SESAR
DEPLOYMENT MANAGER

GUIDANCE MATERIAL FOR SESAR DEPLOYMENT PROGRAMME IMPLEMENTATION

PLANNING VIEW ANNEXES

20 December 2017

LET'S DELIVER TOGETHER

Guidance Material for SESAR Deployment Programme Implementation

Planning View 2017

Annex A
Annex B
Annex C

FPA MOVE/E2/2014-717/SESAR FPA
SGA MOVE/E3/SUB/2016-402/SI2.745134

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December 20th, 2017

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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
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Family 1.1.2 – AMAN upgrade to include Extended Horizon function

083AF1 – AMAN extended to en-route			
Start Date	01/01/2014	**End Date**	30/06/2017
Project Leader	Eurocontrol / Network Manager		
Contributors	-		
Main AF/Sub-AF/Family	AF1	S-AF 1.1	Family 1.1.2
Project Objective	• Upgrade NM systems to cope with extended AMAN requirements. • 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) • Support the network coordination of extended AMAN functions and provide, if necessary, the network view on extended AMAN measures. The project is a key contributor to the following Strategic Objectives mentioned in the Network Strategy Plan (NSP): • SO 4: Plan optimum capacity and flight efficiency • SO 5: Facilitate business trajectories and cooperative traffic management • SO 6: Fully integrate airport and network operations		

104AF1 – Lower Airspace optimization			
Start Date	01/02/2015	**End Date**	30/06/2016
Project Leader	LFV		
Contributors			
Main AF/Sub-AF/Family	AF1	S-AF 1.1	Family 1.1.2

Project Objective	• 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.
	• A complete set up of requirements for the design and use of the future terminal airspace for Stockholm
	• A baseline and a defined long term forecast
	• Well defined KPIs for the baseline and the future
	• Implementation of short term measures within Stockholm TMA
	• A long-term implementation Plan (What, When) with the main purpose to:
	  ○ Increase the general efficiency of operations in lower airspace (more efficient route structure, better use of the available space, better planning of movements)
	  ○ Specifically increase efficiency by the removal of sub-optimal solutions currently required to ensure safety, e.g. during missed approaches
	  ○ Reduce environmental impact		

Family 1.2.1 – RNP APCH with vertical guidance

007AF1 – Performance Based Navigation (PBN) implementation in Vienna (LOWW)			
Start Date	01/03/2014	**End Date**	30/12/2016
Project Leader	Austro Control		
Contributors	-		
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.1
Project Objective	• 2014 RNP AR Procedures to Runway 16 LOWW for noise abatement purposes implemented • 2015 feasibility study for open PBN transitions to final approach conducted • 2015 night SIDs on PBN basis implemented • 2016 one LPV (SBAS) approach in LOWW implemented		

013AF1 – Implementation of RNP Approaches with Vertical Guidance at the Belgian civil aerodromes within the Brussels TMA			
Start Date	01/01/2015	**End Date**	13/09/2018
Project Leader	Belgocontrol		
Contributors	-		
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.1
Project Objective	The main objective of this project is to: • Achieve compliancy with ICAO AR37.11, EC Part-AUR (currently being developed at EASA) and Commission Implementing Regulation (EU) No 716/2014 Annex 1. • 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		

051AF1 – Required Navigation Performance Approaches at CDG Airport with vertical guidance			
Start Date	01/07/2014	**End Date**	01/10/2017
Project Leader	DSNA		
Contributors	Société Air France		
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.1
Project Objective	• To implement RNP APCH with LPV minima and with LNAV/VNAV minima for Runway 08L/26R • To equip 51 B777 aircraft of Air France with LNAV/VNAV capability • To implement RNP APCH with LPV minima and with LNAV/VNAV minima for Runway 09L/27R • 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 The associated indicators are: • For objective 1: Publication of the procedures (source: French AIP) • For objective 2: Number of flights/h in case of ILS outage compared to the flight average		

061AF1a – Required Navigation Performance Approach Implementation in Palma de Mallorca			
Start Date	01/11/2015	**End Date**	03/07/2017
Project Leader	ENAIRE		
Contributors	-		
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.1
Project Objective	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). Specifically, the objectives of this project are: • Reduce the missed-approach rate when using non-precision approach runway headers for landing. • Increase safety by enabling straight approach procedures when not possible by means of current navaids infrastructure. • Reduce 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. Phase 1: • Implementation of RNP Approaches in Palma de Mallorca Phase 2: • Implementation of RNP Approaches in Barcelona • Implementation of RNP Approaches in Madrid		

Family 1.2.2 – Geographic Database for procedure design

060AF1 – ENAIRE reference geographic database (Family 1.2.2)			
Start Date	01/01/2014	**End Date**	31/12/2017
Project Leader	ENAIRE		
Contributors	-		
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.2
Project Objective	• 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. • 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. • To achieve the required high levels of integrity the Spanish AIS provider will participate in the data provision and management processes. • To populate the database with full datasets for LEMD, LEBL and LEPA TMA's.		

065AF1 – ENAV Geographic DB for Procedure Design			
Start Date	02/01/2014	**End Date**	31/12/2016
Project Leader	ENAV		
Contributors	-		
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.2
Project Objective	• To upgrade the ENAV geographic database for procedure design suite based on two products developed by IDS (SIPRO and eTOD). • To implement improvements to the solution currently used and help to execute the Electromagnetic Compatibility analyses to determine the expected radio-electric performances of the new navaids equipment (SIPRO). • To validate a new technique for automatic feature extraction from Digital Orthophoto with the tool Electronic Terrain and Obstacle Database (eTOD). • To use the tools above to implement with priority RNP operations over the geographic applicability area identified within the PCP: LIRF and LIMC.		

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

091AF1 – Enhanced Terminal Airspace (TMA) using RNP-Based Operations			
Start Date	01/01/2014	**End Date**	31/03/2018
Project Leader	Gatwick Airport Limited		
Contributors	-		
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.3
Project Objective	The objectives of the project for Gatwick Airport are as follows: • Introduce point merge • Efficient BOGNA Standard Instrument Departure (SID) Route • Dual Precision Area Navigation (P-RNAV) routes with easterly and westerly arrival and departure routes to runway (RWY) 26 and 08, providing rolling respite • Increase RWY capacity by introducing ADNID SID • Re-design SIDs and STARs to meet RNP specifications As a result of these changes, the project would deliver the following benefits: • Improvements in arrivals and departures stability • Significant improvement in operational resilience • Reduced fuel burn for airlines • Reduced CO_2 emissions (reduced track mileage) – in line with Gatwick Airport and NATS carbon reduction targets • Reduced noise impact for people on the ground through provision of rotating respite • Delivery against requirements of S106 Legal Agreement • Support the delivery of NATS 10% carbon emissions reduction target The project is divided into two Phases: • Phase 1: Enhanced terminal airspace using P-RNAV for all Standard Instrument Routes. • Phase 2: Enhanced terminal airspace to meet RNP specifications (out of scope of this INEA Call).		

107AF1 – First phase of RNAV1 and RNP-APCH approaches Amsterdam Schiphol			
Start Date	01/01/2014	**End Date**	01/03/2017
Project Leader	LVNL		
Contributors	-		
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.3
Project Objective	• Publication and operational implementation of an RNAV1 fixed inbound route to RWY 36R from ARTIP. • Publication and operational implementation of an RNAV1 fixed inbound route to RWY 18C from ARTIP to be flown as CDO. • Publication and operational implementation of an RNP APCH procedure to RWY 22 with vertical guidance.		

119AF1 – Manchester TMA Re-Development			
Start Date	01/01/2014	**End Date**	30/11/2018
Project Leader	NATS		
Contributors	-		
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.1.2
Project Objective	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. The systemised airspace will: • 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. • Offer greater resilience against human error (pilot or controller), with fewer interactions between routes and a reduction in tactical interaction by controllers. ○ Reduced tactical intervention will offer a corresponding increase in capacity • Locate routes where they best meet the needs of airports and flight profiles, making far better use of finite terminal airspace. • 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 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. The Project is split into two phases: Phase 1: Project Definition (PD) from Jan 2012 – December 2016 Goal: Develop PBN designs for the Manchester TMA airspace, and surrounded impacted areas for Consultation in November 2015 and validation by December 2016 Phase 2: Implementation from December 2016 – Q4 2018. Goal: Implement the revised NTCA designs into Operations subject to approval of CAA Consultation		

120AF1 – London Airspace Management Programme (LAMP)			
Start Date	01/01/2014	**End Date**	31/04/2016
Project Leader	NATS		
Contributors	British Airways, Heathrow Airport Limited		
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.3
Project Objective	• Produce systemised airspace design for the London TMA by using PBN-based procedures and STARs facilitating RNP-1 SIDs where required at London Airports • 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.		

	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. 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.

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	13
048AF2	SYSAT@CDG	2.1.2	13
049AF2	SYSAT@NCE	2.1.2	13
050AF2	SYSAT@ORY	2.1.2	14
057AF2a	Fulfillment of the prerequisite EFS for the PCP AF2 Subfunctionality: Airport Integration and Throughput (2014-2016)	2.1.2	14
108AF2	Electronic Flight Strips at Schiphol TWR	2.1.2	15
011AF2	Decision Management (CDM) fully implemented	2.1.3	16
025AF2	TSAT to the Gate	2.1.3	16
026AF2	Evolution CDM-CDG	2.1.3	17
031AF2	Data exchanges with the Air Navigation Service Provider	2.1.3	17
032AF2	Data exchanges with the Network Manager Operations Center	2.1.3	17
033AF2	Data exchanges with COHOR	2.1.3	18
086AF2	A-CDM Extension	2.1.3	18
109AF2	Airport CDM implementation Schiphol	2.1.3	18
129AF2	CDM-ORLY	2.1.3	19
136AF2	A-CDM Optimization	2.1.3	19
024AF2	SAIGA	2.1.4	20
099AF2	Preparation for AOP	2.1.4	20
023AF2	SMAN-Vehicle	2.2.1	21
042AF2a	A-SMGCS Düsseldorf	2.2.1	21
058AF2a	Fulfillment of the prerequisite A-SMGCS 2 for the PCP AF2 Subfunctionality: Airport Integration and Throughput (2014-2016)	2.2.1	22
064AF2	ENAV Airport System upgrade	2.2.1	22
103AF2	FT 2.2.1 Standardization of A-SMGCS	2.2.1	23
115AF2	A-SMGCS Renewal of the Surface Movement Radar (BORA)	2.2.1	23

2014 CEF Call Designator	Title	Family	IP Description Page Number
130AF2	BOREAL-Orly	2.2.1	24
137AF2	Enhancement of Airport Safety Nets at Stockholm Arlanda Airport	2.2.1	24
094AF2	Time-based separation for Final Approach	2.3.1	25
097AF2	Time Based Separation	2.3.1	25
027AF2	SMAN-Airport	2.4.1	26
087AF2	Apron Controller Working Position (Part 1 of 2)	2.4.1	26
018AF2	Enhancement of Airport Safety Nets for Brussels Airport (EBBR)	2.5.1	27
054AF2	CDG2020 Step1	2.5.1	27
088AF2	Airport Safety Net Mobile Detection of Air Crash Tenders	2.5.1	28
092AF2	Enhanced Departure Management integrating airfield surface assets	2.5.1	28
100AF2	Preparation for SMAN	2.5.1	29
022AF2	Vehicle Tracking System (VTS)	2.5.2	29
030AF2	Equipment of ground vehicles to supply the A-SMGCS	2.5.2	30
135AF2	Ryanair RAAS Programme	2.5.2	30

Family 2.1.2 – Electronic Flight Strips (EFS)

008AF2 – External Gateway System (EGS) implementation			
Start Date	25/02/2014	**End Date**	10/12/2015
Project Leader	Austro Control		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.2
Project Objective	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. 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. The former ATM Data processing system VAS will be removed for end of life (EOL) reasons.		

048AF2 – SYSAT@CDG			
Start Date	01/01/2014	**End Date**	31/12/2018
Project Leader	DSNA		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.2
Project Objective	In all CDG tower facilities (3 ATC + 2 apron cab) and Approach control room • introduce Electronic Flight Strip • provide new ASMGCS level 2 tracker with enhanced ground situation display including some level 3/4 functionalities • provide new Air Situation Display • provide new weather information, synoptic display and electronic documentation • increase information sharing among ATC actors and Airport handler especially regarding DMAN and CDM processes • be ready for SESAR evolution Phase 1 (2014-2016): product acquisition and installation preparation Phase 2 (2017-2018): installation in operational rooms		

049AF2 – SYSAT@NCE			
Start Date	01/01/2014	**End Date**	01/07/2019
Project Leader	DSNA		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.2
Project Objective	In the Tower cab and Approach control room • provide ASMGCS level 1 capability before full SYSAT deployment • introduce Electronic Flight Strip		

	• evolve ASMGCS to level 2 with enhanced ground situation display including some level 3/4 functionalities, • provide new Air Situation Display, • provide new weather information, synoptic display and electronic documentation, • be ready for SESAR evolution. Phase 1 (2014-2016): Acquisition, Deployment preparation Phase 2 (2017-2019): Deployment, Training and transition

050AF2 – SYSAT@ORY			
Start Date	01/01/2014	**End Date**	01/07/2019
Project Leader	DSNA		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.2
Project Objective	In Tower cab and Approach control room • introduce Electronic Flight Strip, • provide new ASMGCS level 2 tracker with enhanced ground situation display including some level 3/4 functionalities, • provide new Air Situation Display, • provide new weather information, synoptic display and electronic documentation, • increase information sharing among ATC actors and Airport handler especially regarding DMAN and CDM processes, • be ready for SESAR evolution. Phase 1 (2014-2016) • ACQUISITION • SYSTEM ADAPTATION Phase 2 (2017-2019): IMPLEMENTATION		

057AF2a – Fulfillment of the prerequisite EFS for the PCP AF2 Sub-Functionality: Airport Integration and Throughput (Phase A)			
Start Date	01/01/2014	**End Date**	31/12/2016
Project Leader	ENAIRE		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.2
Project Objective	Partial fulfilment 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: • Departure management synchronized with pre-departure sequencing • Departure management integrating surface management constraints • Time based separation • Automated assistance to controller for surface movement planning and routing • Airport safety nets 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: 1. Based on lists. The information contained in the flight strip will be available in different lists and windows of the system 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 It will require the development of a dynamic simulation system for training purposes. The following Spanish airports will implement Electronic Flight Strip: 1. Adolfo Suárez Madrid-Barajas 2. Barcelona El Prat 3. Palma de Mallorca 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.

108AF2 – Electronic Flight Strips at Schiphol TWR			
Start Date	01/09/2014	**End Date**	01/01/2018
Project Leader	LVNL		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.2
Project Objective	• Digital flight data processing at Schiphol Towers and the Tower simulator • Safer and more efficient handling of ground traffic • Efficient and flexible data distribution and data sharing • Enabler for safety support systems • Enabler for CDM extension of functionalities **Description:** • Work Package 1: Project Management • Work Package 2: Tender Organisation • Work Package 3: Electronic Flight Strip Application • Work Package 4: Console Adjustments • Work Package 5: Transition The overall expected results after EFS is operational with particular reference to the ATM Performance contribution: • A 'digital' tower environment with a digital data flow (so without paper flight strips); • Identical tower working positions with cleaned up and simplified consoles; • A flexibility gain in allocating functions to working positions and extending the amount of working positions; • A quieter working environment (speechless co-ordination, less standing up and walking in the tower, printing noises, etc.). 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.		

Family 2.1.3 – Basic A-CDM

011AF2 – Collaborative Decision Management (CDM) fully implemented			
Start Date	17/07/2014	**End Date**	29/08/2016
Project Leader	Austro Control		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.3
Project Objective	• CDM fully implemented in LOWW and certified by Eurocontrol • Process organisation established, considering all stakeholders involved and guaranteeing a sustainable CDM operation • Meaningful KPIs are constantly measured and used for improvement • Additional tasks contain Enhanced De-icing and the guarantee of a Degraded Mode in case of partial system failure		

025AF2 – TSAT to the Gate			
Start Date	01/01/2014	**End Date**	31/12/2016
Project Leader	Aéroports de Paris: CDG Airport & ORLY Airport		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.3
Project Objective	The use of VDGS/Displays is driven by 2 types of needs: • 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). • Display key A-CDM information, such as TSAT, to all stakeholders located at the Gate: Airlines crews, Ground handler and Airport operator. Visual Display Guidance System (VDGS) units and Displays address sub AF 2.1 and associated Families: • 2.1.1 Consolidate Initial DMAN capabilities • 2.1.3 Enhance Basic A-CDM • 2.1.4 Consolidate Initial Airport Operational Plan (AOP) Number of stands concerned:		

First Phase (2014 – 2016)	Second phase (2017 – 2019)

• CDG
  ○ 64 VDGS
  ○ 34 Displays
• ORLY
  ○ 36 VDGS
  ○ 16 Displays
	• CDG
	  ○ 256 VDGS
	  ○ 136 Displays
	• ORLY
	  ○ 144 VDGS
	  ○ 64 Displays

026AF2 – Evolutions CDM-CDG			
Start Date	01/01/2014	**End Date**	31/12/2016
Project Leader	Aéroports de Paris: Paris CDG Airport		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.3
Project Objective	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) • DPI improvements • TSAT stabilization • PLN / Airport slot reconciliation • PDS/DMAN interface • Training infrastructure • Variable Taxi Time calculation • De-icing tool improvements		

031AF2 – Data exchanges with the Air Navigation Service Provider			
Start Date	25/11/2014	**End Date**	04/07/2017
Project Leader	Aéroports de la Cote d'Azur		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.3
Project Objective	• Implement a new channel for data exchanges between us and the ANSP • Improve the data exchanges (quality and quantity) • Create a common awareness of all operational situations • Through the improvement of the awareness, improve the management of adverse conditions and make the operations more efficient		

032AF2 – Data exchanges with the Network Manager Operations Center			
Start Date	04/02/2015	**End Date**	06/05/2016
Project Leader	Aéroports de la Cote d'Azur		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.3
Project Objective	• Be part of the European Network • Improve the real time data exchanges • Improve the operations efficiency at a local level and at a European one • Facilitate the flow and capacity management • Improve the situational awareness • Better anticipation of the different situations • Improve the management of normal and adverse conditions		

033AF2 – Data exchanges with COHOR			
Start Date	15/09/2014	**End Date**	15/04/2016
Project Leader	Aéroports de la Cote d'Azur		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.3
Project Objective	• Obtain correct and on-time information for general aviation flights • Make the operations easier in order to better anticipate the management of the resources • Make the whole operations more efficient through an easier way to obtain automatically the information • 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		

086AF2 – A-CDM Extension			
Start Date	01/03/2014	**End Date**	12/02/2016
Project Leader	Fraport		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.3
Project Objective	• Enhancement of the pre-departure sequencing (PDP Family 2.1.3 Basic A -CDM) by: ○ Considering minimum departure intervals (MDI) on standard instrument departures (SID) ○ Facilitating a demand & capacity balance capability • Implementation of a "de-icing" element enabling Airport CDM for adverse conditions (PDP Family 2.1.3 Basic A-CDM)		

109AF2 – Airport CDM implementation Schiphol			
Start Date	01/01/2014	**End Date**	31/12/2016
Project Leader	Schiphol Nederland B.V. (AAS)		
Contributors	LVNL, KLM		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.3
Project Objective	Airport CDM implementation according to Eurocontrol guidelines consisting of 2 major parts: Local Airport CDM • Real time CDM data presentation to pilots and handlers • CDM for adverse conditions • Development of an HMI presentation for SUC • CDM Trials • Process and procedure development and implementation • (Local) CDM information sharing Connection to Eurocontrol NMOC • Connecting the local CDM process to the NMOC • allow exchange of DPI messages in accordance with Eurocontrol specifications		

129AF2 – CDM-Orly			
Start Date	01/01/2014	**End Date**	31/12/2016
Project Leader	Aéroports de Paris: Orly Airport		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.3
Project Objective	• Upgrade PDS for sharing information with DMAN, • Implement De-icing tool for improving operational efficiency • Share essential information, such TSAT, on the CDM Website for all stakeholders 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" : • PDS upgrades / DMAN/PDS interface integration • De-icing manager tool upgrades • CDM Website upgrades		

136AF2 – A-CDM Optimization			
Start Date	01/01/2015	**End Date**	31/12/2016
Project Leader	Swedavia		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.3
Project Objective	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. The detailed purpose of the project is • to facilitate cooperation between different organizations while raising the quality of information dissemination at Stockholm Arlanda Airport and at Network Manager Operations Centre (NMOC). • The distribution of information will only be recorded once • Online information will replace the estimated values. • The quality of operational flight data will increase by making data available online • Improve the quality of "Departure Progress Information" to NMOC The main steps are: • Development and introduction a WEB-interface. • Development and introduction of an Flight Operational APP • Develop and introduce a CDM portal • System integration • Introducing Flight information at GATE and STAND		

Family 2.1.4 – Initial Airport Operational Plan (AOP)

024AF2 – SAIGA			
Start Date	01/01/2014	**End Date**	31/12/2015
Project Leader	Aéroports de Paris: CDG Airport & ORLY Airport		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.4
Project Objective	Extend the capabilities of the airport resources management system: Stands, Gates, bridges, and Baggage claims, to: • Consolidate the Airport Operational Plan • Consolidate the Pre-departure sequencing and DMAN capability • Optimize and increase the efficiency and performances of operations • Better support crisis situation and faster recovering		

099AF2 – Preparation for AOP			
Start Date	01/09/2014	**End Date**	01/12/2015
Project Leader	Heathrow Airport Limited		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.4
Project Objective	Airfield Flow Management 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. By sharing this rolling plan with the Airport Operations Centre (APOC) and other stakeholders, the use of resources can be optimized. The production of a common and optimized rolling airfield plan will cover three main steps: • The ability to create a plan (based initially on the schedule, updated with the latest information) that can be shared among all stakeholders. • The ability to evaluate and then update the airfield plan using different scenarios (known as Demand Capacity Balancing, DCB) to optimise it. • 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). 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. In Summary an AOP is: • An integrated operating environment to improve efficiency, effectiveness and resilience against disruptions • A common shared truth to facilitate timely and focused collaborative decision making		

	• Empowering the workforce to make a real difference with the right information at the right time Why AOP? • To aide decision making in complex landscape of airport operations • To optimise allocation of limited Airport resources • To support enhanced passenger experience

Family 2.2.1 – A-SMGCS Level 1&2

023AF2 – SMAN-Vehicle			
Start Date	01/08/2014	**End Date**	30/08/2017
Project Leader	Aéroports de Paris: CDG Airport & ORLY Airport		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.2	Family 2.2.1
Project Objective	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.		

042AF2a – A-SMGCS Düsseldorf			
Start Date	30/04/2013	**End Date**	31/12/2019
Project Leader	DFS		
Contributors	Flughafen Düsseldorf GmbH (Düsseldorf Airport)		
Main AF/Sub-AF/Family	AF2	S-AF 2.2	Family 2.2.1
Project Objective	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: • Replacing/exchanging the current primary sensor • Setting up the new cooperative sensor (MLAT) • Provision of the required infrastructure • Implementation of a tracker and a ground situation display • Safety assessments 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.		

058AF2a – Fulfillment of the prerequisite A-SMGCS 2 for the PCP AF2 Sub-Functionality: Airport Integration and Throughput (Phase A)			
Start Date	01/01/2014	**End Date**	31/12/2016
Project Leader	ENAIRE		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.2	Family 2.2.1
Project Objective	Partial fulfilment 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. 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. The following Spanish airports will implement Runway Incursion Alerts based on A-SMGCS 2: 1. Adolfo Suárez Madrid-Barajas 2. Barcelona El Prat 3. Palma de Mallorca 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.		

064AF2 – ENAV Airport System upgrade			
Start Date	01/01/2014	**End Date**	31/12/2016
Project Leader	ENAV		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.2	Family 2.2.1
Project Objective	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 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. In particular, the surveillance functionality will be improved through: • 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,) • The enhancement of the current Surface Movement Radar (SMR) • the upgrade of the Multilateration system (MLAT), enhancing the actual coverage by adding and integrating other MLAT ground stations.		

	The new tower system will provide the: • Electronic Flight Progress Strips (EFPS). • New Airport Surveillance Data presentation • Basic safety (Conflicting clearances through the use of EFPS).

103AF2 – Standardization of A-SMGCS			
Start Date	01/12/2014	**End Date**	16/11/2016
Project Leader	Køpenhavns Lufthavne A/S		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.2	Family 2.2.1
Project Objective	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. 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.		

115AF2 – A-SMGCS Renewal of the Surface Movement Radar (BORA)			
Start Date	24/01/2014	**End Date**	31/12/2015
Project Leader	Munich Airport		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.2	Family 2.2.1
Project Objective	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. In the short term and long term, the Surface Movement Radar shall enable the following objectives: • 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. • 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. 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.		

130AF2 – BOREAL- Orly			
Start Date	01/02/2015	**End Date**	31/12/2016
Project Leader	Aéroports de Paris: Orly Airport		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.2	Family 2.2.1
Project Objective	• Improve safety by upgrading knowledge of surface state and reaction time. • Enabler to sub-functionalities defined into the IR 716/2014: A-SMGCS Level 1/2 (2.2.1) SAF 2.5/2.4 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.		

137AF2 – Enhancement of Airport Safety Nets at Stockholm Arlanda Airport			
Start Date	01/08/2015	**End Date**	01/06/2017
Project Leader	Swedavia		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.2	Family 2.2.1
Project Objective	• 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. • Keep the implementation of the surveillance function up-to-date to enable future expansion of the ASMGCS system, to enable future functionality of the A-SMGCS system and to ensure interoperability with new components in the future. The main steps to reach this objective are: • Upgrade of SMR stations • Enhancement of Airport Safety Nets • Operational validation and introduction of Airport Safety Nets		

Family 2.3.1 – Time Based Separation (TBS)

094AF2 – Time-Based Separation for Final Approach			
Start Date	30/01/2014	**End Date**	31/12/2016
Project Leader	Gatwick Airport Limited		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.3	Family 2.3.1
Project Objective	The high-level objectives of the project are as follows: • Implement initial spacing monitor to support air traffic controller to deliver optimum separation between arriving aircraft • Improve utilization of existing RWY capacity • Increase landing rates, especially during strong headwind conditions and reduce arrival and knock-on delays		

097AF2 – Time Based Separation			
Start Date	01/01/2014	**End Date**	01/12/2015
Project Leader	Heathrow Airport Limited		
Contributors	NATS, British Airways		
Main AF/Sub-AF/Family	AF2	S-AF 2.3	Family 2.3.1
Project Objective	• 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. • 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. 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: • Reducing the cost of wind-related arrival delay • Improving the consistency of spacing (for wake pairs) (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). 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.		

Family 2.4.1 – A-SMGCS Routing and Planning Functions

027AF2 – SMAN-Airport			
Start Date	01/01/2015	**End Date**	31/12/2016
Project Leader	Aéroports de Paris: CDG Airport & ORLY Airport		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.4	Family 2.4.1

Project Objective	• Develop and integrate Airport Surface Management Tool which allows managing and monitoring information of the airfield area under the responsibility of the airport operator.
	  ○ Enhance Initial AOP to airfield area
	  ○ Improve Airport Safety Nets functionalities
	  ○ Facilitate A-SMGCS planning functions by improving predictability of Take-Off times
	• The system will share information with all stakeholders/Systems and in particular with the ATC ASMGCS
	• The system is currently used by the ATC tower supervisor and apron managers.		

087AF2a – Apron Controller Working Position			
Start Date	01/01/2014	**End Date**	31/12/2016 (Part 1)
Project Leader	FRAPORT		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.4	Family 2.4.1
Project Objective	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"). These are: • Departure Management Synchronised with Pre-Departure Sequencing (in particular with regard to 'variable taxi-times'), • Departure Management integrating Surface Management Constraints ('routing'), • Automated Assistance to Controller for Surface Movement Planning and Routing, • Airport Safety Nets and • 2.5 Essential prerequisites. The latter concern particularly A-SMGCS Level 1 and 2, EFS and DMAN. Consequently, the implementation project is linked to the following sections of the Preliminary Deployment Programme (PDP): • SMGCS Level 1 (Surveillance) (Family 2.2.1 (A-SMGCS Level 1/2)), • 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)), • A-SMGCS Level 2+ (Routing) (S-AF 2.4 (Automated Assistance to Controller for Surface Movement Planning and Routing)) and • —as a prerequisite—EFS (Family 2.1.2 Electronic Flight Strips (EFS)). Underlying objectives of the project are:		

	• 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. • 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. • The apron controller working position shall allow the controller to manage surface route trajectories. • 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. • 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. • The controller working position shall host warnings and alerts with an appropriate human-machine interface (HMI) including support for cancelling the alert. 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

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

018AF2 – Enhancement of Airport Safety Nets for Brussels Airport (EBBR)			
Start Date	02/06/2014	**End Date**	31/12/2016
Project Leader	BELGOCONTROL		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.5	Family 2.5.1
Project Objective	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). Two related sub-projects are defined: • Sub-project 1: Validation and Operational introduction of the Advanced Safety Nets function, developed by Belgocontrol, at Brussels Airport (Control Tower). • Sub-project 2: Further enhancement (by Belgocontrol) of the Advanced Safety Nets function by adding a "Taxi Route conformance monitoring" functionality.		

054AF2 – CDG2020 Step1			
Start Date	01/01/2014	**End Date**	01/03/2017
Project Leader	DSNA		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.5	Family 2.5.1

Project Objective	• Improve runway safety against runway intrusion • Improve runway throughput at peak arrival period 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 Aéroports de Paris (ADP) and the airport users.

088AF2 – Airport Safety Net: Mobile Detection of Air Crash Tenders			
Start Date	01/07/2014	**End Date**	31/12/2016
Project Leader	FRAPORT		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.5	Family 2.5.1
Project Objective	• Equipage of Air Crash Tenders with a Moving Map based on A-SMGCS surveillance data • 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) • Improvement of situational awareness of Air Crash Tenders (PDP Family 2.5.1 Airport Safety Nets associated with A-SMGCS L2) • 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)		

092AF2 – Enhanced Departure Management integrating airfield surface assets			
Start Date	01/03/2015	**End Date**	31/12/2016
Project Leader	Gatwick Airport Limited		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.5	Family 2.5.1
Project Objective	The high-level objectives of the project are as follows: • Achieve 100% equipage of ground service vehicles with tracking technology • Increase airside safety by providing visibility of appropriate vehicles and equipment to Air Traffic Control Tower • Enable further implementation of Airport Safety Nets (ATM Sub-Functionality 2.5) • Improve taxi conflict prediction to reduce number of stop-and-go taxiing • 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		

100AF2 – Airport Safety Nets associated with A-SMGCS Level 2 - Preparation for SMAN			
Start Date	01/01/2014	**End Date**	31/12/2015
Project Leader	Heathrow Airport Limited		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.5	Family 2.5.1
Project Objective	• 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). • 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. • 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. • 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.		

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

022AF2 – Vehicle Tracking System (VTS)			
Start Date	01/01/2008	**End Date**	31/12/2016
Project Leader	Brussels Airport		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.5	Family 2.5.2
Project Objective	Goal Display position and identification of all vehicles entering manoeuvring area on a regular basis on the ground radar display to controller. Motivation • Improve safety airport ground movements (additional safety net) • Comply with Level-1 A-SMGCS requirement (SES Legislation – ESSIP initiative)		

030AF2 – Equipment of ground vehicles to supply the A-SMGCS			
Start Date	28/02/2014	**End Date**	30/10/2015
Project Leader	Aéroports de la Cote d'Azur		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.5	Family 2.5.2
Project Objective	• Supply the A-SMGCS with accurate information • Allow the efficient deployment of the A-SMGCS Level 1 & 2 by providing the location of the vehicle and the identification • Improve the safety on the platform with knowing the location of the vehicles and the possibility to identify runway incursion • Be compliant with the regulation		

135AF2 – Ryanair RAAS Programme			
Start Date	01/01/2015	**End Date**	31/12/2016
Project Leader	Ryanair		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.5	Family 2.5.2
Project Objective	Implement aircraft systems contributing to airport safety nets. (ref: Family 2.5.2) 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. 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. 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. An on-board airport safety net will improve safety in runway operations, mostly at airports where no safety net is provided to controllers.		

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	32
122AF3	Family 3.1.1 NAV Portugal - Initial ASM tool to support AFUA	3.1.1	32
015AF3	LARA integration in CANAC 2	3.1.2	33
080AF3	ASM AFUA Implementation	3.1.3	33
004AF3	Traffic Flow Restriction (TFR) – LIDO planning system	3.2.1	34
005AF3	FREE FLIGHT- DIRECT OPTIMIZATION	3.2.1	34
053AF3	4-Flight deployment in DSNA pilot ACCs	3.2.1	35
081AF3	NM DCT/FRA Implementation and support	3.2.1	35
131AF3	1st part of the upgrade of the P_21 PEGASUS system to SESAR unctionalities - Test and Validation Platform	3.2.1	35
020AF3	Implementation Project 2.6 - Borealis Free Route Airspace (Part 1)	3.2.4	37
063AF3	ENAV implementation of Free Route	3.2.4	37
095AF3	Implementation of FRA in Greece	3.2.4	38
102AF3	Free Route Airspace from the Black Forest to the Black Sea	3.2.4	38

Family 3.1.1 – (Initial) ASM Tool to support AFUA

056AF3 – ASM tool Implementation			
Start Date	01/01/2014	**End Date**	30/12/2017
Project Leader	EANS		
Contributors	-		
Main AF/Sub-AF/Family	AF3	S-AF 3.1	Family 3.1.1
Project Objective	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: • enhance Civil-Military ATM performance; • provide real-time exchange of airspace management data; • enhance situational awareness • facilitates collaborative decision-making • improve safety		

122AF3 – Family 3.1.1 NAV Portugal - Initial ASM tool to support AFUA			
Start Date	01/01/2014	**End Date**	31/12/2016
Project Leader	NAV Portugal		
Contributors	-		
Main AF/Sub-AF/Family	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, sub-regional 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.

Family 3.1.2 – ASM management of real time data

015AF3 – LARA integration in CANAC 2			
Start Date	01/01/2014	**End Date**	01/01/2016
Project Leader	BELGOCONTROL		
Contributors	-		
Main AF/Sub-AF/Family	AF3	S-AF 3.1	Family 3.1.2
Project Objective	• Providing ATCO's (Air Traffic Controller) with military information about areas reservation in order to optimise the use of airspace • Automate the display of airspace reservation in the EUROCAT (in the ODS (Operational input and Display System) of the FDP (Flight Data Processing) system) • Provide information about status of airspace reservation in the ADIDS-c (Aeronautical Data Information Display System)		

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

080AF3 – ASM and A-FUA implementation			
Start Date	01/01/2014	**End Date**	30/06/2017
Project Leader	Eurocontrol / Network Manager		
Contributors	-		
Main AF/Sub-AF/Family	AF3	S-AF 3.1	Family 3.1.3
Project Objective	• Improve Network performance and support a better utilisation of the Free Route Airspace and fixed route structure through enhanced ASM processes and tools • Enhance performance driven ASM/ATFCM processes (including those ATS processes that are linked to the ASM/ATFCM processes); • Introduce more dynamic and flexible ASM/ATFCM/ATS processes; • Production of key performance indicators for AFUA		

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			
Start Date	01/05/2014	**End Date**	01/04/2016
Project Leader	Alitalia		
Contributors	-		
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective	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. 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. The main objectives are: • Improve the route efficiency pursuing the minimum cost (Total cost = fuel costs + ATC costs + time cost). • Automation on the research of the best routing • Research of the best routing looking at the daily availability of DCT and RAD restriction removal • Reduction of CO_2 and other emissions due to optimized flight plans.		

005AF3 – AZA Free Flight – Direct Optimization			
Start Date	01/05/2015	**End Date**	01/05/2017
Project Leader	Alitalia		
Contributors	-		
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective	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 re-clearance procedures or as in flight assistance. 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. Main objective is: • Improve the route efficiency pursuing the minimum cost (Total cost = fuel costs + ATC costs + time costs). • Reduction of CO_2 and other emissions due to optimized flight plans.		

