



Innovation and Networks Executive Agency

Department C - Connecting Europe Facility (CEF)

**SPECIFIC GRANT AGREEMENT No INEA/CEF/TRAN/M2015/1132963
UNDER FRAMEWORK PARTNERSHIP AGREEMENT
No MOVE/E2-2014-717/SESAR FPA**

This Specific agreement (hereinafter referred to as "the Specific Agreement") is concluded between:

The **Innovation and Networks Executive Agency (INEA)** ("the Agency"), under the powers delegated by the European Commission ("the Commission"), represented for the purposes of signature of this Specific Agreement by the Director of the Agency, Dirk Beckers,

on the one part,

and the following coordinating partners acting as the Deployment Manager:

1. NATS (En Route) plc ("NATS")

Company number: 4129273

Official address: 4000 Parkway, Whiteley, Fareham, Hampshire, United Kingdom PO15 7FL

VAT number: GB 440 3794 56

2. Société Air France, Société Anonyme ("Air France")

Official registration No: 420 495 178 RCS BOBIGNY

Official address: 45 rue de Paris, 95747 Roissy CDG CEDEX, France

VAT number: 61 420 495 178

3. Österreichische Gesellschaft für Zivilluftfahrt mit beschränkter Haftung, limited liability company ("Austro Control")

Registration number: 71000m

Official address: Schnirchgasse 11, A-1030 Wien, Austria

VAT number: ATU 37259408

4. Croatia Control Ltd. ("Croatia Control")

Registration number: 080328617

Official address: Rudolfa Fizira 2, Velika Gorica, Croatia

VAT number: 33052761319

5. Deutsche Lufthansa Aktiengesellschaft ("Lufthansa")

Registration number: HR B 2168

Official address: Von-Gablenz-Strasse 2-6, D-50679 Köln

VAT number: DE 122 652 565

6. The State of France, Ministry of ecology, sustainable development and energy, DGAC (Direction générale de l'aviation civile), DSNA (Direction des Services de la Navigation Aérienne), a government entity organised and existing under the laws of France ("DSNA")

Official address: 50 rue Henry Farman, 75720 Paris cedex 15, France

7. DFS DEUTSCHE FLUGSICHERUNG GmbH ("DFS")

Registration number: HRB 34977

Official address: Am DFS Campus 10, Langen/ Hessen, D-63225

VAT number: DE114110232

8. easyJet Airline Company Limited ("easyJet")

Company number: 3034606

Hangar 89, London, Luton Airport, Luton, Bedfordshire, LU2 9PF United Kingdom

VAT number: GB 745360825

9. ENAIRE, business public entity (“ENAIRE”)

Official address: Calle Arturo Soria, 109, 28043, Madrid, Spain

VAT number: ESQ 2822001J

10. ENAV S.p.A. (“ENAV”)

Registration number: 97016000586

Official address: Via Salaria 716, 00138, Rome, Italy

VAT number: 02152021008

11. British Airways plc (“British Airways”)

Company number: 1777777

Official address: Waterside, PO Box 365, Harmondsworth, UB7 0GB, United Kingdom

VAT number: 222452988

12. Irish Aviation Authority, limited liability company (IAA)

Company number: 211082

Official address: Times Building, D’Olier street 11-12, Dublin 2, Ireland

VAT number: IE 8211082 B

13. Luftfartsverket, a state enterprise (“LFV”)

Company number 202195-0795

Official address: Hospitalsgatan 30, 601 79 Norrköping, Sweden

VAT number: SE 202100079501

14. Naviair, a state owned company (“NAVIAIR”)

Company number: 26059763

Official address: Naviair Allé 1, 2770 Kastrup, Denmark

VAT number: DK 26059763

15. Polish Air Navigation Services Agency, a state legal entity (“PANSa”)

Official address: Ul. Wieżowa 8, 02-147 Warszawa, Poland

VAT number: 5222838321

16. Sesar Related Deployment Airport Operators Grouping, EEIG (“SDAG”)

Registration number: 0073682

Official address: Rue Montoyer 10, 1000 Brussels, Belgium

VAT number: BE 548 863 315

hereinafter collectively referred to as “the coordinator”, represented for the purpose of signature of this Specific agreement by Massimo Garbini, Managing Director of the Consortium SESAR Deployment Alliance, if applicable, by virtue of the mandates included in Annex IX of the Framework Partnership Agreement

and the following other implementing partners:

17. Romanian Air Traffic Services Administration (ROMATSA) - established in Romania

18. Cesky Hydrometeorologicky Ustav - Czech Hydrometeorological Institute (CHMI) - established in Czech Republic

19. Air Navigation Services of the Czech Republic (ANS CR) - established in Czech Republic

20. Lennuliiklusteeninduse Aktsiaselts (Estonian Air Navigation Services) (EANS) - established in Estonia

21. BULATSA - State Enterprise “Air Traffic Services Authority” (BULATSA) - established in Bulgaria

22. LETOVÉ PREVÁDZKOVÉ SLUŽBY, ŠTÁTNY PODNIK (V SKRATKE “LPS SR, Š.P.”) (LPS SR) - established in Slovakia

23. Executive Body NATO Airborne Early Warning and Control Programme Management Agency (NAPMA) - established in Netherlands

24. Estonian Environment Agency (ESTEA) - established in Estonia

- 25. HungaroControl (HC) - established in Hungary
- 26. Ministério da Defesa Nacional - Força Aérea (PT AF) - established in Portugal

duly represented by the coordinator by virtue of the mandates included in Annex IX of the Framework Partnership Agreement,

on the other part,

The following annexes form an integral part of the Specific Agreement:

- Annex I Description of the action
- Annex II Estimated budget of the action

ARTICLE 1 – SUBJECT MATTER OF THE AGREEMENT

The Specific agreement is concluded in the context of the partnership established between the parties. It is drawn up in accordance with the relevant terms of framework partnership agreement No **MOVE/E2-2014-717/SESAR FPA** signed between the Commission and the partners (coordinating as well as implementing partners) on the 5th of December 2014 (hereinafter referred to as "the Framework agreement").

The Commission has decided to award a grant ("specific grant for an action"), under the terms and conditions set out in the Specific Agreement and the Framework Agreement, for the action entitled **SESAR Deployment Programme implementation 2015 – Cluster 3** ("the action"), action number **2015-EU-TM-0197-M** as described in Annex I.

With the signature of the Specific Agreement, the partners accept the grant and agree to implement the action in accordance with the terms and conditions of the Specific agreement and the Framework Agreement, acting on their own responsibility.

ARTICLE 2 – ENTRY INTO FORCE OF THE SPECIFIC AGREEMENT AND DURATION

2.1 The Specific agreement shall enter into force on the date on which the last party signs.

2.2 The action shall run from 16/02/2016 ("the starting date") until 31/12/2020 ("the completion date").

ARTICLE 3 - MAXIMUM AMOUNT AND FORM OF THE GRANT

The grant for the action shall be of a **maximum amount of EUR 52,231,657**.

The grant shall take the form of:

(a) the reimbursement of the eligible costs of the action ("reimbursement of eligible costs"), which are estimated at EUR 63,782,919, according to the following conditions:

(a1) Reimbursement of 50% of the eligible costs for the direct costs of the following activities: Activity 1, Activity 4, Activity 7, which are

(i) actually incurred ("reimbursement of actual costs")

(ii) reimbursement of unit costs: not applicable

(iii) reimbursement of lump sum costs: not applicable

(iv) reimbursement of flat-rate costs: not applicable

(v) declared on the basis of an amount per unit calculated in accordance with the partner's usual cost accounting practices ("reimbursement of costs declared on the basis of the partner's usual cost accounting practices") for personnel costs

(a2) Reimbursement of 85% of the eligible costs for the direct costs of the following activities: Activity 2, Activity 3, Activity 5, Activity 6, which are

(i) actually incurred ("reimbursement of actual costs")

(ii) reimbursement of unit costs: not applicable

- (iii) reimbursement of lump sum costs: not applicable
 - (iv) reimbursement of flat-rate costs: not applicable
 - (v) declared on the basis of an amount per unit calculated in accordance with the partner's usual cost accounting practices ("reimbursement of costs declared on the basis of the partner's usual cost accounting practices") for personnel costs
- (b) unit contribution: not applicable
 - (c) lump sum contribution: not applicable
 - (d) flat-rate contribution: not applicable

ARTICLE 4 – ADDITIONAL PROVISIONS ON REPORTING, PAYMENTS AND PAYMENT ARRANGEMENTS

4.1 Reporting periods and payments

In addition to the provisions set out in Articles II.23 and II.24 of the Framework Agreement, the following reporting and payment arrangements shall apply:

4.1.1 Reporting periods

The action is divided into the following reporting periods:

- Reporting period 1 from the starting date of the action to 31 December 2016;
- Reporting period 2 from 1 January 2017 to 31 December 2017;
- Reporting period 3 from 1 January 2018 to 31 December 2018;
- Reporting period 4 from 1 January 2019 to 31 December 2019;
- Last reporting period from 1 January 2020 to the completion date of the action.

4.1.2 Payments

Upon entry into force of the Specific Agreement, the Agency shall make a first pre-financing payment equivalent to 40% of the amount of the first annual instalment of the maximum CEF contribution as indicated in Annex II of the Specific Agreement to the coordinator in accordance with Article II.24.1.

At the end of each reporting period, except the last reporting period, the coordinator may submit a request for further pre-financing payment in accordance with Article II.23.1b of the Framework Agreement. The further pre-financing payment shall be calculated on the basis of 40% of the cumulated financing needs and in accordance with Article II.24.2b of the Framework Agreement. The Agency shall make the further pre-financing payment to the coordinator in accordance with Article II.24.2b of the Framework Agreement.

At the end of at least every two reporting periods, the coordinator shall submit a request for interim payment in accordance with Article II.23.2b of the Framework Agreement. The Agency shall make an interim payment to the coordinator in accordance with Article II.24.3 of the Framework Agreement.

At the end of the last reporting period, the coordinator shall submit the request for payment of the balance in accordance with Article II.23.2c of the Framework Agreement. The Agency shall make the payment of the balance to the coordinator in accordance with Article II.24.4 of the Framework Agreement.

4.1.3 Ceiling for pre-financing and interim payments

The total amount of pre-financing and interim payments shall not exceed 80% of the maximum grant amount set out in Article 3.

4.2 Time limit for payments

The time limit for the Agency to make the interim payment(s) and payment of the balance is 90 days.

4.3 Language and submission means of requests for payment, reports and financial statements

All requests for payments, reports and financial statements shall be submitted in English.

The Action Status Report referred to in Article II.23.1b of the Framework Agreement shall be submitted via TEN-Tec.

Other documents or, if applicable, scanned copies of the original signed paper versions and electronic files, shall be sent via e-mail to the address of the Agency specified in Article I.3.2 of the Framework Agreement.

ARTICLE 5 – BANK ACCOUNT FOR PAYMENTS

All payments shall be made to the coordinator's bank account as indicated below:

Name of bank: Bank Gospodarstwa Krajowego

Address of branch: Al. Jerozolimskie 7, Warsaw 00955, Poland

Precise denomination of the account holder: Polish Air Navigation Services Agency

Full account number (including bank codes): PL 83 1130 1017 0025 0094 4820 0028

IBAN code: PL 83 1130 1017 0025 0094 4820 0028

ARTICLE 6 – ENTITIES AFFILIATED TO THE PARTNER

Not applicable.

ARTICLE 7 - IMPLEMENTING BODIES DESIGNATED BY THE PARTNERS

Not applicable.

ARTICLE 8 – ADDITIONAL PROVISIONS ON REIMBURSEMENT OF COSTS DECLARED ON THE BASIS OF THE PARTNER'S USUAL COST ACCOUNTING PRACTICES

In addition to the conditions set out in Article II.20.5 of the Framework Agreement, where, in accordance with point (v) of Articles 3(a1) and 3(a2), the grant takes the form of the reimbursement of unit costs, lump sum costs or flat-rate costs declared by the partner on the basis of its usual cost accounting practices, the partner shall ensure that the cost accounting practices used are also in compliance with the conditions laid down in Commission Decision C(2016)478 of 3 February 2016.

ARTICLE 9 – ADDITIONAL PROVISIONS ON USE OF THE RESULTS (INCLUDING INTELLECTUAL AND INDUSTRIAL PROPERTY RIGHTS)

In addition to the provisions of Article II.8.3 of the Framework Agreement, the partners shall warrant that the Agency has the rights to:

- summarise the results of the action and distribute the summary;
- extract a part (e.g. audio or video files) of, divide into parts or compile the results of the action.

ARTICLE 10 - INAPPLICABILITY OF THE NO-PROFIT PRINCIPLE

Not applicable.

ARTICLE 11 - INELIGIBILITY OF VALUE ADDED TAX

Not applicable.

ARTICLE 12 - SPECIAL PROVISIONS ON ELIGIBLE COSTS

By way of derogation from point (l) of Article II.19.4 of the Framework Agreement, the following costs may be eligible:

- (i) costs of purchase of land not built on and land built on, up to 10 % of the total eligible costs of the action,
- (ii) costs of purchase of derelict sites and purchase of sites formerly in industrial use which comprise buildings, up to 15 % of the total eligible costs of the action.

ARTICLE 13 – WAIVING OF THE OBLIGATION TO PROVIDE CERTIFICATES ON THE FINANCIAL STATEMENTS

Not applicable.

ARTICLE 14 - FINANCIAL SUPPORT TO THIRD PARTIES

Article II.11 of the Framework agreement is not applicable.

ARTICLE 15 — IMPLEMENTATION OF ACTION TASKS BY PARTNERS NOT RECEIVING EU FUNDING

The following partner shall not receive EU funding:

- DSNA

The costs it incurs shall not be taken into consideration for determining the final amount of the grant in accordance with Article II.25 of the Framework Agreement.

Articles 3, 4, 5, 8, 10, 11, 12, 13 of the Specific Agreement and Articles II.9, II.10, II.11, II.13, II.19, II.20, II.21, II.22, II.23.2b, II.23.2c (b), (c) and (d), II.24 and II.26 of the Framework Agreement shall not apply to that partner.

In addition, it shall not be subject to financial audits and checks referred to in Article II.27 of the Framework Agreement.

SIGNATURES

For the coordinator

For the Agency

Massimo Garbini

Dirk Beckers

Done at Brussels, on

Done at Brussels, on

In duplicate in English

ANNEX I

DESCRIPTION OF THE ACTION

ARTICLE I.1 – IMPLEMENTATION OF THE TEN-T NETWORK

The action contributes to the implementation of:

- the core network
- Horizontal priority: Single European Sky – SESAR system.

