



## **GRANT AGREEMENT FOR MEMBERS<sup>1</sup>**

**NUMBER 874475 — PJ20-W2 AMPLE**

This **Agreement** ('the Agreement') is **between** the following parties:

**on the one part,**

the **Single European Sky ATM Research Joint Undertaking** ('the JU'),

represented for the purposes of signature of this Agreement by the JU Executive Director or his/her representative, Florian GUILLERMET,

**and**

**on the other part,**

1. 'the coordinator':

**EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL)**, established in Rue de la Fusée 96, BRUXELLES 1130, Belgium, VAT number: not applicable, as 'beneficiary not receiving JU funding' (see Article 9), represented for the purposes of signing the Agreement by Eamonn BRENNAN

and the following other beneficiaries, if they sign their 'Accession Form' (see Annex 3 and Article 56):

2. **AIRBUS (AIRBUS)**, established in 2 ROND POINT EMILE DEWOITINE, BLAGNAC 31700, France, VAT number: FR89383474814,

3. **DEUTSCHES ZENTRUM FUER LUFT - UND RAUMFAHRT EV (DLR (AT-One))**, established in Linder Hoehe, KOELN 51147, Germany,

4. **VALSTYBES IMONE ORO NAVIGACIJA (ON (B4))**, established in RODUNIOS KEL 2, VILNIAUS 02188, Lithuania, VAT number: LT100604610,

5. **POLSKA AGENCJA ZEGLUGI POWIETRZNEJ (PANSO (B4))**, established in UL. WIEZOWA 8, WARSZAWA 02 147, Poland, VAT number: PL5222838321,

6. **AUSTRO CONTROL OSTERREICHISCHE GESELLSCHAFT FUR ZIVILLUFTFAHRT MBH (ACG/COOPANS)**, established in WAGRAMER STRASSE 19, WIEN 1220, Austria, VAT number: ATU37259408,

---

<sup>1</sup> 'Members' means "members of the Joint Undertaking" as defined under Article 1(2) and 1(3) of the Statutes of the JU, Annex to the SESAR Regulation.

7. **LUFTFARTSVERKET (LFV/COOPANS)**, established in HOSPITALSGATAN 30, NORRKOPING 602 27, Sweden, VAT number: SE202100079501,
8. **NAVIAIR (Naviair/COOPANS)**, established in NAVIAIR ALLE 1, KASTRUP 2770, Denmark, VAT number: DK26059763,
9. **DFS DEUTSCHE FLUGSICHERUNG GMBH (DFS)**, established in AM DFS CAMPUS 10, LANGEN 63225, Germany, VAT number: DE114110232,
10. **DIRECTION DES SERVICES DE LA NAVIGATION AERIENNE (DSNA)**, established in 50 RUE HENRY FARMAN, PARIS 75720, France, VAT number: FR29120064019,
11. **ENAIRE (ENAIRE)**, established in AVENIDA DE ARAGON S/N BLOQUE 330, PORTAL 2 PARQUE EMPRESARIAL LAS MERCEDES, MADRID 28022, Spain, VAT number: ESQ2822001J,
12. **ENAV SPA (ENAV)**, established in VIA SALARIA 716, ROMA 00138, Italy, VAT number: IT02152021008,
13. **HUNGAROCONTROL MAGYAR LEGIFORGALMISZOLGALAT ZARTKORUEN MUKODO RESZVENYTARSASAG (HC (FSP))**, established in IGLO UTCA 33 35, BUDAPEST 1185, Hungary, VAT number: HU13851325,
14. **INDRA SISTEMAS SA (INDRA)**, established in AVENIDA DE BRUSELAS 35, ALCOBENDAS MADRID 28108, Spain, VAT number: ESA28599033,
15. **LEONARDO - SOCIETA PER AZIONI (LDO)**, established in PIAZZA MONTE GRAPPA 4, ROMA 00195, Italy, VAT number: IT00881841001,
16. **SAAB AKTIEBOLAG (SAAB (NATMIG))**, established in ., LINKOPING 581 88, Sweden, VAT number: SE556036079301,
17. **SINTEF AS (SINTEF (NATMIG))**, established in STRINDVEGEN 4, TRONDHEIM 7034, Norway, VAT number: NO919303808MVA,
18. **NATS (EN ROUTE) PUBLIC LIMITED COMPANY (NATS)**, established in 4000 PARKWAY WHITELEY, FAREHAM PO15 7FL, United Kingdom, VAT number: GB440379456,
19. **AVINOR AS (Avinor-SEAC2020)**, established in DRONNING EUFEMIAS GATE 6, OSLO 2061, Norway,
20. **HEATHROW AIRPORT LIMITED (HAL (SEAC2020))**, established in NELSON ROAD THE COMPASS CENTRE HOUNSLOW, LONDON TW6 2GW, United Kingdom, VAT number: GB927365404,
21. **FLUGHAFEN MUNCHEN GMBH (MUC (SEAC2020))**, established in NORDALLEE 25, MUNCHEN 85326, Germany, VAT number: DE129352365,
22. **SCHIPHOL NEDERLAND B.V. (SNBV (SEAC2020))**, established in EVERT VAN DE BEEKSTRAAT 202, LUCHTHAVEN SCHIPHOL 1118CP, Netherlands, VAT number: NL810336406B01,



23. **SKYGUIDE, SA SUISSE POUR LES SERVICES DE LA NAVIGATION AERIENNE CIVILS ET MILITAIRES (SKYGUIDE)**, established in ROUTE DE PRE BOIS 15-17, GENEVA 1215, Switzerland, VAT number: CH514204,

24. **THALES LAS FRANCE SAS (THALES AIR SYS)**, established in AVENUE GAY LUSSAC 2, ELANCOURT 78990, France, VAT number: FR15319159877,

25. **STICHTING NATIONAAL LUCHT- EN RUIMTEVAARTLABORATORIUM (NLR (AT-One))**, established in Anthony Fokkerweg 2, AMSTERDAM 1059CM, Netherlands, VAT number: NL002760551B01, as ‘beneficiary not receiving JU funding’ (see Article 9),

26. **RIZENI LETOVEHO PROVOZU CESKE REPUBLIKY STATNI PODNIK (ANS CR (B4))**, established in JENEC NAVIGACNI 787, JENEC 252 61, Czechia, VAT number: CZ699004742, as ‘beneficiary not receiving JU funding’ (see Article 9),

27. **LETOVE PREVADZKOVE SLUZBY SLOVENSKEJ REPUBLIKY, STATNY PODNIK (LPS SR (B4))**, established in IVANSKA CESTA 93, BRATISLAVA 823 07, Slovakia, VAT number: SK2020244699, as ‘beneficiary not receiving JU funding’ (see Article 9),

28. **CROATIA CONTROL, CROATIAN AIR NAVIGATION SERVICES LTD (CCL/COOPANS)**, established in RUDOLFA FIZIRA 2, VELIKA GORICA 10410, Croatia, VAT number: HR33052761319, as ‘beneficiary not receiving JU funding’ (see Article 9),

29. **UDARAS EITLIOCHTA NA HEIREANN THE IRISH AVIATION AUTHORITY (IAA/COOPANS)**, established in D'OLIER STREET 11-12 THE TIMES BUILDING, DUBLIN D02 T449, Ireland, VAT number: IE8211082B, as ‘beneficiary not receiving JU funding’ (see Article 9),

30. **ATOS BELGIUM (ATOS (FSP))**, established in DA VINCILAAN 5, ZAVENTEM 1930, Belgium, VAT number: BE0401848135, as ‘beneficiary not receiving JU funding’ (see Article 9),

31. **FREQUENTIS AG (FRQ (FSP))**, established in Innovationsstrasse 1, WIEN 1100, Austria, VAT number: ATU14715600, as ‘beneficiary not receiving JU funding’ (see Article 9),

32. **AIRTEL ATN LIMITED (AIRTEL (NATMIG))**, established in 2 HARBOUR SQUARE CROFTON ROAD, DUN LOAGHAIRE DUBLIN A96D6R0, Ireland, VAT number: IE8287698U, as ‘beneficiary not receiving JU funding’ (see Article 9),

33. **AEROPORTS DE PARIS SA (ADP (SEAC2020))**, established in 1 RUE DE FRANCE, TREMBLAY-EN-FRANCE 93290, France, VAT number: FR33552016628, as ‘beneficiary not receiving JU funding’ (see Article 9),

34. **SWEDAVIA AB (Swed (SEAC2020))**, established in SWEDAVIA, STOCKHOLM ARLANDA 190 45, Sweden, VAT number: SE556797081801, as ‘beneficiary not receiving JU funding’ (see Article 9),

35. **FLUGHAFEN ZURICH AG (ZRH (SEAC2020))**, established in FLUGHAFEN KLOTEN, ZURICH 8058, Switzerland, VAT number: CHE101921104MWST, as ‘beneficiary not receiving JU funding’ (see Article 9),

Unless otherwise specified, references to ‘beneficiary’ or ‘beneficiaries’ include the coordinator.

The parties referred to above have agreed to enter into the Agreement under the terms and conditions below.

By signing the Agreement or the Accession Form, the beneficiaries accept the grant and agree to implement it under their own responsibility and in accordance with the Agreement, with all the obligations and conditions it sets out.

The Agreement is composed of:

#### Terms and Conditions

- |         |   |
|---------|---|
| Annex 1 | Description of the action   |
| Annex 2 | Estimated budget for the action                                       |
|         | 2a Additional information on the estimated budget                     |
| Annex 3 | Accession Forms   |
|         | 3a Declaration on joint and several liability of linked third parties |
| Annex 4 | Model for the financial statements                                    |
| Annex 5 | Model for the certificate on the financial statements                 |
| Annex 6 | Model for the certificate on the methodology                          |

# TERMS AND CONDITIONS

## TABLE OF CONTENTS

<b>CHAPTER 1 GENERAL.....</b>	<b>13</b>
ARTICLE 1 — SUBJECT OF THE AGREEMENT.....	13
<b>CHAPTER 2 ACTION.....</b>	<b>13</b>
ARTICLE 2 — ACTION TO BE IMPLEMENTED — COMPLEMENTARY GRANT.....	13
ARTICLE 3 — DURATION AND STARTING DATE OF THE ACTION.....	13
ARTICLE 4 — ESTIMATED BUDGET AND BUDGET TRANSFERS.....	13
4.1 Estimated budget.....	13
4.2 Budget transfers.....	13
<b>CHAPTER 3 GRANT.....</b>	<b>13</b>
ARTICLE 5 — GRANT AMOUNT, FORM OF GRANT, REIMBURSEMENT RATES AND FORMS OF COSTS.....	13
5.1 Maximum grant amount.....	13
5.2 Form of grant, reimbursement rates and forms of costs.....	14
5.3 Final grant amount — Calculation.....	14
5.4 Revised final grant amount — Calculation.....	16
ARTICLE 6 — ELIGIBLE AND INELIGIBLE COSTS.....	16
6.1 General conditions for costs to be eligible.....	16
6.2 Specific conditions for costs to be eligible.....	17
6.3 Conditions for costs of linked third parties to be eligible.....	23
6.4 Conditions for in-kind contributions provided by third parties free of charge to be eligible.....	23
6.5 Ineligible costs.....	23
6.6 Consequences of declaration of ineligible costs.....	24
<b>CHAPTER 4 RIGHTS AND OBLIGATIONS OF THE PARTIES.....</b>	<b>24</b>
<b>SECTION 1 RIGHTS AND OBLIGATIONS RELATED TO IMPLEMENTING THE ACTION.....</b>	<b>24</b>
ARTICLE 7 — GENERAL OBLIGATION TO PROPERLY IMPLEMENT THE ACTION.....	24
7.1 General obligation to properly implement the action.....	24
7.2 Consequences of non-compliance.....	24
ARTICLE 8 — RESOURCES TO IMPLEMENT THE ACTION — THIRD PARTIES INVOLVED IN THE ACTION.....	25
ARTICLE 9 — IMPLEMENTATION OF ACTION TASKS BY BENEFICIARIES NOT RECEIVING JU FUNDING.....	25
9.1 Rules for the implementation of action tasks by beneficiaries not receiving JU funding.....	25

9.2	Consequences of non-compliance.....	26
ARTICLE 10 — PURCHASE OF GOODS, WORKS OR SERVICES.....		26
10.1	Rules for purchasing goods, works or services.....	26
10.2	Consequences of non-compliance.....	26
ARTICLE 11 — USE OF IN-KIND CONTRIBUTIONS PROVIDED BY THIRD PARTIES AGAINST PAYMENT.....		27
11.1	Rules for the use of in-kind contributions against payment.....	27
11.2	Consequences of non-compliance.....	27
ARTICLE 12 — USE OF IN-KIND CONTRIBUTIONS PROVIDED BY THIRD PARTIES FREE OF CHARGE.....		27
12.1	Rules for the use of in-kind contributions free of charge.....	27
12.2	Consequences of non-compliance.....	28
ARTICLE 13 — IMPLEMENTATION OF ACTION TASKS BY SUBCONTRACTORS.....		28
13.1	Rules for subcontracting action tasks.....	28
13.2	Consequences of non-compliance.....	28
ARTICLE 14 — IMPLEMENTATION OF ACTION TASKS BY LINKED THIRD PARTIES.....		29
14.1	Rules for calling upon linked third parties to implement part of the action.....	29
14.2	Consequences of non-compliance.....	29
ARTICLE 14a — IMPLEMENTATION OF ACTION TASKS BY INTERNATIONAL PARTNERS.....		30
ARTICLE 15 — FINANCIAL SUPPORT TO THIRD PARTIES.....		30
15.1	Rules for providing financial support to third parties.....	30
15.2	Financial support in the form of prizes.....	30
15.3	Consequences of non-compliance.....	30
ARTICLE 16 — PROVISION OF TRANS-NATIONAL OR VIRTUAL ACCESS TO RESEARCH INFRASTRUCTURE.....		30
16.1	Rules for providing trans-national access to research infrastructure.....	30
16.2	Rules for providing virtual access to research infrastructure.....	30
16.3	Consequences of non-compliance.....	30
<b>SECTION 2 RIGHTS AND OBLIGATIONS RELATED TO THE GRANT ADMINISTRATION.....</b>		<b>30</b>
ARTICLE 17 — GENERAL OBLIGATION TO INFORM.....		30
17.1	General obligation to provide information upon request.....	30
17.2	Obligation to keep information up to date and to inform about events and circumstances likely to affect the Agreement.....	30
17.3	Consequences of non-compliance.....	31
ARTICLE 18 — KEEPING RECORDS — SUPPORTING DOCUMENTATION.....		31
18.1	Obligation to keep records and other supporting documentation.....	31

18.2	Consequences of non-compliance.....	32
ARTICLE 19 — SUBMISSION OF DELIVERABLES.....		33
19.1	Obligation to submit deliverables.....	33
19.2	Consequences of non-compliance.....	33
ARTICLE 20 — REPORTING — PAYMENT REQUESTS.....		33
20.1	Obligation to submit reports.....	33
20.2	Reporting periods.....	33
20.3	Periodic reports — Requests for interim payments.....	33
20.4	Final report — Request for payment of the balance.....	35
20.5	Information on cumulative expenditure incurred.....	35
20.6	Currency for financial statements and conversion into euro.....	35
20.7	Language of reports.....	35
20.8	Consequences of non-compliance.....	35
ARTICLE 21 — PAYMENTS AND PAYMENT ARRANGEMENTS.....		36
21.1	Payments to be made.....	36
21.2	Pre-financing payment — Amount — Amount retained for the Guarantee Fund.....	36
21.3	Interim payments — Amount — Calculation.....	36
21.4	Payment of the balance — Amount — Calculation — Release of the amount retained for the Guarantee Fund.....	37
21.5	Notification of amounts due.....	38
21.6	Currency for payments.....	38
21.7	Payments to the coordinator — Distribution to the beneficiaries.....	38
21.8	Bank account for payments.....	38
21.9	Costs of payment transfers.....	38
21.10	Date of payment.....	39
21.11	Consequences of non-compliance.....	39
ARTICLE 22 — CHECKS, REVIEWS, AUDITS AND INVESTIGATIONS — EXTENSION OF FINDINGS.....		39
22.1	Checks, reviews and audits by the JU and the Commission.....	39
22.2	Investigations by the European Anti-Fraud Office (OLAF).....	41
22.3	Checks and audits by the European Court of Auditors (ECA).....	42
22.4	Checks, reviews, audits and investigations for international organisations.....	42
22.5	Consequences of findings in checks, reviews, audits and investigations — Extension of findings.....	42
22.6	Consequences of non-compliance.....	44
ARTICLE 23 — EVALUATION OF THE IMPACT OF THE ACTION.....		44