053AF3 – 4-Flight deployment in DSNA pilot ACCs			
Start Date	01/07/2014	**End Date**	31/12/2018
Project Leader	DSNA		
Contributors	-		
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective	• 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 DSNA's performance • Support the implementation of the European ATM Master Plan for France and of the SESAR concept • Comply with the Single European Sky (SES) and FABEC rules • Switch to "stripless" environment and up-to-date technologies • Reduce total cost of ownership, by sharing development and evolution costs and risks for the new system, with other ANSP partners		

081AF3 – NM DCT/FRA Implementation and support			
Start Date	01/01/2014	**End Date**	30/06/2017
Project Leader	Eurocontrol / Network Manager		
Contributors	-		
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective	This project contributes directly to the implementation of AF3 / S-AF3.2 Free Route: • Family 3.2.2 Upgrade NM Systems to support Direct Routing Operation (DCT) • Family 3.2.3 Implement Direct Routes The project allows to : • Ensure and co-ordinate the gradual implementation, in a harmonized way, of Free Route Airspace, including DCT based, throughout the European airspace. • Adapt NM systems to cope with Free route developments The project is a key contributor to the following Strategic Objectives mentioned in the Network Strategy Plan (NSP): • SO 3: Implement a seamless and flexible airspace • SO 4: Plan optimum capacity and flight efficiency • SO 5: Facilitate business trajectories and cooperative traffic management		

131AF3 – 1st part of the upgrade of the P_21 PEGASUS system to SESAR functionalities - Test and Validation Platform			
Start Date	01/09/2015	**End Date**	28/02/2017
Project Leader	PANSA		
Contributors	-		
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1

Project Objective	The P_21 system transition to iTEC has the following objectives:
	• 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:
	  ○ Pilot Common Project – Technical Annex for the AF 03: 3.1.1. Airspace Management and Advanced Flexible Use of Airspace:
	  ▪ 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
	  ▪ The system shall allow a continuous assessment of the impact of changing airspace configurations on the network
	  ▪ 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
	  ▪ 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.
	  ○ 3.2.1. Free Route - ATC systems shall implement the following:
	  ▪ Flight data processing system, including HMI, to manage trajectory/flight planning without reference to the fixed ATS network
	  ▪ Flight planning systems to support FRA and cross-border operations
	  ▪ ASM/ATFCM to manage FRA — for FRA, Medium Term Conflict Detection (MTCD) including Conflict Detection Tools (CDT), Conflict Resolution Assistant (CORA), 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
	  ▪ Flight Data Processing System (FDPS) shall support FRA, DCT and A-FUA
	  ▪ The controller working position shall support the operating environments, as appropriate
	  ○ Baltic FAB CONOPS - 3.3.6 FRA (Free Route Airspace)
	  ▪ 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;
	  ○ Deployment at the same time of elements of other ATM Functionalities:
	  ▪ Enable the ATM System to support RNP operations (Family 1.2.3)
	  ▪ Electronic Flight Strips (Family 2.1.2)
	  ▪ Interface to NMS (Family 4.2.3)
	  ▪ FDP system adaptation to interface with NOP (Family 4.4.1)
	  ▪ ATM system adaptation to support AIXM 5.1 (Family 5.3.2)
	  ▪ FDPS upgrade preparing for IOP Flight Object exchanges (Family 5.6.1)
	• Alignment of the PEGASUS ATM system to further joint development within the iTEC cooperation and with the FAB partner

Family 3.2.4 – Implement Free Route Airspace

020AF3– Borealis Free Route Airspace (Part 1)			
Start Date	01/01/2014	**End Date**	31/12/2016
Project Leader	BOREALIS Alliance		
Contributors	Avinor, EANS, Finavia, IAA, LFV, LGS, NATS, NAVIAIR		
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.4
Project Objective	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. 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.		

063AF3 – ENAV implementation of Free Route			
Start Date	01/01/2014	**End Date**	31/12/2017
Project Leader	ENAV		
Contributors	-		
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.4
Project Objective	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. 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. 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: • Enable users preferred trajectories within whole Italian airspace • Upgrade of ATM Systems • Seamless integration of four Italy ACCs • ATS-route network optimization, including arrival and departure procedures • Sectors adaptation to accommodate the changes in traffic flows where needed		

095AF3 – Implementation of FRA in Greece			
Start Date	01/11/2015	**End Date**	31/12/2016
Project Leader	HCAA		
Contributors	-		
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.4
Project Objective	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: • Enable users preferred trajectories within the airspace of HELLAS UIR • Upgrade of ATM Systems • Seamless integration of two Greek ACCs • ATS-route network optimization, including arrival and departure procedures • Sectors adaptation to accommodate the changes in traffic flows where needed		

102AF3 – Free route airspace from the Black Forest to the Black Sea			
Start Date	01/09/2015	**End Date**	21/04/2017
Project Leader	Hungarocontrol		
Contributors	Austro Control, BHANSA, Croatia Control, ANS CR, LPS SR, Slovenia Control		
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.4
Project Objective	• development of the cross-border FRA concept within FAB CE • validation of the cross-border FRA concept within FAB CE • development of the FRA concept intra-FAB CE (throughout the FAB) • validation of the FRA concept intra-FAB CE (throughout the FAB) • increase airspace capacity • reduce the environmental footprint • via flexible/shorter routes improve the sustainability of aviation		

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	40
077AF4	Interactive Rolling NOP	4.2.2	40
062AF4	ENAV initiative for the identification of Network Collaborative Management requirements	4.2.3	41
123AF4	Family 4.2.3 NAV Portugal Interface to NMS AFP	4.2.3	41
079AF4	Trajectory accuracy and traffic complexity	4.4.2	42

Family 4.1.1 – STAM Phase 1

078AF4 – ATFCM measures (STAM)			
Start Date	01/01/2014	**End Date**	30/06/2017
Project Leader	Eurocontrol / Network Manager		
Contributors	-		
Main AF/Sub-AF/Family	AF4	S-AF 4.1	Family 4.1.1
Project Objective	• Minimizing ATFCM delay by reducing the need for ATFCM regulations and its impact on operations. • Improve the balance between demand and available capacity through cooperation between ATFCM and ATS processes, through targeted measures on (an) individual flight(s). • 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. • Support the network coordination between stakeholders and provide the network view for the elaboration, decision and execution of STAM measures. • Provide the collaborative environment to stakeholders during the elaboration, decision and execution of STAM measures The project is a key contributor to the following Strategic Objectives mentioned in the Network Strategy Plan (NSP): • SO 4: Plan optimum capacity and flight efficiency • SO 5: Facilitate business trajectories and cooperative traffic management		

Family 4.2.2 – Interactive Rolling NOP

077AF4 – Interactive Rolling NOP			
Start Date	01/01/2014	**End Date**	30/06/2017
Project Leader	Eurocontrol / Network Manager		
Contributors	-		
Main AF/Sub-AF/Family	AF4	S-AF 4.2	Family 4.2.2
Project Objective	• Extension and improvement of the process referred to as the interactive rolling NOP. • Replacing the existing interfaces (NOP Portal, CHMI and EHMI) into a single interface • Provision of the common interface to all Stakeholders to enable the collaborative decision making processes used to build and execute the Network Operations Plan. The project is a key contributor to the following Strategic Objectives mentioned in the Network Strategy Plan (NSP): • SO 4: Plan optimum capacity and flight efficiency • SO 5: Facilitate business trajectories and cooperative traffic management		

Family 4.2.3 – Interface ATM systems to NM systems

062AF4 – ENAV initiative for the identification of Network Collaborative Management requirements			
Start Date	01/01/2014	**End Date**	31/12/2017
Project Leader	ENAV		
Contributors	-		
Main AF/Sub-AF/Family	AF4	S-AF 4.2	Family 4.2.3
Project Objective	ENAV will develop a study in order to identify all requirements and provisions to meet the demands set for AF4 under Reg. 716/2014. The study will identify measures in order to implement: • Optimized management of traffic demand, including high-level/peak hours traffic requests. Some enhancement through reduction in controller workload. • Enhanced by improved sharing of the network situation • Better use of the available network capacity • Increased through suppression of flight ATFM regulations thanks to local ATFCM measures with the same ATC sector manning • 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. • Reduction of costs induced by delays • 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		

123AF4 – Family 4.2.3 NAV Portugal Interface to NMS AFP			
Start Date	01/05/2015	**End Date**	31/03/2017
Project Leader	Nav Portugal		
Contributors	-		
Main AF/Sub-AF/Family	AF4	S-AF 4.2	Family 4.2.3

Project Objective	• 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.
	• The Lisbon FIR ATM system should automatically provide AFP message for:
	  ○ Missing flight plan
	  ○ Change of route
	  ○ Diversion
	  ○ Change of flight rules or flight type
	  ○ Change of requested cruising level
	  ○ Change of aircraft type
	  ○ Change of aircraft equipment.
	• The APL and ACH messages sent by IFPS and AFP messages are automatically processed		

Family 4.4.2 – Traffic Complexity Tools

079AF4 – Trajectory accuracy and traffic complexity			
Start Date	01/01/2014	**End Date**	30/06/2017
Project Leader	Eurocontrol / Network Manager		
Contributors	-		
Main AF/Sub-AF/Family	AF4	S-AF 4.4	Family 4.4.2
Project Objective	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'. • 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. • 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 local and central level. • The implementation of Network Traffic Scenario management tools at NM level will also directly contribute to manage traffic complexity. • Improved trajectory/constraint accuracy/awareness will also result in potential improvements to flight efficiency.		

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	44
014AF5	MPLS WAN Project	5.2.1	44
059AF5	Implementation of an IP-based G/G data communication network in ENAIRE	5.2.1	45
127AF5	National WAN Infrastructure - CANDI-IP preparation project	5.2.1	45
117AF5	Implementation of Initial Capability SWIM across NATS	5.2.2	46
006AF5	ATM Data Quality (ADQ)	5.3.1	46
009AF5	Integrated Briefing System New (IBSN)	5.3.1	47
040AF5	ADQ - Aeronautical Data Quality	5.3.1	47
041AF5	EASI - EAD AIM System Integration	5.3.1	48
066AF5	ENAV AIS system Upgrade to support AIXM5.1	5.3.1	48
084AF5	Implementation of Prerequisites for the Provision of Aerodrome Mapping Data and Airport Maps as Data Originator (Aeronautical Information Exchange)	5.3.1	49
016AF5	Initial WXXM Implementation on Belgocontrol systems	5.4.1	49
110AF5	Meteorological Information Exchange by MET ANSP KNMI to support non-safety-critical and safety-critical aviation applications for Amsterdam Schiphol	5.4.1	50
134AF5	PILOT PLATFORM for access services to OPMET (worldwide/ECAC) data (METAR, TAF, SIGMET) in WXXM format	5.4.1	50
082AF5	SWIM compliance of NM systems	5.5.1	51
067AF5	Coflight-eFDP System Development	5.6.2	51

Family 5.1.3 – Common SWIM Infrastructure Components

073AF5 – SWIM Common Components			
Start Date	01/01/2016	**End Date**	31/12/2020
Project Leader	Eurocontrol		
Contributors	-		
Main AF/Sub-AF/Family	AF5	S-AF 5.1	Family 5.1.3
Project Objective	The objective of this project is twofold: *1. SWIM Data Models - deployment toolkit:* The goal is to have common rules for the data capturing/mapping/interpretation. It will include: • 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. • 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. • 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. The deployment toolkits will be updated based on further versions of the following specifications: • Aeronautical Information Exchange Model (AIXM) version 5.2 • Weather Exchange Model (WXXM) and ICAO Weather Exchange Model (IWXXM) version 3 • Flight Information Exchange Model (FIXM) version 4 *2. Registry:* 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.		

Family 5.2.1 – Stakeholder Internet Protocol Compliance

014AF5 – MPLS WAN project			
Start Date	17/11/2014	**End Date**	07/06/2018
Project Leader	BELGOCONTROL		
Contributors	-		
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.1
Project Objective	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: • 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); • to share the different Belgocontrol applications on the network with the required data integrity; • to replace current SDH (Synchronous Digital Hierarchy) based by an MPLS based Wide Area Network (WAN) The project will allow compliance with EU 409/2013 and 716/2014.

059AF5 – Implementation and operation of an IP-based G/G data communication network in ENAIRE			
Start Date	01/01/2014	**End Date**	31/12/2017
Project Leader	ENAIRE		
Contributors	-		
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.1
Project Objective	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. 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.		

127AF5 – National WAN Infrastructure - CANDI-IP preparation project			
Start Date	03/02/2014	**End Date**	27/04/2015
Project Leader	NAVIAIR		
Contributors	-		
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.1
Project Objective	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: • Ensure continuous availability of WAN data transport in EKDK FIR • Ensure logical and physical segregation of operationally critical data • Ensure that requirements on VoIP data transport are fulfilled • Ensure that rules and requirements on IPv6 data transport are fulfilled • Interface to PENS		

Family 5.2.2 – Stakeholder SWIM Infrastructure components

117AF5 – Implementation of Initial SWIM Capability (AF5) across NATS			
Start Date	01/01/2014	**End Date**	31/07/2018
Project Leader	NATS		
Contributors	-		
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.2
Project Objective	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.		

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

006AF5 – ATM Data Quality (ADQ)			
Start Date	01/01/2014	**End Date**	15/12/2015
Project Leader	AUSTROCONTROL		
Contributors	-		
Main AF/Sub-AF/Family	AF5	S-AF 5.3	Family 5.3.1
Project Objective	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: • Compliance to ICAO Annex 15 and Commission Regulation (EU) No 73/2010 ensured • Validation and integrity checks introduced • Workflow management system introduced to the service delivery management domain (SDM) • Stream for internal and external data delivery digitalized • National legislation aligned		

009AF5 – Integrated Briefing System New (IBSN)			
Start Date	01/01/2014	**End Date**	30/11/2015
Project Leader	Austro Control		
Contributors	-		
Main AF/Sub-AF/Family	AF5	S-AF 5.3	Family 5.3.1
Project Objective	• AIDA (Aeronautical Information Data-handling-system Austria)/Integrated Briefing System (IBS) Legacy System (technology end of life as well as software architecture) replaced • "EAD customized" (EAD - European Aeronautical Database) implemented • Connection to existing Austro Control infrastructure (network, working positions, ECITs – EAD Connection Interface Terminal, BF (Briefing Facility)-Box, IBS Web services etc.) ensured • Data from legacy system transferred • AIDA/IBS legacy system cut out and sub-provider contracts cancelled • OPS (operations) training (AIM/VFSS) and briefing of technical personnel (ACG Service Control Center and experts) conducted • Nagios and Trouble Ticket System inserted • "EAD customized" set in operation after successful FAT and SAT 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) New briefing functions introduced by the new system include: • Graphical display (FPL – Flight Plan & NOTAM – Notification to airman) • Mobile devices • Meteorological (MET) web interface • Webshop		

040AF5 – ADQ – Aeronautical Data Quality			
Start Date	01/10/2013	**End Date**	31/12/2016
Project Leader	DFS		
Contributors	-		
Main AF/Sub-AF/Family	AF5	S-AF 5.3	Family 5.3.1
Project Objective	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: • receiving in conformity with Reg. 73/2010 aeronautical data in AIXM5.1 format, • exchange data between internally databases in AIXM5.1 format and also • providing external entities with aeronautical data in the AIXM5.1 format. 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).		

041AF5 – EASI - EAD AIM System Integration			
Start Date	05/08/2013	**End Date**	31/07/2018
Project Leader	DFS		
Contributors	-		
Main AF/Sub-AF/Family	AF5	S-AF 5.3	Family 5.3.1
Project Objective	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. 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. The migration to the central EAD-system is performed by the usage of standard-EAD-terminal-clients and EAD-standard-interfaces.		

066AF5 – ENAV AIS system Upgrade to support AIXM5.1			
Start Date	01/04/2014	**End Date**	30/06/2016
Project Leader	ENAV		
Contributors	-		
Main AF/Sub-AF/Family	AF5	S-AF 5.3	Family 5.3.1
Project Objective	The Aeronautical Information Exchange Model (AIXM) is designed to enable the management and distribution of Aeronautical Information Services (AIS) data in digital format. 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. The PIB producing system (AOIS Web) is actually based on a non-standard format environmental DB. 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.		

084AF5 – Implementation of Prerequisites for the Provision of Aerodrome Mapping Data and Airport Maps as Data Originator (Aeronautical Information Exchange)			
Start Date	01/01/2014	**End Date**	31/03/2016
Project Leader	FRAPORT		
Contributors	-		
Main AF/Sub-AF/Family	AF5	S-AF 5.3	Family 5.3.1
Project Objective	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. 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. 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). 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 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.		

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

016AF5 – Initial WXXM Implementation on Belgocontrol systems			
Start Date	01/01/2014	**End Date**	11/11/2016
Project Leader	BELGOCONTROL		
Contributors	-		
Main AF/Sub-AF/Family	AF5	S-AF 5.4	Family 5.4.1

Project Objective	The main objectives of this project are:
	• Enabling the Brussels Regional OPMET DataBank (RODB) to:
	  ○ Receive and store ICAO OPMET data in IWXXM (ICAO Meteorological Information Exchange) format;
	  ○ handle requests from users and to exchange ICAO OPMET data in IWXXM format;
	• Enabling the issuance of Belgian OPMET data in IWXXM format to ensure conformity with the envisaged Amendment 77 to ICAO Annex 3;
	• Enabling the Belgocontrol ATS Messages Handling system (AMHS) to support exchange of messages in XML (Extensible Markup Language) data formats (IWXXM, …)		

110AF5 – Meteorological Information Exchange by MET ANSP KNMI			
Start Date	01/06/2015	**End Date**	31/12/2018
Project Leader	KNMI		
Contributors	-		
Main AF/Sub-AF/Family	AF5	S-AF 5.4	Family 5.4.1
Project Objective	The project aims at: • 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. • 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). • 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. • The development and implementation of a central database and web services to make the iSWIM compliant MET information easily available to users (WP3). • The realization of a cost-effective, secure and standard interface (PENS) for dissemination of safety critical MET information to ATM (WP6). • 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. • 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.		

134AF5 – PILOT PLATFORM for access services to OPMET (worldwide/ECAC) data (METAR, TAF, SIGMET) in WXXM format			
Start Date	02/03/2015	**End Date**	01/09/2017
Project Leader	ROMATSA		
Contributors	-		
Main AF/Sub-AF/Family	AF5	S-AF 5.4	Family 5.4.1
Project Objective	Upgrade Meteo service to provide reliable actual and forecast Meteo data, wherever required across the ATM network, in WXXM format. 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.		

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

082AF5 – SWIM compliance of NM systems			
Start Date	01/01/2014	**End Date**	30/06/2017
Project Leader	Eurocontrol / Network Manager		
Contributors	-		
Main AF/Sub-AF/Family	AF5	S-AF 5.5	Family 5.5.1
Project Objective	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: • the exchange of network / flight plan information using the Yellow SWIM TI Profile; • the new NM B2B services. This IP addresses the following Family (ies): • Family 5.5.1 Interface and Data requirements • Family 5.6.1 FDPS Upgrade preparing for IOP Flight Object Exchanges		

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

067AF5 – Coflight-eFDP System Development			
Start Date	01/01/2014	**End Date**	31/12/2016
Project Leader	ENAV		
Contributors	DSNA		
Main AF/Sub-AF/Family	AF5	S-AF 5.6	Family 5.6.2
Project Objective	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. 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. 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. The 4-Flight's system core and infrastructure will be made available by the Coflight Programme, which will provide an 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.		

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	53
2015_166_AF1	Amsterdam Schiphol AMAN 2.0	1.1.1	53
2015_188_AF1	Deploy AMAN - Arrival Management at Düsseldorf and Berlin International	1.1.1	53
2015_234_AF1	AMAN LOWW initial	1.1.1	54
2015_073_AF1	AMAN upgrade for extended horizon at DSNA airports	1.1.2	54
2015_101_AF1	Network Support to extended Arrival Management	1.1.2	55
2015_196_AF1	XMAN - Cross-centre arrival management (A) Extended AMAN in Czech Airspace (B)	1.1.2	55
2015_203_AF1	AMAN Extended Horizon	1.1.2	56
2015_186_AF1	RNP approaches to three main landing runways Amsterdam Schiphol	1.2.1	56
2015_215_AF1	RNP APCH Implementation in Madrid and Barcelona	1.2.1	56
2015_272_AF1	SESAR PCP. CECAF RNP Procedures Implementation	1.2.1	57
2015_309_AF1	Implementation of GBAS	1.2.1	57
2015_139_AF1	GEOGRAPHIC DATABASE - AIM TOOL	1.2.2	57
2015_271_AF1	SESAR PCP. CECAF RNP Procedures Design	1.2.2	58
2015_193_AF1	Implementation of RNP Based Departure Operations in High Density TMAs in FRA, DUS, BER and MUC	1.2.3	58
2015_248_AF1	Search & rescue helicopter DAUPHIN compliance with RNP	1.2.4	59
2015_251_AF1	French Air Force FALCON 900 compliance with RNP	1.2.4	59
2015_253_AF1	RNP 1.0, RNP 0.3 & SBAS FOR E3A AWACS	1.2.4	60
2015_258_AF1	A400M Strategic Transport aircraft compliance with RNP	1.2.4	60
2015_270_AF1	Deliver C17 Training for RNP and CPDLC/VDL2	1.2.4	61
2015_278_AF1	C-130H RNP-1 Avionics Upgrade for 5 A/C	1.2.4	61
2015_279_AF1	Falcon 50 RNP-1 Avionics Upgrade for 3 A/C	1.2.4	61

Family 1.1.1 – Basic AMAN

2015_165_AF1 - Amsterdam Schiphol AMAN 1.0			
Start Date	01/07/2016	**End Date**	31/12/2017
Project Leader	LVNL		
Contributors	-		
Main AF/Sub-AF/Family	AF1	S-AF 1.1	Family 1.1.1
Project Objective	• Implementation of improved Trajectory Predictor (TP) • Implementation of Delta-T indication • Implementation of Preview Window		

2015_166_AF1 - Amsterdam Schiphol AMAN 2.0			
Start Date	01/01/2017	**End Date**	20/12/2019
Project Leader	LVNL		
Contributors	-		
Main AF/Sub-AF/Family	AF1	S-AF 1.1	Family 1.1.1
Project Objective	• Implementing high resolution meteo data to improve trajectory prediction • Implementing speed advisories • Implementing flexible trajectory prediction to support optimised descent profiles		

2015_188_AF1 - Deploy AMAN - Arrival Management at Düsseldorf and Berlin International			
Start Date	16/02/2016	**End Date**	31/12/2018
Project Leader	DFS		
Contributors			
Main AF/Sub-AF/Family	AF1	S-AF 1.1	Family 1.1.1

Project Objective	• 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 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			
Start Date	01/03/2016	**End Date**	31/12/2018
Project Leader	Austro Control		
Contributors	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		
Main AF/Sub-AF/Family	AF1	S-AF 1.1	Family 1.1.1
Project Objective	• Deploying Basic Arrival Manager (AMAN) function (allowing evolution to extended AMAN) for Terminal Area Vienna • Attaching ACC Vienna to the Vienna AMAN • 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 DSNA airports			
Start Date	16/02/2016	**End Date**	31/12/2018
Project Leader	DSNA		
Contributors	Aéroports de Paris (ADP), Air France		
Main AF/Sub-AF/Family	AF1	S-AF 1.1	Family 1.1.2
Project Objective	• Extending planning horizon of AMAN for cross border flights at LFPG/LFPO/LFMN • Improving arrival management within LFFF and LFMM ACC for LFPG/LFPO/LFMN • Integrating collaborative process with airport and airlines (iStream results) • Preparing AMAN capability to export sequence to cross border systems		

2015_101_AF1 - Network Support to extended Arrival Management			
Start Date	01/10/2016	**End Date**	31/12/2020
Project Leader	Eurocontrol / Network Manager		
Contributors	-		
Main AF/Sub-AF/Family	AF1	S-AF 1.1	Family 1.1.2
Project Objective	• Supporting the network coordination of extended AMAN functions and provideing, as appropriate, the network view on extended AMAN measures • Continuing upgrading NM systems to cope with extended AMAN requirements • 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)		

2015_196_AF1_A – XMAN – Cross-centre arrival management 2015_196_AF1_B – Extended AMAN in Czech Airspace			
Start Date	15/02/2016	**End Date**	31/12/2020
Project Leader	DFS		
Contributors	DSNA, Eurocontrol (MUAC), LVNL, Belgocontrol, Skyguide, ANS CR The project implementation scope depends 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.		
Main AF/Sub-AF/Family	AF1	S-AF 1.1	Family 1.1.2
Project Objective	• 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: ○ 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 ○ 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 • Generation of considerable improvements in various performance areas such as environment (CO_2 and fuel-burn reduction), safety (reduction in stack holding) and capacity (reduction in traffic bunching/workload). Provide ecomonic benefits to airspace users (though reduced fuel burn / improved flight efficiency) • 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 • Consideration of existing technologies for early implementations and quick-wins as well as validated SESAR results and technologies for further evolution • Promotion of interoperability though automated Inter-Centre coordination by the use of system to system communication using standards (OLDI AMA Message or SWIM Webservice)		

2015_203_AF1 - AMAN Extended Horizon			
Start Date	25/07/2016	**End Date**	08/10/2018
Project Leader	ENAV		
Contributors			
Main AF/Sub-AF/Family	AF1	S-AF 1.1	Family 1.1.2
Project Objective	• Designing, develop and operational deployment of AMAN with management horizon function extended to the Enroute Airspace • Optimizing traffic sequencing operations in high density TMAs minimising delay • Reducing the environmental impact		

Family 1.2.1 – RNP APCH with vertical guidance

2015_186_AF1 - RNP approaches to three main landing runways Amsterdam Schiphol			
Start Date	08/03/2017	**End Date**	12/05/2019
Project Leader	LVNL		
Contributors	-		
Main AF/Sub-AF/Family	AF1	S-AF 1.1	Family 1.1.1
Project Objective	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			
Start Date	04/07/2017	**End Date**	31/12/2020
Project Leader	ENAIRE		
Contributors	EBAA declare that the EBAA interest in the ENAIRE 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.”		
Main AF/Sub-AF/Family	AF1	S-AF 1.1	Family 1.1.2
Project Objective	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 navaids 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			
Start Date	01/06/2016	**End Date**	31/07/2017
Project Leader	Spanish Air Force		
Contributors	-		
Main AF/Sub-AF/Family	AF1	S-AF 1.1	Family 1.1.2
Project Objective	• 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. • 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. • To enable CECAF for verification of new civil or military systems and manoeuvres associated to any civil or military ECAC airport.		

2015_309_AF1 - Implementation of GBAS			
Start Date	01/01/2017	**End Date**	31/07/2017
Project Leader	Nova Airlines AB		
Contributors			
Main AF/Sub-AF/Family	AF1	S-AF 1.1	Family 1.1.2
Project Objective	• Implementation of GBAS • Preparation of GBAS operation in the Flight Operations Department • Training of flight crew in GBAS operation		

Family 1.2.2 – Geographic Database for procedure design

2015_139_AF1 - GEOGRAPHIC DATABASE - AIM TOOL			
Start Date	15/02/2016	**End Date**	01/10/2020
Project Leader	DSNA		
Contributors	Aéroports de Paris (ADP)		
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.2
Project Objective	• 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 • 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.

2015_271_AF1 - SESAR PCP. CECAF RNP Procedures Design			
Start Date	01/04/2016	**End Date**	31/12/2020
Project Leader	Spanish Air Force		
Contributors			
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.2
Project Objective	• Ensuring civil-military ANSPs coordination. To continue compiling, producing and sharing information between ENAIRE and military • Ensuring civil-military ANSPs coordination. To complete the full data exchange implementation at national level • Ensuring civil-military interoperability, using the same reference geographic database • 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 interoperatibillity information and data ready to feed geospatial aeronautical database • Being able to survey the airports surrouding in a period-basis estrategy information relevant for aeronautical purpouses • 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 interoperatibillity 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 interoperatibillity 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 success		

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			
Start Date	16/02/2016	**End Date**	31/12/2020
Project Leader	DFS		
Contributors	Fraport AG, Deutsche Lufthansa AG		

Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.3
Project Objective	• 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 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 • 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 • 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 CO_2 emissions and an increase in flight efficiency • Implementation of flexible and environmentally friendly procedures for departure using PBN/RNP in high density TMAs, as specified in RNP1 specifications • Implementation of the requirements set out in the SESAR ATM Master Plan moving towards the goal of the Sngle European Sky • Deploy elements of the PBN Implementation Plan		

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

2015_248_AF1 - Search & rescue helicopter DAUPHIN compliance with RNP			
Start Date	31/12/2016	**End Date**	31/12/2018
Project Leader	French Ministry of Defence		
Contributors	-		
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.4
Project Objective	• Implementing LPV on Search and Rescue Dauphin helicopters		

2015_251_AF1 - French Air Force FALCON 900 compliance with RNP			
Start Date	01/01/2016	**End Date**	31/12/2018
Project Leader	French Ministry of Defence		
Contributors	-		
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.4
Project Objective	• Offering ability to the crews to select the most efficient flight-plan to reduce travel duration for MEDEVAC missions • Reducing the effort on ATCOs by allowing a more cost-effective approach, while keeping the highest level of safety • 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			
Start Date	15/02/2016	**End Date**	31/12/2018
Project Leader	NATO Airborne Early Warning and Control Programme Management Organisation (NAPMO/NAPMA)		
Contributors	-		
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.4
Project Objective	• Production and Retrofit Phase for the fleet (13 aircraft)Updating of Flight Training device and Full Flight Simulator for RNP functionalities • Air Crew RNP Training • RNP equipage of the multinational E3 aircraft will ensure that they are not hampered in their day-to-day operations. • 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. • Greater flight efficiency with time reduction and associated fuel and CO_2 reductions due to ability to fly optimized routes. • Reducing noise footprint for approaches using PBN in high density TMAs		

2015_258_AF1 - A400M Strategic Transport aircraft compliance with RNP			
Start Date	01/03/2016	**End Date**	31/12/2018
Project Leader	UK Ministry of Defence		
Contributors	-		
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.4
Project Objective	• Providing UK with nine A400M aircraft with RNP capabilites capable of accessing and operating in high density TMAs across Europe • Training 27 crews (81 personnel) in RNP procedures • The UK's A400M fleet must be capable of deconflicting with all civilian traffic arriving and departing into London. • 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. • RNP upgrade will allow A400M to fly optimized routes through high density TMAs, generating reduction in flight time; therefore, fuel reductions and associated CO_2 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 CO_2 reduction, and approximately 2000 Euro fuel cost saving per flight.		

2015_270_AF1 - Deliver C17 Training for RNP and CPDLC/VDL2			
Start Date	01/03/2016	**End Date**	31/12/2016
Project Leader	UK MOD		
Contributors			
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.4
Project Objective	• RNP 0.3 Approach (Family 1.2.1) and RNP 1 for TMA access (Family 1.2.4) Aircrew Operator Training for 54 personnel • CPDLC/VDL2 (Family 6.1.2) Aircrew Operator Training for 54 personnel • 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) • The UK's C17 fleet must be capable of deconflicting with all civilian traffic arriving and departing into London. • 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. • 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.		

2015_278_AF1 - C-130H RNP-1 Avionics Upgrade for 5 A/C			
Start Date	01/07/2016	**End Date**	31/12/2020
Project Leader	Portuguese Air Force		
Contributors	-		
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.4
Project Objective	• C-130H Full Civil Required Navigation Compliance RNP-1 Capability		

2015_279_AF1 - Falcon 50 RNP-1 Avionics Upgrade for 3 A/C			
Start Date	01/07/2016	**End Date**	31/12/2020
Project Leader	Portuguese Air Force		
Contributors	-		
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.4
Project Objective	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	64
2015_085_AF2	DMAN and Pre-departure sequence (PDS) implementations for the CDM implementation	2.1.1	64
2015_161_AF2	Initial implementation of DMAN	2.1.1	64
2015_162_AF2	Electronic Flight Strip (EFS) Implementation	2.1.2	65
2015_212_AF2	Fulfillment of the prerequisite EFS for the PCP AF2 Subfunctionality: Airport Integration and Throughput (2017-2019)	2.1.2	65
2015_286_AF2	Introduction of Electronic Flight Strips	2.1.2	65
2015_074_AF2	Display TOBT TSAT at the Gate	2.1.3	66
2015_076_AF2	Aerial Visual Display A-CDM Phase 2	2.1.3	66
2015_077_AF2	Universal Mobile Display System (UMDS) solution to support A-CDM Implementation	2.1.3	66
2015_078_AF2	A-CDM Enhancements EIDW	2.1.3	67
2015_133_AF2	Initial AirPort Operational Centre (iAPOC)	2.1.3	67
2015_294_AF2	Implementation of OTP	2.1.3	67
2015_060_AF2	Airport Operating Plan AOP	2.1.4	68
2015_083_AF2	iAOP implementation	2.1.4	68
2015_135_AF2	CDG and ORLY - Initial Airport Operational Plan (AOP)	2.1.4	68
2015_178_AF2	Implementation of AOP Schiphol Airport	2.1.4	69
2015_225_AF2	Initial Airport Operations Plan @ FRA	2.1.4	69
2015_244_AF2	APOC implementation	2.1.4	69
2015_245_AF2	AIRSTAT	2.1.4	69
2015_282_AF2	Initial APOC and AOP	2.1.4	70
2015_290_AF2	Initial AOP	2.1.4	70
2015_292_AF2	DMAN Stockholm Arlanda Airport	2.1.4	70
2015_299_AF2	Integrated Ground Management (GMAN)	2.1.4	70
2015_016_AF2	ASMGCS Level 1 & 2	2.2.1	71

2015 CEF Call Designator	Title	Family	IP Description Page Number
2015_211_AF2	Fulfillment of the prerequisite A-SMGCS 2 for the PCP AF2 Subfunctionality: Airport Integration and Throughput (2017-2019)	2.2.1	71
2015_291_AF2	A-SMGCS Level 2 implementation	2.2.1	72
2015_220_AF2	AF2_MET-Compliance-Program	2.3.1	72
2015_232_AF2	TBS4LOWW (Time Based Separation for Vienna Airport)	2.3.1	72
2015_043_AF2	AF2.4 A-SMGCS - Routing & Planning	2.4.1	73
2015_046_AF2	AF 2.5 A-SMGCS - Safety Nets	2.5.1	73
2015_187_AF2	TWR System at Amsterdam Schiphol	2.5.1	73
2015_298_AF2	A-SMGCS upgrade to provide airport safety nets and routing & planning functions	2.5.1	74
2015_031_AF2	Vehicle Transponder A-SMGCS Düsseldorf	2.5.2	75
2015_222_AF2	Advanced Airport Moving Map (AAMM) Prototype Implementation	2.5.2	75
2015_226_AF2	Airport Safety Net: Mobile Detection of Marshaller Vehicles	2.5.2	75

Family 2.1.1 – Initial DMAN

2015_044_AF2 - Implementation of initial DMAN and AOP at Copenhagen Airport			
Start Date	01/04/2016	**End Date**	30/06/2018
Project Leader	Københavns Lufthavne (Copenhagen Airports AS)		
Contributors	Naviair		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.1
Project Objective	• 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 • 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		

2015_085_AF2 - DMAN and Pre-departure sequence (PDS) implementations for the CDM implementation			
Start Date	18/02/2015	**End Date**	31/12/2018
Project Leader	Aéroports de la Côte d'Azur		
Contributors	DSNA		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.1
Project Objective	• Implementing the requested tool in SESAR • Improving operations predictibility • Optimizing resources management and increase capacity • Providing a common tool between all stakeholders • Sharing a common situationnal awareness between all stakeholders • Decreasing environmental impact • Enhancing resilience (better disruption management)		

2015_161_AF2 - Initial implementation of DMAN			
Start Date	01/01/2016	**End Date**	31/03/2017
Project Leader	Irish Aviation Authority		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.1
Project Objective	• Contributing to the implementation of A-CDM at Dublin Airport • Enhancing information sharing between IAA and A-CDM partners • Implementation of the DMAN as a component of the Electronic Flight Strip system.		

