 2 – ARN Version 2015-2019.

- The Network Manager ensured a full consistency between the European Route Network Improvement Plan, Part 2 – ARN Version 2015-2019 and the evaluation of the operational performance potential of the AF#3 and AF#4 projects with respect to flight efficiency. This potential is covered either by the projects proposed by various operational stakeholders as part of the CEF Call 2014 or is included in the gap analysis.
- The evaluations made in the previous editions of the European Route Network Improvement Plan, Part 2 demonstrated that the operational performance improvements achieved were in line year on year with the estimations made.
- For AF5 and AF6, SDM does not calculate any top-down benefits.

#### Step 4: monetization of benefits

To facilitate the monitoring and comparison with the PCP CBA published in 2013 as the reference and supporting material to the regulation (EC) 716/2014, SDM decided to use the same metrics or at least aligned ones. Considering the long timeframe (2014-2030), it seems also a reasonable choice.

It is therefore understood that SDM does not plan to review these assumptions unless mandated by the European Commission, within a new context such as the review of the PCP regulation, and in order to support specific decisions. This review would then be shared with SJU. The performance differences are monetized through a set of values defined as follows:

Cost-Assumptions		
ATC delay ATFM delay (ER, Airport, TMA)	Tactical Ground Delay	28€/minute <sup>2</sup>
ASMA (add. Time) Taxi Out (add. Time)	Tactical Airborne Delay	44€/minute <sup>2</sup>
ASMA (unimpeded) Taxi In/Out (unimpeded)	Strategic airborne Delay	50€/minute <sup>1</sup>
Flight Time Reduction	Airborne Strategic Cost	31€/minute <sup>1</sup>
Fuel	Kg	0,79€ (2014) <sup>1</sup>
CO2	T	4,30€ (2014) <sup>1</sup>
Flight cancelled		7.600€ <sup>3</sup>

1. REFERENCE AND SUPPORTING MATERIAL – (EC) NO 716-2014 Art.4(c) Global cost benefit analysis. Part B. Assumption, Chapter 9.

2. REFERENCE AND SUPPORTING MATERIAL – (EC) NO 716-2014 Art.4(c) Global cost benefit analysis. Part B. Assumption, Chapter 9. with values calculated with a 70/30 (low/high cost assumptions) ratio

3. Eurocontrol Standard Inputs, Ed.6 para. "Cancellation Cost", chapter 4

**Fig. 6 – Cost assumptions**

The index for CO2 is 3.149 Kg/Kg fuel burned.

As explained under the figure 1 of the document, savings linked to tactical delays and strategic delays are referred to in reference to the flight plan, respectively reducing the delays exceeding the buffer foreseen or reducing the overall plan itself.

The cost of tactical delays is used for instance for:

- ATFM delays (ER, Airport, TMA)
- ATC delays
- Additional Time (in taxiing & in ASMA)

The cost of Strategic delays is used for instance for:

- Unimpeded time (in taxiing & in ASMA)

Explanation of the 28€/min and 44€/min in the first two lines of the figure 6:

SDM is taking different values depending on airborne or ground related with an assumption on the cost categories of 70% low and 30% high.

- Ground Tactical delays [23,8€-37,7€] => 28€
- Airborne Tactical delays [39,4€-53,3€] => 44€

#### 2.2.4. Data source

- CAPA per Airport : Eurocontrol dashboard download area, "Arrival Sequencing and Metering (ASMA) additional time", "Airport arrival ATFM delays", Taxi out additional time - JAN-FEB 2015 - Source: PRR 2014 p 65 (graph) and p63 (graph)
  - <http://www.eurocontrol.int/prudata/dashboard/downloads.html>
- CAPA per Country : Eurocontrol dashboard, download area - "En route ATFM delays" Jan 2015
  - [http://www.eurocontrol.int/prudata/dashboard/eur\\_view\\_2014.html](http://www.eurocontrol.int/prudata/dashboard/eur_view_2014.html)
- Flight Efficiency : PRR 2014 p45 (graph)
  - <http://www.eurocontrol.int/sites/default/files/publication/files/prr-2014.PDF>
- ANS Cost Efficiency : Eurocontrol Dashboard Local view, "En route Determined Unit Rate (DUR) KPI [real terms; 2009 prices] & En route (ER) service units (SU)" & "Terminal (TR) ANS cost PI [national currency] & Inflation rates" tables (from National/FAB performance plans) - FEB 2015
  - [http://www.eurocontrol.int/prudata/dashboard/pp\\_view\\_2014.html](http://www.eurocontrol.int/prudata/dashboard/pp_view_2014.html)
- Resilience : PRR 2014, P54 (from PRU analysis; Central Office for Delay Analysis - CODA)
  - <http://www.eurocontrol.int/sites/default/files/publication/files/prr-2014.PDF>

For the "Bottom Up" approach, the SDM shares its information with the Project Manager while preparing the CBA. Let's note that the stakeholders (e.g. Central Office for Delay Analysis - CODA) can provide directly some data.