23.1	Right to evaluate the impact of the action.....	44
23.2	Consequences of non-compliance.....	44
<b>SECTION 3 RIGHTS AND OBLIGATIONS RELATED TO BACKGROUND AND RESULTS.....</b>		<b>44</b>
<b>SUBSECTION 1 GENERAL.....</b>		<b>44</b>
ARTICLE 23a — MANAGEMENT OF INTELLECTUAL PROPERTY.....		44
23a.1	Obligation to take measures to implement the Commission Recommendation on the management of intellectual property in knowledge transfer activities.....	44
23a.2	Consequences of non-compliance.....	45
<b>SUBSECTION 2 RIGHTS AND OBLIGATIONS RELATED TO BACKGROUND.....</b>		<b>45</b>
ARTICLE 24 — AGREEMENT ON BACKGROUND.....		45
24.1	Agreement on background.....	45
24.2	Consequences of non-compliance.....	45
ARTICLE 25 — ACCESS RIGHTS TO BACKGROUND.....		45
25.1	Exercise of access rights — Waiving of access rights — No sub-licensing.....	45
25.2	Access rights for other beneficiaries, for implementing their own tasks under the action.....	46
25.3	Access rights for other beneficiaries, for exploiting their own results.....	46
25.4	Access rights for affiliated entities.....	46
25.5	Access rights for third parties.....	46
25.6	Consequences of non-compliance.....	46
<b>SUBSECTION 3 RIGHTS AND OBLIGATIONS RELATED TO RESULTS.....</b>		<b>47</b>
ARTICLE 26 — OWNERSHIP OF RESULTS.....		47
26.1	Ownership by the beneficiary that generates the results.....	47
26.2	Joint ownership by several beneficiaries.....	47
26.3	Rights of third parties (including personnel).....	47
26.4	JU ownership, to protect results.....	48
26.5	Consequences of non-compliance.....	48
ARTICLE 27 — PROTECTION OF RESULTS — VISIBILITY OF JU FUNDING AND SUPPORT FROM JU MEMBERS.....		49
27.1	Obligation to protect the results.....	49
27.2	JU ownership, to protect the results.....	49
27.3	Information on JU funding and support from JU members.....	49
27.4	Consequences of non-compliance.....	49
ARTICLE 28 — EXPLOITATION OF RESULTS.....		49
28.1	Obligation to exploit the results.....	49
28.2	Results that could contribute to European or international standards — Information on JU funding and support from JU members .....	50



28.3	Consequences of non-compliance.....	50
ARTICLE 29 — DISSEMINATION OF RESULTS — OPEN ACCESS — VISIBILITY OF JU FUNDING AND SUPPORT FROM JU MEMBERS.....		
29.1	Obligation to disseminate results.....	50
29.2	Open access to scientific publications.....	51
29.3	Open access to research data.....	51
29.4	Information on JU funding and support from JU members — Obligation and right to use the JU logo and the EU emblem .....	51
29.5	Disclaimer excluding JU responsibility.....	52
29.6	Consequences of non-compliance.....	52
ARTICLE 30 — TRANSFER AND LICENSING OF RESULTS.....		
30.1	Transfer of ownership.....	52
30.2	Granting licenses.....	52
30.3	JU right to object to transfers or exclusive licensing.....	53
30.4	Consequences of non-compliance.....	53
ARTICLE 31 — ACCESS RIGHTS TO RESULTS.....		
31.1	Exercise of access rights — Waiving of access rights — No sub-licensing.....	53
31.2	Access rights for other beneficiaries, for implementing their own tasks under the action.....	54
31.3	Access rights for other beneficiaries, for exploiting their own results.....	54
31.4	Access rights of affiliated entities.....	54
31.5	Access rights for the JU, the EU institutions, other EU bodies, offices or agencies and EU Member States.....	54
31.6	Access rights for third parties.....	54
31.7	Consequences of non-compliance.....	54
<b>SECTION 4 OTHER RIGHTS AND OBLIGATIONS.....</b>		
ARTICLE 32 — RECRUITMENT AND WORKING CONDITIONS FOR RESEARCHERS.....		
32.1	Obligation to take measures to implement the European Charter for Researchers and Code of Conduct for the Recruitment of Researchers.....	55
32.2	Consequences of non-compliance.....	55
ARTICLE 33 — GENDER EQUALITY.....		
33.1	Obligation to aim for gender equality.....	55
33.2	Consequences of non-compliance.....	55
ARTICLE 34 — ETHICS AND RESEARCH INTEGRITY.....		
34.1	Obligation to comply with ethical and research integrity principles.....	55
34.2	Activities raising ethical issues.....	56
34.3	Activities involving human embryos or human embryonic stem cells.....	57

34.4	Consequences of non-compliance.....	57
ARTICLE 35 — CONFLICT OF INTERESTS.....		57
35.1	Obligation to avoid a conflict of interests.....	57
35.2	Consequences of non-compliance.....	57
ARTICLE 36 — CONFIDENTIALITY.....		58
36.1	General obligation to maintain confidentiality.....	58
36.2	Consequences of non-compliance.....	58
ARTICLE 37 — SECURITY-RELATED OBLIGATIONS.....		59
37.1	Results with a security recommendation.....	59
37.2	Classified information.....	59
37.3	Activities involving dual-use goods or dangerous materials and substances.....	59
37.4	Consequences of non-compliance.....	59
ARTICLE 38 — PROMOTING THE ACTION — VISIBILITY OF JU FUNDING AND SUPPORT FROM JU MEMBERS.....		59
38.1	Communication activities by beneficiaries.....	59
38.2	Communication activities by the JU.....	60
38.3	Consequences of non-compliance.....	61
ARTICLE 39 — PROCESSING OF PERSONAL DATA.....		61
39.1	Processing of personal data by the JU and the Commission.....	61
39.2	Processing of personal data by the beneficiaries.....	62
39.3	Consequences of non-compliance.....	62
ARTICLE 40 — ASSIGNMENTS OF CLAIMS FOR PAYMENT AGAINST THE JU.....		62
<b>CHAPTER 5 DIVISION OF BENEFICIARIES' ROLES AND RESPONSIBILITIES — RELATIONSHIP WITH COMPLEMENTARY BENEFICIARIES — RELATIONSHIP WITH PARTNERS OF A JOINT ACTION.....</b>		<b>62</b>
ARTICLE 41 — DIVISION OF BENEFICIARIES' ROLES AND RESPONSIBILITIES — RELATIONSHIP WITH COMPLEMENTARY BENEFICIARIES — RELATIONSHIP WITH PARTNERS OF A JOINT ACTION.....		62
41.1	Roles and responsibility towards the JU.....	62
41.2	Internal division of roles and responsibilities.....	63
41.3	Internal arrangements between beneficiaries — Consortium agreement.....	63
41.4	Relationship with complementary beneficiaries — Collaboration agreement.....	64
41.5	Relationship with partners of a joint action — Coordination agreement.....	64
<b>CHAPTER 6 REJECTION OF COSTS — REDUCTION OF THE GRANT — RECOVERY — SANCTIONS — DAMAGES — SUSPENSION — TERMINATION — FORCE MAJEURE.....</b>		<b>64</b>
<b>SECTION 1 REJECTION OF COSTS — REDUCTION OF THE GRANT — RECOVERY — SANCTIONS.....</b>		<b>64</b>
ARTICLE 42 — REJECTION OF INELIGIBLE COSTS.....		64

42.1	Conditions.....	64
42.2	Ineligible costs to be rejected — Calculation — Procedure.....	64
42.3	Effects.....	65
ARTICLE 43 — REDUCTION OF THE GRANT.....		65
43.1	Conditions.....	65
43.2	Amount to be reduced — Calculation — Procedure.....	66
43.3	Effects.....	66
ARTICLE 44 — RECOVERY OF UNDUE AMOUNTS.....		66
44.1	Amount to be recovered — Calculation — Procedure.....	66
ARTICLE 45 — ADMINISTRATIVE SANCTIONS.....		70
<b>SECTION 2 LIABILITY FOR DAMAGES.....</b>		<b>70</b>
ARTICLE 46 — LIABILITY FOR DAMAGES.....		70
46.1	Liability of the JU.....	70
46.2	Liability of the beneficiaries.....	70
<b>SECTION 3 SUSPENSION AND TERMINATION.....</b>		<b>70</b>
ARTICLE 47 — SUSPENSION OF PAYMENT DEADLINE.....		70
47.1	Conditions.....	70
47.2	Procedure.....	71
ARTICLE 48 — SUSPENSION OF PAYMENTS.....		71
48.1	Conditions.....	71
48.2	Procedure.....	72
ARTICLE 49 — SUSPENSION OF THE ACTION IMPLEMENTATION.....		72
49.1	Suspension of the action implementation, by the beneficiaries.....	72
49.2	Suspension of the action implementation, by the JU.....	73
ARTICLE 50 — TERMINATION OF THE AGREEMENT OR OF THE PARTICIPATION OF ONE OR MORE BENEFICIARIES.....		74
50.1	Termination of the Agreement, by the beneficiaries.....	74
50.2	Termination of the participation of one or more beneficiaries, by the beneficiaries.....	74
50.3	Termination of the Agreement or the participation of one or more beneficiaries, by the JU.....	77
<b>SECTION 4 FORCE MAJEURE.....</b>		<b>81</b>
ARTICLE 51 — FORCE MAJEURE.....		81
<b>CHAPTER 7 FINAL PROVISIONS.....</b>		<b>82</b>
ARTICLE 52 — COMMUNICATION BETWEEN THE PARTIES.....		82
52.1	Form and means of communication.....	82
52.2	Date of communication.....	82

52.3	Addresses for communication.....	83
ARTICLE 53 — INTERPRETATION OF THE AGREEMENT.....		83
53.1	Precedence of the Terms and Conditions over the Annexes.....	83
53.2	Privileges and immunities.....	83
ARTICLE 54 — CALCULATION OF PERIODS, DATES AND DEADLINES.....		83
ARTICLE 55 — AMENDMENTS TO THE AGREEMENT.....		83
55.1	Conditions.....	83
55.2	Procedure.....	84
ARTICLE 56 — ACCESSION TO THE AGREEMENT.....		84
56.1	Accession of the beneficiaries mentioned in the Preamble.....	84
56.2	Addition of new beneficiaries.....	84
ARTICLE 57 — APPLICABLE LAW AND SETTLEMENT OF DISPUTES.....		85
57.1	Applicable law.....	85
57.2	Dispute settlement.....	85
ARTICLE 58 — ENTRY INTO FORCE OF THE AGREEMENT.....		86

## **CHAPTER 1 GENERAL**

### **ARTICLE 1 — SUBJECT OF THE AGREEMENT**

This Agreement sets out the rights and obligations and the terms and conditions applicable to the grant awarded to the beneficiaries for implementing the action set out in Chapter 2.

## **CHAPTER 2 ACTION**

### **ARTICLE 2 — ACTION TO BE IMPLEMENTED — COMPLEMENTARY GRANT**

The grant is awarded for the action entitled ‘**PJ.20 W2 Master Planning**’ — ‘**PJ20-W2 AMPLE**’ (**‘action’**), as described in Annex 1.

The grant is a ‘**complementary grant**’ to the grant agreement(s) under the call(s) for proposals H2020-SESAR-2019-1.

### **ARTICLE 3 — DURATION AND STARTING DATE OF THE ACTION**

The duration of the action will be **37 months** as of 1 December 2019 (**‘starting date of the action’**).

### **ARTICLE 4 — ESTIMATED BUDGET AND BUDGET TRANSFERS**

#### **4.1 Estimated budget**

The ‘**estimated budget**’ for the action is set out in Annex 2.

It contains the estimated eligible costs and the forms of costs, broken down by beneficiary (and linked third party) and budget category (see Articles 5, 6, and 14). It also shows the estimated costs of the beneficiaries not receiving JU funding (see Article 9).

#### **4.2 Budget transfers**

The estimated budget breakdown indicated in Annex 2 may be adjusted — without an amendment (see Article 55) — by transfers of amounts between beneficiaries, budget categories and/or forms of costs set out in Annex 2, if the action is implemented as described in Annex 1.

However, the beneficiaries may not add costs relating to subcontracts not provided for in Annex 1, unless such additional subcontracts are approved by an amendment or in accordance with Article 13.

## **CHAPTER 3 GRANT**

### **ARTICLE 5 — GRANT AMOUNT, FORM OF GRANT, REIMBURSEMENT RATES AND FORMS OF COSTS**

#### **5.1 Maximum grant amount**

The '**maximum grant amount**' is **EUR 1 347 931.20** (one million three hundred and forty seven thousand nine hundred and thirty one EURO and twenty eurocents).

## 5.2 Form of grant, reimbursement rates and forms of costs

The grant reimburses **70% of the action's eligible costs** (see Article 6) ('**reimbursement of eligible costs grant**') (see Annex 2).

The estimated eligible costs of the action are **EUR 2 983 993.75** (two million nine hundred and eighty three thousand nine hundred and ninety three EURO and seventy five eurocents).

Eligible costs (see Article 6) must be declared under the following forms ('**forms of costs**'):

(a) for **direct personnel costs**:

- as actually incurred costs ('**actual costs**') or
- on the basis of an amount per unit calculated by the beneficiary in accordance with its usual cost accounting practices ('**unit costs**').

Personnel **costs for SME owners or beneficiaries that are natural persons** not receiving a salary (see Article 6.2, Points A.4 and A.5) must be declared on the basis of the amount per unit set out in Annex 2a (**unit costs**);

(b) for **direct costs for subcontracting**: as actually incurred costs (**actual costs**);

(c) for **direct costs of providing financial support to third parties**: not applicable;

(d) for **other direct costs**:

- for costs of internally invoiced goods and services: on the basis of an amount per unit calculated by the beneficiary in accordance with its usual cost accounting practices ('**unit costs**');
- for all other costs: as actually incurred costs (**actual costs**);

(e) for **indirect costs**: on the basis of a flat-rate applied as set out in Article 6.2, Point E ('**flat-rate costs**');

(f) **specific cost category(ies)**: not applicable.

## 5.3 Final grant amount — Calculation

The '**final grant amount**' depends on the actual extent to which the action is implemented in accordance with the Agreement's terms and conditions.

This amount is calculated by the JU — when the payment of the balance is made (see Article 21.4) — in the following steps:

Step 1 — Application of the reimbursement rates to the eligible costs

Step 2 — Limit to the maximum grant amount

Step 3 — Reduction due to the no-profit rule

Step 4 — Reduction due to substantial errors, irregularities or fraud or serious breach of obligations

### 5.3.1 Step 1 — Application of the reimbursement rates to the eligible costs

The reimbursement rate(s) (see Article 5.2) are applied to the eligible costs (actual costs, unit costs and flat-rate costs; see Article 6) declared by the beneficiaries and linked third parties (see Article 20) and approved by the JU (see Article 21).

### 5.3.2 Step 2 — Limit to the maximum grant amount

If the amount obtained following Step 1 is higher than the maximum grant amount set out in Article 5.1, it will be limited to the latter.

### 5.3.3 Step 3 — Reduction due to the no-profit rule

The grant must not produce a profit.

‘**Profit**’ means the surplus of the amount obtained following Steps 1 and 2 plus the action’s total receipts, over the action’s total eligible costs.

The ‘**action’s total eligible costs**’ are the consolidated total eligible costs approved by the JU.

The ‘**action’s total receipts**’ are the consolidated total receipts generated during its duration (see Article 3).

The following are considered **receipts**:

- (a) income generated by the action; if the income is generated from selling equipment or other assets purchased under the Agreement, the receipt is up to the amount declared as eligible under the Agreement;
- (b) financial contributions given by third parties to the beneficiary or to a linked third party specifically to be used for the action, and
- (c) in-kind contributions provided by third parties free of charge and specifically to be used for the action, if they have been declared as eligible costs.

The following are however not considered receipts:

- (a) income generated by exploiting the action’s results (see Article 28);
- (b) financial contributions by third parties, if they may be used to cover costs other than the eligible costs (see Article 6);
- (c) financial contributions by third parties with no obligation to repay any amount unused at the end of the period set out in Article 3.

If there is a profit, it will be deducted from the amount obtained following Steps 1 and 2.

### 5.3.4 Step 4 — Reduction due to substantial errors, irregularities or fraud or serious breach of obligations — Reduced grant amount — Calculation

If the grant is reduced (see Article 43), the JU will calculate the reduced grant amount by deducting the amount of the reduction (calculated in proportion to the seriousness of the errors, irregularities or fraud or breach of obligations, in accordance with Article 43.2) from the maximum grant amount set out in Article 5.1.

The final grant amount will be the lower of the following two:

- the amount obtained following Steps 1 to 3 or
- the reduced grant amount following Step 4.

### 5.4 Revised final grant amount — Calculation

If — after the payment of the balance (in particular, after checks, reviews, audits or investigations; see Article 22) — the JU rejects costs (see Article 42) or reduces the grant (see Article 43), it will calculate the ‘**revised final grant amount**’ for the beneficiary concerned by the findings.

This amount is calculated by the JU on the basis of the findings, as follows:

- in case of **rejection of costs**: by applying the reimbursement rate to the revised eligible costs approved by the JU for the beneficiary concerned;
- in case of **reduction of the grant**: by calculating the concerned beneficiary’s share in the grant amount reduced in proportion to the seriousness of the errors, irregularities or fraud or breach of obligations (see Article 43.2).

In case of **rejection of costs and reduction of the grant**, the revised final grant amount for the beneficiary concerned will be the lower of the two amounts above.

## ARTICLE 6 — ELIGIBLE AND INELIGIBLE COSTS

### 6.1 General conditions for costs to be eligible

‘**Eligible costs**’ are costs that meet the following criteria:

(a) for **actual costs**:

- (i) they must be actually incurred by the beneficiary;
- (ii) they must be incurred in the period set out in Article 3, with the exception of costs relating to the submission of the periodic report for the last reporting period and the final report (see Article 20);
- (iii) they must be indicated in the estimated budget set out in Annex 2;
- (iv) they must be incurred in connection with the action as described in Annex 1 and necessary for its implementation;
- (v) they must be identifiable and verifiable, in particular recorded in the beneficiary’s accounts



in accordance with the accounting standards applicable in the country where the beneficiary is established and with the beneficiary's usual cost accounting practices;

- (vi) they must comply with the applicable national law on taxes, labour and social security, and
- (vii) they must be reasonable, justified and must comply with the principle of sound financial management, in particular regarding economy and efficiency;

(b) for **unit costs**:

- (i) they must be calculated as follows:

{amounts per unit set out in Annex 2a or calculated by the beneficiary in accordance with its usual cost accounting practices (see Article 6.2, Point A and Article 6.2.D.5)

multiplied by

the number of actual units};

- (ii) the number of actual units must comply with the following conditions:

- the units must be actually used or produced in the period set out in Article 3;
- the units must be necessary for implementing the action or produced by it, and
- the number of units must be identifiable and verifiable, in particular supported by records and documentation (see Article 18);

(c) for **flat-rate costs**:

- (i) they must be calculated by applying the flat-rate set out in Annex 2, and
- (ii) the costs (actual costs or unit costs) to which the flat-rate is applied must comply with the conditions for eligibility set out in this Article.