ARTICLE I.2 – LOCATION OF THE ACTION

I.2.1 Member State(s): Bulgaria, Croatia, Czech Republic, Estonia, Greece, Hungary, Poland, Portugal, Romania, Slovakia

I.2.2 Region(s) (using the NUTS2 nomenclature): Severen tsentralen (BG32), Severoiztochen (BG33), Severozapaden (BG31), Yugoiztochen (BG34), Yuzhen tsentralen (BG42), Jadranska Hrvatska (HR03), Kontinentalna Hrvatska (HR04), Jihovýchod (CZ06), Jihozápad (CZ03), Moravskoslezsko (CZ08), Praha (CZ01), Severovýchod (CZ05), Severozápad (CZ04), Střední Čechy (CZ02), Střední Morava (CZ07), Eesti (EE00), Dél-Alföld (HU33), Közép-Dunántúl (HU21), Dél-Dunántúl (HU23), Közép-Magyarország (HU10), Nyugat-Dunántúl (HU22), Észak-Alföld (HU32), Észak-Magyarország (HU31), Dolnoslaskie (PL51), Kujawsko-Pomorskie (PL61), Lubelskie (PL31), Lubuskie (PL43), Łódzkie (PL11), Malopolskie (PL21), Mazowieckie (PL12), Opolskie (PL52), Podkarpackie (PL32), Podlaskie (PL34), Pomorskie (PL63), Slaskie (PL22), Swietokrzyskie (PL33), Warminsko-Mazurskie (PL62), Wielkopolskie (PL41), Zachodniopomorskie (PL42), Alentejo (PT18), Algarve (PT15), Centro (PT) (PT16), Lisboa (PT17), Norte (PT11), Região Autónoma da Madeira (PT30), Região Autónoma dos Açores (PT20), Bucuresti - Ilfov (RO32), Centru (RO12), Nord-Est (RO21), Nord-Vest (RO11), Sud - Muntenia (RO31), Sud-Est (RO22), Sud-Vest Oltenia (RO41), Vest (RO42), Bratislavský kraj (SK01), Stredné Slovensko (SK03), Východné Slovensko (SK04), Západné Slovensko (SK02), Anatoliki Makedonia, Thraki (EL11), Attiki (EL30), Dytiki Ellada (EL23), Dytiki Makedonia (EL13), Ionia Nisia (EL22), Ipeiros (EL21), Kentriki Makedonia (EL12), Kriti (EL43), Notio Aigaio (EL42), Peloponnisos (EL25), Sterea Ellada (EL24), Thessalia (EL14), Voreio Aigaio (EL41)

I.2.3 Third country(ies): not applicable

ARTICLE I.3 – SCOPE AND OBJECTIVES OF THE ACTION

The European Air Traffic Management (ATM) system currently handles around 26,000 flights daily, which can get to 33,000 flights on busy days. The 2020 forecast shall increase to 17 million flights yearly and 50,000 flights on busy days. At the same time, European ATM costs an additional €2-3 billion every year, compared to other similar systems in the world. The challenge for the European airspace is thus to accommodate the increasing air traffic flows and at the same time to cut costs and improve its performance.

In order to meet this need, the European Commission launched in 1999 the Single European

Sky initiative, which places at its heart the SESAR (Single European Sky ATM Research) Programme. Representing the technological pillar aimed at implementing a new ATM infrastructure in Europe able to meet capacity needs, enhance safety and interoperability, and reduce environmental impact to meet traffic, SESAR entered the final deployment phase in 2014. The required new generation of ATM technological systems and components must be produced and implemented by the European ATM stakeholders, through their progressive injection in the stakeholders' investments planning.

In order to effectively contribute to achieving the SES performance objectives and the overall economic benefits expected from ATM modernisation, SESAR implementation must be managed in a timely, synchronised and coordinated way.

To this extent, the Commission adopted the Implementing Regulation (EU) No 409/2013 which defines two instruments to support SESAR deployment: centralised Deployment governance, and the Common Projects.

The Deployment governance was established on 5th December 2014 with the signature of the SESAR Framework Partnership Agreement between EC and the SESAR Deployment Alliance (SDA), appointed as the SESAR Deployment Manager (SDM); furthermore, the Deployment Programme (DP) was published concurrently and maintained every year.

The Deployment governance has been organised as follows:

- Level 1 - Policy level, under the responsibility of the European Commission;
- Level 2 - Management level, under the responsibility of the SESAR Deployment Manager who ensures the coordinated and synchronised implementation of Common Projects in accordance with the Deployment Programme, composed by the Coordinating Partners;
- Level 3 - Implementation level, that is responsible for implementing the ATM functionalities of the Common Projects in the European ATM Network through Implementation Projects (IPs), named Implementing Project Partners (IPPs).

This Action contributes to the Pilot Common Project (PCP) and combines coherent technological improvements aiming to enhance the performance of the European ATM system in the medium term (end date of implementation up to 31st December 2020) in Cohesion Member States.

In particular, the Action targets a set of implementation initiatives contributing to the deployment of four out of the six ATM functionalities, in particular the Action covers some of the identified gaps in:

- AF1 Extended AMAN and PBN in high density TMA
- AF3 Flexible ASM and Free Route
- AF4 Network Collaborative Management
- AF5 Initial SWIM

Activities supported by this specific agreement shall not include any activity or task supported under programme support actions foreseen in Article I.1.1.3 of the Framework Partnership Agreement. Otherwise, they may not be considered as eligible under this specific agreement.

ARTICLE I.4 – ACTIVITIES

I.4.1 Activities timetable

Activity number	Activity title	Indicative start date	Indicative end date	Milestone number
1	FPA (Framework Partnership Agreement) Action Coordination	16/02/2016	31/12/2020	1, 2, 3, 4, 5, 6, 7
2	AF1 Extended AMAN and PBN in high density TMA implementation	16/02/2016	31/12/2020	8, 9, 10, 11, 12
3	AF3 Flexible ASM and Free Route implementation - Part 1 (85% funding)	16/02/2016	31/12/2020	13, 14, 15, 16, 17
4	AF3 Flexible ASM and Free Route implementation - Part 2 (50% funding)	16/02/2016	31/12/2020	13, 14, 15, 16, 17
5	AF4 Network Collaborative Management implementation	16/02/2016	31/12/2020	18, 19, 20, 21, 22
6	AF5 Initial SWIM implementation - Part 1 (85% funding)	16/02/2016	31/12/2020	23, 24, 25, 26, 27
7	AF5 Initial SWIM implementation - Part 2 (50% funding)	16/02/2016	31/12/2020	23, 24, 25, 26, 27

I.4.2 Activities description

Activity 1: FPA (Framework Partnership Agreement) Action Coordination

Leader: SDM (NATS on behalf of)

Start Date: 16/02/2016

End Date: 31/12/2020

The activity aims at ensuring the efficient and effective coordination of the Action to be conducted in accordance with the relevant provisions, set in both SESAR FPA and SGA model with reference to the FPA and Action Coordinator, in order to:

- Deliver project objectives within time, resource and budget constraints
- Align Action execution with the European strategy, CEF priorities and SESAR DM mission (according to PCP, DP and ATM Master Plan)
- Identify and mitigate any risk for the Action execution and monitor impact of the mitigations
- Identify innovative solutions and approaches, based on best practices and experiences sharing among the different partners
- Lead efficiently multi-stakeholders and multinational teams

In line with the above, Activity 1 will perform all tasks associated with the five main processes to be governed by the Action coordinator and are described in the following paragraphs:

- Sub Activity 1.1 – Action Coordination
- Sub Activity 1.2 – Action monitoring and reporting
- Sub Activity 1.3 – Financial management Payments, checks and audits
- Sub Activity 1.4 – Action Information management

- **Sub-Activity 1.5 - Communication management for stakeholder support**

In order to deliver the above mentioned objectives the SDM will count also on external support which will be selected through a call for tender in order to perform such activities in full alignment with the CEF Programme management requirements.

The scope of the Call for Tender is to provide support to the SDM, potentially for any of the tasks under its responsibility as SESAR Deployment Manager under the terms of the Programme and Support Actions (PSA) SGAs, as well as SESAR Deployment Framework Partnership coordinator, as described above, under the terms of the Implementation Projects (IP) SGAs. The activities contracted as a result of the tender procedure, and having reference to the FPA coordination activities, will be reported in the execution of the present action, and relevant costs claimed under the IP SGAs, according to the SDM Operating Plan. The Call for tender will also provide a managed service for the provision of additionally required resources on both short term, and fixed term contracts.

External support ("Support to FPA Coordination") will aim at supporting, integrating and coordinating all the activities that the Consortium will carry out within the current Action under SDM leadership and instructions, with the aim of:

- Ensuring the progress of the Action within the planned and expected timing, costs and quality standards expected;
- Ensuring the total alignment of the activities envisaged within the Action with the scope and objectives pursued by PCP.

SDM will also deliver the support services in terms of efficient, effective and timely back-office services and support, in order to deliver its commitments under the FPA Coordination.

Sub-Activity 1.1 - Action Coordination

The SDM will be in charge of ensuring that the Action pursues the expected objectives, in particular addressing:

- Maintenance of the Work Breakdown structure (WBS) and Organisational Breakdown Structure (OBS) of the Action
- Planning of the activities (Gantt) in line with the Multi Annual Work Programme and DP evolution

In order to achieve the above mentioned objectives, the Action coordination will be performed by SDM through a coordination team composed by one leader for each activity. To secure efficiency and keep the coordination team down to a manageable size, the activities related to the same AF will have the same leader.

Activity leaders will be in charge of addressing the above two major objectives at activity level (Maintenance of the Work Breakdown structure (WBS) and Planning of the activities).

In particular, the Activity leaders will also ensure that all processes needed for the overall implementation of the Action are conducted in line with the SDM indications.

Deliverables:

1.1.1 Launch of the Action – Kick-Off Meeting Minutes

1.1.2 Activity WBS and OBS yearly updating - 31/03/2017 (every year until 2020)

1.1.3 Activity GANTT yearly updating - 31/03/2017 (every year until 2020)

Sub-Activity 1.2 - Action monitoring and reporting

Action monitoring and reporting – SDM as Action coordinator will monitor the Action execution in order to ensure it is implemented in accordance with the Framework Partnership Agreement and the Specific Grant Agreement, including relevant Annexes, through:

- Continuous monitoring: identifying and managing discrepancies, risks and issues, as well as the mitigation actions to ensure that the Action implementation is synchronised among partners and performance driven
- Periodical monitoring and reporting at specific monitoring gates (three times per year):
 - Action Synchronisation and Execution: gathering the necessary Action-related information on the overall synchronisation of the Deployment Programme
 - Performance monitoring - CBA/Performance analysis: gathering the necessary information to perform the CBA/Performance analysis of the deployed projects
 - Contractual Reporting: gathering technical and financial information to ensure the provision to INEA of the contractual documents (ASR and Final Report)
 - Quality Management: quality management process encompassing three different elements (Quality Planning; Quality Assurance and Quality Control)

All the tasks reported hereunder are specific for this Action and shall not overlap with the tasks performed under the Programme and Support Actions (PSA) SGAs.

Continuous monitoring:

SDM will ensure the continuous monitoring of the Action through “continuous interactions” with IPPs. These interactions will be managed by the Programme Management Tool: SESAR Tool for ATM Rollout (STAR). The continuous monitoring of the implementation progress throughout the year will allow an early detection of misalignments and will anticipate the identification and addressing of possible discrepancies/risks/issues.

Periodical monitoring and reporting:

Action Synchronisation and Execution

In line with the DP monitoring view, the Action will go through three monitoring cycles.

The relevant monitoring gates are set on 15th January, 15th April and 15th September, of each year. On such date, SDM will collect implementation progress and will formalise the information into a comprehensive monitoring dashboard for the Action, which will be used as a contribution to the DP Execution Progress Report (EPR).

In order to provide all the necessary information to enable an effective coordination, the SDM will cooperate with the beneficiaries of the Action. In this respect, it will be supported by the external support "Support to FPA Coordination" which will provide complementary skills to the SDM in order to fully accomplish its coordinator role. SDM as Coordinator and external support will work addressing the right trade-off between relevance and frequency of the information collection, avoiding overload for the IPPs. In particular, the request of information to IPPs will be tailored on the IPs specificities (i.e. complexity degree,

magnitude, duration, etc.), safeguarding, at the same time, a minimum threshold which ensures a reliable DP implementation picture.

The Internal Achievement Points for each project (Activities 2-7) are reported in the description of each Implementation Project (IP).

CBA/Performance analysis at Action level

SDM estimates cost benefit analysis first according to its top-down model and later taking into consideration the interactions with the project managers as described in the Deployment Programme Annex D. Finally, during the course of execution of the project, a specific performance monitoring is ensured in case some assumptions would change.

Contractual reporting

SDM collects the information from IPPs with reference to each calendar year until Action closure, and provides INEA with a full batch of information for Action monitoring (on both technical and financial matters).

Collection will be performed by SDM on the first monitoring gate 15th of January, in accordance with the specific template provided by INEA, and through the STAR tool, in order to finalise the Action Status Report (ASR).

The ASR (and Final Report) represents the contractual report to be submitted to INEA to monitor the implementation of the action in terms of Technical and Financial progress.

Once ASR is finalised, SDM will coordinate the validation by each Member State participating within the Action, before its final submission to INEA foreseen on 31st March of each year.

ASR represents the main reference also for the management of the Sub-Activity 1.3.

Quality Management

SDM acting as Coordinator, will address a quality management process at Action level encompassing three different elements:

- Quality Planning, aiming at identifying quality requirements of the whole Action with particular regards to methodologies and deliverables;
- Quality Assurance, aiming at planning procedures oriented to the prevention, detection and reporting of any issue which might impact on Action quality;
- Quality Control, aiming at verifying the effective implementation of quality procedures. The implementation of the quality management processes will be provided by the SDM in support to AF leaders and IPPs and it is part of the SDM role as coordinator.

Such elements will be addressed throughout the Action with specific reference to the Action processes:

- Elaboration and submission of the Action Status Report;
- Management of expected payments (pre-financing payments, interim payments and payment of the Balance);
- Technical, performance and financial monitoring and reporting processes which are performed to elaborate the DP Execution progress report and the Cost Benefit Analysis.
- Based on the best practices deriving from PMI (Project Management Institute), the SDM identified a Quality Management framework, which aims at ensuring the proper alignment of the Action results with expected standards of quality, throughout the execution of the current Action.

It has to be noted that the term “Action results” refers to: processes adopted during the Action execution and respective outcomes; deliverables and means of verification produced and milestone achieved.

