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World ATM Congress
Madrid – 12th March 2019



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SESAR is delivering

SDP Planning

Cristian Pradera
SDP Planning Manager
SESAR Deployment Manager

The structure of the Pilot Common Project



FROM ATM MASTER PLAN TO COMMON PROJECTS

"ATM functionalities that have reached the appropriate level of industrialisation, are mature for implementation and require synchronised deployment"



AF #1 - Extended AMAN and PBN in high density TMA

S-AF 1.1 - Arrival Management Extended to en-route Airspace

S-AF 1.2 - Enhanced TMA Using RNP-Based Operations

AF #2 - Airport Integration and Throughput

S-AF 2.1 - DMAN synchronized with Pre-departure sequencing

S-AF2.2 - DMAN integrating Surface Management Constraints

S-AF2.3 - Time-Based Separation for Final Approach

S-AF2.4 - Automated Assistance to Controller for Surface Movement Planning and Routing

S-AF 2.5 - Airport Safety Nets

AF #3 - Flexible ASM and Free Route

S-AF 3.1 - ASM and Advanced FUA

S-AF 3.2 - Free Route

AF #4 - Network Collaborative Management

S-AF 4.1 - Enhanced STAM

S-AF4.2 - Collaborative NDP

S-AF4.3 - Calculated Take-off Time to Target Times for ATCD Purposes

S-AF4.4 - Automated Support for Traffic Complexity Assessment

AF #5 - Initial SWIM

S-AF 5.1 - Common Infrastructure Components

S-AF 5.2 - SWIM Infrastructures and Profiles

S-AF 5.3 - Aeronautical Information Exchange

S-AF 5.4 - Meteorological Information Exchange

S-AF 5.5 - Cooperative Network Information Exchange

S-AF 5.6 - Flights Information Exchange

AF #6 - Initial Trajectory Information Sharing

S-AF 6.1 - Initial Trajectory Information Sharing

THE PILOT COMMON PROJECT
ESTABLISHED BY REG. (EU) N. 716/2014,
AS ISSUED BY EC ON 27 JUNE 2014

6 ATM FUNCTIONALITIES
20 SUB-ATM FUNCTIONALITIES

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Translating the PCP into a deployment reality



FROM COMMON PROJECTS TO THE SESAR DEPLOYMENT PROGRAMME

"the operational view of the PCP and blueprint for ATM investment plans of the stakeholders impacted by PCP Regulation"



FROM 6 ATM FUNCTIONALITIES...



... TO 48 FAMILIES OF IMPLEMENTATION PROJECTS



A FAMILY IS A “SPECIFIC SET OF HOMOGENEOUS TECHNOLOGICAL AND OPERATIONAL ELEMENTS, WHICH SHALL BE DEPLOYED WITHIN A DEFINED GEOGRAPHICAL SCOPE AND TIMEFRAME IN ORDER TO MAKE SURE THAT THE OPERATIONAL SCENARIO DEFINED BY THE PCP REGULATION BECOMES REALITY”

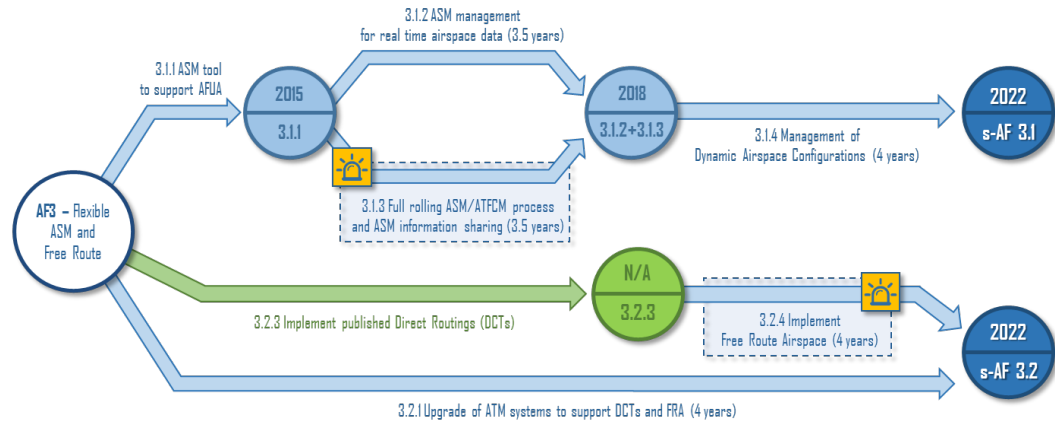
Setting the optimum sequence to deploy



THE SDP IS NOT LIMITED TO LISTING THE ELEMENTS TO BE DEPLOYED. IT ALSO PROVIDES ALL INFORMATION AND GUIDANCE NEEDED ON THE SPECIFIC SEQUENCE AND TIMING TO BE FOLLOWED BY STAKEHOLDERS. THE DEPLOYMENT APPROACH IDENTIFIES SHORT-TERM PRIORITIES, SYNCHRONIZING DEPLOYMENT IN EUROPE

MAIN CRITERIA

- *Technical aspects* to ensure the most appropriate order to progress with deployment
- *Status of deployment* to identify when further push is needed to ensure progress
- *Performance aspects* to secure the accrual of benefits identified in the CBA of the Pilot Common Project



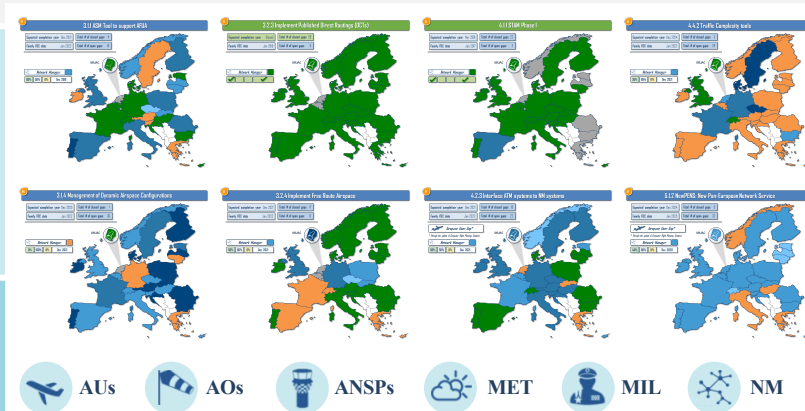
Monitoring the implementation: the gaps



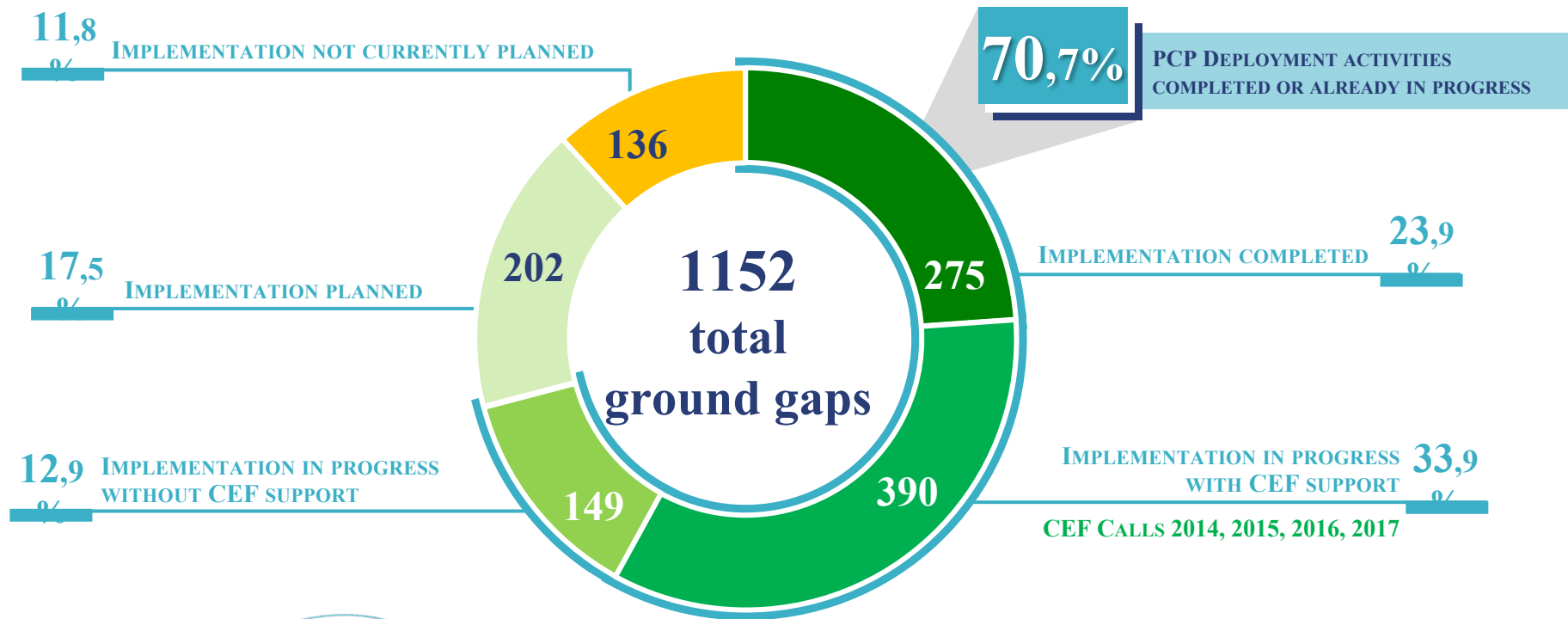
THANKS TO A DEDICATED MONITORING EXERCISE INVOLVING ALL RELEVANT OPERATIONAL STAKEHOLDERS ON GROUND AND AIRBORNE SIDE, THE **MONITORING VIEW OF THE SESAR DEPLOYMENT PROGRAMME** YEARLY REPORTS ON THE **PROGRESS ACHIEVED IN THE IMPLEMENTATION OF THE PCP**

THE **SDP** PROVIDE VIEWS BY **MEMBER STATE**, BY **FAMILY** AND BY **STAKEHOLDER**, CLEARLY IDENTIFYING THE REMAINING **IMPLEMENTATION GAPS** (ACTIVITIES STILL TO BE PERFORMED) TOWARDS THE FULL PCP DEPLOYMENT

The **2019 SDM Monitoring Exercise** will be launched on **March 21st**, involving all **stakeholder categories**



