Ares(2015)5958294

Innovation and Networks Executive Agency

Department C - Connecting Europe Facility (CEF)

SPECIFIC AGREEMENT No INEA/CEF/TRAN/M2014/1037259
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 Vikboplan, 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. **Aéroports de Paris (ADP)** – established in France

18. **Belgocontrol (Belgocontrol)** – established in Belgium

19. **Brussels Aiport Company NV/SA (BAC)** – established in Belgium

20. **Business Integration Partners S.p.A. (BIP)** – established in Italy

21. **Aéroports de la Côte d'Azur (ACA)** – established in France

22. **European Organization for the Safety of Air Navigation (EUROCONTROL)** – established in Belgium

23. **Gatwick Airport Ltd (GAL)** – established in the United Kingdom

24. **Heathrow Airport Ltd (HAL)** – established in the United Kingdom

25. **Koninklijke Luchtvaart Maatschappij NV (KLM)** – established in The Netherlands

26. **Luchtverkeersleiding Nederland (Air Traffic Control The Netherlands) (LVNL)** – established in The Netherlands

27. **Romanian Air Traffic Services Administration (Romatsa RA) (ROMATSA)** – established in Romania

28. **Royal Netherlands Meteorological Institute (KNMI)** – established in The Netherlands

29. **Kobenhavns Lufthavne A/S (CPH)** – established in Denmark

30. **Ryanair Ltd (Ryanair)** – established in Ireland

31. **Schiphol Nederland BV (SNBV)** – established in The Netherlands

32. **Swedavia AB (Swedavia)** – established in Sweden

33. **Frankfurt Airport Services Worldwide (Fraport AG) (Fraport AG)** – established in Germany

34. **Flughafen Düsseldorf GmbH (FDG)** – established in Germany

35. **Flughafen München GmbH (FMG)** – established in Germany

36. **HungaroControl Air Navigation Services Pte Ltd Co. (HungaroControl)** – established in Hungary

37. **Air Navigation Services of the Czech Republic (ANS CR)** – established in the Czech Republic

38. **Slovenian Air Navigation Services Ltd (Slovenia Control) (SCL (KZPS))** – established in Slovenia

39. **Bosnia and Herzegovina Air Navigation Services Agency (BHANSA)** – established in Bosnia and Herzegovina

40. **Letové Prevádzkové Služby SR, Štátny Podnik (LPS SR, š. p.)** – established in Slovakia

41. **Avinor Flysikring AS (Avinor)** – established in Norway

42. **Estonian Air Navigation Services (EANS)** – established in Estonia

43. **Finavia Corporation (Finavia)** – established in Finland

44. **Hellenic Civil Aviation Authority (HCAA)** – established in Greece

45. **SJSC Latvijas gaisa satiksme (LGS)** – established in Latvia

46. **Navegação Aérea de Portugal (NAV Portugal, E.P.E.) (NAV Portugal)** – established in Portugal

47. **Alitalia - Società Aerea Italiana S.p.A. (Alitalia S.p.A.)** – established in Italy

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 SPECIFIC 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 **DP Implementation – call CEF 2014** ("the action"), action number **2014-EU-TM-0136-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 01/01/2014 ("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 318,576,896.42**

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 643,794,513.04 according to the following conditions:

(a1) Reimbursement of 20% of the eligible costs for the direct costs of the following activities: Activity 4, 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 beneficiary's usual cost accounting practices ("reimbursement of costs declared on the basis of the beneficiary's usual cost accounting practices") for personnel costs

(a2) Reimbursement of 50% of the eligible costs for the direct costs of the following

activities: Activity 1, Activity 2, Activity 3, Activity 5, Activity 7, Activity 8, Activity 9, 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 beneficiary's usual cost accounting practices ("reimbursement of costs declared on the basis of the beneficiary'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 2014;
- Reporting period 2 from 1 January 2015 to 31 December 2015;
- Reporting period 3 from 1 January 2016 to 31 December 2016;
- Reporting period 4 from 1 January 2017 to 31 December 2017;
- Reporting period 5 from 1 January 2018 to 31 December 2018;
- Reporting period 6 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, subject to the receipt of a guarantee of EUR 2,859,878.40.

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, subject to the receipt of a further guarantee of an amount equal to the further pre-financing payment to be made.

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

(1) **ACI Europe,** Affiliated to **Sesar Related Deployment Airport Operators Grouping, EEIG ("SDAG")**
(2) **FAB CE Aviation Services Ltd,** Affiliated to **HungaroControl Air Navigation Services Pte Ltd Co. (HungaroControl).**

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

Not applicable.

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

By way of derogation Article II.19.2 (h) of the Framework Agreement, amounts of value added tax (VAT) paid are not eligible for the following partners: Luftfartsverket, Swedavia AB, Navegação Aérea de Portugal (NAV Portugal, E.P.E.), Irish Aviation Authority, Air Navigation Services of the Czech Republic, Finavia Corporation, Austro Control Österreichische Gesellschaft fur Zivilluftfahrt mit beschränkter Haftung (Austro Control GmbH), Royal Netherlands Meteorological Institute, Croatia Air Navigation Services (Croatia Control), SJSC Latvijas gaisa satiksme, Slovenian Air Navigation Services Limited (Slovenia Control), Naviair, Bosnia and Herzegoviana Air Navigation Services Agency,

Entidad Pùblica Empresarial ENAIRE, Romanian Air Traffic Services Administration (Romatsa RA), Luchtverkeersleiding Nederland (Air Traffic Control The Netherlands), DFS Deutsche Flugsicherung GmbH, Hellenic Civil Aviation Authority, ENAV S.p.A., Polish Air Navigation Services Agency, The State of France, Ministry of Ecology, Sustainable Development and Energy - Direction Générale de l'Aviation Civile (DGAC) - Direction des Services de la Navigation Aérienne (DSNA), HungaroControl Air Navigation Services Pte Ltd Co. (HungaroControl), European Organization for the Safety of Air Navigation (EUROCONTROL) and British Airways plc (British Airways).

ARTICLE 12 - SPECIAL PROVISIONS ON ELIGIBLE COSTS

Not applicable.

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 partners shall not receive EU funding:

- Deutsche Lufthansa Aktiengesellschaft ("Lufthansa");
- easyJet Airline Company Limited (“easyJet”).

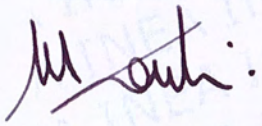
The costs they incur shall not be taken into consideration for determining the final amount of the grant in accordance with Article II.25 of the Framework Agreement.

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 those partners.

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

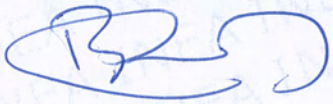
SIGNATURES

For the coordinator
Massimo Garbini



Done at Brussels, on
27.XI.2015

For the Agency
Dirk Beckers



Done at Brussels, on 27/11/2015

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): Austria, Belgium, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom

I.2.2 Region(s) (using the NUTS2 nomenclature): Jihovýchod (CZ06), Jihozápad (CZ03), Moravskoslezsko (CZ08), Praha (CZ01), Severovýchod (CZ05), Severozápad (CZ04), Strední Cechy (CZ02), Strední Morava (CZ07), Burgenland (AT) (AT11), Kärnten (AT21), Niederösterreich (AT12), Oberösterreich (AT31), Salzburg (AT32), Steiermark (AT22), Tirol (AT33), Vorarlberg (AT34), Wien (AT13), Latvija (LV00), Mellersta Norrland (SE32), Norra Mellansverige (SE31), Småland med öarna (SE21), Stockholm (SE11), Sydsverige (SE22), Västsverige (SE23), Östra Mellansverige (SE12), Övre Norrland (SE33), Vzhodna Slovenija (SI01), Zahodna Slovenija (SI02), Jadranska Hrvatska (HR03), Kontinentalna Hrvatska (HR04), Bratislavský kraj (SK01), Stredné Slovensko (SK03), Východné Slovensko (SK04), Západné Slovensko (SK02), Bedfordshire and Hertfordshire (UKH2), Berkshire, Buckinghamshire and Oxfordshire (UKJ1), Cheshire (UKD6), Cornwall and Isles of Scilly (UKK3), Cumbria (UKD1), Derbyshire and Nottinghamshire (UKF1), Devon (UKK4), Dorset and Somerset (UKK2), East Anglia (UKH1), East Wales (UKL2), East Yorkshire and Northern Lincolnshire (UKE1), Eastern Scotland (UKM2), Essex (UKH3), Gloucestershire, Wiltshire and Bristol/Bath area (UKK1), Greater Manchester (UKD3), Hampshire and Isle of Wight (UKJ3), Herefordshire, Worcestershire and Warwickshire (UKG1), Highlands and Islands (UKM6), Inner London (UKI1), Kent (UKJ4), Lancashire (UKD4), Leicestershire, Rutland and Northamptonshire (UKF2), Lincolnshire (UKF3), Merseyside (UKD7), North Eastern Scotland (UKM5), North Yorkshire (UKE2), Northern Ireland (UKN0), Northumberland and Tyne and Wear (UKC2), Outer London (UKI2), Shropshire and Staffordshire (UKG2), South Western Scotland (UKM3), South Yorkshire (UKE3), Surrey, East and West Sussex (UKJ2), Tees Valley and Durham (UKC1), West Midlands (UKG3), West Wales and The Valleys (UKL1), West Yorkshire (UKE4), Bucuresti - Ilfov (RO32), Centru (RO12), Nord-Est (RO21), Nord-Vest (RO11), Sud - Muntenia (RO31), Sud-Est (RO22), Sud-Vest Oltenia (RO41), Vest (RO42), Abruzzo (ITF1), Basilicata (ITF5), Calabria (ITF6), Campania (ITF3), Emilia-Romagna (ITH5), Friuli-Venezia Giulia (ITH4), Lazio (ITI4), Liguria (ITC3), Lombardia (ITC4), Marche (ITI3), Molise (ITF2),

Piemonte (ITC1), Provincia Autonoma di Bolzano/Bozen (ITH1), Provincia Autonoma di Trento (ITH2), Puglia (ITF4), Sardegna (ITG2), Sicilia (ITG1), Toscana (ITI1), Umbria (ITI2), Valle d'Aosta/Vallée d'Aoste (ITC2), Veneto (ITH3), Dél-Alföld (HU33), Dél-Dunántúl (HU23), Közép-Dunántúl (HU21), Közép-Magyarország (HU10), Nyugat-Dunántúl (HU22), Észak-Alföld (HU32), Észak-Magyarország (HU31), Dolnoslaskie (PL51), Kujawsko-Pomorskie (PL61), Lubelskie (PL31), Lubuskie (PL43), Lódzkie (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), Alsace (FR42), Aquitaine (FR61), Auvergne (FR72), Basse-Normandie (FR25), Bourgogne (FR26), Bretagne (FR52), Centre (FR24), Champagne-Ardenne (FR21), Corse (FR83), Franche-Comté (FR43), Guadeloupe (FR91), Guyane (FR93), Haute-Normandie (FR23), Languedoc-Roussillon (FR81), Limousin (FR63), Lorraine (FR41), Martinique (FR92), Midi-Pyrénées (FR62), Nord - Pas-de-Calais (FR30), Pays de la Loire (FR51), Picardie (FR22), Poitou-Charentes (FR53), Provence-Alpes-Côte d'Azur (FR82), Rhône-Alpes (FR71), Réunion (FR94), Île de France (FR10), Andalucía (ES61), Aragón (ES24), Canarias (ES70), Cantabria (ES13), Castilla y León (ES41), Castilla-La Mancha (ES42), Cataluña (ES51), Ciudad Autónoma de Ceuta (ES63), Ciudad Autónoma de Melilla (ES64), Comunidad Foral de Navarra (ES22), Comunidad Valenciana (ES52), Comunidad de Madrid (ES30), Extremadura (ES43), Galicia (ES11), Illes Balears (ES53), La Rioja (ES23), País Vasco (ES21), Principado de Asturias (ES12), Región de Murcia (ES62), Drenthe (NL13), Flevoland (NL23), Friesland (NL) (NL12), Gelderland (NL22), Groningen (NL11), Limburg (NL) (NL42), Noord-Brabant (NL41), Noord-Holland (NL32), Overijssel (NL21), Utrecht (NL31), Zeeland (NL34), Zuid-Holland (NL33), Prov. Antwerpen (BE21), Prov. Brabant Wallon (BE31), Prov. Hainaut (BE32), Prov. Limburg (BE) (BE22), Prov. Liège (BE33), Prov. Luxembourg (BE) (BE34), Prov. Namur (BE35), Prov. Oost-Vlaanderen (BE23), Prov. Vlaams-Brabant (BE24), Prov. West-Vlaanderen (BE25), Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest (BE10), Arnsberg (DEA5), Berlin (DE30), Brandenburg (DE40), Braunschweig (DE91), Bremen (DE50), Chemnitz (DED4), Darmstadt (DE71), Detmold (DEA4), Dresden (DED2), Düsseldorf (DEA1), Freiburg (DE13), Gießen (DE72), Hamburg (DE60), Hannover (DE92), Karlsruhe (DE12), Kassel (DE73), Koblenz (DEB1), Köln (DEA2), Leipzig (DED5), Lüneburg (DE93), Mecklenburg-Vorpommern (DE80), Mittelfranken (DE25), Münster (DEA3), Niederbayern (DE22), Oberbayern (DE21), Oberfranken (DE24), Oberpfalz (DE23), Rheinhessen-Pfalz (DEB3), Saarland (DEC0), Sachsen-Anhalt (DEE0), Schleswig-Holstein (DEF0), Schwaben (DE27), Stuttgart (DE11), Thüringen (DEG0), Trier (DEB2), Tübingen (DE14), Unterfranken (DE26), Weser-Ems (DE94), Eesti (EE00), 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), Etelä-Suomi (FI1C), Helsinki-Uusimaa (FI1B), Länsi-Suomi (FI19), Pohjois- ja Itä-Suomi (FI1D), Åland (FI20), Hovedstaden (DK01), Midtjylland (DK04), Nordjylland (DK05), Sjælland (DK02), Syddanmark (DK03), Border,

Midland and Western (IE01), Southern and Eastern (IE02)

I.2.3 Third country(ies): Bosnia and Herzegovina, Norway

ARTICLE I.3 – SCOPE AND OBJECTIVES OF THE ACTION

The European airspace, as one of the busiest airspace in the world (almost 9 million commercial passenger flights in 2010, figure expected to double by 2030), has always represented a challenge for the Air Traffic Management stakeholders, because of the high level of fragmentation and the lack of interoperability between different countries.

For decades, the Air Traffic Management industry has based its business strategy on a decentralized approach, mainly related to local constraints: the cooperation with stakeholders outside the national barriers has been kept at informal subsidiary level, while industries have concentrated on local investments to improve their individual performance. The lack of a vision focusing on the overall benefits of the network has therefore meant a high fragmentation of the airspace, inevitably leading to a scarce integration and organization among the actors of the air transport value chain, which resulted in poor delivery of functionality, reliability and extremely poor cost efficiency. When the traffic demand started growing, due to the new European configuration and the consequent increase of passengers and goods moving throughout the continent and beyond, the objective of enhancing the overall ATM capacity, whilst reducing its costs, further increasing the safety levels and reducing its environmental footprint, have turned out to be not only a local matter but an international business, due to the dimension and complexity of European air transport.

In order to address the consequent threat of a capacity crunch due to an inefficient ATM infrastructure, and the continuous traffic growth forecasted in the next future, as well as the environmental issues related, the European Air Traffic Management configuration has been radically reviewed, starting from a principle as basic as fundamental: the European ATM system has to be recognised as a cohesive whole - to be managed at network level.

To this end, the European Commission launched in 1999 the Single European Sky initiative, which triggered the launch of SES first legislative package (SES I) in 2004, and SES second legislative package (SES II) in 2009.

It is worth noting that, the European Commission through the IR N° 409/2013 has established a 3-layer Deployment governance to steer the implementation of the Pilot Common Project IR 416/2014) and future Common Projects, which 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; and
- **Level 3 - Implementation level** that is responsible for implementing the ATM functionalities of the Common Projects in the European ATM Network through Implementation projects, named Implementing Partners

The present Action, which sees the SESAR Deployment Manager in the role of coordinator, contributes to the Pilot Common Project (PCP) and combines coherent technological improvements aiming to enhance the performance of the European Air Traffic Management system in the short to medium term.

In particular, the Implementation projects have been identified and selected in alignment with Preliminary Deployment Programme V0, which provides the initial project view of PCP ATM functionalities of the Pilot Common Project.

The Preliminary Deployment Programme is organized in three levels deriving PCP project view from the 6 ATM functionalities and sub-ATM Functionalities included in the PCP IR 716/2014.

The Action is aimed at facilitating the coordinated and synchronised deployment of a number of implementation initiatives under the framework of the Pilot Common Project and in particular within the areas identified by the following PCP ATM Functionalities:

- AF1 Extended AMAN and PBN in high density TMA implementation
- AF2 Airport Integration and Throughput implementation
- AF3 Flexible ASM and Free Route implementation
- AF4 Network Collaborative Management implementation
- AF5 Initial System-Wide Information Management implementation.

In order to best mirror PDP structure at Level 3, where the relevant Implementation Projects lay, the present Action, groups the Implementation Projects according to the ATM sub-functionalities.

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	Activity 1: Framework Partnership Agreement Coordination	15/10/2014	31/12/2020	1, 2, 3, 4
2	Activity 2: Project Management	01/11/2014	31/12/2020	5, 6, 7, 8, 9, 10
3	Activity 3: AF1 Extended AMAN	01/01/2014	31/12/2020	11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22

	and PBN in High Density TMA Implementation			
4	Activity 4: AF1 Extended AMAN and PBN in High Density TMA Implementation - Airspace Users	01/01/2014	31/12/2020	23, 24, 25, 26, 27, 28, 29, 30
5	Activity 5: AF2 Airport Integration and Throughput Implementation	01/01/2014	31/12/2020	31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42
6	Activity 6: AF2 Airport Integration and Throughput Implementation - Airspace Users	01/01/2014	31/12/2020	43, 44, 45, 46, 47, 48, 49, 50
7	Activity 7: AF3 Flexible ASM and Free Route Implementation	01/01/2014	31/12/2020	51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62
8	Activity 8: AF4 Network Collaborative Management Implementation	01/01/2014	31/12/2020	63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74
9	Activity 9: AF5 Initial System-Wide Information Management Implementation	01/01/2014	31/12/2020	75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86

I.4.2 Activities description

Activity 1 - Framework Partnership Agreement (FPA) Coordination

Leader: SDM (NATS on behalf of)

Contributors: ENAV, SDAG, ENAIRE, DFS, and Eurocontrol/Network Manager (AF Implementation leaders)

Objective

According to the activities listed in Article II.1.3 "*General obligations and role of the coordinator* of the *Framework Partnership Agreement with multiple partners*" of the SESAR Framework Partnership Agreement signed on 5th of December 2014, FPA coordination activity envisages a series of tasks, as described in Sub-Activity 1.1. Furthermore, in order to

successful deliver the expected results, specific support to the FPA coordinator is to be provided by the Action leader and Activity leaders, and is described in Sub-Activity 1.2.

Sub-Activity 1.1: FPA monitoring and reporting

The SA 1.1 entails all the activities to be performed by the DM as FPA coordinator:

Action plan and actions monitoring and reporting – FPA coordinator will monitor Action plan execution in order to ensure they are implemented in accordance with the Framework Partnership Agreement and the Specific Grant Agreements, including relevant Annexes.

FPA will address also a **quality management** process encompassing three different elements:

1. Quality Planning, aiming at identify in quality requirements of the whole Action with particular regards to methodologies and deliverables;
2. Quality Assurance, aiming at planning procedures oriented to the prevention, detection and reporting of any issue which might impact on Action quality;
3. Quality Control, aiming at verifying the effective implementation of quality procedures.

The implementation of the quality management processes will be provided by the PMO in support to AF leaders and IPPs.

FPA information flow - FPA coordinator will be the intermediary for the communications between the partners and the Commission, except where provided otherwise in the Framework Partnership Agreement or the Specific Grant Agreements.

FPA payments, checks and audits

FPA's coordinator will bear responsibility for:

- Designated as the sole recipient of payments on behalf of all of the partners in the FPA, 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.

FPA 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.

Activities mentioned will benefit from the definition and launch of a **dedicated tool** to facilitate the management of such complex process with the high level number of involved stakeholders.

Sub-Activity 1.2: Support to FPA coordination processes

The SA 1.2 provides the support to the SDM in its FPA coordinator role. In particular, Action and Activity leaders will carry out the following tasks, according to Art.II.-1.2 of the FPA:

Support to FPA Coordinator Action plan and actions monitoring and reporting

Provision to the FPA coordinator of integrated and validated data required to finalise and submit the reports, financial statements and the other documents provided for in the Framework agreement and the Specific agreement. The Activity leaders, coordinated by the Action leader, will be responsible for provision, through the templates supplied by INEA and SDM as FPA coordinator, of all the data coming from the respective Implementation projects, consolidated view at Activity Level and transversal Activity level, requested for submission of the reports to be delivered according to INEA policy, namely **Action Status Report and Final Report,** as well as for any other documents provided for in the Framework agreement and the Specific agreement.