## 2.3 Monitoring benefits

As some assumptions may change over time or deviation in traffic evolution or other reference data may occur, SDM monitors benefits of all awarded projects based on the CEF Calls.

Assumptions might be reviewed and yearly updates of data sources are used by the SDM.

In addition, because it is the final measurement of actual benefits of the project (or thread of) when implemented that is the final target, the SDM monitors benefits until the change is operational. Further work is foreseen to complement the methodology on this topic.

However, the main lines of action are as follows:

- SDM intends to monitor and to confirm all prior assumptions, data comparison and results of theoretical simulations done by SDM, NM or Project Manager.
- Final performance monitoring set is established to support a real life crosscheck done by SDM with support of Airspace Users, ANSPs and Airports demonstrating that key drivers of deployment have been reached and the SESAR Deployment has been accomplished.
- To organize a manageable frame of actions, SDM suggests organizing part time real life crosschecks, whenever reasonable working packages have been finalized. (i.e. comparison of FRA-DCT projects according fuel burn and flight time with historic data).

## 2.4 Estimating accuracy of benefits

Accuracy of benefits is based depending on the project, either on specific assumptions, or, on NM tools. The CBA always describes the assumptions taken.

For instance, and when applicable, the results of delay forecast at FAB/ANSP/ACC level as published in the Network Operations Plan (NOP) are taken on board. Also in these cases, the route length extension analysis figures published in the European Route Network Improvement Plan (ERNIP) for the calculation of the flight efficiency benefits are used.

The results used in NOP and ERNIP have proved quite accurate in the recent years and are closely monitored every year through reporting and consultation with the concerned operational stakeholders in the NM cooperative decision-making arrangements.

Valuable information is coming from the project managers bringing an operational understanding of their project that is scrutinized by the SDM: contextual performance information collected through the project template, evaluation of the operational conditions and dependencies of the project, validation of the consistency with the NOP information, military impact if any.

It is expected that this accuracy improves, as the experience on project performance assessment is capitalised over time



## 3. Costs

### 3.1 Identifying costs

Costs are identified based on the project as described and submitted to INEA for funding. Funding amounts are not included in the benefits.

As the CBA focus on awarded projects, other costs, either related but not provided or spent without funding are not taken into account. However it is expected to develop furthermore the methodology to embrace also the cost of projects which are not funded.

### 3.2 Measuring expected costs

Costs are measured according to the level of detail of the Project Template and according to the FPA coordination process. In accordance with INEA, the template has been reviewed by the SDM to address both the FPA coordination and the costs analysis.

### 3.3 Monitoring of costs

SDM tracks costs in accordance with declared Implementation Project information to FPA coordination for payments. Additional information is given in parallel with the FPA coordination.

### 3.4 Cost Effectiveness Analysis (CEA)

The SDM makes the cost effectiveness analysis of the Implementation Projects when those are submitted to be included in a proposal coordinated by the SDM as requested by INEA and independently from the technical prioritization. As contributing to the implementation of the Pilot Common Project (PCP), the projects shall demonstrate effectiveness against the PCP CBA. The Pilot Common Project is subject to the EU Regulation ref. (EU) 716/2014 that has been adopted on the basis of an overall positive Cost Benefit Analysis (article 4.c and associated supporting material).

The cost effectiveness analysis aims at measuring how much every Implementation Project fits within the expected envelope.

The methodology allows to assess that the cost of a project is proportionate to the benefits expected from this project in the framework of PCP implementation.

In order to assess the Effectiveness (E) of a project, its Cost (CP), as provided by the implementing partner, is compared to the Gap Reference Cost (GRC) of the gap in the DP that the project contributes to cover by a certain percentage (the Gap Coverage, GC). The formula below applies:

$$E = GRC * \frac{GC}{CP}$$

#### **Step by step**

Estimation of E for each project requires 5 steps.

#### **Step 1: Gap Yearly Benefit (GYB)**



This step is performed for each gap as explained in STEP3 of the chapter 2.2.3. It is project neutral.