Deliverables:

- 1.2.1 Action Execution Progress Report – Three Reporting gates per year
- 1.2.2 Quality Plan - 31/12/2016
- 1.2.3 CBA/Performance Analysis at Action level - 31/03/2017 (every year until 2020)
- 1.2.4 Action Status Report (ASR) - 31/03/2017 (every year until 2020)
- 1.2.5 Final Report - 31/12/2020

Sub-Activity 1.3 - Financial management: payments, checks and audits

SDM acting as Coordinator will bear responsibility for the financial management of the Action.

Financial management includes all relevant tasks underpinning Action payments, checks and audits and will be conducted by the SDM in accordance with the relevant provisions, set in both SESAR FPA and SGA.

Indeed, as per FPA art II.1.3. SDM acting as Coordinator is responsible for:

- Ensuring that all the appropriate payments are made to the other partners without unjustified delay.
- Establishing the requests for payment in accordance with the Framework agreement and the Specific agreements;
- Supporting the requested beneficiaries in making the appropriate arrangements for providing any financial guarantees required under the Framework Agreement or a Specific agreement;

The coordinator will also bear responsibility for providing all the necessary documents in the event of checks and audits initiated before the payment of the balance, and in the event of evaluation in accordance with Article II.27 of the FPA.

Deliverables:

- 1.3.1 Checks and Audit procedure (to be included into the Quality Plan) - 31/12/2016
- 1.3.2 Payments distribution (pre-financing, interim and final) - October/November 2016 (indicative)

Sub-Activity 1.4 - Action information management

SDM will be the intermediary for communications between the partners and the Commission, except where otherwise stated in the Framework Partnership Agreement or the Specific Grant Agreements.

Sub Activity 1.4 covers any potential adjustment or amendment of the SGA to be put in place. Such process will be managed by the SDM as coordinator, in close cooperation with all Implementing Partners and with European Commission/INEA and in full alignment with the FPA and SGA provisions.

Deliverable:

- 1.4.1 Communication Plan - 31/12/2016

Sub-Activity 1.5 - Communication management for stakeholder support

SDM will finalise/provide Beneficiaries with meetings/events and instruments/tools in order to support them during the Execution phase, that it will start immediately after the Agreement's finalisation.

After the Agreement's finalisation the following actions will be put in place by SDM:

Workshop/Events:

- Ad hoc meetings: the aim of the meetings will be to provide Action Beneficiaries with information able to ensure successful execution and closure of the Action (e.g. Overview of the main activities; procedures and roadmaps to be followed for Interim Payment, etc.).
- Instruments/Tools:
 - SESAR Deployment Manager website : beneficiaries will be supported during their project performing process by visiting the SDM website which contains all relevant information (e.g. about SDM, news, events, Q&A): <http://www.sesardeploymentmanager.eu/>;
 - Video and tutorials : beneficiaries can find (on specific section of the SDM website) informative videos about the content of the Development Programme and the tutorials to use the STAR Tool;
 - Email address (CEF Execution 2015): the dedicated email address will be set up to facilitate the communications between the Implementing Partners and the SDM during the entire Action lifecycle;
 - Questions & Answers : the SDM website will contain a dedicated, publicly available, section where all relevant Questions & Answers will be published every two weeks;
 - Periodic Newsletter: with the aim to provide all beneficiaries with the status of the activities performed by IPPs and SDM for the Action progress and finalisation.

Activity 2: AF1 Extended AMAN and PBN in high density TMA implementation

Extended Arrival Management (AMAN) and Performance Based Navigation (PBN) in high density Terminal Manoeuvring Areas (TMAs) improves the precision of the approach trajectory and facilitates air traffic sequencing at an earlier stage. Extended AMAN supports extension of the planning horizon out to a minimum of 180-200 Nautical Miles, up to and including the Top of Descent of arrival flights. PBN in high density TMAs covers the development and implementation of fuel efficient and/or environmental friendly procedures for arrival and departure (Required Navigation Performance 1 Standard Instrument Departures (RNP 1 SIDs), Standard Arrival Routes (STARs) and approach (Required Navigation Performance Approach (RNP APCH)).

It is composed by the following technical families:

S-AF 1.1: Arrival Management extended to en-route Airspace:

- Family 1.1.1: Basic AMAN
- Family 1.1.2: AMAN upgrade to include Extended Horizon function

S-AF1.2: Enhanced TMA using RNP-Based Operations:

- Family 1.2.1: RNP approaches with vertical guidance
- Family 1.2.2: Geographic Database for procedure design

- Family 1.2.3: RNP 1 operations in high density TMAs (ground capabilities)
- Family 1.2.4: RNP 1 operations in high density TMAs (aircraft capabilities)

Sub-Activity 2.1 - AF1 Extended AMAN and PBN in high density TMA

Leader: SDM (NATS on behalf of) as part of Action coordination

Start Date: 16/02/2016

End Date: 31/12/2020

The present sub-activity aims at coordinating the implementing initiatives within the scope of the AF1 and its Sub AFs, for those projects with a co-financing rate of 85%.

According to Deployment Programme Methodology, each Implementing Partner will support SDM during Cost Benefit Analysis (CBA) finalisation at Action Level.

SDM will steer the Implementing Partners to provide all contributions needed to prepare CBA according to the INEA guidelines.

Deliverables:

2.1.1 Action Status Report (ASR) – AF Level - 31/01/2017 (every year until 2020)

2.1.2 Validation Registry - Risks and Issues and Mitigation Actions – AF Level - 30/04/2017 (three times per year until 2020)

2.1.3 Final Report - 31/12/2020

Sub-Activity 2.2 AF1 Extended AMAN and PBN in high density TMA: Implementation Projects

2015_196_AF1_B Extended AMAN in Czech airspace

Start date: 16/02/2016

End date: 31/12/2017

- Implementing Partners
 - Air Navigation Services of the Czech Republic (ANS CR)
- Overview

The Pilot Common Projects Regulation (EU) No 716/2014 requests Extended Arrival Management (AMAN) to “facilitate air traffic sequencing at an earlier stage”, by extending “the planning horizon out to a minimum of 180-200 nautical miles [around PCP-relevant airports], up to and including the Top of Descent of arrival flights”. Czech airspace is located within this 200NM circle around the PCP-relevant airports Munich, Berlin and Vienna.

The proposed activity encompasses, in close coordination with IP 2015_196_AF1 of Action 2015-EU-TM-0196-M “XMAN project”, all necessary tasks to enable Extended AMAN for Munich airport within the Area of Responsibility (AoR) of Prague ACC.

This includes:

- the upgrade of the ATS system to receive and process the On-Line Data Interchange (OLDI) Arrival Management Message (AMA) message,
- the adaption of the HMI (Human Machine Interface) presentation of the arrival

- constraints (e.g. TTL/TTG),
- development of Levels of Automation (LoA) with partner-ANSP (DFS),
- safety assessment,
- training.

This implementation project also forms the basis for the future implementations of Extended AMAN at the PCP-relevant airports Berlin and Vienna.

Some parts of this project, which are not funded through this Action, started in 01/02/2016.

- Internal Achievement Points
 - Start of training (Training of operational and technical staff, subject - AMA message from Munich control centre (EDMM) - reception, communication issue, HMI elements, operational procedures) - 01/06/2017
 - End of training (Training of operational and technical staff, subject - AMA message from EDMM - reception, communication issue, HMI elements, operational procedures) - 31/10/2017
 - Parallel Operations / Operational Trials (Not applicable) - N/A
 - Cutover – Software (SW) ready and successfully tested (Delivery of SW changes to ATM systems involved (E2000, ESUP, IDP). Validation on site, contractual closure of system modifications. User acceptance of system modifications) - 01/05/2017
 - Cutover and fall back period completed (Full operational utilization of EDMM AMA messages processing and operational use.- 31/12/2017

2015_234_AF1_B AMAN LOWW initial

Start date: 01/03/2016

End date: 31/12/2018

- Implementing Partners
 - Hungarocontrol
 - LETOVÉ PREVÁDZKOVÉ SLUŽBY, ŠTÁTNY PODNIK (LPS SR)
 - Air Navigation Services of the Czech Republic (ANS CR)
- Overview

This IP is connected with IP 2015_234_AF1_B "AMAN LOWW initial" of Action 2015-EU-TM-0193-M implemented by Austro Control.

Austro Control is using a legacy AMAN to transmit estimated time of arrival (ETA) information to the Vienna airport. Furthermore, the AMAN is used to open and close sectors, depending on the incoming traffic.

The legacy AMAN is incompatible with the new TopSky system in the TERM Unit Vienna, being deployed end 2015. A new Arrival Manager which will be a basic AMAN will be introduced to improve the overview for the planners, and is the first step on the roadmap to an extended AMAN. Moreover, it allows to transmit more accurate ETA to the Vienna airport.

Beginning in 2016 the current version of the baseline TopSky AMAN ("MAESTRO") will be enabled on some APP and ACC consoles to gain experience and also integrated into the test & simulation environment. From 2017 onwards adjacent units will be connected to the new operational baseline TopSky AMAN. The adjacent units included in this implementation project are within a coverage of 40NM. The integration of these units is important for providing Time to Lose / Time to Gain information. Therefore, the involvement of the

neighbouring partners is essential for the successful implementation of the Basic AMAN at Vienna airport and is fully in line with Austro Control's strategy. This strategy foresees a step wise approach on the way to develop an AMAN with extended Horizon function.

This part of the project is aimed at the connection of the system with adjacent units in Prague, Bratislava and Budapest.

- Internal Achievement Points
 - Start of training (Start of first training) - 01/10/2016
 - End of training (End of last training) - 31/01/2018
 - Parallel Operations / Operational Trials (Operational Trial) - 01/11/2016
 - Cutover – Software ready and successfully tested – (Milestone will be fulfilled within the inter-dependent COOPANS project) - N/A
 - Cutover and fall back period completed (Milestone will be fulfilled within the inter-dependent COOPANS project) - N/A

2015_253_AF1_B RNP 1.0, RNP 0.3 & SBAS FOR E3 AWACS FOR COHESION ELIGIBLE STATES

Start date: 16/02/2016

End date: 31/12/2018

- Implementing Partners
 - NAPMA as executive agent of Czech Republic, Greece, Hungary, Poland, Portugal and Romania in partnership in a multinational programme
- Overview

Many of the 25 large European airports are currently implementing PBN/RNP procedures and improved Arrival Management (AMAN) and Required Navigation Performance (RNP) in the high density TMAs in order to increase capacity with associated environmental and noise benefits. The European militaries operate 1.000 large ‘transport-type’ aircraft as strategic and High Value Assets. The EUROCONTROL military statistics indicate that a significant number of these large aircraft missions are flown as General Air Traffic (GAT) transiting between FL200 and FL300 with the C17 Globemaster; C130 Hercules; specialist ISTAR (Intelligence, surveillance, target acquisition, and reconnaissance) platforms e.g. E3 AWACS, and various Air-to-Air Tanker platforms. These aircraft are important strategic assets which have the requirement to be able to cross all European airspace with no constraints and access both military and civilian major airports as required in accordance with political direction and the assigned tasks. It is important that these aircrafts are “as civil as possible” whilst remaining “as military as necessary” so that their operation does not unduly hamper civilian air traffic and does not increase ATM controller workload. The CNS/ATM modernisation provides the E-3 aircraft (AWACS) with an integrated Communication, Navigation, and Surveillance system that fully complies with the evolving concepts in civil Air Traffic Management and meets all Single European Sky (SES) mandates.

To accomplish these objectives, the avionics suite is upgraded in the following major functional areas: Communication, Navigation, Surveillance and Flight Management System. The Flight Management System Suite (FMSS) integrates and manages all navigation sensors and radios. The different navigation modes are used in determining the corresponding

RNP/RNAV compliance to the levels identified in the Technical Requirements Document and Performance Assessment Matrices. The system is capable and certified of complying to the RNP 1.0, 0.3 and Satellite/Space based augmentation system (SBAS) requirements as per the Pilot Common Project (PCP) mandate. The Boeing E3 AWACS are declared by EU Member States as high value aircraft required to have unimpeded access to cross high density European airspace and have worldwide interoperability. Depending on the assigned National or NATO task they will require access to any of the busy civilian airports and high density TMAs in Europe and cannot be constrained in their operation. Currently on a daily basis they are operating in monitoring Ukrainian airspace and through Istanbul TMA in support of multinational operations in Syria. The E-3A aircraft is a militarised version of the elderly Boeing 707-320B commercial airframe, but has been extensively modified over the years; however, many of the aircraft control and avionics systems are still 'analogue based' so a major design effort had to be applied to digitize these systems in order to feed data to the new SESAR capabilities and this has driven many of the costs. The current declared Out of Service Date for the aircraft is 2035. The Geilenkirchen Air Base, the Main Operating Base of the 14 E3 AWACS aircraft, is within the footprint of the Dusseldorf TMA. Without RNP equipage the E3 aircraft would be severely hampered in their day-to-day operations and Dusseldorf would not be able to optimize their TMA as they would have to make provision for regular access and transit by non-SES equipped aircraft. Due to the proximity of the airbase to the Dutch border there are also routing, noise and environmental restrictions which could be alleviated through the use of PBN. Considering the homebase being located within the close proximity of the Maastricht, Düsseldorf and Brussels TMA the total airspace integration is a prerequisite to uninterrupted operations of the ANSP's as well as the military user.

- Internal Achievement Points
 - Start of training (Start training, initially on aircraft N1, later additional aircraft and Flight Training Device and Full Flight Simulator) - 01/03/2016
 - End of training (All E3 aircrew trained) - 01/08/2018
 - Parallel Operations / Operational Trials (Operational Flight Trials are being conducted using 1st aircraft) - 01/05/2017
 - Cutover - SW ready and successfully tested (Not applicable)
 - Cutover and fall back period completed (Not applicable)

2015_278_AF1 C-130H RNP-1 Avionics Upgrade for 5 A/C

Start date: 01/06/2016

End date: 31/12/2019

- Implementing Partners
 - Portuguese Ministry of Defence

• Overview

The C-130H RNP-1 avionics upgrade is a major modification to the aircraft that requires an extensive review of its systems. The main systems to be upgraded or installed, in order to achieve the required level of compliance, comprise: the flight management system, autopilot, navigation sensors and cockpit flight information displays. Furthermore, an extensive certification process has to be conducted, which will include flight testing and specific crew training. The scope of work for this project is only related to modifications required at the

aircraft level to comply with the RNP-1 aircraft requirements.