Family 2.1.2 – Electronic Flight Strips (EFS)

2015_162_AF2 - Eletronic Flight Strip (EFS) Implementation			
Start Date	01/01/2016	**End Date**	06/12/2018
Project Leader	Irish Aviation Authority		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.2
Project Objective	• Implementation of an Electronic Flight Strip system. • Enhancing information sharing between IAA and A-CDM partners • Contributing to the implementation of A-CDM at Dublin Airport		

2015_212_AF2 - Fulfillment of the prerequisite EFS for the PCP AF2 Subfunctionality: Airport Integration and Throughput (2017-2019)			
Start Date	01/01/2017	**End Date**	31/12/2019
Project Leader	ENAIRE		
Contributors			
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.2
Project Objective	• Operational validation, specification, development and technical verification of changes for EFS based on lists • Operational validation, specification, development and technical verification of changes for EFS based on labels • Deployment in Madrid, Barcelona and Palma de Mallorca airports		

2015_286_AF2 - Introduction of Electronic Flight Strips			
Start Date	01/01/2014	**End Date**	28/02/2018
Project Leader	NATS		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.2
Project Objective	• Introducing electronic flight data for the London TC approach function • 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		

Family 2.1.3 – Basic A-CDM

2015_074_AF2 - Display TOBT TSAT at the Gate			
Start Date	01/04/2016	**End Date**	31/12/2017
Project Leader	DAA		
Contributors			
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.3
Project Objective	• 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) • Displaying key A-CDM information eg TOBT, TSAT to all stakeholders located at the Gate: Pilots, Ground Handler and AO		

2015_076_AF2 - Aerial Visual Display A-CDM Phase 2			
Start Date	01/04/2016	**End Date**	01/04/2017
Project Leader	DAA		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.3
Project Objective	• Improving Situational Awareness • Assisting A-CDM by automatically capturing On and Off block times; • Tracking aircraft on the ground, vehicles • 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			
Start Date	01/04/2016	**End Date**	31/01/2017
Project Leader	DAA		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.3
Project Objective	• Sharing A-CDM information with all A_CDM partners at the airport on mobile devices • Providing powerful functionalities to integrate, operate and monitor information distribution		

2015_078_AF2 - A-CDM Enhancements EIDW			
Start Date	01/04/2016	**End Date**	31/03/2017
Project Leader	DAA		
Contributors			
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.3
Project Objective	• Delivering functionality enhancements to basic A-CDM package to cater for EIDW specific requirements • 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 • Enhancing information sharing between Daa and all A-CDM partners thus providing improved information to the network		

2015_133_AF2 - Initial AirPort Operational Centre (iAPOC)			
Start Date	01/01/2016	**End Date**	31/12/2018
Project Leader	Aéroports de Paris		
Contributors	DSNA, Air France		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.3
Project Objective	• Initial APOC realisation • Reinforcing Collaborative Decision Making with all stakeholders • Demand Capacity Balancing monitoring		

2015_294_AF2 - Implementation of OTP			
Start Date	01/03/2016	**End Date**	31/12/2017
Project Leader	Swedavia		
Contributors			
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.3
Project Objective	• Establishing a robust operational environment needed for PCP implementation • Reducing/eliminating IT blocking points and establish reduced resolution time of IT incidents		

Family 2.1.4 – Initial Airport Operational Plan (AOP)

2015_060_AF2 - Airport Operating Plan AOP			
Start Date	03/02/2016	**End Date**	12/12/2017
Project Leader	Heathrow Airport limited		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.4
Project Objective	• AOP • Sharing the plan with the airports' operational stakeholders (Airlines, Ground Handlers, APOC) • Consuming the plan generated by the DCB system: • Ensuring that exchanged data is being processed for better predictability and improving rolling plans on NM and Airport Sides • Assisting NMOC provide guidance material for other airports for later implementationi of AOP-NOP link and on Collaborative Decision Making in order to provide quality input data • Setting up B2B AOP-NOP (as will be defined in 2016 call) Interfacing for data exchange with NMOC (NOP)		

2015_083_AF2 - iAOP implementation			
Start Date	07/09/2015	**End Date**	31/12/2020
Project Leader	Aéroports de la Côte d'Azur		
Contributors			
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.4
Project Objective	• Making the systems more reliable and efficient • Adapting the tools to the operations changes • Developing an iAOP perspective for the SESAR Deployment • Improving the management of data and resources		

2015_135_AF2 - CDG and ORLY - Initial Airport Operational Plan (AOP)			
Start Date	01/03/2016	**End Date**	31/12/2019
Project Leader	Aéroports de Paris		
Contributors	Air France		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.4
Project Objective	• Airside and Landside Plan/Operational data collection • MET data collection • Operational Repository MDM • Data warehouse / Big data • AOP data exchange with NOP & Centralized Services		

2015_178_AF2 - Implementation of AOP Schiphol Airport			
Start Date	01/01/2016	**End Date**	31/12/2018
Project Leader	Amsterdam Airport Schiphol		
Contributors	KLM, KNMI		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.4
Project Objective	• Preparing execute and monitor the AOP (Airport Operations Plan) • Optimizing the information exchange between airport stakeholders and network management (NMOC)		

2015_225_AF2 - Initial Airport Operations Plan @ FRA			
Start Date	01/03/2016	**End Date**	31/12/2019
Project Leader	Fraport AG		
Contributors			
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.4
Project Objective	• Providing a common picture of the actual flight operation at Frankfurt airport • Providing common parameters for monitoring and examination • Supporting the decision-making-process of stakeholders • improving predictability and resilience		

2015_244_AF2 - APOC implementation			
Start Date	01/03/2016	**End Date**	15/12/2016
Project Leader	Operations Department Brussels Airport		
Contributors	Brussels Airport Company NV/SA		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.4
Project Objective	• Implementation of the Airport Operations Center with all stakeholders to increase the puntuality of passengers & bags flows • Process alignment with all stakeholders • Determination of common Performance Indicators		

2015_245_AF2 – AIRSTAT			
Start Date	01/03/2016	**End Date**	01/04/2019
Project Leader	Brussels Airport Company NV/SA		
Contributors			
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.4
Project Objective	• 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. • 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		

2015_282_AF2 - Initial APOC and AOP			
Start Date	21/03/2016	**End Date**	28/02/2017
Project Leader	Munich Airport		
Contributors			
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.4
Project Objective	• Unifying Baggage handling, Passenger and Aircraft processes and recources • Developing joint communiucation and decision making tools and strctures • Enabling efficient and timely congruent information sharing • Preparing initial AOP structures for NOP integration		

2015_290_AF2 - Initial AOP			
Start Date	01/10/2016	**End Date**	31/12/2018
Project Leader	Swedavia		
Contributors			
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.4
Project Objective	• 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 • Ability to evaluate and then update the airport plan using different scenarios (known as Demand Capacity Balancing, DCB) to optimise it.		

2015_292_AF2 - DMAN Stockholm Arlanda Airport			
Start Date	01/04/2016	**End Date**	30/06/2018
Project Leader	Swedavia		
Contributors			
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.4
Project Objective	• Definition of operational conditions • Development of algorithms and interfaces towards other systems • Flight safety assessment and operational implementation		

2015_299_AF2 - Integrated Ground Management (GMAN)			
Start Date	01/04/2016	**End Date**	31/10/2017
Project Leader	Gatwick Airport		
Contributors			
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.4

Project Objective	• Optimising airside ground management performance by integrating and dynamically allocating stands • Delivering improvements in stand utilization, On-Time Arrival (OTA) and On-Time Departure (OTD) performance • Providing a critical architectural component to subsequently deliver optimized flow management enabled by integrated A-SMGCS Routing & Planning function • Providing relevant operational data in easy to consume formats that include mobile device offerings for information access at users' fingertips • Delivering a solution that enables the integration of data feeds from movement tracking devices used on airside assets • Optimising airside ground management performance by integrating and dynamically allocating critical resources (stands, coaching, towing, PRM, arrival baggage carousels)

Family 2.2.1 – A-SMGCS Level 1&2

2015_016_AF2 - ASMGCS Level 1 & 2			
Start Date	01/03/2016	**End Date**	07/04/2018
Project Leader	Heathrow Airport limited		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.2	Family 2.2.1
Project Objective	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)			
Start Date	01/01/2017	**End Date**	31/12/2019
Project Leader	ENAIRE		
Contributors			
Main AF/Sub-AF/Family	AF2	S-AF 2.2	Family 2.2.1
Project Objective	• 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 • This project will focus on Runway Incursion Alerts • 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		

2015_291_AF2 - A-SMGCS Level 2 implementation			
Start Date	01/01/2017	**End Date**	31/12/2018
Project Leader	Swedavia		
Contributors			
Main AF/Sub-AF/Family	AF2	S-AF 2.2	Family 2.2.1
Project Objective	• Upgrading A-SMGCS for Level 2 incl training and changes of procedures • Upgrading MLAT to fulfill requirements for Level 2 • Identifing potential need for additional sensors to reduce false incursion alarms • Installed and fully operational Solid State SMR		

Family 2.3.1 – Time Based Separation (TBS)

2015_220_AF2 - AF2_MET-Compliance-Program			
Start Date	01/03/2016	**End Date**	31/12/2020
Project Leader	Austro Control		
Contributors			
Main AF/Sub-AF/Family	AF2	S-AF 2.3	Family 2.3.1
Project Objective	• Developing distance-based separation to time-based separation • Recovering and improving loss of capacity due to bad weather conditions • Supporting automatic observer functions • Improve exchange of meteorological information		

2015_232_AF2 - TBS4LOWW (Time Based Separation for Vienna Airport)			
Start Date	22/02/2016	**End Date**	31/05/2018
Project Leader	Austro Control		
Contributors	Eurocontrol		
Main AF/Sub-AF/Family	AF2	S-AF 2.3	Family 2.3.1
Project Objective	• Establishing Procedural Time Based Separation concept (P-TBS) • Preparation of Safety, HP and Business Cases supporting full TBS System Based deployment		

Family 2.4.1 – A-SMGCS Routing and Planning Functions

2015_043_AF2 - AF2.4 A-SMGCS - Routing & Planning			
Start Date	01/04/2016	**End Date**	30/09/2020
Project Leader	Københavns Lufthavne (Copenhagen Airports AS)		
Contributors	Naviair		
Main AF/Sub-AF/Family	AF2	S-AF 2.4	Family 2.4.1
Project Objective	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, predictibility, 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			
Start Date	01/04/2016	**End Date**	30/09/2020
Project Leader	Københavns Lufthavne (Copenhagen Airports AS)		
Contributors	Naviair		
Main AF/Sub-AF/Family	AF2	S-AF 2.5	Family 2.5.1
Project Objective	• Implementing EFS conflict detection • Implementing runway clearence monitoring • Implementing holding point monitoring • Implementing route adherence monitoring		

2015_187_AF2 - TWR System at Amsterdam Schiphol			
Start Date	16/02/2016	**End Date**	31/12/2020
Project Leader	LVNL		
Contributors			
Main AF/Sub-AF/Family	AF2	S-AF 2.5	Family 2.5.1
Project Objective	• 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 • Realising PCP requirements in the TWR domain with a due date in 2021 namely S-AF 2.1 Departure Management Synchronised with Pre-departure 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			
Start Date	01/07/2016	**End Date**	31/12/2019
Project Leader	Gatwick Airport		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.5	Family 2.5.1
Project Objective	• Increasing safety on the manoeuvring area - reducing the risk of runway incursions and conflicts / incidents on the manoeuvring area whilst maintaining declared ground movement rates • Reducing controllers' workload by providing system support for monitoring of traffic and its conformance to clearances on the manoeuvring area, and by providing automated routing and planning functions • Reducing potential conflicting routing for arrivals, departures and other ground movements and thus increase efficiency of ground operations • Optimising controller working position by more advanced integration of systems and improving Human Machine Interface (HMI) • 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 • Implementing A-SMGCS routing and planning functions (Family 2.4.1) in line with Commission Regulation (EU) No 716/2014 and SESAR Deployment Programme		

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

2015_031_AF2 - Vehicle Transponder A-SMGCS Düsseldorf			
Start Date	01/06/2016	**End Date**	30/06/2017
Project Leader	Flughafen Düsseldorf GmbH		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.5	Family 2.5.2
Project Objective	• Transponder for vehicles A-SMGCS Level 2 Düsseldorf		

2015_222_AF2 - Advanced Airport Moving Map (AAMM) Prototype Implementation			
Start Date	17/02/2016	**End Date**	29/09/2017
Project Leader	Fraport AG		
Contributors	Deutsche Lufthansa AG		
Main AF/Sub-AF/Family	AF2	S-AF 2.5	Family 2.5.2
Project Objective	• 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. • 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. • Improving Airport Moving Map application as part of a safety system helps to detect risk of collision with other traffic in the manoevering area and alerert the cockpit by consuming and displaying real-time airport traffic information (A-SMGCS Data) to improve pilots situational awareness. • 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 • 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.		

2015_226_AF2 - Airport Safety Net: Mobile Detection of Marshaller Vehicles			
Start Date	17/02/2016	**End Date**	30/06/2018
Project Leader	Fraport AG		
Contributors	-		
Main AF/Sub-AF/Family	AF2	S-AF 2.5	Family 2.5.2
Project Objective	• Equipage of Marshaller Vehicles with a Moving Map based on A-SMGCS surveillance data • Implementation of a new allocation tool • Improvement of situational awareness		

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	78
2015_239_AF3	Flexible ASM and Free Route	3.1.1	78
2015_058_AF3	Romatsa ATM2020+ Programme	3.1.2	78
2015_051_AF3	VARP - VoIP ATC Radio Project	3.1.4	79
2015_132_AF3	VoIP Programme	3.1.4	79
2015_159_AF3	Deployement of IP/VOIP technology to enable Management of Dynamic Airspace Configurations	3.1.4	79
2015_195_AF3	Deployment of next Generation and VoIP Capable Centre Voice Communication System	3.1.4	80
2015_221_AF3	Implementation of Voice over IP (VoIP) systems and services in ENAIRE	3.1.4	80
2015_236_AF3	VHF Concept Implementation 2020	3.1.4	80
2015_320_AF3	Implementation of VoIP	3.1.4	81
2015_029_AF3	Procurement of new DPS/ATM and VCRS systems to support DCTs and FRA	3.2.1	82
2015_034_AF3	ATM System (MATIAS) upgrade for cross-border free route operation	3.2.1	82
2015_062_AF3_I	4-Flight Deployment in PARIS Area, Upgrade in Marseille and Aix ACCs - Phase I	3.2.1	82
2015_062_AF3_II	4-Flight Deployment in PARIS Area, Upgrade in Marseille and Aix ACCs - Phase II	3.2.1	83
2015_107_AF3	NM Systems upgrades in support of DCTs and FRA	3.2.1	83
2015_190_AF3	Deployment of Air Traffic Control System iCAS: Implementation of ATM PCP Functionalities at LVNL and DFS	3.2.1	83
2015_204_AF3_I	4-Flight deployment in Italy - Phase I	3.2.1	84
2015_204_AF3_II	4-Flight deployment in Italy - Phase II	3.2.1	84
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	85
2015_242_AF3	Free Route implementation into ATM system of ANS CR	3.2.1	85
2015_247_AF3	4Flight deployment in military En-route ACC (CMCC)	3.2.1	85
2015_269_AF3	Mil MTCD Advanced Controller Tools (FOURSIGHT)	3.2.1	86
2015_050_AF3	SIMULATION SEAFRA H24	3.2.4	86

2015 CEF Call Designator	Title	Family	IP Description Page Number
2015_189_AF3	Free Route Airspace (Full FRA) in German and SWISS Airspace	3.2.4	87
2015_227_AF3	Borealis FRA Implementation (Part 2)	3.2.4	87

Family 3.1.1 – (Initial) ASM Tool to support AFUA

2015_202_AF3 - ASM tool Implementation			
Start Date	01/02/2016	**End Date**	31/12/2018
Project Leader	ENAV		
Contributors			
Main AF/Sub-AF/Family	AF3	S-AF 3.1	Family 3.1.1
Project Objective	• Enhancing the civil-miltary collaborative decision-making process • Enhancing ASM process and National procedures • Enhancing situational awareness and increasing safety		

2015_239_AF3 - Flexible ASM and Free Route			
Start Date	01/03/2016	**End Date**	01/12/2020
Project Leader	ANS/CR		
Contributors	-		
Main AF/Sub-AF/Family	AF3	S-AF 3.1	Family 3.1.1
Project Objective	• Increasing airspace capacity due to better airspace organisation and planning • Reducing the effort on ATCOs by allowing a more cost-effective approach, while keeping the highest level of safety • New tool to be implemented will lead to better awareness of airspace users via NM service provided		

Family 3.1.2 – ASM management of real time airspace data

2015_058_AF3 – Romatsa ATM2020+ Programme			
Start Date	22/02/2016	**End Date**	12/03/2019
Project Leader	ROMATSA		
Contributors	-		
Main AF/Sub-AF/Family	AF3	S-AF 3.1	Family 3.1.2
Project Objective	• Improving inter-operability with other flight data processing systems; • Supporting the use of advanced tools and flexible use of airspace that will improve overall quality of service • Improving aircraft - controller communication by means of data link • 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			
Start Date	15/02/2016	**End Date**	05/11/2020
Project Leader	Croatia Control		
Contributors	-		
Main AF/Sub-AF/Family	AF3	S-AF 3.1	Family 3.1.4
Project Objective	• Implementation of modern IP-based VHF/UHF radio network		

2015_132_AF3 - VoIP Programme			
Start Date	01/03/2016	**End Date**	31/12/2018
Project Leader	Naviair		
Contributors			
Main AF/Sub-AF/Family	AF3	S-AF 3.1	Family 3.1.4
Project Objective	• Main VCS upgrading to support VoIP thereby enabling flexible Air Space Management (ASM) • Replacing existing VHF radios by VoIP capable VHF radios thereby enabling flexible ASM		

2015_159_AF3 - Deployement of IP/VOIP technology to enable Management of Dynamic Airspace Configurations			
Start Date	07/09/2015	**End Date**	07/06/2019
Project Leader	Irish Aviation Authority		
Contributors			
Main AF/Sub-AF/Family	AF3	S-AF 3.1	Family 3.1.4
Project Objective	• 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 • 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			
Start Date	16/02/2016	**End Date**	30/09/2018
Project Leader	DFS		
Contributors			
Main AF/Sub-AF/Family	AF3	S-AF 3.1	Family 3.1.4

Project Objective	• 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
	• 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 effectives 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.
	• The dedicated deployment objectives of the technical prerequisites are:
	  ○ Deployment of Primary Voice-Communication Systen (VCS) for ACC Bremen
	  ○ Deployment of a last-resort VCS for ACC Munich and renewing of related radio sites
	  ○ Deployment of a last-resort VCS for ACC Bremen and renewing of related radio sites
	  ○ Deployment of a last-resort VCS for UAC Karlsruhe and renewing of related radio sites		

2015_221_AF3 - Implementation of Voice over IP (VoIP) systems and services in ENAIRE			
Start Date	01/03/2016	**End Date**	30/06/2020
Project Leader	ENAIRE		
Contributors			
Main AF/Sub-AF/Family	AF3	S-AF 3.1	Family 3.1.4
Project Objective	• Evolution of the ENAIRE Voice Communication Systems and Air to Ground radio equipment to comply with EUROCAE specifications • Integration of the ATC Voice over IP netwoks • Reductions of maintenance and operation costs		

2015_236_AF3 - VHF Concept Implementation 2020			
Start Date	01/03/2016	**End Date**	30/11/2020
Project Leader	Austro Control		
Contributors			
Main AF/Sub-AF/Family	AF3	S-AF 3.1	Family 3.1.4
Project Objective	• Implementing Voice COM System as an enabler for PCP AF3 regards to Regulation No 716/2014 - Flexible Airspace Management and Free Route • Valdidating and verifying system safety		

2015_320_AF3 - Implementation of VoIP			
Start Date	01/01/2016	**End Date**	31/12/2019
Project Leader	LFV		
Contributors			
Main AF/Sub-AF/Family	AF3	S-AF 3.1	Family 3.1.4
Project Objective	• Enabling dynamic sectorisation and therefore flexible AirSpace Management within LFV through the implementation of a VoIP compliant system • Developing and implementing VoIP capable end-systems within LFV • Upgrading the VCS within Arlanda's terminal and terminal control centre and of backup VCCS to support VoIP • Enabling the implementation of a VoIP compliant system via the implementation of an IP based network		

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			
Start Date	01/01/2017	**End Date**	31/12/2020
Project Leader	HCAA		
Contributors			
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective	• New DPS/ATM system • New VCRS System • Sectors adaptation to accommodate the changes in traffic flows where needed		

2015_034_AF3 - ATM System (MATIAS) upgrade for cross-border free route operation			
Start Date	04/01/2016	**End Date**	31/12/2018
Project Leader	HungaroControl		
Contributors			
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective	• Achieving the prerequisites for cross-border free route operation at a local level • Contributing to the future FAB CE wide FRA implementation • Improving the controllers effectiveness and increase safety with enhanced functionalities • Contributing to the reduction of fuel consumption by allowing airspace users to plan and fly their preferred trajectories		

2015_062_AF3_Phase I – 4-Flight Deployment in PARIS Area, Upgrade in Marseille and Aix ACCs – Phase I			
Start Date	01/01/2015	**End Date**	31/10/2018
Project Leader	DSNA		
Contributors			
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective	• 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 miltary coordinations in all 4-Flight sites • Supporting the implementation of the European ATM Master Plan for France and of the SESAR concept • Respecting the Single European Sky (SES) and FABEC rules • Switching to "stripless" environment and up-to-date technologies in Paris-ACC • Reducing total cost of ownership, by sharing development and evolution costs and risks for the new system, with ANSP partners		

2015_062_AF3_Phase II – 4-Flight Deployment in PARIS Area, Upgrade in Marseille and Aix ACCs – Phase II			
Start Date	03/07/2017	**End Date**	30/04/2020
Project Leader	DSNA		
Contributors			
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective	• 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 miltary coordinations in all 4-Flight sites • Supporting the implementation of the European ATM Master Plan for France and of the SESAR concept • Respecting the Single European Sky (SES) and FABEC rules • Switching to "stripless" environment and up-to-date technologies in Paris-ACC • Reducinge total cost of ownership, by sharing development and evolution costs and risks for the new system, with ANSP partners		

2015_107_AF3 - NM Systems upgrades in support of DCTs and FRA			
Start Date	01/03/2016	**End Date**	31/12/2020
Project Leader	Eurocontrol / Network Manager		
Contributors	Swiss International Airlines Ltd., Sabre		
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective	• Adapting NM systems in line with FRA requirements contained in DP 2015 family 3.2.1 • Implementing and using Free Route Airspace in Flight Planning system		

2015_190_AF3 - Deployment of Air Traffic Control System iCAS: Implementation of ATM PCP Functionalities at LVNL and DFS			
Start Date	16/02/2016	**End Date**	31/12/2018 (Phase A) 31/12/2020 (Phase B)
Project Leader	DFS		
Contributors	LVNL		
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective	• 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. • 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. • 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. • 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. • 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 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			
Start Date	01/01/2016	**End Date**	31/12/2018
Project Leader	ENAV		
Contributors			
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective:	• Designing, developing and provide operational deployment of a modern interoperable ATM system fully SESAR compliant and based on the brand new Coflight FDPS • Enabling the implementation of free route operations in the whole Bluemed FAB Airspace • Allowing Airspace Users to fly preferred trajectories on regional/Bluemed FAB basis		

2015_204_AF3_Phase II – 4-Flight deployment in Italy – Phase II			
Start Date	01/01/2019	**End Date**	31/12/2020
Project Leader	ENAV		
Contributors			
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective	• Designing, developing and provide operational deployment of a modern interoperable ATM system fully SESAR compliant and based on the brand new Coflight FDPS • Enabling the implementation of free route operations in the whole Bluemed FAB Airspace • Allowing Airspace Users to fly preferred trajectories on regional/Bluemed FAB basis		

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)			
Start Date	01/01/2016	**End Date**	31/12/2019
Project Leader	COOPANS		
Contributors	Austro Control, Irish Aviation Authority, LFV, Naviair. The project implementation scope depends on the coordinated work of all 5 partners (ACG, Croatia Control, IAA, LFV and Naviair) and is split into a cohesion and non-cohesion part.		
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective	• Harmonisation of ATM platforms in 5 ANSP's to gain economy of scale for PCP implementations • Platform support for AF3 Free Route Airspace • Preparation of other PCP related implementations		

2015_242_AF3 - Free Route implementation into ATM system of ANS CR			
Start Date	01/03/2016	**End Date**	31/03/2020
Project Leader	ANS/CR		
Contributors	-		
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective	• Implementation of system functions and tools allowing safe and efficient cross-border Free Route operations		

2015_247_AF3 - 4Flight deployment in military En-route ACC (CMCC)			
Start Date	01/01/2016	**End Date**	31/12/2020
Project Leader	French Ministry of Defence		
Contributors			
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective	• Replacing the current operational system for miitary EnRoute ATC services, by a modern SESAR compliant and interoperable line of product • Enhancing full interoperability of civilian and military En Route ATC systems • Allowing co-location of Civilain and military En Route ATC services • 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)			
Start Date	01/03/2016	**End Date**	31/12/2019
Project Leader	UK Ministry of Defence		
Contributors			
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective	• Providing Flight Path Montioring (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		

Family 3.2.4 – Implement Free Route Airspace

2015_050_AF3 - SIMULATION SEAFRA H24			
Start Date	01/09/2015	**End Date**	28/02/2017
Project Leader	Croatia Control		
Contributors	-		
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.4
Project Objective	• Proving safe implementatation of SEAFRA H24 • Assessing and validate the cross border H24 Free Route Airspace; • Validating the new and existing sector configuration • Validating ATC procedures with regard to new and existing configuration and ATM system capabilities • Validating ATC procedures with regard to technical shortcomings of the ATM system(MTCD Area) • Safety assesment		

2015_189_AF3 – Deploy free Route Airspace (Full FRA) in German and SWISS Airspace			
Start Date	16/02/2016	**End Date**	31/12/2020
Project Leader	DFS		
Contributors	Skyguide		
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.4
Project Objective	• 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. • 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 pursuit 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 EC within the PCP IR. • 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. • 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. • 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. • 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. • 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)			
Start Date	15/02/2016	**End Date**	31/12/2020
Project Leader	Borealis		
Contributors	Avinor Flysikring AS, Finavia, Irish Aviation Authority, LFV, NATS, Naviair, Ryanair, LGS, EANS, Isavia 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.		
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.4

Project Objective	• 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 • 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 • Reducing fuel consumption by allowing users to flight-plan their preferred trajectories • Introducing seamless integration among ACCs • Reducing the effort on ATCOs by allowing a more cost-effective approach, while keeping the highest level of safety • The implementation also includes EANS (Estonia) who are applying for funding their contribution towards implementation through the Cohesion fund

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	90
2015_105_AF4	Interactive Rolling Network Operations Planning	4.2.2	90
2015_179_AF4	Implementation of APOC Schiphol Airport	4.2.2	90
2015_021_AF4	Slot Manager for PCP airports	4.2.3	91
2015_106_AF4	Flight evolution and upgrade of interfaces with NM stakeholders	4.2.3	91
2015_113_AF4	AOP-NOP Integration	4.2.4	91
2015_114_AF4	Implementation of Target Times for ATFCM purposes (NM)	4.3.1	92
2015_115_AF4	Traffic Complexity Management	4.4.2	92
2015_167_AF4	Workload model for Amsterdam Area Control and Approach Control operations	4.4.2	92
2015_217_AF4	tCAT implementation in Sofia ACC	4.4.2	93
2015_240_AF4	Traffic Complexity Tools	4.4.2	93

Family 4.1.2 – STAM Phase 2

2015_110_AF4 - STAM Phase 2 (NM)			
Start Date	01/10/2016	**End Date**	31/12/2020
Project Leader	Eurocontrol / Network Manager		
Contributors	Swiss International Airlines Ltd., Sabre		
Main AF/Sub-AF/Family	AF4	S-AF 4.1	Family 4.1.2
Project Objective	• 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 • Implementing NM System changes necessary to support the STAM phase 2 Operations • STAM connection between Airline NOC and NM • Integrating STAM input (TTA/TTO) in FPM/FE and PROVIDENCE product • Pre-tactical - Slot Management and reaction to TTA coming from STAM • Tactical adapted CI or rerouting based on STAM phase 2 requirements		

Family 4.2.2 – Interactive Rolling NOP

2015_105_AF4 - Interactive Rolling Network Operations Planning			
Start Date	01/03/2016	**End Date**	31/12/2020
Project Leader	Eurocontrol / Network Manager		
Contributors			
Main AF/Sub-AF/Family	AF4	S-AF 4.2	Family 4.2.2
Project Objective	• Improving Network situational awareness and increasing operational CDM efficiency for all network stakeholders • 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 • 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 • NSP-SO2 Deploying interoperable and effective information management systems		

2015_179_AF4 - Implementation of APOC Schiphol Airport			
Start Date	01/01/2016	**End Date**	31/12/2019
Project Leader	Amsterdam Airport Schiphol		
Contributors	KNMI, KLM		
Main AF/Sub-AF/Family	AF4	S-AF 4.2	Family 4.2.2

Project Objective	• Optimizing the information exchange between airport stakeholders (A-CDM) • Optimizing the information exchange between airport stakeholders and network management (NMOC) • Preparing, executing and monitoring the AOP (Airport Operations Plan)

Family 4.2.3 – Interface ATM systems to NM systems

2015_021_AF4 - Slot Manager for PCP airports			
Start Date	01/03/2016	**End Date**	31/12/2019
Project Leader	Deutsche Lufthansa AG		
Contributors	Swiss International Airlines Ltd., Sabre, Brussel Airlines Ltd.		
Main AF/Sub-AF/Family	AF4	S-AF 4.2	Family 4.2.3
Project Objective	• Removing bottlenecks by closing missing information exchange links between NM and airlines for SWIM compliance. • Contributing to a high performing ATM by improving an essential prerequisite capacity and delay management with an improved slot and arrival management. • Supporting tactical replaning, by considering airway restrictions based on additional real time information delivered via NM increasing the capacity in the European airspace and safety level. • Support in the establishment of governance by executing SWIM compliance activities: e.g. AIRM, ISRM rules; B2B over PENS (yellow profile) • 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.		

2015_106_AF4 - Flight evolution and upgrade of interfaces with NM stakeholders			
Start Date	01/03/2016	**End Date**	31/12/2020
Project Leader	Eurocontrol / Network Manager		
Contributors	Swiss International Airlines Ltd., Sabre		
Main AF/Sub-AF/Family	AF4	S-AF 4.2	Family 4.2.3
Project Objective	• Integrating 4DT into pre-departure flight planning operations • Implementing functions associated to FF-ICE/1 • Harmonising military OAT flight planning procedures • Supporting mixed mode operations • FO Implementation Strategy • NSP SO5: Facilitating business trajectories and cooperative traffic management		

Family 4.2.4 – AOP/NOP Information Sharing

2015_113_AF4 – AOP-NOP Integration			
Start Date	01/03/2016	**End Date**	31/12/2019
Project Leader	Eurocontrol / Network Manager		

Contributors	Heathrow Airport Ltd., Aéroports de Paris, Fraport AG		
Main AF/Sub-AF/Family	AF4	S-AF 4.2	Family 4.2.4
Project Objective	• Setting up B2B AOP-NOP Interfacing for data exchange with selected airports • Ensuring that exchanged data is being processed for better predictability and improved rolling plans on NM and Airport Sides • 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		

Family 4.3.1 – Target Time for ATFCM purposes

2015_114_AF4 - Implementation of Target Times for ATFCM purposes (NM)			
Start Date	01/03/2016	**End Date**	31/12/2020
Project Leader	Eurocontrol / Network Manager		
Contributors	Swiss International Airlines Ltd., Sabre		
Main AF/Sub-AF/Family	AF4	S-AF 4.3	Family 4.3.1
Project Objective	• Refining the elements of Concept of operations for Target Time Operations (TTO) for ATFCM purposes and develop associated procedures • Adapting NM Systems to implement TTO • Pre-tactical: preparing and delivering requested TTA/TTO (like iStream) according pre-tactical request of airline • Inflight transmission of tactical informations and exchange of TTA/TTO between airline FOC (and/or aircrafts) with NM • AFLEX procedure if neccesary (SWAP inside the company or Deutsche Lufthansa AG)		

Family 4.4.2 – Traffic Complexity Tools

2015_115_AF4 – Traffic Complexity Management			
Start Date	01/10/2016	**End Date**	31/12/2020
Project Leader	Eurocontrol / Network Manager		
Contributors			
Main AF/Sub-AF/Family	AF4	S-AF 4.4	Family 4.4.2
Project Objective	• Enhancing the network scenario management in support of the collaborative planning • Supporting local tools in the traffic complexity assessment • Supporting local actors in decision making by providing simulation facilities at network level • Providing facilities for complexity management at network level to support FMPs not having local tools		

2015_167_AF4 – Workload model for Amsterdam Area Control and Approach Control operations			
Start Date	16/02/2016	**End Date**	31/12/2020
Project Leader	LVNL		

Contributors			
Main AF/Sub-AF/Family	AF4	S-AF 4.4	Family 4.4.2
Project Objective	• Introduction of WLM to support ATFC Measures decisionmaking • Advanced simulations features for predicting workload to support staffing and ATFC Measures decision making • Advanced workload assesment tools to support the use of Short Term ATFC Measures (STAM) and Flexible Use of Airspace (FUA) • Integrated WLM infrastructure and interoperable with operational ATC-systems • Support tool for runway configuration and capacity planning Schiphol Airport • Workload methodology for APP operations		

2015_217_AF4 – tCAT implementation in Sofia ACC			
Start Date	04/04/2016	**End Date**	01/10/2020
Project Leader	BULATSA		
Contributors	-		
Main AF/Sub-AF/Family	AF4	S-AF 4.4	Family 4.4.2
Project Objective	• Monitoring sector air traffic demand and evaluating traffic complexity (by applying complexity metrics) according to a qualitative scale • Allowing timely action to adjust capacity, or request the traffic profile changes in coordination with NM • 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 • Allowing effective planning of ATCO resources • Allowing effective management of ATCO workload • Providing additional mitigation measures for unplanned/unprecedented increase of traffic volume/workload (e.g. airspace restrictions in adjacent airspace, weather avoidance, etc.)		

2015_240_AF4 - Traffic Complexity Tools			
Start Date	15/02/2016	**End Date**	31/12/2018
Project Leader	ANS/CR		
Contributors	-		
Main AF/Sub-AF/Family	AF4	S-AF 4.4	Family 4.4.2
Project Objective	• Reducing traffic complexity over LKAA FIRs • Reducing workload on LKAA Sectors • Eliminating the use of regulations		

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	96
2015_319_AF5	SWIM Common Components - Phase 2	5.1.3	96
2015_035_AF5	LAN network upgrade	5.2.1	97
2015_047_AF5	Modernization of IP based G/G Data Network in CCL - CaRT/iWAN-NG	5.2.1	97
2015_049_AF5	CCL cyber security architecture - ExCO-NG	5.2.1	97
2015_098_AF5	Implementing redundant WAN	5.2.1	97
2015_131_AF5	CANDI-IP (execution phase)	5.2.1	98
2015_192_AF5	RAPNET NG	5.2.1	98
2015_038_AF5	The ECG Communication System upgrade	5.2.2	99
2015_117_AF5	Improve NM SWIM Infrastructure	5.2.2	99
2015_197_AF5	Centralized DFS "Yellow Profile" SWIM Node	5.2.2	99
2015_198_AF5	Implementation of ENAV "LAN Servizi"	5.2.2	100
2015_210_AF5	AMHS/SWIM gateway	5.2.2	100
2015_249_AF5	PATRUS	5.2.2	100
2015_099_AF5	DK-SE FAB Aeronautical Data Quality (ADQ)	5.3.1	101
2015_112_AF5	Integrate the Aeronautical Information Exchange Services in NM Systems	5.3.1	101
2015_138_AF5	5.3.1 NAV Portugal - Implementation of a solution for eletronic Terrain and Obstacle Data management	5.3.1	101
2015_145_AF5	AIM Deployment Toolkit	5.3.1	102
2015_160_AF5	Aeronautical Information exchange and management	5.3.1	102
2015_168_AF5	Implementation of Aeronautical Data Quality (ADQ) at LVNL	5.3.1	102
2015_194_AF5	STANLY_ACOS iSWIM for Free-Route and NM	5.3.1	103
2015_201_AF5	Transition of current Aeronautical Information Management System to EAD	5.3.1	104
2015_230_AF5	AF5 AIM Compliance Program	5.3.1	104
2015_243_AF5	Aeronautical Information Distribution Service	5.3.1	104
2015_262_AF5	Aeronautical Data Quality and Exchange	5.3.1	105

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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			
Start Date	15/02/2016	**End Date**	31/12/2020
Project Leader	Eurocontrol		
Contributors	Austro Control, Avinor Flysikring AS, DSNA, ENAIRE, Finavia, Irish Aviation Authority, LFV, LVNL, MNAV, NATS, Naviair, SMATSA, NAV Portugal, Aéroports de Paris, Belgocontrol, Slovenia Control, BULATSA, ROMATSA. The project implementation scope depend on the coordinated work of all 19 partners (Eurocontrol as Network Manager and MUAC, AUSTROCONTROL (Austria), Avinor Flysikring AS (Norway), DSNA (France), ENAIRE (Spain), FINAVIA (Finland), IAA (Ireland), LFV (Sweeden), LVNL (The Netherlands), MNAV (Macedonia), NATS (UK), NAVAIR(Denmark), SMATSA (Serbia & 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.		
Main AF/Sub-AF/Family	AF5	S-AF 5.1	Family 5.1.2
Project Objective	• Deploying an Internet Protocol (version6 and version4) Network Service necessary to support the SWIM Exchanges • 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 • Replacing PENS1 terminating in June 2018		

Family 5.1.3 – Common SWIM Infrastructure Components

2015_319_AF5 - SWIM Common Components - Phase 2			
Start Date	16/02/2016	**End Date**	31/12/2020
Project Leader	Eurocontrol		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.1	Family 5.1.2
Project Objective	• 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 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) • Update the deployment toolkits based on further versions of the following specifications: ○ Aeronautical Information Exchange Model (AIXM) ○ Weather Exchange Model (WXXM) and ICAO Weather Exchange Model (IWXXM) ○ Flight Information Exchange Model (FIXM) • The SWIM Registry will provide a platform for the service providers to find information about SWIM (SWIM Reference Management). • Supporting partial mitigation (for the part associated with the exchange of Aeronautical Information and data) of the PCP implementation gap mainly in Familly 5.3.1, but also others,		

	ultimately benefitting operational stakeholders across the entire PCP applicability area.