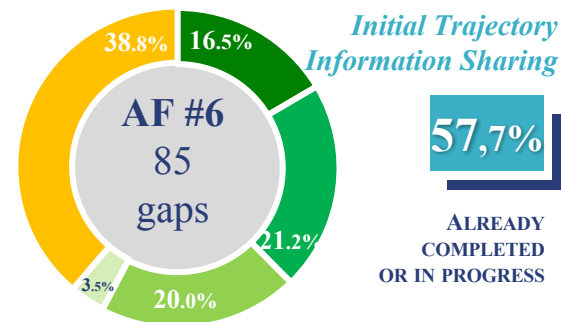
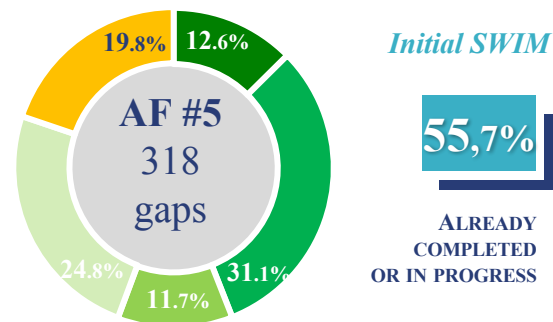
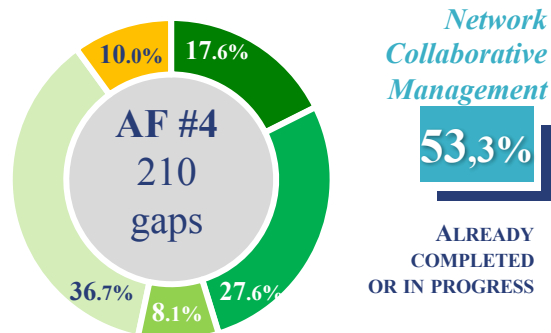
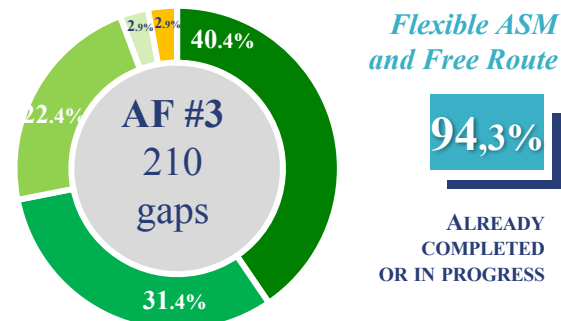
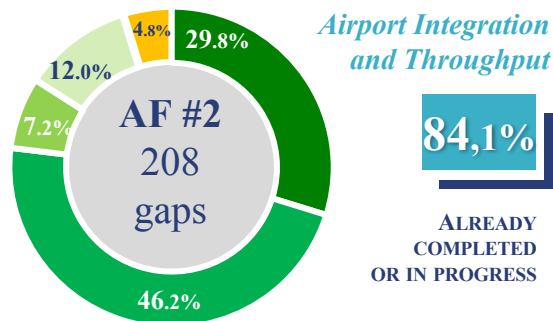
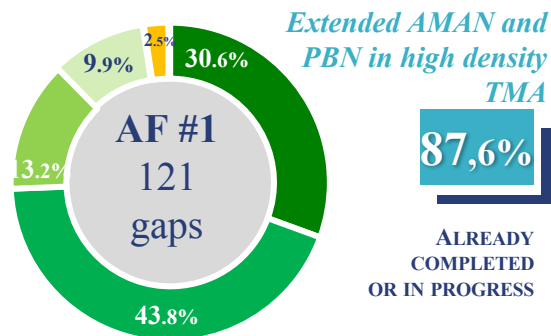
The status of PCP deployment: 2018 update



Monitoring data extracted from the SDP Monitoring View 2018, published last November as part of the Guidance Material to the SESAR Deployment Programme

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The status of PCP deployment: 2018 update



Monitoring data extracted from the SDP Monitoring View 2018, published last November as part of the Guidance Material to the SESAR Deployment Programme

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The path towards full PCP deployment

83,1%

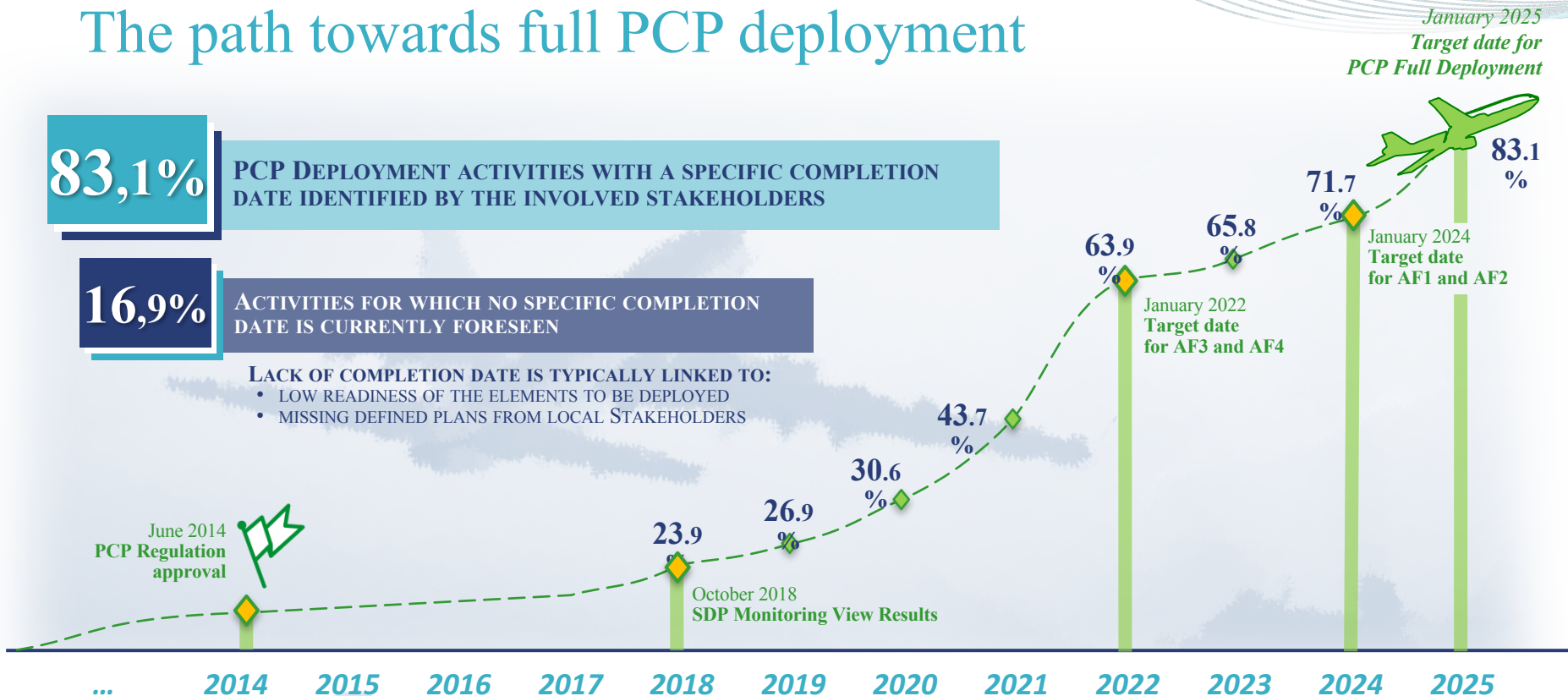
PCP DEPLOYMENT ACTIVITIES WITH A SPECIFIC COMPLETION DATE IDENTIFIED BY THE INVOLVED STAKEHOLDERS

16,9%

ACTIVITIES FOR WHICH NO SPECIFIC COMPLETION DATE IS CURRENTLY FORESEEN

LACK OF COMPLETION DATE IS TYPICALLY LINKED TO:

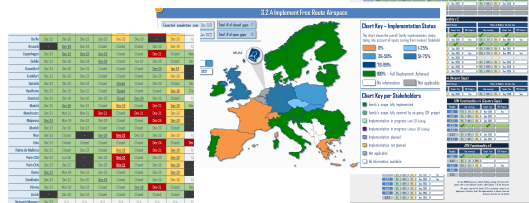
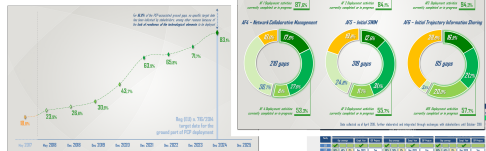
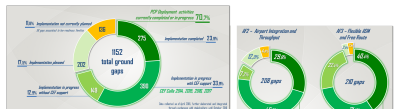
- LOW READINESS OF THE ELEMENTS TO BE DEPLOYED
- MISSING DEFINED PLANS FROM LOCAL STAKEHOLDERS



Tackling the risk of delays



BUILDING ON THE RESULTS OF THE **MONITORING EXERCISE**, **SDM** IS COOPERATING WITH THE IMPACTED LOCAL STAKEHOLDERS TO **TIMELY IDENTIFY ANY RISK OF DELAY OR LACK OF COMPLIANCE WITH THE PILOT COMMON PROJECT REGULATION**



IDENTIFICATION OF POTENTIAL RISKS OF DELAY / LACK OF COMPLIANCE
VIS-À-VIS REGULATION TARGET DATES OR INTERMEDIATE STEPS



DETAILED ASSESSMENT OF IDENTIFIED RISKS (JUSTIFIED / NOT JUSTIFIED)
TAKING INTO ACCOUNT TECHNICAL ELEMENTS, LOCAL ARRANGEMENTS, ETC.



INTERACTIONS AND EXCHANGES WITH IMPACTED STAKEHOLDERS
TO FURTHER CLARIFY THE SITUATION AND AVOID ANY MISUNDERSTANDINGS



DEFINITION AND SETUP OF THE APPROPRIATE MITIGATION ACTIONS
TO ENSURE TIMELY DEPLOYMENT AND REDUCE ANY NEGATIVE IMPACT



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SDP Execution

Ramon Raposo
SDP Execution Manager
SESAR Deployment Manager

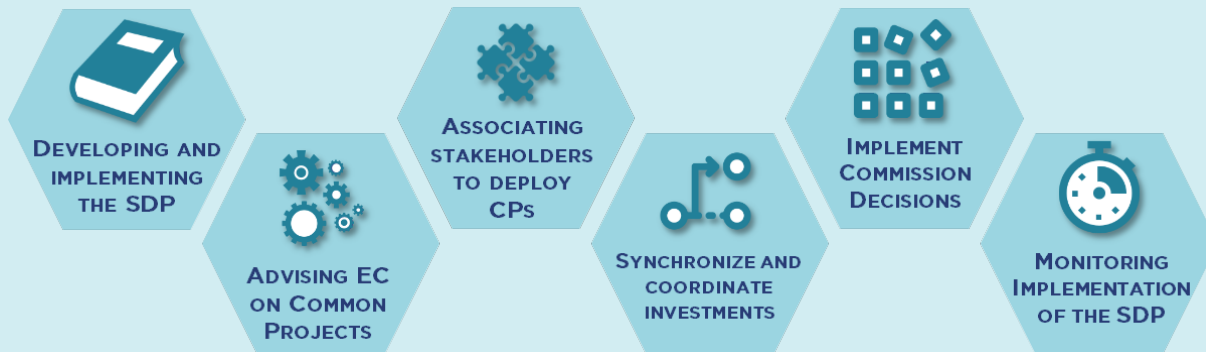
Steering deployment to deliver SESAR



WITH THE LAUNCH OF ITS **DEPLOYMENT PHASE** IN 2014, THE OUTCOMES OF SESAR PREVIOUS PHASES HAVE STARTED BECOMING AN **OPERATIONAL REALITY ACROSS EUROPE**. THANKS TO THE JOINT EFFORT OF THE SESAR DEPLOYMENT MANAGER AND OF LOCAL STAKEHOLDERS, **SESAR IS FINALLY DELIVERING ITS PERFORMANCE IMPROVEMENTS AND BENEFITS** TO THE ATM COMMUNITY



MAIN TASKS PERFORMED BY THE SESAR DEPLOYMENT MANAGER



All tasks are performed by industry for the industry through SDA, a unique partnership of operational stakeholders

The SDM aims at **coordinating deployment initiatives efforts** required to **defragment deployment**, allowing the full synchronization of **wide and complex ATM priorities** at European level

SDP Execution – Monitoring Process



The **DP monitoring process** put in place by the SDM has a two-fold target:



Ensure a **continuous overlook** of the **status of the SDP implementation**



Enable **proactive actions** to manage misalignments **in project progress**

For each Implementation Project, the SDM monitors the progress on Tasks, Deliverables, Milestones, Costs and Risks. **Two main types of milestones are monitored:**



Monitoring Milestones

For All Families

Family-Specific



Key Milestones

SDP Execution – Monitoring leading to Support

Two main typologies of monitoring are performed by the SDM:



MONITORING GATES
(15TH JANUARY, 15TH SEPTEMBER)

Monitoring the implementation progress at **specific moments of the year**, collecting information and formalising them into **comprehensive documents** (SDP Execution Progress Report, Action Status Report)



Monitoring the implementation progress **throughout the year**, allowing a **continuous detection of misalignments**, anticipating possible discrepancies / risks / issues

CONTINUOUS INTERACTIONS

The **Action Coordination Support team** is composed of experienced and skilled experts within the **SDM**, coming from European Aviation Industry. The expertise is **divided by ATM Functionality** (AFs) so as to provide tailored know-how to Implementing Partners, concerning:



Evaluation of the
progress/costs misalignments



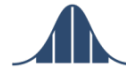
Identification and design of **mitigation**
actions for **delay recovery**



Evaluation of **milestones**
and **deliverables**



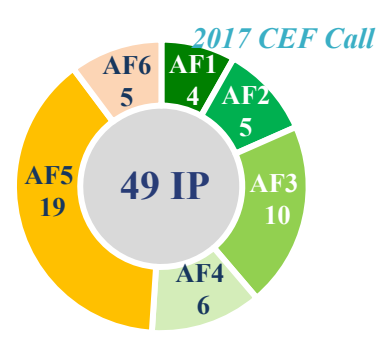
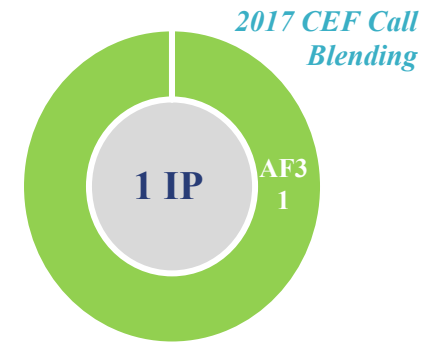
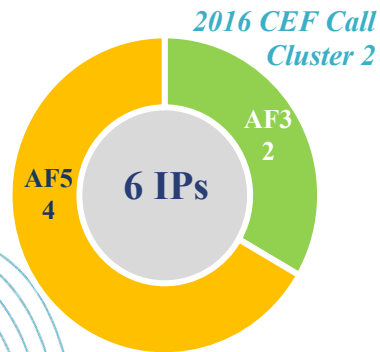
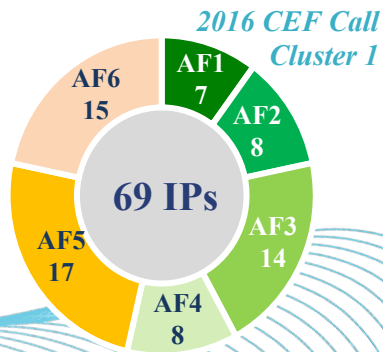
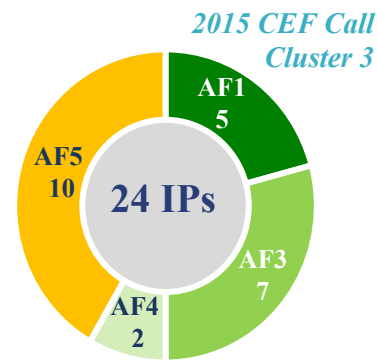
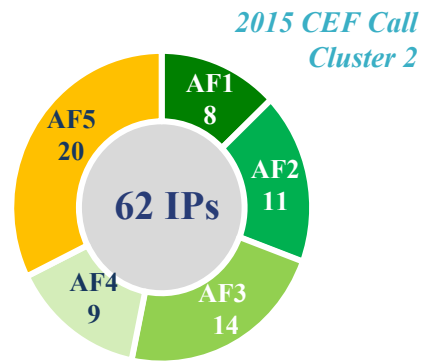
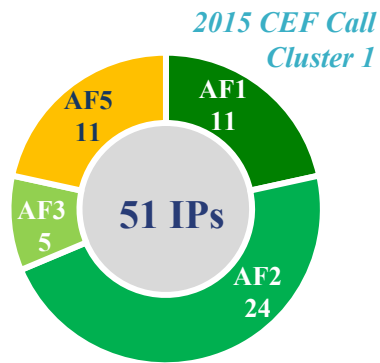
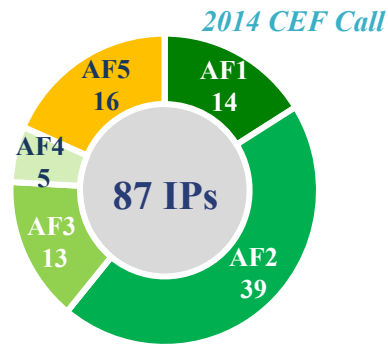
Identification of **interdependencies**
between **Projects across Actions**



Assessment of **risks**

Overview of the eight Actions

Currently, the SDM is coordinating **eight Actions**, including **349 IPs** implemented by **94 Beneficiaries** within **27 EU member states** and **5 third countries**, amounting to **2,94€ Billion EU Investments** and **1.35€ Billion EU Grants**





Funded by the European Union



Co-financed by the European Union
Connecting Europe Facility

Partnering in #SESAR deployment



PCP Implementation across Europe in AF1

2015_196_AF1 - XMAN - Cross-center arrival management

Project Leader: DFS

Project Contributors: DSNA, Eurocontrol, LVNL

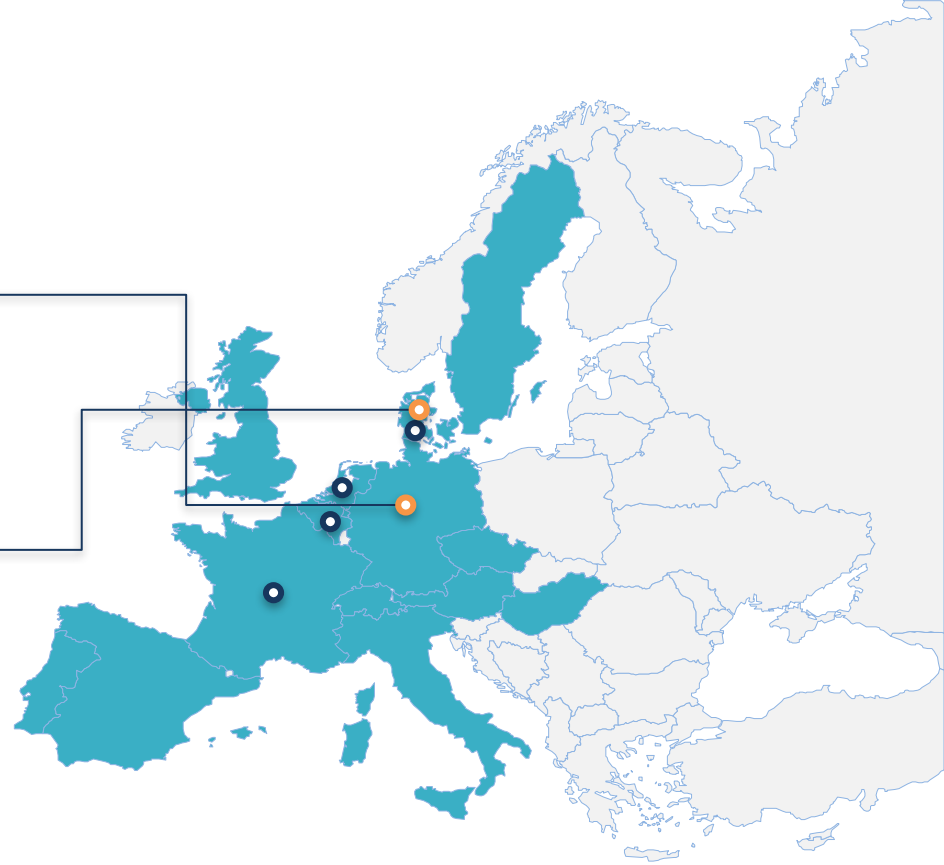
Family: 1.1.2 - AMAN upgrade to include Extended Horizon function

2016_012_AF1 - Synchronised PBN Implementation

Project Leader: Naviair

Project Contributors: Copenhagen Airports

Family: 1.2.3 - RNP1 operations in high density TMAs (ground capabilities)



PCP Implementation across Europe in AF2

2017_022_AF2 - Synchronized stakeholder decision on process optimization at airport level

Project Leader: Brussels National

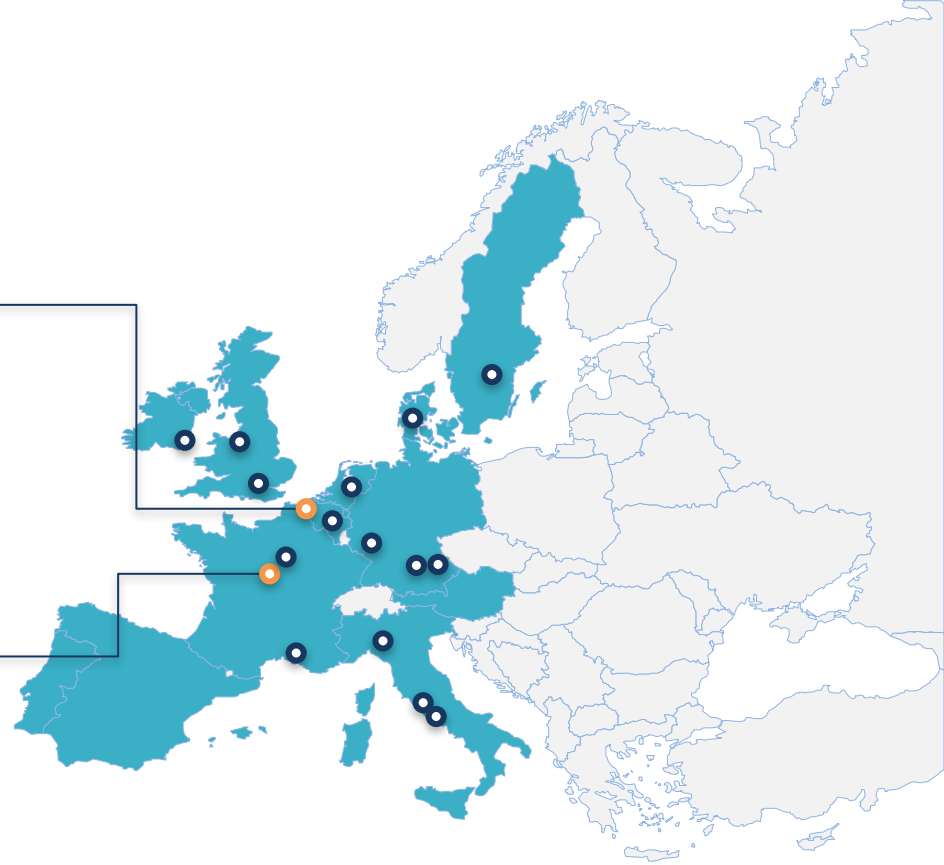
Project Contributors: Aéroports de la Côte d'Azur, Aéroports De Paris, Belgocontrol, Copenhagen Airports, Dublin Airport, ENAV, Flughafen Munchen, Frankfurt International, Manchester Ringway, Roma Fiumicino, SEA Milano Airports, STAL - London Stansted
Family: 2.1.4 - Initial Airport Operational Plan (AOP)