Comprehensive PBN compliance will avoid detrimental impact on sector capacity and enhance safety when operating GAT (General Air Traffic) within the 25 PCP AF1 TMAs/airports, as well as on the remaining SES regulated airspace. This, once implemented, will reduce the need for the application of exemptions and waivers, preserving the required military operational flexibility and contributing to the enhancement of civil-military interoperability.

- Internal Achievement Points

- Start of training (Training for the flight crew responsible to perform the flight tests on the aircraft) - 01/01/2017
- End of training (Training for all the required elements should end in this date) - 31/12/2019
- Parallel Operations / Operational Trials (It is considered that after this date flight tests with modified aircraft #1 could be performed) - 01/01/2017
- Cutover - Software ready and successfully tested (Estimate for the deadline of the SW freeze) - 01/06/2017
- Cutover and fall back period completed (Not applicable.)

2015_279_AF1 Falcon 50 RNP-1 Avionics Upgrade for 3 A/C

Start date: 01/06/2016

End date: 31/12/2019

- Implementing Partners
 - Portuguese Ministry of Defence
- Overview

The Falcon 50 RNP-1 avionics upgrade is a major modification to the aircraft that requires an extensive review of its systems. The main systems to be upgraded or installed, in order to achieve the required level of compliance, comprise: the flight management system, autopilot, navigation sensors and cockpit flight information displays. Furthermore, an extensive certification process has to be conducted, which will include flight testing and specific crew training. The scope of work for this project is only related to modifications required at the aircraft level to comply with the RNP-1 aircraft requirements.

Comprehensive PBN compliance will avoid detrimental impact on sector capacity and enhance safety when operating GAT (General Air Traffic) within the 25 PCP AF1 TMAs/airports, as well as the remaining SES regulated airspace. This, once implemented, will reduce the need for the application of exemptions and waivers, preserving the required military operational flexibility and contributing to the enhancement of civil-military interoperability.

- Internal Achievement Points

- Start of training (It is considered training for the flight crew responsible to perform the flight tests on the aircraft.) - 01/01/2017
- End of training (Training for all the required elements is expected to end in this date.) - 31/12/2019
- Parallel Operations / Operational Trials (It is considered that after this date

flight tests with modified aircraft #1 could be performed) - 01/01/2017

- Cutover - Software ready and successfully tested (Estimate for the deadline of the SW freeze) - 01/06/2017
- Cutover and fall back period completed (Not applicable) - N/A

Activity 3: AF3 Flexible ASM and Free Route implementation - Part 1 (85% funding)

Combined operation of Flexible Airspace Management and Free Route enable airspace users to fly as closely as possible to their preferred trajectory without being constrained by fixed airspace structures or fixed route networks. It further allows operations that require segregation, for example military training, to take place safely and flexibly, and with minimum impact on other airspace users.

It is composed by the following technical families:

S-AF 3.1: ASM and Advanced FUA:

- Family 3.1.1: (Initial) ASM Tool to support AFUA
- Family 3.1.2: ASM management of real time data
- Family 3.1.3: Full rolling ASM/ATFCM process and ASM information sharing
- Family 3.1.4: Management of Dynamic Airspace Configurations

S-AF3.2: Free Route:

- Family 3.2.1: Upgrade of ATM systems (Network Manager, ANSPs, Airspace Users) to support Direct Routings (DCTs) and Free Route Airspace (FRA)
- Family 3.2.3: Implement Published Direct Routings (DCTs)
- Family 3.2.4: Implement Free Route Airspace

Sub-activity 3.1 - AF3 Flexible ASM and Free Route – Part 1

Leader: SDM (NATS on behalf of) as part of Action coordination

Start Date: 16/02/2016

End Date: 31/12/2020

The present activity aims at coordinating the implementing initiatives within the scope of the AF3 and its Sub AFs, for those projects with a co-financing rate of 85%.

According to Deployment Programme Methodology, each Implementing Partner will support SDM during Cost Benefit Analysis (CBA) finalization at Action Level.

SDM will steer the Implementing Partners to provide all contribution needed to perform CBA according to the INEA guidelines.

Deliverables:

3.1.1 Action Status Report (ASR) – AF Level - 31/01/2017 (every year until 2020)

3.1.2 Validation Registry - Risks and Issues and Mitigation Actions – AF Level - 30/04/2017 (three times per year until 2020)

3.1.3 Final Report - 31/12/2020

Sub-activity 3.2 - AF3 Flexible ASM and Free Route – Part 1 Implementation Projects

2015_034_AF3 ATM System (MATIAS) upgrade for cross-border free route operation

Start date: 16/02/2016

End date: 31/12/2018

- Implementing Partners
 - HungaroControl
- Overview

In order to support cross-border free route operations some upgrades of ATM systems are necessary as pre-conditions for a future FAB CE free-route implementation project. The basis for this implementation project is to partially complete activities and tasks that include ATM systems functional upgrade for cross-border Free Route Airspace (FRA) handling (described by Family 3.2.1 in SESAR Deployment Plan). However activities to support flexible airspace management and Enhanced Flexible Use of airspace also serve as prerequisite for the cross-border FRA implementation. These activities are not part of the current implementation project (but are linked to it) since e.g. implementation of automated ASM (Airspace Management) tool is an on-going project and is close to its end.

This implementation project is a contribution to future FAB CE free-route implementation project that is also foreseen by 2015-2019 Network Operation Plan and can be considered as a continuation of IP#102AF3 of 2014-EU-TM-0136-M Action. The Action will address the modification/introduction of the following functionalities:

1. Enhance FDP (Flight Data Processing) to define and manage airspace categories - fixed routes, direct routing (DCT), FRA: In order to support the phased implementation of cross-border free route operation this function will ensure the operation in mixed airspace environment. During the transition period one state still can apply fix routes, another published DCTs and the third one already FRA. In order to handle these different categories FDP needs to be enhanced. It will support the constraint management addressed in the 1st cluster of necessary upgrades (family 3.2.1).
2. Enhance FDP for Traffic Situational Awareness (TSA)/Alternate routes definition outside AoR (Area of Responsibility): This function will allow to handle different airspace categories in the neighbouring airspaces. The prerequisite for this is the expansion of AoR (see next task). It will support the ATC clearances function beyond the AoR described also in the first cluster of required functions.
3. Extend capacities for AoR cross-border operations: This function will allow to handle different airspace categories in the neighbouring airspaces, which is currently possible only within the FIR (Flight Information Region), which is the current AoR. The expansion of AoR will also allow to enlarge/use the applicability areas of SNET functions and controller tools beyond FIR. It will allow to use Medium-Term Conflict Detection (MTCD) in order to detect conflicts between aircrafts within the reserved airspace and MONA (Monitoring Aids) also beyond FIR. This upgrade is also listed in the first cluster of required functions.
4. Enhance FDP to provide AoI (Area of Interest) functionality: This function will provide the possibility to process and display to controllers flight data of aircraft flying in the vicinity of FIR boundary, but not entering into FIR. It will improve the situational awareness of controllers in the vicinity of FIR boundaries. It will also expand the system capacities beyond its AoR and will be the basis for establishment of Area of Common Interest with neighbouring systems. The system will be capable

of processing received On-Line Data Interchange Information (OLDI INF) messages for flights which do not cross the AoR, but which cross the AoI, and presenting relevant information to the controllers.

5. Modify FDP enhancing coordination functionality: Modify FDP in order to be able processing field 15 in On-Line Data Interchange (OLDI) messages and improve the coordination function as a result of change in coordination due to the changed environment (e.g. impact on Revision (REV) message). It will enhance the ATC to ATC Flight Data Exchange listed in the first cluster of necessary functions.
6. Modify SNET (Ground based safety nets) functions: The improvement is necessary in order to adopt the functionality to changed environment. The so called multi-hypothesis principle will improve the alert functions and contributes to increase the safety. This modification will be a performance improvement of the function.
7. Introduction of TCT (Tactical Controller Tool) function: With the implementation of TCT and adapting it to free route environment it will be possible to detect the conflict in shorter term than with Medium-Term Conflict Detection (MTCDD) and provide resolution advice to controller. This upgrade corresponds to function listed in the second cluster of required functions - TCT, using the tactical trajectory and managing the clearances along that trajectory and also to function listed in cluster 3 - managing cross-border clearances.

Some parts of this project, which are not funded through this Action, started in 04/01/2016.

- Internal Achievement Points
 - Start of training - 17/09/2018
 - End of training - 05/10/2018
 - Parallel Operations / Operational Trials - 15/10/2018
 - Cutover - Software ready and successfully tested - 16/07/2018
 - Cutover and fall back period completed - 28/12/2018

2015_050_AF3 SIMULATION AND IMPLEMENTATION OF SEAFRA H24

Start date: 17/02/2016

End date: 28/02/2017

- Implementing Partners
 - Croatia Control

- Overview

On 30 April 2015, three ANSPs (SMATSA, Croatia Control and BHANSA) responsible for the ANS provision in the airspace of four states – Serbia, Montenegro, Croatia and Bosnia and Herzegovina offered airspace users the possibility to plan and execute flights free of fragmentation by state or Area of Responsibility (AoR) borders, by implementing cross-border Free Route Airspace (FRA) – South-East Axis Free Route Airspace (SEAFRA) at night.

SEAFRA H24 project aims to extend existing cross-border SEAFRA, which currently is implemented only during night hours, to cross-border SEAFRA H24. Planned simulation should provide enough data for safe implementation. SEAFRA H24 shall contribute to airspace users to fly more optimal routes, without constraints of fixed route network structure. To provide most optimum operational solution for SEAFRA reorganisation of airspace is needed. The project starts with preparation for simulation, real time simulation,

analysis of simulated data and implementation. Implementation will be done based on conclusions of simulation and analysis that will be done after it. The project shall be done taking into consideration all stakeholders requirements. Common procedures for implementation will be synchronized and on time agreed.

Existing night SEARFA provided with expected results and it is considered as adequate guidelines for improvement. Accordingly night cross-border SEAFRA and simulation SEAFRA H24 may show as a good source of data for full SEAFRA in the future.

- **Internal Achievement Points**
 - Start of training (Start of training for of operating personnel for SEAFRA H24 implementation) - 15/10/2016
 - End of training (End of training of operating personnel for SEAFRA H24 implementation) - 31/12/2016
 - Parallel Operations / Operational Trials (not relevant)
 - Cutover - Software ready and successfully tested (Implementation date of 24H FRA) - 08/12/2016
 - Cutover and fall back period completed (End of project) - 28/02/2017

2015_051_AF3 VARP - VoIP ATC Radio Project

Start date: 16/02/2016

End date: 05/11/2020

- **Implementing Partners**
 - Croatia Control
- **Overview**

The VoIP ATC Radio Project (VARP) project aims to implement a modern IP-based VHF/UHF radio network in order to support flexible configuration of sectors.

The objective is to replace obsolete radio equipment, and to increase overall capacity of radio system used in ACC Zagreb. There are four radio sites meant to be equipped with modern Voice Over IP (VoIP) equipment (Japetic, Sljeme, Kozjak and Northern Adriatic).

The project consists of procurement of radio systems, installation of equipment, commissioning and testing.

After successful testing, the radio systems will be put into operational usage in existing environment. The final stage is migration into full VoIP operational usage.

The new radio system shall be IP based so the limitations of existing radio network in dynamic re-routing shall be solved. With IP based equipment, sector delegation between ACC shall be possible. With VARP project implemented, the controller working positions shall support the operating environment of more dynamic ASM and Free Route.

- **Internal Achievement Points**
 - Start of training (Factory Training of technical staff. Procurement of VoIP radio equipment is an implementation of new technology in air-ground communication, hence the training of technical staff is crucial for successful implementation.) - 10/04/2017
 - End of training (Factory Training of technical staff, certificates issue. All CCL's ATSEP (technical staff) is certified, so training certificates are mandatory for maintenance of procured VoIP radio equipment.) -

21/04/2017

- Parallel Operations / Operational Trials (Date when the Site1 is Operational in existing environment) - 08/09/2017
- Cutover - Software ready and successfully tested (All radio systems ready for VoIP integration. Compatibility tested) - 09/10/2020
- Cutover and fall back period completed (Fully functional VoIP integration) - 05/11/2020

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: 16/02/2016

End date: 31/12/2020

- Implementing Partners
 - COOPANS partners
 - Croatia control
- Overview

The project aims at harmonised system solutions for implementation of AF 3 Free Route Airspace, a harmonised Basic AMAN solution for AF 1 as common baseline for DP 2015 together with standardised Human Machine Interface (HMI) within COOPANS members, but also aligned with other European HMI programs.

Furthermore preparation of SWIM implementation by increasing Cyber Security is also included.

The work is conducted in COOPANS common activities, however contribution of Croatia Control is included in this IP.

It includes the following phases:

B3.3: Harmonisation and standardisation of technical infrastructure in 5 ANSP's and enhancement of system capacities and capabilities to cope with this project as well as future requirements such as the DP 2015.

New hardware and operating system: This is necessary to ensure standardised technical capability to support the implementation of this project as well as the near future DP 2015 projects and other international standards until approx. 2023 as SWIM requirements are not yet fixed.

This Build will include increased system capacities to support enlarged AoI's in support of Multi FAB FRA projects.

B3.4: FRA functional support optimisation, including NM interface, and exploitation of EAD.

Network Manager interface update: Ensure COOPANS is up to date to support the NM processes prior DP 2015 requirements.

ATC Flight Plan (AFP)/ ATC Flight Plan Change message (ACH) handling process update: Ensure COOPANS is up to date to support the NM processes prior DP 2015 requirements.

This build will support use of European AIS Database (EAD), as different Points with same name as well as same name at different lat/long will be treated automatically.

Furthermore it will introduce an AMAN in Vienna.

B4.1: New standardised HMI, including upgrade to modern HMI software, aligned between COOPANS and 4-Flight.

Java Human Machine Interface (jHMI) is the result of the SES study (2014-EU-TM-0376-M) and the CODACAS study (COOPANS-DSNA 2013-EU-40001-S) and is the implementation hereof.

It will ensure a modern HMI technology, together with ensuring standardization of the HMI element within the COOPANS partners, as well as harmonizing (60%) with the 4-Flight program in order to ensure European harmonization as well as future economy of scale.

Some parts of this project, which are not funded through this Action, started in 01/01/2016.