## 6.2 Specific conditions for costs to be eligible

Costs are eligible if they comply with the general conditions (see above) and the specific conditions set out below for each of the following budget categories:

- A. direct personnel costs;
- B. direct costs of subcontracting;
- C. not applicable;
- D. other direct costs;
- E. indirect costs;
- F. not applicable.

'Direct costs' are costs that are directly linked to the action implementation and can therefore be attributed to it directly. They must not include any indirect costs (see Point E below).

'Indirect costs' are costs that are not directly linked to the action implementation and therefore cannot be attributed directly to it.

### A. Direct personnel costs

## Types of eligible personnel costs

A.1 Personnel costs are eligible, if they are related to personnel working for the beneficiary under an employment contract (or equivalent appointing act) and assigned to the action (**‘costs for employees (or equivalent)’**). They must be limited to salaries (including during parental leave), social security contributions, taxes and other costs included in the **remuneration**, if they arise from national law or the employment contract (or equivalent appointing act).

Beneficiaries that are non-profit legal entities<sup>2</sup> may also declare as personnel costs **additional remuneration** for personnel assigned to the action (including payments on the basis of supplementary contracts regardless of their nature), if:

- (a) it is part of the beneficiary’s usual remuneration practices and is paid in a consistent manner whenever the same kind of work or expertise is required;
- (b) the criteria used to calculate the supplementary payments are objective and generally applied by the beneficiary, regardless of the source of funding used.

‘Additional remuneration’ means any part of the remuneration which exceeds what the person would be paid for time worked in projects funded by national schemes.

Additional remuneration for personnel assigned to the action is eligible up to the following amount:

- (a) if the person works full time and exclusively on the action during the full year: up to EUR 8 000;
- (b) if the person works exclusively on the action but not full-time or not for the full year: up to the corresponding pro-rata amount of EUR 8 000, or
- (c) if the person does not work exclusively on the action: up to a pro-rata amount calculated as follows:

{EUR 8 000

divided by

the number of annual productive hours (see below)},

multiplied by

the number of hours that the person has worked on the action during the year}.

A.2 The **costs for natural persons working under a direct contract** with the beneficiary other than an employment contract are eligible personnel costs, if:

- (a) the person works under conditions similar to those of an employee (in particular regarding the way the work is organised, the tasks that are performed and the premises where they are performed);
- (b) the result of the work carried out belongs to the beneficiary (unless exceptionally agreed otherwise), and

<sup>2</sup> For the definition, see Article 2.1(14) of the Rules for Participation Regulation No 1290/2013: ‘**non-profit legal entity**’ means a legal entity which by its legal form is non-profit-making or which has a legal or statutory obligation not to distribute profits to its shareholders or individual members.

- (c) the costs are not significantly different from those for personnel performing similar tasks under an employment contract with the beneficiary.

A.3 The **costs of personnel seconded by a third party against payment** are eligible personnel costs, if the conditions in Article 11.1 are met.

A.4 **Costs of owners** of beneficiaries that are small and medium-sized enterprises (**'SME owners'**) who are working on the action and who do not receive a salary are eligible personnel costs, if they correspond to the amount per unit set out in Annex 2a multiplied by the number of actual hours worked on the action.

A.5 **Costs of 'beneficiaries that are natural persons'** not receiving a salary are eligible personnel costs, if they correspond to the amount per unit set out in Annex 2a multiplied by the number of actual hours worked on the action.

### Calculation

Personnel costs must be calculated by the beneficiaries as follows:

{ {hourly rate  
multiplied by  
the number of actual hours worked on the action},  
plus  
for non-profit legal entities: additional remuneration to personnel assigned to the action under the  
conditions set out above (Point A.1)}.

The number of actual hours declared for a person must be identifiable and verifiable (see Article 18).

The total number of hours declared in JU, EU or Euratom grants, for a person for a year, cannot be higher than the annual productive hours used for the calculations of the hourly rate. Therefore, the maximum number of hours that can be declared for the grant are:

{number of annual productive hours for the year (see below)  
minus  
total number of hours declared by the beneficiary, for that person in that year, for other JU, EU or  
Euratom grants}.

The **'hourly rate'** is one of the following:

- (a) for personnel costs declared as **actual costs** (i.e. budget categories A.1, A.2, A.3): the hourly rate is calculated *per full financial year*, as follows:

{actual annual personnel costs (excluding additional remuneration) for the person  
divided by  
number of annual productive hours}.

using the personnel costs and the number of productive hours for each full financial year covered by the reporting period concerned. If a financial year is not closed at the end of the

reporting period, the beneficiaries must use the hourly rate of the last closed financial year available.

For the ‘number of annual productive hours’, the beneficiaries may choose one of the following:

- (i) ‘fixed number of hours’: 1 720 hours for persons working full time (or corresponding pro-rata for persons not working full time);
- (ii) ‘individual annual productive hours’: the total number of hours worked by the person in the year for the beneficiary, calculated as follows:

{annual workable hours of the person (according to the employment contract, applicable collective labour agreement or national law)

plus

overtime worked

minus

absences (such as sick leave and special leave)}.

‘Annual workable hours’ means the period during which the personnel must be working, at the employer’s disposal and carrying out his/her activity or duties under the employment contract, applicable collective labour agreement or national working time legislation.

If the contract (or applicable collective labour agreement or national working time legislation) does not allow to determine the annual workable hours, this option cannot be used;

- (iii) ‘standard annual productive hours’: the ‘standard number of annual hours’ generally applied by the beneficiary for its personnel in accordance with its usual cost accounting practices. This number must be at least 90% of the ‘standard annual workable hours’.

If there is no applicable reference for the standard annual workable hours, this option cannot be used.

For all options, the actual time spent on **parental leave** by a person assigned to the action may be deducted from the number of annual productive hours.

As an alternative, beneficiaries may calculate the hourly rate *per month*, as follows:

{actual monthly personnel cost (excluding additional remuneration) for the person

divided by

{number of annual productive hours / 12}}}

using the personnel costs for each month and (one twelfth of) the annual productive hours calculated according to either option (i) or (iii) above, i.e.:

- fixed number of hours or
- standard annual productive hours.

Time spent on **parental leave** may not be deducted when calculating the hourly rate per month. However, beneficiaries may declare personnel costs incurred in periods of parental leave in proportion to the time the person worked on the action in that financial year.

If parts of a basic remuneration are generated over a period longer than a month, the beneficiaries may include only the share which is generated in the month (irrespective of the amount actually paid for that month).

Each beneficiary must use only one option (per full financial year or per month) for each full financial year;

(b) for personnel costs declared on the basis of **unit costs** (i.e. budget categories A.1, A.2, A.4, A.5): the hourly rate is one of the following:

- (i) for SME owners or beneficiaries that are natural persons: the hourly rate set out in Annex 2a (see Points A.4 and A.5 above), or
- (ii) for personnel costs declared on the basis of the beneficiary's usual cost accounting practices: the hourly rate calculated by the beneficiary in accordance with its usual cost accounting practices, if:
  - the cost accounting practices used are applied in a consistent manner, based on objective criteria, regardless of the source of funding;
  - the hourly rate is calculated using the actual personnel costs recorded in the beneficiary's accounts, excluding any ineligible cost or costs included in other budget categories.

The actual personnel costs may be adjusted by the beneficiary on the basis of budgeted or estimated elements. Those elements must be relevant for calculating the personnel costs, reasonable and correspond to objective and verifiable information;

and

- the hourly rate is calculated using the number of annual productive hours (see above).

**B. Direct costs of subcontracting** (including related duties, taxes and charges such as non-deductible value added tax (VAT) paid by the beneficiary) are eligible if the conditions in Article 13.1.1 are met.

**C. Direct costs of providing financial support to third parties**

Not applicable

**D. Other direct costs**

**D.1 Travel costs and related subsistence allowances** (including related duties, taxes and charges such as non-deductible value added tax (VAT) paid by the beneficiary) are eligible if they are in line with the beneficiary's usual practices on travel.

**D.2 The depreciation costs of equipment, infrastructure or other assets** (new or second-hand) as recorded in the beneficiary's accounts are eligible, if they were purchased in accordance with

Article 10.1.1 and written off in accordance with international accounting standards and the beneficiary's usual accounting practices.

The **costs of renting or leasing** equipment, infrastructure or other assets (including related duties, taxes and charges such as non-deductible value added tax (VAT) paid by the beneficiary) are also eligible, if they do not exceed the depreciation costs of similar equipment, infrastructure or assets and do not include any financing fees.

The costs of equipment, infrastructure or other assets **contributed in-kind against payment** are eligible, if they do not exceed the depreciation costs of similar equipment, infrastructure or assets, do not include any financing fees and if the conditions in Article 11.1 are met.

The only portion of the costs that will be taken into account is that which corresponds to the duration of the action and rate of actual use for the purposes of the action.

**D.3 Costs of other goods and services** (including related duties, taxes and charges such as non-deductible value added tax (VAT) paid by the beneficiary) are eligible, if they are:

- (a) purchased specifically for the action and in accordance with Article 10.1.1 or
- (b) contributed in kind against payment and in accordance with Article 11.1.

Such goods and services include, for instance, consumables and supplies, dissemination (including open access), protection of results, certificates on the financial statements (if they are required by the Agreement), certificates on the methodology, translations and publications.

**D.4 Capitalised and operating costs of 'large research infrastructure'**<sup>3</sup>: Not applicable

**D.5 Costs of internally invoiced goods and services** directly used for the action are eligible, if:

- (a) they are declared on the basis of a unit cost calculated in accordance with the beneficiary's usual cost accounting practices;
- (b) the cost accounting practices used are applied in a consistent manner, based on objective criteria, regardless of the source of funding;
- (c) the unit cost is calculated using the actual costs for the good or service recorded in the beneficiary's accounts, excluding any ineligible cost or costs included in other budget categories.

The actual costs may be adjusted by the beneficiary on the basis of budgeted or estimated elements. Those elements must be relevant for calculating the costs, reasonable and correspond to objective and verifiable information;

- (d) the unit cost excludes any costs of items which are not directly linked to the production of the invoiced goods or service.

'Internally invoiced goods and services' means goods or services which are provided by the

---

<sup>3</sup> **'Large research infrastructure'** means research infrastructure of a total value of at least EUR 20 million, for a beneficiary, calculated as the sum of historical asset values of each individual research infrastructure of that beneficiary, as they appear in its last closed balance sheet before the date of the signature of the Agreement or as determined on the basis of the rental and leasing costs of the research infrastructure.

beneficiary directly for the action and which the beneficiary values on the basis of its usual cost accounting practices.

## E. Indirect costs

**Indirect costs** are eligible if they are declared on the basis of the flat-rate of 25% of the eligible direct costs (see Article 5.2 and Points A to D above), from which are excluded:

- (a) costs of subcontracting and
- (b) costs of in-kind contributions provided by third parties which are not used on the beneficiary's premises;
- (c) not applicable;
- (d) not applicable.

Beneficiaries receiving an operating grant<sup>5</sup> financed by the EU or Euratom budget cannot declare indirect costs for the period covered by the operating grant, unless they can demonstrate that the operating grant does not cover any costs of the action.

## F. Specific cost category(ies)

Not applicable

### 6.3 Conditions for costs of linked third parties to be eligible

**Costs incurred by linked third parties** are eligible if they fulfil — *mutatis mutandis* — the general and specific conditions for eligibility set out in this Article (Article 6.1 and 6.2) and Article 14.1.1.

### 6.4 Conditions for in-kind contributions provided by third parties free of charge to be eligible

**In-kind contributions provided free of charge** are eligible direct costs (for the beneficiary or linked third party), if the costs incurred by the third party fulfil — *mutatis mutandis* — the general and specific conditions for eligibility set out in this Article (Article 6.1 and 6.2) and Article 12.1.

### 6.5 Ineligible costs

**'Ineligible costs'** are:

- (a) costs that do not comply with the conditions set out above (Article 6.1 to 6.4), in particular:
  - (i) costs related to return on capital;
  - (ii) debt and debt service charges;

---

<sup>5</sup> For the definition, see Article 121(1)(b) of Regulation (EU, Euratom) No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union and repealing Council Regulation (EC, Euratom) No 1605/2002 ('**Financial Regulation No 966/2012**') (OJ L 218, 26.10.2012, p.1): '**operating grant**' means direct financial contribution, by way of donation, from the budget in order to finance the functioning of a body which pursues an aim of general EU interest or has an objective forming part of and supporting an EU policy.



- (iii) provisions for future losses or debts;
  - (iv) interest owed;
  - (v) doubtful debts;
  - (vi) currency exchange losses;
  - (vii) bank costs charged by the beneficiary's bank for transfers from the JU;
  - (viii) excessive or reckless expenditure;
  - (ix) deductible VAT;
  - (x) costs incurred during suspension of the implementation of the action (see Article 49);
- (b) costs declared under another JU, EU or Euratom grant (including other grants awarded by the JU, grants awarded by a Member State and financed by the EU or Euratom budget and grants awarded by bodies other than the JU for the purpose of implementing the EU or Euratom budget); in particular, indirect costs if the beneficiary is already receiving an operating grant financed by the EU or Euratom budget in the same period, unless it can demonstrate that the operating grant does not cover any costs of the action.

## **6.6 Consequences of declaration of ineligible costs**

Declared costs that are ineligible will be rejected (see Article 42).

This may also lead to any of the other measures described in Chapter 6.

# **CHAPTER 4 RIGHTS AND OBLIGATIONS OF THE PARTIES**

## **SECTION 1 RIGHTS AND OBLIGATIONS RELATED TO IMPLEMENTING THE ACTION**

### **ARTICLE 7 — GENERAL OBLIGATION TO PROPERLY IMPLEMENT THE ACTION**

#### **7.1 General obligation to properly implement the action**

The beneficiaries must implement the action as described in Annex 1 and in compliance with the provisions of the Agreement and all legal obligations under applicable EU, international and national law.

#### **7.2 Consequences of non-compliance**

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 43).

Such breaches may also lead to any of the other measures described in Chapter 6.



## **ARTICLE 8 — RESOURCES TO IMPLEMENT THE ACTION — THIRD PARTIES INVOLVED IN THE ACTION**

The beneficiaries must have the appropriate resources to implement the action.

If it is necessary to implement the action, the beneficiaries may:

- purchase goods, works and services (see Article 10);
- use in-kind contributions provided by third parties against payment (see Article 11);
- use in-kind contributions provided by third parties free of charge (see Article 12);
- call upon subcontractors to implement action tasks described in Annex 1 (see Article 13);
- call upon linked third parties to implement action tasks described in Annex 1 (see Article 14);
- call upon international partners to implement action tasks described in Annex 1 (see Article 14a).

In these cases, the beneficiaries retain sole responsibility towards the JU and the other beneficiaries for implementing the action.

## **ARTICLE 9 — IMPLEMENTATION OF ACTION TASKS BY BENEFICIARIES NOT RECEIVING JU FUNDING**

### **9.1 Rules for the implementation of action tasks by beneficiaries not receiving JU funding**

Beneficiaries that are not eligible for JU funding or request zero JU funding (**‘beneficiaries not receiving JU funding’**) must implement the action tasks attributed to them in Annex 1 in accordance with Article 7.1.

Their costs are estimated in Annex 2 but:

- will not be reimbursed and
- will not be taken into account for the calculation of the grant (see Articles 5.2, 5.3 and 5.4, and 21).

Chapter 3, Articles 10 to 15, 18.1.2, 20.3(b), 20.4(b), 20.6, 21, 23a, 26.4, 27.2, 28.1, 28.2, 30.3, 31.5, 40, 42, 43, 44, 47 and 48 do not apply to Swed (SEAC2020), ZRH (SEAC2020), CCL/COOPANS, ANS CR (B4), LPS SR (B4), ADP (SEAC2020), FRQ (FSP), ATOS (FSP), AIRTEL (NATMIG), IAA/COOPANS, NLR (AT-One).

They will not be subject to financial checks, reviews and audits under Article 22.

Chapter 3, Articles 10 to 15, 18.1.2, 20.6, 23a, 26.4, 27.2, 28.1, 28.2, 30.3, 31.5 and 40 do not apply to EUROCONTROL.

The beneficiary will not be subject to financial checks, reviews and audits under Article 22 for its own costs.

Beneficiaries not receiving JU funding may provide in-kind contributions to another beneficiary. In this case, they will be considered as a third party for the purpose of Articles 11 and 12.

If a beneficiary requesting zero funding receives funding later on (through an amendment; see Article 55), all obligations will apply retroactively.

## **9.2 Consequences of non-compliance**

If a beneficiary not receiving JU funding breaches any of its obligations under this Article, its participation in the Agreement may be terminated (see Article 50).

Such breaches may also lead to any of the other measures described in Chapter 6 that are applicable to it.