2016_150_AF2 - Enablers for Airport Surface Movement related to Safety Nets

Project Leader: Aéroports De Paris

Project Contributors: Aéroports de la Côte d'Azur, Air France, Amsterdam Schiphol, Brussels National, Copenhagen Airports, DSNA, Dublin Airport, Frankfurt International, Manchester Ringway, Munich Franz Josef Strauss, Naviair, Roma Fumicino, STAL - London Stansted, Swedavia

Family: 2.4.1 - A-SMGCS Routing and Planning Functions



PCP Implementation across Europe in AF3

2015_190_AF3 - Deployment of Air Traffic Control System iCAS:
Implementation of ATM PCP Functionalities at LVNL and DFS

Project Leader: DFS

Project Contributor: LVNL

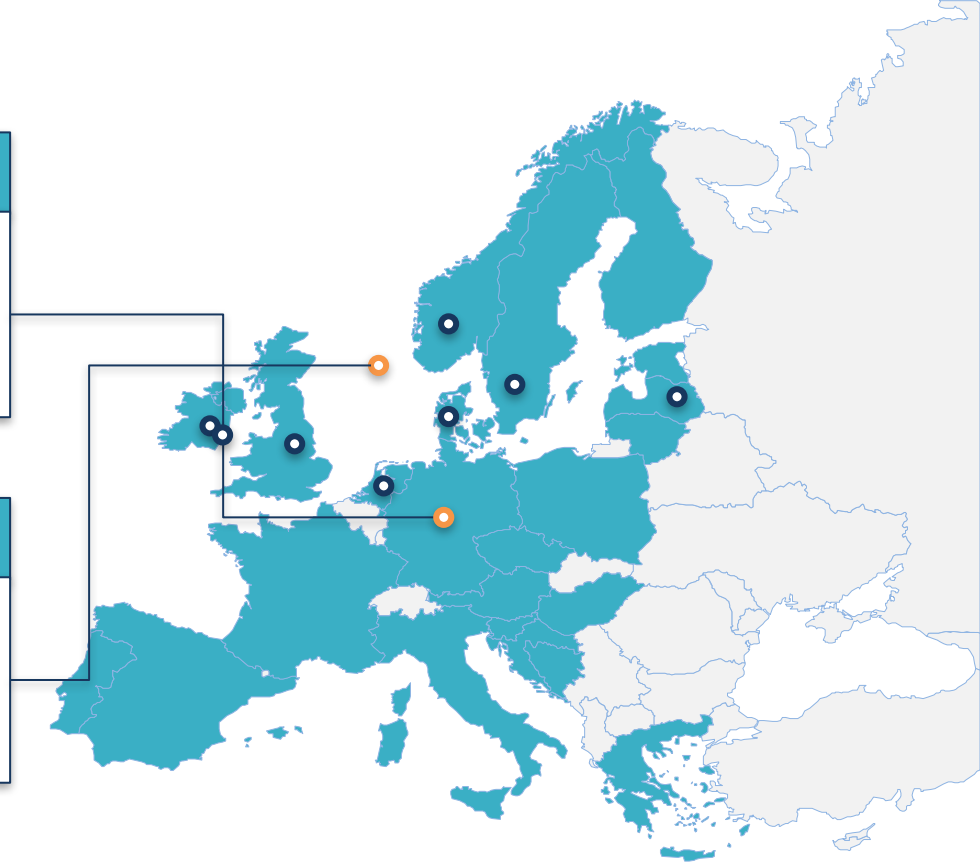
Family: Family 3.2.1 - Upgrade of ATM systems (NM, ANSPs, AUs) to support Direct Routings (DCTs) and Free Routing Airspace (FRA)

2015_227_AF3 - FRA Implementation (Part 2)

Project Leader: Borealis Alliance

Project Contributors: Finavia, IAA, LFV, LGS, NATS, Naviar, Ryanair

Family: 3.2.4 - Implement Free Route Airspace



PCP Implementation across Europe in AF4

2017_038_AF4 - Enablers of Network Collaborative Management for En Route and Airports at DSNA

Project Leader: DSNA

Project Contributors: Aéroports De Paris, Air France

Family: 4.1.2 – STAM Phase 2

2016_131_AF4 - AOP-NOP Integration - Extended Implementation

Project Leader: Eurocontrol

Project Contributors: AENA, Amsterdam Schiphol (SNBV), Brussels National, Swedavia

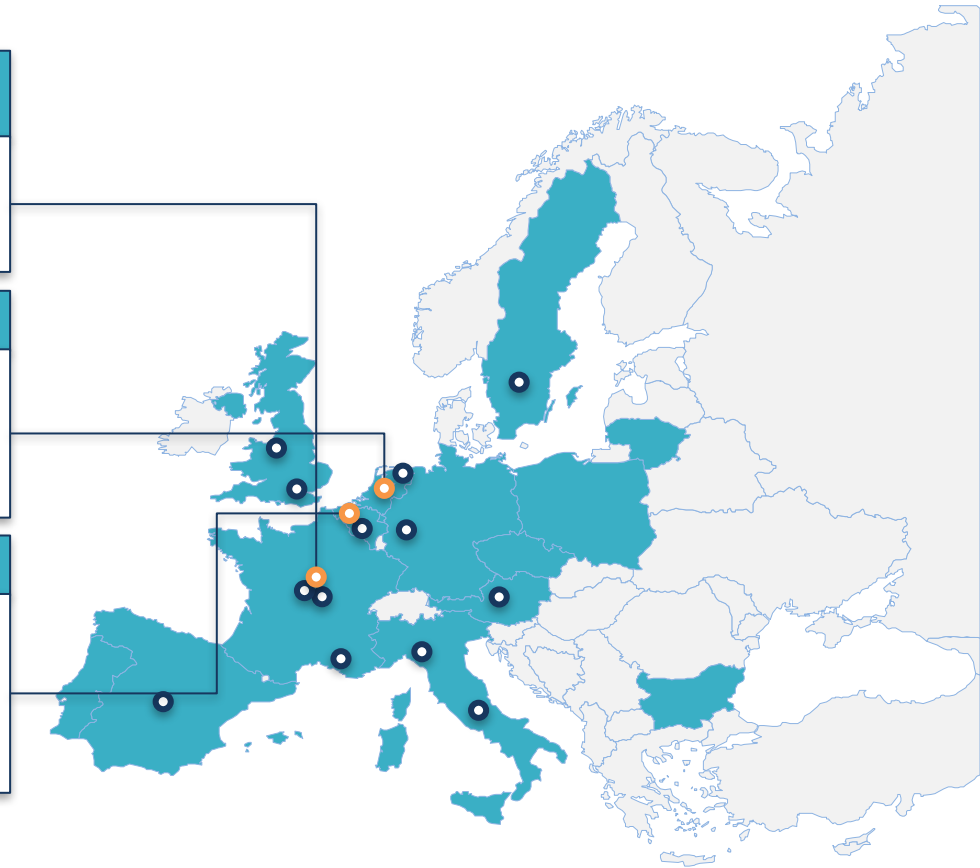
Family: 4.2.4 - AOP-NOP information sharing

2017_052_AF4 - AOP-NOP Integration - Extended Implementation

Project Leader: Eurocontrol

Project Contributors: Aéroports de la Côte d'Azur, Duesseldorf International, Manchester Ringway, Roma Fiumicino, SEA Milano Airports, STAL - London Stansted, Vienna Schwechat

Family: 4.2.4 - AOP-NOP information sharing



PCP Implementation across Europe in AF5

2016_141_AF5 - Deploy SWIM governance

Project Leader: DSN

Project Contributor(s): Air France, Austrocontrol, BULATSA, Copenhagen Airports, Deutsche Lufthansa, DFS, ENAIRE, ENAV, EUMETNET, Eurocontrol, Finavia, French MOD, Hungaro Control, LfV, LPS SR, Munich Franz Josef Strauss, NATS, NAV Portugal, PANS

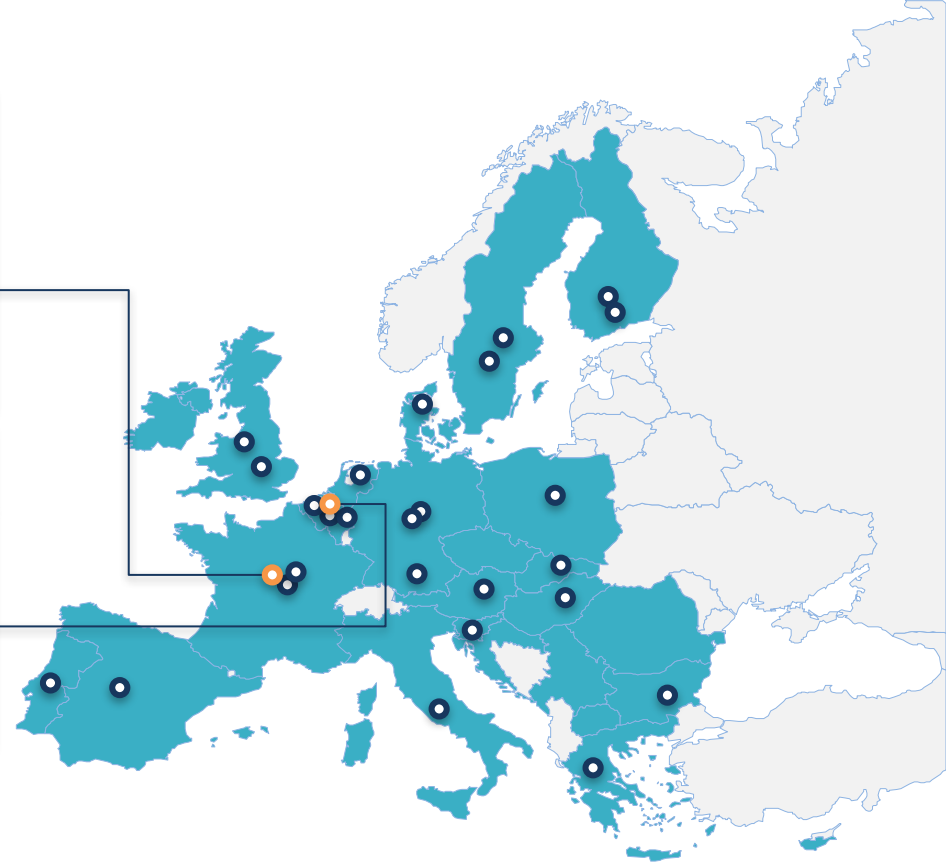
Family: 5.1.3 - Common SWIM Infrastructure Components

2017_084_AF5 - SWIM Common PKI and policies & procedures for establishing a trust framework

Project Leader: Eurocontrol

Project Contributor(s): Aéroports De Paris (ADP), Air France, ANS Finland, Austrocontrol, Belgocontrol, BULATSA, Copenhagen Airports, Deutsche Lufthansa, DFS, DSN, ENAV, FABCE Ltd, French MOD, HCAA, Hungaro Control, LfV, LPS SR, LVNL, Manchester Ringway

Family: 5.1.4 – Common SWIM PKI and Cybersecurity



PCP Implementation across Europe in AF6

2016_161_AF6_GND - DLS Implementation Project - Path 1

Project Leader: ENAIRE

Project Contributors: Arinc, Austrocontrol, Croatia Control, DFS, DSNA, EANS, ENAV, HCAA, Hungaro Control, LFV, LGS, MATS, NAV Portugal, Oro Navigacija, PANSA, SITA