Deliverables

1.1 FPA Information Package (SGA Preparation phase) - 29/07/2015

1.2 Signature of Framework Partnership Agreement (FPA) - 15/11/2015

1.3 Videos on FPA - 29/10/2015

1.4 SDM Processes portfolio (FPA Processes and Procedures) - 29/10/2015

1.5 Accession of IPPs to Internal Cooperation Agreement (ICA) 06/11/2015

1.6 Kick Off Meeting (KOM) - 19-20/11/2015

1.7 FPA Information Package (Execution phase) - 20/11/2015

1.8 Tutorial on SDM tool - 20/11/2015

1.9 SDM Tool operation - 30/11/2015

1.10 Guidelines for Quality Assurance - 30/11/2015

1.11 Specific Grant Agreement (SGA) - 03/12/2015

1.12 Action Status Report (ASR) - AF Level - 30/01/2016, 30/01/2017, 30/01/2018, 30/01/2019, 30/01/2020

1.13 Action Status Report (ASR) - AF Transversal Level - 15/02/2016, 15/02/2017, 15/02/2018, 15/02/2019, 15/02/2020

1.14 Consolidation and Submission of Action Status Report (ASR) - 31/03/2016, 31/03/2017, 31/03/2018, 31/03/2019, 31/03/2020

1.15 Final Report instruction (Overall Process) - 15/05/2020

1.16 Final Report (Technical Content) - AF Level - 31/10/2020

1.17 Final Report (Technical Content) - Transversal level - 30/11/2020

1.18 Final Report (Technical Content) – Consolidation - 15/12/2020

Activity 2 - Project Management

Leader: ENAV

PMO: BIP

Contributors: ENAV, SDAG, ACI affiliate to SDAG, DFS, ENAIRE and Eurocontrol/Network Manager (AF leaders)

Objective

Project management activity will aim at **integrating and coordinating all the activities to be carried out within the proposed Action**, in order to:

- Support the SDM during the Execution phase in ensuring the total alignment of the activities envisaged within the Action with the scope and objectives pursued by PDP/PCP, with specific reference to the ATM functionalities.

In order to cope with the complex structure of the Action which is mirroring the DP structure, based on ATM functionalities, three layers of project management activities have been envisaged:

- Action Leader - ENAV : leader of the Project management Activities, focusing on transversal AFs coordination;
- Activity Leaders (one per each ATM Functionality) - ENAV, SDAG, DFS, ENAIRE and Eurocontrol/Network Manager: focusing on AF coordination (ref. Activity 3 – Activity 9);
- PMO - BIP providing Project management competencies and skills to support operational stakeholders, Activity leaders and Action leader in the activities expected at Project management level.

Indeed, all IPPs will contribute to the PMO through the provision of updated information.

Sub-Activity 2.1: Transversal AF coordination

SA 2.1 aims at the identification and preliminary analysis of relevant issue impacting on DP realisation as results of 2 reporting cycles which will take place on April each year, and on September each year.

Action Leader, together with AF Leaders and supported by PMO, will perform the analysis of relevant issues impacting on DP realization at transversal AF level, building further on the information provided by the AF Leaders and Implementing Partners at the envisaged reporting gates (and described in Activity AF"X" Coordination).

In particular SA 2.1 will focus on:

- Risk and issue management at transversal AF level;
- Mitigation action monitoring at transversal AF level; Collection and preliminary analysis of contributions for Cost Benefit Analysis (CBA)/Performance Analysis according to guidelines provided by SDM (at transversal AF level).

Sub-Activity 2.2: PMO support to transversal coordination

The above mentioned activities will be performed by Action Leader and AF Leaders, during reporting cycles, supported by a structured and integrated PMO trough:

- advising and supporting the Action Leader and AF Leaders in connection with the fulfillment of their tasks relating to the management of coordination among AFs and the
- preliminary detection of discrepancies, risks and issues for DP realisation at transversal level, on the basis of the data provided by AFs Leaders);
- provision to Action Leader, on the basis of the progress data provided by AFs Leaders, of implementation progress data already elaborated (consistent draft) at AF transversal level to facilitate timely submission of progress data at "reporting gates" (April and September);
- preliminary analysis of DP realization at AF transversal level and of contributions for CBA/Performance Analysis according to guidelines provided by SDM (at transversal AF level), on the basis of the contributions provided by the AFs Leaders.

In order to perform properly the above mentioned activities a PMO Manual, encompassing all Project Management activities to be performed by the PMO support and addressing relevant processes, procedures and subsequent responsibilities, will be developed by the PMO support and jointly finalised with IPPs in order to ensure clear and agreed working arrangements are established.

Such Manual, which will be based on the legal framework underpinning the Action, will be included amongst the deliverables of ASR 2016.

PMO Manual elaboration will finally take into due account SDM monitoring and synchronization process, in order to ensure a consistent, effective and efficient information exchange between SESAR Deployment governance Level 2 (SDM) and Level 3 (implementing partner).

Moreover, PMO will assist Action Leader and AF Leaders in the implementation of the quality management processes to support them on transversal coordination.

Methodology wise, the PMO through an Action Quality Plan will also assist the Action Leader and AF Leaders in connection with quality controls, aiming at verifying the effective implementation of quality procedures set by the FPA Coordination.

PMO activities, in compliance with the tasks above described, will therefore aim to assist the Action Leader and AF Leader, owners of the Sub-Activity 2.1, in the execution of their respective tasks.

Deliverables

2.1.1 Risks and Issues Registry at transversal AF level[1] - 15/05/2016, 15/10/2016, 15/05/2017, 15/10/2017, 15/05/2018, 15/10/2018, 15/05/2019, 15/10/2019, 15/05/2020, 15/10/2020

2.1.2 Mitigation Registry at transversal AF Level[2] - 15/05/2016, 15/10/2016, 15/05/2017, 15/10/2017, 15/05/2018, 15/10/2018, 15/05/2019, 15/10/2019, 15/05/2020, 15/10/2020

2.1.3 Preliminary CBA/Performance Analysis (Transversal AF level) - 15/02/2016, 15/02/2017, 15/02/2018, 15/02/2019, 15/02/2020

2.2.1 (a) PMO Manual – First Draft - 30/11/2015

2.2.1 (b) PMO Manual – Final - 29/01/2016

2.2.2 Action Quality Plan - 31/12/2015

2.2.3 Risks and Issues Registry Advanced Draft at transversal AF level (PMO) - 07/05/2016, 07/10/2016, 07/05/2017, 07/10/2017, 07/05/2018, 07/10/2018, 07/05/2019, 07/10/2019, 07/05/2020, 07/10/2020

2.2.4 Mitigation Action Plan Advanced Draft at transversal AF level (PMO) 07/05/2016, 07/10/2016, 07/05/2017, 07/10/2017, 07/05/2018, 07/10/2018, 07/05/2019, 07/10/2019, 07/05/2020, 07/10/2020

2.2.5 Preliminary CBA/Performance Analysis at transversal AF level (fed by Preliminary CBA/Performance Analysis at AF level) 07/02/2016, 07/02/2017, 07/02/2018, 07/02/2019, 07/02/2020

Footnotes

[1] Risks and Issues Registry: supporting document where are collected risks and issues that could affect the implementation of the Action according to the deadlines and the quality level expected.
[2] Mitigation Registry: supporting document where are collected the mitigation actions to put in place to mitigate/eliminate Risks and Issues identified (such actions are performed to avoid any negative impact for the Action implementation).

Activity 3 - AF1 Implementation

Leader: ENAIRE

PMO: BIP

Contributors: Austrocontrol, Belgocontrol, DSNA, Air France, ENAIRE, ENAV, Eurocontrol/Network Manager,Gatwick Airport, LFV, LVNL, NATS, Heathrow Airport

Objective

AF 1 Coordination Activity aims at improving coordination of DP execution at AF level.

AF Leader, with the support of the PMO, will perform the identification and preliminary analysis of relevant issues impacting on DP realisation at AF level, building further on the information provided by the Implementation projects - falling under the AF - at the envisaged reporting gates.

Sub-Activity 3.1: AF 1 implementation coordination

SA 3.1 will focus on:

- Collection and preliminary analysis of risk and issue management at AF level;
- Mitigation action monitoring at AF level;
- Collection and preliminary analysis of contributions for CBA/Performance Analysis according to guidelines provided by SDM (at AF level).

Sub-Activity 3.2: PMO support to AF implementation

A structured and integrated PMO will support the AF implementation providing direct advice to both IPPs and AF Leader aimed at coordinating the IPs according to SDM indications and instructions.

PMO direct support to IPPs and project management tasks in connection there with will consist in:

- day to day support to IPPs to accomplish SDM/EC requirements;
- assistance relating to the timely upload of all the information to be provided at each reporting gate;
- preliminary verification for the quality assurance in terms of completeness/consistency/alignment to quality requirements of data/information/deliverables provided by IPPs;
- support and advice relating to clarifications requested by SDM/EC;
- support and advice aimed at the proactive identification of gaps/risks/issue and mitigation actions (on the basis of the IPPs contribution);
- support and advice relating to checks and sample audits through the provision of relevant guidelines (in compliance with the SDM/INEA requirements);
- contribution to CBA/Performance Analysis according to the guidelines provided by SDM (on the basis of the IPPs contribution).

PMO will support the AF leader in:

- advising and supporting the AF Leader in connection with the fulfillment of AF Leader's tasks relating to the management of coordination among IPs within the same AF;
- provision to Action Leader, on the basis of the progress data provided by IPPs, of implementation progress data already elaborated (consistent draft) at AF level to facilitate timely submission of progress data at "reporting gates" (April and September);
- preliminary detection of discrepancies, risks with specific reference to realisation issues at AF level and issues for DP Implementation at AF level (on the basis of the data provided by IPPs);
- collection of IPs contributions for CBA/Performance Analysis according to guidelines provided by SDM (at AF level);
- consolidating CBA/Performance Analysis findings executed by IPPs according to the

guidelines provided by SDM (the activities will be performed on the basis of the IPPS contributions).

Moreover, the PMO will assist the AF Leader in the implementation of the quality management processes in support to the tasks of the AF coordination.

PMO's activities, in compliance with the tasks above described, will therefore aim to assist the AF Leader, owner of the Sub-Activity 3.1, and the IPPs, owners of their implementing projects as described in Sub-Activity 3.3, in the execution of their respective tasks.

Deliverables

3.1.1 Validation of Risks and Issues Registry - AF level - 30/04/2016, 30/09/2016, 30/04/2017, 30/09/2017, 30/04/2018, 30/09/2018, 30/04/2019

3.1.2 Validation of Mitigation Registry - AF level - 30/04/2016, 30/09/2016, 30/04/2017, 30/09/2017, 30/04/2018, 30/09/2018, 30/04/2019

3.1.3 Preliminary CBA/Performance Analysis (AF level) - 30/01/2016, 30/01/2017, 30/01/2018, 30/01/2019

3.2.1 Action Status Report (ASR) - AF Level – advanced draft - 23/01/2016, 23/01/2017, 23/01/2018, 23/01/2019, 23/01/2020

3.2.2 Updating Risks and Issues Registry - AF level - 23/04/2016, 23/09/2016, 23/04/2017, 23/09/2017, 23/04/2018, 23/09/2018, 23/04/2019

3.2.3 Updating of Mitigation Registry - AF level - 23/04/2016, 23/09/2016, 23/04/2017, 23/09/2017, 23/04/2018, 23/09/2018, 23/04/2019

3.2.4 Final Report (Technical Content) - AF Level advanced draft - 15/10/2020

3.2.5 Preliminary CBA/Performance Analysis (AF level) – advanced draft 23/01/2016, 23/01/2017, 23/01/2018, 23/01/2019

3.2.6 Final Report - AF1 Closing - 07/01/2019

Sub-Activity 3.3: AF1 Extended Arrival Management and Performance Based Navigation in high density Terminal Manoeuvring Area – Implementation Projects

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)).

The present Sub-Activity groups those Implementation Projects presented by Austrocontrol, Belgocontrol, DSNA, Air France, ENAIRE, ENAV, EUROCONTROL/NETWORK MANAGER, Gatwick Airport, LFV, LVNL, NATS and Heathrow Airport which will contribute to the AF1 with a 50% co-financing rate.

Sub-Activity 3.3 Implementation Projects

IP 1: Performance Based Navigation (PBN) implementation in Vienna (LOWW)

Leader/Contributor: Austrocontrol

Objective

The project 'PBN implementation in LOWW' proposed implies the implementation of approach procedures with vertical guidance APV/Baro and/or APV/SBAS (as per ESSIP NAV10). Moreover, it aims at a full PBN based SID and STAR/transition architecture to support optimized trajectories in the Vienna TMA to reduce the regional environmental footprint and increase the operational efficiency.

There is the need to coordinate/synchronise efforts (operational procedure and aircraft capabilities) between ANSPs and Airspace users to ensure the return of investment and/or the start of operational benefits.

Main objectives:

- 2014 RNP AR Procedures to Runway 16 LOWW for noise abatement purposes implemented;
- 2015 feasibility study for open PBN transitions to final approach conducted;
- 2015 night SIDs on PBN basis implemented;
- 2016 one LPV (SBAS) approach in LOWW implemented.

IP 2: Implementation of RNP Approaches with Vertical Guidance at the Belgian civil aerodromes within the Brussels TMA

Leader/Contributor: Belgocontrol

Objective

The main objectives of this project are to:

- Implement Required Navigation Performance (RNP) Approaches (Lateral Navigation/Vertical Navigation (LNAV/VNAV) and Localiser Performance with Vertical guidance (LPV) minima) on all instrument runway ends of the civil aerodromes located within the Brussels TMA: Brussels Airport (6) and Antwerp Airport (2);
- Achieve compliancy with ICAO AR37.11, EC Part-AUR (currently being developed at EASA) and Commission Implementing Regulation (EU) No 716/2014 Annex 1.

Relation with PCP Regulation:

This project responds to:

- **PCP AF 1**: sub-functionality 'Enhanced Terminal Airspace using RNP-Based Operations' (see **section 1.1.2 of the ANNEX to the PCP Regulation**), and
- **Fast-Track (FT) project number 1.21** as defined in the Preliminary Deployment Programme (**PDP**).

IP3: RNP Approaches at CDG Airport with vertical guidance (Part A)

Leader/Contributor: DSNA/Air France (50% co-financing rate)

Objective

The main objectives of the proposed project are:

- To implement RNP APCH with LPV minima and with LNAV/VNAV minima;
- To maintain maximum CDG Airport Runway Throughput when one ILS equipment not available by ensuring independent triple parallel approaches capability between CD Gand Le Bourget airports.

The associated indicators are:

- For objective 1: Publication of the procedures (source : French AIP);
- For objective 2: Number of flights/h in case of ILS outage compared to the flight average.

IP 4: ENAIRE reference geographic database (FT 1.2.2)

Leader/Contributor: ENAIRE

Objective

- The project will generate an ENAIRE reference dataset structure and set up the managing processes to maintain the information up to date with authoritative sources reference data.
- Procedure design tools will be updated to make use of this database content; digital cartography (terrain and obstacles) and aeronautical data defining instrumental manoeuvres from authoritative sources with required quality and integrity.
- To achieve the required high levels of integrity the Spanish AIS provider will participate in the data provision and management processes.

IP 5: RNP APCH Implementation in Palma de Mallorca

Leader/Contributor: ENAIRE

Objective

The main objective of this project is to improve the precision of the approach trajectories and to develop and implement fuel efficient and environmental friendly procedures for approach in this high density TMA airport. The new RNP APCH procedures will help increase the accessibility by means of RNP APCH to LPV minima procedures (using SBAS), in

combination with LNAV and LNAV/VNAV minima for those operators not equipped with SBAS technology. These procedures will make operations at this site more efficient and profitable, thus enhancing the use of the airport and saving operational costs, both for aircraft and airport operators (AENA).

Specifically, the objectives of this project are:

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

IP 6: ENAV Geographic DB for Procedure Design

Leader/Contributor: ENAV

Objective

The main objective of the project is to upgrade the ENAV geographic database for procedure design suite, based on two products developed by IDS (SIPRO and eTOD). The former implement improvements to the solution currently used and helps to execute the Electromagnetic Compatibility analyses to determine the expected radio-electric performances of the new navaids equipment (SIPRO). The second tool is the Electronic Terrain and Obstacle Database (eTOD). It will be also validated of a new technique for automatic feature extraction from Digital Orthophoto.

IP 7: AMAN extended to En-Route

Leader/Contributor: EUROCONTROL/NETWORK MANAGER

Objective

This project contributes directly to the implementation ofAF1 / S-AF11 AMAN extended to En-Route / FT1.1.2 AMAN upgrade to include extended horizon:

- Upgrade NM systems to cope with extended AMAN requirements;
- Introduce in the network view and the collaborative NOP, the information managed and shared with NM system by local extended AMAN systems (from airports/ANSP's where available);
- Support the network coordination of extended AMAN functions and provide, if necessary, the network view on extended AMAN measures.

The project is a key contributor to the following Strategic Objectives mentioned in the Network Strategy Plan (NSP):

- SO 4: Plan optimum capacity and flight efficiency;
- SO 5: Facilitate business trajectories and cooperative traffic management;

- SO 6: Fully integrate airport and network operations.

IP 8: Enhanced Terminal Airspace (TMA) using RNP-Based Operations

Leader/Contributor: Gatwick Airport

Objective

The objectives of the project are as follows:

- Introduce point merge;
- Efficient BOGNA Standard Instrument Departure (SID) Route;
- Dual Precision Area Navigation (P-RNAV) routes with easterly and westerly arrival and departure routes to runway (RWY) 26 and 08, providing rolling respite;
- Increase RWY capacity by introducing ADNID SID;
- Re-design SIDs and STARs to meet RNP specifications.

As a result of these changes, the project would deliver the following benefits:

- Improvements in arrivals and departures stability;
- Significant improvement in operational resilience;
- Reduced fuel burn for airlines;
- Reduced CO2 emissions (reduced track mileage) – in line with Gatwick Airport and NATS carbon reduction targets;
- Reduced noise impact for people on the ground through provision of rotating respite
- Delivery against requirements of S106 Legal Agreement;
- Support the delivery of NATS 10% carbon emissions reduction target.

IP 9: Lower Airspace optimization

Leader/Contributor: LFV

Objective

- This project aims to contribute to the PCP AF-1 Extended AMAN and PBN in high density TMAs, through the development and implementation of short term improvements and the development of a roadmap for long term implementation.
- Define a complete set up of requirements for the design and use of the future terminal airspace.
- Create a baseline and a defined long term forecast.
- Well defined KPIs for the baseline and the future Implementation of short term measures.
- Long term implementation Plan (What, When) with the main purpose to:
    - Increase the general efficiency of operations in lower airspace (more efficient route structure, better use of the available space, better planning of movements);
    - Specifically increase efficiency by the removal of sub-optimal solutions currently required to ensure safety, e.g. during missed approaches;
    - Reduce environmental impact.

IP 10: First phase of RNAV1 and RNP- APCH approaches Amsterdam Schiphol (EHAM)

Leader/Contributor: LVNL

Objective

- Publication and operational implementation of an RNAV1 fixed inbound route to RWY 36R from ARTIP.
- Publication and operational implementation of an RNAV1 fixed inbound route to RWY 18C from ARTIP to be flown as CDO.
- Publication and operational implementation of an RNP APCH procedure to RWY 22 with vertical guidance.

IP 11: Manchester TMA Re-Development

Leader/Contributor: NATS

Objective

Introduction of RNAV1 SIDs (Standard Instrument Departure) and STARs (Standard Arrival Route) within the existing Manchester Terminal Manoeuvring Area (MTMA) in order to systemise the airspace infrastructure. This will replace the airspace which has evolved historically in a piecemeal fashion and remove reliance on ground based navigational aids. The existing SIDS and STARS have been 'outgrown' by aircraft performance and as a result are rarely flown as published.

The systemised airspace will:

- Exploit existing and future aircraft capabilities to fly precise trajectories (through use of Performance Based Navigation – PBN), enabling greater flexibility in airspace design through closely spaced arrival and departure routes independent of ground-based navigation aids;
- Offer greater resilience against human error (pilot or controller), with fewer interactions between routes and a reduction in tactical interaction by controllers;
- Reduced tactical intervention will offer a corresponding increase in capacity;
- Locate routes where they best meet the needs of airports and flight profiles, making far better use of finite terminal airspace;
- Save fuel and reducing noise by enabling continuous descent approaches (CDAs) and continuous climb departures (CCDs) to be flown from/to significantly higher altitudes than available today.

The revised RNAV route infrastructure will align with LAMP (London Airspace Management Programme) requirements and maximise the benefits within the majority of the UK TMA.

IP 12: London Airspace Management Programme (LAMP) (Part A)

Leader/Contributor: NATS, Heathrow Airport

Objective

- Produce systemised airspace design for the London TMA by using PBN-based procedures and STARs facilitating RNP-1 SIDs where required at London Airports.
- Introduce greater efficiencies in the design of airspace to accommodate forecast demand and also facilitate Continuous Climb and Descent Operations minimising delay and realising fuel savings.

Activity 4 - AF1 Implementation – Airspace users

Leader: ENAIRE

PMO: BIP

Contributors: Air France, British Airways

Sub-Activity 4.1: AF1 Extended Arrival Management and Performance Based Navigation in high density Terminal Manoeuvring Area – Implementation Projects

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)).

The present Sub-Activity groups those Implementation Projects presented by Air France and British Airways which will contribute to the AF1with a 20% co-financing rate.

Sub-Activity 4.1 Implementation Projects

IP 1: RNP Approaches at CDG Airport with vertical guidance (Part B)

Leader/Contributor: Air France (20% co-financing rate)

Objective

The main objectives of the proposed project are:

- To implement RNP APCH with LPV minima and with LNAV/VNAV minima;
- To maintain maximum CDG Airport Runway Throughput when one ILS equipment not available by ensuring independent triple parallel approaches capability between CDG and Le Bourget airports.

The associated indicators are:

- For objective 1: Publication of the procedures (source : French AIP);
- For objective 2: Number of flights/h in case of ILS out age compared to the flight average.

IP 2: London Airspace Management Programme (LAMP) (Part B)

Leader/Contributor: British Airways (20% co-financing rate)

Objective

- Produce systemised airspace design for the London TMA by using PBN-based procedures and STARs facilitating RNP-1 SIDs where required at London Airports.

- Introduce greater efficiencies in the design of airspace to accommodate forecast demand and also facilitate Continuous Climb and Descent Operations minimising delay and realising fuel savings.

Activity 5 - AF2 Implementation

Leader: SDAG, ACI affiliate to SDAG

PMO: BIP

Contributors: Austrocontrol, BELGOCONTROL, Brussels Airport, AÉROPORTS DE PARIS (CDG AND ORLY), Aéroports de la Côte d'Azur (Nice), DSNA, Air France, ENAIRE, ENAV, Gatwick Airport, Heathrow, Københavns Lufthavne, LVNL, Ryanair, Swedavia, DFS, FRAPORT, Munich Airport; Düsseldorf Airport, British Airways, NATS, NAVIAIR, KLM, Schiphol Airport

Objective

AF 2 Coordination Activity aims at improving coordination of DP execution at AF level.