## **ARTICLE 10 — PURCHASE OF GOODS, WORKS OR SERVICES**

### **10.1 Rules for purchasing goods, works or services**

10.1.1 If necessary to implement the action, the beneficiaries may purchase goods, works or services.

The beneficiaries must make such purchases ensuring the best value for money or, if appropriate, the lowest price. In doing so, they must avoid any conflict of interests (see Article 35).

The beneficiaries must ensure that the JU, the Commission, the European Court of Auditors (ECA) and the European Anti-Fraud Office (OLAF) can exercise their rights under Articles 22 and 23 also towards their contractors.

10.1.2 Beneficiaries that are ‘contracting authorities’ within the meaning of Directive 2004/18/EC<sup>6</sup> (or 2014/24/EU<sup>7</sup>) or ‘contracting entities’ within the meaning of Directive 2004/17/EC<sup>8</sup> (or 2014/25/EU<sup>9</sup>) must comply with the applicable national law on public procurement.

### **10.2 Consequences of non-compliance**

If a beneficiary breaches any of its obligations under Article 10.1.1, the costs related to the contract concerned will be ineligible (see Article 6) and will be rejected (see Article 42).

If a beneficiary breaches any of its obligations under Article 10.1.2, the grant may be reduced (see Article 43).

Such breaches may also lead to any of the other measures described in Chapter 6.

<sup>6</sup> Directive 2004/18/EC of the European Parliament and of the Council of 31 March 2004 on the coordination of procedures for the award of public work contracts, public supply contracts and public service contracts (OJ L 134, 30.04.2004, p. 114).

<sup>7</sup> Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC. (OJ L 94, 28.03.2014, p. 65).

<sup>8</sup> Directive 2004/17/EC of the European Parliament and of the Council of 31 March 2004 coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors (OJ L 134, 30.04.2004, p. 1)

<sup>9</sup> Directive 2014/25/EU of the European Parliament and of the Council of 26 February 2014 on procurement by entities operating in the water, energy, transport and postal services sectors and repealing Directive 2004/17/EC (OJ L 94, 28.03.2014, p. 243).

## **ARTICLE 11 — USE OF IN-KIND CONTRIBUTIONS PROVIDED BY THIRD PARTIES AGAINST PAYMENT**

### **11.1 Rules for the use of in-kind contributions against payment**

If necessary to implement the action, the beneficiaries may use in-kind contributions provided by third parties against payment.

The beneficiaries may declare costs related to the payment of in-kind contributions as eligible (see Article 6.1 and 6.2), up to the third parties' costs for the seconded persons, contributed equipment, infrastructure or other assets or other contributed goods and services.

The third parties and their contributions must be set out in Annex 1. The JU may however approve in-kind contributions not set out in Annex 1 without amendment (see Article 55), if:

- they are specifically justified in the periodic technical report and
- their use does not entail changes to the Agreement which would call into question the decision awarding the grant or breach the principle of equal treatment of applicants.

The beneficiaries must ensure that the JU, the Commission, the European Court of Auditors (ECA) and the European Anti-Fraud Office (OLAF) can exercise their rights under Articles 22 and 23 also towards the third parties.

### **11.2 Consequences of non-compliance**

If a beneficiary breaches any of its obligations under this Article, the costs related to the payment of the in-kind contribution will be ineligible (see Article 6) and will be rejected (see Article 42).

Such breaches may also lead to any of the other measures described in Chapter 6.

## **ARTICLE 12 — USE OF IN-KIND CONTRIBUTIONS PROVIDED BY THIRD PARTIES FREE OF CHARGE**

### **12.1 Rules for the use of in-kind contributions free of charge**

If necessary to implement the action, the beneficiaries may use in-kind contributions provided by third parties free of charge.

The beneficiaries may declare costs incurred by the third parties for the seconded persons, contributed equipment, infrastructure or other assets or other contributed goods and services as eligible in accordance with Article 6.4.

The third parties and their contributions must be set out in Annex 1. The JU may however approve in-kind contributions not set out in Annex 1 without amendment (see Article 55), if:

- they are specifically justified in the periodic technical report and
- their use does not entail changes to the Agreement which would call into question the decision awarding the grant or breach the principle of equal treatment of applicants.

The beneficiaries must ensure that the JU, the Commission, the European Court of Auditors (ECA)

and the European Anti-Fraud Office (OLAF) can exercise their rights under Articles 22 and 23 also towards the third parties.

## **12.2 Consequences of non-compliance**

If a beneficiary breaches any of its obligations under this Article, the costs incurred by the third parties related to the in-kind contribution will be ineligible (see Article 6) and will be rejected (see Article 42).

Such breaches may also lead to any of the other measures described in Chapter 6.

## **ARTICLE 13 — IMPLEMENTATION OF ACTION TASKS BY SUBCONTRACTORS**

### **13.1 Rules for subcontracting action tasks**

13.1.1 If necessary to implement the action, the beneficiaries may award subcontracts covering the implementation of certain action tasks described in Annex 1.

Subcontracting may cover only a limited part of the action.

The beneficiaries must award the subcontracts ensuring the best value for money or, if appropriate, the lowest price. In doing so, they must avoid any conflict of interests (see Article 35).

The tasks to be implemented and the estimated cost for each subcontract must be set out in Annex 1 and the total estimated costs of subcontracting per beneficiary must be set out in Annex 2. The JU may however approve subcontracts not set out in Annex 1 and 2 without amendment (see Article 55), if:

- they are specifically justified in the periodic technical report and
- they do not entail changes to the Agreement which would call into question the decision awarding the grant or breach the principle of equal treatment of applicants.

The beneficiaries must ensure that the JU, the Commission, the European Court of Auditors (ECA) and the European Anti-Fraud Office (OLAF) can exercise their rights under Articles 22 and 23 also towards their subcontractors.

13.1.2 The beneficiaries must ensure that their obligations under Articles 35, 36, 38 and 46 also apply to the subcontractors.

Beneficiaries that are ‘contracting authorities’ within the meaning of Directive 2004/18/EC (or 2014/24/EU) or ‘contracting entities’ within the meaning of Directive 2004/17/EC (or 2014/25/EU) must comply with the applicable national law on public procurement.

### **13.2 Consequences of non-compliance**

If a beneficiary breaches any of its obligations under Article 13.1.1, the costs related to the subcontract concerned will be ineligible (see Article 6) and will be rejected (see Article 42).

If a beneficiary breaches any of its obligations under Article 13.1.2, the grant may be reduced (see Article 43).

Such breaches may also lead to any of the other measures described in Chapter 6.

## ARTICLE 14 — IMPLEMENTATION OF ACTION TASKS BY LINKED THIRD PARTIES

### 14.1 Rules for calling upon linked third parties to implement part of the action

14.1.1 The following **affiliated entities**<sup>11</sup> and **third parties with a legal link to a beneficiary**<sup>12</sup> (**‘linked third parties’**) may implement the action tasks attributed to them in Annex 1:

- BOEING RESEARCH & TECHNOLOGY EUROPE S.L.U. (BOEING), affiliated or linked to AIRBUS
- NAVEGACAO AEREA DE PORTUGAL - NAV PORTUGAL EPE (NAV-PT), affiliated or linked to ENAIRE
- INDRA BUSINESS CONSULTING (IBC), affiliated or linked to INDRA, if it has accepted joint and several liability with the beneficiary (see Annex 3a)

The linked third parties may declare as eligible the costs they incur for implementing the action tasks in accordance with Article 6.3.

The beneficiaries must ensure that the JU, the Commission, the European Court of Auditors (ECA) and the European Anti-Fraud Office (OLAF) can exercise their rights under Articles 22 and 23 also towards their linked third parties.

14.1.2 The beneficiaries must ensure that their obligations under Articles 18, 20, 35, 36 and 38 also apply to their linked third parties.

### 14.2 Consequences of non-compliance

If any obligation under Article 14.1.1 is breached, the costs of the linked third party will be ineligible (see Article 6) and will be rejected (see Article 42).

If any obligation under Article 14.1.2 is breached, the grant may be reduced (see Article 43).

Such breaches may also lead to any of the other measures described in Chapter 6.

<sup>11</sup> For the definition see Article 2.1(2) Rules for Participation Regulation No 1290/2013: **‘affiliated entity’** means any legal entity that is:

- under the direct or indirect control of a participant, or
- under the same direct or indirect control as the participant, or
- directly or indirectly controlling a participant.

‘Control’ may take any of the following forms:

- (a) the direct or indirect holding of more than 50% of the nominal value of the issued share capital in the legal entity concerned, or of a majority of the voting rights of the shareholders or associates of that entity;
- (b) the direct or indirect holding, in fact or in law, of decision-making powers in the legal entity concerned.

However the following relationships between legal entities shall not in themselves be deemed to constitute controlling relationships:

- (a) the same public investment corporation, institutional investor or venture-capital company has a direct or indirect holding of more than 50% of the nominal value of the issued share capital or a majority of voting rights of the shareholders or associates;
- (b) the legal entities concerned are owned or supervised by the same public body.

<sup>12</sup> **‘Third party with a legal link to a beneficiary’** is any legal entity which has a legal link to the beneficiary implying collaboration that is not limited to the action.

## **ARTICLE 14a — IMPLEMENTATION OF ACTION TASKS BY INTERNATIONAL PARTNERS**

Not applicable

## **ARTICLE 15 — FINANCIAL SUPPORT TO THIRD PARTIES**

### **15.1 Rules for providing financial support to third parties**

Not applicable

### **15.2 Financial support in the form of prizes**

Not applicable

### **15.3 Consequences of non-compliance**

Not applicable

## **ARTICLE 16 — PROVISION OF TRANS-NATIONAL OR VIRTUAL ACCESS TO RESEARCH INFRASTRUCTURE**

### **16.1 Rules for providing trans-national access to research infrastructure**

Not applicable

### **16.2 Rules for providing virtual access to research infrastructure**

Not applicable

### **16.3 Consequences of non-compliance**

Not applicable

## **SECTION 2 RIGHTS AND OBLIGATIONS RELATED TO THE GRANT ADMINISTRATION**

## **ARTICLE 17 — GENERAL OBLIGATION TO INFORM**

### **17.1 General obligation to provide information upon request**

The beneficiaries must provide — during implementation of the action or afterwards and in accordance with Article 41.2 — any information requested in order to verify eligibility of the costs, proper implementation of the action and compliance with any other obligation under the Agreement.

### **17.2 Obligation to keep information up to date and to inform about events and circumstances likely to affect the Agreement**

Each beneficiary must keep information stored in the Participant Portal Beneficiary Register (via

the electronic exchange system; see Article 52) up to date, in particular, its name, address, legal representatives, legal form and organisation type.

Each beneficiary must immediately inform the coordinator — which must immediately inform the JU and the other beneficiaries — of any of the following:

- (a) **events** which are likely to affect significantly or delay the implementation of the action or the EU's or the JU's financial interests, in particular:
  - (i) changes in its legal, financial, technical, organisational or ownership situation or those of its linked third parties and
  - (ii) changes in the name, address, legal form, organisation type of its linked third parties;
- (b) **circumstances** affecting:
  - (i) the decision to award the grant or
  - (ii) compliance with requirements under the Agreement.

### 17.3 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 43).

Such breaches may also lead to any of the other measures described in Chapter 6.

## ARTICLE 18 — KEEPING RECORDS — SUPPORTING DOCUMENTATION

### 18.1 Obligation to keep records and other supporting documentation

The beneficiaries must — for a period of five years after the payment of the balance — keep records and other supporting documentation in order to prove the proper implementation of the action and the costs they declare as eligible.

They must make them available upon request (see Article 17) or in the context of checks, reviews, audits or investigations (see Article 22).

If there are on-going checks, reviews, audits, investigations, litigation or other pursuits of claims under the Agreement (including the extension of findings; see Article 22), the beneficiaries must keep the records and other supporting documentation until the end of these procedures.

The beneficiaries must keep the original documents. Digital and digitalised documents are considered originals if they are authorised by the applicable national law. The JU or the Commission may accept non-original documents if it considers that they offer a comparable level of assurance.

#### 18.1.1 Records and other supporting documentation on the scientific and technical implementation

The beneficiaries must keep records and other supporting documentation on scientific and technical implementation of the action in line with the accepted standards in the respective field.



### 18.1.2 Records and other documentation to support the costs declared

The beneficiaries must keep the records and documentation supporting the costs declared, in particular the following:

- (a) for **actual costs**: adequate records and other supporting documentation to prove the costs declared, such as contracts, subcontracts, invoices and accounting records. In addition, the beneficiaries' usual cost accounting practices and internal control procedures must enable direct reconciliation between the amounts declared, the amounts recorded in their accounts and the amounts stated in the supporting documentation;
- (b) for **unit costs**: adequate records and other supporting documentation to prove the number of units declared. Beneficiaries do not need to identify the actual eligible costs covered or to keep or provide supporting documentation (such as accounting statements) to prove the amount per unit.

In addition, **for unit costs calculated in accordance with the beneficiary's usual cost accounting practices**, the beneficiaries must keep adequate records and documentation to prove that the cost accounting practices used comply with the conditions set out in Article 6.2.

The beneficiaries and linked third parties may submit to the JU, for approval by the Commission, a certificate (drawn up in accordance with Annex 6) stating that their usual cost accounting practices comply with these conditions (**'certificate on the methodology'**). If the certificate is approved, costs declared in line with this methodology will not be challenged subsequently, unless the beneficiaries have concealed information for the purpose of the approval.

- (c) for **flat-rate costs**: adequate records and other supporting documentation to prove the eligibility of the costs to which the flat-rate is applied. The beneficiaries do not need to identify the costs covered or provide supporting documentation (such as accounting statements) to prove the amount declared at a flat-rate.

In addition, for **personnel costs** (declared as actual costs or on the basis of unit costs), the beneficiaries must keep **time records** for the number of hours declared. The time records must be in writing and approved by the persons working on the action and their supervisors, at least monthly. In the absence of reliable time records of the hours worked on the action, the JU or the Commission may accept alternative evidence supporting the number of hours declared, if it considers that it offers an adequate level of assurance.

As an exception, for **persons working exclusively on the action**, there is no need to keep time records, if the beneficiary signs a **declaration** confirming that the persons concerned have worked exclusively on the action.

For costs declared by linked third parties (see Article 14), it is the beneficiary that must keep the originals of the financial statements and the certificates on the financial statements of the linked third parties.

## 18.2 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, costs insufficiently substantiated



will be ineligible (see Article 6) and will be rejected (see Article 42), and the grant may be reduced (see Article 43).

Such breaches may also lead to any of the other measures described in Chapter 6.

## ARTICLE 19 — SUBMISSION OF DELIVERABLES

### 19.1 Obligation to submit deliverables

The coordinator must submit the ‘**deliverables**’ identified in Annex 1, in accordance with the timing and conditions set out in it.

### 19.2 Consequences of non-compliance

If the coordinator breaches any of its obligations under this Article, the JU may apply any of the measures described in Chapter 6.

## ARTICLE 20 — REPORTING — PAYMENT REQUESTS

### 20.1 Obligation to submit reports

The coordinator must submit to the JU (see Article 52) the technical and financial reports set out in this Article. These reports include requests for payment and must be drawn up using the forms and templates provided in the electronic exchange system (see Article 52).

### 20.2 Reporting periods

The action is divided into the following ‘**reporting periods**’:

- RP1: from month 1 to month 13
- RP2: from month 14 to month 25
- RP3: from month 26 to month 37

### 20.3 Periodic reports — Requests for interim payments

The coordinator must submit a periodic report within 60 days following the end of each reporting period.

The **periodic report** must include the following:

- (a) a ‘**periodic technical report**’ containing:
  - (i) an **explanation of the work carried out** by the beneficiaries;
  - (ii) an **overview of the progress** towards the objectives of the action, including milestones and deliverables identified in Annex 1.

This report must include explanations justifying the differences between work expected to be carried out in accordance with Annex 1 and that actually carried out.

The report must detail the exploitation and dissemination of the results and — if required in Annex 1 — an updated ‘**plan for the exploitation and dissemination of the results**’.

The report must indicate the communication activities;

- (iii) a **summary** for publication by the JU;
- (iv) the answers to the ‘**questionnaire**’, covering issues related to the action implementation and the economic and societal impact, notably in the context of the JU and the Horizon 2020 key performance indicators and JU and the Horizon 2020 monitoring requirements;

(b) a ‘**periodic financial report**’ containing:

- (i) an ‘**individual financial statement**’ (see Annex 4) from each beneficiary and from each linked third party, for the reporting period concerned.

The individual financial statement must detail the eligible costs (actual costs, unit costs and flat-rate costs; see Article 6) for each budget category (see Annex 2).

The beneficiaries and linked third parties must declare all eligible costs, even if — for actual costs, unit costs and flat-rate costs — they exceed the amounts indicated in the estimated budget (see Annex 2). Amounts which are not declared in the individual financial statement will not be taken into account by the JU.

If an individual financial statement is not submitted for a reporting period, it may be included in the periodic financial report for the next reporting period.

The individual financial statements of the last reporting period must also detail the **receipts of the action** (see Article 5.3.3).

Each beneficiary and each linked third party must **certify** that:

- the information provided is full, reliable and true;
  - the costs declared are eligible (see Article 6);
  - the costs can be substantiated by adequate records and supporting documentation (see Article 18) that will be produced upon request (see Article 17) or in the context of checks, reviews, audits and investigations (see Article 22), and
  - for the last reporting period: that all the receipts have been declared (see Article 5.3.3);
- (ii) an **explanation of the use of resources** and the information on subcontracting (see Article 13) and in-kind contributions provided by third parties (see Articles 11 and 12) from each beneficiary and from each linked third party, for the reporting period concerned;
  - (iii) not applicable;
  - (iv) a ‘**periodic summary financial statement**’, created automatically by the electronic exchange system, consolidating the individual financial statements for the reporting period concerned and including — except for the last reporting period — the **request for interim payment**.