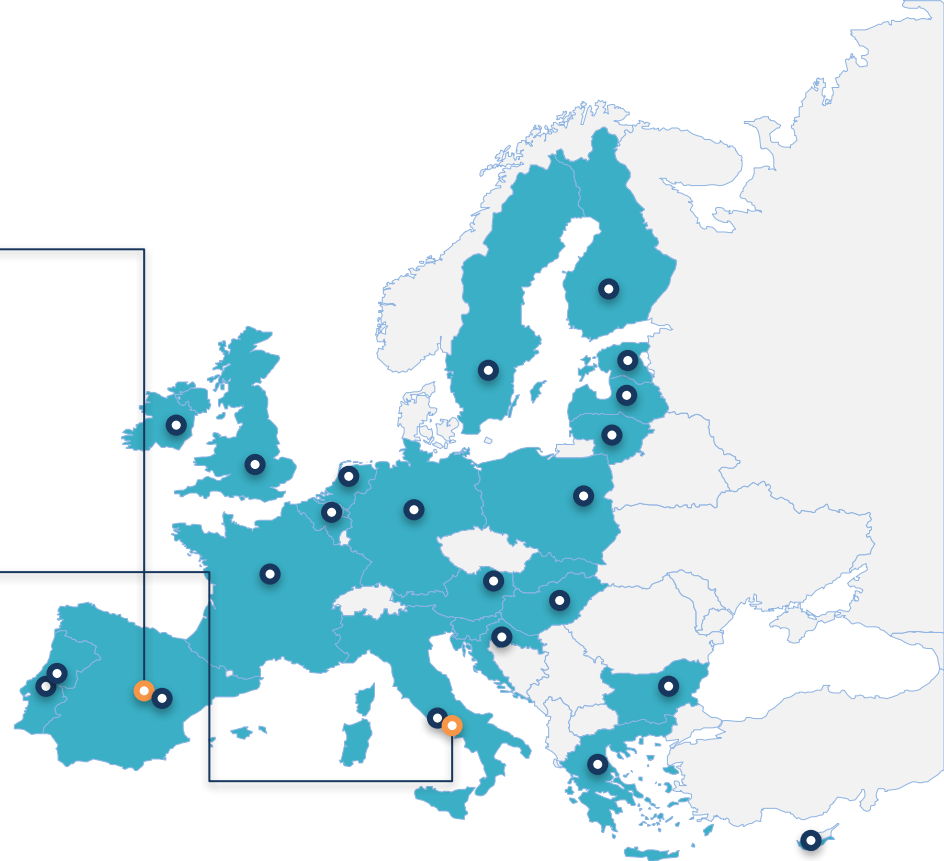
Family: 6.1.3 - A.G. and G.G. Multi Frequency DL Network in defined European Service Areas

2016_159_AF6 - DLS Implementation Project - Path 2

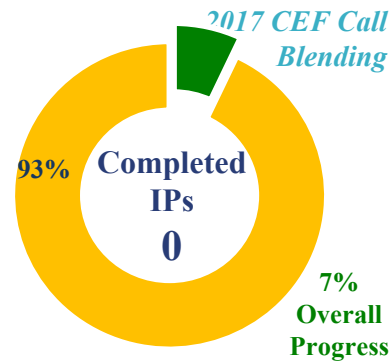
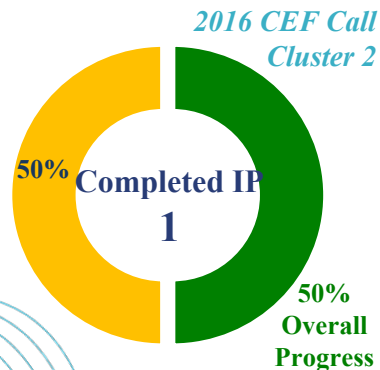
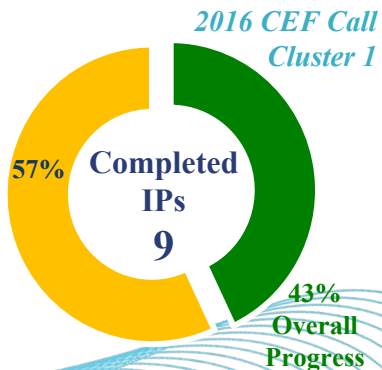
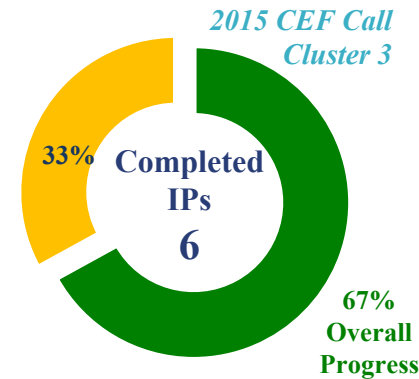
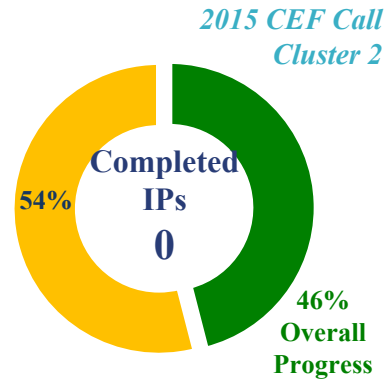
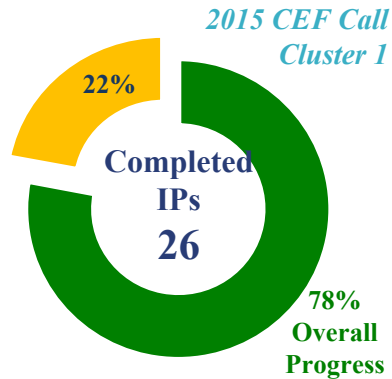
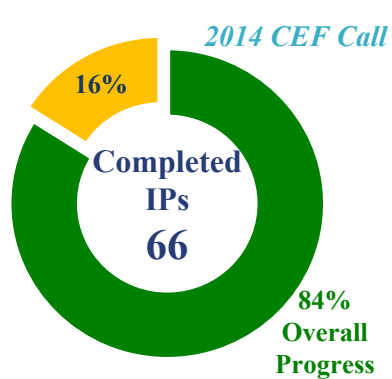
Project Leader: ENAV

Project Contributors: ANS Finland, Arinc, Austrocontrol, BULATSA, Croatia Control, DCAC, Deutsche Lufthansa, DFS, DSNA, EANS, ENAIRE, ESSP, Eurocontrol, Hungaro Control, LFV, LGS, LPS SR, MATS, NATS, NAV Portugal, Oro Navigacija, PANSA, Ryanair, SITA, TAP Portugal

Family: 6.1.3 - A.G. and G.G. Multi Frequency DL Network in defined European Service Areas



108 Completed Projects and Actions' Progress





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ENAV contribution to PCP deployment

Cristiano Cantoni
Head of International ATM Planning
ENAV

ENAV Strategy for PCP deployment (1/2)

- Reg. EU 716/2014 (Pilot Common Project) as an opportunity to synchronise investments with neighboring countries in a pan-European perspective
- PCP at local level is an opportunity to translate local requirements and local investment needs into network priorities
- EU funding mechanism managed by SDM is a resource and a tool to anticipate activities with different planning and synchronise deployment

ENAV Strategy for PCP deployment (2/2)

PCP vs ENAV Investments Plan

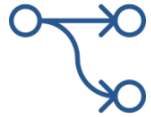
Since the entry into force of Reg. EU 716/2014, ENAV established a dedicated working group in order to comply with requirements. The WG is focusing in particular:

- Analysis of Pilot Common Project requirements for each AF
- Analysis of projects within ENAV Investments Plans and possible gaps
- Identification of possible projects to be further enclosed in the Investment Plan in order to fill the gaps
- Identification of projects to be anticipated in order to fill the gap
- Identification of co-funding opportunities in the frame of INEA Calls

Planning view: Alignment with national/EU-level planning



Different means of planning perspectives (SDM Deployment Programme, Master Plan Level 3, SESAR Solutions)



Investments Plan as the unique source of ENAV planning information for all the reporting tools



Harmonised planning information for different reporting and monitoring mechanisms

Monitoring view: Alignment with national/DP Monitoring



SESAR Solutions catalogue/questionnaire

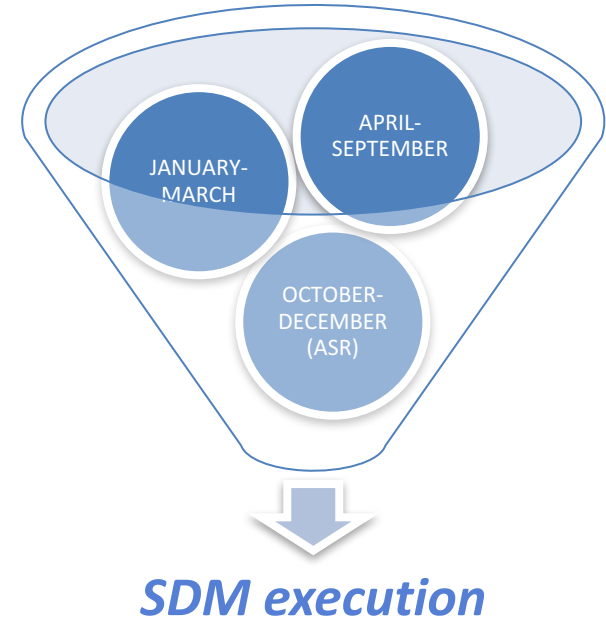
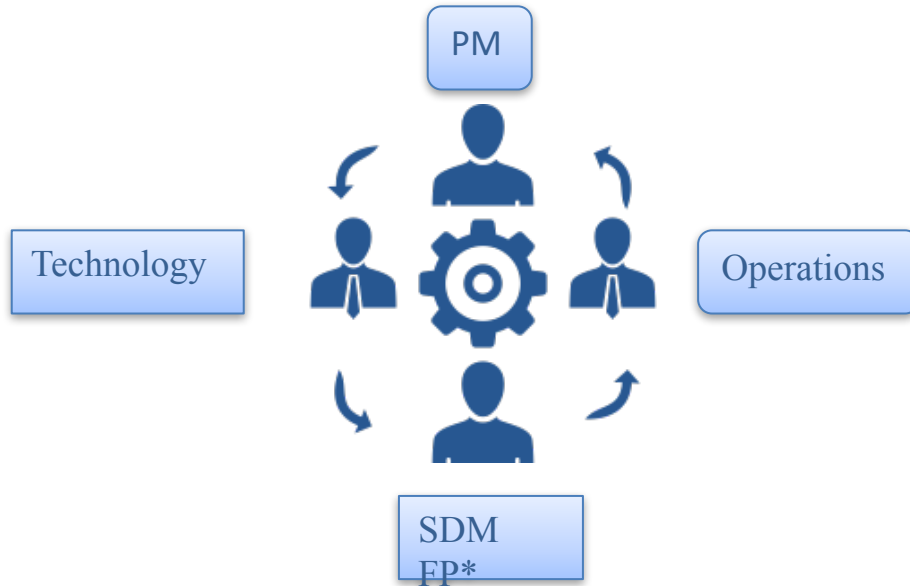