### **Step 2: Cumulated Gap Benefit (CGB)**

This step is performed for each gap. It is project neutral. The total benefit expected from a gap is calculated from GYB modulated by a ramp-up over the payback period. Unless defined otherwise in the DP, the ramp-up is given by PCP's CBA. It is the ramp-up of the AF to which this gap belongs.

Unless defined otherwise in the DP, the payback period is given by PCP's CBA. It is the payback period of the AF to which this gap belongs.

The calculation takes into account the discounted values of money for future years according to the PCP CBA reference value of 8% of discounted rate. GYB is discounted and modulated each year to sum the global benefit on the payback period.

### **Step 3: Gap Reference Cost (GRC)**

This step is performed for each gap. It is project neutral. This step aims at estimating a Gap Reference Cost (GRC) for a gap identified in the DP. The GRC is estimated on the basis of a reference as provided by PCP CBA, either the benefits expected for the AF 1 to 4 (excluding families 2.5) according to the payback period or, the cost envelope of the AF 5 and 6 and families 2.5, to which this gap relates.

Some assumptions are used to adjust the specificities of some gaps:

- ✓ AF1 RNP approach: Data Base for Procedure Design (family 1.2.2) have been accommodated a 5% overall of AF1.2 families benefits and Airspace Users gap (family 1.2.4) a 15%.
- ✓ AF Safety Net (families 2.5.1 and 2.5.2) are not providing quantified benefits. This cost is then analysed according to the cost reference of the PCP CBA.

The breakdown of the total AF related PCP reference between all the gaps in all the families for this AF is performed according to a distribution key.

The key is calculated as follows:

- ✓ All the CGB of all the gaps in the same AF are added.
- ✓ Each CGB is then expressed as a percentage of this total. The sum of CGB percentages is equal to 100;

The GRC of each gap is then obtained by multiplying the percentage of the gap by the total cost of the AF as provided by PCP CBA. The GRC is the maximum budget available to close the gap while complying with PCP CBA.

### **Step 4: Efficiency (E)**

This step is specific for every thread (single project thread or multiple projects thread). The thread cost is the sum of the projects of the thread.

It connects the thread cost (CP, in €) with the GRC of the gap it contributes to (in €, see step 3) taking into account the percentage by which the thread closes the gap, named the Gap Coverage: GC (in %). GC is evaluated by SDM.

This GC is a collegial experts' judgment reviewed and harmonized at SDM level. It is defined roughly as 20%, 50%, 80% or 100%. The way of judging gap coverage has been established in a pragmatic way. The experts would first judge clearly if the project does cover 100% of the gap or not (meaning other projects would be needed to implement the functionality on the defined scope). Then, the experts would appreciate according to the content of the project, how much the coverage is, more or less than 50% or eventually 50%. For specific situations such as gaps shared between airlines, the percentage of flights flown by the airlines of the project to the PCP airports would be an additional criterion.

Efficiency (E) is the ratio:

$$E = GRC * \frac{GC}{CP}$$

Sensibility analysis: As shown by the formula, impact on the Efficiency relies on the three different contributors (GRC, GC, CP). The formula protects the global consistency with the PCP CBA at ATM functionality level (AF). As explained previously, some projects may be grouped in threads to better fit a gap or eventually several gaps. In this case the E value would be the same for all the grouped projects.

An error on GC would be rather difficult to make because of the discretionary choice. However, the difference between 20% and 50% or 50% and 80%, therefore calculating a E value between E and 2.5E or E and 1.6E, would shift the yellow flag status respectively from 10 times to 4 times or 6.25 times the defined cost reference.

### Step 5: Mathematical Interpretation

When E is close to 1, it means that IP's cost is in exact proportion of its expected contribution to benefits achievable by closing the gap. Cost effectiveness is aligned with PCP CBA;

When E is lower than 1, it means that IP's cost exceeds its expected contribution to benefits achievable by closing the gap. It is sub-effective;

When E is higher than 1, it means that this IP cost is below its expected contribution to benefits achievable by closing the gap. It generates some margin of manoeuvre compared to the PCP CBA envelope. It is over-effective.

The SDM would compare the projects to rate them as "dark green" when the cost efficiency is 0.3 or above, "light green" when the cost efficiency is down to 0.1, "yellow" when the cost efficiency is lower than 0.1.

## 3.5 Estimating accuracy of costs

Accuracy of costs is linked to the accuracy of the declared costs by the projects.

## 4. Analysing costs and benefits

### 4.1 Net Present Value (NPV)

The SDM deducts costs from the monetary benefits to compute the expected NPV per thread of projects.