## 20.4 Final report — Request for payment of the balance

In addition to the periodic report for the last reporting period, the coordinator must submit the final report within 60 days following the end of the last reporting period.

The **final report** must include the following:

- (a) a '**final technical report**' with a **summary** for publication containing:
  - (i) an overview of the results and their exploitation and dissemination;
  - (ii) the conclusions on the action, and
  - (iii) the socio-economic impact of the action;
- (b) a '**final financial report**' containing:
  - (i) a '**final summary financial statement**', created automatically by the electronic exchange system, consolidating the individual financial statements for all reporting periods and including the **request for payment of the balance** and
  - (ii) a '**certificate on the financial statements**' (drawn up in accordance with Annex 5) for each beneficiary and for each linked third party, if it requests a total contribution of EUR 325 000 or more, as reimbursement of actual costs and unit costs calculated on the basis of its usual cost accounting practices (see Article 5.2 and Article 6.2).

## 20.5 Information on cumulative expenditure incurred

Not applicable

## 20.6 Currency for financial statements and conversion into euro

Financial statements must be drafted in euro.

Beneficiaries and linked third parties with accounting established in a currency other than the euro must convert the costs recorded in their accounts into euro, at the average of the daily exchange rates published in the C series of the *Official Journal of the European Union*, calculated over the corresponding reporting period.

If no daily euro exchange rate is published in the *Official Journal of the European Union* for the currency in question, they must be converted at the average of the monthly accounting rates published on the Commission's website, calculated over the corresponding reporting period.

Beneficiaries and linked third parties with accounting established in euro must convert costs incurred in another currency into euro according to their usual accounting practices.

## 20.7 Language of reports

All reports (technical and financial reports, including financial statements) must be submitted in the language of the Agreement.

## 20.8 Consequences of non-compliance

If the reports submitted do not comply with this Article, the JU may suspend the payment deadline (see Article 47) and apply any of the other measures described in Chapter 6.

If the coordinator breaches its obligation to submit the reports and if it fails to comply with this obligation within 30 days following a written reminder, the JU may terminate the Agreement (see Article 50) or apply any of the other measures described in Chapter 6.

## ARTICLE 21 — PAYMENTS AND PAYMENT ARRANGEMENTS

### 21.1 Payments to be made

The following payments will be made to the coordinator:

- one **pre-financing payment**;
- one or more **interim payments**, on the basis of the request(s) for interim payment (see Article 20), and
- one **payment of the balance**, on the basis of the request for payment of the balance (see Article 20).

### 21.2 Pre-financing payment — Amount — Amount retained for the Guarantee Fund

The aim of the pre-financing is to provide the beneficiaries with a float.

It remains the property of the JU until the payment of the balance.

The amount of the pre-financing payment will be EUR **808 758.72** (eight hundred and eight thousand seven hundred and fifty eight EURO and seventy two eurocents).

The JU will — except if Article 48 applies — make the pre-financing payment to the coordinator within 30 days, either from the entry into force of the Agreement (see Article 58) or from 10 days before the starting date of the action (see Article 3), whichever is the latest.

An amount of EUR **67 396.56** (sixty seven thousand three hundred and ninety six EURO and fifty six eurocents), corresponding to 5% of the maximum grant amount (see Article 5.1), is retained by the JU from the pre-financing payment and transferred into the ‘**Guarantee Fund**’.

### 21.3 Interim payments — Amount — Calculation

Interim payments reimburse the eligible costs incurred for the implementation of the action during the corresponding reporting periods.

The JU will pay to the coordinator the amount due as interim payment within 90 days from receiving the periodic report (see Article 20.3), except if Articles 47 or 48 apply.

Payment is subject to the approval of the periodic report. Its approval does not imply recognition of the compliance, authenticity, completeness or correctness of its content.

The **amount due as interim payment** is calculated by the JU in the following steps:

Step 1 — Application of the reimbursement rates

## Step 2 — Limit to 90% of the maximum grant amount

### 21.3.1 Step 1 — Application of the reimbursement rates

The reimbursement rate(s) (see Article 5.2) are applied to the eligible costs (actual costs, unit costs and flat-rate costs; see Article 6) declared by the beneficiaries and the linked third parties (see Article 20) and approved by the JU (see above) for the concerned reporting period.

### 21.3.2 Step 2 — Limit to 90% of the maximum grant amount

The total amount of pre-financing and interim payments must not exceed 90% of the maximum grant amount set out in Article 5.1. The maximum amount for the interim payment will be calculated as follows:

{90% of the maximum grant amount (see Article 5.1)

minus

{pre-financing and previous interim payments}}.

## 21.4 Payment of the balance — Amount — Calculation — Release of the amount retained for the Guarantee Fund

The payment of the balance reimburses the remaining part of the eligible costs incurred by the beneficiaries for the implementation of the action.

If the total amount of earlier payments is greater than the final grant amount (see Article 5.3), the payment of the balance takes the form of a recovery (see Article 44).

If the total amount of earlier payments is lower than the final grant amount, the JU will pay the balance within 90 days from receiving the final report (see Article 20.4), except if Articles 47 or 48 apply.

Payment is subject to the approval of the final report. Its approval does not imply recognition of the compliance, authenticity, completeness or correctness of its content.

The **amount due as the balance** is calculated by the JU by deducting the total amount of pre-financing and interim payments (if any) already made, from the final grant amount determined in accordance with Article 5.3:

{final grant amount (see Article 5.3)

minus

{pre-financing and interim payments (if any) made}}.

At the payment of the balance, the amount retained for the Guarantee Fund (see above) will be released and:

- if the balance is positive: the amount released will be paid in full to the coordinator together with the amount due as the balance;
- if the balance is negative (payment of the balance taking the form of recovery): it will be deducted from the amount released (see Article 44.1.2). If the resulting amount:

- is positive, it will be paid to the coordinator
- is negative, it will be recovered.

The amount to be paid may however be offset — without the beneficiaries' consent — against any other amount owed by a beneficiary to the JU up to the maximum JU contribution indicated, for that beneficiary, in the estimated budget (see Annex 2).

### **21.5 Notification of amounts due**

When making payments, the JU will formally notify to the coordinator the amount due, specifying whether it concerns an interim payment or the payment of the balance.

For the payment of the balance, the notification will also specify the final grant amount.

In the case of reduction of the grant or recovery of undue amounts, the notification will be preceded by the contradictory procedure set out in Articles 43 and 44.

### **21.6 Currency for payments**

The JU will make all payments in euro.

### **21.7 Payments to the coordinator — Distribution to the beneficiaries**

Payments will be made to the coordinator.

Payments to the coordinator will discharge the JU from its payment obligation.

The coordinator must distribute the payments between the beneficiaries without unjustified delay.

Pre-financing may however be distributed only:

- (a) if the minimum number of beneficiaries set out in the call for proposals has acceded to the Agreement (see Article 56) and
- (b) to beneficiaries that have acceded to the Agreement (see Article 56).

### **21.8 Bank account for payments**

All payments will be made to the following bank account:

Name of bank: ING BELGIUM NV/SA (FORMERLY BANK BRUSSELS LAMBERT SA),  
BRUSS

Full name of the account holder: EUROCONTROL AGENCY DIVISION DR AD TR  
IBAN code: BE36310109735681

### **21.9 Costs of payment transfers**

The cost of the payment transfers is borne as follows:

- the JU bears the cost of transfers charged by its bank;

- the beneficiary bears the cost of transfers charged by its bank;
- the party causing a repetition of a transfer bears all costs of the repeated transfer.

### 21.10 Date of payment

Payments by the JU are considered to have been carried out on the date when they are debited to its account.

### 21.11 Consequences of non-compliance

21.11.1 If the JU does not pay within the payment deadlines (see above), the beneficiaries are entitled to **late-payment interest** at the rate applied by the European Central Bank (ECB) for its main refinancing operations in euros ('reference rate'), plus three and a half points. The reference rate is the rate in force on the first day of the month in which the payment deadline expires, as published in the C series of the *Official Journal of the European Union*.

If the late-payment interest is lower than or equal to EUR 200, it will be paid to the coordinator only upon request submitted within two months of receiving the late payment.

Late-payment interest is not due if all beneficiaries are EU Member States (including regional and local government authorities or other public bodies acting on behalf of a Member State for the purpose of this Agreement).

Suspension of the payment deadline or payments (see Articles 47 and 48) will not be considered as late payment.

Late-payment interest covers the period running from the day following the due date for payment (see above), up to and including the date of payment.

Late-payment interest is not considered for the purposes of calculating the final grant amount.

21.11.2 If the coordinator breaches any of its obligations under this Article, the grant may be reduced (see Article 43) and the Agreement or the participation of the coordinator may be terminated (see Article 50).

Such breaches may also lead to any of the other measures described in Chapter 6.

## ARTICLE 22 — CHECKS, REVIEWS, AUDITS AND INVESTIGATIONS — EXTENSION OF FINDINGS

### 22.1 Checks, reviews and audits by the JU and the Commission

#### 22.1.1 Right to carry out checks

The JU will — during the implementation of the action or afterwards — check the proper implementation of the action and compliance with the obligations under the Agreement, including assessing deliverables and reports.

For this purpose the JU may be assisted by external persons or bodies.

The JU may also request additional information in accordance with Article 17. The JU may request beneficiaries to provide such information to it directly.

Information provided must be accurate, precise and complete and in the format requested, including electronic format.

### 22.1.2 Right to carry out reviews

The JU may — during the implementation of the action or afterwards — carry out reviews on the proper implementation of the action (including assessment of deliverables and reports), compliance with the obligations under the Agreement and continued scientific or technological relevance of the action.

Reviews may be started up to two years after the payment of the balance. They will be formally notified to the coordinator or beneficiary concerned and will be considered to have started on the date of the formal notification.

If the review is carried out on a third party (see Articles 10 to 16), the beneficiary concerned must inform the third party.

The JU may carry out reviews directly (using its own staff) or indirectly (using external persons or bodies appointed to do so). It will inform the coordinator or beneficiary concerned of the identity of the external persons or bodies. They have the right to object to the appointment on grounds of commercial confidentiality.

The coordinator or beneficiary concerned must provide — within the deadline requested — any information and data in addition to deliverables and reports already submitted (including information on the use of resources). The JU may request beneficiaries to provide such information to it directly.

The coordinator or beneficiary concerned may be requested to participate in meetings, including with external experts.

For **on-the-spot** reviews, the beneficiaries must allow access to their sites and premises, including to external persons or bodies, and must ensure that information requested is readily available.

Information provided must be accurate, precise and complete and in the format requested, including electronic format.

On the basis of the review findings, a '**review report**' will be drawn up.

The JU will formally notify the review report to the coordinator or beneficiary concerned, which has 30 days to formally notify observations ('**contradictory review procedure**').

Reviews (including review reports) are in the language of the Agreement.

### 22.1.3 Right to carry out audits

The JU or the Commission may — during the implementation of the action or afterwards — carry out audits on the proper implementation of the action and compliance with the obligations under the Agreement.

Audits may be started up to two years after the payment of the balance. They will be formally notified



to the coordinator or beneficiary concerned and will be considered to have started on the date of the formal notification.

If the audit is carried out on a third party (see Articles 10 to 16), the beneficiary concerned must inform the third party.

The JU or the Commission may carry out audits directly (using its own staff) or indirectly (using external persons or bodies appointed to do so). It will inform the coordinator or beneficiary concerned of the identity of the external persons or bodies. They have the right to object to the appointment on grounds of commercial confidentiality.

The coordinator or beneficiary concerned must provide — within the deadline requested — any information (including complete accounts, individual salary statements or other personal data) to verify compliance with the Agreement. The JU or the Commission may request beneficiaries to provide such information to it directly.

For **on-the-spot** audits, the beneficiaries must allow access to their sites and premises, including to external persons or bodies, and must ensure that information requested is readily available.

Information provided must be accurate, precise and complete and in the format requested, including electronic format.

On the basis of the audit findings, a '**draft audit report**' will be drawn up.

The JU or the Commission will formally notify the draft audit report to the coordinator or beneficiary concerned, which has 30 days to formally notify observations ('**contradictory audit procedure**'). This period may be extended by the JU or the Commission in justified cases.

The '**final audit report**' will take into account observations by the coordinator or beneficiary concerned. The report will be formally notified to it.

Audits (including audit reports) are in the language of the Agreement.

The JU or the Commission may also access the beneficiaries' statutory records for the periodical assessment of unit costs or flat-rate amounts.

## 22.2 Investigations by the European Anti-Fraud Office (OLAF)

Under Regulations No 883/2013<sup>16</sup> and No 2185/96<sup>17</sup> (and in accordance with their provisions and procedures), and Article 110 of the JU Financial Rules<sup>18</sup>, the European Anti-Fraud Office (OLAF) may — at any moment during implementation of the action or afterwards — carry out investigations, including on-the-spot checks and inspections, to establish whether there has been fraud, corruption or any other illegal activity affecting the financial interests of the EU.

<sup>16</sup> Regulation (EU, Euratom) No 883/2013 of the European Parliament and of the Council of 11 September 2013 concerning investigations conducted by the European Anti-Fraud Office (OLAF) and repealing Regulation (EC) No 1073/1999 of the European Parliament and of the Council and Council Regulation (Euratom) No 1074/1999 (OJ L 248, 18.09.2013, p. 1).

<sup>17</sup> Council Regulation (Euratom, EC) No 2185/1996 of 11 November 1996 concerning on-the-spot checks and inspections carried out by the Commission in order to protect the European Communities' financial interests against fraud and other irregularities (OJ L 292, 15.11.1996, p. 2).

<sup>18</sup> The SESAR JU Financial Rules are made publicly available on the SESAR JU official website.

### 22.3 Checks and audits by the European Court of Auditors (ECA)

Under Article 287 of the Treaty on the Functioning of the European Union (TFEU) and Article 110 of the JU Financial Rules, the European Court of Auditors (ECA) may — at any moment during implementation of the action or afterwards — carry out audits.

The ECA has the right of access for the purpose of checks and audits.

### 22.4 Checks, reviews, audits and investigations for international organisations

In conformity with its financial regulations, the European Union, including the European Anti-Fraud Office (OLAF) and the European Court of Auditors (ECA), may undertake, including on the spot, checks, reviews, audits and investigations.

This Article will be applied in accordance with any specific agreement concluded in this respect by the international organisation and the European Union.

### 22.5 Consequences of findings in checks, reviews, audits and investigations — Extension of findings

#### 22.5.1 Findings in this grant

Findings in checks, reviews, audits or investigations carried out in the context of this grant may lead to the rejection of ineligible costs (see Article 42), reduction of the grant (see Article 43), recovery of undue amounts (see Article 44) or to any of the other measures described in Chapter 6.

Rejection of costs or reduction of the grant after the payment of the balance will lead to a revised final grant amount (see Article 5.4).

Findings in checks, reviews, audits or investigations may lead to a request for amendment for the modification of Annex 1 (see Article 55).

Checks, reviews, audits or investigations that find systemic or recurrent errors, irregularities, fraud or breach of obligations may also lead to consequences in other JU, EU or Euratom grants awarded under similar conditions (**‘extension of findings from this grant to other grants’**).

Moreover, findings arising from an OLAF investigation may lead to criminal prosecution under national law.

#### 22.5.2 Findings in other grants

The JU or the Commission may extend findings from other grants to this grant (**‘extension of findings from other grants to this grant’**), if:

- (a) the beneficiary concerned is found, in other JU, EU or Euratom grants awarded under similar conditions, to have committed systemic or recurrent errors, irregularities, fraud or breach of obligations that have a material impact on this grant and
- (b) those findings are formally notified to the beneficiary concerned — together with the list of grants affected by the findings — no later than two years after the payment of the balance of this grant.

The extension of findings may lead to the rejection of costs (see Article 42), reduction of the grant (see Article 43), recovery of undue amounts (see Article 44), suspension of payments (see Article 48), suspension of the action implementation (see Article 49) or termination (see Article 50).

### 22.5.3 Procedure

The JU or the Commission will formally notify the beneficiary concerned the systemic or recurrent errors and its intention to extend these audit findings, together with the list of grants affected.

22.5.3.1 If the findings concern **eligibility of costs**: the formal notification will include:

- (a) an invitation to submit observations on the list of grants affected by the findings;
- (b) the request to submit **revised financial statements** for all grants affected;
- (c) the **correction rate for extrapolation** established by the JU or the Commission on the basis of the systemic or recurrent errors, to calculate the amounts to be rejected if the beneficiary concerned:
  - (i) considers that the submission of revised financial statements is not possible or practicable or
  - (ii) does not submit revised financial statements.

The beneficiary concerned has 90 days from receiving notification to submit observations, revised financial statements or to propose a duly substantiated **alternative correction method**. This period may be extended by the JU or the Commission in justified cases.

The JU or the Commission may then start a rejection procedure in accordance with Article 42, on the basis of:

- the revised financial statements, if approved;
  - the proposed alternative correction method, if accepted
- or
- the initially notified correction rate for extrapolation, if it does not receive any observations or revised financial statements, does not accept the observations or the proposed alternative correction method or does not approve the revised financial statements.

22.5.3.2 If the findings concern **substantial errors, irregularities or fraud or serious breach of obligations**: the formal notification will include:

- (a) an invitation to submit observations on the list of grants affected by the findings and
- (b) the flat-rate the JU or the Commission intends to apply according to the principle of proportionality.