Local investment items within DP framework



SDM Monitoring view for the Deployment Programme

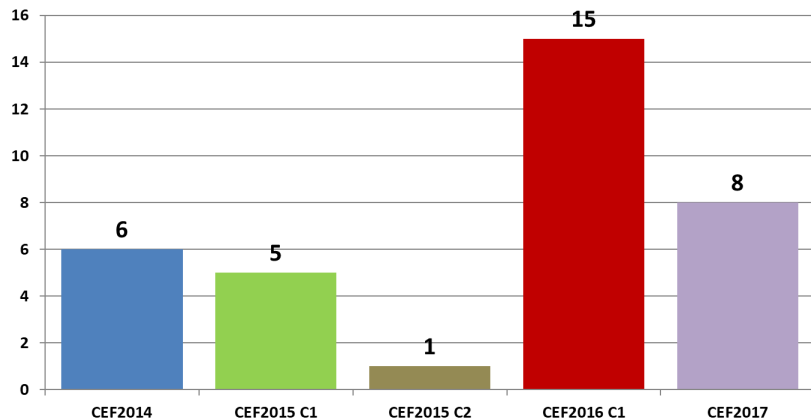
ENAV/SDM planning and execution framework



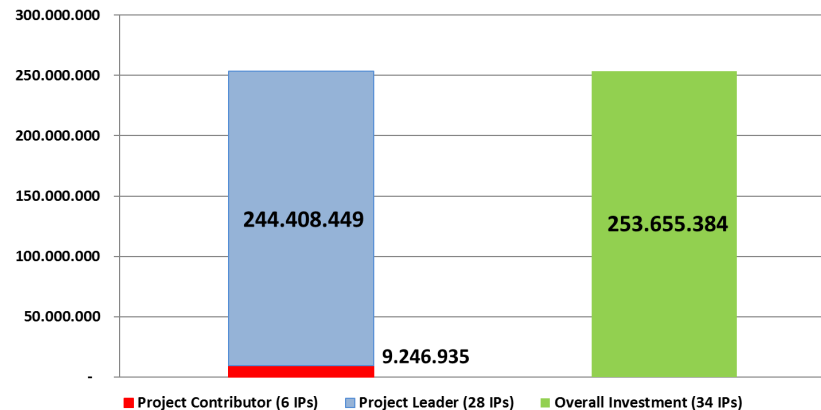
ENAV/SDM planning and execution framework

ENAV has always been very keen to participate in the SDM execution framework since the first call in 2014. Up to the CEF CALL 2017 a total of 35 IPs have been selected from INEA for co-funding, for an overall ENAV investment of more than 250M€.

ENAV IPs in the CEF INEA CALLs

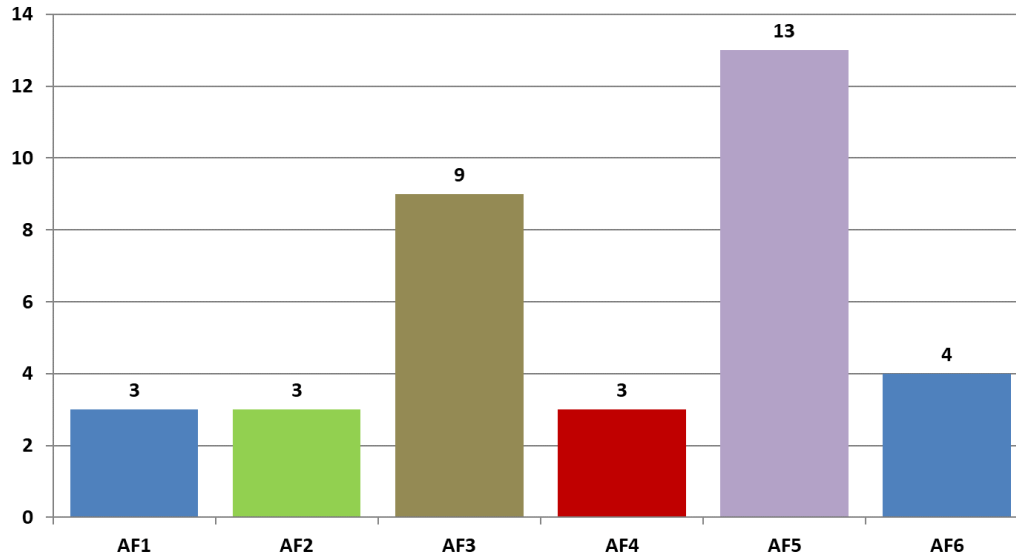


ENAV IPs Overall Investment



ENAV IPs distribution in the PCP implementation

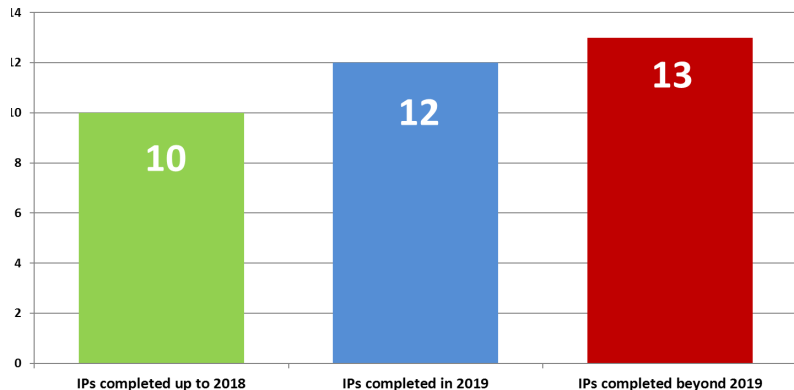
ENAV IPs distribution by AF



- Figure shows a concrete commitment from ENAV in the deployment of 9 projects belonging the ATM Functionality 3 (AF3 - Flexible ASM and Free Route) as operational enablers for immediate benefits for ANSP and Airspace Users;
- In addition, ENAV is improving its network' architecture with 13 projects deployed on AF5 (Initial System Wide Information Management)

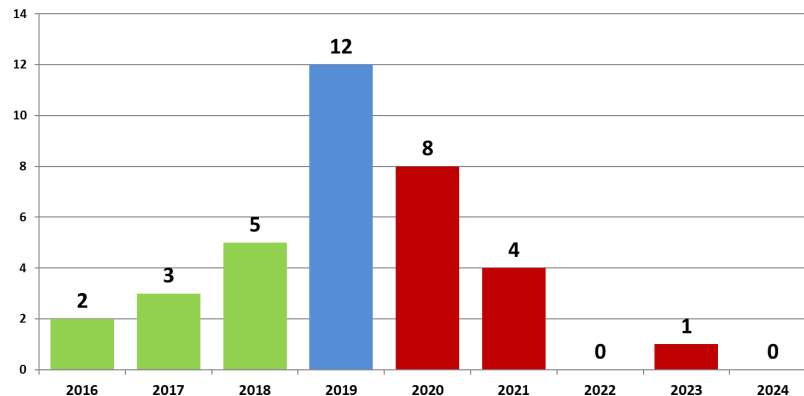
ENAV IPs execution and progress

ENAV IPs overall status



- A total of **35** Implementation Projects (29 as Project Leader, 6 as Contributor);
- **10** IPs completed by the end of 2018;
- **12** IPs will be completed by the end of 2019;
- **13** IPs to be completed beyond 2019