Family 5.2.1 – Stakeholder Internet Protocol Compliance

2015_035_AF5 - LAN network upgrade			
Start Date	01/01/2015	**End Date**	30/06/2019
Project Leader	Polish Air Navigation Services Agency (PANSA)		
Contributors	-		
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.1
Project Objective	• Redesigning LAN in ACC building. Splitting of operational and non-operational services, based on network environment. • Improving network services for operational users by upgrading reliability and stability level.		

2015_047_AF5 - Modernization of IP based G/G Data Network in CCL - CaRT/iWAN-NG			
Start Date	15/02/2016	**End Date**	28/04/2017
Project Leader	Croatia Control		
Contributors	-		
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.1
Project Objective	• Redesigning existing national IP-based ground-ground data communications network to support SWIM and VoIP based voice comunications • Validating the design through Proof of Concept		

2015_049_AF5 - CCL cyber security architecture - ExCO-NG			
Start Date	02/03/2015	**End Date**	24/02/2017
Project Leader	Croatia Control		
Contributors	-		
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.1
Project Objective	• 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		

2015_098_AF5 - Implementing redundant WAN			
Start Date	01/01/2016	**End Date**	31/12/2019
Project Leader	LFV		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.1

Project Objective	• Ensuring SWIM capability within LFV's communication systems • Ensuring redundancy in LFV's communication systems via the implementation of additional WAN services • Commissioning Second national WAN • Commissioning Third national WAN

2015_131_AF5 - CANDI-IP (execution phase)			
Start Date	22/02/2016	**End Date**	31/12/2018
Project Leader	Naviair		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.1
Project Objective	• Implementation of fully IP4- and IP6-based, dual redundant ground-to-ground communication network • Implementation of fully IP4- and IP6-based, separate back-up network • Implementation of the communication infrastructure required for Voice over IP communication (VoIP) and SWIM • Implementation of the infrastructure required for information exchange and services via PENS and NewPENS • Ensuring continuous availability of WAN data transport in EKDK FIR • Ensuring logical and physical segregation of operationally critical data		

2015_192_AF5 - RAPNET NG			
Start Date	16/02/2016	**End Date**	31/12/2018
Project Leader	DFS		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.1
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. 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 • 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 connectd to RAPNET NG utilizing gateways to the RAPNET NG infrastructure (PENS or billateral connections) • 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		

Family 5.2.2 – Stakeholder SWIM Infrastructure components

2015_038_AF5 - The ECG Communication System upgrade			
Start Date	01/01/2016	**End Date**	31/12/2018
Project Leader	Polish Air Navigation Services Agency (PANSA)		
Contributors	-		
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.2
Project Objective	• Improving reliability level for AMHS. • Upgrading AMHS functionality for Warsaw AMHS COM Center		

2015_117_AF5 - Improve NM SWIM Infrastructure			
Start Date	01/03/2016	**End Date**	31/12/2020
Project Leader	Eurocontrol / Network Manager		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.2
Project Objective	• Enhancing NM SWIM Yellow Profile infrastructure components • Upgrading security management, infrastructure and processes • NSP - SO2 Deploying interoperable and effective information management systems • NSP - SO7 Ensuring network safety, security and robustness		

2015_197_AF5 - Centralized DFS "Yellow Profile" SWIM Node			
Start Date	01/04/2016	**End Date**	31/12/2020
Project Leader	DFS		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.2
Project Objective	• 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 • 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 • Ensure 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 industrialization and operations to pertinent requirements of the Interoperability Implementing Rule EU No. 552/2004 ○ fully integrating with the SWIM "Common Components" applicable to the "Yellow 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, 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"			
Start Date	01/06/2016	**End Date**	30/06/2018
Project Leader	ENAV		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.2
Project Objective	• Identification of interventions required for the implementation of a a new "LAN Servizi" at Rome ACC • Upgrade FDP operational systems • Upgrade RDP operational systems		

2015_210_AF5 - AMHS/SWIM gateway			
Start Date	16/02/2016	**End Date**	30/06/2017
Project Leader	ENAIRE		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.2
Project Objective	• Developing a gateway that allows routing/converting AMHS messages into SWIM messages (based in Web 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			
Start Date	31/12/2013	**End Date**	31/10/2019
Project Leader	French Ministry of Defence		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.2

Project Objective	• Implementing Internet Protocol for military control centers • Allowing interoperability between military controls centers, civilian centers and SWIM • Implementing a secured gateway between from civilian centers to miliatry control centers • Studying for a bidirectionnal secured gateway • Implementing a secured bidirectionnal gateway between military and civilain control center

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

2015_099_AF5 – DK-SE FAB Aeronautical Data Quality (ADQ)			
Start Date	01/03/2016	**End Date**	01/03/2018
Project Leader	LFV		
Contributors	Naviair		
Main AF/Sub-AF/Family	AF5	S-AF 5.3	Family 5.3.1
Project Objective	• Migrating LFV's and Naviair´s aeronautical data to support AIXM 5.1 • Ensuring compliance to ICAO Annex 15 and Commission Regulation (EU) No 73/2010 • Enabling the first set of aeronautical SWIM compliant services; • Seeking efficiency improvements within DK-SE FAB in-line with SES objectives		

2015_112_AF5 – Integrate the Aeronautical Information Exchange Services in NM Systems			
Start Date	01/03/2016	**End Date**	31/12/2020
Project Leader	Eurocontrol / Network Manager		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.3	Family 5.3.1
Project Objective	• Improving data quality • Reducing NMOC workload		

2015_138_AF5 - 5.3.1 NAV Portugal - Implementation of a solution for eletronic Terrain and Obstacle Data management			
Start Date	01/11/2014	**End Date**	30/05/2018
Project Leader	NAV Portugal		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.3	Family 5.3.1
Project Objective	• Implementing a centralised solution for all eletronic terrain and obstacles data (eTOD)management in accordance with SWIM principles • Exchanging Aeronautical Information in compliance with the yellow SWIM TI Profile • Collecting, exchanging, managing and distributing the digital terrain (geoTIFF) and obstacles information (AIXM)		

2015_145_AF5_A – AIM Deployment Toolkit 2015_145_AF5_B – AIM Deployment Toolkit			
Start Date	01/04/2016	**End Date**	31/12/2020
Project Leader	Eurocontrol		
Contributors	Air Navigation Services of the Czech Republic (ANS CR)		
Main AF/Sub-AF/Family	AF5	S-AF 5.3	Family 5.3.1
Project Objective	• 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 • Contributing to the establishment of a framework enabling provision of Digital NOTAM pre-encoded data • Managing underlying aeronautical airport data and data products, including the airport mapping, terrain and obstacle aspect • Performing SWIM data translationss (e.g. between AMDB 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 Familly 5,3,1, but also others, ultimately benefitting operational stakeholders across the entire PCP applicability area.		

2015_160_AF5 - Aeronautical Information exchange and management			
Start Date	01/01/2016	**End Date**	01/01/2020
Project Leader	Irish Aviation Authority		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.3	Family 5.3.1
Project Objective	• Automating the esisting AIS functionality including eAIP publication and D-NOTAm management • Implementing an eTOD database for EISN • Migrating to AIXM/Swim Yelow format for all data exchanges • Meeting the requirements of 5.3.1 on an incremental basis		

2015_168_AF5 – Implementation of Aeronautical Data Quality (ADQ) at LVNL			
Start Date	16/02/2016	**End Date**	31/10/2017
Project Leader	LVNL		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.3	Family 5.3.1
Project Objective	• Increasing the quality and integrity of the publication of static and dynamic aeronautical data • Increasing the productivity by automating data transfer		

2015_194_AF5 – STANLY_ACOS iSWIM for Free-Route and NM			
Start Date	15/04/2016	**End Date**	31/12/2020
Project Leader	DFS		
Contributors			
Main AF/Sub-AF/Family	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 neigbouring 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			
Start Date	01/01/2016	**End Date**	28/02/2017
Project Leader	ENAV		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.3	Family 5.3.1
Project Objective	• Replacing the current ENAV NOTAM System with the centrally provided EAD System • Using of AIXM5.1 as standard exchange data format • Provision of PIBs compliant with ADQ requirements		

2015_230_AF5 – AF5 AIM Compliance Pogram			
Start Date	01/03/2016	**End Date**	31/12/2020
Project Leader	Austro Control		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.3	Family 5.3.1
Project Objective	• Analysing, developing and upgrading or implementing AIM infrastrucuture to comply with iSWIM requirements • Ensuring continuous improvement of data distribution and aeronautical data quality according to iSWIM requirements • Upgrading and/or implementing and continuously improving the AMSS to comply with iSWIM requirements • Implementing ongoing enhancements to the AIMP		

2015_243_AF5 – Aeronautical Information Distribution Service			
Start Date	01/06/2016	**End Date**	31/12/2018
Project Leader	ANS/CR		
Contributors	-		
Main AF/Sub-AF/Family	AF5	S-AF 5.3	Family 5.3.1
Project Objective	• Allowing direct digital aeronautical information exchange to enable ADQ IR 73/2010 implementation (distribution from AIS to users inside and outside the ANSP) • Allowing flexible on-demand aeronautical data provision and distribution • Reducing the effort on AIS staff for digital data provision and distribution • Introducing seamless AIM/SWIM operation by the AIS		

2015_262_AF5 – Aeronautical Data Quality and Exchange			
Start Date	01/01/2016	**End Date**	31/12/2018
Project Leader	Portoguese Air Force		
Contributors	-		
Main AF/Sub-AF/Family	AF5	S-AF 5.3	Family 5.3.1
Project Objective	• This project is paramount to accomplish the required level of data quality established by EC Regulation 73/2010. • Improving civil/military coordination towards Flexible Use of Airspace • Allowing Portuguese Air Force (PRTAF) to perform GROUND-GROUND coordination between military and adjacent ATC Units • 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		

2015_288_AF5 – ADQ implementation Stockholm Arlanda			
Start Date	01/03/2016	**End Date**	31/12/2017
Project Leader	Swedavia		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.3	Family 5.3.1
Project Objective	• Stockholm Arlanda Airport ADQ compliant • Implementing Quality control		

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)			
Start Date	01/11/2016	**End Date**	31/12/2018
Project Leader	Finnish Meteorological Institute		
Contributors	Swedish Meteorological and Hydrological Institute, Danish Meteorological Institute 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.		
Main AF/Sub-AF/Family	AF5	S-AF 5.4	Family 5.4.1
Project Objective	• 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 • Demonstration and verification of cost-effective multi-stakeholder operational deployment of SWIM for MET information • Implementation and verification covering TAFs and METARs for civil airports within the geographical scope of the project, AIRMETs and SIGMETs for Sondrestrom, Kobenhavn, 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 • 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 • Development and implementation of common user interfaces to facilitate the generation and monitoring of harmonised and coherent MET information • Embedding and implementing the systems/applications in the operational production and monitoring chains of all project contributors

2015_067_AF5 – European Weather Radar Composite of Convection Information Service			
Start Date	01/04/2016	**End Date**	30/09/2019
Project Leader	EUMETNET EIG		
Contributors	Met Office (UK), DWD, Météo-France, Eurocontrol		
Main AF/Sub-AF/Family	AF5	S-AF 5.4	Family 5.4.1
Project Objective	• 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 • Originating resilient, single source real-time weather radar information of convective weather events for the European geographical footprint • Distributing weather radar information of convective weather events in a SWIM complaint format through the MET-GATE (069-AF5) service by applying SWIM compliant protocols, standards and governance principles • Enabling all aviation stakeholders (including ATC, NM, Airlines, Airports) to base decisions on a common reference and representation of convective weather events for the European geographical footprint • Raising awareness of new MET capabilities among stakholder groups		

2015_068_AF5 – European Harmonised Forecasts of Adverse Weather (Icing, Turbulence, Convection and Winter weather)			
Start Date	01/07/2016	**End Date**	30/06/2020
Project Leader	EUMETNET EIG		
Contributors	Met Office (UK), Météo France, Finnish Meteorological Institute, Eurocontrol, DWD		
Main AF/Sub-AF/Family	AF5	S-AF 5.4	Family 5.4.1
Project Objective	• 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 particulr the MET information will cover high density TMA and Airports, as well as pan European network applications • 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 • Distributing forecast information of adverse weather via the MET-GATE (069-AF5) service, using protocols and governance compatible with SWIM architecure and principles • 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 • Raising awareness of new MET capabilities among stakholder groups

2015_069_AF5 – European MET Information Exchange (MET-GATE)			
Start Date	01/07/2016	**End Date**	31/12/2020
Project Leader	EUMETNET EIG		
Contributors	Météo-France, Met Office (UK), DWD, Eurocontrol, DFS		
Main AF/Sub-AF/Family	AF5	S-AF 5.4	Family 5.4.1
Project Objective	Single source to request and receive customized MET information tailored for user's needs by applying smart functionalities Point of contact for requesting MET information services, 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)			
Start Date	01/03/2016	**End Date**	31/12/2020
Project Leader	Royal Netherlands Meteorological Institute (KNMI)		
Contributors	Met Office (UK)		
Main AF/Sub-AF/Family	AF5	S-AF 5.4	Family 5.4.1
Project Objective	• 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 • Deploying operational European meteorological aircraft derived data center • 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 • Providing service and disseminating derived meteorological information via services and PENS/(New)PENS		

2015_169_AF5 – Initial (I)WXXM implementation on CCIS Amsterdam ACC and Schiphol			
Start Date	01/01/2017	**End Date**	31/12/2018
Project Leader	LVNL		
Contributors			

Main AF/Sub-AF/Family	AF5	S-AF 5.4	Family 5.4.1
Project Objective	• Implementation of the (I)WXXM model in the meteo gateway of LVNL, CCISv2 • Demonstration and verification of the operational deployment of iSWIM for MET information, in collaboration with the dutch MET office KNMI • Receiving and storing MET information coming from the dutch MET office KNMI, compliant with the iSWIM data formats and interfaces. • Simultaneously supporting legacy messaging exchanges		

2015_231_AF5 – METSW-DB PCP Evolution			
Start Date	01/12/2014	**End Date**	31/12/2020
Project Leader	Austro Control		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.4	Family 5.4.1
Project Objective	• Implementing a new METSW as technical enabler for iSWIM and ACG AF5 MET Compliance Program • Ensuring compliance through continuous system upgrades to ensure functionality and required performance needs • Evolutions will react on changes in developments and ensure fulfillment of new requirements		

2015_241_AF5 – Meteorological Information Exchange Service			
Start Date	01/03/2016	**End Date**	01/12/2020
Project Leader	ANS/CR		
Contributors	CHMI (Czech Hydrometeorological Institute)		
Main AF/Sub-AF/Family	AF5	S-AF 5.4	Family 5.4.1
Project Objective	• Generation of SWIM compliant MET information (IWXXM) from the Czech Republic - FIR LKAA • Building of communication interface for MET information exchange service (Yellow SWIM TI profile) • Provision of IWXXM MET information for ATM systems and international exchange		

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

2015_045_AF5 – AF5 iSWIM			
Start Date	01/02/2016	**End Date**	30/09/2019
Project Leader	Københavns Lufthavne (Copenhagen Airports AS)		
Contributors	–		
Main AF/Sub-AF/Family	AF5	S-AF 5.5	Family 5.5.1
Project Objective	• 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 • Reducing CAPEX and OPEX by using standard 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			
Start Date	01/10/2015	**End Date**	31/12/2019
Project Leader	LFV		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.5	Family 5.5.1
Project Objective	• Implementing an integration platform within Sweden, allowing for more efficient flight planning • Ensuring the necessary technology is in place for LFV's transition to SWIM Services • Supporting the streamlining of LFV AIM function and the introduction of ADQ • Establishing the strategic ability to effectively utilize information in both operational and administrative systems		

2015_143_AF5 – Improve Cooperative Network Information Exchange Services			
Start Date	01/10/2016	**End Date**	31/12/2020
Project Leader	Eurocontrol / Network Manager		
Contributors	Swiss International Airlines Ltd.		
Main AF/Sub-AF/Family	AF5	S-AF 5.5	Family 5.5.1
Project Objective	• Improving quality and timeliness of the information exchange with NM stakeholders • NSP SO2: Deploying interoperable and effective information management system • NSP/SO5: 5: Facilitating business trajectories and cooperative traffic management • NSP/SO6: Integrating airport and network operations		

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

2015_141_AF5 – Improve NM Flight Information Exchange Services			
Start Date	01/10/2016	**End Date**	31/12/2020
Project Leader	Eurocontrol / Network Manager		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.6	Family 5.6.1
Project Objective	• Improving quality and timeliness of the information exchange with NM stakeholders • Improving predictability thru the automatic exchange of 4D trajectory • NSP SO2: Deploying interoperable and effective information management system • NSP SO5: Facilitating business trajectories and cooperative traffic management		

3. CEF Call 2016

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 2016 CEF Transport Calls for Proposal.

2016 CEF Call Designator	Title	Family	IP Description Page Number
2016_023_AF1	XMAN - Cross-center arrival management - Part 2 (CEF2016)	1.1.2	112
2016_012_AF1	Synchronised PBN Implementation	1.2.3	113
2016_042_AF1	Enhanced Terminal Airspace using RNP Based Operations at STN	1.2.3	113
2016_120_AF1	ENAV Introduction of RNP1+RF and APV procedures in MXP and FCO	1.2.3	114
2016_147_AF1	RNP APCH RWY 29 Vienna	1.2.3	114
2016_166_AF1	Stockholm Arlanda Airport RNP Project (SAARP)	1.2.3	114
2016_077_AF1	ES_FALCON 900 compliance with RNP 1 and RNP APCH [50% & 20%]	1.2.4	115

Family 1.1.2 – AMAN Upgrade to include Extended Horizon function

2016_023_AF1 – XMAN - Cross-center arrival management - Part 2 (CEF2016)			
Start Date	07/02/2017	**End Date**	31/12/2020
Project Leader	DFS Deutsche Flugsicherung GmbH		
Contributors	the French Republic – Ministry of the Environment, Energy and the Sea, DGAC (Direction générale de l'aviation civile), DSNA (Direction des services de la navigation aérienne); Eurocontrol MUAC; Luchtverkeersleiding Nederland (LVNL);		
Main AF/Sub-AF/Family	AF1	S-AF 1.1	Family 1.1.2
Project Objective	The overall objective is to deploy the Family 1.1.2 "AMAN upgrade to include: • Extended Horizon function" of the Deployment Programme 2016 on the basis of the Pilot-Common-Project Regulation EU No. 716/2014. The IP covers the continued implementation of Extended Arrival Management (E-AMAN) in En-route Control Centers adjacent to PCP-relevant airports Munich, Berlin, Dusseldorf, Nice, and Barcelona based on a commonly developed Concept of Operations and System requirements in a timely, coordinated and synchronized effort, using currently available systems and Technology; • 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); • 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; • Consideration of existing technologies for early implementations and quick-wins as well as validated SESAR results and technologies for further evolution; • Promotion of interoperability though automated Inter-Center coordination by the use of system to system communication using standards (OLDI AMA Message or SWIM Webservice); • Initial implementation 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 involved.		

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

2016_012_AF1 – Synchronised PBN Implementation			
Start Date	01/07/2017	**End Date**	31/12/2019
Project Leader	Naviair		
Contributors	Københavns Lufthavne A/S		
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.3
Project Objective	• Implementation and publication of RNP-1 procedures (SIDs/STARs); • Implementation and publication of RNP approaches with vertical guidance (LNAV/VNAV & LPV); • Preparation of implementation of E-AMAN as support to PBN procedures (for Copenhagen airport); • Validation of local TBS procedures with traffic feed from PBN (for Copenhagen airport); • Consultation and coordination with Airspace Users and development of tailored PBN training.		

2016_042_AF1 – Enhanced Terminal Airspace using RNP Based Operations at STN			
Start Date	01/04/2017	**End Date**	31/12/2020
Project Leader	STAL - Stansted Airport Limited		
Contributors	-		
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.3
Project Objective	Enhanced Terminal Airspace using RNP Based Operations [STN] The objective of this project is to convert the conventional SIDS, STARS, transitions and LPV approaches to RNP1 design standards at Stansted Airport. This project is designed to the SESAR standards as required to achieve PCP compliance as a minimum, not limited to: • To better integrate with Network Manager with increased efficiency, environmentally friendly procedures and enhanced safety by the implementation of RNP technology.		

2016_120_AF1 – ENAV Introduction of RNP1+RF and APV procedures in MXP and FCO			
Start Date	01/09/2017	**End Date**	31/03/2019
Project Leader	ENAV S.p.A		
Contributors			
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.3
Project Objective	• Improve air traffic management in operational situation where the airport capacity could suffer from existing design constraints; • Reduce track miles providing aircraft with shortest path taking advantage from RF functionality.		

2016_147_AF1 – RNP APCH RWY 29 Vienna			
Start Date	01/06/2017	**End Date**	31/01/2019
Project Leader	Austro Control Österreichische Gesellschaft für Zivilluftfahrt mit beschränkter Haftung (Austro Control GmbH)		
Contributors	Deutsche Lufthansa AG		
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.3
Project Objective	• SIDs based on RF functionality in the initial leg implemented (all RWY directions) in order to minimize noise exposure and emissions and improve flight Efficiency; • Feasibility study RF Overlay based on TF segments (Multiple Track Turns) for one RWY conducted in order to enhance departure procedures, provide higher efficiency due to the fact that this MTT can be flown by all operators, and reduce overall noise exposure and emissions; • RWY29 Z/X (day/night operation): SBAS LPV200 approach & re-design of LNAV/VNAV according new ICAO DOC 8168 (AMDT 6) in LOWW implemented.		

2016_166_AF1 – Stockholm Arlanda Airport RNP Project (SAARP)			
Start Date	06/02/2017	**End Date**	31/12/2020
Project Leader	Swedavia AB		
Contributors	Nova Airlines AB (Novair)		
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.3
Project Objective	To be noted is task 9 "Analysis". This task is composed of a variety of analyses, Fuel consumption, navaid reduction possibilities and an enviromnental impact analysis. Moreover this IP is paving the way for further improvements in SID/STAR construction as this new concept makes it a simple task to adjust and refine layout of SID/STARs depending on Community or County Council expectations or Changes in current environmental condition for Stockholm Arlanda Airport.		

Family 1.2.4 – RNP1 operations (aircraft capabilities)

2016_077_AF1 – ES_FALCON 900 compliance with RNP 1 and RNP APCH [50% & 20%]			
Start Date	31/03/2017	**End Date**	30/12/2019
Project Leader	Spanish Airforce		
Contributors			
Main AF/Sub-AF/Family	AF1	S-AF 1.2	Family 1.2.4
Project Objective	The modification to PBN navigation for FALCON 900 White fleet will comply with the regulatory baseline of section 4.2 of the Eurocontrol Guidelines on conformity assessment for the interoperability Regulation of the single European sky (Edition 3.0 dated 20/02/2012) and so will enhance the interoperability Civil-Military. This directly contributes to PCP AF1 objectives. It will also be a solid basis for compliance with future PBN regulation. Adequate on-board equipage for PBN implementation which, in turn, is one of the elements that crucially contributes to the increase in capacity and safety and to the decrease in the carbon footprint of State aircraft operations. As the Falcon 900 fleet flies predominantly GAT, including within the 25 identified TMAs and airport, full compliance with applicable PBN specifications will alleviate capacity constraints that would result from handling based on exemption. This directly contributes to PCP AF1 objectives. To enable the Implementation of RNP (Required Navigation Performance) Approach with LPV (Localizer performance with vertical guidance) capabilities in Spanish Air Force Falcon 900 Fleet. RNAV (aRea NAVigation) capability, which means no operating restrictions for flight levels and increased safety. In this context, Eurocontrol expected that to have P-RNAV will reduce VHF communications between crew and ATM, between 30% and 50%.With RNP capabilities, the expected benefits are even higher. Possibility of short and direct routes, with consequent savings in time, fuel and operating costs, providing greater reach. Eurocontrol estimate forecasts an average time savings of 2-4 minutes of 13-15 miles per flight. Flexible route modification which facilitates also ATM (Air Traffic Management). Make operation at airports having no restrictions. As a resume, benefits of aircraft equipped with RNP1 and RNP APCH specifications includes: • Improved safety, situational awareness, and improved reliability; • Improved surveillance capabilities; • Seamless GAT accommodation; • Reduction of ATC workload.		

AF 2 Airport integration and throughput

The following table encompasses the list of implementation initiatives associated to ATM Functionality #2 that were awarded under the 2016 CEF Transport Calls for Proposal.

2016 CEF Call Designator	Title	Family	IP Description Page Number
2016_041_AF2	Basic A-CDM implementation at London Stansted Airport	2.1.3	117
2016_137_AF2	Initial AOP DUS	2.1.4	117
2016_117_AF2	ENAV Implementation of A-SMGCS Level 1 and 2 with Safety Nets in MXP and FCO	2.2.1	118
2016_021_AF2	TANGe (Tower ATS-System Next Generation) Phase 1	2.4.1	118
2016_150_AF2	Enablers for Airport Surface Movement related to Safety Nets [50% & 20%]	2.4.1	119
2016_069_AF2	Runway Overrun Prevention System (ROPS) bundled application for TAP Portugal [50% & 20%]	2.5.2	119

Family 2.1.3 – Basic A-CDM

2016_041_AF2 – Basic A-CDM implementation at London Stansted Airport			
Start Date	01/03/2017	**End Date**	31/05/2020
Project Leader	STAL - Stansted Airport Limited		
Contributors			
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.3
Project Objective	• Ensuring that the Airport complies to the Commission Implementing Regulation (EU) no 716/2014 by supporting the SESAR/PCP ATM functionality deployments in coordination with PCP Deployment Manager • Deploying Phase 1 by the end of 2018 • Deploying Phase 2 by the mid of 2020		

Family 2.1.4 – Initial Airport Operations Plan (AOP)

2016_137_AF2 – Initial AOP DUS			
Start Date	15/02/2017	**End Date**	01/06/2018
Project Leader	Flughafen Düsseldorf GmbH		
Contributors	DFS Deutsche Flugsicherung GmbH		
Main AF/Sub-AF/Family	AF2	S-AF 2.1	Family 2.1.4
Project Objective	• Implementation of an Initial AOP to enhance common situational awareness and efficiency of operations • Implementation of an Initial AOP to be ready to connect the AOP with the NOP (Family 4.2.4.) • Improved predictability and resilience • Improved decision-making-process of stakeholders due to provision of common parameters for monitoring and examination		

Family 2.2.1 – A-SMGCS Level 1 and 2

2016_117_AF2 – ENAV Implementation of A-SMGCS Level 1 and 2 with Safety Nets in MXP and FCO			
Start Date	07/02/2017	**End Date**	31/12/2020
Project Leader	ENAV S.p.A		
Contributors	Aeroporti di Roma S.p.A., Società per Azioni Esercizi Aeroportuali – SEA		
Main AF/Sub-AF/Family	AF2	S-AF 2.2	Family 2.2.1
Project Objective	• To fulfill A-SMGCS Level 1 in MXP and FCO by extending MLAT coverage; • To Integrate SNET foreseen for A-SMGCS Level 2 in MXP and FCO; • To equip Roma FCO and Milano MXP vehicles with ADS-B technology and Graphic Display enabling the visualisation of the vehicles position with the airport map, the surrounding traffics and SNET alerts; • To equip Milano MXP and Roma FCO control rooms with Graphic Display enabling the visualisation of the vehicles position on the airport map, the surrounding traffics and SNET alerts.		

Family 2.4.1 – A-SMGCS Routing and Planning Functions

2016_021_AF2 – TANGe (Tower ATS-System Next Generation) Phase 1			
Start Date	07/02/2017	**End Date**	31/01/2018
Project Leader	DFS Deutsche Flugsicherung GmbH		
Contributors			
Main AF/Sub-AF/Family	AF2	S-AF 2.4	Family 2.4.1
Project Objective	The project TANGe (Tower ATS-system Next Generation) will have to its main objectives the implementation of core PCP functionalities with regard to deploying A-SMGCS Routing and Planning Functions as well as significantly improving the associated Airport Safety Nets at the airports of Frankfurt (EDDF), Munich (EDDM), Düsseldorf (EDDL) and Berlin (EDDB). Project TANGe is structured into three phases of which the dedicated project objectives are as follows: • Phase 1: System design for DFS in-house development of the TANGe PCP compliant tower-ATS system. Therewith, TANGe Phase 1 will provide a site independent system specification in order to ensure that the system and requirements meet operational needs and to ready the system for safe and reliable air traffic management operations at all German PCP airports. Phase 1 will conclude by describing PCP IR S-AF 2.4 and S-AF 2.5 compliance for German PCP Towers. • Phase 2: The TANGe system fully readied for operational roll-out at all German PCP airports will be deployed and taken into operational use at the airports of Frankfurt (EDDF), Munich (EDDM), Düsseldorf (EDDL) and Berlin (EDDB). Phase 2 will conclude by achieving full PCP IR S-AF 2.4 and S-AF 2.5 compliance for EDDF, EDDM, EDDL and EDDB. • Phase 3: The TANGe system will be migrated on to SWIM services in line with the PCP IR (EU No. 716/2014) requirements for AF5 Initial SWIM. The implemented interfaces will be based on yellow profile definition.		

2016_150_AF2 – Enablers for Airport Surface Movement related to Safety Nets [50% & 20%]			
Start Date	07/02/2017	**End Date**	31/12/2020
Project Leader	Aéroports De Paris (ADP)		
Contributors	Aéroports de la Côte d'Azur; Société Air France; Schiphol Nederland B.V.; Brussels Airport Company NV/SA; Københavns Lufthavne A/S; the French Republic – Ministry of the Environment, Energy and the Sea, DGAC (Direction générale de l'aviation civile), DSNA (Direction des services de la navigation aérienne); DAA plc; Fraport AG Frankfurt Airport Services Worldwide; STAL – Stansted Airport Limited; Manchester Airport PLC; Flughafen München GmbH; Aeroporti di Roma S.p.A.; Swedavia AB; Naviair		
Main AF/Sub-AF/Family	AF2	S-AF 2.4	Family 2.4.1
Project Objective	As from the 2016 CEF Transport Calls for Proposals airport operators and SDAG have opted for a coordinated and synchronized approach to the priority families in IR 716/204 ATM functionality 2 : Airport Integration and throughput. This is a coordinated approach to 4 families in the SESAR Deployment Programme: • 2.2.1: A-SMGCS Levels 1 and 2 (Advanced Surface Movement Guidance and Control System) • 2.4.1: A-SMGCS routing and planning functions • 2.5.1: Airport safety nets associated with A-SMGCS (Level 2) • 2.5.2: Aircraft and vehicle systems contributing to airport safety nets; The aim of this unprecedented coordinated project is to improve ATM performance in Europe through the modernisation and harmonisation of ATM systems that will enhance the safety for the passengers at our airports. Consequently, the present joint application brings relevant benefits in terms of safety (contributing to the EC high level SES goal of increasing it by a factor 10). Thanks to this collaboration which sees involvement of 13 airport operators (all members of SDAG), 4 Air Navigation Service Provides (DSNA, NATS, Naviair (Naviair only contribute pro bono) and Skyguide) and 1 Airspace User (Air France) the following aspects will be ensured: • Enhanced level of synchronization • Sharing of the best practises among of the participants • Reduced fragmentation • Enhance cross-border connections, international (9 EU Countries plus 1 third country covered in the project), national and regional traffic • Professional management		

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

2016_069_AF2 – Runway Overrun Prevention System (ROPS) bundled application for TAP Portugal [50% & 20%]			
Start Date	07/02/2017	**End Date**	31/12/2020
Project Leader	TRANSPORTES AEREOS PORTUGUESES SA (TAP Portugal)		
Contributors			
Main AF/Sub-AF/Family	AF2	S-AF 2.5	Family 2.5.2
Project Objective	The objective of the proposed Action is to equip TAP Portugal fleet with ROPS functionality. This covers retrofit of the existing fleet, and also forward fit for the newly delivered aircraft.		

AF 3 Flexible ASM and Free Route

The following table encompasses the list of implementation initiatives associated to ATM Functionality #3 that were awarded under the 2016 CEF Transport Calls for Proposal.

2016 CEF Call Designator	Title	Family	IP Description Page Number
2016_037_AF3	Deployment of LARA System in Spain	3.1.1	121
2016_133_AF3	NM system management of real time airspace data	3.1.2	121
2016_134_AF3	Implementation of rolling ASM/ATFCM	3.1.3	122
2016_043_AF3	VCS-IP - Upgrade of Voice Communication Systems to support ATM VoIP communications	3.1.4	122
2016_075_AF3	FAB CE wide Study of DAM and STAM [Part A & B]	3.1.4	123
2016_135_AF3	Implementation of pre-defined airspace configuration	3.1.4	124
2016_026_AF3	System Procurement for Deployment of PCP Air Traffic Control System iCAS at DFS and LVNL	3.2.1	125
2016_036_AF3	Deployment of SACTA-iTEC	3.2.1	126
2016_040_AF3	Upgrade of trajectory management in SACTA-iTEC	3.2.1	127
2016_055_AF3	FR_Upgrade of French Military Control and Reporting Centres (CRC) for civil-military interoperability	3.2.1	128
2016_085_AF3	ATM System Upgrade Towards Free Route Airspace	3.2.1	128
2016_087_AF3	iTEC Tests, Validations and Planning (iTEC-TVP)	3.2.1	129
2016_110_AF3	ENAV Automated ENV Data Interchange for FDP/ERATO	3.2.1	130
2016_115_AF3	ENAV 4-Flight Deployment in Italy - Third Stage 2017-2018	3.2.1	130
2016_121_AF3	Free Route	3.2.1	130
2016_068_AF3	Gate One Free Route Airspace (GO FRA) Study-General Call [Part A & B]	3.2.4	131

Family 3.1.1 – ASM Tool to support AFUA

2016_037_AF3 – Deployment of LARA System in Spain			
Start Date	07/02/2017	**End Date**	31/12/2018
Project Leader	Entidad Pública Empresarial ENAIRE		
Contributors	Spanish Air Force		
Main AF/Sub-AF/Family	AF3	S-AF 3.1	Family 3.1.1
Project Objective	• The project aims at the installation and deployment of a common ASM (Airspace Management) civil-military co-ordination system (LARA) interoperable with NM (Network Manager), at national level in Spain • With the implementation of this Management Tool, the ASM/ATFCM national structure palliate greatly the lack of a proper tool to support the FUA, and the subsequent implementation of AFUA, as well as facilitate airspace real time management, and promote the process of ASM information sharing • To implement civil-military performance monitoring system (PRISMIL) at national level as direct enabler of AF# 3. • With the implementation of this performance monitoring system, the performance measurement and KPIs (Key Performance Indicators) production will be achieved • To enhance civil-military interoperability		

Family 3.1.2 – ASM management of real time airspace data

2016_133_AF3 – NM system management of real time airspace data			
Start Date	01/04/2017	**End Date**	31/05/2020
Project Leader	Eurocontrol / Network Manager		
Contributors			
Main AF/Sub-AF/Family	AF3	S-AF 3.1	Family 3.1.2
Project Objective	• Upgrades of NM systems related to real time data exchanges • Ensure the interoperability of NM systems with civil and military ANSPs, joint ASM bodies, Airspace Users, and CFSPs systems in the field of real time airspace data as agreed in the NMF cooperative decision making process		

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

2016_134_AF3 – Implementation of rolling ASM/ATFCM			
Start Date	01/04/2017	**End Date**	31/12/2020
Project Leader	Eurocontrol / Network Manager		
Contributors	Société Air France; Deutsche Lufthansa AG; Lufthansa Systems GmbH & Co. KG; Sabre Austria GmbH		
Main AF/Sub-AF/Family	AF3	S-AF 3.1	Family 3.1.3
Project Objective	• Upgrades of NM system related to full rolling ASM/ATFCM process • Procedural changes related to full rolling ASM/ATFCM process • Upgrade of SABRE solution for an automatic processing of AUP • Upgrade of SABRE solution to receive and read in real time data • Evaluation of real time exchanges in Sabre solution with support of dedicated Airspace Users (Austrian Airlines) • Upgrade of Lufthansa Systems Lido/Flight software to manage the ASM information as provided by the NM for Lufthansa (including its daughter companies using Lido/Flight) and Air France		

Family 3.1.4 – Management of Dynamic Airspace configurations

2016_043_AF3 – VCS-IP - Upgrade of Voice Communication Systems to support ATM VoIP communications			
Start Date	01/03/2017	**End Date**	31/12/2020
Project Leader	Croatia Control Ltd.		
Contributors			
Main AF/Sub-AF/Family	AF3	S-AF 3.1	Family 3.1.4
Project Objective	• Upgrade of all main and backup Voice Communication Systems to comply with EUROCAE ATM VoIP standards as a prerequisite for implementation of PCP AF3 Flexible Airspace Management (ASM) and Free Route; • Safety Assessment of the upgraded main and backup Voice Communication Systems.		