- Internal Achievement Points
 - Start of training - 01/03/2017
 - End of training - 15/12/2020
 - Parallel Operations / Operational Trials - N/A
 - Cutover - Software ready and successfully tested - B3.3: 31/05/2017; B3.4: 31/05/2018; B 4.1: 15/12/2020
 - Cutover and fall back period completed - B3.3: 31/12/2018; B3.4: 31/05/2018; B 4.1: 31/12/2020

2015_239_AF3 Flexible ASM and Free Route

Start date: 01/03/2016

End date: 31/12/2020

- Implementing Partners
 - Air Navigation Services of the Czech Republic (ANS CR)
- Overview

Project objective is the development of a national ASM (Airspace Management) tool. The national ASM tool will also be interconnected to the military ASM tool and interoperable with Network Manager.

The overall ASM system will allow pre-tactical, tactical and ad-hoc management of restricted areas to ensure safe and efficient operations.

Scope of ASM system functions:

- Pre-AUP (Airspace Use Plan), AUP and UUP (Updated Airspace Use Plan) management
 - preparation
 - creation
 - preview
 - update
 - distribution
- Collaborative online activation of restricted areas
 - Real time distribution of airspace status to cooperating systems
 - Processing of Aeronautical Information Exchange Model (AIXM) 5.1 format messages
 - NOTice To AirMen (NOTAMs) management
 - Interoperability with NM

The impacted functionalities/operations are:

- Free Route operations
- Safety Nets
- Segregated Airspace Probe
- Efficient operational coordination in civil-military environment
- Conditional Route management

The functional ASM system ensures compatibility for real time airspace status requirements.

- Internal Achievement Points
 - Start of training (training for operational staff) - 01/03/2020
 - End of training (training for operational staff) - 01/06/2020
 - Parallel Operations / Operational Trials (N/A for the time being, it will be based on the Analysis performed) - N/A
 - Cutover - Software ready and successfully tested (N/A for the time being, it will be based on the Analysis performed) - N/A
 - Cutover and fall back period completed (N/A for the time being, it will be based on the Analysis performed) - N/A

2015_242_AF3 Free Route implementation into ATM system of ANS CR

Start date: 01/03/2016

End date: 31/03/2020

- Implementing Partners
 - Air Navigation Services of the Czech Republic (ANS CR)
- Overview

The project aims at the implementation of system functions and tools allowing safe and efficient cross-border Free Route operations. This includes:

- Trajectory prediction and flight profile computation
 - Complex function allowing route analysis, 4D profile computation and corresponding constraints application
- MTCD
 - The Medium Term Conflict Detection (MTCD) is a tool which provides air traffic controllers with details of predicted, potential and risks of future conflicts between aircraft with automatic conflict severity detection.
- Probing functions
 - Check of Flight plan items on Conflict
- SAP function
 - Segregated Airspace Probe (SAP) is a tool which detects flight plan infringement of restricted areas
- Monitoring Aids
 - A set of tools providing flight plan conformity checks
- Related HMI functions
 - Cross-sector lists as from trajectory computation
 - Display of warnings and monitoring functions
- On-Line Data Interchange (OLDI) coordination
 - Notification and coordination messages, transfer of flights
- Airspace management functions

- A set of tool providing FUA (Flexible Use of Airspace) in an efficient manner
 - Internal Achievement Points
 - Start of training (ATCo and ATSEP) - 01/09/2019
 - End of training (ATCo and ATSEP) - 31/12/2019
 - Parallel Operations / Operational Trials (Shadow operations) - 01/01/2020
 - Cutover - Software ready and successfully tested (Decision on cutover in 2019) - 26/03/2020
 - Cutover and fall back period completed - 31/03/2020

Activity 4: AF3 Flexible ASM and Free Route implementation - Part 2 (50% funding)

Combined operation of Flexible Airspace Management and Free Route enable airspace users to fly as closely as possible to their preferred trajectory without being constrained by fixed airspace structures or fixed route networks. It further allows operations that require segregation, for example military training, to take place safely and flexibly, and with minimum impact on other airspace users.

It is composed by the following technical families:

S-AF 3.1: ASM and Advanced FUA:

- Family 3.1.1: (Initial) ASM Tool to support AFUA
- Family 3.1.2: ASM management of real time data
- Family 3.1.3: Full rolling ASM/ATFCM process and ASM information sharing
- Family 3.1.4: Management of Dynamic Airspace Configurations

S-AF3.2: Free Route:

- Family 3.2.1: Upgrade of ATM systems (NM, ANSPs, Airspace Users) to support Direct Routings (DCTs) and Free Route Airspace (FRA)
- Family 3.2.3: Implement Published Direct Routings (DCTs)
- Family 3.2.4: Implement Free Route Airspace

Sub-activity 4.1 - AF3 Flexible ASM and Free Route – Part 2

Leader: SDM (NATS on behalf of) as part of Action coordination

Start Date: 16/02/2016

End Date: 31/12/2020

The present activity aims at coordinating the implementing initiatives within the scope of the AF3 and its Sub AFs, for those projects with a co-financing rate of 50%.

According to Deployment Programme Methodology, each Implementing Partner will support SDM during Cost Benefit Analysis (CBA) finalisation at Action Level.

SDM will steer the Implementing Partners to provide all contributions needed to prepare CBA according to the INEA guidelines.

Deliverables:

4.1.1 Action Status Report (ASR) – AF Level - 31/01/2017 (every year until 2020)

4.1.2 Validation Registry - Risks and Issues and Mitigation Actions – AF Level - 30/04/2017

(three times per year until 2020)
4.1.3 Final Report - 31/12/2020

Sub-activity 4.2 - AF3 Flexible ASM and Free Route – Part 2 Implementation Projects

2015_227_AF3_B Borealis FRA Implementation (Part 2)

Start date: 16/02/2016

End date: 31/12/2020

- Implementing Partners
 - Borealis
 - Estonian Air Navigation Services (EANS)
- Overview

Executive Summary

The Borealis Alliance has developed significantly since the initial implementation of Free Route Airspace (FRA) between Denmark and Sweden. The Alliance has continued to grow greater in its collaboration and the next stage of FRA within Borealis was the establishment of Free Route in NEFAB (North European Functional Airspace Block) on 12th November 2015, which enables operators to plan and take their preferred trajectories in Estonia, Finland, Latvia and Norway. This project will further aid the nine members of Borealis to develop and implement their respective programmes increasing FRA operations throughout the collective Borealis airspace. Together, the Borealis Alliance members provide air traffic services for 3.8m flights a year across 12.5 million km² of North European airspace, accounting for 38% of European airspace. The programme is very mature and its capabilities will also fulfil most, if not all, of the AF 3 family activities well in advance of the PCP mandate of 1st January 2022.

Description of work

FRA is a key element 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. Within the Preliminary Deployment Programme FRA is sub-ATM functionality S-AF3.2: Free Route. The target date for implementing FRA is 1 January 2022 above flight level 310 in the ICAO EUR region.

The Performance Review Body and the Network Manager (NM) have highlighted the need to pay particular attention to interfaces between the FABs and the deployment of FRA initiatives to achieve the flight efficiency targets for second reference period (RP2) of the Performance Scheme. This activity is the synchronised implementation of FRA at FAB and also inter-FAB level and is aligned to the FRA CONOPS (Concept of Operations) that is described in the Network Manager's European Route Network Improvement Plan (ERNIP) Part 1. Part 2 of the ERNIP describes the NM objectives for implementing FRA and the current status of implementation across Europe.

The implementation of FRA throughout the region covered by the Borealis Alliance is broken down into three parts:

- Part 1: Implementation of FRA in the North European Free Route Airspace (NEFRA) region consisting of the DK/SE FAB and NEFAB (this scope has been covered in INEA 2014 Cluster).

- Part 2: Implementation of FRA within the Borealis FRA region except for London FIR and part of Scottish FIR (this scope is covered within this IP).
- Part 3: Full implementation of FRA across the Borealis FRA.

This Implementation Project aims to develop Part 2 of the Borealis FRA Programme. The Borealis FRA will be expanded by joining the Scottish and Irish Airspace and Icelandic airspace to the already implemented NEFRA. The Borealis FRA, which is of approximately 21.5 million square kilometres, will extend across nine FIRs, including a European neighbouring country, Iceland.

In addition to the work being undertaken on Free Route Airspace, the ANSPs within the Borealis Alliance are undertaking tasks to implement Family 3.1.2 - ASM Management of real time airspace data to support their implementation of Airspace Management and Flexible Use of Airspace. The work being undertaken will enhance airspace management by automating the exchange services of ASM data during the tactical phases (continuously in real time).

To further assist the implementation of FRA, and to ensure that the implementation is optimised from the perspective of the airspace users, the Borealis Alliance is involving Ryanair in the planning and implementation of FRA. This has a number of benefits, including to ensure one of the heaviest users of the Borealis airspace volume can put FRA to best use, provide airspace user insight to the risk and safety elements of the programme and to understand and mitigate the impact of the changes required by the airline to implement FRA with flight crew and operational staff training, new procedures, and to enable a thorough post-implementation performance assessment using real-world data for flights within the Borealis airspace volume. This part of the IP is focused on the implementation within Estonian Air Navigation Services (EANS).

Current status of Borealis FRA programme

The North European Free Route Airspace (NEFRA) operations has commenced on 12 November 2015 by joining the FRA operations across Estonia, Latvia, Finland, Norway. On 33 June 2016 border between two FRA areas - NEFAB EAST FRA (Estonia, Latvia and Finland) and DK-SE FAB FRA (Denmark and Sweden) - was opened for cross-border FRA operations.

The Borealis FRA Concept of Operation (CONOPs) has been drafted by the Borealis FRA Project Group and has been through a range of internal reviews. Draft CONOPs will be discussed with a range of stakeholders (airlines and flight planning service providers) by the end of 2015. The outcome of this meeting has been summarised in the "Borealis FRA Stakeholder Consultation report". The Borealis FRA CONOPs will require an annual review and update.

The Borealis FRA Technical Specification document is yet to be drafted by the Borealis FRA Technical Sub-group. The work commenced in October 2015 with the aim to finalise it by March 2016. The Borealis FRA Technical Sub-group is also tasked to draft the technical validation plan.

The Borealis FRA Programme Management Plan (PMP) has been drafted by the Borealis FRA Project Group. The document contains details regarding the seven implementation steps and the additional NEFRA Phase 2/Borealis FRA activities that should lead towards the achievement of the Borealis FRA vision by 2021. The Borealis FRA PMP will require an annual review and update.

The Borealis FRA Airspace Modelling/Simulation Sub-group has been formed in October 2015 with the aim of supporting the Network Manager's preparation of the Borealis FRA

System for traffic Assignment and Analysis at Macroscopic level (SAAM) model, defining the scope of the required airspace modelling, fast-time and real-time simulations, and drafting the operational validation plan.

The Borealis FRA Communication and Engagement Plan has been drafted by the Borealis Communication Focal Points and has been through a range of internal reviews. This document will require an annual review and update.

The Borealis FRA Cost Benefit Analysis work commenced in December 2015 with the initial set of results expected in spring 2016. These initial results will be further validated in autumn 2016 when the Borealis FRA CBA is expected to be finalised.

- Internal Achievement Points
 - Start of training (Multiple dates- one for each implementation step) - 16/02/2016
 - End of training (Multiple dates - one for each implementation step) - 30/12/2020
 - Parallel Operations / Operational Trials (Multiple dates - one for each implementation step) - 30/12/2020
 - Cutover - Software ready and successfully tested (Multiple dates - one for each implementation step) - 31/03/2020
 - Cutover and fall back period completed (Multiple dates - one for each implementation step) - 30/12/2020

Activity 5: AF4 Network Collaborative Management implementation

Network Collaborative Management improves the European ATM network performance, notably capacity and flight efficiency through exchange, modification and management of trajectory information. Flow Management shall move to a Cooperative Traffic Management (CTM) environment, optimizing the delivery of traffic into sectors and airports and the need for Air Traffic Flow and Capacity Management (ATFCM) measures.

It is composed by the following technical families:

S-AF 4.1: Enhanced STAM:

- Family 4.1.1: STAM phase 1
- Family 4.1.2: STAM phase 2

S-AF 4.2: Collaborative NOP:

- Family 4.2.2: Interactive rolling NOP
- Family 4.2.3: Interface ATM systems to NMS
- Family 4.2.4: AOP/NOP Information Sharing

S-AF 4.3: Calculated Take-off Time to Target Times for AFTCM Purposes:

- Family 4.3.1: Target Time for ATFCM purposes
- Family 4.3.2: Reconciled Target times for ATFCM and arrival sequencing

S-AF 4.4: Automated Support for Traffic Complexity Assessment:

- Family 4.4.2: Traffic Complexity Tools

Sub-activity 5.1 - AF4 Network Collaborative Management

Leader: SDM (NATS on behalf of) as part of Action coordination

Start Date: 16/02/2016

End Date: 31/12/2020

The present activity aims at coordinating the implementing initiatives within the scope of the AF4 and its Sub AFs, for those projects with a co-financing rate of 85%.

According to Deployment Programme Methodology, each Implementing Partner will support SDM during Cost Benefit Analysis (CBA) finalisation at Action Level.

SDM will steer the Implementing Partners to provide all contribution needed to prepare CBA according to the INEA guidelines.

Deliverables:

5.1.1 Action Status Report (ASR) – AF Level 31/01/2017 (every year until 2020)

5.1.2 Validation Registry - Risks and Issues and Mitigation Actions – AF Level 30/04/2017 (three times per year until 2020)

5.1.3 Final Report (31/12/2020)

Sub-activity 5.2 - AF4 Network Collaborative Management – Implementation Projects

2015_217_AF4 tCAT implementation in Sofia ACC

Start date: 04/04/2016

End date: 01/10/2020

- Implementing Partners
 - BULATSA
- Overview

The objective of this project is to deploy a Traffic Complexity Assessment Tool (tCAT) in Sofia ACC. The tCAT is intended to be a non-intrusive decision support tool which uses a combination of the predicted traffic to create a cognitive workload assessment and provide analysis of the complexity of the ATC operations to allow accurate planning of ANSP resources to manage that complexity in an efficient and cost-effective manner. The tool will be active on a continuous 24/7 cycle using latest Flight Plan and Flight Data Processing Systems (FDPS) information combined with other traffic prediction data to continuously evaluate the future workload outlook for all possible airspace configurations defined for specific geographical area.

Activities will include:

1. Researching and collecting best practices from ANSPs which already have implemented/ are in process of implementation of such functionalities.
2. Developing a technical specification of tCAT and performance requirements in order to exchange the appropriate data with the existing Aeronautical Fixed Telecommunications Network (AFTN) / ATS Message Handling System (AMHS) and OLDI message systems (for current implementation).
3. Developing Concept of Operations (CONOPS) and detailed procedures for tCAT use in regard to human resources and ATM sector management.
4. Procurement of equipment and services based on the developed technical

specifications and CONOPS.