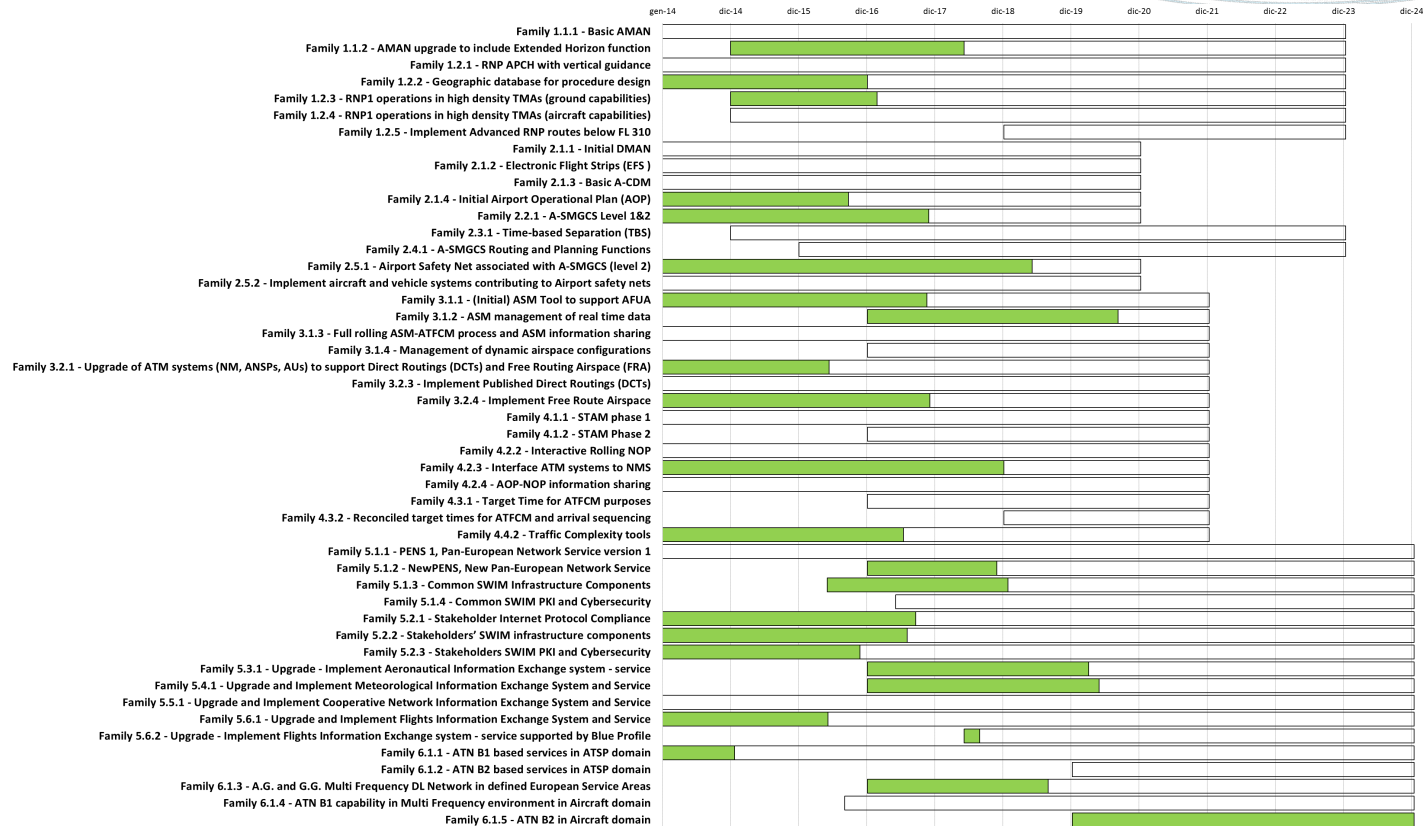
ENAV IPs completion by year



ENAV IPs overall progress



ENAV IPs deployment within implementation of PCP families

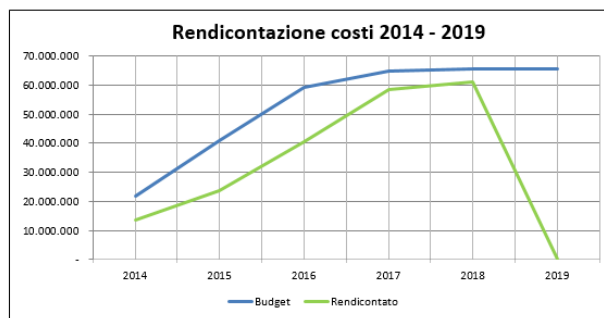
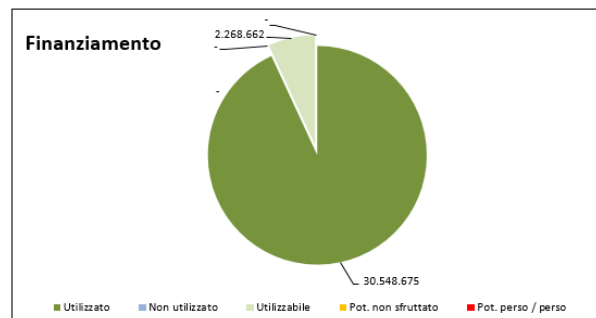
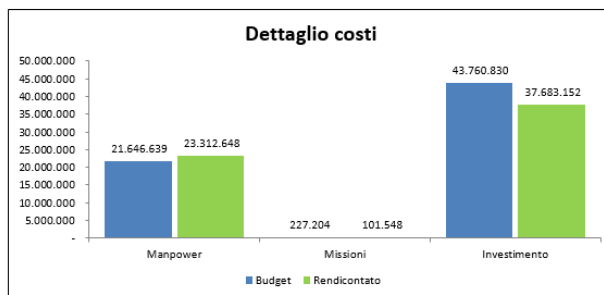
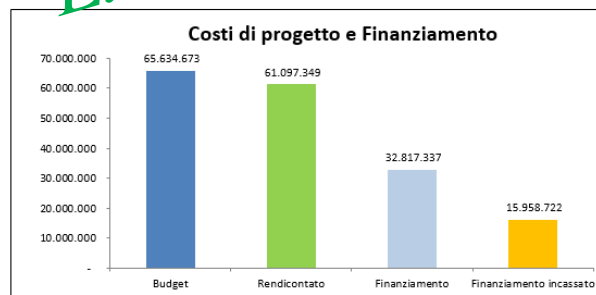


ENAV IPs progress from the CEF INEA CALL 2014

Internal monitoring process

Example

Codice Progetto	Progetto Finanziato	CEF	Inizio	Fine	Budget	% Finanz.	Finanziamento	Incassato	Progresso	Commesse	Stato	Outlook
CEF2014	CEF INEA CALL 2014	CEF2014	01/01/2014	31/12/2020	65.634.673	50,00%	32.817.337	15.958.722	96,37%	n/a	IN PROGRESS	VERY GOOD

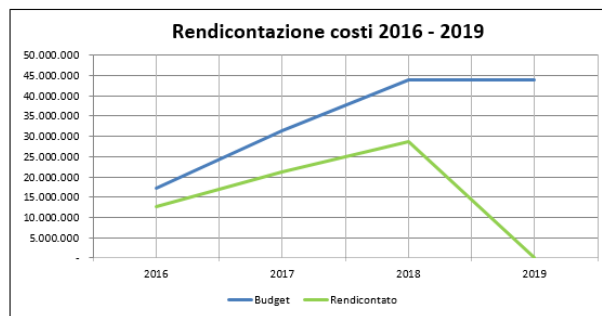
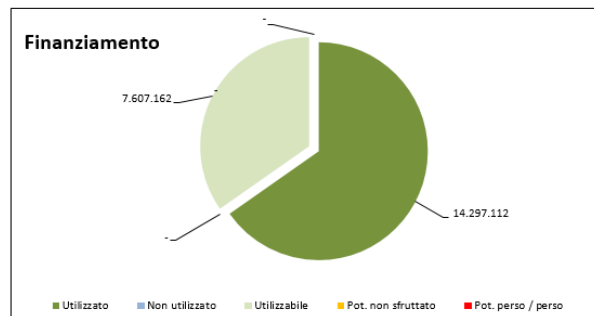
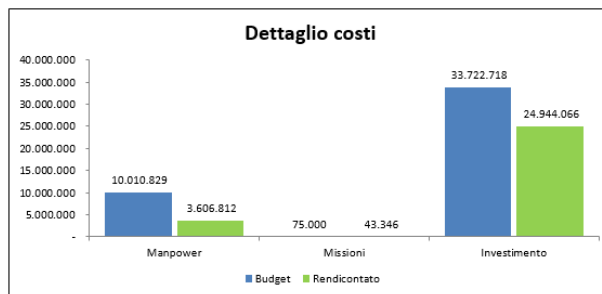
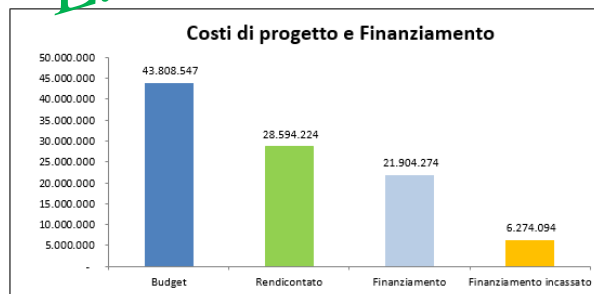


ENAV IPs progress from the CEF INEA CALL 2015c1

Internal monitoring process

Example

Codice Progetto	Progetto Finanziato	CEF	Inizio	Fine	Budget	% Finanz.	Finanziamento	Incassato	Progresso	Commesse	Stato	Outlook
CEF2015 C1	CEF INEA CALL 2015c1	CEF2015 C1	07/02/2016	31/12/2019	43.808.547	50,00%	21.904.274	6.274.094	49,60%	n/a	IN PROGRESS	VERY GOOD



Completed initiative: ENAV FRAIT Project

Project Number: #063AF3

Project Results

FREE ROUTE benefits vs NTW	
TIME per AC (mins)	1:38
NM per AC (NM)	11,48
FUEL per AC (kg)	79
CO ₂ per AC (kg)	250

TOTAL FRAIT BENEFITS

**from 8 December 2016
to 31 December 2018**

Distance Reduction (NM)	Fuel Reduction (Tonnes)	CO2 Reduction (Tonnes)	Cost Reduction (M €)
10.851.100	75.014	236.295	56.261

AVERAGE AC in ITALY per day	AVERAGE in FRAIT per day	PERCENTAGE in FRAIT per day	IMPROVED by FRA
4.633	2.606	56,26%	48,09%

Project Number: #063AF3

Project Results

ACTUAL FRAIT BENEFITS
Summary per Year - ALL AOs

2016	FREE ROUTE benefits vs NTW		Distance Reduction (NM)	Fuel Reduction (kg)	CO2 Reduction (kg)
	TIME per AC (mins)	1:16	173.231	1.295.000	4.080.000
	NM per AC (NM)	8,90	AVERAGE in FRAIT per day	PERCENTAGE in FRAIT per day	IMPROVED by FRA
	FUEL per AC (kg)	67	1.363	40,20%	59,46%
	CO ₂ per AC (kg)	210			
2017	FREE ROUTE benefits vs NTW		Distance Reduction (NM)	Fuel Reduction (kg)	CO2 Reduction (kg)
	TIME per AC (mins)	1:25	4.554.741	30.911.000	97.369.000
	NM per AC (NM)	9,97	AVERAGE in FRAIT per day	PERCENTAGE in FRAIT per day	IMPROVED by FRA
	FUEL per AC (kg)	68	2.315	51,00%	54,07%
	CO ₂ per AC (kg)	213			
2018	FREE ROUTE benefits vs NTW		Distance Reduction (NM)	Fuel Reduction (kg)	CO2 Reduction (kg)
	TIME per AC (mins)	1:52	6.123.188	42.809.000	134.847.000
	NM per AC (NM)	13,07	AVERAGE in FRAIT per day	PERCENTAGE in FRAIT per day	IMPROVED by FRA
	FUEL per AC (kg)	91	2.979	61,96%	43,10%
	CO ₂ per AC (kg)	288			



EUROPE^{FOR} AVIATION

SESAR is delivering

Performance

Antoine Hottelart
Head of Performance and Financing
SESAR Deployment Manager

**Over 100 projects are already in operation
bringing benefits to passengers**



105 completed
projects

SAVING

12,000,000

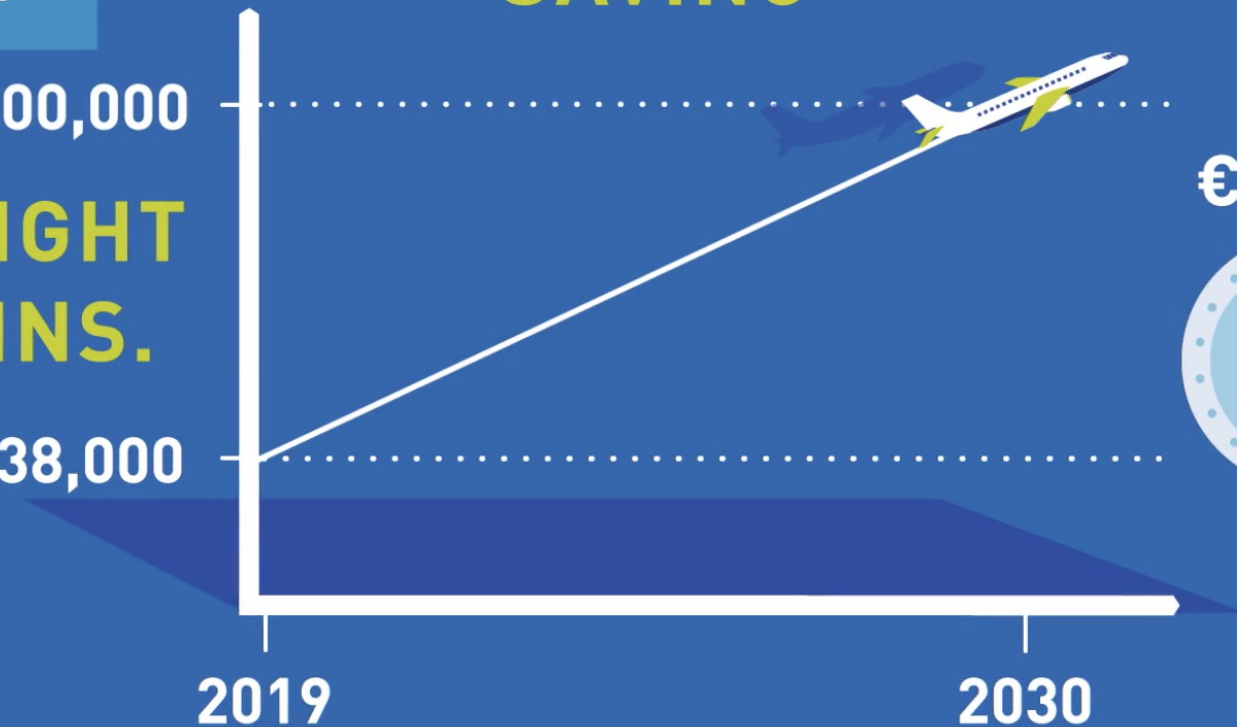
FLIGHT
MINS.