The beneficiary concerned has 90 days from receiving notification to submit observations or to propose a duly substantiated alternative flat-rate.

The JU or the Commission may then start a reduction procedure in accordance with Article 43, on the basis of:

- the proposed alternative flat-rate, if accepted

or

- the initially notified flat-rate, if it does not receive any observations or does not accept the observations or the proposed alternative flat-rate.

## **22.6 Consequences of non-compliance**

If a beneficiary breaches any of its obligations under this Article, any insufficiently substantiated costs will be ineligible (see Article 6) and will be rejected (see Article 42).

Such breaches may also lead to any of the other measures described in Chapter 6.

## **ARTICLE 23 — EVALUATION OF THE IMPACT OF THE ACTION**

### **23.1 Right to evaluate the impact of the action**

The JU or the Commission may carry out interim and final evaluations of the impact of the action measured against the objective of the EU programme.

Evaluations may be started during implementation of the action and up to five years after the payment of the balance. The evaluation is considered to start on the date of the formal notification to the coordinator or beneficiaries.

The JU or the Commission may make these evaluations directly (using its own staff) or indirectly (using external bodies or persons it has authorised to do so).

The coordinator or beneficiaries must provide any information relevant to evaluate the impact of the action, including information in electronic format.

### **23.2 Consequences of non-compliance**

If a beneficiary breaches any of its obligations under this Article, the JU may apply the measures described in Chapter 6.

## **SECTION 3 RIGHTS AND OBLIGATIONS RELATED TO BACKGROUND AND RESULTS**

### **SUBSECTION 1 GENERAL**

## **ARTICLE 23a — MANAGEMENT OF INTELLECTUAL PROPERTY**

### **23a.1 Obligation to take measures to implement the Commission Recommendation on the management of intellectual property in knowledge transfer activities**

Beneficiaries that are universities or other public research organisations must take measures to

implement the principles set out in Points 1 and 2 of the Code of Practice annexed to the Commission Recommendation on the management of intellectual property in knowledge transfer activities<sup>19</sup>.

This does not change the obligations set out in Subsections 2 and 3 of this Section.

The beneficiaries must ensure that researchers and third parties involved in the action are aware of them.

### **23a.2 Consequences of non-compliance**

If a beneficiary breaches its obligations under this Article, the JU may apply any of the measures described in Chapter 6.

## **SUBSECTION 2 RIGHTS AND OBLIGATIONS RELATED TO BACKGROUND**

### **ARTICLE 24 — AGREEMENT ON BACKGROUND**

#### **24.1 Agreement on background**

The beneficiaries must identify and agree (in writing) on the background for the action (**‘agreement on background’**).

**‘Background’** means any data, know-how or information — whatever its form or nature (tangible or intangible), including any rights such as intellectual property rights — that:

- (a) is held by the beneficiaries before they acceded to the Agreement, and
- (b) is needed to implement the action or exploit the results.

#### **24.2 Consequences of non-compliance**

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 43).

Such breaches may also lead to any of the other measures described in Chapter 6.

### **ARTICLE 25 — ACCESS RIGHTS TO BACKGROUND**

#### **25.1 Exercise of access rights — Waiving of access rights — No sub-licensing**

To exercise access rights, this must first be requested in writing (**‘request for access’**).

**‘Access rights’** means rights to use results or background under the terms and conditions laid down in this Agreement.

Waivers of access rights are not valid unless in writing.

Unless agreed otherwise, access rights do not include the right to sub-license.

---

<sup>19</sup> Commission Recommendation C(2008) 1329 of 10.4.2008 on the management of intellectual property in knowledge transfer activities and the Code of Practice for universities and other public research institutions attached to this recommendation.

## 25.2 Access rights for other beneficiaries, for implementing their own tasks under the action

The beneficiaries must give each other access — on a royalty-free basis — to background needed to implement their own tasks under the action, unless the beneficiary that holds the background has — before acceding to the Agreement —:

- (a) informed the other beneficiaries that access to its background is subject to legal restrictions or limits, including those imposed by the rights of third parties (including personnel), or
- (b) agreed with the other beneficiaries that access would not be on a royalty-free basis.

## 25.3 Access rights for other beneficiaries, for exploiting their own results

The beneficiaries must give each other access — under fair and reasonable conditions — to background needed for exploiting their own results, unless the beneficiary that holds the background has — before acceding to the Agreement — informed the other beneficiaries that access to its background is subject to legal restrictions or limits, including those imposed by the rights of third parties (including personnel).

‘**Fair and reasonable conditions**’ means appropriate conditions, including possible financial terms or royalty-free conditions, taking into account the specific circumstances of the request for access, for example the actual or potential value of the results or background to which access is requested and/or the scope, duration or other characteristics of the exploitation envisaged.

Requests for access may be made — unless agreed otherwise — up to one year after the period set out in Article 3.

## 25.4 Access rights for affiliated entities

Unless otherwise agreed in the consortium agreement, access to background must also be given — under fair and reasonable conditions (see above; Article 25.3) and unless it is subject to legal restrictions or limits, including those imposed by the rights of third parties (including personnel) — to affiliated entities<sup>20</sup> established in an EU Member State or ‘**associated country**’<sup>21</sup>, if this is needed to exploit the results generated by the beneficiaries to which they are affiliated.

Unless agreed otherwise (see above; Article 25.1), the affiliated entity concerned must make the request directly to the beneficiary that holds the background.

Requests for access may be made — unless agreed otherwise — up to one year after the period set out in Article 3.

## 25.5 Access rights for third parties

Not applicable

## 25.6 Consequences of non-compliance

<sup>20</sup> For the definition, see ‘affiliated entity’ footnote (Article 14.1).

<sup>21</sup> For the definition, see Article 2.1(3) of the Rules for Participation Regulation No 1290/2013: ‘**associated country**’ means a third country which is party to an international agreement with the Union, as identified in Article 7 of Horizon 2020 Framework Programme Regulation No 1291/2013. Article 7 sets out the conditions for association of non-EU countries to Horizon 2020.

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 43).

Such breaches may also lead to any of the other measures described in Chapter 6.

### **SUBSECTION 3 RIGHTS AND OBLIGATIONS RELATED TO RESULTS**

#### **ARTICLE 26 — OWNERSHIP OF RESULTS**

##### **26.1 Ownership by the beneficiary that generates the results**

Results are owned by the beneficiary that generates them.

‘**Results**’ means any (tangible or intangible) output of the action such as data, knowledge or information — whatever its form or nature, whether it can be protected or not — that is generated in the action, as well as any rights attached to it, including intellectual property rights.

##### **26.2 Joint ownership by several beneficiaries**

Two or more beneficiaries own results jointly if:

- (a) they have jointly generated them and
- (b) it is not possible to:
  - (i) establish the respective contribution of each beneficiary, or
  - (ii) separate them for the purpose of applying for, obtaining or maintaining their protection (see Article 27).

The joint owners must agree (in writing) on the allocation and terms of exercise of their joint ownership (**‘joint ownership agreement’**), to ensure compliance with their obligations under this Agreement.

Unless otherwise agreed in the joint ownership agreement, each joint owner may grant non-exclusive licences to third parties to exploit jointly-owned results (without any right to sub-license), if the other joint owners are given:

- (a) at least 45 days advance notice and
- (b) fair and reasonable compensation.

Once the results have been generated, joint owners may agree (in writing) to apply another regime than joint ownership (such as, for instance, transfer to a single owner (see Article 30) with access rights for the others).

##### **26.3 Rights of third parties (including personnel)**

If third parties (including personnel) may claim rights to the results, the beneficiary concerned must ensure that it complies with its obligations under the Agreement.

If a third party generates results, the beneficiary concerned must obtain all necessary rights (transfer,



licences or other) from the third party, in order to be able to respect its obligations as if those results were generated by the beneficiary itself.

If obtaining the rights is impossible, the beneficiary must refrain from using the third party to generate the results.

## **26.4 JU ownership, to protect results**

26.4.1 The JU may — with the consent of the beneficiary concerned — assume ownership of results to protect them, if a beneficiary intends — up to four years after the period set out in Article 3 — to disseminate its results without protecting them, except in any of the following cases:

- (a) the lack of protection is because protecting the results is not possible, reasonable or justified (given the circumstances);
- (b) the lack of protection is because there is a lack of potential for commercial or industrial exploitation, or
- (c) the beneficiary intends to transfer the results to another beneficiary or third party established in an EU Member State or associated country, which will protect them.

Before the results are disseminated and unless any of the cases above under Points (a), (b) or (c) applies, the beneficiary must formally notify the JU and at the same time inform it of any reasons for refusing consent. The beneficiary may refuse consent only if it can show that its legitimate interests would suffer significant harm.

If the JU decides to assume ownership, it will formally notify the beneficiary concerned within 45 days of receiving notification.

No dissemination relating to these results may take place before the end of this period or, if the JU takes a positive decision, until it has taken the necessary steps to protect the results.

26.4.2 The JU may — with the consent of the beneficiary concerned — assume ownership of results to protect them, if a beneficiary intends — up to four years after the period set out in Article 3 — to stop protecting them or not to seek an extension of protection, except in any of the following cases:

- (a) the protection is stopped because of a lack of potential for commercial or industrial exploitation;
- (b) an extension would not be justified given the circumstances.

A beneficiary that intends to stop protecting results or not seek an extension must — unless any of the cases above under Points (a) or (b) applies — formally notify the JU at least 60 days before the protection lapses or its extension is no longer possible and at the same time inform it of any reasons for refusing consent. The beneficiary may refuse consent only if it can show that its legitimate interests would suffer significant harm.

If the JU decides to assume ownership, it will formally notify the beneficiary concerned within 45 days of receiving notification.

## **26.5 Consequences of non-compliance**



If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 43).

Such breaches may also lead to the any of the other measures described in Chapter 6.

## **ARTICLE 27 — PROTECTION OF RESULTS — VISIBILITY OF JU FUNDING AND SUPPORT FROM JU MEMBERS**

### **27.1 Obligation to protect the results**

Each beneficiary must examine the possibility of protecting its results and must adequately protect them — for an appropriate period and with appropriate territorial coverage — if:

- (a) the results can reasonably be expected to be commercially or industrially exploited and
- (b) protecting them is possible, reasonable and justified (given the circumstances).

When deciding on protection, the beneficiary must consider its own legitimate interests and the legitimate interests (especially commercial) of the other beneficiaries.

### **27.2 JU ownership, to protect the results**

If a beneficiary intends not to protect its results, to stop protecting them or not seek an extension of protection, the JU may — under certain conditions (see Article 26.4) — assume ownership to ensure their (continued) protection.

### **27.3 Information on JU funding and support from JU members**

Applications for protection of results (including patent applications) filed by or on behalf of a beneficiary must — unless the JU requests or agrees otherwise or unless it is impossible — include the following:

“The project leading to this application has received funding from the SESAR Joint Undertaking (JU) under grant agreement No 874475. The JU receives support from the European Union’s Horizon 2020 research and innovation programme and the SESAR JU members other than the Union”.

### **27.4 Consequences of non-compliance**

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 43).

Such a breach may also lead to any of the other measures described in Chapter 6.

## **ARTICLE 28 — EXPLOITATION OF RESULTS**

### **28.1 Obligation to exploit the results**

Each beneficiary must — up to four years after the period set out in Article 3 — take measures aiming to ensure ‘**exploitation**’ of its results (either directly or indirectly, in particular through transfer or licensing; see Article 30) by:

- (a) using them in further research activities (outside the action);

- (b) developing, creating or marketing a product or process;
- (c) creating and providing a service, or
- (d) using them in standardisation activities.

This does not change the security obligations in Article 37, which still apply.

## **28.2 Results that could contribute to European or international standards — Information on JU funding and support from JU members**

If results are incorporated in a standard, the beneficiary concerned must — unless the JU requests or agrees otherwise or unless it is impossible — ask the standardisation body to include the following statement in (information related to) the standard:

“Results incorporated in this standard received funding from the SESAR Joint Undertaking (JU) under grant agreement No 874475. The JU receives support from the European Union’s Horizon 2020 research and innovation programme and the SESAR JU members other than the Union”.

## **28.3 Consequences of non-compliance**

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced in accordance with Article 43.

Such a breach may also lead to any of the other measures described in Chapter 6.

## **ARTICLE 29 — DISSEMINATION OF RESULTS — OPEN ACCESS — VISIBILITY OF JU FUNDING AND SUPPORT FROM JU MEMBERS**

### **29.1 Obligation to disseminate results**

Unless it goes against their legitimate interests, each beneficiary must — as soon as possible — ‘**disseminate**’ its results by disclosing them to the public by appropriate means (other than those resulting from protecting or exploiting the results), including in scientific publications (in any medium).

This does not change the obligation to protect results in Article 27, the confidentiality obligations in Article 36, the security obligations in Article 37 or the obligations to protect personal data in Article 39, all of which still apply.

A beneficiary that intends to disseminate its results must give advance notice to the other beneficiaries of — unless agreed otherwise — at least 45 days, together with sufficient information on the results it will disseminate.

Any other beneficiary may object within — unless agreed otherwise — 30 days of receiving notification, if it can show that its legitimate interests in relation to the results or background would be significantly harmed. In such cases, the dissemination may not take place unless appropriate steps are taken to safeguard these legitimate interests.

If a beneficiary intends not to protect its results, it may — under certain conditions (see Article 26.4.1) — need to formally notify the JU before dissemination takes place.

## 29.2 Open access to scientific publications

Each beneficiary must ensure open access (free of charge online access for any user) to all peer-reviewed scientific publications relating to its results.

In particular, it must:

- (a) as soon as possible and at the latest on publication, deposit a machine-readable electronic copy of the published version or final peer-reviewed manuscript accepted for publication in a repository for scientific publications;

Moreover, the beneficiary must aim to deposit at the same time the research data needed to validate the results presented in the deposited scientific publications.

- (b) ensure open access to the deposited publication — via the repository — at the latest:
  - (i) on publication, if an electronic version is available for free via the publisher, or
  - (ii) within six months of publication (twelve months for publications in the social sciences and humanities) in any other case.
- (c) ensure open access — via the repository — to the bibliographic metadata that identify the deposited publication.

The bibliographic metadata must be in a standard format and must include all of the following:

- the terms “SESAR Joint Undertaking”, “European Union (EU)” and “Horizon 2020”;
- the name of the action, acronym and grant number;
- the publication date, and length of embargo period if applicable, and
- a persistent identifier.

## 29.3 Open access to research data

Not applicable;

## 29.4 Information on JU funding and support from JU members — Obligation and right to use the JU logo and the EU emblem

Unless the JU requests or agrees otherwise or unless it is impossible, any dissemination of results (in any form, including electronic) must:

- (a) display the JU logo and
- (b) display the EU emblem and
- (c) include the following text:

“This project has received funding from the SESAR Joint Undertaking (JU) under grant agreement No 874475. The JU receives support from the European Union’s Horizon 2020 research and innovation programme and the SESAR JU members other than the Union”.

When displayed together with another logo, the JU logo and the EU emblem must have appropriate prominence.

For the purposes of their obligations under this Article, the beneficiaries may use the JU logo and the EU emblem without first obtaining approval from the JU or the Commission.

This does not however give them the right to exclusive use.

Moreover, they may not appropriate the JU logo and the EU emblem or any similar trademark or logo, either by registration or by any other means.

### **29.5 Disclaimer excluding JU responsibility**

Any dissemination of results must indicate that it reflects only the author's view and that the JU is not responsible for any use that may be made of the information it contains.

### **29.6 Consequences of non-compliance**

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 43).

Such a breach may also lead to any of the other measures described in Chapter 6.

## **ARTICLE 30 — TRANSFER AND LICENSING OF RESULTS**

### **30.1 Transfer of ownership**

Each beneficiary may transfer ownership of its results.

It must however ensure that its obligations under Articles 26.2, 26.4, 27, 28, 29, 30 and 31 also apply to the new owner and that this owner has the obligation to pass them on in any subsequent transfer.

This does not change the security obligations in Article 37, which still apply.

Unless agreed otherwise (in writing) for specifically-identified third parties or unless impossible under applicable EU and national laws on mergers and acquisitions, a beneficiary that intends to transfer ownership of results must give at least 45 days advance notice (or less if agreed in writing) to the other beneficiaries that still have (or still may request) access rights to the results. This notification must include sufficient information on the new owner to enable any beneficiary concerned to assess the effects on its access rights.

Unless agreed otherwise (in writing) for specifically-identified third parties, any other beneficiary may object within 30 days of receiving notification (or less if agreed in writing), if it can show that the transfer would adversely affect its access rights. In this case, the transfer may not take place until agreement has been reached between the beneficiaries concerned.

### **30.2 Granting licenses**

Each beneficiary may grant licences to its results (or otherwise give the right to exploit them), if:

- (a) this does not impede the access rights under Article 31 and

(b) not applicable.

In addition to Points (a) and (b), exclusive licences for results may be granted only if all the other beneficiaries concerned have waived their access rights (see Article 31.1).

This does not change the dissemination obligations in Article 29 or security obligations in Article 37, which still apply.

### **30.3 JU right to object to transfers or exclusive licensing**

The JU may — up to four years after the period set out in Article 3 — object to a transfer of ownership or the exclusive licensing of results, if:

- (a) it is to a third party established in a non-EU country not associated with Horizon 2020 and
- (b) the JU considers that the transfer or licence is not in line with EU interests regarding competitiveness or is inconsistent with ethical principles or security considerations.