5. Developing tCAT Safety Case which demonstrates effective sector management based on traffic volume and sector complexity (therefore mitigating ATCO personnel overloads).
6. tCAT development and implementation within Sofia ACC operational environment.
7. Other activities related to the tCAT operational deployment.

Considering the substantial increase of air traffic over the territory of Republic of Bulgaria as a direct result of the shifted traffic patterns due to the crisis in Ukraine and Syria, closed airspace portions of Iran and Iraq, the tCAT will prove to be a valuable asset towards the optimal allocation of resources and managing of the complexity of the ATC operations. Additionally, summer convective weather is also a major concern related to the complexity of the ATC operations (especially between May and September). Despite the high occurrence of traffic avoiding severe convective weather no capacity reduction is usually declared and the extra workload is absorbed by the application of new sectorisation.

- Internal Achievement Points

- Start of training (As provided in WP6 Conduct Training: Perform the training to the concerned personnel according to the tCAT training plans.) - 02/12/2019
- End of training (As provided in WP6 Produce Training Records. The outcome of the training will be recorded and it is considered with this activity 'End of training' phase is concluded.) - 31/12/2019
- Parallel Operations / Operational Trials (As provided in WP8 Prepare and Execute the Transition Plan. Operational trials will commence on 1.4.2020. WP8 envisages seamless transition from testing and validation phase to continuous operational use.) - 31/03/2020
- Cutover - Software ready and successfully tested (As provided in WP8 Prepare and Execute the Transition Plan: Performing transition to ops with SW ready and successfully tested is planned at 01.06.2020 and post-implementation monitoring process will commence) - 31/05/2020
- Cutover and fall back period completed (As provided in WP8 Post Implementation Monitoring: The conclusion of the post implementation monitoring process, scheduled for 01.10.2020, precludes the fall back period) - 30/09/2020

2015_240_AF4 Traffic Complexity Tools

Start date: 16/02/2016

End date: 01/05/2018

- Implementing Partners
 - Air Navigation Services of the Czech Republic (ANS CR)
- Overview

The objective is to provide support in the management of the traffic load over LKAA area. Support should be primarily provided to Prague Area Control Centre (ACC) Flow Manager Position. Secondary service would be provided to Prague ACC/Approach (APP) control sectors.

The main goal is to establish an autonomous tool that would provide support to flow manager position. Tool should be based on existing Flight Data Processing System (FDPS) load prediction modules and provide following functional services:

- Overview of traffic load within LKAA, broken down to LKAA elementary sectors
- Calculation of traffic load figures based on different criteria (e.g. proportion between level and vertical movement flights etc.)
- Indication and warning if traffic load figures exceed defined thresholds
- What-if functionality allowing modelling predicted air situation based on changes of attributes of certain group of flights, changes of structure of the airspace
- Interface to Network Manager Operating Center (NMOC) flow management unit.

Tool should mainly interface with NMOC and local ATM system.

- Internal Achievement Points
 - Start of training (training for operational staff) - 20/03/2018
 - End of training (training for operational staff) - 10/04/2018
 - Parallel Operations / Operational Trials (Several operational trials to be performed; the milestone indicates the last and final one) - 01/03/2018
 - Cutover - Software ready and successfully tested (start of operational usage) - 30/04/2018
 - Cutover and fall back period completed – N/A

Activity 6: AF5 Initial SWIM implementation - Part 1 (85% funding)

System Wide Information Management (SWIM) concerns the development of services for information exchange. SWIM comprises standards, infrastructure and governance enabling the management of information and its exchange between operational stakeholders via interoperable services.

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.

It is composed by the following technical families:

S-AF 5.1: Common Infrastructure Components:

- Family 5.1.1: Pan-European Network Services (PENS) 1
- Family 5.1.2: Future PENS
- Family 5.1.3: Common SWIM Infrastructure Components

S-AF 5.2: SWIM Infrastructures and Profiles:

- Family 5.2.1: Stakeholder Internet Protocol Compliance
- Family 5.2.2: Stakeholders' SWIM infrastructure components

S-AF 5.3: Aeronautical Information Exchange:

- Family 5.3.1: Upgrade / Implement Aeronautical Information Exchange System / Service

S-AF 5.4: Meteorological Information Exchange:

- Family 5.4.1: Upgrade / Implement Meteorological Information Exchange System/ Service

S-AF 5.5: Cooperative Network Information Exchange:

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

S-AF 5.6: Flights Information Exchange:

- Family 5.6.1: Upgrade / Implement Flights Information Exchange System/ Service

Sub-activity 6.1 - AF5 Initial SWIM – Part 1

Leader: SDM (NATS on behalf of) as part of Action coordination

Start Date: 16/02/2016

End Date: 31/12/2020

The present activity aims at coordinating the implementing initiatives within the scope of the AF1 and its Sub AFs, for those projects with a co-financing rate of 85%.

According to Deployment Programme Methodology, each Implementing Partner will support SDM during Cost Benefit Analysis (CBA) finalisation at Action Level.

SDM will steer the Implementing Partners to provide all contribution needed to prepare CBA according to the INEA guidelines.

Deliverables:

6.1.1 Action Status Report (ASR) – AF Level - 31/01/2017 (every year until 2020)

6.1.2 Validation Registry - Risks and Issues and Mitigation Actions – AF Level - 30/04/2017 (three times per year until 2020)

6.1.3 Final Report - 31/12/2020

Sub-activity 6.2 - AF5 Initial SWIM – Part 1 Implementation Projects

2015_035_AF5 LAN network upgrade

Start date: 16/02/2016

End date: 28/10/2020

- Implementing Partners
 - POLISH AIR NAVIGATION SERVICES AGENCY (PANS)
- Overview

Communication infrastructure is a vital part of common tools for ATCO. Transmission and exchange of data allow to improve ATM quality. Dedicated communication infrastructure for ATM purposes, through a local area network (LAN), is needed for providing appropriate level of quality. Number of data in ATM is still growing from year to year. The concept of shared LAN infrastructure was sufficient few years ago, but considering the current growing amount of data and more demanding requirements for transmission, it became necessary to split data transmission infrastructure on several independent parts, where the most important will be SWIM-ready ATM operational part. Such upgrade and development for communication infrastructure is strongly related with increasing capabilities, which are

required for providing appropriate security level. It will also allow to improve management of information flow, including especially integration existing legacy information solutions with SWIM environment. Such upgrade will also allow to achieve required Quality of Service (QoS) level, taking into account requirements related with Blue Profile and its technical advantages. It is also strongly related with growing amount of information, as a consequence of still more intensive cooperation between identified on national level stakeholders. The project supports: AF5 in developing information infrastructure and in particular AF 5.2.1 in developing of Stakeholder Internet Protocol Compliance. Cooperation with Military Stakeholder will allow to increase project efficiency and to multiply project benefits. Some parts of this project, which are not funded through this Action, started in 01/01/2015.

- **Internal Achievement Points**

- Start of training (Proper training for technical staff is a key for successful implementation. Well defined training objectives (system operations as well as maintenance and troubleshooting) are determinant for service capability.) - 20/12/2018
- End of training (At this moment, technical staff will be able to perform system maintenance. Training, provided by system manufacturer, should provide knowledge for personnel, allowing on proper system maintaining.) - 30/04/2019
- Parallel Operations / Operational Trials (Operational trials allow to verify if project goals are achieved. In next step, after positive verification, parallel operations will take place. For defined period of time, two communications systems will operate.) - 30/06/2020
- Cutover - Software ready and successfully tested (After successful verification of the platform, cutover will be performed. New platform will become main operational infrastructure. But after this, some defined period of time will spend for additional verification, when solution will operates on live traffic load. In this period fall back procedure will be possible.) - 29/09/2020
- Cutover and fall back period completed (When real traffic will verify solution proper functioning, fall back procedure will be disabled and back to previous solution will be impossible. Only the new one will be a component in data processing chain.) - 30/09/2020

2015_038_AF5 The ECG Communication System upgrade

Start date: 16/02/2016

End date: 31/12/2018

- **Implementing Partners**

- POLISH AIR NAVIGATION SERVICES AGENCY (PANS)

- **Overview**

Aeronautical Fixed Telecommunication Network (AFTN) / ATS Message Handling System (AMHS) allows to transmit and exchange data between all parties involved in use and management of airspace. It also allows to provide data in the simplest way (AFTN) as well as to provide more complex data services to more demanding users (AMHS). It is absolutely necessary to have ability of data exchange with Network Manager, based on services

available on Network Manager side (European Directory Service). In parallel, due to improve safety level, it is needed to prepare upgrade of AFTN/AMHS system taking into account contingency scenario. After such modification, even in contingency mode, all required services will be provided to the system clients, without degradation of data quality and accuracy. Such upgrade will also include requirements related with increasing from year to year data amount. The upgrade of Communication System, related with introduction new functionalities, is required by AF 5.3.1 and AF 5.4.1. It will support information exchange in areas mentioned in both AFs. This upgrade will allow also to achieve required security level. Such solution will be in line with AF 5.1.3 and, as a result, allow to integrate with security infrastructure provided by other components of infrastructure. Cooperation with Military Stakeholder (Military Air Traffic Service Office of the Polish Armed Forces) will allow to increase project efficiency and to multiply project benefits.

Some parts of this project, which are not funded through this Action, started in 01/01/2016.

- Internal Achievement Points

- Start of training (Proper training for technical staff is a key for successful implementation. Well defined training objectives (system operations as well as maintenance and troubleshooting) are determinants for course serviceableness) - 04/09/2017
- End of training (At this moment, technical staff will be able to perform system maintenance and use. Training, provided by system manufacturer, should provide knowledge for personnel, allowing on proper system handling and maintaining) - 15/09/2017
- Parallel Operations / Operational Trials (Operational trials allow to verify if project goals are achieved. In next step, after positive verification, parallel operations will take place. For defined period of time, two systems will operate) - 19/04/2018
- Cutover - Software ready and successfully tested (After successful verification of software platform, cutover will be performed. New platform will become main operational system. But after this, some defined period of time will spend for additional verification, when system will operates on live traffic load. In this period fall back procedure will be possible) - 09/12/2018
- Cutover and fall back period completed (When real traffic will verify system proper functioning, fall back procedure will be disabled and back to old system will be impossible. Only the new one will be a link in data processing chain) - 10/12/2018

2015_047_AF5 Modernisation of IP based G/G Data Network in CCL - CaRT/iWAN-NG

Start date: 16/02/2016

End date: 31/07/2017

- Implementing Partners

- Croatia Control

- Overview

The CaRT/iWAN-NG project aims to upgrade existing national IP-based ground-ground data

communications network in order to support information exchange (SWIM) according to new European standards on information exchange and services and to enable advanced QoS (Quality of Service) functionality to support Voice Over IP (VoIP) based voice communications. The scope of this application is the first, preparatory phase of the Implementation Project. The preparation phase includes consultancy services and development of a detailed design recommendation for national data network and Wide Area Network (WAN) transport infrastructure validated through Proof of Concept testing and precedes the actual implementation phase of the project. The preparation phase should provide enough information to perform more thorough estimate of the implementation phase scope, timeline and costs. The deliverables shall also provide technical requirements for the upcoming tendering process in the project implementation phase.

- Internal Achievement Points
 - Start of training (N/A for design phase)
 - End of training (N/A for design phase)
 - Parallel Operations / Operational Trials (N/A for design phase)
 - Cutover - Software ready and successfully tested (N/A for design phase)
 - Cutover and fall back period completed (N/A for design phase)

2015_049_AF5 CCL cyber security architecture - ExCO-NG

Start date: 16/02/2016

End date: 06/06/2017

- Implementing Partners
 - Croatia Control
- Overview

Initial System Wide Information Management (iSWIM) supports information exchanges that are delivered through an internet protocol (IP)-based network. The result is that ATM becomes increasingly IP interconnected across Europe which means that there is a strong requirement for appropriate cyber security measures.

Existing cyber security architecture (ExCO) is not able to fully support SWIM environment and therefore needs to be upgraded. This project addresses the cyber security component for SWIM implementation and is a prerequisite for implementation of Aeronautical Information Exchange Service (Family 5.3.1) in Croatia Control.

ExCO-NG (External Connections Next Generation) project aims to implement cyber security architecture which would enable acceptable level of security while supporting iSWIM information exchanges via IP based network by SWIM enabled ATM systems.

The scope of this IP is:

- Phase 1 - the consultancy services for development of a detailed design validated through Proof of Concept - goal of phase 1 is to obtain the design but also the list of equipment and services needed to fully implement ExCO-NG cyber security architecture (Contract execution with external partner is currently ongoing)
- Phase 2 - actual implementation phase of the project validated through Site Acceptance Test; goal of phase 2 is to procure equipment and services and to implement them into ExCO-NG cyber security architecture
- Phase 3 - transfer of the ExCO-NG architecture into operations

ExCO-NG needs to be in operation by March 2017 as a prerequisite for the other currently

ongoing key Croatia Control project "implementation of Aeronautical Information Exchange Service". ExCO-NG design shall be susceptible to requirements that may arise from future Centralised Services or equivalent coherent/integrated projects on European or FAB levels. This IP will follow EUROCONTROL initiative associated to Cybersecurity. Some parts of this project, which are not funded through this Action, started in 02/03/2015.

- Internal Achievement Points
 - Start of training - 03/03/2017
 - End of training - 23/05/2017
 - Parallel Operations / Operational Trials - 18/04/2016
 - Cutover - Software ready and successfully tested - 06/06/2017
 - Cutover and fall back period completed - 06/06/2017

2015_145_AF5_B AIM Deployment Toolkit

Start date: 01/04/2016

End date: 31/12/2020

- Implementing Partners
 - Air Navigation Services of the Czech Republic (ANS CR)
- Overview

A number of Operational Improvements (OI) identified in the scope of EU 716/2014 are conditioned by the availability of digital environment data (i.e. aeronautical data and information) to all involved operational stakeholders in a timely manner and which would maximise the foreseen safety and efficiency gain for the European Air Traffic Management Network (EATMN). It is expected that local Aeronautical Information Service (AIS) / Aeronautical Information Management (AIM) systems and other aeronautical data originators and providers shall enable this capability and the upload of changing local data required for various PCP (mainly related to 'Extended AMAN and PBN in high density TMA', 'Airport Integration and Throughput' and 'Flexible ASM and Free Route'). However, in the current European environment there is a need for coordinated and synchronised approach to ensure that the AIS/AIM Systems (together with various data originators) of all European States would enable this capability in a similar manner. There is a potential risk of isolated developments (e.g. airport mapping databases) that would later require adjustments for complying with future various standardisation activities.