AF Leader, with the support of the PMO, will perform the identification and preliminary analysis of relevant issues impacting on DP realization at AF level, building further on the information provided by the Implementation projects - falling under the AF - at the envisaged reporting gates

Sub-Activity 5.1: AF 2 Implementation coordination

SA 5.1 will focus on:

- Collection and preliminary analysis of risk and issue management at AF 2 level;
- Mitigation action monitoring at AF 2 level;
- Collection and preliminary analysis of contributions for CBA/Performance Analysis according to guidelines provided by SDM (at AF 2 level).

Sub-Activity 5.2: PMO support to AF implementation

A structured and integrated PMO will support the AF implementation providing direct advice to both IPPs and AF Leader aimed at coordinating the IPs according to SDM indications and instructions.

PMO will provide direct support to IPPs and project management tasks in connection therewith will consist in:

- day to day support to IPPs to accomplish SDM/EC requirements;
- assistance relating to the timely upload of all the information to be provided at each reporting gate;
- preliminary verification for the quality assurance in terms of completeness/consistency/alignment to quality requirements of data/information/deliverables provided by IPPs;
- support and advice relating to clarifications requested by SDM/EC;
- support and advice aimed at the proactive identification of gaps/risks/issue and mitigation actions (on the basis of the IPPs contribution);
- support in connection with the provision of guidelines for checks and sample audits (compliance with the SDM/INEA requirements);
- contributing to CBA/Performance Analysis according to the guideline provided by SDM (on the basis of the IPPs contribution).

PMO will support the AF leader in:

- advising and supporting the AF Leader in connection with the fulfillment of AF Leader's tasks relating to the management of coordination among IPs within the same AF;
- provision to Action Leader, on the basis of the progress data provided by IPPs, of implementation progress data already elaborated (consistent draft) at AF level to facilitate timely submission of progress data at "reporting gates" (April and September);
- preliminary detection of discrepancies, risks with specific reference to potential lack of realization at AF level and issues for DP Implementation at AF level (on the basis of the data provided by IPPs);
- collection of IPs contributions for CBA/Performance Analysis according to guidelines provided by SDM (at AF level) Consolidating CBA/Performance Analysis findings executed by IPPs according to the guidelines provided by SDM (the activities will be performed on the basis of the IPPS contributions).

Moreover, PMO will assist the AF Leader in the implementation of the quality management processes in support to the tasks of the AF coordination.

PMO's activities, in compliance with the tasks above described, will therefore aim to assist the AF Leader, owner of the Sub-Activity 5.1, and the IPPs, owners of the implementing projects as described in Sub-Activity 5.3, in the execution of their respective tasks.

Deliverables

5.1.1 Validation of Risks and Issues Registry - AF level - 30/04/2016, 30/09/2016, 30/04/2017, 30/09/2017, 30/04/2018, 30/09/2018, 30/04/2019, 30/09/2019, 30/04/2020

5.1.2 Validation of Mitigation Registry - AF level - 30/04/2016, 30/09/2016, 30/04/2017, 30/09/2017, 30/04/2018, 30/09/2018, 30/04/2019, 30/09/2019, 30/04/2020

5.1.3 Preliminary CBA/Performance Analysis (AF level) - 30/01/2016, 30/01/2017, 30/01/2018, 30/01/2019, 30/01/2020

5.2.1 Action Status Report (ASR) - AF Level - advanced draft - 23/01/2016, 23/01/2017, 23/01/2018, 23/01/2019, 23/01/2020

5.2.2 Updating Risks and Issues Registry - AF level - 23/04/2016, 23/09/2016, 23/04/2017, 23/09/2017, 23/04/2018, 23/09/2018, 23/04/2019, 23/09/2019, 23/04/2020

5.2.3 Updating of Mitigation Registry - AF level - 23/04/2016, 23/09/2016, 23/04/2017, 23/09/2017, 23/04/2018, 23/09/2018, 23/04/2019, 23/09/2019, 23/04/2020

5.2.4 Final Report (Technical Content) - AF Level advanced draft - 15/10/2020

5.2.5 Preliminary CBA/Performance Analysis (AF level) advanced draft - 23/01/2016, 23/01/2017, 23/01/2018, 23/01/2019, 23/01/2020

5.2.6 Final Report - AF2 Closing - 10/01/2020

Sub-Activity 5.3: AF 2: Airport Integration and Throughput Implementation Projects

Airport Integration and Throughput facilitates the provision of approach and aerodrome control services by improving runway safety and throughput, enhancing taxi integration and safety and reducing hazardous situations on the runway.

The present Sub-Activity groups those Implementation Projects presented by Austrocontrol, BELGOCONTROL, Brussels Airport, AÉROPORTS DE PARIS (CDG AND ORLY), Aéroports de la Côte d'Azur (Nice), DSNA, Air France, ENAIRE, ENAV, Gatwick Airport, Heathrow, Københavns Lufthavne, LVNL, Ryanair, Swedavia, DFS, FRAPORT, Munich Airport; Düsseldorf Airport, British Airways, NATS, NAVIAIR, KLM and Schiphol Airport which will contribute to the AF 2 with a 50% co-financing rate.

Sub-Activity 5.3 Implementation Projects

IP 1: External Gateway System (EGS) implementation

Leader/Contributor: Austrocontrol

Objective

EGS (**E**xternal **G**ateway **S**ystem) will connect the Tower and Approach ATS Units' subsystems DIFLIS (Digital Flight Strip System) and ASTOS (A-SMGCS – Airport Surface Movement and Guidance Control System) to the ATM Data Processing System TopSky. The former ATM Data processing system VAS will be removed for end of life (EOL) reasons. The EGS implementation contributes to AF2 of the PCP implementing rule as an enabler for

future Electronic Flight Strip, DMAN, CDM and A-SMGCS enhancements.

Main objective:

- DIFLIS (Digital Flight Strip System), ASTOS (A-SMGCS) and other sub systems are connected to TopSky (former Eurocat-E) via EGS (External Gateway System).

IP 2: Collaborative Decision Management (CDM) fully implemented

Leader/Contributor: Austrocontrol

Objective

With the completion of this project, Vienna Schwechat (LOWW) will reach the status "CDM fully implemented" according Eurocontrol Manual V4. The CDM system/ISP (Information sharing platform) and STUPS (start up sequencer = DMAN) will be connected to NMOC for exchange of DPI messages.

The main objectives of the project are:

- CDM fully implemented in LOWW and certified by Eurocontrol;
- Process organisation established, considering all stakeholders involved and guaranteeing a sustainable CDM operation;
- Meaningful KPIs are constantly measured and used for improvement.

IP 3: Enhancement of Airport Safety Nets for Brussels Airport (EBBR)

Leader/Contributor: BELGOCONTROL

Objective

The main objective of this project is to upgrade the existing Airport Safety Nets function, associated with the A-SMGCS system at Brussels Airport (EBBR), to obtain (or even exceed) the level of performance as envisaged under ATM functionality AF 2 as defined in the PCP Regulation (see ANNEX, section 2.1.5).

Two related sub-projects are defined:

- Sub-project 1: Validation and Operational introduction of the Advanced Safety Nets function, developed by Belgocontrol, at Brussels Airport (Control Tower);
- Sub-project 2: Further enhancement (by Belgocontrol) of the Advanced Safety Nets function by adding a "Taxi Route conformance monitoring" functionality.

Specific objectives for each of the sub-projects:

Sub-project 1:
This project is a combined technical-operational project, involving both the engineering department and operational staff of Belgocontrol.

The *basic* Airport Safety Nets function, in use at Brussels Airport (Control Tower) and being part of the Airport Movement System (AMS) developed by Belgocontrol, has recently been

upgraded. The result of this upgrade (i.e. an *advanced* Airport Safety Nets function) is capable of integrating A-SMGCS surveillance data, contextual data (stop bar status information provided by the Airfield Lighting System deployed at Brussels Airport) and controller runway related clearances, issued by the Air Traffic Controllers at the Brussels Airport Control Tower and available through the Electronic Flight Strips (EFS) system in use at the Control Tower.

The major part of this sub-project concentrates on the involvement of air traffic controllers (ATCO) at the Brussels Airport Control Tower during training and subsequent operational trials at Brussels Airport in order to jointly:

- set the boundaries of the operational rule set for the *advanced* Safety Nets (function) logic at Brussels Airport (Control Tower);
- minimize the amount of false and nuisance (safety net) alerts to an operationally acceptably safe level;
- fine tune the advanced Safety Nets logic (algorithms), based on the outcome of the operational trails, prior to
- the operational introduction of the *advanced* Safety Nets function at Brussels Airport.

Sub-project 2:
This project is a combined technical-operational project, involving both the engineering department and operational staff of Belgocontrol.

This sub-project aims at:

- introducing a 'cleared taxi route function', enhancing the Routing/Planning function of the A-SMGCS system in use at the Brussels Airport Control Tower (in accordance with the requirements for an 'Automated Assistance to Controller for Surface Movement Planning and Routing', as required under AF2 of the PCP Regulation), and
- further enhancing the Safety Nets function by integrating controller routing clearances allowing to generate alerts in case of deviations/non-conformances between the assigned (cleared) and followed taxi routes (to/by aircraft).

Relation with PCP Regulation:

This project responds to:
PCP AF 2: sub-functionality 'Airport Safety Nets' (see **section 2.1.5 of the ANNEX to the PCP Regulation**) and sub-functionality 'Automated Assistance to Controller for Surface Movement Planning and Routing' (see **section 2.1.4 of the ANNEX to the PCP Regulation**), and **Fast-Track (FT) project number 2.5.1** as defined in the Preliminary Deployment Programme (**PDP**).

IP 4: Vehicle Tracking System (VTS)

Leader/Contributor: Brussels Airport

Objective

Main objective:

- Display position and identification of all vehicles entering manoeuvring area on a regular basis on the ground radar display to controllers.

Motivation:

- Improve safety airport ground movements (additional safety net);
- Comply with Level-1 A-SMGCS requirement (SES Legislation – ESSIP initiative).

IP 5: SMAN-Vehicle

Leader/Contributor: Aéroports de Paris (CDG and Orly)

Objective

Upgrade and Extend the A-SMGCS L2 for all relevant ground vehicles moving on the manoeuvring area and providing functionalities for the drivers.

IP 6: SAIGA

Leader/Contributor: Aéroports de Paris (CDG and Orly)

Objective

Extend the capabilities of the airport resources management system: Stands, Gates, bridges, and Baggage claims, to:

- Consolidate the Airport Operational Plan;
- Consolidate the Pre-departure sequencing and DMAN capability;
- Optimize and increase the efficiency and performances of operations;
- Better support crisis situation and faster recovering.

IP 7: TSAT to the Gate

Leader/Contributor: Aéroports de Paris (CDG and Orly)

Objective

The use of VDGS/Displays is driven by 2 types of needs:

- Consolidate the Pre-departure Sequence and enhance predictability by implementing highly recommended milestones: In-bloc (AIBT - milestone n°7 - Airport CDM Manual V4) and Off-bloc (AOBT- milestone n°15 - Airport CDM Manual V4);
- Display key A-CDM information, such as TSAT, to all stakeholders located at the Gate: Airlines crews, Ground handler and Airport operator.

Visual Display Guidance System (VDGS) units and Displays address sub AF 2.1 and associated Fast track:

- 2.1.1 Consolidate Initial DMAN capabilities;
- 2.1.3 Enhance Basic A-CDM;
- 2.1.4 Consolidate Initial Airport Operational Plan (AOP).

Number of stands concerned :

- AÉROPORTS DE PARIS (CDG AND ORLY):
  - 320 stands with VDGS;
  - 170 stands with Display.
- ORLY:
  - 180 stands with VDGS;
  - 80 stands with Display.

During 2016, Aéroports de Paris planned to achieve 20% of the deployment:

- CDG: 64 VDGS & ORLY: 36 VDGS;
- CDG: 34 Displays & ORLY: 16 Displays.

IP 8: Evolutions CDM - CDG

Leader/Contributor: Aéroports de Paris CDG

Objective

Upgrade CDM@CDG airport tools (PDS and De-icing tool) to be more efficient and to enhance actual functionalities to respond to the requirements of operational staff.

It directly responds to the pre requisite S-AF 2.1 through FT 2.1.1 ("initial DMAN capability") and FT 2.1.3 (Basic A-CDM).

IP 9: SMAN-Airport

Leader/Contributor: Aéroports de Paris (CDG and Orly)

Objective

Develop and integrate Airport Surface Management Tool which allows managing and monitoring information of the airfield area under the responsibility of the airport operator.

- Enhance Initial AOP to airfield area.
- Improve Airport Safety Nets functionalities.
- Facilitate A-SMGCS planning functions by improving predictability of Take-Off times.

The system will share information with all stakeholders/Systems and in particular with the ATC A-SMGCS

The system is currently used by the ATC tower supervisor and apron managers

IP 10: Equipment of ground vehicles to supply the A-SMGCS

Leader/Contributor: Aéroports de la Côte d'Azur (Nice)

Objective

- Supply the A-SMGCS with accurate information.
- Allow the efficient deployment of the A-SMGCS Level 1 & 2 by providing the location of the vehicle and the identification.
- Improve the safety on the platform with knowing the location of the vehicles and the possibility to identify runway incursion.
- Be compliant with the regulation.

IP 11: Data exchanges with the Air Navigation Service Provider

Leader/Contributor: Aéroports de la Côte d'Azur (Nice)

Objective

- Implement a new channel for data exchanges between us and the ANSP.
- Improve the data exchanges (quality and quantity).
- Create a common awareness of all operational situations.
- Through the improvement of the awareness, improve the management of adverse conditions and make the operations more efficient.

IP 12: Data exchanges with the Network Manager Operations Center

Leader/Contributor: Aéroports de la Côte d'Azur (Nice)

Objective

- Be part of the European Network.
- Improve the real time data exchanges.
- Improve the operations efficiency at a local level and at a European one.
- Facilitate the flow and capacity management.
- Improve the situational awareness.
- Better anticipation of the different situations.
- Improve the management of normal and adverse conditions.

IP 13: Data exchanges with COHOR

Leader/Contributor: Aéroports de la Côte d'Azur (Nice)

Objective

- Obtain correct and on-time information for general aviation flights.
- Make the operations easier in order to better anticipate the management of the resources.
- Make the whole operations more efficient through an easier way to obtain automatically the information.
- As general aviation traffic is a big part of our whole traffic, the improvement of the

management of this part allow a gain in the management efficiency for the whole traffic on the platform and also in the European Network.
- Gain in predictability and efficiency at a local level and at a European one.
- Have the most real and up-to-date SOBT for the concerned flights.

IP 14: SYSAT@CDG

Leader/Contributor: DSNA

Objective

In all CDG tower facilities (3 ATC + 2 apron cab) and Approach control room:
- introduce Electronic Flight Strip;
- provide new ASMGCS level 2 tracker with enhanced ground situation display including some level 3/4 functionalities;
- provide new Air Situation Display;
- provide new weather information, synoptic display and electronic documentation, increase information sharing among ATC actors and Airport handler especially regarding DMAN and CDM processes, be ready for SESAR evolution.

IP 15: SYSAT@NCE

Leader/Contributor: DSNA

Objective

In the Tower cab and Approach control room:
- provide ASMGCS level 1 capability before full SYSAT deployment;
- introduce Electronic Flight Strip, evolve ASMGCS to level 2 with enhanced ground situation display including some level 3/4 functionalities;
- provide new Air Situation Display;
- provide new weather information, synoptic display and electronic documentation, be ready for SESAR evolution.

IP 16: SYSAT@ORY

Leader/Contributor: DSNA

Objective

In Tower cab and Approach control room:
- introduce Electronic Flight Strip;
- provide new ASMGCS level 2 tracker with enhanced ground situation display including some level 3/4 functionalities;
- provide new Air Situation Display;
- provide new weather information, synoptic display and electronic documentation;
- increase information sharing among ATC actors and Airport handler especially

regarding DMAN and CDM processes, be ready for SESAR evolution.

IP 17: CDG 2020 Step1

Leader/Contributor: DSNA/Air France

Objective

- Improve runway safety against runway intrusion.
- Improve runway throughput at peak arrival period.

IP 18: Fulfillment of the prerequisite EFS for the PCP AF2 Subfunctionality: Airport Integration and Throuhput (Phase A)

Leader/Contributor: ENAIRE

Objective

Partial fulfilment of the IR 716/2014 "Pilot common project", and in special the AF2 functionality which identifies the use of EFS ("Electronic Flight Strip" in the Tower domain) as a prerequisite for the following functions:

- Departure management synchronised with pre-departure sequencing;
- Departure management integrating surface management constraints;
- Time based separation;
- Automated assistance to controller for surface movement planning and routing;
- Airport safety nets.

FAST TRACK FT2.1.2 Electronic Flight Strip (EFS). Electronic Strip where all the information regarding instructions controller/pilot about flight plan, surveillance etc. are integrated. The tool will ease the data input and display for the use of advanced tools like DMAN, A-SMGCS and CDM.

There will be two EFS operation modes, according to the operational complexity of the airport:

1. Based on lists. The information contained in the flight strip will be available in different lists and windows of the system;
2. Based on labels. In airports with surface surveillance systems, the relevant flight strip information will be displayed (apart from the lists and windows) in the corresponding flight label.

It will require the development of a dynamic simulation system for training purposes.

The following Spanish airports will implement Electronic Flight Strip:

1. Adolfo Suárez Madrid-Barajas;
2. Barcelona El Prat;
3. Palma de Mallorca.

This proposal includes all the development activities, to be carried out from 2014 to 2016, prior to the operational validation of the new function. The operational validation and

deployment of the functionality in the above mentioned airports will be performed 2017 onwards.

IP 19: Fulfillment of the prerequisite A-SMGCS 2 for the PCP AF2 Subfunctionality: Airport Integration and Throughput (Phase A)

Leader/Contributor: ENAIRE

Objective

Partial fulfilment of the IR 716/2014 "Pilot common project", and in special the AF2 functionality which identifies the implementation and deployment of A-SMGCS 2 as a prerequisite for the Airport Safety Nets function.

ENAIRE´s FAST TRACK FT2.2.1 A-SMGCS 2 will focus on Runway Incursion Alerts.

The function shall integrate the surveillance information (regarding all relevant aircraft and vehicles on the area) and controller runway related clearances, to generate and distribute the appropriate alerts.

The following Spanish airports will implement Runway Incursion Alerts based on A-SMGCS 2:

1. Adolfo Suárez Madrid-Barajas;
2. Barcelona El Prat;
3. Palma de Mallorca.

This proposal includes all the development activities, to be carried out from 2014 to 2016, prior to the operational validation of the new function. The operational validation and deployment of the functionality in the above mentioned airports will be performed 2017 onwards.

IP 20: ENAV Airport System upgrade

Leader/Contributor: ENAV

Objective

The main objective is to increase the efficiency and safety of operations at Malpensa and Fiumicino, the two main Italian airports, by improving the surveillance coverage, quality and accuracy in order to extend its capabilities over the all movement area (including most of the suitable apron areas), with a view to implement functionalities that shall facilitate and enable the deployment of Airport Safety Nets as requested within Reg. 716/2014.

The enhancement of surveillance is needed in order to fully satisfy the requirements for ASMGCS level 1 and for laying down the bases for ASMGCS Level 2. In particular, the aim of this project is to achieve the implementation of A-SMGCS level 2 at Malpensa airport and full A-SMGCS level 1 at Fiumicino airport.

The project modularity will reflect the different requirements at airport level, allowing each working package to be further decomposed in different modules.

In particular the surveillance functionality will be improved through:

- The implementation of a new multi-sensor data fusion that will be able to integrate all the contributions coming from different surveillance sensors (ADS-B, Multilateration, SMR);
- The enhancement of the current Surface Movement Radar (SMR);
- the upgrade of the Multilateration system (MLAT), enhancing the actual coverage by adding and integrating other MLAT ground stations.

The new tower system will provide the:

- Electronic Flight Progress Strips (EFPS);
- New Airport Surveillance Data presentation;
- Basic safety (Conflicting clearances through the use of EFPS).

IP 21: Enhanced Departure Management integrating airfield surface assets

Leader/Contributor: Gatwick Airport

Objective

The high-level objectives of the project are as follows:

- Achieve 100% equipage of ground service vehicles with tracking technology;
- Increase airside safety by providing visibility of appropriate vehicles and equipment to Air Traffic Control Tower;
- Enable further implementation of Airport Safety Nets (ATM Sub-Functionality 2.5);
- Improve taxi conflict prediction to reduce number of stop-and-go taxiing;
- Improve efficiency of airside operations by providing real-time information about location of ground service equipment and vehicles to Ground Handling Agents (GHAs) and Airport Flow Centre.

IP 22: Time-Based Separation for Final Approach

Leader/Contributor: Gatwick Airport

Objective

The high-level objectives of the project are as follows:

- Implement initial spacing monitor to support air traffic controller to deliver optimum separation between arriving aircraft;
- Improve utilisation of existing RWY capacity;
- Increase landing rates, especially during strong headwind conditions and reduce arrival and knock-on delays.

IP 23: Time Based Separation

Leader/Contributor: Heathrow/ NATS/ British Airways

Objective

Deployment of Time-based separation (TBS) at Heathrow Airport in order to address the biggest single cause of delay to Heathrow arrivals - strong headwinds on final approach.

Time Based Separation is expected to reduce this delay by as much as 50% of all strong wind regulations applied at Heathrow (equating to c.20% reduction in overall Heathrow ATFM delay) with a projected benefit to the airlines in the range £6m to £7.5m per annum. Any reduction in spacing during strong wind conditions will not result in aircraft being closer than minimum radar separation of 2.5nm.

As noted by Eurocontrol the European Network Manager, London Heathrow airport remained a delay hot spot in 2013 due to our significant impact to aircraft operations under adverse weather conditions. Strong winds is the most impacting condition to Heathrow flights operations thus knocking on to wider global operations.