A beneficiary that intends to transfer ownership or grant an exclusive licence must formally notify the JU before the intended transfer or licensing takes place and:

- identify the specific results concerned;
- describe in detail the new owner or licensee and the planned or potential exploitation of the results, and
- include a reasoned assessment of the likely impact of the transfer or licence on EU competitiveness and its consistency with ethical principles and security considerations.

The JU may request additional information.

If the JU decides to object to a transfer or exclusive licence, it must formally notify the beneficiary concerned within 60 days of receiving notification (or any additional information it has requested).

No transfer or licensing may take place in the following cases:

- pending the JU decision, within the period set out above;
- if the JU objects;
- until the conditions are complied with, if the JU objection comes with conditions.

### **30.4 Consequences of non-compliance**

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 43).

Such a breach may also lead to any of the other measures described in Chapter 6.

## **ARTICLE 31 — ACCESS RIGHTS TO RESULTS**

### **31.1 Exercise of access rights — Waiving of access rights — No sub-licensing**

The conditions set out in Article 25.1 apply.

The obligations set out in this Article do not change the security obligations in Article 37, which still apply.

### **31.2 Access rights for other beneficiaries, for implementing their own tasks under the action**

The beneficiaries must give each other access — on a royalty-free basis — to results needed for implementing their own tasks under the action.

### **31.3 Access rights for other beneficiaries, for exploiting their own results**

The beneficiaries must give each other — under fair and reasonable conditions (see Article 25.3) — access to results needed for exploiting their own results.

Requests for access may be made — unless agreed otherwise — up to one year after the period set out in Article 3.

### **31.4 Access rights of affiliated entities**

Unless agreed otherwise in the consortium agreement, access to results must also be given — under fair and reasonable conditions (Article 25.3) — to affiliated entities established in an EU Member State or associated country, if this is needed for those entities to exploit the results generated by the beneficiaries to which they are affiliated.

Unless agreed otherwise (see above; Article 31.1), the affiliated entity concerned must make any such request directly to the beneficiary that owns the results.

Requests for access may be made — unless agreed otherwise — up to one year after the period set out in Article 3.

### **31.5 Access rights for the JU, the EU institutions, other EU bodies, offices or agencies and EU Member States**

The beneficiaries must give access to their results — on a royalty-free basis — to the JU and to EU institutions, other EU bodies, offices or agencies, for developing, implementing or monitoring EU policies or programmes.

Such access rights are limited to non-commercial and non-competitive use.

This does not change the right to use any material, document or information received from the beneficiaries for communication and publicising activities (see Article 38.2).

### **31.6 Access rights for third parties**

The beneficiaries must give — under the conditions set out in Article 31.2 — access to their results to complementary beneficiaries<sup>22</sup> (see Article 2).

### **31.7 Consequences of non-compliance**

---

<sup>22</sup> ‘Complementary beneficiary’ means a beneficiary of a complementary grant agreement.

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 43).

Such breaches may also lead to any of the other measures described in Chapter 6.

## **SECTION 4 OTHER RIGHTS AND OBLIGATIONS**

### **ARTICLE 32 — RECRUITMENT AND WORKING CONDITIONS FOR RESEARCHERS**

#### **32.1 Obligation to take measures to implement the European Charter for Researchers and Code of Conduct for the Recruitment of Researchers**

The beneficiaries must take all measures to implement the principles set out in the Commission Recommendation on the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers<sup>23</sup>, in particular regarding:

- working conditions;
- transparent recruitment processes based on merit, and
- career development.

The beneficiaries must ensure that researchers and third parties involved in the action are aware of them.

#### **32.2 Consequences of non-compliance**

If a beneficiary breaches its obligations under this Article, the JU may apply any of the measures described in Chapter 6.

### **ARTICLE 33 — GENDER EQUALITY**

#### **33.1 Obligation to aim for gender equality**

The beneficiaries must take all measures to promote equal opportunities between men and women in the implementation of the action. They must aim, to the extent possible, for a gender balance at all levels of personnel assigned to the action, including at supervisory and managerial level.

#### **33.2 Consequences of non-compliance**

If a beneficiary breaches its obligations under this Article, the JU may apply any of the measures described in Chapter 6.

### **ARTICLE 34 — ETHICS AND RESEARCH INTEGRITY**

#### **34.1 Obligation to comply with ethical and research integrity principles**

---

<sup>23</sup> Commission Recommendation 2005/251/EC of 11 March 2005 on the European Charter for Researchers and on a Code of Conduct for the Recruitment of Researchers (OJ L 75, 22.3.2005, p. 67).

The beneficiaries must carry out the action in compliance with:

- (a) ethical principles (including the highest standards of research integrity)
- and
- (b) applicable international, EU and national law.

Funding will not be granted for activities carried out outside the EU if they are prohibited in all Member States or for activities which destroy human embryos (for example, for obtaining stem cells).

The beneficiaries must ensure that the activities under the action have an exclusive focus on civil applications.

The beneficiaries must ensure that the activities under the action do not:

- (a) aim at human cloning for reproductive purposes;
- (b) intend to modify the genetic heritage of human beings which could make such changes heritable (with the exception of research relating to cancer treatment of the gonads, which may be financed), or
- (c) intend to create human embryos solely for the purpose of research or for the purpose of stem cell procurement, including by means of somatic cell nuclear transfer.

In addition, the beneficiaries must respect the fundamental principle of research integrity — as set out, for instance, in the European Code of Conduct for Research Integrity<sup>24</sup>.

This implies compliance with the following fundamental principles:

- **reliability** in ensuring the quality of research reflected in the design, the methodology, the analysis and the use of resources;
- **honesty** in developing, undertaking, reviewing, reporting and communicating research in a transparent, fair and unbiased way;
- **respect** for colleagues, research participants, society, ecosystems, cultural heritage and the environment;
- **accountability** for the research from idea to publication, for its management and organisation, for training, supervision and mentoring, and for its wider impacts

and means that beneficiaries must ensure that persons carrying out research tasks follow the good research practices and refrain from the research integrity violations described in this Code.

This does not change the other obligations under this Agreement or obligations under applicable international, EU or national law, all of which still apply.

### 34.2 Activities raising ethical issues

<sup>24</sup> European Code of Conduct for Research Integrity of ALLEA (All European Academies)  
[http://ec.europa.eu/research/participants/data/ref/h2020/other/hi/h2020-ethics\\_code-of-conduct\\_en.pdf](http://ec.europa.eu/research/participants/data/ref/h2020/other/hi/h2020-ethics_code-of-conduct_en.pdf)



Activities raising ethical issues must comply with the ‘**ethics requirements**’ set out as deliverables in Annex 1.

Before the beginning of an activity raising an ethical issue, each beneficiary must have obtained:

- (a) any ethics committee opinion required under national law and
  - (b) any notification or authorisation for activities raising ethical issues required under national and/or European law
- needed for implementing the action tasks in question.

The documents must be kept on file and be submitted upon request by the coordinator to the JU (see Article 52). If they are not in English, they must be submitted together with an English summary, which shows that the action tasks in question are covered and includes the conclusions of the committee or authority concerned (if available).

### **34.3 Activities involving human embryos or human embryonic stem cells**

Activities involving research on human embryos or human embryonic stem cells may be carried out, in addition to Article 34.1, only if:

- they are set out in Annex 1 or
- the coordinator has obtained explicit approval (in writing) from the JU (see Article 52).

### **34.4 Consequences of non-compliance**

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 43) and the Agreement or participation of the beneficiary may be terminated (see Article 50).

Such breaches may also lead to any of the other measures described in Chapter 6.

## **ARTICLE 35 — CONFLICT OF INTERESTS**

### **35.1 Obligation to avoid a conflict of interests**

The beneficiaries must take all measures to prevent any situation where the impartial and objective implementation of the action is compromised for reasons involving economic interest, political or national affinity, family or emotional ties or any other shared interest (‘**conflict of interests**’).

They must formally notify to the JU without delay any situation constituting or likely to lead to a conflict of interests and immediately take all the necessary steps to rectify this situation.

The JU may verify that the measures taken are appropriate and may require additional measures to be taken by a specified deadline.

### **35.2 Consequences of non-compliance**

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 43) and the Agreement or participation of the beneficiary may be terminated (see Article 50).

Such breaches may also lead to any of the other measures described in Chapter 6.

## ARTICLE 36 — CONFIDENTIALITY

### 36.1 General obligation to maintain confidentiality

During implementation of the action and for four years after the period set out in Article 3, the parties must keep confidential any data, documents or other material (in any form) that is identified as confidential at the time it is disclosed (**‘confidential information’**).

If a beneficiary requests, the JU may agree to keep such information confidential for an additional period beyond the initial four years.

If information has been identified as confidential only orally, it will be considered to be confidential only if this is confirmed in writing within 15 days of the oral disclosure.

Unless otherwise agreed between the parties, they may use confidential information only to implement the Agreement.

The beneficiaries may disclose confidential information to their personnel or third parties involved in the action only if they:

- (a) need to know to implement the Agreement and
- (b) are bound by an obligation of confidentiality.

This does not change the security obligations in Article 37, which still apply.

The JU may disclose confidential information to its staff, other EU institutions and bodies. It may disclose confidential information to third parties, if:

- (a) this is necessary to implement the Agreement or safeguard the EU's or JU's financial interests and
- (b) the recipients of the information are bound by an obligation of confidentiality.

The confidentiality obligations no longer apply if:

- (a) the disclosing party agrees to release the other party;
- (b) the information was already known by the recipient or is given to him without obligation of confidentiality by a third party that was not bound by any obligation of confidentiality;
- (c) the recipient proves that the information was developed without the use of confidential information;
- (d) the information becomes generally and publicly available, without breaching any confidentiality obligation, or
- (e) the disclosure of the information is required by EU or national law.

### 36.2 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 43).

Such breaches may also lead to any of the other measures described in Chapter 6.

## **ARTICLE 37 — SECURITY-RELATED OBLIGATIONS**

### **37.1 Results with a security recommendation**

Not applicable

### **37.2 Classified information**

Not applicable

### **37.3 Activities involving dual-use goods or dangerous materials and substances**

Not applicable

### **37.4 Consequences of non-compliance**

Not applicable

## **ARTICLE 38 — PROMOTING THE ACTION — VISIBILITY OF JU FUNDING AND SUPPORT FROM JU MEMBERS**

### **38.1 Communication activities by beneficiaries**

#### **38.1.1 Obligation to promote the action and its results**

The beneficiaries must promote the action and its results, by providing targeted information to multiple audiences (including the media and the public) in a strategic and effective manner.

This does not change the dissemination obligations in Article 29, the confidentiality obligations in Article 36 or the security obligations in Article 37, all of which still apply.

Before engaging in a communication activity expected to have a major media impact, the beneficiaries must inform the JU (see Article 52).

#### **38.1.2 Information on JU funding and support from JU members — Obligation and right to use the JU logo and the EU emblem**

Unless the JU requests or agrees otherwise or unless it is impossible, any communication activity related to the action (including in electronic form, via social media, etc.) and any infrastructure, equipment and major results funded by the grant must:

- (a) display the JU logo and
- (b) display the EU emblem and
- (c) include the following text:



For communication activities:

“This project has received funding from the SESAR Joint Undertaking (JU) under grant agreement No 874475. The JU receives support from the European Union’s Horizon 2020 research and innovation programme and the SESAR JU members other than the Union”.

For infrastructure, equipment and major results:

“This *[infrastructure]/[equipment]/[insert type of result]* is part of a project that has received funding from the SESAR Joint Undertaking (JU) under grant agreement No 874475. The JU receives support from the European Union’s Horizon 2020 research and innovation programme and the SESAR JU members other than the Union”.

When displayed together with another logo, the JU logo and the EU emblem must have appropriate prominence.

For the purposes of their obligations under this Article, the beneficiaries may use the JU logo and the EU emblem without first obtaining approval from the JU or the Commission.

This does not, however, give them the right to exclusive use.

Moreover, they may not appropriate the JU logo and the EU emblem or any similar trademark or logo, either by registration or by any other means.

### 38.1.3 Disclaimer excluding JU responsibility

Any communication activity related to the action must indicate that it reflects only the author's view and that the JU is not responsible for any use that may be made of the information it contains.

## 38.2 Communication activities by the JU

### 38.2.1 Right to use beneficiaries’ materials, documents or information

The JU may use, for its communication and publicising activities, information relating to the action, documents notably summaries for publication and public deliverables as well as any other material, such as pictures or audio-visual material received from any beneficiary (including in electronic form).

This does not change the confidentiality obligations in Article 36 and the security obligations in Article 37, all of which still apply.

If the JU’s use of these materials, documents or information would risk compromising legitimate interests, the beneficiary concerned may request the JU not to use it (see Article 52).

The right to use a beneficiary’s materials, documents and information includes:

- (a) **use for its own purposes** (in particular, making them available to persons working for the JU or any other EU institution, body, office or agency or body or institutions in EU Member States; and copying or reproducing them in whole or in part, in unlimited numbers);
- (b) **distribution to the public** (in particular, publication as hard copies and in electronic or digital format, publication on the internet, as a downloadable or non-downloadable file, broadcasting by any channel, public display or presentation, communicating through press information services, or inclusion in widely accessible databases or indexes);

- (c) **editing or redrafting** for communication and publicising activities (including shortening, summarising, inserting other elements (such as meta-data, legends, other graphic, visual, audio or text elements), extracting parts (e.g. audio or video files), dividing into parts, use in a compilation);
- (d) translation;
- (e) giving **access in response to individual requests** under Regulation No 1049/2001<sup>27</sup>, without the right to reproduce or exploit;
- (f) **storage** in paper, electronic or other form;
- (g) **archiving**, in line with applicable document-management rules, and
- (h) the right to authorise **third parties** to act on its behalf or sub-license the modes of use set out in Points (b), (c), (d) and (f) to third parties if needed for the communication and publicising activities of the JU.

If the right of use is subject to rights of a third party (including personnel of the beneficiary), the beneficiary must ensure that it complies with its obligations under this Agreement (in particular, by obtaining the necessary approval from the third parties concerned).

Where applicable (and if provided by the beneficiaries), the JU will insert the following information:

“© – [year] – [name of the copyright owner]. All rights reserved. Licensed to the SESAR Joint Undertaking under conditions.”

### 38.3 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 43).

Such breaches may also lead to any of the other measures described in Chapter 6.

## ARTICLE 39 — PROCESSING OF PERSONAL DATA

### 39.1 Processing of personal data by the JU and the Commission

Any personal data under the Agreement will be processed by the JU or the Commission under Regulation No 45/2001<sup>28</sup> and according to the ‘notifications of the processing operations’ to the Data Protection Officer (DPO) of the JU or the Commission (publicly accessible in the DPO register).

Such data will be processed by the ‘**data controller**’ of the JU or the Commission for the purposes of implementing, managing and monitoring the Agreement or protecting the financial interests of the JU, EU or Euratom (including checks, reviews, audits and investigations; see Article 22).

The persons whose personal data are processed have the right to access and correct their own personal

<sup>27</sup> Regulation (EC) No 1049/2001 of the European Parliament and of the Council of 30 May 2001 regarding public access to European Parliament, Council and Commission documents, OJ L 145, 31.5.2001, p. 43.

<sup>28</sup> Regulation (EC) No 45/2001 of the European Parliament and of the Council of 18 December 2000 on the protection of individuals with regard to the processing of personal data by the Community institutions and bodies and on the free movement of such data (OJ L 8, 12.01.2001, p. 1).

data. For this purpose, they must send any queries about the processing of their personal data to the data controller, via the contact point indicated in the ‘privacy statement’ that are published on the JU and the Commission websites.

They also have the right to have recourse at any time to the European Data Protection Supervisor (EDPS).

### **39.2 Processing of personal data by the beneficiaries**

The beneficiaries must process personal data under the Agreement in compliance with applicable EU and national law on data protection (including authorisations or notification requirements).

The beneficiaries may grant their personnel access only to data that is strictly necessary for implementing, managing and monitoring the Agreement.

The beneficiaries must inform the personnel whose personal data are collected and processed by the JU or the Commission. For this purpose, they must provide them with the privacy statement(s) (see above), before transmitting their data to the JU or the Commission.

### **39.3 Consequences of non-compliance**

If a beneficiary breaches any of its obligations under Article 39.2, the JU may apply any of the measures described in Chapter 6.

## **ARTICLE 40 — ASSIGNMENTS OF CLAIMS FOR PAYMENT AGAINST THE JU**

The beneficiaries may not assign any of their claims for payment against the JU to any third party, except if approved by the JU on the basis of a reasoned, written request by the coordinator (on behalf of the beneficiary concerned).

If the JU has not accepted the assignment or the terms of it are not observed, the assignment will have no effect on it.

In no circumstances will an assignment release the beneficiaries from their obligations towards the JU.

## **CHAPTER 5 DIVISION OF BENEFICIARIES’ ROLES AND RESPONSIBILITIES** **— RELATIONSHIP WITH COMPLEMENTARY BENEFICIARIES —** **RELATIONSHIP WITH PARTNERS OF A JOINT ACTION**

### **ARTICLE 41 — DIVISION OF BENEFICIARIES’ ROLES AND RESPONSIBILITIES** **— RELATIONSHIP WITH COMPLEMENTARY BENEFICIARIES —** **RELATIONSHIP WITH PARTNERS OF A JOINT ACTION**

#### **41.1 Roles and responsibility towards the JU**

The beneficiaries have full responsibility for implementing the action and complying with the Agreement.

The beneficiaries are jointly and severally liable for the **technical implementation** of the action as described in Annex 1. If a beneficiary fails to implement its part of the action, the other beneficiaries

become responsible for implementing this part (without being entitled to any additional JU funding for doing so), unless the JU expressly relieves them of this obligation.