2016_075_AF3_A – FAB CE wide Study of DAM and STAM - General Call 2016_075_AF3_B – FAB CE wide Study of DAM and STAM - Cohesion Call			
Start Date	07/02/2017	**End Date**	31/12/2018
Project Leader	FABCE, Aviation Services, Ltd. (FABCE, Ltd.)		
Contributors	Austro Control Österreichische Gesellschaft für Zivilluftfahrt mit beschränkter Haftung (Austro Control GmbH); Slovenia Control, Slovenian Air Navigation Services, Limited (Slovenia Control, Ltd)		
Main AF/Sub-AF/Family	AF3	S-AF 3.1	Family 3.1.4
Project Objective	The objective of the DAM/STAM project to define a FAB CE wide high level operational concept and related implementation plan for the application of STAM and FUA. In particular, the project aims to close the gaps in the following Deployment Programme families for FAB CE States: • 3.1.1 ASM Tool to support AFUA • 3.1.2 ASM management of real time airspace data • 3.1.3 Full rolling ASM/ATFCM process and ASM information sharing • 3.1.4 Management of Dynamic Airspace con • 4.1.2 STAM Phase 2 • 4.4.2 Traffic Complexity Tools The main objective of the DAM/STAM study project is to produce a FAB CE key high-level document that contains all relevant elements required for a consequent FAB CE wide implementation of DAM and STAM processes. As such the DAM/STAM final report can be seen as an implementation roadmap for all involved FAB CE ANSP, a FAB CE ASM document that defines the high level operational concept for FAB CE DAM/STAM by describing the collaboration, processes, procedures and tools needed for later implementation. The second main objective of the DAM/STAM study is to provide the involved ANSP with all required information necessary to plan for closing existing gaps to PCP/Deployment Plan on a local level. As a FAB CE wide assessment revealed gaps to the DP 2016 among the ANSP in all the related AF families, the DAM/STAM study is the FAB CE led activity to coordinate the closure of these remaining gaps. Furthermore, it is a stated goal of the DAM/STAM study to describe and prepare the conditions required to allow for a FAB CE wide harmonization of ASM-, FUA-, DAM and STAM processes. The effect of this is seen to be FAB CE wide ASM that will allow to unlock the full operational benefits associated to FAB CE FRA implementation as well as to a GO FRA implementation. A FAB CE wide future implementation of DAM/STAM processes and procedures following the study is seen to yield the following additional goals : • Enable equitable treatment of all airspace users in the allocation of airspace and required trajectories on short notice and increased flexibility in dealing with short term adjustments of airspace configurations (achieved through data-sharing and collaboration mechanisms); • Provide proactive route/trajectory activation/ airspace reservation or restriction allocation through a collaborative (cross-border) decision making process to accommodate short term changes; • Provide supporting processes and tools (requirements) that allow for the FAB CE FRA to achieve optimal operational efficiency • Overall increase of airspace capacity through optimized utilization of airspace configurations and scenarios, as STAM will provide more opportunities to balance demand and available capacity; • More robust and reliable planning for the Airspace Users through a common view amongst all stakeholders on the availability of		

	airspace and a larger selection of airspace configurations tailored towards different scenarios; • Enable airspace users to make informed decisions and to increase their benefits by offering a larger choice of possible routeing and (until full FRA implementation is completed) airspace options.

2016_135_AF3 – Implementation of pre-defined airspace configuration			
Start Date	01/04/2017	**End Date**	31/12/2020
Project Leader	Eurocontrol / Network Manager		
Contributors			
Main AF/Sub-AF/Family	AF3	S-AF 3.1	Family 3.1.4
Project Objective	• Upgrades of NM system related to predefined and dynamic airspace configurations • Procedural changes related to predefined and dynamic airspace configurations		

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

2016_026_AF3 – System Procurement for Deployment of PCP Air Traffic Control System iCAS at DFS and LVNL			
Start Date	07/02/2017	**End Date**	31/12/2020
Project Leader	DFS Deutsche Flugsicherung GmbH		
Contributors	Luchtverkeersleiding Nederland (LVNL)		
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective	• iCAS will deploy up to 19 so called Families as laid down by the SESAR Deployment Manager within the Deployment Programme 2016 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. • 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. • 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. • 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 Navigacija (Lithuania) and two additional ANSPs in order to explore their iTEC interest and to elaborate the best way to join iTEC. • It is the objective of DFS and LVNL to deploy iCAS in accordance with the deployment plan of this coordinated 2016 CEF funding application through the SESAR Deployment Manager. The potential utilization of funding through the Connecting Europe Facilities (CEF) will offset 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. • The project contributes to the free movement of people within the European Union by enabling safe and reliable transport within which passengers put their trust. With a total of more than three million flights and over 450 million passengers flying through the European core airspace affected by this project, the benefits of the implementation are immense towards the European public as well to the European economic growth generated and facilitated via air transport.		

2016_036_AF3 – Deployment of SACTA-iTEC			
Start Date	07/02/2017	**End Date**	31/12/2020
Project Leader	Entidad Pública Empresarial ENAIRE		
Contributors			
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective	The project objective is the deployment of the iTEC (Interoperability Through European Cooperation) version of the SACTA system, that is aimed at the fulfillment of several ATM (Air Traffic Management) functionalities linked to the PCP (Pilot Common Project) requirements. SACTA is the Spanish Air Traffic Control (ATC) system. SACTA-iTEC will be deployed in all 5 Spanish ACCs (Area Control Center) and all TMAs (Terminal Maneuvering Area). Therefore, it will provide the operational improvements in the whole Spanish airspace. SACTA-iTEC is being deployed within the iTEC (Interoperability Through European Cooperation) collaboration framework in order to attain a very high level of interoperability within European systems. This means that, in order to attain a very high level of interoperability and commonality, all iTEC partners, namely five main European Air Navigation Service Providers (NATS (United Kingdom), DFS (Germany), LVNL (Holland), AVINOR (Norway) and ENAIRE (Spain)) are closely working together in the deployment of a common FDP(Flight Data Processing) and CWP(Controller Working Position) system. The objectives of this Implementing Project are: • Enable the Implementation of DCTs • iTEC FDP (Flight Data Processing) and CWP (Controller Working Position) license acquisition • Deployment of Tactical Trajectory Module (TTM) within the Spanish ATC system SACTA, as an enabler of FRA (Free Route). It will provide the tactical MTCD (Medium Term Conflict Detection) function. • HW acquisition and deployment for the TTM • Operational training for DCTs (Direct Routes) and TTM • Deployment of Mode S DAPs (Downlinked Aircraft Parameters), as an enabler for 4D trajectory improvements and alerts enhancements • Commissioning of the TTM and Mode S DAPs by 31/12/2020 This Implementing Project will improve air traffic management reducing costs and delays in the whole ATM network. In addition, it will have a positive impact on the environment by a reduction of emissions through more efficient routes (shorter routes). This project is presented alongside project " Upgrade of trajectory management in SACTA-iTEC". The final products implemented within both projects will merge afterwards (after CEF2016 eligibility period) to produce the final SACTA system version that will be able to fully comply with families 1.1.2, 3.2.1 and 3.2.4. There is no activities nor investment overlap between the both projects awarded in CEF2016 call.		

2016_040_AF3 – Upgrade of trajectory management in SACTA-iTEC			
Start Date	01/01/2018	**End Date**	31/12/2020
Project Leader	Entidad Pública Empresarial ENAIRE		
Contributors			
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective	The project objective is the deployment of the iTEC (Interoperability Through European Cooperation) version of the SACTA system, that is aimed at the fulfilment of several ATM functionalities linked to the PCP requirements.SACTA-iTEC will be deployed in all 5 Spanish ACCs (Area Control Center) and all TMAs (Terminal Manoeuvring Area). So it will provide the operational improvements hereinafter described in the whole Spanish airspace. SACTA-iTEC is being deployed within the iTEC (Interoperability Through European Cooperation) collaboration framework in order to attain a very high level of interoperability within European systems. This means that, in order to attain a very high level of interoperability and commonality, all iTEC partners, namely five main European Air Navigation Service Providers (NATS (United Kingdom), DFS (Germany), LVNL (Holland), AVINOR (Norway) and ENAIRE (Spain)) are closely working together in the deployment of a common FDP(Flight Data Processing) and CWP(Controller Working Position) system. In line with this common framework, this proposal is very closely related to some implementation projects which also include the upgrade of iTEC partners' ATC systems, such us 2015_190_AF3 (DFS and LVNL) and 2015_227_AF3_A (NATS within Borealis), that were awarded in previous 2015 CEF Call. The objective of this Implementation Project is the implementation of a new version of SACTA-iTEC that is aimed at the fulfillment of several ATM functionalities linked to the PCP requirements, i.e. the following families: • Family 1.1.2 AMAN upgrade to include Extended Horizon function. Provision of arrival sequence time and management of AMAN constraints • Family 3.2.1 Upgrade of ATM systems (NM, ANSPs, AUs) to support DCTs and FRA This project aims at the technical upgrade of SACTA-iTEC system by improving trajectory management for covering aditional PCP objectives such us: • Planner MTCD (Medium Term Conflict Detection) • MONA (Monitoring Aids) • 4D Trajectory FDP (Flight Data Processing) • ATC (Air Traffic Control) to ATC Flight Data Exchange (OLDI and SYSCO) • Dynamic sectorization • Cross-border DCTs (Direct Routes) • Enhance conflict management tools and controller HMI (Human Machine Interface) functions to support conflict detection and resolution (such as What-if and What-else) • Capability for initial Multi Sector Planner • Extended AMAN (Arrival Manager) The project submitted under Call CEF2016 Upgrade of trajectory management in SACTA-iTEC, covers the integration of iTEC FDP (Flight Data Processing) and CWP (Controller Working Position) into SACTA system. This project will end up with a factory PQT (Pre QualificationTest) of the integration. This project is presented alongside project "Deployment of SACTA-iTEC". The final products implemented within both projects will merge afterwards (after CEF2016 eligibility period) to produce the final SACTA system version that will be able to fully comply with families 1.1.2, 3.2.1 and 3.2.4. There is no activities nor investment overlap between the projects submitted to CEF2016 call.		

2016_055_AF3 – FR_Upgrade of French Military Control and Reporting Centres (CRC) for civil-military interoperability			
Start Date	07/02/2017	**End Date**	30/09/2019
Project Leader	French Ministry of Defence - DGA		
Contributors			
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective	• Assure the preservation of interoperability services between military CRC and civil en-route control center during FRA control • Pave the way to the civil-military coordination for implementation of Free-routing		

2016_085_AF3 – ATM System Upgrade Towards Free Route Airspace			
Start Date	07/02/2017	**End Date**	31/12/2018
Project Leader	Polska Agencja Żeglugi Powietrznej (PANSA - Polish Air Navigation Services Agency)		
Contributors	-		
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective	The main projects objective is implementation of ATM system upgrade, which will enable efficient operation in DCT and FRA. The PANSA upgrade project will be a continuation of series of planned upgrades of PANSA ATM system. The systems already have some functionality supporting DCTs/FRA. This Upgrade project will include FDPS, Safety-Net Server and system HMI modifications to fully support DCTs/FRA operations. Additionally the PANSA upgrade is including PANSA system functionalities for Berlin XMAN. In order to reach the goal of the PCP in the entire EU airspace, the inclusion of the upper airspace usage the FRA implementation within neighbouring FIRs is necessary. Otherwise the FRA functionality within the EU airspace directly prior to the external boundaries will be hampered through the fixed transfer points.		

2016_087_AF3 – iTEC Tests, Validations and Planning (iTEC-TVP)			
Start Date	01/03/2017	**End Date**	31/12/2020
Project Leader	Polska Agencja Żeglugi Powietrznej (PANSA - Polish Air Navigation Services Agency)		
Contributors	State Enterprise "Oro Navigacija"		
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective	The iTEC Test, Validation and Planning project concerns the second phase of the PANSA migration to the iTEC-based ATM system. The project will have the following objectives: • Determination of requirements for the PANSA iTEC-based system along with the transfer of PEGASUS P_21 system achieved FRA support to the TEC-based system; • Validation of iTEC system requirements for support of DCT/FRA; • Transfer and validation of PANSA DCT/FRA CONOPS developed in P_21 (and its upgrade) system to next ATM system; • Minimization of the risk of the system rejection by the operational personnel, through their involvement into the requirements validation using a test platform (risk identified in 2014/15, mitigation through this project, based on the project 131AF3 - 1st part of the upgrade of the P_21 PEGASUS system to SESAR functionalities - Test and Validation Platform); • Preparation of PANSA requirements for the next iTEC-based ATM system fully supporting cross-border DCT and FRA; • Practical preparation of PANSA (iTEC platform and staff) for collaborative work over iTEC in the future. iTEC Test, Validation and Planning project is a next step in a way of PANSA towards full deployment of cross-border DCT and FRA. Before that PANSA need to support constant development of actual ATM System Pegasus_21. Oro Navigacija, which is, with PANSA, member of Baltic FAB and together with PANSA will access DFS iTEC Collaboration Group, will contribute to the project. Especially in the matter of cross-border DCT and FRA concept. PANSA and Oro Navigacija expert will work together to achieve sufficient level of cooperation between both ATM Systems: future iTEC Based PANSA System and Oro Navigacija iTEC System, improving interoperability. PANSA develops currently the ATM System in two parallelized paths: • Path 1 – Achievement of the PCP-required functionalities, in particular DCT/FRA (AF 3.2.1) in the current P_21 system till 2018/2019; • Path 2 – Transfer of the achieved P_21 functionalities to the iTEC-based system and further joint developments within the iTEC Collaboration.		

2016_110_AF3 – ENAV Automated ENV Data Interchange for FDP/ERATO			
Start Date	01/06/2017	**End Date**	31/05/2019
Project Leader	ENAV S.p.A		
Contributors			
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective	Implement automatic interchange of data to improve operations of FDP and MTCD.		

2016_115_AF3 – ENAV 4-Flight Deployment in Italy - Third Stage 2017-2018			
Start Date	07/02/2017	**End Date**	31/12/2018
Project Leader	ENAV S.p.A		
Contributors			
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective	• Design, develop and operational deployment of a modern interoperable ATM system fully SESAR compliant and based on the brand new Coflight FDPS • Enable the implementation of free route operations in the whole Bluemed FAB Airspace • Allow Airspace Users to fly preferred trajectories on regional / Bluemed FAB basis		

2016_121_AF3 – Free Route			
Start Date	07/02/2017	**End Date**	31/12/2020
Project Leader	Deutsche Lufthansa AG		
Contributors	Société Air France; Lufthansa Systems GmbH & Co. KG		
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.1
Project Objective	• Introduce full Free Route flight planning capabilities at Lufthansa (including its daughter companies Eurowings, Germanwings, Lufthansa Cargo, Lufthansa Cityline (all using the Lufthansa Systems Lido/Flight software) • Introduce full Free Route flight planning capabilities at Air France		

Family 3.2.4 – Implement Free Route Airspace

2016_068_AF3_A – Gate One Free Route Airspace (GO FRA) Study-General Call 2016_068_AF3_B – Gate One Free Route Airspace (GO FRA) Study - Cohesion Call			
Start Date	01/09/2017	**End Date**	30/11/2019
Project Leader	FABCE, Aviation Services, Ltd. (FABCE, Ltd.)		
Contributors	Austro Control Österreichische Gesellschaft für Zivilluftfahrt mit beschränkter Haftung (Austro Control GmbH); State Enterprise "Oro navigacija"; Polska Agencja Żeglugi Powietrznej (PANSA - Polish Air Navigation Services Agency); Romanian Air Traffic Services Administration – ROMATSA RA; Slovenia Control, Slovenian Air Navigation Services, Limited (Slovenia Control, Ltd)		
Main AF/Sub-AF/Family	AF3	S-AF 3.2	Family 3.2.4
Project Objective	The overall objective of the GO FRA Study document defines the operational high level criteria required for a future implementation of FRA in the Gate One (GO) area. The development of the GO FRA shall: • Analyse the potential benefits for the Airspace Users; • Contrast the potential benefits with effort estimation on the ANSP side: • Evaluate the operationally, technically and economically most feasible solution; • Focus on the main elements of the pan-European FRA deployment as defined by PCP requirements; • Provide an enabling framework for the discussion with all involved stakeholders from adjacent FAB's, non-EU FIR's, Borealis Alliance and the NM; • Sketch a roadmap for future implementation of GO FRA; • Carry out implementation of urgent Free Route elements by selected project members, as a result of the Gate One Free Route study and simulations. The GO FRA Study shall be built on existing FRA initiatives and the common denominators between these FRA initiatives with the goal of avoiding additional layers of complexity, decision-making and substantial additional cost for the participating ANSP's. The following guiding principles shall be applied throughout the development of the GO FRA Study: • Pragmatic solutions: Relevant preparatory work has already been performed in the context of the different national/regional FRA initiatives and by the NM. The GO FRA Study shall take advantage of this work to ensure compatibility of the selected solution and to minimise the ANSP's work effort and associated costs; • Cost-efficiency: The goal of the development of the Study is to ensure that ANSP costs are weighed against airspace user benefits throughout the decision-making process; • Respect for ANSP efforts: Minimize ANSP costs and efforts by utilizing existing work done in FAB and FRA context, and • Ensure user benefit: Assess the added value for the end-user (the service providers as well as the airspace users) throughout the study lifecycle.		

AF 4 Network Collaborative Management

The following table encompasses the list of implementation initiatives associated to ATM Functionality #4 that were awarded under the 2016 CEF Transport Calls for Proposal.

2016 CEF Call Designator	Title	Family	IP Description Page Number
2016_039_AF4	STAM Phase 1 Implementation in Spain	4.1.1	133
2016_010_AF4	STAM Phase 2	4.1.2	133
2016_123_AF4	STAM Phase 2 in combination with Target Times	4.1.2	134
2016_008_AF4	Flight evolution and upgrade of interfaces with NM stakeholders	4.2.3	134
2016_100_AF4	Provision of EFPL data and initial FF-ICE/ 1 readiness	4.2.3	135
2016_131_AF4	AOP-NOP Integration Extended Implementation	4.2.4	135
2016_114_AF4	ENAV Traffic Complexity Tool Implementation	4.4.2	136
2016_024_AF4	Deployment of an Automated Support Tool for Traffic Complexity Assessment at DFS	4.4.2	136

Family 4.1.1 – STAM Phase 1

2016_039_AF4 – STAM Phase 1 Implementation in Spain			
Start Date	07/02/2017	**End Date**	30/06/2018
Project Leader	Entidad Pública Empresarial ENAIRE		
Contributors			
Main AF/Sub-AF/Family	AF4	S-AF 4.1	Family 4.1.1
Project Objective	Achieve Full STAM Phase 1 implementation in Spain by: • Developing STAM Phase 1 Concept of Operations • Developing STAM Procedures for Spanish Control Centers • Developing Operational Guidance Material • Performing Training of Operational Personnel		

Family 4.1.2 – STAM Phase 2

2016_010_AF4 – STAM Phase 2			
Start Date	01/07/2017	**End Date**	31/12/2020
Project Leader	Austrian Airlines AG		
Contributors	Deutsche Lufthansa AG		
Main AF/Sub-AF/Family	AF4	S-AF 4.1	Family 4.1.2
Project Objective	• Upgrade the flight planning system SABRE with regard to the STAM Phase 2 concept • Upgrade the flight planning system SABRE with regard to the Target Time concept • Upgrading the Operations control system Netline Ops with regard to the Target Time concept (slot swapping) • Update the operational procedures of the respective LH Group airlines in accordance with the STAM Phase 2 procedures • Update the operational procedures of the respective LH Group airlines in accordance with the target Times procedures including slot swapping • Integrate the new operational concepts (systems, procedures) of STAM phase 2 and Target Times into the respective LH group airlines procedures		

2016_123_AF4 – STAM Phase 2 in combination with Target Times			
Start Date	07/02/2017	**End Date**	11/12/2020
Project Leader	Deutsche Lufthansa AG		
Contributors	Société Air France; Lufthansa Systems GmbH & Co. KG		
Main AF/Sub-AF/Family	AF4	S-AF 4.1	Family 4.1.2
Project Objective	• Upgrade the flight planning system Lido/Flight with regard to the STAM Phase 2 concept • Upgrade the flight planning system Lido/Flight with regard to the Target Time concept • Upgrading the Operations control system Netline Ops with regard to the Target Time concept (slot swapping) • Update the operational procedures of the respective LH Group and AF airlines in accordance with the STAM Phase 2 procedures • Update the operational procedures of the respective LH Group and AF airlines in accordance with the target Times procedures including slot swapping • Integrate the new operational concepts (systems, procedures) of STAM phase 2 and Target Times into the respective LH group and AF airlines procedures		

Family 4.2.3 – Interface ATM systems to NM systems

2016_008_AF4 – Flight evolution and upgrade of interfaces with NM stakeholders			
Start Date	01/07/2017	**End Date**	31/12/2020
Project Leader	Austrian Airlines AG		
Contributors	Deutsche Lufthansa AG		
Main AF/Sub-AF/Family	AF4	S-AF 4.1	Family 4.2.3
Project Objective	The aim of this project is to prepare and upgrade the message exchange between NM systems and SABRE flight plan filing systems in respect of collaborative flight planning. Focus on implementation of the EFPL including the planned 4D trajectory of the flight, as well as, flight performance data. To include all potential interfaces with the data linked system in order to access to the aircraft flight data and the adaptation of the trajectory prediction sub system to integrate such additional information in SABRE flight planning system. The project includes: • Preparation and delivery of FPL (4d trajectory) according pre-tactical request of airline • Inflight transmission of tactical decision from the airline NOC and/or aircrafts to NM • Integration of the NM information (e.g. hot spots information, target times) to improve the tactical steering inflight		

2016_100_AF4 – Provision of EFPL data and initial FF-ICE/ 1 readiness			
Start Date	07/02/2017	**End Date**	22/09/2020
Project Leader	Deutsche Lufthansa AG		
Contributors	Eurocontrol / Network Manager; Société Air France; Lufthansa Systems GmbH & Co. KG;		
Main AF/Sub-AF/Family	AF4	S-AF 4.1	Family 4.2.3
Project Objective	• Upgrade the flight planning system Lido/Flight to enable the EFPL exchange with NM operationally • Upgrade the flight planning system Lido/Flight in accordance with FF/ICE 1/FIXM provisions as far as applicable • Update the operational procedures of the respective LH Group airlines and Air France in accordance the procedures of collaborative flight planning and 4D flight plan filing (EFPL and FF/ICE eFPL/ FIXM) • Integrate the new operational concepts (systems, procedures) of collaborative flight planning and 4D flight plan filing (EFPL/ FF-ICE 1 eFPL/ FIXM) into LH group airlines procedures		

Family 4.2.4 – AOP/NOP Information Sharing

2016_131_AF4 – AOP-NOP Integration - Extended Implementation			
Start Date	01/03/2017	**End Date**	31/12/2020
Project Leader	Eurocontrol / Network Manager		
Contributors	Aena S.A.; Schiphol Nederland B.V.; Brussels Airport Company NV/SA; Swedavia AB		
Main AF/Sub-AF/Family	AF4	S-AF 4.1	Family 4.2.4
Project Objective	• Adapt/harmonize interfacing for data exchange • Adapt data processing to type of airport for better predictability and improved rolling plans on NM and Airport sides • Implement and test AOP-NOP exchange		

Family 4.4.2 – Traffic Complexity Tools

2016_024_AF4 – Deployment of an Automated Support Tool for Traffic Complexity Assessment at DFS			
Start Date	07/02/2017	**End Date**	31/12/2020
Project Leader	DFS Deutsche Flugsicherung GmbH		
Contributors			
Main AF/Sub-AF/Family	AF4	S-AF 4.1	Family 4.4.2
Project Objective	• To deploy an Automated Support for Traffic Complexity Assessment Tool on all DFS Control Centers (Langen, Munich, Bremen, Karlsruhe). • To provide "what if" functionality for local flow management based on fast-time simulation ensuring accurate trajectory based traffic-forecasts. • To support local traffic complexity management entailing federated dynamic demand and capacity balancing taking into account current and expected traffic load and estimating controllers´ workload. • To integrate timely information from various domains (e.g. NM, weather, A-CDM, FUA) aiming at supporting FMPs and Supervisors in decision making.		

2016_114_AF4 – ENAV Traffic Complexity Tool Implementation			
Start Date	01/06/2017	**End Date**	31/12/2020
Project Leader	ENAV S.p.A		
Contributors			
Main AF/Sub-AF/Family	AF4	S-AF 4.1	Family 4.4.2
Project Objective	Main objective is to implement Traffic Complexity Tool within the four Italian ACCs.		

AF 5 Initial SWIM

The following table encompasses the list of implementation initiatives associated to ATM Functionality #5 that were awarded under the 2016 CEF Transport Calls for Proposal.

2016 CEF Call Designator	Title	Family	IP Description Page Number
2016_118_AF5	ENAV Network enhancement toward NewPENS	5.1.2	138
2016_129_AF5	NewPENS Stakeholders contribution for the procurement and deployment of NewPENS	5.1.2	138
2016_141_AF5	Deploy SWIM governance	5.1.3	139
2016_038_AF5	Implementation of an IP-based G/G data communication network in ENAIRE (REDAN)	5.2.1	140
2016_044_AF5	Modernization of IP based G/G Data Network in CCL - CaRT/iWAN-NG - Phase II. – Implementation	5.2.1	140
2016_071_AF5	PT_Implement a PT Air Force IP Backbone connected into NewPENS	5.2.1	140
2016_092_AF5	ITAF WAN	5.2.1	141
2016_109_AF5	BLUEMED FAB IP Network deployment	5.2.1	141
2016_143_AF5	ATM Network 2.0 Amsterdam	5.2.1	141
2016_034_AF5	Upgrade/Replace Infrastructure to facilitate SWIM	5.2.2	142
2016_149_AF5	Austro Control iSWIM Capability Infrastructure	5.2.2	142
2016_062_AF5	Creating Local Security Operation Center	5.2.3	142
2016_116_AF5	ENAV Security Operational Centre (iSOC) Upgrade	5.2.3	143
2016_035_AF5	ENAIRE exchange of Aeronautical Information data in AIXM5.1	5.3.1	143
2016_064_AF5	AIMSIL - AIM Systems Integration Layer	5.3.1	144
2016_108_AF5	ENAV ADQ - Aeronautical Data Quality system interface evolution (ADQ2)	5.3.1	144
2016_119_AF5	ENAV Airport MET System and UPM-MET database upgrade	5.4.1	144
2016_148_AF5	Implementation of Automated Meteorological Information Exchange	5.4.1	145
2016_033_AF5	Use SWIM methods to replace AFTN feeds for A-CDM	5.5.1	145
2016_065_AF5	SWIM implementation into ATS INFO/ARO system of ANS CR	5.6.1	146
2016_027_AF5	European Deployment Roadmap for Flight Object Interoperability	5.6.2	146

Family 5.1.2 – NewPENS: New Pan-European Network Service

2016_118_AF5 – ENAV Network enhancement toward NewPENS			
Start Date	07/02/2017	**End Date**	31/12/2018
Project Leader	ENAV S.p.A		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.1	Family 5.1.2
Project Objective	ENAV is already a PENS user. In order to fully complete its transition to NewPENS (ENAV proposed its national network to the future contractors of NewPENS) an enhancement of the current italian IP network connectivity is required. The ENAV national communication infrastructure (WAN) is constituted by the ENET network with POP (Point of Presence) for the delivery of PENS services. In each POP there are also present the related MSE (Security Modules for ENET) in order to guarantee security for any connection and data transmission/reception. Toward NewPENS, the overall ENET connectivity to PENS shall have to be upgraded in order to comply with the new NewPENS requirements, this implies: • The upgrade of the current ENET design and architecture; • The update of the network configuration up to remote sites; • The update of ENET software components (including Security Modules) that work as an interface from the sites towards ENET/NewPENS.		

2016_129_AF5 – NewPENS Stakeholders contribution for the procurement and deployment of NewPENS			
Start Date	15/02/2017	**End Date**	31/12/2020
Project Leader	Eurocontrol / Network Manager		
Contributors	Polska Agencja Żeglugi Powietrznej (PANSA - Polish Air Navigation Services Agency)		
Main AF/Sub-AF/Family	AF5	S-AF 5.1	Family 5.1.2
Project Objective	• Deploy an Internet Protocol (version6 and version4) Network Service necessary to support the SWIM Exchanges • Deploy 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 • Replace PENS1 terminating in June 2018		

Family 5.1.3 – Common SWIM Infrastructure Components

2016_141_AF5 – Deploy SWIM governance			
Start Date	07/02/2017	**End Date**	01/07/2019
Project Leader	The French Republic – Ministry of the Environment, Energy and the Sea, DGAC (Direction générale de l'aviation civile), DSNA (Direction des services de la navigation aérienne)		
Contributors	Société Air France; Austrian Airlines AG; Austro Control Österreichische Gesellschaft für Zivilluftfahrt mit beschränkter Haftung (Austro Control GmbH); State Enterprise "Air Traffic Services Authority" (BULATSA); Københavns Lufthavne A/S; Deutsche Lufthansa AG; DFS Deutsche Flugsicherung GmbH; Entidad Pública Empresarial ENAIRE; ENAV S.p.A; GIE EUMETNET; Eurocontrol; Finavia Corporation; Fraport AG Frankfurt Airport Services Worldwide; French Ministry of Defence – DGA; HungaroControl Hungarian Air Navigation Services Pte.Ltd.Co.; Luftfartsverket (LFV); Letové prevádzkové služby Slovenskej republiky, štátny podnik, (v skratke „LPS SR, š. p."); Flughafen München GmbH; NATS (En Route) plc; Navegação Aérea de Portugal - NAV Portugal, E.P.E.; Polska Agencja Żeglugi Powietrznej (PANSA - Polish Air Navigation Services Agency)		
Main AF/Sub-AF/Family	AF5	S-AF 5.1	Family 5.1.3
Project Objective	This project aims at implementing the phase 2 of the SDM SWIM Governance action plan defined in the Deployment Program 2016 (Addendum II as well as Families 5.1.3 and 5.1.4), thus ensuring a controlled evolution and a harmonized deployment of all SWIM elements. It can be considered as a ramp-up for the operational deployment of a solid and agile SWIM Governance. Based on the outputs of SESAR1 and of the Phase 1 of the SDM SWIM Action plan: • The project will define and set up an initial organizational structure with the related legal and financial framework, representative of all affected operational stakeholders, in order to execute the SWIM Governance within the context of the PCP. • The project will ensure a stable implementation and controlled evolution of SWIM standards, guidance material, foundation material, common components, the SWIM service lifecycle including service definitions and the compliance framework. • It will define SWIM policies, processes and functions to support the implementation of all aspects of SWIM, e.g. change control of SWIM Elements and assessment of compliance to SWIM standards. • The project will provide a collaborative platform for the communication and collaboration between all SWIM stakeholders and actors on all matters of SWIM Governance. • The project will deliver a set of tools and guidance supporting the contributors to SWIM deployment (service providers, information providers, IT specialists, etc.). • It will identify and refine the common security requirements necessary for giving trust to the SWIM deployment. • It will coordinate with the SWIM implementations developed in the others projects dealing with SWIM common components.		

Family 5.2.1 – Stakeholders Internet Protocol Compliance

2016_038_AF5 – Implementation of an IP-based G/G data communication network in ENAIRE (REDAN)			
Start Date	01/01/2018	**End Date**	31/12/2020
Project Leader	Entidad Pública Empresarial ENAIRE		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.1
Project Objective	• 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 • Integrate new users (SWIM based) and new voice users		

2016_044_AF5 – Modernization of IP based G/G Data Network in CCL - CaRT/iWAN-NG - Phase II. – Implementation			
Start Date	01/05/2017	**End Date**	31/12/2018
Project Leader	Croatia Control Ltd.		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.1
Project Objective	The present project addresses 3 major objectives: • Upgrade of existing national IP-based ground-ground data communications network; • To enable advanced QoS functionality to support VoIP based voice communications; • Support of information exchange (SWIM).		

2016_071_AF5 – PT_Implement a PT Air Force IP Backbone connected into NewPENS			
Start Date	01/07/2017	**End Date**	31/12/2019
Project Leader	Portuguese Air Force		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.1
Project Objective	PRTAF currently has no direct connection to PENS, and relies on dated technology to communicate with national ANSP (NAV Portugal) using IPv4. Radios and Voice Communications System (VCS) on PRTAF Airbases are not yet VoIP capable.		

2016_092_AF5 – ITAF WAN			
Start Date	15/02/2017	**End Date**	31/12/2020
Project Leader	Italian Air Force (MoD)		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.1
Project Objective	The Project objective is: • Achieve IP compliance to support future SWIM information exchange through Yellow and blue Profiles; • Enable ITAF to Exchange ATM, AIS and MET information over IP with external users (e.g. ENAV, EAD); • Enable ITAF to support VoIP services; • Implement adequate efficiency and resilience requirements to support above mentioned services/information exchange		

2016_109_AF5 – BLUEMED FAB IP Network deployment			
Start Date	01/04/2017	**End Date**	31/12/2020
Project Leader	ENAV S.p.A		
Contributors	Department of Civil Aviation Ministry of Transport, Communications and Works Republic of Cyprus (DCAC); Malta Air Traffic Services (MATS)		
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.1
Project Objective	Main objectives of the project are: • Achieving IP compliance • Enable SWIM infrastructures and profiles • PENS preparation • Support operational data and SWIM information exchanges		

2016_143_AF5 – ATM Network 2.0 Amsterdam			
Start Date	01/04/2017	**End Date**	31/12/2019
Project Leader	Luchtverkeersleiding Nederland (LVNL)		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.1
Project Objective	• The objective of the project "ATM Network 2.0 Amsterdam" is to deploy Family 5.2.1 – Stakeholders Internet Protocol Compliance as laid down by the SESAR Deployment Manager within the Deployment Programme 2016 on the basis of implementing the Pilot-Common-Project Regulation EU No. 716/2014. Aiming at implementing Internet Protocol Network connectivity for the Amsterdam ACC and Amsterdam Schiphol TMA to be able to exchange ATM information. The ATM Network 2.0 Amsterdam supports future SWIM information exchanges through SWIM Yellow and Blue profiles based on Internet Protocol • Network infrastructure for iCAS Deployment • To integrate the military network (NAFIN) in the Network 2.0 Amsterdam infrastructure		

Family 5.2.2 – Stakeholders SWIM Infrastructure Components

2016_034_AF5 – Upgrade/Replace Infrastructure to facilitate SWIM			
Start Date	01/03/2017	**End Date**	30/09/2019
Project Leader	DAA plc		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.3
Project Objective	• Upgrade/Replace DAA's middleware Enterprise Service Bus(ESB) platform to ensure it conforms to the requirements as a very reliable SWIM infrastructure platform • Ensure the infrastructure conforms to SWIM's security Yellow profile • SWIM infrastructure to comply with SWIM governance recommended procedures and best practices • Allow for the migration of existing A-CDM services for flight information and NMOC data exchange and publishing/subscribing clients to new platform • Ensure it is scalable to cater for future airport traffic growth and resilient enough to cater for eventual full SWIM compliance - ie best of breed with a long life • Provide a platform for NM Interoperability Family 5.5.2 also included as a project in this call • Investigate whether Service Orientated Architecture(SOA), micro services or some other service architecture approach is the most suitable for DAA and SWIM. • Identify features of a middleware platform that DAA would require to support SWIM with the maximum flexibility and scalability and required security and governance into the future		

2016_149_AF5 – Austro Control iSWIM Capability Infrastructure			
Start Date	01/03/2017	**End Date**	30/09/2020
Project Leader	Austro Control Österreichische Gesellschaft für Zivilluftfahrt mit beschränkter Haftung (Austro Control GmbH)		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.3
Project Objective	• Develop the SWIM target architecture for Austro Control • Implement infrastructure components required for SWIM TI Yellow Profile		

Family 5.2.3 - Stakeholders' SWIM PKI and cyber security

2016_062_AF5 – Creating Local Security Operation Center			
Start Date	10/02/2017	**End Date**	31/12/2018
Project Leader	State Enterprise "Air Traffic Services Authority" (BULATSA)		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.3

Project Objective	The main objective of the project is the implementation of a platform (hardware and software) for monitoring, analysis and control of logs, network traffic, system files and incident management. The solution should enable building a Security Operations Center (SOC) in BULATSA based on it. The platform shall consolidate and manage the network and critical systems cyber-security events/incidents in a centralised capability. The SOC shall be built in a way to allow collecting and sharing cyber-security events/incidents with EATM-CERT and the national CERT. The SOC will increase the level of protection of BULATSA critical infrastructure against cyber-threats and will protect data integrity, confidentiality and maintain the ATM service availability.