738,000

2019

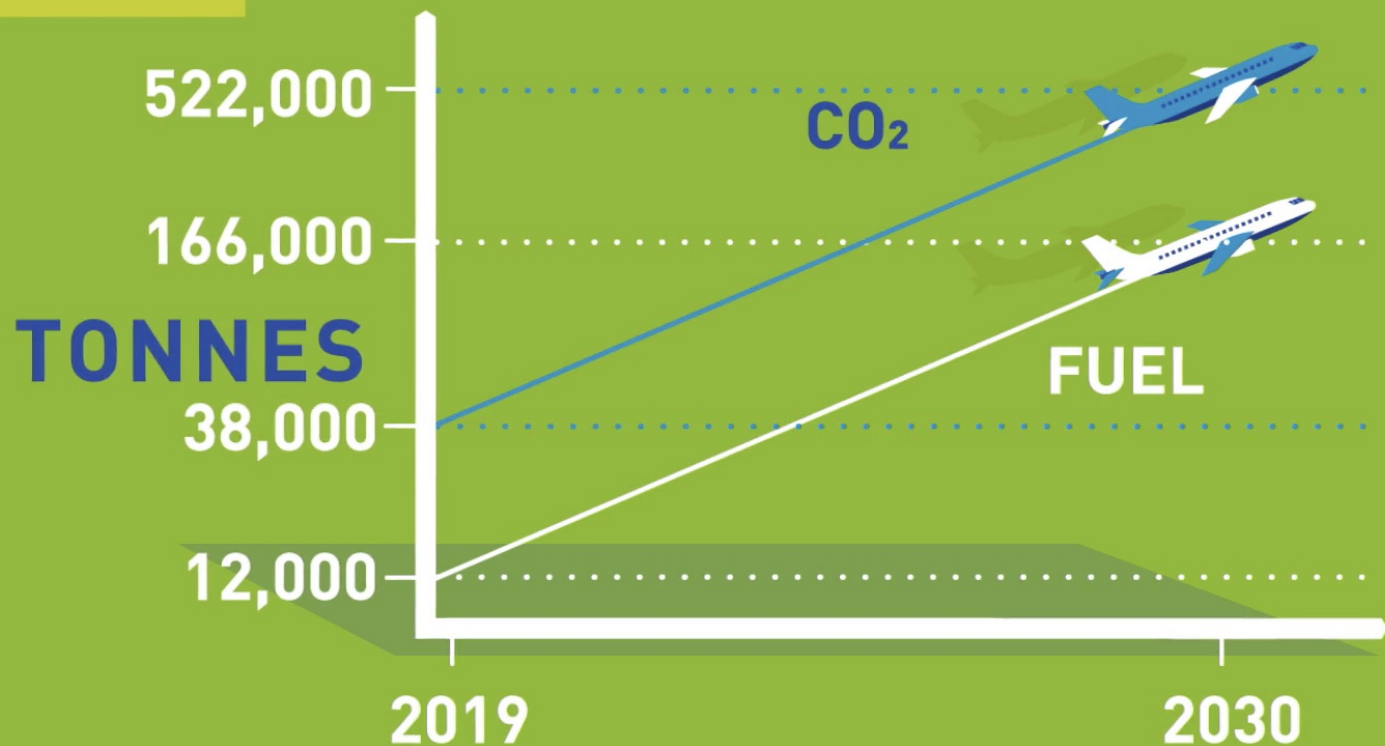
2030

€484M



105 completed
projects

SAVING



€134M



105 completed
projects

CREATING CAPACITY

6,200,000

DELAY
MINS.

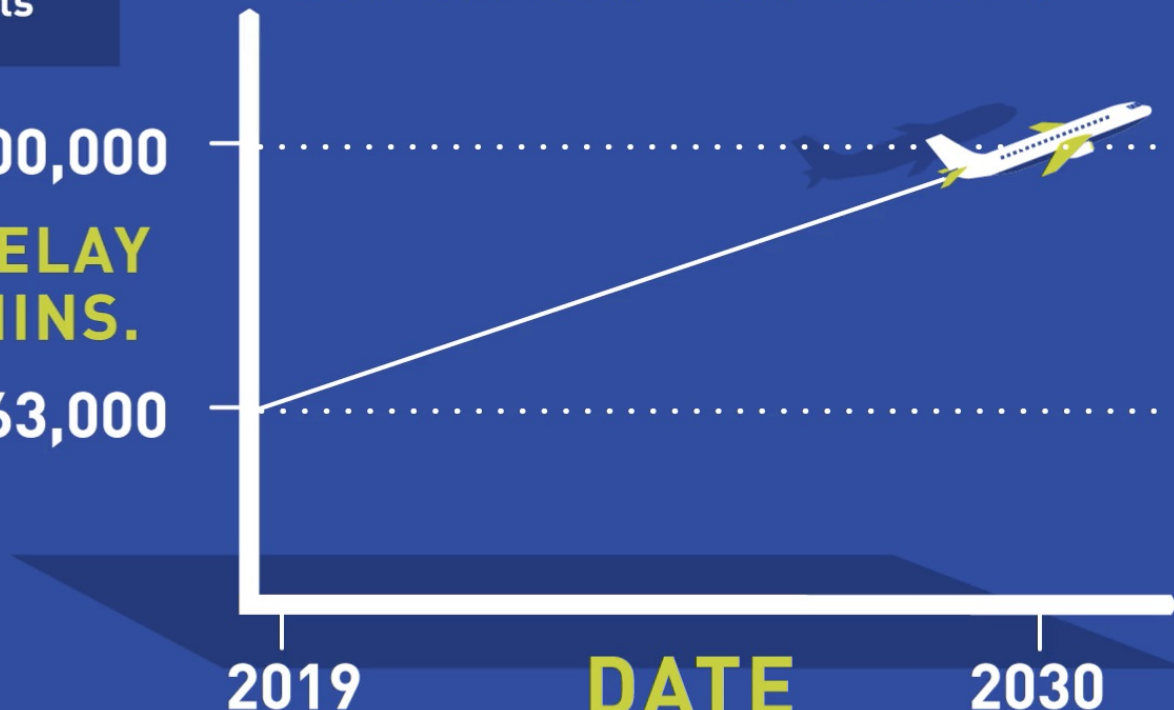
363,000

2019

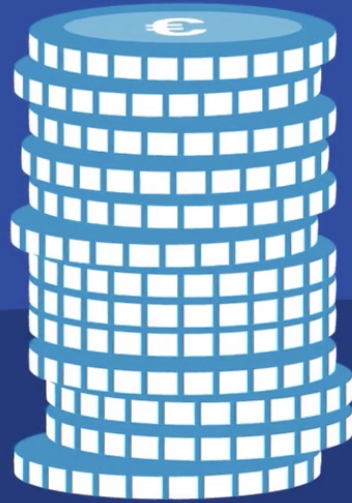
DATE

2030

€178M



**The current portfolio of SESAR deployment
is expected to generate**

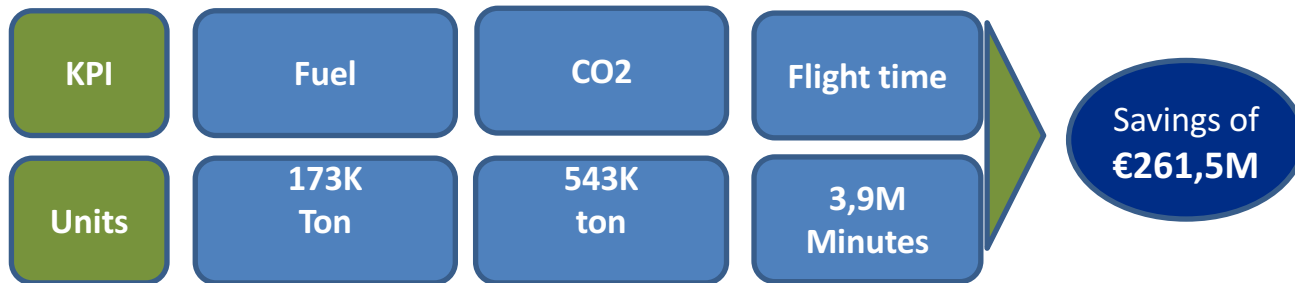


**> €10
billion**

2014-2030

Free route Implementation in Italy

Identified benefits cumulated until 2030

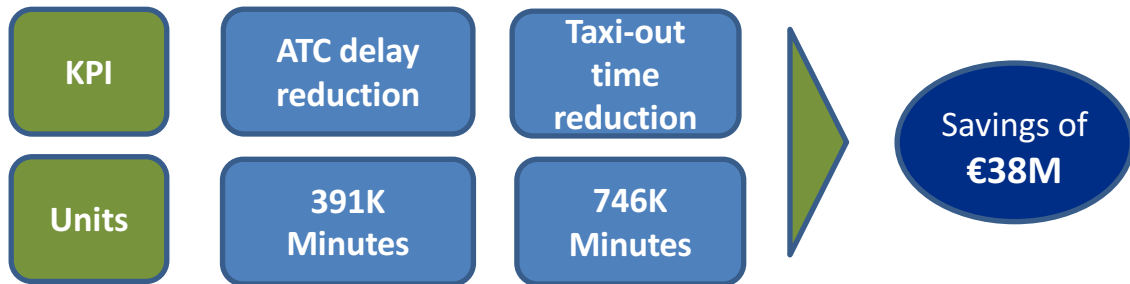


- ✓ Enabling airspace users to flight-plan their preferred trajectories
- ✓ Improved horizontal flight efficiency (KEP)
- ✓ Lower environmental footprint

- *Implementation period: January 2013- November 2017*
- *Cost: €28,5M*
- *The project enables more optimal routes, without constraints of fixed route network structure.*

TSAT to Gate, SMAN in ORLY & CDG

Identified benefits cumulated until 2030



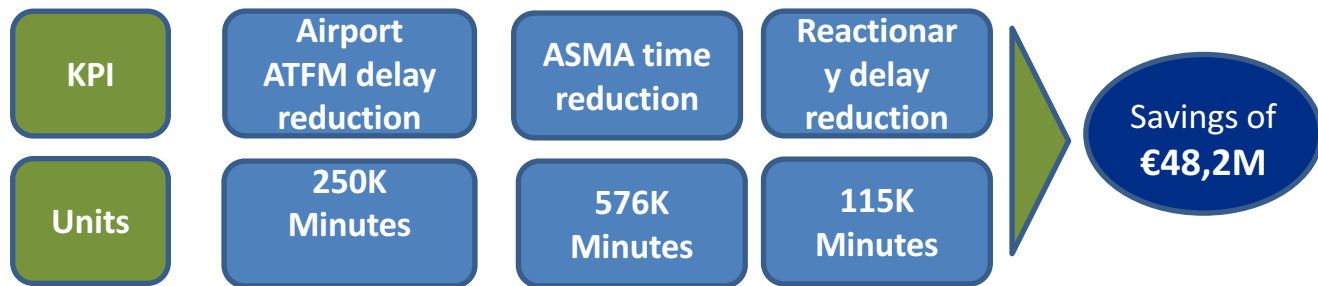
- ✓ Better resource management of stands
- ✓ Better optimisation of the turnaround process
- ✓ Improved Arrival and Departure punctuality

- **Implementation period:** January 2014-December 2017
- **Cost:** €10,5M
- **The project improves operational efficiency through enhanced CDM information sharing (TSAT to all stakeholders located at the Gate; PDS and de-icing tool upgrade; Surface Management Tool).**

Zoom on Performance

TBS IN LONDON HEATHROW

Identified benefits cumulated until 2030



- ✓ Separation distance is reduced safely
- ✓ Runway throughput is increased
- ✓ Improved resilience and reduced cancellations on strong wind days

- *Implementation period: January 2014- February 2016*
- *Cost: €15,4M*
- *The project enables separation of arriving aircraft by time instead of distance. It enhances throughput on strong wind days.*



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SESAR is delivering

Conclusions

Nicolas Warinsko
General Manager
SESAR Deployment Manager