The TBS concept aims to improve resilience to the impact of high head wind conditions by:

- Reducing the cost of wind-related arrival delay;
- Improving the consistency of spacing (for wake pairs).

(TBS) is a pioneering new system plus operational methodology aimed at organising the separation of arriving aircraft at Heathrow by time instead of distance. This will radically cut flight delays and reduce cancellations due to high headwinds. Supported in the Airports Commission's interim report in December 2013, the delivery of TBS comes after three years of exhaustive analysis from co-members of the Single European Sky Research ATM Research and development programme (SESAR).

The introduction of a time-based separation method at Heathrow will help maintain the landing rate under strong headwind conditions and thus deliver an average improvement of 4 flights per hour beyond today's rate. Every year half of the current delay figure under strong wind conditions while significantly reducing the need for airlines to cancel flights due to the effects of strong headwinds.

<u>IP 24: Initial Airport Operational Plan (AOP)</u>

Leader/Contributor: Heathrow

Objective

The **key improvement** area is the production of a rolling airfield plan with added layers or resilience and architectural consolidations. The AOP is an up-to-date plan or "on the day schedule" with pre-tactical provisions from the pre-tactical DCB (covered under another call submission within AF4). It is the airfield part of the Airport Operations Plan (AOP), known here as the 'airfield plan'. The solution builds on the pre-requisite ACDM Concept and tooling and expands in line with the future SESAR APOC/AOP concept.

By sharing this rolling plan with the Airport Operations Centre (APOC) and other stakeholders, the use of resources can be optimised.

The production of a common and optimised rolling airfield plan will cover three main steps:

- The ability to create a plan (based initially on the schedule, updated with the latest information) that can be shared among all stakeholders;
- The ability to evaluate and then update the airfield plan using different scenarios (known as Demand Capacity Balancing, DCB) to optimise it;
- The ability to take into account user preferences – in all operational circumstances and not only during disruptions, as is the case today. This is known as User Driven Prioritisation Process (UDPP).

The vision for the airport and stakeholders to operate in line with a rolling airfield plan which is up-to-date and reflects external factors and user preferences will be a major cultural change.

IP 25: Airport Safety Nets associated with A-SMGCS Level 2 - Preparation for SMAN

Leader/Contributor: Heathrow

Objective

- Concept of Operation has been developed to clarify the AGL and field infrastructure component design and architecture requirements for an integrated ASMGCS level 4/5 Surface manager (SMAN).
- A holistic Options analysis and selection process is being undertaken to assess the functional and safety integrity requirement of the Ground Movement Control System as a system design that is fully congruent and potentially pre-integrated with the **ASMGSC4/5 Surface Manager.**
- Primary Cable specification, distribution and operational architecture is being surveyed to scope design and installation of an airfield-wide GMCS primary cabling matrix to allow floating separation and necessary system integrity for automatic/.semi-automatic operation.
- Existing AGL system architecture is undergoing resilience and communication architecture modification to allow for validation testing of floating separation and seamless operational transition to the new GMCS/SMAN function.

IP 26: Standardization of A-SMGCS

Leader/Contributor: Kopenhavns Lufthavne/NAVIAIR

Objective

With this project Copenhagen Airport will upgrade the existing A-SMGCS to a newer and standardized version. The standardization of the existing A-SMGCS will facilitate the future procurement of ad-on modules necessary for the implementation of the A-SMGCS advanced functions, cf. point 2 of the Annex to the PCP regulation 716/2014. Furthermore, it will enable Copenhagen Airport to enter into a partnership with other EU airports, which are also

looking to upgrade to the standardized expansion module to A-SMGCS.

The project is also part of Copenhagen Airport's strategy "Expanding CPH", which objective is to facilitate the expected future growth in operations at Copenhagen Airport.

IP 27: Electronic Flight Strips at Schiphol TWR

Leader/Contributor: LVNL

Objective

The overall expected results after EFS is operational with particular reference to the ATM Performance contribution:

- A 'digital' tower environment with a digital data flow (so without paper flight strips);
- Identical tower working positions with cleaned up and simplified consoles;
- A flexibility gain in allocating functions to working positions and extending the amount of working positions;
- A more quiet working environment (speechless co-ordination, less standing up and walking in the tower, printing noises, etc.).

These results will lead to less working errors (thus an increase in safety) and a more efficient use of both data and ATC personnel in the ATM process at the tower. It is an enabler for a lot of planned future activities like safety net functions, conflict detection, data sharing, enhanced CDM, automation of specific functions, enhanced A-SMGCS, etc.

Main objectives:

- Digital flight data processing at Schiphol Towers and the Tower simulator;
- Safer and more efficient handling of ground traffic;
- Efficient and flexible data distribution and data sharing;
- Enabler for safety support systems;
- Enabler for CDM extension of functionalities.

IP 28: Airport CDM implementation Schiphol

Leader/Contributor: Schiphol Airport, LVNL, KLM

Objective

Airport CDM implementation according to Eurocontrol guidelines:

- Local Airport CDM;
- Connection to Eurocontrol NMOC.

IP 29: CDM-Orly

Leader/Contributor: Aéroports de Paris (Orly)

Objective

- Upgrade PDS for sharing information with DMAN;
- Implement De-icing tool for improving operational efficiency;
- Share essential information, such TSAT, on the CDM Website for all stakeholders.

These functionalities contribute directly to the pre-requisite S-AF 2.1 "Departure Management synchronised with Pre Departure sequencing", through FT 2.1.1 "Initial DMAN capability" and FT 2.1.3 "Basic A-CDM".

IP 30: BOREAL-Orly

Leader/Contributor: Aéroports de Paris (Orly)

Objective

- Improve safety by upgrading knowledge of surface state and reaction time.
- Enabler to sub-functionalities defined into the IR 716/2014: A-SMGCS Level 1/2 (2.2.1) SAF 2.5/2.4.

IP 31: Ryanair RAAS Programme (Part A)

Leader/Contributor: Ryanair (50% co-financing rate)

Objective

The objective is to equip all Ryanair aircrafts with Honeywell Runway Awareness and Advisory Systems (RAAS) to improve situational awareness, reduce the risks of runway incursion, runway confusion and runway excursions and thus contribute to the overall airport safety net for high-density airports.

Airport safety nets consist of the detection and alerting of conflicting ATC clearances to aircraft and deviation of vehicles and aircraft from their instructions, procedures or routing which may potentially put the vehicles and aircraft at risk of a collision. The main benefit is related to the increase of runway usage awareness, and consequently an increase of runway safety.

On-board systems and technology uses airport data coupled with on-board sensors to monitor the movement of an aircraft around the airport and provide relevant information to the flight crew. Further applications of on-board systems are related to continuous monitoring of aircraft landing performance, providing pilots with a real-time, constantly updated picture. The on-board systems detect potential and actual risk of collision with other traffic during runway operations and provide the Flight Crew with the appropriate alert. An on-board airport safety net will improve safety in runway operations, mostly at airports where no safety net is provided to controllers.

IP 32: A-CDM Optimization

Leader/Contributor: Swedavia

Objective

- The purpose is to facilitate cooperation between different organizations while raising the quality of information dissemination at Stockholm Arlanda Airport and at Network Manager Operations Centre (NMOC).
- The distribution of information will only be recorded once.
- Online information will replace the estimated values.
- The quality of operational flight data will increase by making data available online.
- Improve the quality of "Departure Progress Information" to NMOC.

IP 33: Enhancement of Airport Safety Nets at Stockholm Arlanda Airport

Leader/Contributor: Swedavia

Objective

The main objectives of this project are to:

- Improve the performance of the surveillance function of the A-SMGCS system at Stockholm Arlanda airport, in order to enable to provision of high-quality, reliable surveillance data for integration in the advanced Airport Safety Nets function;
- Keep the implementation of the surveillance function up-to-date to enable future expansion of the A-SMGCS system, to enable future functionality of the A-SMGCS system and to ensure interoperability with new components in the future.

Relation with PCP Regulation:
This project puts in place the necessary **prerequisite** (A-SMGCS level 1 – surveillance data) for the deployment of **PCP AF 2**, sub-functionality 'Airport Safety Nets' (see **section 2.1.5 of the ANNEX to the PCP Regulation**), also described by **Fast-Track (FT) project number 2.5.1** as defined in the Preliminary Deployment Programme (**PDP**).

IP 34: A-SMGCS Düsseldorf

Leader/Contributor: DFS/ Düsseldorf Airport

Objective

The A-SMGCS-Düsseldorf project comprises the implementation of an A-SMGCS Level 2, including RIM function, at Düsseldorf Airport to improve runway safety and throughput and to support the provision of air traffic services and apron services. The project covers the following activities:

- Replacing/exchanging the current primary sensor;
- Setting up the new cooperative sensor (MLAT);
- Provision of the required infrastructure;
- Implementation of a tracker and a ground situation display;

- Safety assessments.

The realisation of this project will be the preparatory work for the further A-SMGCS Level 3 and 4.

Implementation of the routing function as well as airport safety nets is not part of the described project.

This protect supports FT 2.2.1 A-SMGCS Level 1/2.

IP 35: A-CDM Extension

Leader/Contributor: FRAPORT

Objective

Enhancement of the pre-departure sequencing (PDP FT2.1.3 Basic A-CDM) by:

- considering minimum departure intervals (MDI) based on standard instrument departures (SID);
- facilitating a demand & capacity balance capability;
- Implementation of a "de-icing" element enabling Airport CDM for adverse conditions (PDP FT2.1.3 Basic A-CDM).

IP 36: Apron Controller Working Position

Leader/Contributor: FRAPORT

Objective

Fraport AG is responsible for apron management services at Frankfurt Airport and as such subject to a number of provisions in Commission Implementing Regulation (EU) No 716/2014 ("Pilot Common Project"). These are:

- 2.1.1 Departure Management Synchronised with Pre-Departure Sequencing (in particular with regard to 'variable taxi-times');
- 2.1.2 Departure Management integrating Surface Management Constraints ('routing');
- 2.1.4 Automated Assistance to Controller for Surface Movement Planning and Routing;
- 2.1.5 Airport Safety Nets and
- 2.5 Essential prerequisites. The latter concern particularly A-SMGCS Level 1 and 2, EFS and DMAN.

Consequently, the implementation project is linked to the following sections of the Preliminary Deployment Programme (PDP):

- A-SMGCS Level 1 (Surveillance) (FT 2.2.1 (A-SMGCS Level 1/2));
- A-SMGCS Level 2 (Alerting) (FT 2.2.1 (A-SMGCS Level 1/2) and FT 2.5.1 (Airport Safety Nets Associated with A-SMGCS Level 2));

- A-SMGCS Level 2+ (Routing) (S-AF 2.4 (Automated Assistance to Controller for Surface Movement Planning and Routing)) and
- - as a prerequisite - EFS (FT 2.1.2 Electronic Flight Strips (EFS)).

Underlying objectives of the project are:

- The implementation of an Advanced Surface Movement Guidance and Control System (A-SMGCS) providing routing, guidance and surveillance for the control of aircraft and vehicles in order to maintain the declared surface movement rate under all weather conditions while maintaining the required level of safety;
- The routing and planning function shall calculate the most operationally relevant route as free as possible of conflicts which permits the aircraft to go from stand to runway, from runway to stand or any other surface movement;
- The apron controller working position shall allow the controller to manage surface route trajectories;
- The flight data processing system shall be able to receive planned and cleared routes assigned to aircraft and vehicles and manage the status of the route for all concerned aircraft and vehicles;
- The system shall also be complemented by a function providing controllers with appropriate alerts when potential conflicts primarily on taxiways and intrusions to restricted areas are detected. Conflicts on runways are of secondary interest in this implementation project as the runway system is controlled by the local Air Navigation Service Provider;
- The controller working position shall host warnings and alerts with an appropriate human-machine interface (HMI) including support for cancelling the alert;
- Digital systems, such as electronic flight strips (EFSs), shall integrate the instructions given by the controller with other data such as flight plan, surveillance, routing, published rules and procedures.

IP 37: Airport Safety Net: Mobile Detection of Air Crash Tenders

Leader/Contributor: FRAPORT

Objective

- Equipage of Air Crash Tenders with a Moving Map based on A-SMGCS surveillance data.
- Identification of deviations from routes and procedures of Air Crash Tenders (PDP FT2.5.1 Airport Safety Nets associated with A-SMGCS Level 2).
- Improvement of situational awareness of Air Crash Tenders (PDP FT2.5.1 Airport Safety Nets associated with A-SMGCS Level 2).
- Early prediction of situations that would end up in hazardous situations (PDP FT2.5.1 Airport Safety Nets associated with A-SMGCS Level 2).

IP 38: A-SMGCS Renewal of the Surface Movement Radar (BORA)

Leader/Contributor: Munich Airport

Objective

In the short term and long term, the Surface Movement Radar (coupled with other corresponding technologies) shall enable the following objectives:

- The departure sequence at the runway shall be optimized according to the real traffic situation reflecting any change off-gate or during taxi to the runway;
- Thus enabled, A-SMGCS shall provide optimized taxi-time and improve predictability of take-off times by monitoring of real surface traffic and by considering updated taxi times in departure management regardless of meteorological or other impacting conditions.

In a further step, planned routing and planning functions shall calculate the most operationally relevant route as free as possible of conflicts which permits the aircraft to go from stand to runway, from runway to stand or any other surface movement.

This protect supports FT 2.2.1 A-SMGCS Level 1/2.

Activity 6 - AF2 Implementation – Airspace users

Leader: SDAG, ACI affiliate to SDAG

PMO: BIP

Contributors: Ryanair

Sub-Activity 6.1: AF 2: Airport Integration and Throughput Implementation Projects

Airport Integration and Throughput facilitates the provision of approach and aerodrome control services by improving runway safety and throughput, enhancing taxi integration and safety and reducing hazardous situations on the runway.

The present Sub-Activity groups the Implementation Project presented by Ryanair which will contribute to the AF 2 with a 20% co-financing rate.

Sub-Activity 6.1 Implementation Projects

IP 1: Ryanair RAAS Programme (Part B)

Leader/Contributor: Ryanair (20% co-financing rate)

Objective

The objective is to equip all Ryanair aircrafts with Honeywell Runway Awareness and Advisory Systems (RAAS) to improve situational awareness, reduce the risks of runway incursion, runway confusion and runway excursions and thus contribute to the overall airport safety net for high-density airports.

Airport safety nets consist of the detection and alerting of conflicting ATC clearances to aircraft and deviation of vehicles and aircraft from their instructions, procedures or routing which may potentially put the vehicles and aircraft at risk of a collision. The main benefit is related to the increase of runway usage awareness, and consequently an increase of runway safety.

On-board systems and technology uses airport data coupled with on-board sensors to monitor the movement of an aircraft around the airport and provide relevant information to the flight crew. Further applications of on-board systems are related to continuous monitoring of aircraft landing performance, providing pilots with a real-time, constantly updated picture. The on-board systems detect potential and actual risk of collision with other traffic during runway operations and provide the Flight Crew with the appropriate alert. An on-board airport safety net will improve safety in runway operations, mostly at airports where no safety net is provided to controllers.

Activity 7 - AF3 Implementation

Leader: ENAV; EUROCONTROL/NETWORK MANAGER

PMO: BIP

Contributors: ANS CR, ALITALIA, AUSTRO CONTROL, AVINOR, BELGOCONTROL, BHANSA, CROATIA CONTROL, ENAV, EUROCONTROL, FINAVIA, HCAA, HUNGAROCONTROL, IAA, SLOVENIA CONTROL, EANS, LPS SR, LFV, NATS, NAV PORTUGAL, NAVIAIR, PANSA, LGS, DSNA

Objective

AF 3 Coordination Activity aims at improving coordination of DP execution at AF level.

AF Leader, with the support of the PMO, will perform the identification and preliminary analysis of relevant issues impacting on DP realization at AF level, building further on the information provided by the Implementation projects - falling under the AF - at the envisaged reporting gates.

Sub-Activity 7.1: AF 3 Implementation coordination

SA 7.1 will focus on:

- Collection and preliminary analysis of risk and issue management at AF level;
- Mitigation action monitoring at AF level;
- Collection and preliminary analysis of contributions for CBA/Performance Analysis according to guidelines provided by SDM (at AF level).

Sub-Activity 7.2: PMO support to AF implementation

A structured and integrated PMO will support the AF implementation providing direct advice to both IPPs and AF Leader aimed at coordinating the IPs according to SDM indications and instructions.

PMO direct support to IPPs and to the project management tasks in connection therewith will consist in:

- day to day support to IPPs to accomplish SDM/EC requirements;
- assistance relating to the timely upload of all the information to be provided at each reporting gate;
- preliminary verification for the quality assurance in terms of completeness/consistency/alignment to quality requirements of data/information/deliverables provided by IPPs;
- support and advices relating to clarifications requested by SDM/EC;
- support and advice aimed at the proactive identification of gaps/risks/issue and mitigation actions (on the basis of the IPPs contribution);
- support in connection with the provision of guidelines for checks and sample audits (compliance with the SDM/INEA requirements);
- contributing to CBA/Performance Analysis according to the guideline provided by SDM (on the basis of the IPPs contribution).

PMO will support the AF leader in:

- advising and supporting the AF Leader in connection with the fulfillment of his/her tasks relating to the management of coordination among IPs within the same AF;
- provision to Action Leader, on the basis of the progress data provided by IPPs, of implementation progress data already elaborated (consistent draft) at AF level to facilitate timely submission of progress data at "reporting gates" (April and September);
- preliminary detection of discrepancies, risks with specific reference to potential lack of realization at AF level and issues for DP Implementation at AF level (on the basis of the data provided by IPPs);
- collection of IPs contributions for CBA/Performance Analysis according to guidelines provided by SDM (at AF level);
- consolidating CBA/Performance Analysis findings executed by IPPs according to the guidelines provided by SDM (the activities will be performed on the basis of the IPPS contributions).

Moreover, PMO will assist the AF Leader in the implementation of the quality management processes in support to the tasks of the AF coordination.

PMO's activities, in compliance with the tasks above described, will therefore aim to assist the AF Leader, owner of the Sub-Activity 7.1, and the IPPs, owners of the implementing projects as described in Sub-Activity 7.3, in the execution of their respective tasks.

Deliverables

7.1.1 Validation of Risks and Issues Registry - AF level - 30/04/2016, 30/09/2016, 30/04/2017, 30/09/2017, 30/04/2018, 30/09/2018, 30/04/2019

7.1.2 Validation of Mitigation Registry - AF level - 30/04/2016, 30/09/2016, 30/04/2017, 30/09/2017, 30/04/2018, 30/09/2018, 30/04/2019

7.1.3 Preliminary CBA/Performance Analysis (AF level) - 30/01/2016, 30/01/2017,

30/01/2018, 30/01/2019

7.2.1 Action Status Report (ASR) - AF Level - advanced draft - 23/01/2016, 23/01/2017, 23/01/2018, 23/01/2019, 23/01/2020

7.2.2 Updating Risks and Issues Registry - AF level - 23/04/2016, 23/09/2016, 23/04/2017, 23/09/2017, 23/04/2018, 23/09/2018, 23/04/2019

7.2.3 Updating of Mitigation Registry - AF level - 23/04/2016, 23/09/2016, 23/04/2017, 23/09/2017, 23/04/2018, 23/09/2018, 23/04/2019

7.2.4 Final Report (Technical Content) - AF Level advanced draft - 15/10/2020

7.2.5 Preliminary CBA/Performance Analysis (AF level) advanced draft - 23/01/2016, 23/01/2017, 23/01/2018, 23/01/2019

7.2.6 Final Report - AF3 Closing - 10/01/2019

Sub-Activity 7.3: AF 3 – Flexible Airspace Management and Free Route

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

The present Sub-Activity groups all Implementation Projects which will contribute to the AF 3.

Sub-Activity 7.3 Implementation Projects

IP 1: AZA Traffic Flow Restriction (TFR) – LIDO planning system

Leader/Contributor: Alitalia

Objective

TFR (Traffic Flow Restriction) is a LIDO FLIGHT LUFTHANSA SYSTEMS module that allows integrating traffic flow restriction document (RAD) into the flight planning process within Lido/Flight. The RAD is the document published by Central Flow management Unit (CFMU) of EUROCONTROL and describes routes on which restrictions are imposed for a specific period.

By this Lido tool Alitalia will be able to plan usually closed segments (CDR) obtaining in this way important optimization to company routes and also be able to catch the opportunity to plan over new segments whose availability will be unveiled day by day.

The main objectives are:

- Improve the route efficiency pursuing the minimum cost (Total cost = fuel costs + ATC costs + time cost);
- Automation on the research of the best routing;
- Research of the best routing looking at the daily availability of DCT and RAD restriction removal;
- Reduction of CO2 and other emissions due to optimized flight plans.

IP 2: AZA FREE FLIGHT- DIRECT OPTIMIZATION

Leader/Contributor: Alitalia

Objective

The feature 'Free Flight – Direct Optimization' lets users define arbitrary waypoints by their coordinates and dynamically trigger a calculation of the missing segment between the newly defined Free Flight waypoint and any other Free Flight or system-known waypoint, or between two system known waypoints. The feature can be used as part of the regular flight planning process. It is also suitable for the modification of reclearance procedures or as inflight assistance.

With the aid of graphical maps, flight dispatchers can visualize and evaluate a given calculated route, select a waypoint, replace it with a Free Flight waypoint, eliminate waypoints deemed superfluous and reconnect the Free Flight waypoint with existing route objects. The application plots the missing segment between a designated Free Flight waypoint and the designated next waypoint.

Main objective is:

- Improve the route efficiency pursuing the minimum cost (Total cost = fuel costs + ATC costs + time costs);
- Reduction of CO2 and other emissions due to optimized flight plans.

IP 3: LARA integration in CANAC 2

Leader/Contributor: Belgocontrol

Objective

This project aims at:

- Providing ATCO's (Air Traffic Controller) with military information about areas reservation in order to optimise the use of airspace;
- Automate the display of airspace reservation in the EUROCAT (in the ODS (Operational input and Display System) of the FDP (Flight Data Processing) system);
- Provide information about status of airspace reservation in the ADIDS-c (Aeronautical Data Information Display System).