2016_116_AF5 – ENAV Security Operational Centre (iSOC) Upgrade			
Start Date	07/02/2017	**End Date**	31/12/2018
Project Leader	ENAV S.p.A		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.2	Family 5.2.3
Project Objective	Main objectives fo the project are: • To desing of the new SOC architecture that will be in high availability and will target business continuity scenario; • To achieve the CERT international certification for ENAV Security department; • To deploy the new SOC network that will be in parallel with the existing one to facilitate migration activities; • To deploy the new server infrastructure (servers, storage, backup systems etc) that will host SOC Security services after migration; • To migrate the existing SOC services from the legacy architecture to the new one and to provide training for SOC concerned staff; • To manage all certification aspects of the project.		

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

2016_035_AF5 – ENAIRE exchange of Aeronautical Information data in AIXM5.1			
Start Date	07/02/2017	**End Date**	31/12/2019
Project Leader	Entidad Pública Empresarial ENAIRE		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.3	Family 5.3.1
Project Objective	• This project will upgrade ENAIRE AIS databases and systems to be compliant with SWIM data model (AIRM) by implementing the AIXM5.1 (Aeronautical Information Exchange Model) data exchange messages for static (AIP) and long temporal (SUP) data • It will enable ENAIRE to exchange AIP data with Eurocontrol systems by means of web services. Becoming EAD DP (EAD database Data Provider) and DU (EAD database Data User) over AIXM5.1 • It will enable the integration of ENAIRE's static and dinamic aeronautical data systems (AIP and NOTAM), to be		

	interconnected by means of AIXM5.1 messages and web services, becoming a pre-Digital NOTAM implementation • The project will also include connection to NM web services to retrieve airspace activations

2016_064_AF5 – AIMSIL - AIM Systems Integration Layer			
Start Date	01/05/2017	**End Date**	30/11/2020
Project Leader	Air Navigation Services of the Czech Republic (ANS CR)		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.3	Family 5.3.1
Project Objective	• To allow unificated data input (B2B communication) for AIS/AIM systems; • To allow unificated data input (interactive/GUI interfaces) for AIS/AIM systems; • To allow internal digital communication between relevant AIS/AIM systems; • Metadata management of input data/internal digital communication processes, incl. archiving and logging functionalities; • To introduce seamless AIM/SWIM operation by the AIS/AIM unit.		

2016_108_AF5 – ENAV ADQ - Aeronautical Data Quality system interface evolution (ADQ2)			
Start Date	07/02/2017	**End Date**	31/12/2018
Project Leader	ENAV S.p.A		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.3	Family 5.3.1
Project Objective	To align ENAV AIM Systems to new version 10 of EAD according to the provision of COMMISSION REGULATION (EU) No 73/2010 of 26 January 2010 laying down requirements on the quality of aeronautical data and aeronautical information for the single European sky, which has set obligatory specifications for dealing with aeronautical data and aeronautical information in Europe.		

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

2016_119_AF5 – ENAV Airport MET System and UPM-MET database upgrade			
Start Date	01/03/2017	**End Date**	31/12/2019
Project Leader	ENAV S.p.A		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.4	Family 5.4.1
Project Objective	Main objectives of the project are: • Upgrade Meteo service to provide reliable actual and forecast Meteo data, wherever required across the ATM network, in WXXM format		

	• Implementation of a flexible and cost-effective interoperable exchange of MET information for Italian airports, TMAs and ACC, Airspace Users, Military and Network Manager compliant with the iSWIM data formats and interfaces • Enabling the issuance of Italian OPMET data in IWXXM format to ensure conformity with the envisaged Amendment 77 to ICAO Annex 3 • Enabling the ENAV OPMET DataBank (BDM) to Receive and store ICAO OPMET data in BUFR and IWXXM (ICAO Meteorological Information Exchange) format, and • Enabling the ENAV network (E-NET) to support exchange of messages in XML data formats

2016_148_AF5 – Implementation of Automated Meteorological Information Exchange			
Start Date	07/02/2017	**End Date**	31/12/2020
Project Leader	Irish Aviation Authority		
Contributors	Met Éireann - Department of Housing, Planning, Community and Local Government		
Main AF/Sub-AF/Family	AF5	S-AF 5.4	Family 5.4.1
Project Objective	• To automate the collection of meteorological data for the provision of ATS services. • To distribute and update MET data in a format compliant with the SWIM Yellow profile • To display MET data for ATS services enriched with additional alert management functionality.		

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

2016_033_AF5 – Use SWIM methods to replace AFTN feeds for A-CDM			
Start Date	01/09/2017	**End Date**	31/10/2020
Project Leader	DAA plc		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.5	Family 5.5.1
Project Objective	Implement integration to Network Manager Operations Centre(NMOC) using Network Manager Business to Business(B2B) services to replace Aeronautical Fixed Telecommunications Network which is used as part of A-CDM. Subscribe for Network Manager's Flight Plans and Flight Update messages services - multiple message types to be consumed by DAAs A-CDM system. Publish Departure Planning Information messages from Dublin's A-CDM system via NMOC's B2B services. To be implemented on System Wide Information Management(SWIM) infrastructure and conform to SWIM Security Yellow Profile method. Comply with SWIM governance recommended procedures.		

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

2016_065_AF5 – SWIM implementation into ATS INFO/ARO system of ANS CR			
Start Date	01/09/2017	**End Date**	01/12/2020
Project Leader	Air Navigation Services of the Czech Republic (ANS CR)		
Contributors			
Main AF/Sub-AF/Family	AF5	S-AF 5.6	Family 5.6.1
Project Objective	Implementation of the following services for exchange of flight information using the yellow SWIM TI Profile: • Validate flight plan and routes; • Flights lists and detailed flight data; • Flight update message related (departure information).		

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

2016_027_AF5 – European Deployment Roadmap for Flight Object Interoperability			
Start Date	08/02/2017	**End Date**	08/02/2017
Project Leader	DFS Deutsche Flugsicherung GmbH		
Contributors	Austro Control Österreichische Gesellschaft für Zivilluftfahrt mit beschränkter Haftung (Austro Control GmbH); the French Republic – Ministry of the Environment, Energy and the Sea, DGAC (Direction générale de l'aviation civile), DSNA (Direction des services de la navigation aérienne); Entidad Pública Empresarial ENAIRE; ENAV S.p.A; Finavia Corporation; HungaroControl Hungarian Air Navigation Services Pte.Ltd.Co.; Irish Aviation Authority; Luftfartsverket (LFV); Luchtverkeersleiding Nederland (LVNL); NATS (En Route) plc; Navegação Aérea de Portugal - NAV Portugal, E.P.E.; Naviair; Polska Agencja Żeglugi Powietrznej (PANSA - Polish Air Navigation Services Agency); Croatia Control Ltd.; Eurocontrol as Network Manager and MUAC		
Main AF/Sub-AF/Family	AF5	S-AF 5.6	Family 5.6.2
Project Objective	• Improve planning security for Flight Object Interoperability Deployment. • Synchronise Flight Object Interoperability Industrialisation Projects. • Synchronise Flight Object Interoperability Deployment Activities. • Study and identify best options for a Flight Object Deployment Governance. • Provide input into the review process of PCP Reg. EU 716/2014.		

AF 6 Initial Trajectory Information Sharing

The following table encompasses the list of implementation initiatives associated to ATM Functionality #6 that were awarded under the 2016 CEF Transport Calls for Proposal.

2016 CEF Call Designator	Title	Family	IP Description Page Number
2016_030_AF6	Air Ground Datalink Implementation	6.1.1	148
2016_089_AF6	IT_ITAF ATC CONTROL SYSTEM MOVING TO i4D	6.1.1	148
2016_162_AF6	IMPLEMENTATION OF DATA LINK SERVICES FOR THE ATM IN FIR WARSAW	6.1.1	149
2016_163_AF6	CPDLC Implementation in the Riga FIR	6.1.1	149
2016_159_AF6	DLS Implementation Project - Path 2	6.1.3	150
2016_161_AF6	DLS Implementation Project - Path 1 "Ground" stakeholders	6.1.3	151
2016_061_AF6	Deployment of ATN B1 capability within TAP Group [50% & 20%]	6.1.4	152
2016_125_AF6	ES_Airbus A310 ATN VDL2 Compliance [50% & 20%]	6.1.4	152
2016_126_AF6	ES_FALCON 900 compliance with Air Ground ATN VDL2 Data Link [50% & 20%]	6.1.4	152
2016_164_AF6	RYR Upgrade to ATN B1 to "best in class"	6.1.4	153
2016_165_AF6	Lufthansa Group & Air France Group Datalink upgrade to "best in class" avionics [50% & 20%]	6.1.4	153

Family 6.1.1 – ATN B1 based services in ATSP domain

2016_030_AF6 – Air Ground Datalink Implementation			
Start Date	07/02/2017	**End Date**	05/02/2018
Project Leader	Slovenia Control, Slovenian Air Navigation Services, Limited (Slovenia Control, Ltd)		
Contributors			
Main AF/Sub-AF/Family	AF6	S-AF 6.1	Family 6.1.1
Project Objective	Objectives: • Set in operation Data Link Services in accordance with Commission Regulation (EC) No 29/2009 and 310/2015 as from 5 February 2018 within the airspace above FL 285 • Commission Regulation (EC) No 29/2009, amended with 310/2015 fulfilled • End to end acceptance test accomplished • Integration into the ATM System of Slovenia Control completed • CPDLC service set in operation • Communication Service Provider SITA and ARINC connected in order to be able to provide the services to all airspace users • Services of the Air Communication Service Provider (ACSP) ARINC/SITA procured		

2016_089_AF6 – IT_ITAF ATC Control System Moving to i4D			
Start Date	15/02/2017	**End Date**	31/01/2018
Project Leader	Italian Air Force (MoD)		
Contributors	ENAV S.p.A		
Main AF/Sub-AF/Family	AF6	S-AF 6.1	Family 6.1.1
Project Objective	The Project objective is to update military ATC Area Control systems in order to • Correctly process and display Data Link Initiation Capabilities (DLIC) service messages • Correctly process and display Logon Forward (LOF) and Next Authority Notified (NAN) messages by the flight data processing system to support the transfer of air/ground data link communication between ATSUs • Correctly process and display ATC Communications Management (ACM) service messages to support the transfer of voice and data communications between sectors of the same ATSU and between different ATSUs • Correctly process and display ATC Clearances (ACL) service messages, including monitoring and supervision of dialogue states • Correctly process ATC Microphone Check (AMC) service messages to support controllers to simultaneously instruct all (data link connected) flight crews to check the status of their voice communication systems • Update operations manuals • Training of ATCOs and technical staff		

2016_162_AF6 – Implementation of Data Link Services for the ATM in FIR Warsaw			
Start Date	07/02/2017	**End Date**	05/02/2018
Project Leader	Polska Agencja Żeglugi Powietrznej (PANSA - Polish Air Navigation Services Agency)		
Contributors			
Main AF/Sub-AF/Family	AF6	S-AF 6.1	Family 6.1.1
Project Objective	The aim of the Project is to implement in FIR Warsaw above FL285 Data Link Services required by EC Regulation No 29/2009, namely: DLIC - Data Link Initiation Capability; ACM - ATC Communications Management; ACL - ATC Clearances; AMC - ATC Microphone Check. The Project include extending the functionality of the Polish ATM system (PEGASUS_21) of CPDLC. This project will be implemented in accordance with the Contract signed by PANSA with the Contractor. The start of upgrading the terrestrial communication infrastructure by PANSA will be within the multi-stakeholders' project "DLS Implementation Project - Path 1 "Ground" stakeholder". Detailed objectives: • Capacity & Throughput • Safety • Reduction of Delays • Normalization		

2016_163_AF6 – CPDLC Implementation in the Riga FIR			
Start Date	08/02/2017	**End Date**	05/02/2018
Project Leader	"Latvijas gaisa satiksme" SJSC (LGS)		
Contributors			
Main AF/Sub-AF/Family	AF6	S-AF 6.1	Family 6.1.1
Project Objective	• The project main objective is to meet the requirements of the Commission Regulation (EC) n. 29/2009; Commission Regulation (EC) n. 30/2009 and Commission Implementing Regulation (EU) n. 2015/310 • Deployment of corresponding infrastructure in ATSP domain (Front End Processor and ATN Ground / Ground Router)		

Family 6.1.3 – A/G and G/G Multi Frequency DL Network in defined European Service Areas

2016_159_AF6 – DLS Implementation Project - Path 2			
Start Date	15/02/2017	**End Date**	31/12/2020
Project Leader	ENAV S.p.A		
Contributors	Arinc incorporated, Austro Control Österreichische Gesellschaft für Zivilluftfahrt mit beschränkter Haftung (Austro Control GmbH), State Enterprise "Air Traffic Services Authority" (BULATSA), Croatia Control Ltd., Department of Civil Aviation Ministry of Transport, Communications and Works Republic of Cyprus (DCAC), Deutsche Lufthansa AG, DFS Deutsche Flugsicherung GmbH, the French Republic – Ministry of the Environment, Energy and the Sea, DGAC (Direction générale de l'aviation civile), DSNA (Direction des services de la navigation aérienne), "Latvijas gaisa satiksme" SJSC (LGS); Lennuliiklusteeninduse Aktsiaselts (EANS - Estonian Air Navigation Services), Entidad Pública Empresarial ENAIRE, European Satellite Services Provider (ESSP), European Organisation for the Safety of Air Navigation (Eurocontrol); Finavia Corporation, HungaroControl Hungarian Air Navigation Services Pte.Ltd.Co., Luftfartsverket (LFV), "Latvijas gaisa satiksme" SJSC (LGS), Letové prevádzkové služby Slovenskej republiky, štátny podnik, (v skratke „LPS SR, š. p."), Malta Air Traffic Services (MATS), NATS (En Route) plc, Navegação Aérea de Portugal - NAV Portugal, E.P.E., State Enterprise "Oro navigacija", Polska Agencja Żeglugi Powietrznej (PANSA - Polish Air Navigation Services Agency), RYANAIR DAC, SITA Information Networking Computing BV, TRANSPORTES AEREOS PORTUGUESES SA (TAP Portugal)		
Main AF/Sub-AF/Family	AF6	S-AF 6.1	Family 6.1.3
Project Objective	• Support SDM in its activities according to the DLS Recovery Plan and defining a European DLS Common Governance; • Identify the steps towards the envisaged target solution in order to grant the required performances needed to achieve full AF6 implementation, • Identification of the Service Areas; • Design of the system architecture.		

2016_161_AF6 – DLS Implementation Project - Path 1 "Ground" stakeholders			
Start Date	07/02/2017	**End Date**	01/02/2018
Project Leader	Entidad Pública Empresarial ENAIRE		
Contributors	Arinc incorporated; Austro Control Österreichische Gesellschaft für Zivilluftfahrt mit beschränkter Haftung (Austro Control GmbH), Croatia Control Ltd., DFS Deutsche Flugsicherung GmbH, the French Republic – Ministry of the Environment, Energy and the Sea, DGAC (Direction générale de l'aviation civile), DSNA (Direction des services de la navigation aérienne), Lennuliiklusteeninduse Aktsiaselts (EANS - Estonian Air Navigation Services), ENAV S.p.A., HungaroControl Hungarian Air Navigation Services Pte.Ltd.Co., Luftfartsverket (LFV), "Latvijas gaisa satiksme" SJSC (LGS), Navegação Aérea de Portugal - NAV Portugal, E.P.E.; State Enterprise "Oro navigacija", Polska Agencja Żeglugi Powietrznej (PANSA - Polish Air Navigation Services Agency), SITA Information Networking Computing BV		
Main AF/Sub-AF/Family	AF6	S-AF 6.1	Family 6.1.3
Project Objective	• DLS Deployment/ upgrade towards Multi Frequency networks at Country/Region Level; • Transition from Model A to Model B and from model C to model C with multi frequency (following ELSA study nomenclature) from existing local implementations; • Achieve a harmonisation and interoperability between type 1 and type 2 infrastructures as within the SDM Recovery Plan		

Family 6.1.4 – ATN B1 capability in Multi Frequency environment in Aircraft domain

2016_061_AF6 – Deployment of ATN B1 capability within TAP Group [50% & 20%]			
Start Date	01/10/2017	**End Date**	30/09/2019
Project Leader	TRANSPORTES AEREOS PORTUGUESES SA (TAP Portugal)		
Contributors	PORTUGÁLIA – Companhia Portuguesa de Transportes Aéreos S.A.		
Main AF/Sub-AF/Family	AF6	S-AF 6.1	Family 6.1.4
Project Objective	• Conclude the fleet wide deployment of ATN B1 capability at TAP Portugal; • Modify Portugália fleet to enable ATN B1 capability; • Ensure TAP Portugal and Portugália readiness to comply with DLS IR mandate		

2016_125_AF6 – ES_Airbus A310 ATN VDL2 Compliance [50% & 20%]			
Start Date	01/03/2017	**End Date**	31/12/2019
Project Leader	Spanish Airforce		
Contributors			
Main AF/Sub-AF/Family	AF6	S-AF 6.1	Family 6.1.4
Project Objective	The aim of this project is to enable SAF A310 fleet with required capabilities to operate within the European Air Traffic Management Network, including ATN VDL-2 that will enable CPDLC and i4D. More specifically it will be used to enable ATN B1 and ATNB2 services. Trajectory data will be automatically downlinked from the airborne system according to contract terms. Then target times (TTO/TTA) will be used as inputs to ATM and TFCM constraints and for arrival sequencing. Inside milestones are identified for internal task progress monitoring.		

2016_126_AF6 –ES_FALCON 900 compliance with Air Ground ATN VDL2 Data Link [50% & 20%]			
Start Date	31/03/2017	**End Date**	30/12/2019
Project Leader	Spanish Airforce		
Contributors			
Main AF/Sub-AF/Family	AF6	S-AF 6.1	Family 6.1.4
Project Objective	The aim of this project is to enable SAF Falcon 900B aircraft with required capabilities to operate within the European Air Traffic Management Network, including ATN VDL-2 that will enable CPDLC and i4D. More specifically it will be used to enable ATN B1 and ATNB2 services. Trajectory data shall be automatically downlinked from the airborne system according to contract terms. Then target times (TTO/TTA) shall be used as inputs to ATM and TFCM constraints and for arrival sequencing.		

2016_164_AF6 – RYR Upgrade to ATN B1 to "best in class"			
Start Date	01/03/2017	**End Date**	31/12/2019
Project Leader	Ryanair DAC		
Contributors			
Main AF/Sub-AF/Family	AF6	S-AF 6.1	Family 6.1.4
Project Objective	• This SESAR project is addressing the following ELSA recommendations as identified in Annex 2 of the DLS Recovery Plan: ELSA Re. IDs Avionics 01 and 02; • This project would build on what ELSA's recommendations put forward as the immediately ready for deployment technology, i.e. Upgrade to ATN B1 MF not yet tested against "best in class" criteria defined by ELSA study; • Testing of ATN B1 Multi Frequency avionics against "best in class" criteria in ELSA, subject to demonstration of equivalent minimum level of performance as part of the proposal or commitment to demonstrate equivalent minimum level of performance prior to implementation; • Contribute to end to end certification if necessary; • "Procurement of all necessary hardware and software components required for the upgrade. Installation and integration in on-board systems of all aircraft in the RYR fleet (Boeing 737 NG and potentially Boeing 737 MAX)"; • Elaboration and approval process of operational and pilot procedures (IAA and EASA) and training packages, including training activities attended by crews focused on the use of the equipment and update the pilot procedures to avoid unnecessary avionics reset.		

2016_165_AF6 – Lufthansa Group & Air France Group Datalink upgrade to "best in class" avionics [50% & 20%]			
Start Date	07/02/2017	**End Date**	27/02/2020
Project Leader	Deutsche Lufthansa AG		
Contributors	Société Air France; Austrian Airlines AG; HOP!; Lufthansa Cargo AG; Lufthansa CityLine GmbH		
Main AF/Sub-AF/Family	AF6	S-AF 6.1	Family 6.1.4
Project Objective	• Upgrading LH Group and Air France Group aircraft to "Best in class" avionic configuration recommended by ELSA study and further alignment with DLS Recovery Plan • Modify LH Group and Air France Group aircraft to enable ATN B1 capability		

Annex B – Standardization and Regulation support to PCP deployment

The Standardization and Regulation Annex is a key document, 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. It also provides information on the on-going 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.

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, and Very Large Scale Demonstrations (VLD) are part of V3 but conducted during V4 as support to industrialisation. Deployment starts during or after V4, in V5, and its coordination is under SESAR Deployment Manager (SDM) responsibility.

Different approval methodologies are applied in aviation. For airborne equipment, "certification" is used based on specifications, standards and "technical specification orders". A certified piece of equipment can be installed and used on board aircraft. Ground system constituents are accompanied by "declaration of conformity or suitability for use" issued by the manufacturers. The service provider presents a "declaration of verification of systems", a demonstration of compliance with the regulation, to a competent authority i.e. the National Supervisory Authority (NSA) who approves the system for operations. In some cases, the regulation is very prescriptive with precise requirements, but in most cases only guidance is provided.

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, additional/alternative means for compliance can be applied if accepted by the relevant NSA. Regulations listed in the tables are binding instruments considered as relevant for the family implementation.

Early implementations before formal standards and regulatory material is available is possible subject to NSA approval. However, it might be necessary to adjust the implementations once formal standards and regulatory material becomes available at the end of V4.

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 ATM Master Plan Level 2 Operational Improvements (OIs);

- related plans or further development according to SESAR 2020 plans; and
- the Rolling Work Plan version 3.1 developed by the European ATM Standardisation Coordination Group (EASCG), summarising on-going activities within bodies involved in development of standards and regulation.

The information reported in the document was elaborated and analysed by SDM in coordination with **EASA, EDA, NM and SJU**, as well as with **EUROCAE and EASCG** 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;
- The Network and Information Security (NIS) Directive (2016/1148);
- Commission Implementing Regulation 2017/373 of 1 March 2017 laying down common requirements for providers of air traffic management/air navigation services and other air traffic management network functions and their oversight;
- ITU X.1205 "Overview of Cybersecurity";
- CEN EN 16495 "Information security for organisations supporting civil aviation";
- ISO 27001 - Information technology — Security techniques — Information security management systems — Requirements;
- ISO 27002 - Information technology — Security techniques — Code of practice for information security management;
- ISO 27003 - Information Technology — Security techniques — Information security management system implementation guidance;
- ISO 27004 - Information technology — Security techniques — Information security management — Measurement;
- ISO 27005 - Information technology — Security techniques — Information security risk management;
- ISO 27006 - Information technology — Security techniques — Requirements for bodies providing audit and certification of information security management systems;
- ISO 28000 Specification for security management systems for the supply chain;
- CANSO Cyber Security and Risk Assessment Guide.

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.

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 Planning View of the Programme.

The collection of references in Annex B should be assessed by each individual deployment project to ensure that all relevant standards and regulatory material is taken into account.

Furthermore, national standards and regulation might be applicable.

The "SDM View" in the tables below, identifies areas where deployment would benefit from further standards and regulatory material.

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

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

AF1 - Extended AMAN and PBN in high density TMA

Family 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**			**Regulation**		
References	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**
Arrival Manager - Implementation Guidelines and Lessons Learned; Edition 0.1, 17/12/2010	*Eurocontrol*	*Published*						

V5 – Deployment Phase	
Initial Operational Capability	*Before 2014*
Full Operational Capability	*01/2020*

Family readiness	SDM view
High	*AMAN is one component within a local ATM system, therefore not subject to further standardisation activities.*

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*	*SESAR Release 4*	**Release 7**	*PJ.25*
			Release 8	*PJ.25*
			Release 9	*PJ.25*
			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 9426 Air Traffic Services Planning Manual	*ICAO*	*Published*	*SPEC-0106 Specification for On-Line Data Interchange (OLDI) Ed. 4.2 Community Specification (EC No 1032/2006)*	*Eurocontrol*	*Published*			
Guidance Manual on Airport Traffic Synchronisation	*ICAO*	*2018*	*Update SPEC-0106 Specification for On-Line Data Interchange (OLDI) to Edition 4.3*	*Eurocontrol*	*2018*			
AMAN Information Extension to En-Route Sectors - Concept of Operations; Edition 1.0, 5/06/2009	*Eurocontrol*	*Published*						
MASPS covering the Extended horizon AMAN upstream coordination service (AMAN SWIM Service)	*EUROCAE WG-104*	*2017*						
Eurocontrol Concept of Operations for Network Manager Support to Advanced Arrival Management Edition 1.0 (24/10/2014)	*Network Manager*	*Published*						

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

Family readiness	SDM view
High	*V3 achieved but VLDs are planned until 2019. 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.*

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" *#51 "Enhanced terminal operations with LPV procedures"*	*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**			**Regulation**		
References	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**
Doc 8168 (PANS-OPS Vol. 1 & 2)	*ICAO*	*Published*	*AMC 20-27 (APV Baro)*	*EASA*	*Published*	*PBN Implementing Rule*	*European Commission*	*2017*
Doc 9613, Performance-based Navigation (PBN) Manual Edition 4	*ICAO*	*Published*	*AMC 20-28 (SBAS)*	*EASA*	*Published*			
Update Doc 9613, Performance-based Navigation (PBN) Manual	*ICAO*	*Ongoing TBD*	*EASA regulatory material on PBN incorporating ICAO Doc 9613*	*EASA RMT.0519*	*2018*			
Doc 9992 Manual on the use of PBN in Airspace Design	*ICAO*	*Published*						
Manual on Simultaneous Operations on Parallel or Near-Parallel Instrument Runways (SOIR)	*ICAO*	*2018*						
EGNOS Safety of Life (SoL) Service Definition Document	*European GNSS Agency (GSA)*	*Published*						

ED-76A / DO-200B Standards for Processing of Aeronautical Data *NOP 2014-2018/2019*	*EUROCAE / RTCA* *Network Manager*	*Published* *Published*						

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

Family readiness	SDM view
High	*The EASA Opinion No 10/2016 defines the basis of PBN implementation in Europe. It proposes regulative actions to EC. The PCP regulation (EU) No 716/2014 defines more stringent requirements for the 25 busiest airports/TMAs as defined in the geographical scope.* *A certification process for military performance equivalence (Alternative Means of Compliance) is being defined by EDA, Eurocontrol and NATO.*

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**			**Regulation**		
References	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**
Doc 8168 (PANS-OPS Vol. 1 & 2)	*ICAO*	*Published*	*Terrain Avoidance and Warning System (ETSO-C151B)*	*EASA*	*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*
Doc 9613, Performance-based Navigation (PBN) Manual Edition 4	*ICAO*	*Published*	*EASA AMC/GM 2014/012R*	*EASA*	*Published*	*Commission Regulation (EU). 73/2010 (ADQ IR) as amended by Commission Implementing Regulation (EU) 1029/2014*	*European Commission*	*Published*
Update Doc 9613, Performance-based Navigation (PBN) Manual	*ICAO*	*Ongoing TBD*				*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*
Doc 9888 Noise Abatement Procedures	*ICAO*	*Published*						

Doc 9906 Quality assurance manual for flight procedure design	*ICAO*	*Published*						
Doc 9997 PBN Operational Approval Manual	*ICAO*	*Published*						
Doc 9992 Manual on the use of PBN in Airspace Design	*ICAO*	*Published*						
ED-76A / DO-200B Standards for Processing of Aeronautical Data	*EUROCAE / RTCA*	*Published*						

V5 – Deployment Phase	
Initial Operational Capability	*01/2014*
Full Operational Capability	*01/2019*

Family readiness	SDM view
High	*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" *#51 "Enhanced terminal operations with LPV procedures"*	*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**
Update Doc 4444 PANS ATM, PBN Separation Standards	*ICAO*	*2018*	*EASA regulatory material on PBN incorporating ICAO Doc 9613*	*EASA RMT.0519*	*2018*	*PBN Implementing Rule*	*European Commission*	*2017*
Doc 8168 (PANS-OPS Vol. 1 & 2)	*ICAO*	*Published*						
Doc 9426 Air Traffic Services Planning Manual	*ICAO*	*Published*						
Doc 9613, Performance-based Navigation (PBN) Manual Edition 4	*ICAO*	*Published*						

Update Doc 9613, Performance-based Navigation (PBN) Manual	*ICAO*	*Ongoing TBD*						
Doc 9689 Manual on Airspace Planning Methodology for the Determination of Separation Minima	*ICAO*	*Published*						
Doc 9992 Manual on the use of PBN in Airspace Design	*ICAO*	*Published*						
Guidance Manual on Airport Traffic Synchronisation	*ICAO*	*2018*						
European Airspace Concept Handbook for PBN Implementation; Edition 3.0	*Eurocontrol*	*Published*						
ED-57 MOPS for DME/N and DME/P ground equipment	*EUROCAE*	*Published*						
ED-76A / DO-200B Standards for Processing of Aeronautical Data	*EUROCAE / RTCA*	*Published*						

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

Family Readiness	SDM view
High	*The EASA Opinion No 10/2016 defines the basis of PBN implementation in Europe. It proposes regulative actions to EC. The PCP regulation (EU) No 716/2014 defines more stringent requirements for the 25 busiest airports/TMAs as defined in the geographical scope.*

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" *#51 "Enhanced terminal operations with LPV procedures"*	*AOM-0605*	*SESAR Release 5*	**Release 7**	*N/A*
			Release 8	*N/A*
			Release 9	*N/A*
			Second Wave	*N/A*
#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*

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*	*EASA regulatory material on PBN incorporating ICAO Doc 9613*	*EASA RMT.0519*	*2018*	*PBN Implementing Rule*	*European Commission*	*2017*
Update of Doc 9613, Performance-based Navigation (PBN) Manual	*ICAO*	*Ongoing TBD*						
ED-72 MOPS for Airborne GPS Receiving Equipment	*EUROCAE*	*Published*						
ED-75D / DO-236D MASPS: Required Navigation Performance for Area Navigation	*EUROCAE*	*Published*						
ED-76A / DO-200B Standards for Processing of Aeronautical Data	*EUROCAE / RTCA*	*Published*						

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

Family readiness	SDM view
High	*The EASA Opinion No 10/2016 defines the basis of PBN implementation in Europe. It proposes regulative actions to EC. The PCP regulation (EU) No 716/2014 defines more stringent requirements for the 25 busiest airports/TMAs as defined in the geographical scope.*

Family 1.2.5 – RNP routes connecting Free Route Airspace (FRA) with TMA

V3 – Development Phase				
SESAR Solution	**OIs**	**V3 End**	**VLD**	
#10 Optimised Route Network using Advanced RNP	*AOM-0404*	*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**	**Delivery**	**References**	**Organization**	**Delivery**
Doc 4444 PANS ATM for RNAV/RNP, BRNAV	*ICAO*	*Published*	*EASA regulatory material on PBN incorporating ICAO Doc 9613*	*EASA RMT.0519*	*2018*	*PBN Implementing Rule*	*European Commission*	*2017*
Update Doc 4444 PANS ATM, PBN Separation Standards	*ICAO*	*2018*						
Doc 8168 (PANS-OPS Vol. 1 & 2)	*ICAO*	*Published*						
Doc 9426 Air Traffic Services Planning Manual	*ICAO*	*Published*						
Doc 9613, Performance-based Navigation (PBN) Manual Edition 4	*ICAO*	*Published*						
Update Doc 9613, Performance-based Navigation (PBN) Manual	*ICAO*	*Ongoing TBD*						
Doc 9689 Manual on Airspace Planning methodology for the Determination of Separation Minima	*ICAO*	*Published*						
Doc 9992 Manual on the use of PBN in Airspace Design	*ICAO*	*Published*						
ED-76A / DO-200B Standards for Processing of Aeronautical Data	*EUROCAE / RTCA*	*Published*						
Network Strategy Plan (NSP): SO 3/2 and SO 3/3	*Network Manager*	*Published*						

V5 – Deployment Phase	
Initial Operational Capability	*01/2020*
Full Operational Capability	*01/2024*

Family readiness	SDM view
Medium	*The EASA Opinion No 10/2016 defines the basis of PBN implementation in Europe. It proposes regulative actions to EC. The PCP regulation (EU) No 716/2014 defines more stringent requirements for the 25 busiest airports/TMAs as defined in the geographical scope. RNP outside TMAs is not covered by the present regulation. It is expected that the next version of ICAO PBN Manual will include Advance RNP covering all phases of flight.*

AF2 - Airport Integration and Throughput

Family 2.1.1 – 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**			**Regulation**		
References	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**
Doc 9426 Air Traffic Services Planning Manual	*ICAO*	*Published*	*EN 303 212 Airport Collaborative Decision Making (A-CDM) Community Specification*	*ETSI*	*Published*			
Doc 9830, Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Manual	*ICAO*	*2018*	*Update EN 303 212 Airport Collaborative Decision Making (A-CDM) Community Specification (Communication 2010/C 168/04 A-CDM)*	*ETSI*	*2019*			
Guidance Manual on Airport Traffic Synchronisation	*ICAO*	*2018*						
Airport CDM Implementation Manual Version 4	*Eurocontrol*	*Published*						
Update Airport CDM Implementation Manual	*Eurocontrol*	*2018*						
ED-141 Minimum Technical Specification for the Airport Collaborative Decision Making (Airport-CDM)	*EUROCAE*	*Published*						
ED-145 Airport-CDM Interface Specification	*EUROCAE*	*Published*						

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

Family readiness	SDM view
High	*No further supporting material needed other than already existing/being developed.*

Family 2.1.2 – 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**	**References**	**Organization**	**Delivery**

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

Family readiness	SDM view
High	*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**			**Regulation**		
References	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**
Doc 8896 Manual of Aeronautical Meteorological Practice	*ICAO*	*Published*	*EN 303 212 Airport Collaborative Decision Making (A-CDM) Community Specification*	*ETSI*	*Published*			
Doc 9328 Manual of Runway Visual Range Observing and Reporting Practices	*ICAO*	*Published*	*Update EN 303 212 Airport Collaborative Decision Making (A-CDM) Community Specification (Communication 2010/C 168/04)*	*ETSI*	*2019*			
Doc 9377 Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services	*ICAO*	*Published*						

Doc 9817 Manual on Low-level Wind Shear	*ICAO*	*Published*						
Doc 9837 Manual on Automatic Meteorological Observing Systems at Aerodromes	*ICAO*	*Published*						
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*	*Published*						
Meteorological Information Exchange Model (IWXXM) Version 2.0	*ICAO*	*Published*						
Update Meteorological Information Exchange Model (IWXXM) Version 2.0 to Version 2.1	*ICAO*	*2017*						
Airport CDM Implementation Manual Version 4	*Eurocontrol*	*Published*						
Update Airport CDM Implementation Manual	*Eurocontrol*	*2018*						
Aeronautical Information Exchange Model (AIXM) Version 5.1	*Eurocontrol*	*Published Continuously maintained*						
ED-141 Minimum Technical Specification for the Airport Collaborative Decision Making (Airport-CDM)	*EUROCAE*	*Published*						
ED-145 Airport CDM Interface Specification	*EUROCAE*	*Published*						
ED-146 Guidelines for Test and Validation related to A-CDM interoperability	*EUROCAE*	*Published*						
FIXM Flight Information Exchange Model Version 4	*FIXM development team*	*Published*						