The discount rate is kept at 8% to be consistent with the “REFERENCE AND SUPPORTING MATERIAL – (EC) NO 716-2014 Art.4(c) Global cost benefit analysis”.

The SDM would present the results on the first year, then over periods of 5 and 10 years. The SDM would also calculate the payback period of each thread of projects.

### 4.2 Analysis on costs and benefits results

SDM shall integrate its analysis in the “Performance view” of the Deployment Program. It shall support the evaluation of the contribution of the Deployment Program to the SES high-level goals. In a more detailed manner, it shall also identify risks on the outcome of some projects.

SDM shares the information on the CBA results with the Implementing Partners through the project-monitoring tool that has been set up for this purpose.

Where a positive CBA is not possible to calculate or where a gap or bottleneck and/ or other circumstances are identified, SDM liaises with the corresponding Project Manager.

The results shall present the expected benefits monetized and the associated costs. Those projects that shall depend on future projects to realize the benefits are presented in a performance driven gap analysis.

The global CBA is the CBA summing all CBAs of the Deployment Program for all awarded projects and threads. This global CBA shall be regularly published by the SDM for each new version of the Deployment Program and will mature over time to reflect the full scope of EU No 716/2014.

The initial reference for the PCP is the PCP CBA referred to in EU Regulation 716/2014, article 4 – c). The global CBA is then compared to this reference to assess any significant deviation.

It is understood that the initial PCP CBA has been calculated based on many assumptions and the analysis shall review the main changes in these assumptions to explain the differences. The possible differences with the initial PCP CBA supporting the PCP implementing Regulation shall be analysed by SDM with the SJU in view of identifying lessons to be learned and improving the CBA methodology to support the setting up of the next CPs.

Finally, the main conclusions of this analysis shall be reported to the European Commission.

As an example of different assumption:

- PCP’s CBA takes percentage of delayed flights and duration of delayed flights and so takes a global figure mix ground and airborne, PCP’s CBA makes assumption of 90% ground delays & 10% airborne delays.

- SDM has the opportunity to be more precise in the CBA due to Performance Indicators used (related to SESII and Performance Scheme, e.g. ATFM delays, Additional time, ...), So SDM can take the cost of airborne for “airborne” delays and costs of ground for “ground” delays (this avoid the assumption of 90%grounded/10% airborne).

### 4.3 Cross reading of Performance Indicators with the SES Performance Scheme and the ATM Master Plan

The table below presents the consistency between the indicators used by the SDM and the other relevant European references (SES II Performance scheme and ATM Master Plan).

SDM Performance Indicators	KPI SES II Performance Scheme	KPI ATM Master Plan
Airports ATFM delays	Arrival Airports ATFM delays	Departure delay
ATC delay	ATC pre-departure delay	Departure Delay
Unimpeded taxi-out time	Unimpeded taxi-out time	Flight Time
Additional taxi-out time	Additional taxi-out time	Flight Time
Unimpeded time in taxi-in	Not in the IR but it is the counterpart of Unimpeded time in taxi-out but in the arrival phase	Flight Time
Additional time in taxi-in	Not in the IR but it is the counterpart of Unimpeded time in taxi-out but in the arrival phase	Flight Time
Unimpeded ASMA time	Unimpeded ASMA time	Flight Time
Additional ASMA time	Additional ASMA time	Flight Time
en route ATFM delay	en route ATFM delay	Departure delay
Determined Unit Cost for en-route ANS	Determined Unit Cost for en-route ANS	gate to gate direct ANS costs per flight
Terminal ANS Unit Cost	Determined Unit Cost for Terminal ANS	gate to gate direct ANS costs per flight
Cancellation		Additional flights at congested airports and Additional flights at network level

**Fig. 8 – SDM Performance Indicators, SES II Performance Scheme KPIs and ATM Master Plan KPIs**

The figure shows that SESAR indicators, whether in the column “SDM Performance Indicators” or the “KPI ATM Master Plan” one, are either equivalent or cross-readable with the “KPI SES II Performance scheme” column. Being implementation and deployment oriented, the SDM Performance Indicators are matching the SES II Performance scheme.

The reconciliation of the “SDM Performance Indicators” with the Performance Scheme or the ATM Master Plan is possible thanks to the granularity of SDM’s CBA metrics. For instance, instead of assessing additional capacity measured in additional flights, the CBA calculates time reduction, which can also be transposed into additional flights, in line with the ATM Master Plan KPI.



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