IP 4: Borealis Free Route Airspace (Part 1)

Leader/Contributor: BOREALIS (AVINOR, FINAVIA, IAA, EANS, LFV, NATS, NAVIAIR, LGS)

Objective

Free Route Airspace (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. Therefore, the implementation will ensure that all Fast Track elements defined in the PDP to support Free Route (S-AF3.2) are fully implemented including:

Family 1 Projects:

- FT3.2.1 Upgrade of ATM systems, where appropriate;
- FT3.2.2 Upgrade of NM systems, where appropriate;

Family 2 Projects:

- FT3.2.3 Implementation of Direct Routes, where these are not currently implemented;
- S-AF3.2 Implementation of Free Route across the NEFRA region.

The target date for implementing FRA is 1 January 2022 above flight level 310 in the ICAO EUR region.

This action is the implementation of Free Route Airspace, and hence is within Category a) of the proposed actions under the SESAR element of Funding Objective 3 of the Multi-Annual Work Programme 2014 CEF Transport Call for 2014.The Performance Review Body and the Network Manager has highlighted the need to pay particular attention to interfaces between the FABs and the deployment of FRA initiatives to achieve the flight efficiency targets forRP2 of the Performance Scheme. Furthermore, the Network Operations Plan (NOP) developed by the Network Manager for the period between2014 and 2019 highlights that Free Route Airspace forms a key element of the Strategic Object SO3: Implement a seamless and flexible airspace enabling Free Routes. The Network Manager's objective is to ensure and coordinate the implementation of Free Route Airspace throughout Europe at and above FL 310 by2019, working towards the SESAR deployment objective of full Free Route implementation in 2022. This activity, which is to implement FRA across six States initially and to plan for implementation across nine States, is clearly aligned with the Strategic Objectives defined in the NOP.

The activity is the synchronised implementation of FRA at FAB and also inter-FAB level and is aligned to the FRA CONOPs that is described in the Network Manager's European Route Network Improvement Plan (ERNIP).

Part 2 of the ERNIP describes the NM objectives for implementing FRA and the current status of implementation, which includes the current implementation of FRA in the DK-SE FAB and Shannon ACC and also the implementation of FRA at night in Tampere ACC in Finnish airspace.

The proposed action is Part 1 of the implementation of FRA throughout the region covered by the Borealis Alliance. It is broken down into two parts:

- Part 1: Implementation of FRA in NEFRA region consisting of the DK/SE FAB and NEFAB (Works);
- Part 2: Planning activities for introducing FRA across all Borealis States (Study).

IP 5: 4-Flight deployment in DSNA pilot ACCs

Leader/Contributor: DSNA

Objective

- Replace the current operational CAUTRA System for ACC and Major APP, by a modern SESAR compliant interoperable line of product, to increase DSNA Performance.
- Support the implementation of the European ATM Master Plan for France and of the SESAR concept.
- Respect the Single European Sky (SES) and FABEC rules.
- Switch to "stripless" environment and up-to-date technologies.
- Reduce total cost of ownership, by sharing development and evolution costs and risks for the new system, with ANSP partners.

IP 6: ASM tool Implementation

Leader/Contributor: EANS

Objective

Air Space Management (ASM) tool implementation is a prerequisite for Free Route Airspace Implementation of AF3 – Flexible Airspace Management and Free Route of the Commission Implementing Regulation (EU) No 716/2014 on the establishment of the Pilot Common Project (PCP) supporting the implementation of the European Air Traffic Management Master Plan.

The EUROCONTROL LARA ASM tool will:

- enhance Civil-Military ATM performance;
- provide real-time exchange of airspace management data;
- enhance situational awareness;
- facilitates collaborative decision-making;
- improve safety.

IP 7: ENAV implementation of Free Route

Leader/Contributor: ENAV

Objective

ENAV and BLUE MED FAB partners have been implementing Free Route Airspace concept

according to the agreed BLUE MED FAB Implementation Programme, within which the Free Route Airspace concept will be applied in all its stages: from the implementation of night DCTs, up to more ambitious Free Route scenarios on regional scale.

The project aims to implement free route operations in Italy through a seamless integration of the four Italy ACCs enabling airspace users to flight-plan their preferred trajectories within the whole Italian airspace.

The deployment will cover technical systems, operational airspace design and procedures addressing the following objectives:

- Enable users preferred trajectories within whole Italian airspace;
- Upgrade of ATM Systems;
- Seamless integration of four Italy ACCs;
- ATS-route network optimisation, including arrival and departure procedures;
- Sectors adaptation to accommodate the changes in traffic flows where needed.

IP 8: NM DCT/FRA Implementation and support

Leader/Contributor: EUROCONTROL/NETWORK MANAGER

Objective

This project contributes directly to the implementation of AF3 / S-AF3.2 Free Route:

- FT 3.2.2 Upgrade NM Systems to support Direct Routing Operation (DCT);
- FT 3.2.3 Implement Direct Routes.

The project allows to:

- Ensure and co-ordinate the gradual implementation, in a harmonised way, of Free Route Airspace, including DCT based, throughout the European airspace;
- Adapt NM systems to cope with Free route developments.

The project is a key contributor to the following Strategic Objectives mentioned in the Network Strategy Plan (NSP):

- SO 3 : Implement a seamless and flexible airspace;
- SO 4: Plan optimum capacity and flight efficiency;
- SO 5: Facilitate business trajectories and cooperative traffic management.

IP 9: Implementation of FRA in Greece

Leader/Contributor: HCAA

Objective

The project aims to implement free route operations in Greece through a seamless integration of the two Greek ACCs enabling airspace users to flight-plan their preferred trajectories within the airspace of HELLAS UIR.

The deployment will cover technical systems, operational airspace design and procedures addressing the following objectives:

- Enable users preferred trajectories within the airspace of HELLAS UIR;
- Upgrade of ATM Systems;
- Seamless integration of two Greek ACCs;
- ATS-route network optimisation, including arrival and departure procedures;
- Sectors adaptation to accommodate the changes in traffic flows where needed.

Phase I: (11/2015- 12/2016)

Gradually implementation of Direct Routing Airspace (DRA) within HELLAS UIR.

Airspace from FL355 to FL460 from 11/2015 until 12/2016.

In compliance with EC Regulation 716/2014, pre-requisites for enabling Free Route operations are the upgrade of the ATM systems and the reorganization of the whole ATHINAI FIR/HELLAS UIR Airspace. Therefore, for the purpose of this project the following activities are considered:

- Phase I of Upgrade ATM Systems;
- Phase I of Airspace reorganizationPhase I of Direct Route Network.

IP 10: FT3.1.1 NAV Portugal - Initial ASM tool to support AFUA

Leader/Contributor: NAV Portugal

Objective

Airspace Management (ASM) and Advanced Flexible Use of Airspace (A-FUA) aims to provide the possibility to manage airspace reservations more flexibly in response to airspace user requirements. Changes in airspace status shall be shared with all concerned users, in particular Network Manager, air navigation service providers and airspace users (Flight Operations Centre/Wing Operations Centre (FOC/WOC)). ASM procedures and processes shall cope with an environment where airspace is managed dynamically with no fixed-route network, ASM solutions shall support all airspace users, including enabling the alignment of FRA, Conditional Route (CDR) and published Direct Routing (DCT). These ASM solutions shall be based on forecast demand received from the local Air Traffic Flow and Capacity Management (ATFCM) function and/or the Network Manager.

The process will be applied also for improving the planning activities related to the updates to airspace status. Foster a consistent application of the Flexible Use of Airspace (FUA) Concept across the European network, and support a safe, efficient and accurate flow of ASM data.

The improved planning process refers to the use of specific procedures allowing Airline Operators (AOs) to optimise their flight planning in order to achieve a more efficient utilization of available airspace through more dynamic responses to specific short notice or real-time airspace status changes, requirements and route optimisation at the pre-tactical and/or tactical levels.

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

Ultimately, the ASM operations continue until the real-time activation of airspaces in the Lisbon ACC or routes (below FL 240, since above that level the FIR airspace is full free route). The alignment between both ASM/ATFCM processes shall continue to ensure the assessment of the network impact, the identification of flights affected by real-time modifications, as well as the timely dissemination of the decisions. Airspace uses (allocations, activations, deactivations) are issued from the ASM tools (LARA,) via B2B.

The system requirements are:

- The ASM support system shall support the fixed and conditional route networks currently in place, as well as DCTs, FRA and flexible sector configurations; The system shall be able to respond to changing demands for airspace; Enhancements to the Network Operations Plan (NOP) shall be achieved through a cooperative decision-making process between all involved operational stakeholders;
- Airspace configurations shall be accessible via Network Manager systems, which shall contain the up-to-date and foreseen airspace configurations, to allow airspace users to file and modify their flight plans based on timely and accurate information;
- The Lisbon ATC system shall support flexible configuration of sectors so that their dimensions and operating hours can be optimised according to the demands of the NOP;
- The system shall allow a continuous assessment of the impact of changing airspace configurations on the network - ATC systems shall correctly depict the activation and de-activation of configurable airspace reservations and the change of a volume of airspace from a fixed route network to FRA;
- The ASM, ATFCM and ATC systems shall securely interface in a way that allows the provision of air navigation services based on a common understanding of the airspace and traffic environment. The ATC systems shall be modified to enable this functionality to the extent necessary to comply with Regulation (EC) No 552/2004, point 4 of Part A of Annex II;
- Centralised Aeronautical Information Services (AIS) systems, such as the European AIS Database (EAD), shall make available environment data for flexible airspace structures to all involved operational stakeholders in a timely manner. This enables planning to be undertaken based on accurate information relevant to the time of the planned operations; Local AIS systems shall enable this capability and the upload of changing local data;
- Operational stakeholders shall be able to interface with the NOP as specified in Point 4; Interfaces shall be defined to allow dynamic data to be sent to operational stakeholder systems, and for those stakeholders to be able to communicate information in an accurate and timely manner; The systems of these stakeholders shall be modified to enable these interfaces.

IP 11: Free route airspace from the Black Forest to the Black Sea

Leader/Contributor: HUNGAROCONTROL, SLOVENIA CONTROL, CROATIA

CONTROL, LPS SR, AUSTRO CONTROL, BHANSA, ANS CR

Objective

The aim of the technical feasibility study is to develop and validate the Free Route Airspace Concept of Operations (CONOPS) within the Functional Airspace Block Central Europe (FAB CE) with the potential of extending it beyond its borders. The study will include the development of the CONOPS, simulation exercise to validate the findings and a detailed elaboration on the necessary ATM system requirements to connect the individual ATM systems. The final report of the study will provide recommendations for the necessary system modifications in order to provide system support for the implementation of the developed concept.

The FAB CE FRA CONOPS will need to be developed in such a way that the various implementation scenarios it includes will have to meet the safety objectives and will need to be compatible with existing civil and military operations. Some of the scenarios will possibly as well focus on and/or include inter-FAB component. In addition, it will need to be sustainable for further development and have the capability of being connected to neighbouring FAB airspace.

In the course of the Action and respectively the subsequent simulation activities, the principles of Airspace Management issues will be tackled according to the CONOPS. Best practices and relevant guidelines will be coordinated and exchanged beforehand with the Network Manager. Nonetheless, the focus of the Action is on cross border applications and procedures within a Free Route Airspace.

The title of the study reflects FAB CE's determination of creating a concept whose potential does not end where its geographical borders do: it reflects a forward-thinking attitude that benefits not only the Functional Airspace Block, or even one single region, but the added-value will be recognizable on a European scale. The study takes the commitment of the seven FAB CE ANSPs, seven countries, six being EU Member States, with the addition of Bosnia and Herzegovina, with one common goal: the defragmentation of airspace that supports the Single European Sky.

The Action has a network effect that directly and indirectly contributes to the better and more effective realization of SES objectives, and those of the trans-European ATM system.

Activities implemented by the Implementation Project:

- Activity 1: Framework Partnership Agreement Coordination (DM);
- Activity 2: Project management and dissemination;
- Activity 3: Development of Concept of Operations;
- Activity 4: Validation of CONOPS and relevant new functionalities;
- Activity 5: Definition of ATM system requirements;
- Activity 6: Survey and assessment of the existing functionalities of the ATM systems;
- Activity 7: Identification of required system developments and up-grades per ATM systems.

Coordinator: HungaroControlPte. Ltd. Co.

Promoters:

- HungaroControlPte. Ltd. Co.,
- Air Navigation Services of the Czech Republic,
- Austro Control ÖsterreichischeGesellschaftfürZivilluftfahrtmitbeschränkterHaftung,
- Slovenian Air Navigation Services Limited,
- Bosnia and Herzegovina Air Navigation Services Agency,
- Croatia Control Ltd.,
- LetovéPrevádzkovéSlužby SR, StátnyPodnik,
- NATS En Route PLC.

Affiliated entity: FAB CE Aviation Services Ltd.

IP 12: 1st part of the upgrade of the P_21 PEGASUS system to SESAR functionalities - Test and Validation Platform

Leader/Contributor: PANSA

Objective

The main objective of this project is implementation of the iTEC Test and Validation Platform for the ATM system which will enable validation of new concepts of operations concerning: trajectory management, ground safety-nets, inter system coordination, human machine interface and other constituents of the ATM system.

The Test and Validation Platform will allow effective transition from the P_21 system to iTEC to meet the following objectives:

Deployment of Preliminary Deployment Plan functionalities of the ATM System, mostly the ATM Functionality 3 - Flexible Airspace Management and Free Route (Fast Track 3.2.1), with references to:

- Pilot Common Project – Technical Annex for the AF 03:
  - 3.1.1. Airspace Management and Advanced Flexible Use of Airspace:
    - The ATC system shall support flexible configuration of sectors so that their dimensions and operating hours can be optimized according to the demands of the NOP;
    - The system shall allow a continuous assessment of the impact of changing airspace configurations on the network;
    - ATC systems shall correctly depict the activation and de-activation of configurable airspace reservations and the change of a volume of airspace from a fixed route network to FRA;
    - The ASM, ATFCM and ATC systems shall securely interface in a way that allows the provision of air navigation services based on a common understanding of the airspace and traffic environment. The ATC systems shall be modified to enable this functionality to the extent necessary to comply with Regulation (EC) No 552/2004, point 4 of Part A of Annex II.
  - 3.1.2. Free Route - ATC systems shall implement the following:
    - Flight data processing system, including HMI, to manage trajectory/flight planning without reference to the fixed ATS network;

- Flight planning systems to support FRA and cross-border operations;
- ASM/ATFCM to manage FRA — for FRA, Medium Term Conflict Detection (MTCD) including Conflict Detection Tools (CDT), Conflict Resolution Assistant (CORA), Conformance Monitoring, and APW for dynamic airspace volumes/sectors; Trajectory prediction and de-confliction shall support an automated MTCD tool adapted to operate in FRA airspace and, when required, on DCT;
- Flight Data Processing System (FDPS) shall support FRA, DCT and A-FUA;
- The controller working position shall support the operating environments, as appropriate.

- European Network Operations Plan 2014-2019:
  - **Winter 2017:** Projects planned or proposed for implementation – Poland - H24 Free Route Airspace Warsaw FIR.
- European Route Network Improvement Plan Part 1, including the FRA CONOPS:
  - 4.4.15 Activity 14 – ATC System Integration Considerations
    - Modifications of the air traffic automation's Flight Data Processor (FDP);
    - Changes, if necessary, to the Radar Data Processor (RDP);
    - Required changes to the ATC situation display;
    - Required changes to ATC support tools.
  - 5.3.3 Enablers
    - Constraint: Aircraft Navigation Performance Mix limits capacity by increasing ATC workload;
    - Mitigation: ATC system modification to allow FDPS/RDPS to show aircraft navigation capability.
  - 6.8.5 Increasing Sector Capacity and Efficiency – Enablers - enhanced system support (e.g. automated support for exchanging coordination data, conflict detection, air/ground data link, ground based safety nets).
- European Route Network Improvement Plan Part 2 ARN Version 2014-2019:
  - ANNEX C. SUMMARY OF ERNIP PART 2 - ARN VERSION 2014 - 2018/19 PROPOSALS
    - **Winter 2016:** Projects planned or proposed for implementation – Poland - Polish Airspace Project 2010+, Phase 3 (Implementation of an optimized airspace structure and vectorization within Warszawa ACC), H24 Free Route Airspace Warsaw FIR, Phase 3 (Upper airspace FL365+);
    - **Winter 2017:** Projects planned or proposed for implementation –Poland - H24 Free Route Airspace Warsaw FIR.
- ATM Master Plan / ESSIP – Free Route Airspace:
  - AOM21 Implementation of Free Route Airspace - AOM21-ASP02 Implement system improvements:
    - Upgrade FDP and CWP, if strictly required by the selected FRA operations and according to the existing FDP/CWP capabilities. Possible FDP upgrades are differentiation between different traffic type airspaces, support to cross-border FRA operations (direct route beyond AoR, DCT clearances, random entry/exit points, OLDI/SYSCO messages supporting LAT/LONG COPs);

        - Possible CWP upgrades (e.g. the ones required by the FDP changes). Upgrade local flight plan reception and handling, if required.
    - Baltic FAB CONOPS:
        - 3.3.6 FRA (Free Route Airspace)
        - The deployment of FRA will initially require the introduction of a number of key enablers - System support – enhancement for the purposes of flight planning, flight data processing, flight data display and exchange, coordination, conflict detection and resolution;

- Deployment at the same time of elements of other ATM Functionalities:
    - Enable the ATM System to support RNP operations (FT 1.2.3);
    - Electronic Flight Strips (FT 2.1.2);
    - Interface to NMS (FT 4.2.3);
    - FDP system adaptation to interface with NOP (FT 4.4.1);
    - ATM system adaptation to support AIXM 5.1 (FT 5.3.2);
    - FDPS upgrade preparing for IOP Flight Object exchanges (FT 5.6.1).

- Alignment of the PEGASUS ATM system to further joint development within the iTEC cooperation and with FAB partner.

IP 13: ASM and AFUA Implementation

Leader/Contributor: ECTL/NM / EUROCONTROL

Objective

The work is concerning two Tasks:

- Task 1: NM deployment and support related to ASM/AFUA

The NM participation in this Activity will respond to the approved Concepts of Operations and Technical Specifications developed for FRA and ASM as part of the European Network Operations Plan/European Route Network Improvement Plan.
The general objective of the Activity is to further improve existing ASM/ATFCM processes putting more emphasis on the contributions to the achievement of the performance targets defined both at network and ANSP/FAB level. This development will lead to achieving the NSP and PCP objectives across the entire European airspace, ensuring the implementation of Advanced FUA process with specific support to FRA operations.

- Task 2: PRISMIL

The activity concerns mainly the continuation of support to the deployment of PRISMIL at States and FAB level and the implementation of B2B services to automate the exchange of data between ASM tools and PRISMIL.

Activity 8 - AF4 Implementation

Leader: EUROCONTROL/NETWORK MANAGER

PMO: BIP

Contributors: ENAV, EUROCONTROL/NETWORK MANAGER, NAV Portugal

Objective

AF 4 Coordination Activity aims at improving coordination of DP execution at AF 4 level.

AF Leader, with the support of the PMO, will perform the identification and preliminary analysis of relevant issues impacting on DP realization at AF level, building further on the information provided by the Implementation projects - falling under the AF - at the envisaged reporting gates.

Sub-Activity 8.1: AF 4 Implementation coordination

SA 8.1 will focus on:

- Collection and preliminary analysis of risk and issue management at AF 4 level;
- Mitigation action monitoring at AF 4 level;
- Collection and preliminary analysis of contributions for CBA/Performance Analysis according to guidelines provided by SDM (at AF 4 level).

Sub-Activity 8.2: PMO support to AF implementation

A structured and integrated PMO will support the AF implementation providing direct support to both IPPs and AF Leader aimed at coordinating the IPs according to SDM indications and instructions.

PMO direct support to IPPs and project management tasks in connection therewith will consist in:

- day to day support to IPPs to accomplish SDM/EC requirements;
- assistance relating to the timely upload of all the information to be provided at each reporting gate;
- preliminary verification for the quality assurance in terms of completeness/consistency/alignment to quality requirements of data/information/deliverables provided by IPPs;
- support and advice relating to clarifications requested by SDM/EC;
- support and advice aimed at the proactive identification of gaps/risks/issue and mitigation actions (on the basis of the IPPs contribution);
- support in connection with the provision of guidelines for checks and sample audits (compliance with the SDM/INEA requirements);
- contribution to CBA/Performance Analysis according to the guideline provided by SDM (on the basis of the IPPs contribution).

PMO will support the AF Leader in:

- advising and supporting the AF Leader in connection with the fulfillment of his/her tasks relating to the management of coordination among IPs within the same AF;
- provision to Action Leader, on the basis of the progress data provided by IPPs, of

implementation progress data already elaborated (consistent draft) at AF level to facilitate timely submission of progress data at "reporting gates" (April and September);

- preliminary detection of discrepancies, risks with specific reference to potential lack of realization at AF level and issues for DP Implementation at AF level (on the basis of the data provided by IPPs);
- collection of IPs contributions for CBA/Performance Analysis according to guidelines provided by SDM (at AF level);
- contribution to the consolidation CBA/Performance Analysis findings executed by IPPs according to the guidelines provided by SDM (the activities will be performed on the basis of the IPPS contributions).

Moreover, PMO will assist the AF Leader in the implementation of the quality management processes in support to the tasks of the AF coordination.

PMO's activities, in compliance with the tasks above described, will therefore aim to assist the AF Leader, owner of the Sub-Activity 8.1, and the IPPs, owners of the implementing projects as described in Sub-Activity 8.3, in the execution of their respective tasks.