International deployment guidance being mostly performance based requires further add-ons to ensure the required interoperability levels in the European environment. The need has been identified by the European AIS/AIM stakeholders for practical guidance on the provisions of aeronautical and aerodrome mapping data within the context of SWIM, electronic terrain and obstacle data and the deployment of Digital Notice to Airmen (NOTAM). This will ensure a harmonised and coordinated deployment implementation by all European States AIS/AIM services.

The project will resolve the identified gap and will contribute to defined OIs, improving at the same time the dialogue between the various European stakeholders involved in the collection and provision of these data. The project is organised in three main work areas, as detailed below:

Digital Aeronautical Data Toolkit for Airports, enabling 'Extended AMAN and PBN in high

density TMA' (AF1) and 'Airport Integration and Throughput' (AF2).

In the context of SWIM, the responsibility for the provision of digital data is pushed as much as possible towards the data originators, in order to improve the integrity and the efficiency of the process. This requires the provision of tools/services that support the data originators in this process whilst also aligning to the SWIM Standards used in the context of the PCP.

Based on the Digital NOTAM Event Specification the toolkit will provide airport side encoding rules for specific events, such as runway closures, airspace activation, nav-aid outages, etc., thereby filling an existing gap. In addition the toolkit will work on airport mapping, terrain and obstacle reference data which are needed in the context of SWIM enabled applications such as the Digital NOTAM and which will be used in the context of downstream and related airport SWIM enabled applications (e.g. AMDB context).

The project will provide a set of tools that enable airport operators of the PCP airports list:

- To provide Digital NOTAM pre-encoded data;
- To manage underlying aeronautical airport data and data products, including the airport mapping, terrain and obstacle aspect;
- To perform SWIM data transformations (e.g. between Aerodrome Mapping Database (AMDB) and Digital NOTAM format).

Several airports have been contacted to participate as clients in the deployment of the toolkit and they confirmed interest. Their participation will be organised through the stakeholder consultation task.

With the implementation of the digital NOTAM process, static and dynamic data management for NOTAM creation is integrated, and maintenance of static data sets, current AIS procedures and processes in managing aeronautical information and data will change. The current division between static and dynamic aeronautical and data management with separate processes disappears. The shift in responsibilities in the data chain, where the originators of the information takes on a new role as provider of digital data, including the data quality aspects, requires an update of current AIS data processes as well as the static data procedures as described today.

Updated guidelines are needed to describe in detail the procedures and actions to be undertaken to manage aeronautical information and data for the purpose of a digital AIS provision in the SWIM environment. The guidance will recognize the new roles and responsibilities in the digital aeronautical data change in the context of SWIM, and serve as a baseline for AIS/AIM stakeholders in establishing quality assured processes in operations.

The project will provide guidance on Aeronautical Digital Data Management Processes and Procedures with required actions within the digital data chain, for origination, receipt, storage and provision of digital aeronautical data through SWIM enabled services.

Guidance for electronic obstacle and terrain data provision mainly enabling 'Extended AMAN and PBN in high density TMA' (AF1).

The terrain and obstacles datasets are the first digital datasets required to be provided by the States in accordance with the ICAO Standards and Recommended Practices (SARPs). The existing guidance material supporting States' implementation and provision of these datasets requires amplification with additional European guidance for obstacle data collection specifications, data product specifications, generic national Terrain and Obstacle Data (TOD) policy/regulatory framework, dataset provision procedures, reference datasets, guidance covering cross-border issues.

The project will provide guidance on obstacle and terrain data provision.

ADQ implementation events in states

The Implementation of EU Regulation 73/2010 on Aeronautical Data and Information Quality (ADQ) is being progressed and implemented by Member States; however, they are facing significant implementation difficulties resulting in non-compliance. One key issue is linked with diverse and manifold regulated parties, notably Data Originators, who lack consistent ADQ understanding, hence lack implementation commitment. There is a need for a coordinated approach to ensure that all regulated parties would achieve consistent understanding on the provisions including relevant means of compliance. The underlying requirement has been requested by the ADQ regulators working group.

- Internal Achievement Points
 - Start of training (This training concerns the ADQ training events) - 15/09/2016
 - End of training (This training concerns the ADQ training events) - 31/12/2018
 - Parallel Operations / Operational Trials
 - Cutover - Software ready and successfully tested
 - Cutover and fall back period completed

2015_174_AF5_B NewPENS Stakeholders contribution for the procurement and deployment of NewPENS - Part B: Cohesion Call

Start date: 16/02/2016

End date: 31/12/2020

- Implementing Partners
 - Air Navigation Services of the Czech Republic (ANS CR)
 - BULATSA
 - Croatia Control
 - LETOVÉ PREVÁDZKOVÉ SLUŽBY, ŠTÁTNY PODNIK (LPS SR)
 - ROMATSA
- Overview

The project aims at procuring and deploying, in cooperation with ANSPs, Airports, Airlines, MET Providers and Military, the New Pan-European Network Services (PENS) network, an IP services based Ground-Ground network that will replace the current PENS to support all SWIM Information Exchanges - and in particular the IOP Flight Object, as well as other Information Exchanges in order to become the unique international ATM network in the ICAO EUR/NAT Region. This project aims at achieving the availability of NewPENS and the migration from the current users' position (current PENS users or existing other arrangements) to NewPENS before the current PENS contract terminates.

Under the auspices of the European Commission, coordination took place between EUROCONTROL and the ANSPs of the A6 Alliance (A6 alliance is an alliance of the six ANSP members of the SESAR JU – DFS (Germany), DSNA (France), ENAIRE (Spain), ENAV (Italy), NATS (UK) and NORACON – a consortium including Austro Control (Austria), AVINOR (Norway), EANS (Estonia), Finavia (Finland), IAA (Ireland), LFV (Sweden) and Naviair (Denmark)). The jointly developed NewPENS Governance structure, Procurement approach and Cost sharing were presented to all ATM Stakeholders in a workshop on 3rd of June 2015. A Common Procurement Agreement (CPA) has been

developed and in September 2016, 35 stakeholders have already signed it. The EUROCONTROL Centralised Service 8 (CS8) feasibility study (funded through Action 2013-BE-40004-S) and an A6 Alliance PENS2 feasibility study (2013-EU-40002-S), concluded with the technical feasibility of NewPENS.

The proposed project includes the contribution of EUROCONTROL and of all the Parties who join the project by signing, as a minimum, the Common Procurement Agreement (CPA). All project partners have either delegated members to the Common Procurement Task Force (CPTF) (a TF in charge of collecting and structuring the NewPENS Call for Tenders, evaluating the bids and selecting the NewPENS Service Provider) or feed the CPTF with their specific requirements and review the CFT developed by the CPTF. Once the Contract will be signed, the network will be set up and accepted to the point where the network is ready to connect to the Users participating to the Contract; this includes the transition of the current Users' positions (current PENS Users or existing other arrangements) to NewPENS.

Note: this IP is twinned with 2015_174_AF5_A (NewPENS Stakeholders contribution for the procurement and deployment of NewPENS – Part A; General call) present in Action 2015-EU-TM-0196-M. The two IPs together form the complete project.

- Internal Achievement Points
 - Start of training (At least one technical personnel of one NewPENS Signatory has been trained to manage connection to and to deploy applications on NewPENS) - 01/11/2018
 - End of training (At least one technical personnel of each NewPENS Signatory has been trained to manage connection to and to deploy applications on NewPENS) - 30/06/2019
 - Parallel Operations / Operational Trials (The NewPENS Signatories have proceeded to the verification testing of at least one application running on NewPENS) - 30/09/2018
 - Cutover - Software ready and successfully tested (The NewPENS Signatories have validated the deployment of at least one application on NewPENS) - 30/06/2019
 - Cutover and fall back period completed (The NewPENS Signatories have validated the running of at least one application on NewPENS, including contingency measures) - 31/12/2020

2015_241_AF5 Meteorological Information Exchange Service

Start date: 01/03/2016

End date: 01/12/2020

- Implementing Partners
 - Air Navigation Services of the Czech Republic (ANS CR)
 - CHMI (Czech Hydrometeorological Institute)
- Overview

The general objective of the project is to provide SWIM compliant interface for access to all aeronautical meteorological information produced in LKAA Flight Information Region (FIR) (from both Civil and Military sources, including current standard Operational Meteorological

(OPMET) and new meteorological products for international exchange and ATM usage).

Work in the project would consist of:

- Transposition of all relevant MET information covering LKAA/area of interest into SWIM compliant standard formats (WXXM/IWXXM)
- Building of SWIM enabled communication interface for MET information exchange service using (mainly) Yellow SWIM Technical Infrastructure (TI) profile
- Provision of all MET related information from LKAA FIR for input into ATM system and international SWIM based exchange

Project should enable:

- Availability of all ATM related MET data/products from current (ICAO Annex 3 OPMET) and new (Remote sensing data, detailed ground based MET observations, Wind aloft products etc.) data sources
 - Simultaneous provision of traditional message formats and eXtensible Markup Language (IWXXM) coded MET information
 - Access to WXXM/IWXXM formatted MET data for legacy ATM systems of ANS CR.
- Internal Achievement Points
 - Start of training - 01/03/2019
 - End of training - 31/08/2019
 - Parallel Operations / Operational Trials - 30/09/2019
 - Cutover - Software ready and successfully tested (expected implementation date of ICAO Annex 3, AMD-78) - 01/01/2020
 - Cutover and fall back period completed - 01/12/2020

2015_243_AF5 Aeronautical Information Distribution Service

Start date: 01/06/2016

End date: 31/12/2018

- Implementing Partners
 - Air Navigation Services of the Czech Republic (ANS CR)
- Overview

The general objective is to provide interface based on web services technology that allows to provide static aeronautical information from Aeronautical Information Service (AIS) database systems and pre Digital Notices to Airmen (NOTAMs) to the other systems (ATM systems, other AIS units). This interface ("distribution service") will support data exchange using the Yellow SWIM Technical Infrastructure (TI) Profile focused on Aeronautical information features on request (including filtering by feature type, name and an advanced filter with spatial, temporal and logical operators), Aerodrome mapping data and Airport Maps providing (including electronic Terrain and Obstacle Data / eTOD) and dynamic data (pre D-NOTAMs). Service implementation will be compliant with the applicable version of Aeronautical Information Reference Model (AIRM) and the service will be provided based on the Information Service Reference Model (ISRM).

- Internal Achievement Points
 - Start of training - 01/07/2017
 - End of training - 30/06/2018

- Parallel Operations / Operational Trials (Operational Trials only) - 30/06/2018
- Cutover - Software ready and successfully tested - 30/06/2018
- Cutover and fall back period completed - 30/06/2018

2015_262_AF5 Aeronautical Data Quality and Exchange

Start date: 16/02/2016

End date: 03/12/2018

- Implementing Partners
 - Portuguese Air Force
- Overview

The project has the objective of ensuring the appropriate aeronautical data quality levels according to applicable legislation in order to access the European Aeronautical Database (EAD), implementation of LARA (Local And sub-Regional Airspace Management Support System), Aeronautical Message Handling System (AMHS), Aeronautical Information Management (AIM), training and education. LARA installation is already underway, pending the release of a new software version by EUROCONTROL, this project is being implemented in coordination with the civilian ANSP as the basis for new National ASM Cell policy. Access to EAD Pro is going to be procured and provided to Portuguese Air Force (PRTAF) ATC Management. AMHS and AIM systems shall be configured (Hardware and Software) to meet PRTAF requirements and the equipment shall be installed on all PRTAF operational facilities, integrated within the local operational environment and tested in coordination with the National ANSP (COMMS Center). Potential use of future geographic databases to sustain navigation roles (AF1) is considered.

Some parts of this project, which are not funded through this Action, started in 01/01/2016.

- Internal Achievement Points
 - Start of training (Beginning of training activities for maintenance and operations) - 02/04/2018
 - End of training (End of all training activities for maintenance and operations, delivery of training certificates) - 29/06/2018
 - Parallel Operations / Operational Trials (Beginning of the tests in operation) - 02/07/2018
 - Cutover - Software ready and successfully tested (SAT completed) - 30/03/2018
 - Cutover and fall back period completed (Fully operational system) - 03/12/2018

Activity 7: AF5 Initial SWIM implementation - Part 2 (50% funding)

System Wide Information Management (SWIM) concerns the development of services for information exchange. SWIM comprises standards, infrastructure and governance enabling the management of information and its exchange between operational stakeholders via interoperable services.

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.

It is composed by the following technical families:

S-AF 5.1: Common Infrastructure Components:

- Family 5.1.1: Pan-European Network Services (PENS) 1
- Family 5.1.2: Future PENS
- Family 5.1.3: Common SWIM Infrastructure Components

S-AF 5.2: SWIM Infrastructures and Profiles:

- Family 5.2.1: Stakeholder Internet Protocol Compliance
- Family 5.2.2: Stakeholders' SWIM infrastructure components

S-AF 5.3: Aeronautical Information Exchange:

- Family 5.3.1: Upgrade / Implement Aeronautical Information Exchange System / Service

S-AF 5.4: Meteorological Information Exchange:

- Family 5.4.1: Upgrade / Implement Meteorological Information Exchange System/ Service

S-AF 5.5: Cooperative Network Information Exchange:

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

S-AF 5.6: Flights Information Exchange:

- Family 5.6.1: Upgrade / Implement Flights Information Exchange System/ Service

Sub-activity 7.1 - AF5 Initial SWIM – Part 2

Leader: SDM (NATS on behalf of) as part of Action coordination

Start Date: 16/02/2016

End Date: 31/12/2020

The present activity aims at coordinating the implementing initiatives within the scope of the AF5 and its Sub AFs, for those projects with a co-financing rate of 50%.

According to Deployment Programme Methodology, each Implementing Partner will support SDM during Cost Benefit Analysis (CBA) finalisation at Action Level.

SDM will steer the Implementing Partners to provide all contribution needed to prepare CBA according to the INEA guidelines.