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

Family readiness	SDM view
High	*No further supporting material required other than what is already existing/being developed.*

Family 2.1.4 – Initial Airport Operational Plan (AOP)

V3 – Development Phase				
SESAR Solution	**OIs**	**V3 End**	**VLD**	
#21 "Airport Operations Plan and AOP-NOP Seamless Integration"	*AO-0801-A (AIRPORT-03)*	*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**	**Delivery**	**References**	**Organization**	**Delivery**
Doc 8896 Manual of Aeronautical Meteorological Practice	*ICAO*	*Published*	*EN 303 212 Airport Collaborative Decision Making (A-CDM) Community Specification*	*ETSI*	*Published*			
Doc 9328 Manual of Runway Visual Range Observing and Reporting Practices	*ICAO*	*Published*	*Update EN 303 212 Airport Collaborative Decision Making (A-CDM) Community Specification (Communication 2010/C 168/04)*	*ETSI*	*2019*			
Doc 9377 Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services	*ICAO*	*Published*						
Doc 9426 Air Traffic Services Planning Manual	*ICAO*	*Published*						
Doc 9817 Manual on Low-level Wind Shear	*ICAO*	*Published*						
Doc 9830, Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Manual	*ICAO*	*2018*						
Doc 9837 Manual on Automatic Meteorological Observing Systems at Aerodromes	*ICAO*	*Published*						

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*	*Published*						
Guidance Manual on Airport Traffic Synchronisation	*ICAO*	*2018*						
Meteorological Information Exchange Model (IWXXM) Version 2.0	*ICAO*	*Published*						
Update Meteorological Information Exchange Model (IWXXM) Version 2.0 to Version 2.1	*ICAO*	*2017*						
Airport CDM Implementation Manual Version 4	*Eurocontrol*	*Published*						
Update Airport CDM Implementation Manual	*Eurocontrol*	*2018*						
Aeronautical Information Exchange Model (AIXM) Version 5.1	*Eurocontrol*	*Published Continuously maintained*						
FIXM Flight Information Exchange Model Version 4	*FIXM development team*	*Published*						

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

Family readiness	SDM view
High	*V3 completed in 2016.Updates of supporting material need to be considered.*

Family 2.2.1 – A-SMGCS Level 1 and 2

V3 – Development Phase				
SESAR Solution	**OIs**	**V3 End**	**VLD**	
N/A	*AO-0201*	*Available*	**Release 7**	*N/A*
			Release 8	*N/A*
			Release 9	*N/A*
			Second Wave	*N/A*
N/A	*AO-0102*	*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**	**Delivery**
Doc 7030/5 (EUR/NAT) Regional Supplementary Procedures, Section 6.5.6 and 6.5.7	*ICAO*	*Published*	*EN 303 213-1 A-SMGCS Part 1 Community Specification (covering the EUROCAE A-SMGCS MASPS (ED-87 C))*	*ETSI*	*Published*			
Doc 9426 Air Traffic Services Planning Manual	*ICAO*	*Published*	*EN 303 213-2 A-SMGCS Part 2 Community Specification (covering the EUROCAE A-SMGCS MASPS (ED-87 C))*	*ETSI*	*Published*			
Doc 9830 A-SMGCS Manual, First Edition	*ICAO*	*Published*	*EN 303 213-3 A-SMGCS; Part 3: Community Specification for a deployed cooperative sensor including its interfaces*	*ETSI*	*Published*			
Doc 9830, Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Manual	*ICAO*	*2018*	*EN 303 213-4-1 A-SMGCS Part 4: Community Specification for a deployed non-cooperative sensor including its interfaces; Sub-part 1: Generic requirements for non-cooperative sensor*	*ETSI*	*Published*			

Doc 9871 Technical Provisions for Mode S Services and Extended Squitter	*ICAO*	*Published*	*EN 303 213-4-2 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*	*ETSI*	*Published*			
Doc 9924 Aeronautical Surveillance Manual	*ICAO*	*Published*	*EN 303 213-5-1 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*	*ETSI*	*2017*			
Guidance Manual on Airport Traffic Synchronisation	*ICAO*	*2018*	*EN 303 213-5-2 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*	*ETSI*	*2017*			
Update A-SMGCS Manual	*Eurocontrol*	*2017*	*EN 303 213-6-1 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*	*ETSI*	*Published*			
ED-87C A-SMGCS MASPS	*EUROCAE*	*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*						

ED-117A MOPS for MLAT	*EUROCAE*	*Published*						
ED-116A MOPS for Surface Movement Radar Sensor Systems for Use in A-SMGCS	*EUROCAE WG-41*	*2018*						
ED-128A Guidelines for Surveillance Data Fusion in A-SMGCS Levels 1&2	*EUROCAE WG-41*	*2018*						
ED-163 Safety, Performance and Interoperability Requirements document for ADS-B Airport Surface surveillance application (ADS-B APT)	*EUROCAE*	*Published*						

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

Family readiness	SDM view
High	*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**	**VLD**	
#64 "Time Based Separation"	*AO-0303*	*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**
Doc 8896 Manual of Aeronautical Meteorological Practice	*ICAO*	*Published*						
Doc 9328 Manual of Runway Visual Range Observing and Reporting Practices	*ICAO*	*Published*						
Doc 9377 Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services	*ICAO*	*Published*						
Doc 9817 Manual on Low-level Wind Shear	*ICAO*	*Published*						
Doc 9837 Manual on Automatic Meteorological Observing Systems at Aerodromes	*ICAO*	*Published*						
Doc 10003 Manual on the digital exchange of aeronautical information	*ICAO*	*Published*						
Meteorological Information Exchange Model (IWXXM) Version 2.0	*ICAO*	*Published*						
Update Meteorological Information Exchange Model (IWXXM) Version 2.0 to Version 2.1	*ICAO*	*2017*						
Time Based Operation (TBS) Specification for Final Approach	*Eurocontrol*	*2017*						

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

Family readiness	SDM view
High	*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 – 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*
#106 "DMAN Baseline for integrated AMAN DMAN" *#53 "Pre-Departure Sequencing supported by Route Planning"*	*TS-0202*	*SESAR Release 4*	**Release 7**	*PJ.28*
			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.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**	**References**	**Organization**	**Delivery**
Doc 9426 Air Traffic Services Planning Manual	*ICAO*	*Published*	*EN 303 213-1 A-SMGCS Part 1on the basis of the EUROCAE A-SMGCS MASPS (ED-87 C)*	*ETSI*	*Published*			
Doc 9830, Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Manual	*ICAO*	*2018*	*Update EN 303 213-1 A-SMGCS Part 1 on the basis of the EUROCAE A-SMGCS MASPS (ED-87 D)*	*ETSI*	*2018*			
Guidance Manual on Airport Traffic Synchronisation	*ICAO*	*2018*	*EN 303 213--2 A-SMGCS Part 2 on the basis of the EUROCAE A-SMGCS MASPS (ED-87 C)*	*ETSI*	*Published*			
Update Airport CDM Implementation Manual	*Eurocontrol*	*2018*	*Update EN 303 213- 2 A-SMGCS Part 2 on the basis of the EUROCAE A-SMGCS MASPS (ED-87 D)*	*ETSI*	*2018*			

Update A-SMGCS Manual	*Eurocontrol*	*2017*	*Update EN 303 213-3 A-SMGCS Part 3 on the basis of the EUROCAE A-SMGCS MASPS (ED-87 D)*	*ETSI*	*2018*			
			Update EN 303 213-7 A-SMGCS Part 7 on the basis of the EUROCAE A-SMGCS MASPS (ED-87 D)	*ETSI*	*2018*			
Update ED-87C to include the new functions: routing & planning and additional safety nets (ED-87D)	*EUROCAE WG-41*	*2017*	*Update EN 303 213-8 A-SMGCS Part 8 on the basis of the EUROCAE A-SMGCS MASPS (ED-87 E)*	*ETSI*	*2019*			
Update ED-87D to include Guidance Services (ED-87E)	*EUROCAE WG-41*	*2018*						

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

Family readiness	SDM view
High	*V3 completed in 2016 and VLDs are planned until 2019.Updates of supporting material need to be considered. Initial deployment started. Need to accelerate the delivery of supporting material (EUROCAE), and safety-related material (EASA).*

Family 2.5.1 – Airport Safety Nets associated with A-SMGCS (Level 2)

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 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**	**References**	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**
Doc 7030/5, (EUR/NAT) Regional Supplementary Procedures, Section 6.5.6 and 6.5.7	*ICAO*	*Published*	*Update CS on ASMGCS to comply with ED-87D EN 303 213-1*	*ETSI*	*2018*			
Doc 9426 Air Traffic Services Planning Manual	*ICAO*	*Published*	*Update CS on ASMGCS to comply with ED-87D EN 303 213-2*	*ETSI*	*2018*			
Doc 9830, Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Manual	*ICAO*	*Published*	*Update CS on ASMGCS to comply with ED-87D EN 303 213-3*	*ETSI*	*2018*			
Doc 9830, Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Manual	*ICAO*	*2018*	*Update CS on ASMGCS to comply with ED-87D EN 303 213-7*	*ETSI*	*2018*			
Doc 9871, Technical Provisions for Mode S Services and Extended Squitter	*ICAO*	*Published*						
Doc 9924, Aeronautical Surveillance Manual	*ICAO*	*Published*	*Update CS on ASMGCS to comply with ED-87E EN 303 213-8*	*ETSI*	*2019*			
Guidance Manual on Airport Traffic Synchronisation	*ICAO*	*2018*						
Update A-SMGCS Manual	*Eurocontrol*	*2017*						

Update ED-87C to include the new functions: routing & planning and additional safety nets (ED-87D)	*EUROCAE WG-41*	*2017*						
Update ED-87D to include Guidance Services (ED-87E)	*EUROCAE WG-41*	*2018*						
ED-163 Safety, Performance and Interoperability Requirements document for ADS-B Airport Surface surveillance application (ADS-B APT)	*EUROCAE*	*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*						

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

Family readiness	SDM view
High	*V3 completed in 2016 and VLDs are planned until 2019.Updates of supporting material need to be considered. Initial deployment started. In view of PCP FOC of 01/2021, the need to accelerate the delivery of supporting material (EUROCAE) and safety-related aspects (EASA), is becoming crucial.*

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

V3 – Development Phase				
SESAR Solution	**OIs**	**V3 End**	**VLD**	
#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**	**Delivery**
Doc 8168 PANS OPS (SURF IA)	*ICAO*	*Published*	*Update CS on ASMGCS to comply with ED-87D EN 303 213-1*	*ETSI*	*2018*			
Doc 9994 Manual on Airborne Surveillance Applications (Edition 1) (SURF)	*ICAO*	*Published*	*Update CS on ASMGCS to comply with ED-87D EN 303 213-2*	*ETSI*	*2018*			
Update ED-87C to include the new functions: routing & planning and additional safety nets (ED-87D)	*EUROCAE WG-41*	*2017*	*Update CS on ASMGCS to comply with ED-87D EN 303 213-3*	*ETSI*	*2018*			
Update ED-87D to include Guidance Services (ED-87E)	*EUROCAE WG-41*	*2018*	*Update CS on ASMGCS to comply with ED-87D EN 303 213-7*	*ETSI*	*2018*			
ED-165 / DO-322 Safety, Performance and Interoperability Requirements Document for ATSA-SURF Application	*EUROCAE*	*Published*						

ED-179B / DO-315B MASPS for Enhanced Vision Systems, Synthetic Vision Systems, Combined Vision Systems and Enhanced Flight Vision Systems	*EUROCAE*	*Published*	*Update CS on ASMGCS to comply with ED-87E EN 303 213-8*	*ETSI*	*2019*			
ED-194A / DO-317A, MOPS for Aircraft Surveillance Applications (ASA) System	*EUROCAE*	*Published*						

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

Family readiness	SDM view
High	*V3 completed in 2016 and VLDs are planned until 2019.Updates of supporting material need to be considered. Initial deployment started. In view of PCP FOC of 01/2021, the need to accelerate the delivery of supporting material (EUROCAE) and safety-related aspects (EASA), is becoming crucial.*

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**			**Regulation**		
References	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**
LARA Local and sub-Regional Airspace Management Support System: edition 23/01/2015	*Eurocontrol*	*Published*	*Communication 2009/C 2196/05 Community Specifications for the application of the Flexible Use of Airspace (FUA)*	*Eurocontrol*	*Published*	*Commission Regulation (EC) 2150/2005*	*European Commission*	*Published*
Advanced FUA Concept edition 1.0 24/07/2015	*Eurocontrol*	*Published*				*Commission Regulation (EC) 677/2011 as amended by Commission Implementing Regulation (EU) 970/2014*	*European Commission*	*Published*
Aeronautical Information Exchange Model (AIXM) Version 5.1	*Eurocontrol*	*Published Continuously maintained*						
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 2016	*Network Manager*	*Published*						

V5 – Deployment Phase	
Initial Operational Capability	*Before 2014*
Full Operational Capability	*01/2019*

Family readiness	SDM view
High	*No further supporting material required other than what is already existing*

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*
#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**			**Regulation**		
References	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**
Specification for ASM Systems Interfaces Supporting Advanced Flexible Use of Airspace	*Eurocontrol*	*2017*	*Communication 2009/C 2196/05 Community Specifications for the application of the Flexible Use of Airspace (FUA)*	*Eurocontrol*	*Published*	*Commission Regulation (EC) 2150/2005*	*European Commission*	*Published*
LARA Local and sub-Regional Airspace Management Support System: Edition 23/01/2015	*Eurocontrol*	*Published*				*Commission Regulation (EC) 677/2011 as amended by Commission Implementing Regulation (EU) 970/2014*	*European Commission*	*Published*
Advanced FUA Concept Edition 1.0 24/07/2015	*Eurocontrol*	*Published*						
Aeronautical Information Exchange Model (AIXM) Version 5.1	*Eurocontrol*	*Published Continuously maintained*						
Network Strategy Plan (NSP): SO 3/2 and SO 3/3	*Network Manager*	*Published*						
Directions of work for enhancing the ASM/ATFCM/ATS processing in the short and medium term 2012-2017; Edition1.0 Edition Date 14/11/11	*Network Manager*	*Published*						

ERNIP Part 3 - Handbook for Airspace Management - Guidelines for Airspace Management; November 2016	*Network Manager*	*Published*						

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

Family readiness	SDM view
High	*V3 completed in 2016. Update of supporting material needs to be considered.*

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**			**Regulation**		
References	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**
Specification for ASM Systems Interfaces Supporting Advanced Flexible Use of Airspace	*Eurocontrol*	*2017*	*Communication 2009/C 2196/05 Community Specifications for the application of the Flexible Use of Airspace (FUA)*	*Eurocontrol*	*Published*	*Commission Regulation (EC) 2150/2005*	*European Commission*	*Published*
Advanced FUA Concept edition 1.0 24/07/2015	*Eurocontrol*	*Published*				*Commission Regulation (EC) 677/2011 as amended by Commission Implementing Regulation (EU) 970/2014*	*European Commission*	*Published*
Aeronautical Information Exchange Model (AIXM) ver 5.1	*Eurocontrol*	*Published Continuously maintained*						
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 2016	*Network Manager*	*Published*						
NOP User Guide; Edition: 19.0-92 Date:09/01/2017	*Network Manager*	*Published*						
Responsibilities Document for the application of Air Traffic Flow Management (ATFM); Edition 1.0; Date: 25/10/2012	*Network Manager*	*Published*						

V5 – Deployment Phase	
Initial Operational Capability	Before 2014
Full Operational Capability	01/2022

Family readiness	SDM view
High	*V3 completed in 2016. Initial deployment started. Update of supporting material needs to be considered.*

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**			**Regulation**		
References	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**
ED-136 VoIP ATM System Operational and Technical Requirements	*EUROCAE*	*Published*				*Commission Regulation (EC) No 2150/2005*	*European Commission*	*Published*
ED-137A Interop Standards for VoIP ATM Components	*EUROCAE*	*Published*						
Update ED-137 to ED-137C (5 parts)	*EUROCAE WG-67*	*2017*						
ED-138 Network requirements and Performance for VoIP ATM Systems	*EUROCAE*	*Published*						
Advanced FUA Concept Edition 1.0 24/07/2015	*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 2016	*Network Manager*	*Published*						

V5 – Deployment Phase	
Initial Operational Capability	*01/2018*
Full Operational Capability	*01/2022*

Family readiness	SDM view
Medium	*V3 reached only for CM-0102A. For the other OIs, activities are expected to continue in Second Wave of SESAR 2020. Delivery expected after IOC. Supporting material needs to be considered.*

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

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 for flights both in cruise and vertically evolving in cross ACC/FIR borders and in high complexity environments *#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*
#33 "Free Route through the use of Free Routing for flights both in cruise and vertically evolving in cross ACC/FIR borders and within permanently low to medium complexity environments	*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 9*	**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**
Doc 9426 Air Traffic Services Planning Manual	*ICAO*	*Published*	*SPEC-0106 Specification for On-Line Data Interchange (OLDI) Ed. 4.2 Community Specification (EC No 1032/2006)*	*Eurocontrol*	*Published*	*Commission Regulation (EC)No 2150/2005*	*European Commission*	*Published*

Doc 4444 PANS ATM, PBN Separation Standards	*ICAO*	*2018*	*Update SPEC-0106 Specification for On-Line Data Interchange (OLDI) to Edition 4.3*	*Eurocontrol*	*2018*	*Commission Regulation (EU) No 1032/2006 - Requirements for automatic systems for the exchange of flight data for the purpose of notification, coordination and transfer of flights between air traffic control units*	*European Commission*	*Published*
Extended MTCD Specification SPEC-0139	*Eurocontrol*	*Published*				*Commission Regulation (EU) No 677/2011, as amended by Commission Implementing Regulation (EU) No 970/2014*	*European Commission*	*Published*
STCA Guidelines GUID-0159	*Eurocontrol*	*Published*						
Update Monitoring Aids (MONA) Specification SPEC-0142	*Eurocontrol*	*Published*						
Update Trajectory Prediction Specification SPEC-0143	*Eurocontrol*	*Published*						
Update Area Proximity Warning (APW) Guidelines GUID-0161	*Eurocontrol*	*Published*						
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*						

V5 – Deployment Phase	
Initial Operational Capability	*Before 2014*
Full Operational Capability	*01/2022*

Family readiness	SDM view
High	*V3 reached for CM-0102A, CM-0202 and CM-0203 (they are ready for deployment) and for AOM-0500 and AOM-0501 in 2016. For the rest of OIs (AOM-0505), V3 will end in 2019. Initial deployment started. Update of supporting material needs to be considered in order to support full Free Route implementation and potentially for cross border operations in FRA.*

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 for flights both in cruise and vertically evolving in cross ACC/FIR borders and in high complexity environments" *#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**	**Delivery**	**References**	**Organization**	**Delivery**
Doc 9426 Air Traffic Services Planning Manual	*ICAO*	*Published*				*Commission Regulation (EC) 2150/2005*	*European Commission*	*Published*
Doc 4444 PANS ATM, PBN Separation Standards	*ICAO*	*2018*				*Commission Regulation (EC) 677/2011 as amended by 970/2014*	*European Commission*	*Published*
Network Strategy Plan (NSP): SO 3/1	*Network Manager*	*Published*						
European Route Network Improvement Plan (ERNIP) Part 1 Edition July 2016	*Network Manager*	*Published*						
European Route Network Improvement Plan (ERNIP) Part 2 - European ATS Route Network - Edition July 2016	*Network Manager*	*Published*						
European Route Network Improvement Plan (ERNIP) Part 4 - Route Availability Document User's Manual; Edition June 2015	*Network Manager*	*Published*						
European Airspace Design Methodology - Guidelines; Edition June 2015	*Network Manager*	*Published*						

V5 – Deployment Phase	
Initial Operational Capability	*Before 2014*
Full Operational Capability	*01/2018*

Family readiness	SDM view
High	*V3 completed in 2016. Deployment already started. Update of supporting material needs to be considered, potentially for cross border DCT.*

Family 3.2.4 – Implement Free Route Airspace

V3 – Development Phase				
SESAR Solution	**OIs**	**V3 End**	**VLD**	
#33 33 "Free Route through the use of Free Routing for flights both in cruise and vertically evolving in cross ACC/FIR borders and within permanently low to medium complexity environments"	*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 9*	**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 4444 PANS ATM, PBN Separation Standards	*ICAO*	*2018*				*Commission Regulation (EC) 2150/2005*	*European Commission*	*Published*
Doc 9426 Air Traffic Services Planning Manual	*ICAO*	*Published*				*Commission Regulation (EC) 677/2011 as amended by 970/2014*	*European Commission*	*Published*
Network Strategy Plan (NSP): SO 3/1	*Network Manager*	*Published*						
European Route Network Improvement Plan (ERNIP) Part 1 Edition July 2016	*Network Manager*	*Published*						
European Route Network Improvement Plan (ERNIP) Part 2 - European ATS Route Network - Edition July 2016	*Network Manager*	*Published*						
European Route Network Improvement Plan (ERNIP) Part 4 - Route Availability Document User's Manual; Edition June 2015	*Network Manager*	*Published*						

European Airspace Design Methodology - Guidelines; Edition June 2015	*Network Manager*	*Published*						

V5 – Deployment Phase	
Initial Operational Capability	Before 2014
Full Operational Capability	01/2022

Family readiness	SDM view
High	*V3 ends in 2019. Deployment already started. Update of supporting material needs to be considered, potentially for cross border operations in FRA. Present navigation accuracy specifications refer to route structures. Similar specifications should be defined for FRA.*

AF4 - Network Collaborative Management

Family 4.1.1 – 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**			**Regulation**		
References	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**
Doc 9971 Manual on Collaborative Air Traffic Flow Management (ATFM part)	*ICAO*	*Published*						
Network Strategy Plan (NSP): SO 4/3 SO 5/4	*Network Manager*	*Published*						
ATFCM Operations Manual; Edition 20,1 (Date 16 November 2016)	*Network Manager*	*Published*						

V5 – Deployment Phase	
Initial Operational Capability	*Before 2014*
Full Operational Capability	*11/2017*

Family readiness	SDM view
High	*No further supporting material required other than what is already existing.*

Family 4.1.2 – STAM Phase 2

V3 – Development Phase				
SESAR Solution	**OIs**	**V3 End**	**VLD**	
#17 "Advanced Short ATFCM 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**	**References**	**Organization**	**Delivery**
Doc 9971 Manual on Collaborative Air Traffic Flow Management (ATFM part)	*ICAO*	*Published*						
Enhanced Short Term ATFCM Guidance Material	*Network Manager*	*Published*						
Network Strategy Plan (NSP): SO 4/3 SO 5/4	*Network Manager*	*Published*						

V5 – Deployment Phase	
Initial Operational Capability	*11/2017*
Full Operational Capability	*01/2022*

Family readiness	SDM view
High	*V3 completed in 2016 and VLDs are planned until 2019. 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*
N/A	*DCB-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**			**Regulation**		
References	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**
Collaborative NOP	*Network Manager*	*Published*						
Network Strategy Plan (NSP): SO 2/1 SO 2/2 SO 2/3 and SO 2/4	*Network Manager*	*Published*						
NOP User Guide; Edition:19.0-92 Date:08/01/2017	*Network Manager*	*Published*						

V5 – Deployment Phase	
Initial Operational Capability	*Before 2014*
Full Operational Capability	*01/2022*

Family readiness	SDM view
High	*V3 completed in 2016 and VLDs are planned until 2019.* *Deployment already started. Update of supporting material needs to be considered*

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*
			Release 8	*N/A*
			Release 9	*N/A*
			Second Wave	*N/A*
PJ.18-01 "Mission Trajectories"	*AUO-0215*	*SESAR Release 9*	**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 4/2 and SO 5/1	*Network Manager*	*Published*	*SPEC- 0101 Edition 1.1 Specification for the Initial Flight Plan (IFPL), Community Specification*	*Eurocontrol*	*Published*	*Commission Regulation (EU) No 1033/2006 - Requirements on procedures for flight plans in the pre-flight phase for the single European sky*	*European Commission*	*Published*
NM Flight Progress Messages Document – Edition 2.3 (25/11/2016)	*Network Manager*	*Published*	*Update SPEC- 0101 Edition 1.1 Specification for the Initial Flight Plan (IFPL)*	*Eurocontrol*	*Published*			
			ADEXP specification Edition 3.1	*Eurocontrol*	*Published*			

V5 – Deployment Phase	
Initial Operational Capability	Before 2014
Full Operational Capability	01/2022

Family readiness	SDM view
High	*V3 ends in 2019. Deployment already started. Update of supporting material needs to be considered* *V3 not achieved for OAT flight plan (part of AUO-0215). Community Specifications to be updated with EFPL and Improved OAT FPL. Need to update guidelines for Harmonised & Improved OAT FPL.*

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.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**	**References**	**Organization**	**Delivery**
Doc 9971 Manual on Collaborative Air Traffic Flow Management (ATFM part)	*ICAO*	*Published*						
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*						

V5 – Deployment Phase	
Initial Operational Capability	*Before 2014*
Full Operational Capability	*01/2022*

Family readiness	SDM view
High	*V3 completed in 2016 and VLDs are planned until 2019. 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.*

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**	*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**	**References**	**Organization**	**Delivery**
Doc 9971 Manual on Collaborative Air Traffic Flow Management (ATFM part)	*ICAO*	*Published*						
CTOT to TTA for ATFCM Guidance Material	*Network Manager*	*Published*						
Network Strategy Plan (NSP): SO 4/3, SO 5/4	*Network Manager*	*Published*						

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

Family readiness	SDM view
High	*V3 completed in 2016 and VLDs are planned until 2019. Update of supporting material needs be considered. Target Times must be included. Target times adherence was not validated in the scope of solution #18.*

Family 4.3.2 – Reconciled Target Times for ATFCM and arrival sequencing

V3 – Development Phase				
SESAR Solution	**OIs**	**V3 End**	**VLD**	
PJ.09-02 "Integrated Local DCB Processes"	*DCB-0213*	*SESAR 2020 Second Wave*	**Release 7**	*N/A*
			Release 8	*N/A*
			Release 9	*N/A*
			Second Wave	*N/A*
#18 "CTOT and TTA"	*DCB-0208*	*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**	**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	
Initial Operational Capability	*01/2019*
Full Operational Capability	*01/2022*

Family readiness	SDM view
Low	*V3 ends in SESAR2020 Second wave. Update of supporting material needs to be considered. Standards, guidance material and potentially CS are needed before the start of deployment.*

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**			**Regulation**		
References	**Organization**	**Delivery**	**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 2.3 (25.11.2016)	*Network Manager*	*Published*						

V5 – Deployment Phase	
Initial Operational Capability	*Before 2014*
Full Operational Capability	*01/2022*

Family readiness	SDM view
High	*V3 completed in 2016 and VLDs are planned until 2019. Deployment already started. Update of supporting material needs to be considered.*

AF5 - iSWIM

Family 5.1.1 – 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**			**Regulation**		
References	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**
Doc 10039 Manual on System Wide Information Management (SWIM) concept	*ICAO*	*Published*						
ATM information security EN 16495 (Version 2)	*CEN*	*2019*						
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*	*TBD*						
PENS1 documents	*PSSG*	*Published*						

V5 – Deployment Phase	
Initial Operational Capability	*Before 2014*
Full Operational Capability	*12/2019*

Family readiness	SDM view
High	*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.*

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**	*PJ.24, PJ.25, PJ.27*
			Release 8	*PJ.24, PJ.25, PJ.27*
			Release 9	*PJ.24, PJ.25, PJ.27*
			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 10039 Manual on System Wide Information Management (SWIM) concept	*ICAO*	*Published*						
ATM information security EN 16495 (Version 2)	*CEN*	*2019*						
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*	*TBD*						
NewPENS documents	*PENS Executive Board*	*2018*						

V5 – Deployment Phase	
Initial Operational Capability	*06/2018*
Full Operational Capability	*01/2025*

Family readiness	SDM view
High	*V3 completed in 2016 and VLDs are planned until 2019.Updates of supporting material need to be considered. Sufficient material is currently available for implementing NewPENS mid-2018, supporting SWIM communications. Possible need for updates when SWIM profile definitions become available.*

Family 5.1.3 – Common SWIM Infrastructure Components

V3 – Development Phase				
SESAR Solution	**OIs**	**V3 End**	**VLD**	
#46 "Initial system-wide information management (SWIM) technology solution"	*IS-0901-A*	*SESAR Release 5*	**Release 7**	*PJ.24, PJ.25, PJ.27*
			Release 8	*PJ.24, PJ.25, PJ.27*
			Release 9	*PJ.24, PJ.25, PJ.27*
			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 10039 Manual on System Wide Information Management (SWIM) concept	*ICAO*	*Published*						
SARPs on AIRM	*ICAO IMP*	*2018*						
ATM information security EN 16495 (Version 2)	*CEN*	*2019*						
SWIM Information Definition	*Eurocontrol*	*2017*						
SWIM Service Description	*Eurocontrol*	*2017*						
Stand/Spec on TI SWIM Yellow Profile definition	*Eurocontrol*	*2017*						
Stand/Spec on TI SWIM Blue Profile Definition	*Eurocontrol*	*TBD*						

V5 – Deployment Phase	
Initial Operational Capability	*06/2016*
Full Operational Capability	*01/2025*

Family readiness	SDM view
High	*V3 completed in 2016 and VLDs are planned until 2019.Updates of supporting material need to be considered. The current SWIM outputs of SESAR1 regarding common SWIM components need to be refined and approved within the community to be established as SWIM Governance in order to become common deployment specifications.*

Family 5.1.4 – Common SWIM PKI and cyber security

V3 – Development Phase				
SESAR Solution	**OIs**	**V3 End**	**VLD**	
#46 "Initial system-wide information management (SWIM) technology solution"	*IS-0901-A*	*SESAR Release 5*	**Release 7**	*PJ.24, PJ.25, PJ.27*
			Release 8	*PJ.24, PJ.25, PJ.27*
			Release 9	*PJ.24, PJ.25, PJ.27*
			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 10039 Manual on System Wide Information Management (SWIM) concept	*ICAO*	*Published*						
ATM information security EN 16495 (Version 2)	*CEN*	*2019*						
SWIM Service Description	*Eurocontrol*	*2017*						
Stand/Spec on TI SWIM Yellow Profile definition	*Eurocontrol*	*2017*						
Stand/Spec on TI SWIM Blue Profile Definition	*Eurocontrol*	*TBD*						

V5 – Deployment Phase	
Initial Operational Capability	*06/2017*
Full Operational Capability	*01/2025*

Family readiness	SDM view
Medium	*V3 completed in 2016 and VLDs are planned until 2019.Updates of supporting material need to be considered. 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 – 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**	**References**	**Organization**	**Delivery**
Doc 10039 Manual on System Wide Information Management (SWIM) concept	*ICAO*	*Published*						
ATM information security EN 16495 (Version 2)	*CEN*	*2019*						
Stand/Spec on TI SWIM Yellow Profile definition	*Eurocontrol*	*2017*						
Stand/Spec on TI SWIM Blue Profile Definition	*Eurocontrol*	*TBD*						
Internet Protocol version 4 and 6 for Unicast and Multicast (RFC)	*IETF*	*Published*						

V5 – Deployment Phase	
Initial Operational Capability	*Before 2014*
Full Operational Capability	*01/2018*

Family readiness	SDM view
High	*IP already deployed. No further supporting material required other than what is already existing.*

Family 5.2.2 – Stakeholder SWIM Infrastructure components

V3 – Development Phase				
SESAR Solution	**OIs**	**V3 End**	**VLD**	
#46 "Initial system-wide information management (SWIM) technology solution	*IS-0901-A*	*SESAR Release 5*	**Release 7**	*PJ.24, PJ.25, PJ.27*
			Release 8	*PJ.24, PJ.25, PJ.27*
			Release 9	*PJ.24, PJ.25, PJ.27*
			Second Wave	*N/A*
#28 "Initial Ground-Ground Interoperability"	*CM-0201-A*	*SESAR Release 5*	**Release 7**	*PJ.27*
			Release 8	*PJ.27*
			Release 9	*PJ.27*
			Second Wave	*N/A*
#18-02b: Flight Object Interoperability	*CM-0201-A*	*SESAR Release 9*	**Release 7**	*PJ.27*
			Release 8	*PJ.27*
			Release 9	*PJ.27*
			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 10039 Manual on System Wide Information Management (SWIM) concept	*ICAO*	*Published*						
ATM information security EN 16495 (Version 2)	*CEN*	*2019*						
Stand/Spec on TI SWIM Yellow Profile definition	*Eurocontrol*	*2017*						
Stand/Spec on TI SWIM Blue Profile Definition	*Eurocontrol*	*TBD*						

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

Family readiness	SDM view
High	*V3 ends in 2019 and VLDs are planned until 2019. 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 46 "Initial system-wide information management (SWIM) technology solution"	*IS-0901-A*	*SESAR Release 5*	**Release 7**	*PJ.24, PJ.25, PJ.27*
			Release 8	*PJ.24, PJ.25, PJ.27*
			Release 9	*PJ.24, PJ.25, PJ.27*
			Second Wave	*N/A*
#28 "Initial Ground-Ground Interoperability"	*CM-0201-A*	*SESAR Release 5*	**Release 7**	*PJ.27*
			Release 8	*PJ.27*
			Release 9	*PJ.27*
			Second Wave	*N/A*
#18-02b: Flight Object Interoperability	*CM-0201-A*	*SESAR Release 9*	**Release 7**	*PJ.27*
			Release 8	*PJ.27*
			Release 9	*PJ.27*
			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 10039 Manual on System Wide Information Management (SWIM) concept	*ICAO*	*Published*						
x.509	*ITU*	*Published*						
ATM information security EN 16495 (Version 2)	*CEN*	*2019*						
Stand/Spec on TI SWIM Yellow Profile definition	*Eurocontrol*	*2017*						
Stand/Spec on TI SWIM Blue Profile Definition	*Eurocontrol*	*TBD*						

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

Family readiness	SDM view
Medium	*V3 ends in 2019 and VLDs are planned until 2019. Deployment already started. Update of supporting material needs be considered.*

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

V3 – Development Phase				
SESAR Solution	**OIs**	**V3 End**	**VLD**	
#46 "Initial system-wide information management (SWIM) technology solution"	*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**	**References**	**Organization**	**Delivery**
Doc 8126 Aeronautical Information Services Manual	*ICAO*	*2018*				*Commission Regulation (EU). 73/2010 (ADQ IR) as amended by Commission Implementing Regulation (EU) 1029/2014*	*European Commission*	*Published*
Doc 10039 Manual on System Wide Information Management (SWIM) concept	*ICAO*	*Published*						
PANS AIM	*ICAO*	*TBD*						
SARPs on AIRM	*ICAO IMP*	*2018*						
ATM information security EN 16495 (Version 2)	*CEN*	*2019*						
SWIM Service Description	*Eurocontrol*	*2017*						
SWIM Information Definition	*Eurocontrol*	*2017*						
Stand/Spec on TI SWIM Yellow Profile definition	*Eurocontrol*	*2017*						
Aeronautical Information Exchange Model (AIXM) Version 5.1	*Eurocontrol*	*Published Continously maintained*						
Electronic e-AIP Specification	*Eurocontrol*	*Published*						
ED-76A / DO-200B Standard for processing aeronautical data	*EUROCAE / RTCA*	*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*						
GML Profile for Aviation Data	*OGC Aviation Domain WG*	*Published*						
Web Feature Service (WFS)	*OGC/ISO*	*Published*						

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

Family readiness	SDM view
High	*V3 completed in 2016 and VLDs are planned until 2019. Deployment already started. Update of supporting material needs to be considered.*

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**	*N/A*
			Release 8	*N/A*
			Release 9	*N/A*
			Second Wave	*N/A*
#46 "Initial system-wide information management (SWIM) technology solution"	*IS-0901-A*	*SESAR Release 5*	**Release 7**	*PJ.24, PJ.25, PJ.27*
			Release 8	*PJ.24, PJ.25, PJ.27*
			Release 9	*PJ.24, PJ.25, PJ.27*
			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 8896 Manual of Aeronautical Meteorological Practice	*ICAO*	*Published*						
Doc 9328 Manual of Runway Visual Range Observing and Reporting Practices	*ICAO*	*Published*						
Doc 9377 Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services	*ICAO*	*Published*						
Doc 9691 Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds	*ICAO*	*Published*						
Doc 9766 Handbook on the International Airways Volcano Watch (IAVW) Operational Procedures	*ICAO*	*Published*						
Doc 9817 Manual on Low-level Wind Shear	*ICAO*	*Published*						