Deliverables

8.1.1 Validation of Risks and Issues Registry - AF level - 30/04/2016, 30/09/2016, 30/04/2017, 30/09/2017, 30/04/2018

8.1.2 Validation of Mitigation Registry - AF level - 30/04/2016, 30/09/2016, 30/04/2017, 30/09/2017, 30/04/2018

8.1.3 Preliminary CBA/Performance Analysis (AF level) - 30/01/2016, 30/01/2017, 30/01/2018

8.2.1 Action Status Report (ASR) - AF Level - advanced draft - 23/01/2016, 23/01/2017, 23/01/2018, 23/01/2019, 23/01/2020

8.2.2 Updating Risks and Issues Registry - AF level - 23/04/2016, 23/09/2016, 23/04/2017, 23/09/2017, 23/04/2018

8.2.3 Updating of Mitigation Registry - AF level - 23/04/2016, 23/09/2016, 23/04/2017, 23/09/2017, 23/04/2018

8.2.4 Final Report (Technical Content) - AF Level advanced draft - 15/10/2020

8.2.5 Preliminary CBA/Performance Analysis (AF level) advanced draft - 23/01/2016, 23/01/2017, 23/01/2018

8.2.6 Final Report - AF4 Closing - 10/01/2018

Sub-Activity 8.3: AF 4 Network collaborative management

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.

The present Sub-Activity groups all Implementation Projects which will contribute to the AF 4.

Sub-Activity 8.3 Implementation Projects

IP 1: ENAV initiative for the identification of Network Collaborative Management requirements

Leader/Contributor: ENAV

Objective

ENAV will develop a study in order to identify all requirements and provisions to meet the demands set for AF4 under Reg. 716/2014. The study will identify measures in order to implement:

- Optimized management of traffic demand, including high-level/peak hours traffic; requests. Some enhancement through reduction in controller workload;
- Enhanced by improved sharing of the network situation;
- Better use of the available network capacity;
- Increased through suppression of flight ATFM regulations thanks to local ATFCM measures with the same ATC sector manning;
- Small benefits through improved use of the airport and airspace capacity resulting from a better knowledge of the airspace availability and of the traffic demand;
- Reduction of costs induced by delays.

Reduction of flight delays Enhanced through use of cost effective tools to access network information instead of expensive local tools or procedures and through the improved capacity.

IP 2: Interactive Rolling NOP

Leader/Contributor: EUROCONTROL/NETWORK MANAGER EUROCONTROL/NETWORK MANAGER

Objective

This implementation project addresses the evolutions of the operational interfaces between NM and its operational partners through the following objectives:

- Extension and improvement of the process referred to as the interactive rolling NOP;
- Replacing the existing interfaces (NOP Portal, CHMI and EHMI) into a single interface;
- Provision of the common interface to all Stakeholders to enable the collaborative decision making processes used to build and execute the Network Operations Plan.

The project is a key contributor to the following Strategic Objectives mentioned in the Network Strategy Plan (NSP):

- SO 4: Plan optimum capacity and flight efficiency;
- SO 5: Facilitate business trajectories and cooperative traffic management.

IP 3: ATFCM measures (STAM)

Leader/Contributor: EUROCONTROL/NETWORK MANAGER

Objective

This project supports the deployment of enhanced STAM process (STAM: Short Term ATFCM Measures), its underlying NM systems changes and associated operational enablers (e.g. required level of traffic predictability), in a collaborative environment involving multiple stakeholders (NM, ANSP's, AU's, Airports), through the consolidation of the STAM package (supporting procedures, documents and tools).

STAM Package will be developed and deployed to support the coordination, decision, promulgation and effective execution of STAM measures in order to extend them beyond the specific local problems and to allow considering the impact on the Network.

Following objectives may be associated to the project:

- Minimizing ATFCM delay by reducing the need for ATFCM regulations and its impact on operations;
- Improve the balance between demand and available capacity through cooperation between ATFCM and ATS processes, through targeted measures on (an) individual flight(s);
- Delivery of a complete package of system support and operational procedures, to enable the harmonised and effective deployment of Short Term ATFCM Measures throughout the European airspace;
- Support the network coordination between stakeholders and provide the network view for the elaboration, decision and execution of STAM measures;
- Provide the collaborative environment to stakeholders during the elaboration, decision and execution of STAM measures.

The project is a key contributor to the following Strategic Objectives mentioned in the Network Strategy Plan (NSP):

- SO 4: Plan optimum capacity and flight efficiency;
- SO 5: Facilitate business trajectories and cooperative traffic management.

IP 4: Trajectory accuracy and traffic complexity

Leader/Contributor: EUROCONTROL/NETWORK MANAGER

Objective

This IP addresses the FT4.4.1 'FDP System adaptation and EFD (EFTMS flight data

message)' and contributes to the S-AF4.4 'Automated Support for Traffic Complexity Assessment'.

- The accuracy of demand assessment will be significantly improved by the use of the Extended Flight Plan (EFPL) in the planning phase, meaning a Flight Plan enriched with detailed trajectory and flight performance information. This will also positively impact the ETFMS flight data (EFD) messages process.
- The better accuracy of the initial trajectory information provided by NM will improve traffic predictability in general, and more specifically facilitate the traffic complexity assessment both at local and central level.
- The implementation of Network Traffic Scenario management tools at NM level will also directly contribute to manage traffic complexity.
- Improved trajectory/constraint accuracy/awareness will also result in potential improvements to flight efficiency.

IP 5: FT 4.2.3 NAV Portugal Interface to NMS AFP

Leader/Contributor: NAV Portugal

Objective

The purpose of this national project (action), on the Lisbon FIR, is to contribute for the European wide objectives of the IR 716/2014 AF#4, namely on the Improvement of the collaboration between the NM and ANS providers, airports and airspace users in flight plan filing.

The Lisbon FIR ATM system should automatically provide AFP message for:

- Missing flight plan;
- Change of route;
- Diversion;
- Change of flight rules or flight type;
- Change of requested cruising level;
- Change of aircraft type;
- Change of aircraft equipment.

The APL and ACH messages sent by IFPS and AFP messages are automatically processed in the local ATC system. These messages permit a real time update of the flight plan information.

Activity 9 - AF5 Implementation

Leader: DFS

PMO: BIP

Contributors: Austrocontrol, BELGOCONTROL, ENAIRE, ENAV, DSNA, EUROCONTROL/NM, KNMI, NATS, NAVIAIR, ROMATSA, DFS, FRAPORT

Objective

AF 5 Coordination Activity aims at improving coordination of DP execution at AF 5 level.

AF Leader, with the support of the PMO, will perform the identification and preliminary analysis of relevant issues impacting on DP realization at AF level, building further on the information provided by the Implementation projects - falling under the AF - at the envisaged reporting gates.

Sub-Activity 9.1: AF 3 Implementation coordination

SA 9.1 will focus on:

- Collection and preliminary analysis of risk and issue management at AF 5 level;
- Mitigation action monitoring at AF 5 level;
- Collection and preliminary analysis of contributions for CBA/Performance Analysis according to guidelines provided by SDM (at AF5 level).

Sub-Activity 9.2: PMO support to AF implementation

A structured and integrated PMO will support the AF implementation providing direct advice to both IPPs and AF Leader aimed at coordinating the IPs according to SDM indications and instructions.

PMO direct support to IPPs and to the project management tasks in connection therewith will consist in:

- day to day support to IPPs to accomplish SDM/EC requirements;
- assistance relating to the timely upload of all the information to be provided at each reporting gate;
- preliminary verification for the quality assurance in terms of completeness/consistency/alignment to quality requirements of data/information/deliverables provided by IPPs;
- support and advice relating to clarifications requested by SDM/EC;
- support and advice aimed at the proactive identification of gaps/risks/issue and mitigation actions (on the basis of the IPPs contribution);
- support in connection with the provision of guidelines for checks and sample audits (compliance with the SDM/INEA requirements);
- contributing to CBA/Performance Analysis according to the guideline provided by SDM (on the basis of the IPPs contribution).

PMO will support the AF Leader in:

- advising and supporting the AF Leader in connection with the fulfillment of his/her tasks relating to the management of coordination among IPs within the same AF;
- Provision to Action Leader, on the basis of the progress data provided by IPPs, of implementation progress data already elaborated (consistent draft) at AF level to facilitate timely submission of progress data at "reporting gates" (April and September);
- Preliminary detection of discrepancies, risks with specific reference to potential lack of realization at AF level and issues for DP Implementation at AF level (on the basis

of the data provided by IPPs);
- Collection of IPs contributions for CBA/Performance Analysis according to guidelines provided by SDM (at AF level);
- Consolidating CBA/Performance Analysis findings executed by IPPs according to the guidelines provided by SDM (the activities will be performed on the basis of the IPPS contributions).

Moreover, PMO will assist the AF Leader in the implementation of the quality management processes in support to the tasks of the AF coordination.

PMO's activities, in compliance with the tasks above described, will therefore aim to assist the AF Leader, owner of the Sub-Activity 9.1, and the IPPs, owners of the implementing projects as described in Sub-Activity 9.3, in the execution of their respective tasks.

Deliverables

9.1.1 Validation of Risks and Issues Registry - AF level - 30/04/2016, 30/09/2016, 30/04/2017, 30/09/2017, 30/04/2018, 30/09/2018, 30/04/2019, 30/09/2019, 30/04/2020, 30/09/2020

9.1.2 Validation of Mitigation Registry - AF level - 30/04/2016, 30/09/2016, 30/04/2017, 30/09/2017, 30/04/2018, 30/09/2018, 30/04/2019, 30/09/2019, 30/04/2020, 30/09/2020

9.1.3 Preliminary CBA/Performance Analysis (AF level) - 30/01/2016, 30/01/2017, 30/01/2018, 30/01/2019, 30/01/2020

9.2.1 Action Status Report (ASR) - AF Level - advance draft - 23/01/2016, 23/01/2017, 23/01/2018, 23/01/2019, 23/01/2020

9.2.2 Updating Risks and Issues Registry - AF level - 23/04/2016, 23/09/2016, 23/04/2017, 23/09/2017, 23/04/2018, 23/09/2018, 23/04/2019, 23/09/2019, 23/04/2020, 23/09/2020

9.2.3 Updating of Mitigation Registry - AF level - 23/04/2016, 23/09/2016, 23/04/2017, 23/09/2017, 23/04/2018, 23/09/2018, 23/04/2019, 23/09/2019, 23/04/2020, 23/09/2020

9.2.4 Final Report (Technical Content) - AF Level advanced draft - 15/10/2020

9.2.5 Preliminary CBA/Performance Analysis (AF level) advanced draft - 23/01/2016, 23/01/2017, 23/01/2018, 23/01/2019, 23/01/2020

9.2.6 Final Report - AF5 Closing - 06/01/2021

Sub-Activity 9.3: AF 5 – Initial System-Wide Information Management

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.

The present Sub-Activity groups all Implementation Projects (IPs) that will contribute to deploying AF5 (iSWIM), ensuring *inter alia* the implementation of flight data processing systems' interoperability functionalities.

Sub-Activity 9.3 Implementation Projects

IP 1: ATM Data Quality (ADQ)

Leader/Contributor: Austrocontrol

Objective

- Compliance to ICAO Annex 15 and Commission Regulation (EU) No 73/2010 ensured.
- Basis for the implementation of Commission Regulation (EU) No 73/2010 created.
- Validation and integrity checks introduced.
- Workflow management system introduced to the service delivery management domain (SDM).
- Stream for internal and external data delivery digitalized.
- National legislation aligned.
- System requirements fulfilled according Commission Regulation (EU) No 73/2010.

IP 2: Integrated Briefing System New (IBSN)

Leader/Contributor: Austrocontrol

Objective

Austro Control's Integrated Briefing Legacy System has reached end of life (of the technological product cycle) and needs to be replaced.

The new briefing service will be prepared to be compliant with the System-Wide Information Management (SWIM) architecture. The upgrade of AIS services shall be seen as a SWIM prerequisite by using EAD core services (reference is made to ESSIP INF 05).

New briefing functions introduced by the new system include:

- Graphical display (FPL – Flight Plan & NOTAM – Notification to airman);
- Mobile devices;
- Meteorological (MET) web interface;
- Webshop.

Main objectives:

- AIDA (Aeronautical Information Data-handling-system Austria)/Integrated Briefing System (IBS) Legacy System (technology end of life as well as software architecture) replaced;
- "EAD customized" (EAD - European Aeronautical Database) implemented
- Connection to existing Austro Control infrastructure (network, working positions, ECITs - EAD Connection Interface Terminal, BF (Briefing Facility)-Box, IBS Web services etc.) ensured;
- Data from legacy system transferred;
- AIDA/IBS legacy system cut out and sub-provider contracts cancelled;
- OPS (operations) training (AIM/VFSS) and briefing of technical personnel (ACG Service Control Center and experts) conducted;
- Nagios and Trouble Ticket System inserted;
- "EAD customized" set in operation after successful FAT and SAT.

IP 3: MPLS WAN PROJECT

Leader/Contributor: BELGOCONTROL

Objective

In the context of the Common Backbone Network Group (Germany, Belgium, Luxembourg and the Netherlands), the RAPNET (Regional Aeronautical Packet switched NETwork) is used for inter-ANSP connections (ANSP's (Air Navigation Service Provider): ANA, Belgocontrol, LVNL, MUAC, DFS). RAPNET is currently used by these ANSP's to connect to the PENS (Pan-European Network System). The evolution of this inter-ANSP network is based on MPLS (Multi Protocol Label Switching) networking technology. This RAPNET upgrade project is currently on going and managed by DFS under the name 'RAPNET NG' (NG for New Generation). It is planned to be finished in 2016.

In order to remain interoperable with this RAPNET evolution, Belgocontrol also needs to implement a compatible networking infrastructure. This new networking infrastructure, that anyway is a prerequisite for possible direct future access to PENS, encompasses the MPLS WAN project.

The specific goals of MPLS WAN project are:

- to create a secure and performing IP-based Ground-Ground communication network (ref. Preliminary Deployment Programme FT 5.1.1). This network will be used by Belgocontrol for the transfer of both:
  - operational data : Radar, Voice, Meteo, Aeronautical and Flight Information;
  - administrative data : LAN (applications) and Telephony;
- to share the different Belgocontrol applications on the network with a sufficiently secure separation to guarantee the required data integrity;
- to implement an MPLS based Wide Area Network (WAN) that will replace the current (SDH (Synchronous Digital Hierarchy) based) based network.

IP 4: Initial WXXM Implementation on Belgocontrol systems

Leader/Contributor: BELGOCONTROL

Objective

The main objective of this project is:

- Enabling the Brussels Regional OPMET Data Bank (RODB) to:
  - Received and store ICAO OPMET data in IWXXM (ICAO Meteorological Information Exchange) format;
  - handle requests from users and to exchange ICAO OPMET data in IWXXM format;
- Enabling the issuance of Belgian OPMET data in IWXXM format to ensure conformity with the envisaged Amendment 77 to ICAO Annex 3;
- Enabling the Belgocontrol ATS Messages Handling system (AMHS) to support exchange of messages in XML (Extensible Markup Language) data formats (IWXXM etc.).

IP 5: Implementation and operation of an IP-based G/G data communication network in ENAIRE

Leader/Contributor: ENAIRE

Objective

- Evolution of the existing ENAIRE's aeronautical data network (REDAN) in order to ensure an agreed level of Ground-Ground interconnectivity between ENAIRE ATSUs and stakeholders as required to facilitate information exchange with the communication requirements of new applications (SWIM based).
- Voice and data integration.
- Alignment of REDAN technology with the current and future state-of-the-art.
- Reduction of maintenance and operation costs.

IP 6: ENAV AIS system Upgrade to support AIXM 5.1

Leader/Contributor: ENAV

Objective

- The Aeronautical Information Exchange Model (AIXM) is designed to enable the management and distribution of Aeronautical Information Services (AIS) data in digital format.

- ENAV uses an IDS suite called AERODB for AIS static data storage, exchange, manipulation and AIP and Charts production, the actual DB use AIXM 4.5 protocol.

- The PIB producing system (AOIS Web) is actually based on a non-standard format environmental DB. To ensure fully capability AIS system to support AIXM 5.1 data

format, ENAV needs to complete the AERODB migration and change from AOIS web to a new application called EWADs.

IP 7: Coflight-eFDP System Development

Leader/Contributor: ENAV/DSNA

Objective

The Coflight-eFDP System is the Flight Data Processing (FDP) System of new generation designed to meet the needs of European Air Navigation Service Providers (ANSPs) for the next decade, satisfying the need for the harmonisation and interoperability of air traffic management systems in Europe.

Coflight will provide also the connections with most of the external systems through Sesar standardised Flight Object based Gate-To-Gate IOP.

From 2003 to 2013 the main deliverables of the Coflight Programme have been:

- Dec 2008 – Product Roadmap. It is the main output of the Project Definition, that has defined the overall architectural design of the Coflight Product and the versions to be implemented in terms of functional content;
- Jun 2010 – Version V1: it contains the new Service Oriented system architecture, the new infrastructure (middleware) and basic FDP functionalities;
- May 2013 – Version V2: it is the first complete version with respect to the initial contract.

From 2014 onward the main activities are the following:

- WP0: Project management;
- WP1: Implementation of Version V2R1;
- WP2: Implementation of Version V3+;
- WP3: Implementation of Version V4.

IP 8: SWIM Common Components

Leader/Contributor: EUROCONTROL

Objective

SWIM Data Models - deployment toolkit

Provide "deployment toolkits" in order to enable a harmonised implementation of the SWIM data exchange models (AIXM/(I)WXXM/FIXM). The goal is to have common rules for the data capturing/mapping/interpretation. Real data interoperability is only possible if all involved parties adhere to both same structure (provided by the XM) and same semantics (data capturing rules).

- Development of an AIXM Coding Guidelines Service. Such services used to exist for the previous AIXM 4.5 version, developed and provided by the European AIS Database (through the "Sigma" application). However, because of the larger data

scope of AIXM 5.1 and of the increased complexity of the new version, the existing EAD Sigma database is outdated. In addition, the AIXM 5.1 coding guidelines should better reflect the needs of a wider range of stakeholders, such as NM sub-systems, ATC, procedure designers, etc.

- Provide AIXM Data Validation Services, based on an exhaustive set of AIXM Business Rules. These will ensure that data sets that are syntactically valid (against the XML Schema) are also semantically correct and can be used in confidence for a particular application. An initial set of AIXM 5.1 Business Rules is already available, based on the previous AIXM 4.5 version and on specific Aeronautical Data Quality (ADQ) Regulation provisions. This needs to be maintained and enhanced, taking into consideration the feedback from the implementations and the needs of the various stakeholder groups.
- Provide a Web Based Training (WBT) Service for the latest AIXM version. A WBT module for the previous AIXM 4.5 version is available on the Eurocontrol IANS eLearning platform, being used by both AIM domain specialists and by application developers who need to acquire a basic understanding of the aeronautical information domain. The new AIXM 5.1 version uses a different modelling technique (UML instead of entity-relationships) a new coding format (GML instead of custom XML), new concepts such as the Temporality model based on TimeSlices, etc. Therefore, the existing AIXM 4.5 WBT is outdated and there is a strong need for a new AIXM 5.1 WBT Service.

- Update the deployment toolkits based on further versions of the following specifications:
    - Aeronautical Information Exchange Model (AIXM) version 5.2;
    - Weather Exchange Model (WXXM) and ICAO Weather Exchange Model (IWXXM) version 3;
    - Flight Information Exchange Model (FIXM) version 4.

Registry

- The SWIM Registry will provide a platform for the service providers to find information about SWIM (SWIM Reference Management).
- The SWIM registry will provide the visibility of the SWIM References: The registry provides a consolidated point of access to the SWIM information. This improves the efficiency to discover the information on SWIM in the network. An improvement of visibility has a direct effect on service adoption and reusability. The registry will provide a trusted reference in the registry information and ultimately in the SWIM service network.
- Provide a limited support for the end-users, including minor changes to the look and feel of the SWIM registry and allow updates of the SWIM references when needed.

IP 9: SWIM compliance of NM systems

Leader/Contributor: EUROCONTROL

Objective

This IP addresses the following FT(s):

- FT5.5.1 Interface and Data requirements;

- FT5.6.1 FDPS Upgrade preparing for IOP Flight Object Exchanges.

The project aims at extending NM systems technical capabilities to initiate SWIM compliance and at developing/deploying new NM B2B services to exchange network / flight plan information with the operational stakeholders.

It includes:
- the exchange of network / flight plan information using the Yellow SWIM TI Profile;
- the new NM B2B services.

The project is a key contributor to the following Strategic Objectives mentioned in the Network Strategy Plan (NSP):
- SO 2 : Deploy interoperable and effective information management system;
- SO 3 : Implement a seamless and flexible airspace;
- SO 4 : Plan optimum capacity and flight efficiency;
- SO 5 : Facilitate business trajectories and cooperative traffic management.

IP 10: Meteorological Information Exchange by MET ANSP KNMI

Leader/Contributor: KNMI

Objective

- Implementation of a flexible and cost-effective interoperable exchange of MET information for Amsterdam TMA and ACC, Amsterdam Airport Schiphol, Airspace Users, Military and Network Manager compliant with the iSWIM data formats and interfaces.
- Demonstration and verification of the operational deployment of iSWIM for MET information.
- To provide feedback on the principles, standards and specifications currently defined for iSWIM in AF5 and the information and exchange models and schemes of ICAO (WXXM), WMO (METCE) and the EUROCONTROL/FAA (WXCM-WXXM-WXXS).
- The implementation and verification covers the standard MET products: TAFs for civil airports in Amsterdam TMA and ACC (WP1); AIRMETs and SIGMETs for the Amsterdam FIR (WP2); METARs and AUTO METARs for civil airports in Amsterdam TMA and ACC (WP4); (AUTO) MET reports and warnings for civil airports in Amsterdam TMA and ACC (WP5).
- The implementation and verification also covers the provision of continuous sensor information for all available runways in Amsterdam TMA and ACC.
- The development and implementation of a central database and web services to make the iSWIM compliant MET information easily available to users (WP3).
- The realization of a cost-effective, secure and standard interface (PENS) for dissemination of safety critical MET information to ATM (WP6).
- The development and implementation of (geo) graphical user interfaces to facilitate the generation and monitoring of the MET products and the efficient maintenance of these data formats.
- The embedding of the systems/applications (new and/or extended) for the above

mentioned provision of MET information in the operational production and monitoring chains of KNMI.