Deliverables:

7.1.1 Action Status Report (ASR) – AF Level - 31/01/2017 (every year until 2020)

7.1.2 Validation Registry - Risks and Issues and Mitigation Actions– AF Level - 30/04/2017 (three times per year until 2020)

7.1.3 Final Report - 31/12/2020

Sub-activity 7.2 - AF5 Initial SWIM – Part 2 Implementation Projects

2015_025_AF5_B Sub-regional SWIM MET deployment to support NEFRA (part B)

Start date: 01/06/2016

End date: 31/12/2018

- Implementing Partners
 - Estonian Environment Agency
- Overview

The aim of this project is to address ATM Functionality 5 (AF5) - Initial SWIM, sub-ATM functionality 5.4 Meteorological Information Exchange, one of the six functionalities included in the European ATM Master Plan. The readiness for deployment and production benefits has been demonstrated through SESAR and its Large Scale Demonstrations. The implementation of the main family 5.4.1 "Implement Meteorological Information Exchange System" will provide a seamless and interoperable exchange of MET information compliant with the SWIM architecture in and between Denmark, Finland and Sweden (part A) and Estonia (part B) for Terminal Aerodrome Forecast (TAF), METEorological Aerodrome Report (METAR), SIGnificant METEorologic information (SIGMET), Airmen's Meteorological Information (AIRMET) and Significant Weather Chart (SWC). The project shall take on a sub-regional approach to deploy the (I)WXXM format for MET data exchange in Northern European MET Service Providers and establish a sub-regional data exchange hub supporting the operation of the North European Free Route Airspace (NEFRA) and Borealis FRA. The project shall upgrade the capabilities of project contributors to provide all MET services in a SWIM-compliant manner, including the dissemination of chart products such as the SWCs and SIGMETs. The project will enable the MET service providers to offer their information in an open, transparent and interoperable manner and will offer end-users new opportunities to consume MET information.

The project will build upon the success of the Northern Europe Aviation Meteorology Consortium (NAMCON), collaboration between the National MET Service Providers of Northern Europe with the aim to improve consistency, harmonisation and cost-effectiveness of MET service provision in line with the Performance Targets set in Reference Period 2. The NAMCON consortium has to date already achieved cross-border TAF and SIGMET production between Denmark and Sweden, cross-border SWC production between Sweden and Finland and a joint aviation weather briefing portal developed by Danish Meteorological Institute. Deployment of (I)WXXM will greatly benefit from a multi-stakeholder approach by reducing the effort and cost for SWIM deployment.

This project will include:

- Development and implementation of a common system for the operational production of TAFs for civil airports in Estonia;
- Development and implementation of a common tool for the operational formatting of METARs for civil airports in Estonia in an iSWIM compliant exchange format;
- Development and implementation of a common system for the operational production of AIRMETs and SIGMETs for Tallinn FIR in an iSWIM compliant exchange format;
- Development and implementation of a common system for the operational production

of Significant Weather Charts (SWCs) in an iSWIM compliant exchange format for Tallinn FIR.

- Internal Achievement Points
 - Start of training (Training started as soon as a final version of tools available) - 01/01/2018
 - End of training (Training end depending on State needs, final date for all training provided) - 30/06/2018
 - Parallel Operations / Operational Trials (Operational trials staggered according to finished systems) - 30/04/2018
 - Cutover - Software ready and successfully tested (Final date for all software testing) - 30/04/2018
 - Cutover and fall back period completed (All national fall-back periods closed) - 31/08/2018

ARTICLE I.5 – MILESTONES AND MEANS OF VERIFICATION

Milestone number	Milestone description	Indicative completion date	Means of verification
1	Launch of the Action	18/11/2016	Framework Partnership Agreement (FPA) and Specific Grant Agreement (SGA) signature
2	Action Work Breakdown Structure and Organisational Breakdown Structure yearly updating	31/03/2020	Action WBS and OBS updated every year
3	Action GANTT yearly updating	31/03/2020	Action GANTT updated every year
4	Action Execution Progress Report	31/12/2020	Action Execution Progress Report
5	Quality Plan	31/12/2016	Quality Plan
6	Action CBA/Performance Analysis	31/03/2020	Action CBA/Performance Analysis
7	Communication Plan	31/12/2016	Communication Plan
8	Action Status Report (ASR) – AF1 Level	31/03/2020	Action Status Report (ASR) – AF1 Level
9	Validation Registry - Risks and Issues Mitigation Actions - AF1 Level	30/04/2020	Validation of Mitigation Registry – AF1 Level
10	Final Report AF1	31/12/2020	Final Report AF1
11	Action Status Report (ASR) - IPP Level AF1	31/03/2020	IPP Action Status Report (ASR)
12	IP periodical reporting (Risks and Issues; Mitigation Actions; CBA/Performance	30/04/2020	IP periodical reports AF1 (3 times per

	Analysis)		year)
13	Action Status Report (ASR) – AF3 Level	31/03/2020	Action Status Report (ASR) – AF3 Level
14	Validation Registry - Risks and Issues Mitigation Actions - AF3 Level	30/04/2020	Validation of Mitigation Registry – AF3 Level
15	Final Report AF3	31/12/2020	Final Report AF3
16	Action Status Report (ASR) - IPP Level AF3	31/03/2020	IPP Action Status Report (ASR)
17	IP periodical reporting (Risks and Issues; Mitigation Actions; CBA/Performance Analysis)	30/04/2020	IP periodical reports AF3 (3 times per year)
18	Action Status Report (ASR) – AF4 Level	31/03/2020	Action Status Report (ASR) – AF4 Level
19	Validation Registry - Risks and Issues Mitigation Actions - AF4 Level	30/04/2020	Validation of Mitigation Registry – AF4 Level
20	Final Report AF4	31/12/2020	Final Report AF4
21	Action Status Report (ASR) - IPP Level AF4	31/03/2020	IPP Action Status Report (ASR)
22	IP periodical reporting (Risks and Issues; Mitigation Actions; CBA/Performance Analysis)	30/04/2020	IP periodical reports AF4 (3 times per year)
23	Action Status Report (ASR) – AF5 Level	31/03/2020	Action Status Report (ASR) – AF5 Level
24	Validation Registry - Risks and Issues Mitigation Actions - AF5 Level	30/04/2020	Validation of Mitigation Registry – AF5 Level
25	Final Report AF5	31/12/2020	Final Report AF5
26	Action Status Report (ASR) - IPP Level AF5	31/03/2020	IPP Action Status Report (ASR)
27	IP periodical reporting (Risks and Issues; Mitigation Actions; CBA/Performance Analysis)	30/04/2020	IP periodical reports AF5 (3 times per year)

ANNEX II
ESTIMATED BUDGET OF THE ACTION

Table 1: Planned sources of financing of the eligible costs of the action

Financing sources	Amount of financial contribution to the action eligible costs (EUR)	Amount of financial contribution to the action eligible costs (EUR)	Amount of financial contribution to the action eligible costs (EUR)	Amount of financial contribution to the action eligible costs (EUR)	Amount of financial contribution to the action eligible costs (EUR)
	SDM	ROMATSA	PANSA	CHMI	ANS CR
1. CEF-Transport financing	318,915	188,914	3,040,450	121,550	8,878,905
2. Beneficiary's own resources	318,915	33,338	536,550	0	1,566,865.5
of which:					
(a) EIB loan	0	0	0	0	0
3. State budget(s)	0	0	0	21,450	0
4. Regional/ local budget(s)	0	0	0	0	0
5. Income generated by the action	0	0	0	0	0
6. Other sources	0	0	0	0	0
TOTAL	637,830	222,252	3,577,000	143,000	10,445,770.5

Financing sources	Amount of financial contribution to the action eligible costs (EUR)	Amount of financial contribution to the action eligible costs (EUR)	Amount of financial contribution to the action eligible costs (EUR)	Amount of financial contribution to the action eligible costs (EUR)	Amount of financial contribution to the action eligible costs (EUR)
	EANS	BULATSA	LPS SR	NAPMA	Croatia Control
1. CEF-Transport financing	2,170,600	2,153,768	620,330	6,606,295	11,264,260
2. Beneficiary's own resources	2,170,600	380,076.75	109,470	1,165,817	1,987,810
of which:	0	0	0	0	0
(a) EIB loan	0	0	0	0	0
3. State budget(s)	0	0	0	0	0
4. Regional/ local budget(s)	0	0	0	0	0
5. Income generated by the action	0	0	0	0	0
6. Other sources	0	0	0	0	0
TOTAL	4,341,200	2,533,844.75	729,800	7,772,112	13,252,070

Financing sources	Amount of financial contribution to the action eligible costs (EUR)	Amount of financial contribution to the action eligible costs (EUR)	Amount of financial contribution to the action eligible costs (EUR)
	ESTE A	HC	PT AF
1. CEF-Transport financing	344,520	2,651,150	13,872,000
2. Beneficiary's own resources	0	467,850	0
of which:			
(a) EIB loan	0	0	0
3. State budget(s)	344,520	0	2,448,000
4. Regional/ local budget(s)	0	0	0
5. Income generated by the action	0	0	0
6. Other sources	0	0	0
TOTAL	689,040	3,119,000	16,320,000

Table 2: Indicative breakdown per activity and per beneficiary of estimated eligible costs of the action (EUR)

Activities	2016	2017	2018	2019	2020	Total	Pro-rata share of the estimated eligible costs (%)
ELIGIBLE DIRECT COSTS							
Activity 1	130,856	219,053	166,328	81,685	39,908	637,830	1
SDM	130,856	219,053	166,328	81,685	39,908	637,830	1
Activity 2	5,767,114	6,360,311	7,676,057	4,545,000	0	24,348,482	38.17
ANS CR	130,995	210,985	10,890	0	0	352,870	0.55
LPS SR	0	287,000	131,500	0	0	418,500	0.66
NAPMA	3,571,119	2,389,826	1,811,167	0	0	7,772,112	12.19
HC	0	327,500	477,500	0	0	805,000	1.26
PT AF	2,065,000	3,145,000	5,245,000	4,545,000	0	15,000,000	23.52
Activity 3	3,530,775	9,794,848	2,720,319	2,765,660	2,346,780	21,158,382	33.17
ANS CR	747,500	3,997,000	338,000	1,135,900	608,500	6,826,900	10.7
Croatia Control	2,768,442	3,577,140	2,303,860	1,629,760	1,738,280	12,017,482	18.84
HC	14,833	2,220,708	78,459	0	0	2,314,000	3.63
Activity 4	1,395,640	1,792,560	962,960	145,040	45,000	4,341,200	6.81
EANS	1,395,640	1,792,560	962,960	145,040	45,000	4,341,200	6.81
Activity 5	1,284,770	1,361,720	1,278,570	200,360	66,825	4,192,245	6.57
ANS CR	984,000	847,000	30,000	0	0	1,861,000	2.92
BULATSA	300,770	514,720	1,248,570	200,360	66,825	2,331,245	3.65

Activity 6		935,299	2,043,265	3,514,168	430,734	1,492,274	8,415,740	13.19
ROMATSA		30,180	33,766	48,658	54,824	54,824	222,252	0.35
PANSA		48,500	203,500	2,029,000	33,000	1,263,000	3,577,000	5.61
CHMI		19,000	20,000	82,000	20,000	2,000	143,000	0.22
ANS CR		170,400	744,150	229,650	172,250	88,550	1,405,000	2.2
BULATSA		11,000	11,000	83,600	71,600	25,400	202,600	0.32
LPS SR		41,500	25,200	143,100	52,500	49,000	311,300	0.49
Croatia Control		604,719	530,649	63,160	26,560	9,500	1,234,588	1.94
PT AF		10,000	475,000	835,000	0	0	1,320,000	2.07
Activity 7		41,160	333,520	314,360	0	0	689,040	1.08
ESTE A		41,160	333,520	314,360	0	0	689,040	1.08
TOTAL ELIGIBLE DIRECT COSTS		13,085,614	21,905,277	16,632,762	8,168,479	3,990,787	63,782,919	100
SDM		130,856	219,053	166,328	81,685	39,908	637,830	1
ROMATSA		30,180	33,766	48,658	54,824	54,824	222,252	0.35
PANSA		48,500	203,500	2,029,000	33,000	1,263,000	3,577,000	5.61
CHMI		19,000	20,000	82,000	20,000	2,000	143,000	0.22
ANS CR		2,032,895	5,799,135	608,540	1,308,150	697,050	10,445,770	16.38
EANS		1,395,640	1,792,560	962,960	145,040	45,000	4,341,200	6.81
BULATSA		311,770	525,720	1,332,170	271,960	92,225	2,533,845	3.97
LPS SR		41,500	312,200	274,600	52,500	49,000	729,800	1.14
NAPMA		3,571,119	2,389,826	1,811,167	0	0	7,772,112	12.19
Croatia Control		3,373,161	4,107,789	2,367,020	1,656,320	1,747,780	13,252,070	20.78
ESTE A		41,160	333,520	314,360	0	0	689,040	1.08
HC		14,833	2,548,208	555,959	0	0	3,119,000	4.89

PT AF	2,075,000	3,620,000	6,080,000	4,545,000	0	16,320,000	25.59
Annual instalments of maximum CEF contribution	28,372,781.2	0	13,632,570.9	6,863,853.4	3,362,451.15	52,231,656.65	81.89
SDM	174,954.5	0	83,164	40,842.5	19,954	318,915	0.5
ROMATSA	54,354.1	0	41,359.3	46,600.4	46,600.4	188,914.2	0.3
PANSA	214,200	0	1,724,650	28,050	1,073,550	3,040,450	4.77
CHMI	33,150	0	69,700	17,000	1,700	121,550	0.19
ANS CR	6,657,225.5	0	517,259	1,111,927.5	592,492.5	8,878,904.5	13.92
EANS	1,594,100	0	481,480	72,520	22,500	2,170,600	3.4
BULATSA	711,866.5	0	1,132,344.5	231,166	78,391.25	2,153,768.25	3.38
LPS SR	300,645	0	233,410	44,625	41,650	620,330	0.97
NAPMA	5,066,803.25	0	1,539,491.95	0	0	6,606,295.2	10.36
Croatia Control	6,358,807.5	0	2,011,967	1,407,872	1,485,613	11,264,259.5	17.66
ESTE A	187,340	0	157,180	0	0	344,520	0.54
HC	2,178,584.85	0	472,565.15	0	0	2,651,150	4.16
PT AF	4,840,750	0	5,168,000	3,863,250	0	13,872,000	21.75

Table 3: Indicative breakdown per beneficiary of the maximum CEF contribution (EUR)

	Estimated contribution	Pro-rata share of the maximum CEF contribution (%)
SDM	318,915	0.61%
ROMATSA	188,914	0.36%
PANSA	3,040,450	5.82%
CHMI	121,550	0.23%
ANS CR	8,878,905	17%
EANS	2,170,600	4.16%
BULATSA	2,153,768	4.12%
LPS SR	620,330	1.19%
NAPMA	6,606,295	12.65%
Croatia Control	11,264,260	21.57%
ESTEVA	344,520	0.66%
HC	2,651,150	5.08%
PT AF	13,872,000	26.56%
Total	52,231,657	100%