Doc 9837 Manual on Automatic Meteorological Observing Systems at Aerodromes	*ICAO*	*Published*						
Doc 10003 Manual on the digital exchange of aeronautical information	*ICAO*	*Published*						
Doc 10039 Manual on System Wide Information Management (SWIM) concept	*ICAO*	*Published*						
SARPs on AIRM	*ICAO IMP*	*2018*						
ATM information security EN 16495 (Version 2)	*CEN*	*2019*						
Meteorological Information Exchange Model (IWXXM) Version 2.0	*ICAO*	*Published*						
Update Meteorological Information Exchange Model (IWXXM) Version 2.0 to Version 2.1	*ICAO*	*2017*						
GRIB2: WMO-No. 306, Manual on Codes Volume I.2	*WMO*	*Published*						
SWIM Information Definition	*Eurocontrol*	*2017*						
SWIM Service Description	*Eurocontrol*	*2017*						
Stand/Spec on TI SWIM Yellow Profile definition	*Eurocontrol*	*2017*						
MET SWIM Service	*EUROCAE*	*2020*						
HDF5 https://www.hdfgroup.org/HDF5/doc/H5.format.html	*HDF Group*	*Published*						
GML Profile for Aviation Data	*OGC Aviation Domain WG*	*Published*						
Web Feature Service (WFS)	*OGC/ISO*	*Published*						
Web Coverage Service (WCS)	*OGC*	*Published*						
Web Map Service Interface (WMS)	*OpenGIS*	*Published*						

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

Family readiness	SDM view
High	*V3 completed in 2016 and VLDs are planned until 2019. Initial deployment started. Update of supporting material needs to be considered.*

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

V3 – Development Phase				
SESAR Solution	**OIs**	**V3 End**	**VLD**	
#46 "Initial system-wide information management (SWIM) technology solution"	*IS-0901-A*	*SESAR Release 5*	**Release 7**	*PJ.24, PJ.25, PJ.27*
			Release 8	*PJ.24, PJ.25, PJ.27*
			Release 9	*PJ.24, PJ.25, PJ.27*
			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**
Global Air Navigation Plan (GANP)	*ICAO*	*Published*						
Doc 10039 Manual on System Wide Information Management (SWIM) concept	*ICAO*	*Published*						
SARPs on AIRM	*ICAO IMP*	*2018*						
ATM information security EN 16495 (Version 2)	*CEN*	*2019*						
SWIM Information Definition	*Eurocontrol*	*2017*						
SWIM Service Description	*Eurocontrol*	*2017*						
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*						
Network Strategy Plan (NSP): SO 2/2, SO 2/4, SO 5/2, SO5/4, SO5/5, SO6, SO7/6	*Network Manager*	*Published*						
FIXM Flight Information Exchange model Version 4 including flow Management	*FIXM development team*	*Published*						

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

Family readiness	SDM view
High	*V3 completed in 2016 and VLDs are planned until 2019. 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 5.6.1 – Upgrade/Implement Flight Information Exchange System/Service supported by Yellow Profile

V3 – Development Phase				
SESAR Solution	**OIs**	**V3 End**	**VLD**	
#46 "Initial system-wide information management (SWIM) technology solution"	*IS-0901-A*	*SESAR Release 5*	**Release 7**	*PJ.24, PJ.25, PJ.27*
			Release 8	*PJ.24, PJ.25, PJ.27*
			Release 9	*PJ.24, PJ.25, PJ.27*
			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 10039 Manual on System Wide Information Management (SWIM) concept	*ICAO*	*Published*	*Community specification on FDP IOP*	*CEN*	*Not planned*			
SARPs on AIRM	*ICAO IMP*	*2018*	*SPEC- 0101 Edition 1.1 Specification for the Initial Flight Plan (IFPL), Community Specification*	*Eurocontrol*	*Published*			
ATM information security EN 16495 (Version 2)	*CEN*	*2019*	*Update SPEC- 0101 Edition 1.1 Specification for the Initial Flight Plan (IFPL)*	*Eurocontrol*	*Published*			
SWIM Information Definition	*Eurocontrol*	*2017*						
SWIM Service Description	*Eurocontrol*	*2017*						
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*						
FIXM Flight Information Exchange Model Version 4	*FIXM development team*	*Published*						

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

Family readiness	SDM View
High	*V3 ends in 2019 and VLDs are planned until 2019. 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**	
#28 "Initial Ground-Ground Interoperability"	*CM-0201-A*	*SESAR Release 5*	**Release 7**	*PJ.27*
			Release 8	*PJ.27*
			Release 9	*PJ.27*
			Second Wave	*N/A*
#18-02b: Flight Object Interoperability	*CM-0201-A*		*Release 7*	*PJ.27*
			Release 8	*PJ.27*
			Release 9	*PJ.27*
			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 10039 Manual on System Wide Information Management (SWIM) concept	*ICAO*	*Published*	*Community specification on FDP IOP*	*CEN*	*Not planned*			
SARPs on AIRM	*ICAO IMP*	*2018*						
ATM information security EN 16495 (Version 2)	*CEN*	*2019*						
Interoperability of Flight Data Processing (FDP) (TS 16071)	*CEN*	*Published*						
SWIM Information Definition	*Eurocontrol*	*2017*						
SWIM Service Description	*Eurocontrol*	*2017*						
Stand/Spec on TI SWIM Blue Profile definition	*Eurocontrol*	*TBD*						
ED-133: Flight object interoperability specification	*EUROCAE*	*Published*						
Update ED-133 and potential future revisions	*EUROCAE WG-59*	*2020*						

V5 – Deployment Phase	
Initial Operational Capability	*06/2018*
Full Operational Capability	*01/2025*

Family readiness	Family readiness
Medium	*V3 will end in 2019 and VLDs are planned until 2019. Update of supporting material needs to be considered.* *Work is ongoing on Blue Profile and ED-133 specifications, both of which are essential prerequisites for deploying family 5.6.2. Timely deployment of this family is endangered by the delay in those specifications. Once a date for the release of the specifications is fixed, the timelines for family 5.6.2 will have to be revisited and potentially updated.*

AF6 - Initial Trajectory Information Sharing

Family 6.1.1 – ATN B1 based services in ATSP domain

V3 – Development Phase				
SESAR Solution	**OIs**	**V3 End**	**VLD**	
N/A	*AUO-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**			**Regulation**		
References	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**
Doc 9694 Manual of Air Traffic Services Data Link Applications	*ICAO*	*Published*	*EASA/CS-ACNS 17 Dec 2013 – Community Specification on DL for aircraft implementations*	*EASA*	*Published*	*Commission Regulation (EC) 1032/2006 amended by (C) 30/2009*	*European Commission*	*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*	*Data Link Services (DLS) System; Community Specification; Requirements for ground constituents and system testing EN 303 214 (Version 1.2.1)*	*ETSI*	*Published*	*Commission Regulation (EC) n. 29/2009 amended by (EC) 2015/310*	*European Commission*	*Published*
Update Doc 10037 ICAO GOLD to Edition 2	*ICAO CP*	*2018*	*Update Data Link Services (DLS) System; Community Specification; Requirements for ground constituents and system testing EN 303 214)*	*ETSI*	*2019*	*Commission Regulation (EC) n. 30/2009*	*European Commission*	*Published*
SPEC-0116 Specification on Data Link Services, Edition 2.1	*Eurocontrol*	*Published*	*Data Link Services*	*EASA RMT.0524*	*Planned 2018*			
ATC Data Link Operational Guidance Edition 6.0 17 December 2012	*Eurocontrol*	*Published*	*SPEC-0106 Specification for On-Line Data Interchange (OLDI) Ed. 4.2 Community Specification (EC No 1032/2006)*	*Eurocontrol*	*Published*			

Link 2000+ Guidance to Ground Implementers edition 2.3 14 Oct 2014	*Eurocontrol*	*Published*	*Update SPEC-0106 Specification for On-Line Data Interchange (OLDI) to Edition 4.3*	*Eurocontrol*	*2018*		
ED-93, Minimum Aviation System Performance Specification for CNS/ATM message recording systems	*EUROCAE*	*Published*					
ED-100A / DO-258A, Interoperability Requirements for ATS Applications using ARINC 622 Data Communications.	*EUROCAE*	*Published*					
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 Continental Airspace (SPR IC)	*EUROCAE*	*Published*					
Network Strategy Plan (NSP): SO 8.3	*Network Manager*	*Published*					

V5 – Deployment Phase	
Initial Operational Capability	*Before 2014*
Full Operational Capability	*02/2018*

Family readiness	SDM view
High	*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.*

Family 6.1.2 – ATN B2 based services in ATSP domain

V3 – Development Phase				
SESAR Solution	**OIs**	**V3 End**	**VLD**	
#115 Extended projected profile (EPP) availability on ground	*IS-0303-A (ER APP ATC 149a, ER APP ATC 119,*	*SESAR Release 5*	**Release 7**	*PJ.31*
			Release 8	*PJ.31*
			Release 9	*PJ.31*
			Second Wave	*N/A*
#18-06a ATC Planned Trajectory Performance Improvement	*IS-0303-A (ER APP ATC 100)*	*SESAR Release 9*	**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**	**References**	**Organization**	**Delivery**
Doc 9776 Manual on VDL Mode 2 Technical Specifications	*ICAO*	*Published*	*Updated CS on DL*	*ETSI*	*2020 (not planned)*			
Doc 9880 Manual on Detailed Technical Specifications for the Aeronautical Telecommunication Network (ATN) using ISO/OSI Standards and Protocols	*ICAO*	*Published*						
Doc 9925 - Manual on the Aeronautical Mobile Satellite (Route) Service Edition 2	*ICAO*	*Published*						
Update Doc 10037 ICAO GOLD to Edition 2	*ICAO CP*	*2018*						
Update Doc 9869 Manual on Required Communication Performance (RCP) to Edition 3	*ICAO CP*	*2018*						
ED-75D / DO-236D MASPS: Required Navigation Performance for Area Navigation	*EUROCAE*	*Published*						

ED-133 Flight object interoperability specification	*EUROCAE*	*Published*						
Update ED-133 to ED-133 and potential future revisions	*EUROCAE*	*2020*						
ED-228A / DO-350A ATN B2 standard	*EUROCAE / RTCA*	*Published*						
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*						
Network Strategy Plan (NSP): SO 5.1, SO 5.5 and SO 8.3	*Network Manager*	*Published*						

V5 – Deployment Phase	
Initial Operational Capability	*01/2020*
Full Operational Capability	*01/2025*

Family readiness	SDM view
Low	*V3 ends in 2019 and VLDs are planned until 2019.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.*

Family 6.1.3 – A/G and G/G Multi Frequency DL Network in defined European Service Areas

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**			**Regulation**		
References	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**
Doc 9776 Manual on VDL Mode 2 Technical Specifications	*ICAO*	*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*	*European Commission*	*Published*
ED-92B MOPS for an Airborne VDL Mode-2 System Operating in the Frequency Range 118-136.975 MHz	*EUROCAE*	*Published*	*Update 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*	*Planned*			
Update ED-92B to ED-92C MOPS for an Airborne VDL Mode-2 System Operating in the Frequency Range 118-136.975 MHz	*EUROCAE WG-92*	*2018*	*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-XX Follow up DLS recovery plan	*EUROCAE WG-92*	*2018*						
ARINC Specification 631-6	*ARINC*	*Published*	*Update 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*	*Planned*			

SJU/LC/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, Part 3: Harmonized EN covering the essential requirements of the Directive 2014/53/EU EN 301 841-3* *Update VHF air-ground Digital Link (VDL) Mode 2, Part 3: Harmonized EN covering the essential requirements of the Directive 2014/53/EU EN 301 841-3*	*ETSI* *ETSI*	*Published* *Planned*			

V5 – Deployment Phase	
Initial Operational Capability	*01/2017*
Full Operational Capability	*12/2022*

Family readiness	SDM view
High	*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.*

Family 6.1.4 – ATN B1 capability in Multi Frequency environment in aircraft domain

V3 – Development Phase				
SESAR Solution	**OIs**	**V3 End**	**VLD**	
N/A	*AUO-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**			**Regulation**		
References	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**	**References**	**Organization**	**Delivery**
Doc 9694 Manual of Air Traffic Services Data Link Applications	*ICAO*	*Published*	*CS-ACNS, 17December 2013 - Community Specification on DL for aircraft implementations*	*EASA*	*Published*	*Commission Regulation (EC) n. 1032/2006 amended by (EC) 30/2009*	*European Commission*	*Published*
Doc 9776 Manual on VDL Mode 2 Technical Specifications	*ICAO*	*Published*	*Data Link Services*	*EASA RMT.0524*	*Planned 2018*	*Commission Regulation (EC) n. 29/2009 amended by (EC) 2015/310*	*European Commission*	*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*				*Commission Regulation (EC) n. 965/2012*	*European Commission*	*Published*
Update Doc 10037 ICAO GOLD to Edition 2	*ICAO CP*	*2018*						
ED-92B MOPS for an Airborne VDL Mode-2 System Operating in the Frequency Range 118-136.975 MHz	*EUROCAE*	*Published*						
Update ED-92B to ED-92C MOPS for an Airborne VDL Mode-2 System Operating in the Frequency Range 118-136.975 MHz	*EUROCAE WG-92*	*2018*						

ED-XX Follow up DLS recovery plan	*EUROCAE WG-92*	*2018*						
ED-93, Minimum Aviation System Performance Specification for CNS/ATM message recording systems	*EUROCAE*	*Published*						
ED-100A / DO-258A, Interoperability Requirements for ATS Applications using ARINC 622 Data Communications.	*EUROCAE / RTCA*	*Published*						
ED-110B / DO-280B, Interoperability Requirements Standard for Aeronautical Telecommunication Network Baseline 1 (Interop ATN B1).	*EUROCAE / RTCA*	*Published*						
ED-154A / DO-305A, Future Air Navigation System 1/A - Aeronautical Telecommunication Network Interoperability Standard (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 / RTCA*	*Published*						
Network Strategy Plan (NSP): SO 8.3	*Network Manager*	*Published*						
ARINC Specification 631-6	*ARINC*	*Published*						
SJU/LC/0109-CFT – D1602 "VDL Mode 2 Measurement, Analysis and Simulation Campaign", Deliverable D11 – Final Report	*SJU*	*Published*						

V5 – Deployment Phase	
Initial Operational Capability	*09/2016*
Full Operational Capability	*02/2020*

Family readiness	SDM View
High	*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.*

Family 6.1.5 – ATN B2 in aircraft domain

V3 – Development Phase				
SESAR Solution	**OIs**	**V3 End**	**VLD**	
#115 Extended projected profile (EPP) availability on ground	*IS-0303-A (A/C-37a)*	*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**	**References**	**Organization**	**Delivery**
Doc 9925-Manual on the Aeronautical Mobile Satellite (Route) Service Edition 2	*ICAO*	*Published*	*Update CS on DL*	*ETSI*	*2020 (not planned)*			
Update Doc 9869 Manual on Required Communication Performance (RCP) to Edition 3	*ICAO CP*	*2018*						
Doc 9880 Manual on Detailed Technical Specifications for the Aeronautical Telecommunication Network (ATN) using ISO/OSI Standards and Protocols	*ICAO*	*Published*						
Update Doc 10037 ICAO GOLD to Edition 2	*ICAO CP*	*2018*						
ED-75D / DO-236D MASPS: Required Navigation Performance for Area Navigation	*EUROCAE / RTCA*	*Published*						
ED-228A / DO350 ATN B2 Standard	*EUROCAE / RTCA*	*Published*						
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*						
ARINC Specification 631-6	*ARINC*	*Published*						

V5 – Deployment Phase	
Initial Operational Capability	*01/2020*
Full Operational Capability	*01/2026*

Family readiness	SDM view
Low	*V3 completed in 2016 and VLDs are planned until 2019.Updates of supporting material need to be considered.* *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.*

Annex C – 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 analyses 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 Programme (DP).

While the PCP CBA[1] 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 Programme 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 Programme.

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

Through 2015 and 2016, this methodology has been tested and improved. It is expected to be stable enough to be pursued over the next periods, notwithstanding the possibility to take on board further improvements if necessary.

The requested information and data allowing to elaborate CBAs are uploaded by the respective stakeholders manages in the STAR tool[2].

2. Benefits

2.1. Identifying benefits

2.1.1. Key Performance Areas (KPAs), 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[3].

The following pictures and corresponding grids give an overview of ATM Functionalities and the definition of the Performance Indicators used and their relation with KPAs.

[1] Cost Benefits Analysis
[2] SESAR Tool for ATM Roll-out
[3] Flight efficiency and capacity are monetized through savings of fuel and operational costs (i.e. reduction of delays, shorter flight-routes). Environmental impact is monetized through CO2 reductions. Cost efficiency is monetized through ATCO productivity and ANS cost reductions.

Fig. 1 – Overview of ATM Functionalities

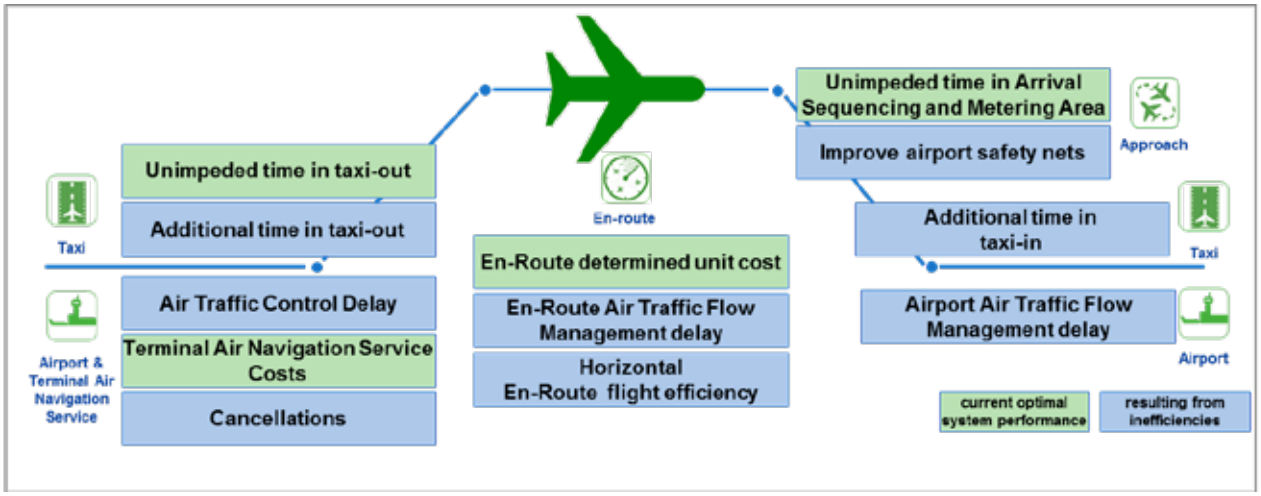

Fig. 2 – Performance Indicators

- In green, Performance Indicators refer to "strategic" inefficiencies, for example due to current airspace design, that is to say which refer to the reduction of delay that is included in airline schedules (flight plan).
- In blue, Performance Indicators resulting from inefficiencies, so called "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[4]

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

[4] Reference to IR 390/2013

ATC delay[1]

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[1]

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

Additional taxi-out time[5]

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

[5] Reference to IR 390/2013

Unimpeded time in taxi-in[6]

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[2]

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[1]

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[1]

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

En-route ATFM delay[7]

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

[6] Reference to Performance Review Report 2014

[7] Reference to IR 390/2013

Determined Unit Cost for En-route ANS[1]

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[1]

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[8]

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

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 "En Route 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., Fig. 7). The following grid gives the CBA metrics used in relation to their KPAs.

[8] Reference to Performance Review Report 2014

KPAs	CBA metrics
Cost Efficiency	Savings linked to DUC[9] 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_2 reduction

Fig. 3: KPAs and CBA metrics

- In green, 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 blue, 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*"
- "*Savings linked to fuel consumption*"
- "*Savings linked to CO2 reduction*" which refers to the reduced fuel burn.

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 CO2 reduction" are used in CBA metrics to valorize projects that have an impact on environment.

Safety and Security are not developed with CBA metrics at this stage.

Additionally, the STAR tool includes the possibility for stakeholders to insert their assessments concerning predictability and resilience aspects, which may be of added value in the assessment of capacity or operational efficiency on the local situation and, consequently and possibly, at network level.

[9] DUC: Determined Unit Rate for en route Air Navigation Services: the measure addresses the costs for the provision of en route air navigation services. The en route ANS Determined Unit Rate is defined as the en route determined costs (in real terms) divided by the total en route service units. 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.

2.1.2. Initial Assessment approach

The initial assessment approach is as follows:

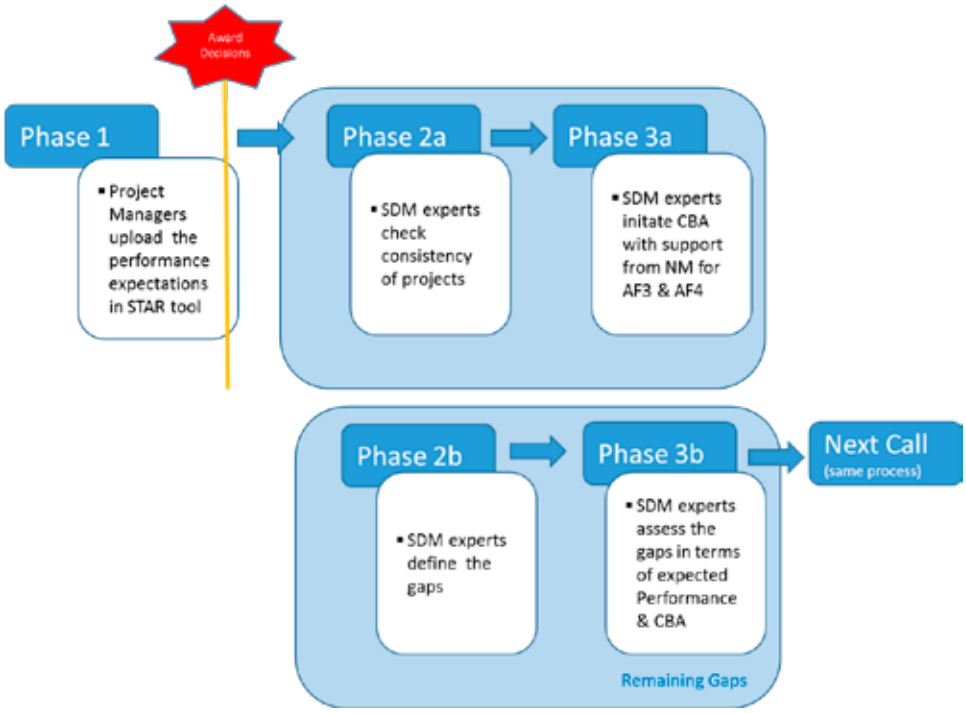

Fig. 4 – Identifying benefits

Phase 1

The information of the respective project allows collecting the initial information and expectations of benefits from the project managers for all projects before submission to the call. Information about expected performance improvements are based on the identification of improvements of Key Performance Areas (KPAs) and related information to support a quantitative analysis. The SDM relies 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 mentioned or primary identified by the project manager or when other data are available. The SDM pays attention to the consistency of the data between projects, including the ones reported in NOP and ERNIP published by NM in accordance with EU IR 677/2011 as last amended.

Phase 2b

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

Phase 3a

AF1 & AF2: SDM experts initiate CBA according to its top-down approach and share with the Project Manager (PM).

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.

AF5 & AF6: SDM experts initiate CBA according to expert judgement and in accordance with the respective project managers.

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

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

Starting point of elaboration of awarded projects is the question if this particular project is an independent or dependent to other projects. As a principle SDM is looking firstly to calculate independent CBAs.

Using the STAR tool to administrate all submitted and awarded projects, SDM is transferring every project in a so-called thread[10]. This construction allows grouping of projects which are for instance:

- follow up projects (i.e. projects divided into phases)
- projects which are firstly enabler or prerequisites
- projects which are covering the same sub-family and therefore shall have the same impact on performance, in order to avoid double counting of benefits.
- 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.
- projects dependent of other projects to deliver most of their benefits, or projects whose benefits cannot be isolated from other projects

In these cases the decision is to group the project 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.

Whenever a grouping of single projects into threads is senseful, SDM will consult the respective project manager beforehand.

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 is 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 two 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 used to make the initial assessment for the Bottom Up approach, and also to measure the benefits of the remaining gaps of the Deployment Programme.

[10] Thread = smallest unit is a single Implementation Project (IP) or a multi project thread containing >1 IP.

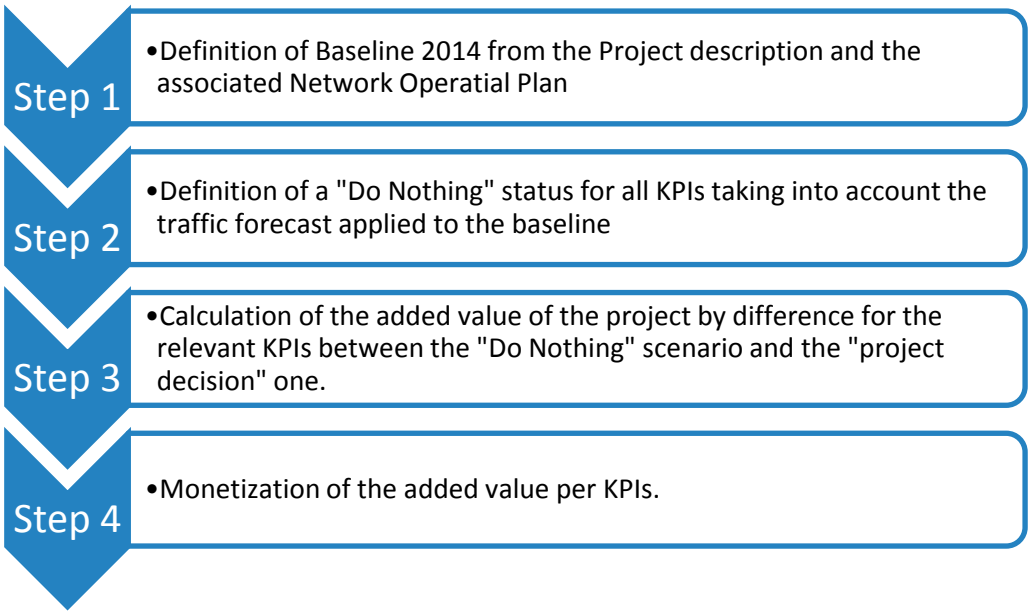

Fig. 5 – Measuring the expected benefits

The process in figure 5 is a systematic way to address any project or thread of projects in following 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 (i.e. airport or 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 specificities that prevent from using generic parameters. SDM seeks the support of each airport in defining the "Do Nothing" scenario. The input of the airport is then crosschecked with the NOP data. Concerning TMA capacity, the "Do Nothing" scenario is elaborated on a case-by-case basis depending on 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.

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 validates with the Network Manager according to the NOP/ERNIP documents when applicable.
- SDM considers the sensitivity of the project to deal with adverse weather conditions, resilience and robustness.
- TMA related projects would require a case-by-case assessment depending on:
  - whether 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.
  - whether contribution is mainly directed to improve the TMA capability to handle multiple queuing at different airports; then the TMA related project is treated separately.
  - whether contribution is mainly directed to improve the ATC sector capacity; then the TMA related project is 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 x CBA x VEUR[11]

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:

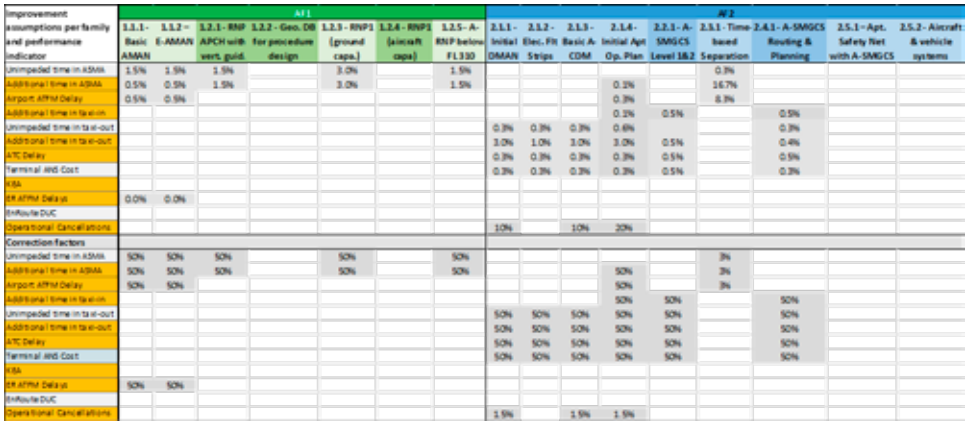

Fig. 6 – Improvement assumptions

For AF3 and AF4 the assessments made by the Network Manager take into consideration a harmonised network approach. The Network Manager ensures 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 AF3 and AF4. This consistency must be maintained for all the subsequent updates of the Deployment Programme and the gaps identification.

Capacity Assessment with respect to the AF3 and AF4 projects:

- The capacity assessment is based 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.

[11] YB = yearly benefit, %I = percentage of improvement, CBA = CBA metric, VEUR = valorisation in Euros.

- In the capacity assessment, the percentages of improvement brought by the project or thread are taken into account together with the flight profiles derived from STATFOR data assuming routing via the shortest routes available on the future ATS route network, with generally unconstrained vertical profiles. (in general the base scenario from STATFOR is used and with an homogenous approach following impacts are considered: reduction of nautical miles and saving of En Route ATFM delays).
- The Network Manager has ensured a full consistency between the last available version of the Network Operations Plan and the evaluation of the operational performance potential of the AF3 and AF4 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 AF3 and AF4 related projects listed in the last available version of the Network Operations Plan. The assessments take into consideration a harmonized network approach.

Flight Efficiency with respect to the AF3 and AF4 projects:

- The flight efficiency assessment is based on the overall flight efficiency evaluations made in the context of the last version of the European Route Network Improvement Plan, Part 2 – ARN Version.
- The Network Manager has ensured a full consistency between the European Route Network Improvement Plan, Part 2 last ARN version and the evaluation of the operational performance potential of the AF3 and AF4 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.

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[2]
ASMA (add. Time) Taxi Out (add. Time)	Tactical Airborne Delay	44€/minute[2]
ASMA (unimpeded) Taxi In/Out (unimpeded)	Strategic airborne Delay	50€/minute[1]
Flight Time Reduction	Airborne Strategic Cost	31€/minute[1]
Fuel	Kg	0,79€ (2014)[1]
CO2[12]	T	4,30€ (2014)[1]
Flight cancelled		7.600€[3]

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. 7 – Cost assumptions

[12] The index for CO_2 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 7:

SDM is taking different values depending on airborne or ground related metrics 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

The SDM uses published data when possible, or sources consistent with the one used for PCP CBA, the ATM Master Plan and the SES high-level goals.

Performance Indicators:

- 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
- 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
- Resilience: PRR 2014, P54 (from PRU[13] analysis; Central Office for Delay Analysis -CODA[14])
  - 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. The stakeholders (e.g. Central Office for Delay Analysis - CODA) can also 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 continuously monitors the benefits of all awarded projects based on the CEF Calls. On the course of the implementation, assumptions may be reviewed and yearly updates of data sources are used by the SDM.

In addition, the SDM is expected to monitor the benefits until the change is operational: the final target is the measurement of actual benefits of the thread when fully implemented. Specific analysis might be necessary to implement the methodology on this topic.

[13] PRU: Performance Review Unit
[14] CODA: Central Office of delay Analysis

Therefore, the two main streams of action are as follows:

- Monitoring: SDM intends to monitor and to confirm all prior assumptions, data comparison and results of theoretical simulations done by SDM, NM or Project Manager. This includes for instance a continuously updating of PRU and CODA data on relevant KPIs.
- Performance Crosscheck: A 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. Therefore, a manageable frame of actions will be needed. SDM suggests organizing part time real life crosschecks, whenever reasonable working packages have been finalized. (for instance 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, based on NM tools. The CBA always describes the assumptions taken.

For instance, and when applicable, the results of delays 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 to be 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

The estimated budget is reported in the Annex of the SGA[15]. The costs are updated continuously by the Action beneficiaries. As a pre-condition, the eligibility of costs is outlined in Article II.19.1 of the FPA.

As the CBA focuses on awarded projects, other costs, either related but not provided or spent without funding, are not taken into account. However, it is expected to furthermore establish an approach 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 uploaded by the project manager in the STAR tool and according to the provisions of the ICA, SGA and FPA.

3.3. Monitoring of costs

SDM tracks costs in accordance with the estimated budget and the development of the expenditures in the duration of the respective Action.

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

[15] SGA = Specific Grant Agreement

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 assessing 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 of project (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 which is called the **Gap Coverage (GC)**. The formula below applies:

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

Step by step

Estimation of E for each project requires six 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[16]. 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 and it is project neutral. This step aims at estimating a 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.

[16] Discount Rate of 8% according to the value published in PCP EC-716-2014 article 4c global CBA.

Step 4: Effectiveness (E)

This step is specific for every thread (single IP thread or multiple IP 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.

Step 5: Sensibility analysis

As shown by the formula, impact on the **Effectiveness (E)** relies on the three different contributors (GRC, GC and 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.

The results are provided through a **"Cost Effectiveness Indicator"** whose absolute value is then translated into a five-level color scale:

- "Green" (G) when the cost effectiveness is 0.9 or above. The cost is below 1.11 times the reference (GRC*GC);
- "Light Green" (LG) when the cost effectiveness is between 0.5 and 0.9. The cost is between 2 times and 1.11 times the reference (GRC*GC);
- "Yellow" (Y) when the cost effectiveness is between 0.1 and 0.5. The cost is between 2 and 10 times the reference (GRC*GC);
- "Orange" (O) when the cost effectiveness is between 0.01 and 0.1. The cost is between 10 and 100 times the reference (GRC*GC);
- "Violet" (V) when the cost effectiveness is 0.01 or below. The cost is above 100 times the reference budget (GRC*GC).

Due to the methodology used, SDM considers that a group of IPs is more cost effective when its CEA indicator is Green and Light Green, and less cost effective when it is Yellow or even much less when it is Orange. Violet clearly indicates a non-sufficient cost effectiveness.

Step 6: Mathematical Interpretation

- When E is close to 1, it means that the cost for closing the gap equals the expected contribution to benefits. Cost effectiveness is aligned with PCP CBA;
- When E is lower than 1, it means that the cost for closing the gap is above the expected contribution to benefits. It is sub-effective compared with PCP CBA;
- When E is higher than 1, it means that the cost for closing the gap is below the expected contribution to benefits. It is over-effective compared with PCP CBA.

3.5. Estimating accuracy of costs

Accuracy of costs is linked to the accuracy of the declared costs by the project managers.

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".

For each thread of projects, the STAR tool allows to present the results of NPV over a 10 year-period. It also calculates the payback period.

4.2. Analysis on costs and benefits results

SDM shares the information on the CBA results with the Implementing Partners through the STAR tool.

The results present the expected benefits monetized and the associated costs. Those projects that depend on future projects to realize benefits are candidates for multi-project threads in the STAR tool.

SDM shall integrate its analysis in the "Monitoring & Performance view" of the Deployment Programme. It should also support the evaluation of the contribution of the Deployment Program to the SES high-level goals. In a more detailed manner, it should also identify risks from the outcome of some projects.

The global CBA is the CBA summing all CBAs of the Deployment Programme for all awarded projects and threads. This global CBA shall be regularly published in the "Monitoring & Performance view" of the Deployment Program and will mature over time to reflect the full scope of Regulation (EU) n. 716/2014.

4.3. Comparing with the PCP CBA

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 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 assumptions:

- PCP CBA uses percentages of delayed flights and durations of delays and so uses a global figure of mixed ground and airborne activities. PCP CBA makes the assumption of 90% ground delays and 10% airborne delays.
- SDM has the opportunity to be more precise in the CBA due the Performance Indicators used (related to SES II and Performance Scheme, e.g. ATFM delays, Additional time, etc.). So SDM can use the exact cost of airborne delays and of ground delays (this avoids using a mixed value of 90% grounded and 10% airborne delays).
- PCP CBA takes into account the cost for the deployment of the functionalities of the PCP. The PCP CBA however does not reflect the necessary prerequisites and enablers in need of deployment in order to establish the operational or technical capability / baseline to implement the PCP functionalities. The European Commission has however acknowledged that CEF funding shall also be used to secure the necessary investment of prerequisites and enablers. Therewith the total cost of the awarded IPs not being comparable on a one-to-one basis to the original assessments of the PCP CBA.

4.4. Cross reading of Performance Indicators with the SES II 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.

Notes

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