IP 11: Implementation of Initial SWIM Capability (AF5) across NATS

Leader/Contributor: NATS

Objective

- AF5 iSWIM is primarily an enabler for other PCP elements that deliver benefits in safety, capacity, cost-effectiveness and environment, in AF1, AF3, AF4 and AF6.
- 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 and will be delivered in the following blocks:
    - S-AF5.1: Common Infrastructure Components;
    - S-AF5.2: SWIM Technical Infrastructure and Profiles;
    - S-AF5.3: Aeronautical information exchange;
    - S-AF5.4: Meteorological information exchange;
    - S-AF5.5: Cooperative network information exchange;
    - S-AF5.6: Flight information exchange.
- NATS proposal is to deliver a core Enterprise Information Service (EIS) capability to interconnect ATM services within centres, with Airports and other users and to underpin and enable later stages of information exchange by Flight Object. Delivery of the core EIS is the prime action in this 2014 funding call.
- To enable information exchanges of this nature, a number of NATS core systems (primarily Networks, FDP, AIS and Meteo) also require update and enhancement. By their nature, these enhancements need to be carried out first and form the other sub-action elements of this 2014 funding call.
- Provision of full Flight Object exchange and IOP are expected to be part of future funding requests.

IP 12: National WAN Infrastructure - CANDI-IP preparation project

Leader/Contributor: NAVIAIR

Objective

- Ensure continuous availability of WAN data transport in EKDK FIR.
- Ensure logical and physical segregation of operationally critical data.
- Ensure that requirements on VoIP data transport are fulfilled.
- Ensure that rules and requirements on IPv6 data transport are fulfilled.
- Interface to PENS.

IP 13: PILOT PLATFORM for access services to OPMET (worldwide/ECAC) data (METAR, TAF, SIGMET) in WXXM format

Leader/Contributor: ROMATSA

Objective

The main objectives of this project are:

- Upgrade Meteo service to provide reliable actual and forecast ICAO OPMET data in Weather Exchange Model (WXXM) format, wherever required across the ATM network;
- Development and implementation of a high availability hardware and software solution with distributed database and web services capable to providing access to MET information using WXXM and compliant with the iSWIM data formats;
- The pilot platform solution will be based on COTS (Commercial Off The Shelf) hardware and open source software (operating system, database, web application server);
- Demonstration and verification of the iSWIM implementation for MET information, using the standards and specifications defined in AF5 regarding the implementation of the new MET data model (FT5.4.1) for meteorological information exchange (S-AF5.4)and the information and exchange models and schemes of ICAO (WXXM) and the EUROCONTROL/FAA (WXCM-WXXM-WXXS);
- The implementation covers the standard MET products for the worldwide/ECAC civil airports: METAR, TAF and SIGMET.

IP 14: ADQ – Aeronautical Data Quality

Leader/Contributor: DFS

Objective

With the EU Reg. 73/2010 the European Commission has set obligatory specifications for dealing with aeronautical data and aeronautical information in Europe. Without obligation for AIXM5.1, there is only one economic way for realizing the specifications defined in Chapter II article 4 (Data Set) and article 5 (Data Exchange). It is the intensive use of AIXM5.1.In consultation with the responsible authorities, therefore national aeronautical data suppliers and the DFS migrate their relevant IT systems to AIXM5.1. The Project ADQ is the focal point for all technical issues Reg. 73/2010 and establishing AIXM5.1-ability. It supports FT 5.3.2 ATM System Upgrade to support AIXM 5.1

With completion of the project ADQ, the DFS will be able:

- receiving in conformity with Reg. 73/2010 aeronautical data in AIXM5.1 format;
- exchange data between internally databases in AIXM5.1 format and also
- providing external entities with aeronautical data in the AIXM5.1 format.

In consultation with the German authority BAF, the implementation will be proved by ECTL Specification as Means of Compliance (MoC). One of these ECTL specifications for

compliance of AIXM5.1 is the documentation of - Aeronautical information Exchange (Aix)

IP 15: EASI - EAD AIM System Integration

Leader/Contributor: DFS

Objective

The DFS project EASI will replace the current DFS system DIAS by the centrally provided EAD system in the context of AIS/ARO functions.

- This step to a centralised system enables the direct provision of DFS NOTAM and flight plan information via this centralised service. As soon as implemented on the EAD, this DFS information will be available in AIXM-5.1-format and DFS will directly input this data in AIXM-5.1.
- The abdication of a DFS-specific AIS-system reduces the complexity for the launch of AIXM-5.1 as the number of interfaces and especially parallel AIXM-5.1-implementations is limited. The effort to implement AIXM-5.1 on an internal system can then be spent to support the AIXM-5.1-implementation by EUROCONTROL on the central system.
- The migration to the central EAD-system is performed by the usage of standard-EAD-terminal-clients and EAD-standard-interfaces.

This project supports FT 5.3.1 AIS System Upgrade to support AIXM 5.1.

IP 16: Implementation of Prerequisites for the Provision of Aerodrome Mapping Data and Airport Maps as Data Originator (Aeronautical Information Exchange)

Leader/Contributor: FRAPORT

Objective

- This implementation project will ensure that Frankfurt Airport can fulfil its role as data originator for aerodrome mapping data and airport maps as required by 5.1.3 Aeronautical Information Exchange, bullet point "provide aerodrome mapping data and airport maps" of Commission Regulation (EU) No 716/2014.
- The implementation of this project will allow the provision of aerodrome mapping data and airport maps by standard XML schema as per AIXM 5.1

ARTICLE I.5 – MILESTONES AND MEANS OF VERIFICATION

Milestone number	Milestone description	Indicative completion date	Means of verification
1	M1.1 Launch of the Action	03/12/2015	Signature of: - Framework Partnership Agreement (FPA) - Specific Grant Agreement (SGA) - Accession to ICA
2	M1.2 Kick Off Meeting (KOM)	20/11/2015	Minutes of the meeting
3	M1.3 Reports delivery (annually)	31/03/2020	Action Status Report (ASR)
4	M1.4 Action closure	31/12/2020	Final Report (Technical Content)
5	M2.1.1 Registry delivery - Risks and Issues (annually)	15/05/2020	Risks and Issues Registry at transversal AF level
6	M2.1.2 Registry delivery - Mitigation Actions (annually)	15/05/2020	Mitigation Actions at transversal AF level
7	M2.1.3 Preliminary CBA/Performance Analysis at transversal AF level (annually)	15/02/2020	Preliminary CBA/Performance Analysis at transversal AF level
8	M2.2.1 PMO Manual - Final	29/01/2016	ASR 2016
9	M2.2.2 Action Quality Assurance	31/12/2015	Action Quality Plan
10	M2.2.3 Action Closure	15/11/2020	Final Report (Technical Content) - Advanced Draft at AF transversal level
11	M3.1.1 Validation Registry - Risks and Issues at AF level (annually)	30/04/2019	Validation of Risks and Issues Registry - AF level
12	M3.1.2 Validation Registry - Mitigation Actions - AF level (annually)	30/04/2019	Validation of Mitigation Registry - AF level
13	M3.1.3 Preliminary CBA/Performance Analysis (AF level) (annually)	30/01/2019	Preliminary CBA/Performance Analysis (AF level)
14	M3.2.1 Action closure	15/10/2020	Final Report (Technical Content) - Advanced Draft at AF level
15	M3.3.1 Action Status Report (ASR) – IP Level (annually)	15/01/2020	ASR 2020

16	M3.3.2 IP Periodical reporting (including Risks and Issues; Mitigation Actions; CBA/Performance Analysis) (3 times per year)	31/12/2020	IP Periodical reporting (including Risks and Issues; Mitigation Actions; CBA/Performance Analysis)
17	M3.3.3 Start of training	01/01/2017	Kick off Report
18	M3.3.4 End of training	17/05/2017	Training Results Report
19	M3.3.5 Parallel Operations/Operational Trials	31/08/2017	Monitoring Report
20	M3.3.6 Cutover - SW ready and successfully tested	06/01/2017	Test Cases Report
21	M3.3.7 Cutover and fall back period completed	17/05/2017	Final Report (Go live)
22	M3.3.8 Contribution to Final Report (Technical Content) – IP level	07/10/2020	Final Report (Technical Content) – IP level
23	M4.1.1 Action Status Report (ASR) – IP Level (annually)	15/01/2020	Action Status Report (ASR)
24	M4.1.2 IP Periodical reporting (including Risks and Issues; Mitigation Actions; CBA/Performance Analysis) (3 times per year)	31/12/2020	IP Periodical reporting (including Risks and Issues; Mitigation Actions; CBA/Performance Analysis)
25	M4.1.3 Start of training	01/01/2017	Kick off Report
26	M4.1.4 End of training	17/05/2017	Training Results Report
27	M4.1.5 Parallel Operations/Operational Trials	31/08/2017	Monitoring Report
28	M4.1.6 Cutover - SW ready and successfully tested	06/01/2017	Test Cases Report
29	M4.1.7 Cutover and fall back period completed	17/05/2017	Final Report (Go live)
30	M4.1.8 Contribution to Final Report (Technical Content) – IP level	07/10/2020	Final Report (Technical Content) – IP level
31	M5.1.1 Validation Registry - Risks and Issues at AF level (annually)	30/04/2020	Validation of Risks and Issues Registry - AF level
32	M5.1.2 Validation Registry - Mitigation Actions - AF level (annually)	30/04/2020	Validation of Mitigation Registry - AF level
33	M5.1.3 Preliminary CBA/Performance Analysis (AF level) (annually)	30/01/2020	Preliminary CBA/Performance Analysis (AF level)
34	M5.2.1 Action closure	15/10/2020	Final Report (Technical Content)- Advanced Draft at AF level

35	M5.3.1 Action Status Report (ASR) – IP Level (annually)	15/01/2020	Action Status Report (ASR)
36	M5.3.2 IP Periodical reporting (including Risks and Issues; Mitigation Actions; CBA/Performance Analysis) (3 times per year)	31/12/2020	IP Periodical reporting (including Risks and Issues; Mitigation Actions; CBA/Performance Analysis)
37	M5.3.3 Start of training	07/01/2019	Kick off Report
38	M5.3.4 End of training	28/06/2019	Training Results Report
39	M5.3.5 Parallel Operations/Operational Trials	01/07/2019	Monitoring Report
40	M5.3.6 Cutover - SW ready and successfully tested	01/07/2019	Test Cases Report
41	M5.3.7 Cutover and fall back period completed	01/07/2019	Final Report (Go live)
42	M5.3.8 Contribution to Final Report (Technical Content) – IP level	07/10/2020	Final Report (Technical Content) – IP level
43	M6.1.1 Action Status Report (ASR) – IP Level (annually)	15/01/2020	Action Status Report (ASR)
44	M6.1.2 IP Periodical reporting (including Risks and Issues; Mitigation Actions; CBA/Performance Analysis) (3 times per year)	31/12/2020	IP Periodical reporting (including Risks and Issues; Mitigation Actions; CBA/Performance Analysis)
45	M6.1.3 Start of training	07/01/2019	Kick off Report
46	M6.1.4 End of training	28/06/2019	Training Results Report
47	M6.1.5 Parallel Operations/Operational Trials	01/07/2019	Monitoring Report
48	M6.1.6 Cutover - SW ready and successfully tested	01/07/2019	Test Cases Report
49	M6.1.7 Cutover and fall back period completed	01/07/2019	Final Report (Go live)
50	M6.1.8 Contribution to Final Report (Technical Content) – IP level	07/10/2020	Final Report (Technical Content) – IP level
51	M7.1.1 Validation Registry - Risks and Issues at AF level (annually)	30/04/2019	Validation of Risks and Issues Registry - AF level
52	M7.1.2 Validation Registry - Mitigation Actions - AF level (annually)	30/04/2019	Validation of Mitigation Registry - AF level
53	M7.1.3 Preliminary CBA/Performance Analysis (AF level) (annually)	30/01/2019	Preliminary CBA/Performance Analysis (AF level)
54	M7.2.1 Action closure	15/10/2020	Final Report (Technical Content)-

			Advanced Draft at AF level
55	M7.3.1 Action Status Report (ASR) – IP Level (annually)	15/01/2020	Action Status Report (ASR)
56	M7.3.2 IP Periodical reporting (including Risks and Issues; Mitigation Actions; CBA/Performance Analysis) (3 times per year)	31/12/2020	IP Periodical reporting (including Risks and Issues; Mitigation Actions; CBA/Performance Analysis)
57	M7.3.3 Start of training	04/01/2018	Kick off Report
58	M7.3.4 End of training	31/12/2018	Training Results Report
59	M7.3.5 Parallel Operations/Operational Trials	31/12/2017	Monitoring Report
60	M7.3.6 Cutover - SW ready and successfully tested	30/06/2018	Test Cases Report
61	M7.3.7 Cutover and fall back period completed	31/03/2019	Final Report (Go live)
62	M7.3.8 Contribution to Final Report (Technical Content) – IP level	07/10/2020	Final Report (Technical Content) – IP level
63	M8.1.1 Validation Registry - Risks and Issues at AF level (annually)	30/04/2018	Validation of Risks and Issues Registry - AF level
64	M8.1.2 Validation Registry - Mitigation Actions - AF level (annually)	30/04/2018	Validation of Mitigation Registry - AF level
65	M8.1.3 Preliminary CBA/Performance Analysis (AF level)	30/01/2018	Preliminary CBA/Performance Analysis (AF level)
66	M8.2.1 Action closure	15/10/2020	Final Report - Advanced Draft at AF level
67	M8.3.1 Action Status Report (ASR) – IP Level (annually)	15/01/2020	Action Status Report (ASR)
68	M8.3.2 IP Periodical reporting (including Risks and Issues; Mitigation Actions; CBA/Performance Analysis) (3 times per year)	31/12/2020	IP Periodical reporting (including Risks and Issues; Mitigation Actions; CBA/Performance Analysis)
69	M8.3.3 Start of training	01/01/2017	Kick off Report
70	M8.3.4 End of training	29/12/2017	Training Results Report
71	M8.3.5 Parallel Operations/Operational Trials	28/02/2017	Monitoring Report
72	M8.3.6 Cutover - SW ready and successfully tested	31/12/2016	Test Cases Report
73	M8.3.7 Cutover and fall back period completed	30/04/2017	Final Report (Go live)
74	M8.3.8 Contribution to Final Report	07/10/2020	Final Report

	(Technical Content) – IP level		(Technical Content) – IP level
75	M9.1.1 Validation Registry - Risks and Issues at AF level (annually)	30/04/2020	Validation of Risks and Issues Registry - AF level
76	M9.1.2 Validation Registry - Mitigation Actions - AF level (annually)	30/04/2020	Validation of Mitigation Registry – AF level
77	M9.1.3 Preliminary CBA/Performance Analysis (AF level) (annually)	30/01/2020	Preliminary CBA/Performance Analysis (AF level)
78	M9.2.1 Action closure	15/10/2020	Final Report (Technical Content)- Advanced Draft at AF level
79	M9.3.1 Action Status Report (ASR) – IP Level (annually)	15/01/2020	Action Status Report (ASR)
80	M9.3.2 IP Periodical reporting (including Risks and Issues; Mitigation Actions; CBA/Performance Analysis) (3 times per year)	31/12/2020	IP Periodical reporting (including Risks and Issues; Mitigation Actions; CBA/Performance Analysis)
81	M9.3.3 Start of training	15/01/2017	Kick off Report
82	M9.3.4 End of training	02/02/2018	Training Results Report
83	M9.3.5 Parallel Operations/Operational Trials	30/03/2018	Monitoring Report
84	M9.3.6 Cutover - SW ready and successfully tested	20/08/2018	Test Cases Report
85	M9.3.7 Cutover and fall back period completed	31/12/2018	Final Report (Go live)
86	M9.3.8 Contribution to Final Report (Technical Content) – IP level	07/10/2020	Final Report (Technical Content) – IP level

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) SDM	Amount of financial contribution to the action eligible costs (EUR) NATS	Amount of financial contribution to the action eligible costs (EUR) ACA	Amount of financial contribution to the action eligible costs (EUR) ADP	Amount of financial contribution to the action eligible costs (EUR) ANS CR
1. CEF-Transport financing	2,529,090.5	47,040,624	261,386.5	6,857,824	102,669
2. Beneficiary's own resources	0	47,040,624	261,386.5	6,857,824	102,669
of which:	0	0	0	0	0
(a) EIB loan					
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	2,529,090.5	0	0	0	0
TOTAL	5,058,181	94,081,248	522,773	13,715,648	205,338

Financing sources	Amount of financial contribution to the action eligible costs (EUR) Alitalia S.p.A.	Amount of financial contribution to the action eligible costs (EUR) Austro Control	Amount of financial contribution to the action eligible costs (EUR) Avinor	Amount of financial contribution to the action eligible costs (EUR) Belgocontrol	Amount of financial contribution to the action eligible costs (EUR) BHANSA
1. CEF-Transport financing	385,400	2,532,358	4,515,377	1,142,726	56,231.5
2. Beneficiary's own resources	385,400	2,532,358	4,515,377	1,142,726	56,231.5
of which:	0	0	0	0	0
(a) EIB loan					
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	770,800	5,064,716	9,030,754	2,285,452	112,463

Financing sources	Amount of financial contribution to the action eligible costs (EUR) BRITISH AIRWAYS	Amount of financial contribution to the action eligible costs (EUR) BAC	Amount of financial contribution to the action eligible costs (EUR) BIP	Amount of financial contribution to the action eligible costs (EUR) Croatia Control	Amount of financial contribution to the action eligible costs (EUR) DFS
1. CEF-Transport financing	35,560.4	116,073	4,950,170	136,693.5	12,220,893.36
2. Beneficiary's own resources	75,866.6	116,073	4,950,170	136,693.5	12,220,893.36
of which:	0	0	0	0	0
(a) EIB loan					
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	111,427	232,146	9,900,340	273,387	24,441,786.72

Financing sources	Amount of financial contribution to the action eligible costs (EUR) ENAV	Amount of financial contribution to the action eligible costs (EUR) ENAIRE	Amount of financial contribution to the action eligible costs (EUR) EANS	Amount of financial contribution to the action eligible costs (EUR) EUROCONTROL	Amount of financial contribution to the action eligible costs (EUR) Finavia
1. CEF-Transport financing	33,663,703.79	22,841,818.5	212,984	23,185,477.38	300,000
2. Beneficiary's own resources	33,663,703.79	22,841,818.5	212,984	23,185,477.37	300,000
of which:					
(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	67,327,407.58	45,683,637	425,968	46,370,954.75	600,000

Financing sources	Amount of financial contribution to the action eligible costs (EUR) FDG	Amount of financial contribution to the action eligible costs (EUR) FMG	Amount of financial contribution to the action eligible costs (EUR) Fraport AG	Amount of financial contribution to the action eligible costs (EUR) GAL	Amount of financial contribution to the action eligible costs (EUR) HAL
1. CEF-Transport financing	765,500	1,000,000	2,546,821.5	3,724,570	6,349,731
2. Beneficiary's own resources	765,500	1,000,000	2,546,821.5	3,724,570	6,349,731
of which:					
(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	1,531,000	2,000,000	5,093,643	7,449,140	12,699,462

Financing sources	Amount of financial contribution to the action eligible costs (EUR) HCAA	Amount of financial contribution to the action eligible costs (EUR) HungaroControl	Amount of financial contribution to the action eligible costs (EUR) IAA	Amount of financial contribution to the action eligible costs (EUR) CPH	Amount of financial contribution to the action eligible costs (EUR) KLM
1. CEF-Transport financing	5,793,000	462,369	173,500	666,500	550,000
2. Beneficiary's own resources	0	462,369	173,500	666,500	550,000
of which:	0	0	0	0	0
(a) EIB loan					
3. State budget(s)	5,793,000	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	11,586,000	924,738	347,000	1,333,000	1,100,000

Financing sources	Amount of financial contribution to the action eligible costs (EUR) LPS SR, š. p.	Amount of financial contribution to the action eligible costs (EUR) LVNL	Amount of financial contribution to the action eligible costs (EUR) LFV	Amount of financial contribution to the action eligible costs (EUR) NAV Portugal	Amount of financial contribution to the action eligible costs (EUR) Naviair
1. CEF-Transport financing	106,494.5	2,848,679	915,288	248,765	522,216.5
2. Beneficiary's own resources	106,494.5	2,848,679	915,288	248,765	522,216.5
of which:	0	0	0	0	0
(a) EIB loan					
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	212,989	5,697,358	1,830,576	497,530	1,044,433

Financing sources	Amount of financial contribution to the action eligible costs (EUR) PANSA	Amount of financial contribution to the action eligible costs (EUR) ROMATSA	Amount of financial contribution to the action eligible costs (EUR) KNMI	Amount of financial contribution to the action eligible costs (EUR) Ryanair	Amount of financial contribution to the action eligible costs (EUR) SNBV
1. CEF-Transport financing	3,300,000	203,604.5	1,377,500	2,134,203	2,675,000
2. Beneficiary's own resources	3,300,000	203,604.5	1,377,500	8,232,297	2,675,000
of which:	0	0	0	0	0
(a) EIB loan					
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	6,600,000	407,209	2,755,000	10,366,500	5,350,000

Financing sources	Amount of financial contribution to the action eligible costs (EUR) SDAG	Amount of financial contribution to the action eligible costs (EUR) LGS	Amount of financial contribution to the action eligible costs (EUR) SCL (KZPS)	Amount of financial contribution to the action eligible costs (EUR) Air France	Amount of financial contribution to the action eligible costs (EUR) Swedavia
1. CEF-Transport financing	412,161.5	349,939	155,019.5	275,190	1,002,124
2. Beneficiary's own resources	412,161.5	349,939	155,019.5	777,510	1,002,124
of which:	0	0	0	0	0
(a) EIB loan					
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	824,323	699,878	310,039	1,052,700	2,004,248

Financing sources	Amount of financial contribution to the action eligible costs (EUR) DSNA
1. CEF-Transport financing	116,931,660
2. Beneficiary's own resources	0
of which:	
(a) EIB loan	0
3. State budget(s)	116,931,660
4. Regional/ local budget(s)	0
5. Income generated by the action	0
6. Other sources	0
TOTAL	233,863,320

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

Activities	2014	2015	2016	2017	2018	2019	2020	Total	Pro-rata share of the estimated eligible costs (%)
ELIGIBLE DIRECT COSTS									
Activity 1	65,137	1,143,622.73	2,857,677.64	1,030,408.2	517,647.99	370,539.14	311,560.34	6,296,593.04	0.98
SDM	65,137	745,034	2,392,825	841,419	434,872	323,435	255,459	5,058,181	0.79
DFS	0	80,012.35	100,398.55	55,832.54	11,351.64	9,249.26	12,792.37	269,636.71	0.04
ENAV	0	32,359.62	48,065.09	18,250.66	6,174.35	3,484.88	4,931.97	113,266.57	0.02
ENAIRE	0	92,834	54,637	33,930	38,563	9,997	13,218	243,179	0.04
EUROCONTROL	0	85,579.76	124,160	49,556	13,250	9,216	12,765	294,526.76	0.05
SDAG	0	107,803	137,592	31,420	13,437	15,157	12,394	317,803	0.05
Activity 2	330,220	1,121,791	1,776,755	1,260,474	705,903	289,803	298,671	5,783,617	0.9
BIP	184,060	594,957	1,066,483	779,757	400,609	162,822	111,428	3,300,116	0.51
DFS	61,439	97,644	79,756	28,358	6,638	1,794	2,884	278,513	0.04
ENAV	26,702	181,344	397,732	341,929	254,036	103,932	160,526	1,466,201	0.23
ENAIRE	8,837	109,012	89,041	31,660	7,411	2,002	3,219	251,182	0.04
EUROCONTROL	7,552	72,672	89,702	59,555	32,711	18,038	18,660	298,890	0.05
SDAG	41,630	66,162	54,041	19,215	4,498	1,215	1,954	188,715	0.03
Activity 3	15,335,805	21,103,858	5,688,964	4,710,838	5,309,816	10,012	10,012	52,169,305	8.1
NATS	10,455,000	15,674,000	2,136,000	3,664,000	5,043,000	0	0	36,972,000	5.74
Austro Control	114,360	217,720	114,360	0	0	0	0	446,440	0.07
Belgocontrol	0	243,539	33,158	236,774	81,874	0	0	595,345	0.09

BIP	0	66,449	221,497	143,973	121,823	0	0	553,742	0.09
ENAV	800,044	790,401	1,200,518	0	0	0	0	2,790,963	0.43
ENAIRE	54,900	208,549	262,484	234,100	63,119	10,012	10,012	843,176	0.13
EUROCONTROL	47,289	323,944	313,945	138,289	0	0	0	823,467	0.13
GAL	3,114,292	0	307,708	0	0	0	0	3,422,000	0.53
HAL	528,252	3,015,858	0	0	0	0	0	3,544,110	0.55
LVNL	186,668	263,053	419,599	4,746	0	0	0	874,066	0.14
LFV	0	50,395	368,825	220,956	0	0	0	640,176	0.1
Air France	29,000	64,450	77,050	0	0	0	0	170,500	0.03
DSNA	6,000	185,500	233,820	68,000	0	0	0	493,320	0.08
Activity 4	16,794	887,583	0	0	0	0	0	904,377	0.14
BRITISH AIRWAYS	16,794	50,383	0	0	0	0	0	67,177	0.01
Air France	0	837,200	0	0	0	0	0	837,200	0.13
Activity 5	23,190,674	25,826,829	39,176,064	20,026,808	14,441,859	6,766,194	10,056	129,438,484	20.11
NATS	11,327,000	2,060,000	0	0	0	0	0	13,387,000	2.08
ACA	72,982	262,436	157,555	29,800	0	0	0	522,773	0.08
ADP	535,976	1,772,933	10,219,504	1,187,235	0	0	0	13,715,648	2.13
Austro Control	1,108,680	514,105	126,055	0	0	0	0	1,748,840	0.27
Belgocontrol	40,933	57,307	107,925	0	0	0	0	206,165	0.03
BRITISH AIRWAYS	10,500	33,750	0	0	0	0	0	44,250	0.01
BAC	112,804	59,671	59,671	0	0	0	0	232,146	0.04
BIP	0	145,180	653,310	290,360	232,288	130,662	0	1,451,800	0.23
DFS	74,853	1,414,195	1,497,891	745,505	175,860	1,593,696	0	5,502,000	0.85
ENAV	319,910	1,565,428	3,711,571	2,545,000	681,024	0	0	8,822,933	1.37

ENAIRE	350,900	1,001,300	2,514,900	0	0	0	0	3,867,100	0.6
FDG	0	109,000	1,422,000	0	0	0	0	1,531,000	0.24
FMG	20,000	1,925,000	55,000	0	0	0	0	2,000,000	0.31
Fraport AG	469,551	1,156,273	2,564,250	0	0	0	0	4,190,074	0.65
GAL	211,140	0	3,816,000	0	0	0	0	4,027,140	0.63
HAL	5,028,277	4,127,075	0	0	0	0	0	9,155,352	1.42
CPH	30,000	614,177	650,423	38,400	0	0	0	1,333,000	0.21
KLM	335,000	485,000	280,000	0	0	0	0	1,100,000	0.17
LVNL	409,896	1,134,969	367,827	2,910,600	0	0	0	4,823,292	0.75
Naviair	0	0	213,908	0	0	0	0	213,908	0.03
Ryanair	0	74,370	128,640	0	0	0	0	203,010	0.03
SNBV	593,500	2,556,500	2,200,000	0	0	0	0	5,350,000	0.83
SDAG	57,622	92,610	111,735	24,464	9,682	11,636	10,056	317,805	0.05
Air France	0	20,000	25,000	0	0	0	0	45,000	0.01
Swedavia	0	176,000	1,383,499	444,749	0	0	0	2,004,248	0.31
DSNA	2,081,150	4,469,550	6,909,400	11,810,695	13,343,005	5,030,200	0	43,644,000	6.78
Activity 6	0	3,752,130	6,411,360	0	0	0	0	10,163,490	1.58
Ryanair	0	3,752,130	6,411,360	0	0	0	0	10,163,490	1.58
Activity 7	36,562,181	76,346,322	76,340,715	40,272,849	15,630,529	28,317	28,317	245,209,230	38.09
NATS	0	63,900	63,900	0	0	0	0	127,800	0.02
ANS CR	0	33,051	153,719	18,568	0	0	0	205,338	0.03
Alitalia S.p.A.	21,600	310,000	439,200	0	0	0	0	770,800	0.12
Austro Control	0	25,569	113,649	12,608	0	0	0	151,826	0.02
Avinor	3,049,776	3,962,160	2,018,818	0	0	0	0	9,030,754	1.4
Belgocontrol	139,382	41,350	10,831	0	0	0	0	191,563	0.03

BHANSA	0	17,069	84,200	11,194	0	0	0	112,463	0.02
BIP	0	385,079	1,078,221	821,501	282,391	0	0	2,567,192	0.4
Croatia Control	0	41,639	204,681	27,067	0	0	0	273,387	0.04
ENAV	13,634,356	7,432,014	5,507,716	2,188,950	19,255	11,327	11,327	28,804,945	4.47
EANS	39,168	286,430	100,370	0	0	0	0	425,968	0.07
EUROCONTROL	2,266,671	4,923,276	5,077,654	1,492,635	28,883	16,990	16,990	13,823,099	2.15
Finavia	125,000	250,000	225,000	0	0	0	0	600,000	0.09
HCAA	0	4,612,000	6,974,000	0	0	0	0	11,586,000	1.8
HungaroControl	0	117,746	692,539	114,453	0	0	0	924,738	0.14
IAA	0	176,000	171,000	0	0	0	0	347,000	0.05
LPS SR, š. p.	0	31,899	159,467	21,623	0	0	0	212,989	0.03
LFV	129,600	433,800	627,000	0	0	0	0	1,190,400	0.18
NAV Portugal	0	38,906	38,200	93,040	0	0	0	170,146	0.03
Naviair	95,000	160,000	327,905	0	0	0	0	582,905	0.09
PANSA	0	25,000	1,835,500	4,739,500	0	0	0	6,600,000	1.03
LGS	217,628	414,649	67,601	0	0	0	0	699,878	0.11
SCL (KZPS)	0	44,785	232,144	33,110	0	0	0	310,039	0.05
DSNA	16,844,000	52,520,000	50,137,400	30,698,600	15,300,000	0	0	165,500,000	25.71
Activity 8	2,423,580	10,456,017	8,941,733	3,451,436	3,504	2,803	4,005	25,283,078	3.93
BIP	0	39,555	129,212	94,931	0	0	0	263,698	0.04
ENAV	784,034	1,277,835	882,836	813,000	0	0	0	3,757,705	0.58
EUROCONTROL	1,639,546	9,006,627	7,838,685	2,439,121	3,504	2,803	4,005	20,934,291	3.25
NAV Portugal	0	132,000	91,000	104,384	0	0	0	327,384	0.05
Activity 9	45,477,187	57,127,528	40,707,221	21,709,252	3,061,996	262,670	200,485	168,546,339	26.18
NATS	14,550,000	18,533,265	3,832,025	4,594,858	2,084,300	0	0	43,594,448	6.77

Austro Control	1,382,206	1,335,404	0	0	0	0	0	2,717,610	0.42
Belgocontrol	31,749	119,894	672,496	468,240	0	0	0	1,292,379	0.2
BIP	0	211,655	670,241	705,517	123,465	26,457	26,457	1,763,792	0.27
DFS	4,361,231	7,342,722	5,235,963	1,260,836	170,035	12,482	8,368	18,391,637	2.86
ENAV	6,208,275	8,002,203	7,360,916	0	0	0	0	21,571,394	3.35
ENAIRE	6,628,900	11,471,500	11,272,700	11,105,900	0	0	0	40,479,000	6.29
EUROCONTROL	1,200,000	2,614,390	3,393,803	2,214,901	384,196	223,731	165,660	10,196,681	1.58
Fraport AG	295,119	340,690	267,760	0	0	0	0	903,569	0.14
Naviair	155,640	91,980	0	0	0	0	0	247,620	0.04
ROMATSA	0	183,109	175,100	49,000	0	0	0	407,209	0.06
KNMI	0	271,250	873,750	1,310,000	300,000	0	0	2,755,000	0.43
DSNA	10,664,067	6,609,466	6,952,467	0	0	0	0	24,226,000	3.76
TOTAL ELIGIBLE DIRECT COSTS	123,401,578	197,765,680.73	181,900,489.64	92,462,065.2	39,671,254.99	7,730,338.14	863,106.34	643,794,513.04	100
SDM	65,137	745,034	2,392,825	841,419	434,872	323,435	255,459	5,058,181	0.79
NATS	36,332,000	36,331,165	6,031,925	8,258,858	7,127,300	0	0	94,081,248	14.61
ACA	72,982	262,436	157,555	29,800	0	0	0	522,773	0.08
ADP	535,976	1,772,933	10,219,504	1,187,235	0	0	0	13,715,648	2.13
ANS CR	0	33,051	153,719	18,568	0	0	0	205,338	0.03
Alitalia S.p.A.	21,600	310,000	439,200	0	0	0	0	770,800	0.12
Austro Control	2,605,246	2,092,798	354,064	12,608	0	0	0	5,064,716	0.79
Avinor	3,049,776	3,962,160	2,018,818	0	0	0	0	9,030,754	1.4
Belgocontrol	212,064	462,090	824,410	705,014	81,874	0	0	2,285,452	0.35
BHANSA	0	17,069	84,200	11,194	0	0	0	112,463	0.02
BRITISH AIRWAYS	27,294	84,133	0	0	0	0	0	111,427	0.02

BAC	112,804	59,671	59,671	0	0	0	0	232,146	0.04
BIP	184,060	1,442,875	3,818,964	2,836,039	1,160,576	319,941	137,885	9,900,340	1.54
Croatia Control	0	41,639	204,681	27,067	0	0	0	273,387	0.04
DFS	4,497,523	8,934,573.35	6,914,008.55	2,090,531.54	363,884.64	1,617,221.26	24,044.37	24,441,786.71	3.8
ENAV	21,773,321	19,281,584.62	19,109,354.09	5,907,129.66	960,489.35	118,743.88	176,784.97	67,327,407.57	10.46
ENAIRE	7,043,537	12,883,195	14,193,762	11,405,590	109,093	22,011	26,449	45,683,637	7.1
EANS	39,168	286,430	100,370	0	0	0	0	425,968	0.07
EUROCONTROL	5,161,058	17,026,488.76	16,837,949	6,394,057	462,544	270,778	218,080	46,370,954.76	7.2
Finavia	125,000	250,000	225,000	0	0	0	0	600,000	0.09
FDG	0	109,000	1,422,000	0	0	0	0	1,531,000	0.24
FMG	20,000	1,925,000	55,000	0	0	0	0	2,000,000	0.31
Fraport AG	764,670	1,496,963	2,832,010	0	0	0	0	5,093,643	0.79
GAL	3,325,432	0	4,123,708	0	0	0	0	7,449,140	1.16
HAL	5,556,529	7,142,933	0	0	0	0	0	12,699,462	1.97
HCAA	0	4,612,000	6,974,000	0	0	0	0	11,586,000	1.8
HungaroControl	0	117,746	692,539	114,453	0	0	0	924,738	0.14
IAA	0	176,000	171,000	0	0	0	0	347,000	0.05
CPH	30,000	614,177	650,423	38,400	0	0	0	1,333,000	0.21
KLM	335,000	485,000	280,000	0	0	0	0	1,100,000	0.17
LPS SR, š. p.	0	31,899	159,467	21,623	0	0	0	212,989	0.03
LVNL	596,564	1,398,022	787,426	2,915,346	0	0	0	5,697,358	0.88
LFV	129,600	484,195	995,825	220,956	0	0	0	1,830,576	0.28
NAV Portugal	0	170,906	129,200	197,424	0	0	0	497,530	0.08
Naviair	250,640	251,980	541,813	0	0	0	0	1,044,433	0.16
PANSA	0	25,000	1,835,500	4,739,500	0	0	0	6,600,000	1.03

ROMATSA	0	183,109	175,100	49,000	0	0	0	407,209	0.06
KNMI	0	271,250	873,750	1,310,000	300,000	0	0	2,755,000	0.43
Ryanair	0	3,826,500	6,540,000	0	0	0	0	10,366,500	1.61
SNBV	593,500	2,556,500	2,200,000	0	0	0	0	5,350,000	0.83
SDAG	99,252	266,575	303,368	75,099	27,617	28,008	24,404	824,323	0.13
LGS	217,628	414,649	67,601	0	0	0	0	699,878	0.11
SCL (KZPS)	0	44,785	232,144	33,110	0	0	0	310,039	0.05
Air France	29,000	921,650	102,050	0	0	0	0	1,052,700	0.16
Swedavia	0	176,000	1,383,499	444,749	0	0	0	2,004,248	0.31
DSNA	29,595,217	63,784,516	64,233,087	42,577,295	28,643,005	5,030,200	0	233,863,320	36.33
Annual instalments of maximum CEF contribution	159,186,677.26	0	89,026,836.82	46,231,032.6	19,835,627.5	3,865,169.07	431,553.17	318,576,896.42	49.48
SDM	32,568.5	372,517	1,196,412.5	420,709.5	217,436	161,717.5	127,729.5	2,529,090.5	0.39
NATS	18,166,000	18,165,582.5	3,015,962.5	4,129,429	3,563,650	0	0	47,040,624	7.31
ACA	36,491	131,218	78,777.5	14,900	0	0	0	261,386.5	0.04
ADP	267,988	886,466.5	5,109,752	593,617.5	0	0	0	6,857,824	1.07
ANS CR	0	16,525.5	76,859.5	9,284	0	0	0	102,669	0.02
Alitalia S.p.A.	10,800	155,000	219,600	0	0	0	0	385,400	0.06
Austro Control	1,302,623	1,046,399	177,032	6,304	0	0	0	2,532,358	0.39
Avinor	1,524,888	1,981,080	1,009,409	0	0	0	0	4,515,377	0.7
Belgocontrol	106,032	231,045	412,205	352,507	40,937	0	0	1,142,726	0.18
BHANSA	0	8,534.5	42,100	5,597	0	0	0	56,231.5	0.01
BRITISH AIRWAYS	8,608.8	26,951.6	0	0	0	0	0	35,560.4	0.01
BAC	56,402	29,835.5	29,835.5	0	0	0	0	116,073	0.02

BIP	92,030	721,437.5	1,909,482	1,418,019.5	580,288	159,970.5	68,942.5	4,950,170	0.77
Croatia Control	0	20,819.5	102,340.5	13,533.5	0	0	0	136,693.5	0.02
DFS	2,248,761.5	4,467,286.68	3,457,004.28	1,045,265.77	181,942.32	808,610.63	12,022.18	12,220,893.36	1.9
ENAV	10,886,660.5	9,640,792.31	9,554,677.04	2,953,564.83	480,244.68	59,371.94	88,392.48	33,663,703.78	5.23
ENAIRE	3,521,768.5	6,441,597.5	7,096,881	5,702,795	54,546.5	11,005.5	13,224.5	22,841,818.5	3.55
EANS	19,584	143,215	50,185	0	0	0	0	212,984	0.03
EUROCONTROL	2,580,529	8,513,244.38	8,418,974.5	3,197,028.5	231,272	135,389	109,040	23,185,477.38	3.6
Finavia	62,500	125,000	112,500	0	0	0	0	300,000	0.05
FDG	0	54,500	711,000	0	0	0	0	765,500	0.12
FMG	10,000	962,500	27,500	0	0	0	0	1,000,000	0.16
Fraport AG	382,335	748,481.5	1,416,005	0	0	0	0	2,546,821.5	0.4
GAL	1,662,716	0	2,061,854	0	0	0	0	3,724,570	0.58
HAL	2,778,264.5	3,571,466.5	0	0	0	0	0	6,349,731	0.99
HCAA	0	2,306,000	3,487,000	0	0	0	0	5,793,000	0.9
HungaroControl	0	58,873	346,269.5	57,226.5	0	0	0	462,369	0.07
IAA	0	88,000	85,500	0	0	0	0	173,500	0.03
CPH	15,000	307,088.5	325,211.5	19,200	0	0	0	666,500	0.1
KLM	167,500	242,500	140,000	0	0	0	0	550,000	0.09
LPS SR, š. p.	0	15,949.5	79,733.5	10,811.5	0	0	0	106,494.5	0.02
LVNL	298,282	699,011	393,713	1,457,673	0	0	0	2,848,679	0.44
LFV	64,800	242,097.5	497,912.5	110,478	0	0	0	915,288	0.14
NAV Portugal	0	85,453	64,600	98,712	0	0	0	248,765	0.04
Naviair	125,320	125,990	270,906.5	0	0	0	0	522,216.5	0.08
PANSA	0	12,500	917,750	2,369,750	0	0	0	3,300,000	0.51
ROMATSA	0	91,554.5	87,550	24,500	0	0	0	203,604.5	0.03

KNMI	**0**	**135,625**	**436,875**	**655,000**	**150,000**	**0**	**0**	**1,377,500**	**0.21**
Ryanair	**0**	**787,611**	**1,346,592**	**0**	**0**	**0**	**0**	**2,134,203**	**0.33**
SNBV	**296,750**	**1,278,250**	**1,100,000**	**0**	**0**	**0**	**0**	**2,675,000**	**0.42**
SDAG	**49,626**	**133,287.5**	**151,684**	**37,549.5**	**13,808.5**	**14,004**	**12,202**	**412,161.5**	**0.06**
LGS	**108,814**	**207,324.5**	**33,800.5**	**0**	**0**	**0**	**0**	**349,939**	**0.05**
SCL (KZPS)	**0**	**22,392.5**	**116,072**	**16,555**	**0**	**0**	**0**	**155,019.5**	**0.02**
Air France	**14,500**	**209,665**	**51,025**	**0**	**0**	**0**	**0**	**275,190**	**0.04**
Swedavia	**0**	**88,000**	**691,749.5**	**222,374.5**	**0**	**0**	**0**	**1,002,124**	**0.16**
DSNA	**14,797,608.5**	**31,892,258**	**32,116,543.5**	**21,288,647.5**	**14,321,502.5**	**2,515,100**	**0**	**116,931,660**	**18.16**

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

	Estimated contribution	Pro-rata share of the maximum CEF contribution (%)
SDM	2,529,090.5	0.79%
NATS	47,040,624	14.77%
ACA	261,386.5	0.08%
ADP	6,857,824	2.15%
ANS CR	102,669	0.03%
Alitalia S.p.A.	385,400	0.12%
Austro Control	2,532,358	0.79%
Avinor	4,515,377	1.42%
Belgocontrol	1,142,726	0.36%
BHANSA	56,231.5	0.02%
BRITISH AIRWAYS	35,560.4	0.01%
BAC	116,073	0.04%
BIP	4,950,170	1.55%
Croatia Control	136,693.5	0.04%
DFS	12,220,893.36	3.84%
ENAV	33,663,703.79	10.57%
ENAIRE	22,841,818.5	7.17%

EANS	212,984	0.07%
EUROCONTROL	23,185,477.38	7.28%
Finavia	300,000	0.09%
FDG	765,500	0.24%
FMG	1,000,000	0.31%
Fraport AG	2,546,821.5	0.8%
GAL	3,724,570	1.17%
HAL	6,349,731	1.99%
HCAA	5,793,000	1.82%
HungaroControl	462,369	0.15%
IAA	173,500	0.05%
CPH	666,500	0.21%
KLM	550,000	0.17%
LPS SR, š. p.	106,494.5	0.03%
LVNL	2,848,679	0.89%
LFV	915,288	0.29%
NAV Portugal	248,765	0.08%
Naviair	522,216.5	0.16%
PANSA	3,300,000	1.04%
ROMATSA	203,604.5	0.06%
KNMI	1,377,500	0.43%
Ryanair	2,134,203	0.67%

SNBV	**2,675,000**	**0.84%**
SDAG	**412,161.5**	**0.13%**
LGS	**349,939**	**0.11%**
SCL (KZPS)	**155,019.5**	**0.05%**
Air France	**275,190**	**0.09%**
Swedavia	**1,002,124**	**0.31%**
DSNA	**116,931,660**	**36.7%**
Total	**318,576,896.42**	**100%**