The **financial responsibility** of each beneficiary is governed by Article 44.

#### 41.2 Internal division of roles and responsibilities

The internal roles and responsibilities of the beneficiaries are divided as follows:

(a) Each **beneficiary** must:

- (i) keep information stored in the Participant Portal Beneficiary Register (via the electronic exchange system) up to date (see Article 17);
- (ii) inform the coordinator immediately of any events or circumstances likely to affect significantly or delay the implementation of the action (see Article 17);
- (iii) submit to the coordinator in good time:
  - individual financial statements for itself and its linked third parties and, if required, certificates on the financial statements (see Article 20);
  - the data needed to draw up the technical reports (see Article 20);
  - ethics committee opinions and notifications or authorisations for activities raising ethical issues (see Article 34);
  - any other documents or information required by the JU under the Agreement, unless the Agreement requires the beneficiary to submit this information directly to the JU.

(b) The **coordinator** must:

- (i) monitor that the action is implemented properly (see Article 7);
- (ii) act as the intermediary for all communications between the beneficiaries and the JU (in particular, providing the JU with the information described in Article 17), unless the Agreement specifies otherwise;
- (iii) request and review any documents or information required by the JU and verify their completeness and correctness before passing them on to the JU;
- (iv) submit the deliverables and reports to the JU (see Articles 19 and 20);
- (v) ensure that all payments are made to the other beneficiaries without unjustified delay (see Article 21);
- (vi) inform the JU of the amounts paid to each beneficiary, when required under the Agreement (see Articles 44 and 50) or requested by the JU.

The coordinator may not delegate or subcontract the above-mentioned tasks to any other beneficiary or third party (including linked third parties).

#### 41.3 Internal arrangements between beneficiaries — Consortium agreement

Not applicable

#### **41.4 Relationship with complementary beneficiaries — Collaboration agreement**

The beneficiaries must conclude a written ‘collaboration agreement’ with the complementary beneficiaries to coordinate the work under the Agreement and the complementary grant agreement(s) (see Article 2), covering for instance:

- efficient decision making processes and
- settlement of disputes.

The collaboration agreement must not contain any provision contrary to the Agreement.

The beneficiaries and complementary beneficiaries must create and participate in common boards and advisory structures to decide on collaboration and synchronisation of activities, including on management of outcomes, common approaches towards standardisation, SME involvement, links with regulatory and policy activities, and commonly shared dissemination and awareness raising activities.

The beneficiaries must give access to their results to the complementary beneficiaries, for the purposes of the complementary grant agreement(s) (see Article 31.6).

The beneficiaries must share the technical reports (see Article 20.3 and 20.4). The confidentiality obligations in Article 36 apply.

#### **41.5 Relationship with partners of a joint action — Coordination agreement**

Not applicable

### **CHAPTER 6 REJECTION OF COSTS — REDUCTION OF THE GRANT — RECOVERY — SANCTIONS — DAMAGES — SUSPENSION — TERMINATION — FORCE MAJEURE**

#### **SECTION 1 REJECTION OF COSTS — REDUCTION OF THE GRANT — RECOVERY — SANCTIONS**

#### **ARTICLE 42 — REJECTION OF INELIGIBLE COSTS**

##### **42.1 Conditions**

The JU will — after **termination of the participation of a beneficiary**, at the time of an **interim payment, at the payment of the balance or afterwards** — reject any costs which are ineligible (see Article 6), in particular following checks, reviews, audits or investigations (see Article 22).

The rejection may also be based on the **extension of findings from other grants to this grant** (see Article 22.5.2).

##### **42.2 Ineligible costs to be rejected — Calculation — Procedure**

Ineligible costs will be rejected in full.



If the rejection of costs does not lead to a recovery (see Article 44), the JU will formally notify the coordinator or beneficiary concerned of the rejection of costs, the amounts and the reasons why (if applicable, together with the notification of amounts due; see Article 21.5). The coordinator or beneficiary concerned may — within 30 days of receiving notification — formally notify the JU of its disagreement and the reasons why.

If the rejection of costs leads to a recovery, the JU will follow the contradictory procedure with pre-information letter set out in Article 44.

### 42.3 Effects

If the JU rejects costs at the time of an **interim payment** or **the payment of the balance**, it will deduct them from the total eligible costs declared, for the action, in the periodic or final summary financial statement (see Articles 20.3 and 20.4). It will then calculate the interim payment or payment of the balance as set out in Articles 21.3 or 21.4.

If the JU rejects costs **after termination of the participation of a beneficiary**, it will deduct them from the costs declared by the beneficiary in the termination report and include the rejection in the calculation after termination (see Article 50.2 and 50.3).

If the JU — **after an interim payment but before the payment of the balance** — rejects costs declared in a periodic summary financial statement, it will deduct them from the total eligible costs declared, for the action, in the next periodic summary financial statement or in the final summary financial statement. It will then calculate the interim payment or payment of the balance as set out in Articles 21.3 or 21.4.

If the JU rejects costs **after the payment of the balance**, it will deduct the amount rejected from the total eligible costs declared, by the beneficiary, in the final summary financial statement. It will then calculate the revised final grant amount as set out in Article 5.4.

## ARTICLE 43 — REDUCTION OF THE GRANT

### 43.1 Conditions

The JU may — **after termination of the participation of a beneficiary, at the payment of the balance or afterwards** — reduce the grant amount (see Article 5.1), if :

- (a) a beneficiary (or a natural person who has the power to represent or take decisions on its behalf) has committed:
  - (i) substantial errors, irregularities or fraud or
  - (ii) serious breach of obligations under the Agreement or during the award procedure (including improper implementation of the action, submission of false information, failure to provide required information, breach of ethical principles) or
- (b) a beneficiary (or a natural person who has the power to represent or take decision on its behalf) has committed — in other EU or Euratom grants awarded to it under similar conditions — systemic or recurrent errors, irregularities, fraud or serious breach of obligations that have a material impact on this grant (**extension of findings from other grants to this grant**; see Article 22.5.2).

### 43.2 Amount to be reduced — Calculation — Procedure

The amount of the reduction will be proportionate to the seriousness of the errors, irregularities or fraud or breach of obligations.

Before reduction of the grant, the JU will formally notify a ‘**pre-information letter**’ to the coordinator or beneficiary concerned:

- informing it of its intention to reduce the grant, the amount it intends to reduce and the reasons why and
- inviting it to submit observations within 30 days of receiving notification.

If the JU does not receive any observations or decides to pursue reduction despite the observations it has received, it will formally notify **confirmation** of the reduction (if applicable, together with the notification of amounts due; see Article 21).

### 43.3 Effects

If the JU reduces the grant **after termination of the participation of a beneficiary**, it will calculate the reduced grant amount for that beneficiary and then determine the amount due to that beneficiary (see Article 50.2 and 50.3).

If the JU reduces the grant **at the payment of the balance**, it will calculate the reduced grant amount for the action and then determine the amount due as payment of the balance (see Articles 5.3.4 and 21.4).

If the JU reduces the grant **after the payment of the balance**, it will calculate the revised final grant amount for the beneficiary concerned (see Article 5.4). If the revised final grant amount for the beneficiary concerned is lower than its share of the final grant amount, the JU will recover the difference (see Article 44).

## ARTICLE 44 — RECOVERY OF UNDUE AMOUNTS

### 44.1 Amount to be recovered — Calculation — Procedure

The JU will — after **termination of the participation of a beneficiary, at the payment of the balance or afterwards** — claim back any amount that was paid, but is not due under the Agreement.

Each beneficiary’s financial responsibility in case of recovery is limited to its own debt (including undue amounts paid by the JU for costs declared by its linked third parties), except for the amount retained for the Guarantee Fund (see Article 21.4).

#### 44.1.1 Recovery after termination of a beneficiary’s participation

If recovery takes place after termination of a beneficiary’s participation (including the coordinator), the JU will claim back the undue amount from the beneficiary concerned, by formally notifying it a debit note (see Article 50.2 and 50.3). This note will specify the amount to be recovered, the terms and the date for payment.

If payment is not made by the date specified in the debit note, the JU will **recover** the amount:

- (a) by ‘**offsetting**’ it — without the beneficiary’s consent — against any amounts owed to the beneficiary concerned by the JU.

In exceptional circumstances, to safeguard the EU’s or JU’s financial interests, the JU may offset before the payment date specified in the debit note;

- (b) if a linked third party has accepted joint and several liability (see Article 14), by **holding the third party liable** up to the maximum JU contribution indicated, for the linked third party, in the estimated budget (see Annex 2) and/or
- (c) by **taking legal action** (see Article 57).

If payment is not made by the date specified in the debit note, the amount to be recovered (see above) will be increased by **late-payment interest** at the rate set out in Article 21.11, from the day following the payment date in the debit note, up to and including the date the JU receives full payment of the amount.

Partial payments will be first credited against expenses, charges and late-payment interest and then against the principal.

Bank charges incurred in the recovery process will be borne by the beneficiary, unless Directive 2007/64/EC<sup>29</sup> applies.

#### 44.1.2 Recovery at payment of the balance

If the payment of the balance takes the form of a recovery (see Article 21.4), the JU will formally notify a ‘**pre-information letter**’ to the coordinator:

- informing it of its intention to recover, the amount due as the balance and the reasons why;
- specifying that it intends to deduct the amount to be recovered from the amount retained for the Guarantee Fund;
- requesting the coordinator to submit a report on the distribution of payments to the beneficiaries within 30 days of receiving notification, and
- inviting the coordinator to submit observations within 30 days of receiving notification.

If no observations are submitted or the JU decides to pursue recovery despite the observations it has received, it will **confirm recovery** (together with the notification of amounts due; see Article 21.5) and:

- pay the difference between the amount to be recovered and the amount retained for the Guarantee Fund, **if the difference is positive** or
- formally notify to the coordinator a **debit note** for the difference between the amount to be recovered and the amount retained for the Guarantee Fund, **if the difference is negative**. This note will also specify the terms and the date for payment.

<sup>29</sup> Directive 2007/64/EC of the European Parliament and of the Council of 13 November 2007 on payment services in the internal market amending Directives 97/7/EC, 2002/65/EC, 2005/60/EC and 2006/48/EC and repealing Directive 97/5/EC (OJ L 319, 05.12.2007, p. 1).

If the coordinator does not repay the JU by the date in the debit note and has not submitted the report on the distribution of payments: the JU will **recover** the amount set out in the debit note from the coordinator (see below).

If the coordinator does not repay the JU by the date in the debit note, but has submitted the report on the distribution of payments: the JU will:

- (a) identify the beneficiaries for which the amount calculated as follows is negative:

{ { {beneficiary's costs declared in the final summary financial statement and approved by the JU multiplied by the reimbursement rate set out in Article 5.2 for the beneficiary concerned

plus

its linked third parties' costs declared in the final summary financial statement and approved by the JU multiplied by the reimbursement rate set out in Article 5.2 for each linked third party concerned}

divided by

the JU contribution for the action calculated according to Article 5.3.1}

multiplied by

the final grant amount (see Article 5.3)},

minus

{pre-financing and interim payments received by the beneficiary} }.

- (b) formally notify to each beneficiary identified according to point (a) a **debit note** specifying the terms and date for payment. The amount of the debit note is calculated as follows:

{ {amount calculated according to point (a) for the beneficiary concerned

divided by

the sum of the amounts calculated according to point (a) for all the beneficiaries identified according to point (a)}

multiplied by

the amount set out in the debit note formally notified to the coordinator}.

If payment is not made by the date specified in the debit note, the JU will **recover** the amount:

- (a) by **offsetting** it — without the beneficiary's consent — against any amounts owed to the beneficiary concerned by the JU.

In exceptional circumstances, to safeguard the EU's or JU's financial interests, the JU may offset before the payment date specified in the debit note;

- (b) by **drawing on the Guarantee Fund**. The JU will formally notify the beneficiary concerned the debit note on behalf of the Guarantee Fund and recover the amount:

- (i) if a linked third party has accepted joint and several liability (see Article 14), by **holding the third party liable** up to the maximum JU contribution indicated, for the linked third party, in the estimated budget (see Annex 2) and/or

(ii) by **taking legal action** (see Article 57).

If payment is not made by the date in the debit note, the amount to be recovered (see above) will be increased by **late-payment interest** at the rate set out in Article 21.11, from the day following the payment date in the debit note, up to and including the date the JU receives full payment of the amount.

Partial payments will be first credited against expenses, charges and late-payment interest and then against the principal.

Bank charges incurred in the recovery process will be borne by the beneficiary, unless Directive 2007/64/EC applies.

#### 44.1.3 Recovery of amounts after payment of the balance

If, for a beneficiary, the revised final grant amount (see Article 5.4) is lower than its share of the final grant amount, it must repay the difference to the JU.

The beneficiary's share of the final grant amount is calculated as follows:

$$\left\{ \left\{ \begin{array}{l} \text{beneficiary's costs declared in the final summary financial statement and approved by the JU multiplied by} \\ \text{the reimbursement rate set out in Article 5.2 for the beneficiary concerned} \end{array} \right\} \right.$$
 plus  

$$\left\{ \begin{array}{l} \text{its linked third parties' costs declared in the final summary financial statement and approved by the JU} \\ \text{multiplied by the reimbursement rate set out in Article 5.2 for each linked third party concerned} \end{array} \right\}$$
 divided by  

$$\left\{ \begin{array}{l} \text{the JU contribution for the action calculated according to Article 5.3.1} \end{array} \right\}$$
 multiplied by  

$$\left\{ \begin{array}{l} \text{the final grant amount (see Article 5.3)} \end{array} \right\}.$$

If the coordinator has not distributed amounts received (see Article 21.7), the JU will also recover these amounts.

The JU will formally notify a **pre-information letter** to the beneficiary concerned:

- informing it of its intention to recover, the due amount and the reasons why and
- inviting it to submit observations within 30 days of receiving notification.

If no observations are submitted or the JU decides to pursue recovery despite the observations it has received, it will **confirm** the amount to be recovered and formally notify to the beneficiary concerned a **debit note**. This note will also specify the terms and the date for payment.

If payment is not made by the date specified in the debit note, the JU will **recover** the amount:

- (a) by **offsetting** it — without the beneficiary's consent — against any amounts owed to the beneficiary concerned by the JU.

In exceptional circumstances, to safeguard the EU's or JU's financial interests, the JU may offset before the payment date specified in the debit note;

(b) by **drawing on the Guarantee Fund**. The JU will formally notify the beneficiary concerned the debit note on behalf of the Guarantee Fund and recover the amount:

- (i) if a linked third party has accepted joint and several liability (see Article 14), by **holding the third party liable** up to the maximum JU contribution indicated, for the linked third party, in the estimated budget (see Annex 2) and/or
- (ii) by **taking legal action** (see Article 57).

If payment is not made by the date in the debit note, the amount to be recovered (see above) will be increased by **late-payment interest** at the rate set out in Article 21.11, from the day following the date for payment in the debit note, up to and including the date the JU receives full payment of the amount.

Partial payments will be first credited against expenses, charges and late-payment interest and then against the principal.

Bank charges incurred in the recovery process will be borne by the beneficiary, unless Directive 2007/64/EC applies.

## **ARTICLE 45 — ADMINISTRATIVE SANCTIONS**

In addition to contractual measures, the JU may also adopt administrative sanctions under Articles 84 and 89 of the JU Financial Rules read in conjunction with Articles 106 and 131(4) of the Financial Regulation No 966/2012 (i.e. exclusion from future procurement contracts, grants, prizes and expert contracts and/or financial penalties).

## **SECTION 2 LIABILITY FOR DAMAGES**

### **ARTICLE 46 — LIABILITY FOR DAMAGES**

#### **46.1 Liability of the JU**

The JU cannot be held liable for any damage caused to the beneficiaries or to third parties as a consequence of implementing the Agreement, including for gross negligence.

The JU cannot be held liable for any damage caused by any of the beneficiaries or third parties involved in the action, as a consequence of implementing the Agreement.

#### **46.2 Liability of the beneficiaries**

Except in case of force majeure (see Article 51), the beneficiaries must compensate the JU for any damage it sustains as a result of the implementation of the action or because the action was not implemented in full compliance with the Agreement.

## **SECTION 3 SUSPENSION AND TERMINATION**

### **ARTICLE 47 — SUSPENSION OF PAYMENT DEADLINE**

#### **47.1 Conditions**

The JU may — at any moment — suspend the payment deadline (see Article 21.2 to 21.4) if a request for payment (see Article 20) cannot be approved because:

- (a) it does not comply with the provisions of the Agreement (see Article 20);
- (b) the technical or financial reports have not been submitted or are not complete or additional information is needed, or
- (c) there is doubt about the eligibility of the costs declared in the financial statements and additional checks, reviews, audits or investigations are necessary.

## 47.2 Procedure

The JU will formally notify the coordinator of the suspension and the reasons why.

The suspension will **take effect** the day notification is sent by the JU (see Article 52).

If the conditions for suspending the payment deadline are no longer met, the suspension will be **lifted** — and the remaining period will resume.

If the suspension exceeds two months, the coordinator may request the JU if the suspension will continue.

If the payment deadline has been suspended due to the non-compliance of the technical or financial reports (see Article 20) and the revised report or statement is not submitted or was submitted but is also rejected, the JU may also terminate the Agreement or the participation of the beneficiary (see Article 50.3.1(i)).

## ARTICLE 48 — SUSPENSION OF PAYMENTS

### 48.1 Conditions

The JU may — at any moment — suspend payments, in whole or in part and interim payments or the payment of the balance for one or more beneficiaries, if:

- (a) a beneficiary (or a natural person who has the power to represent or take decision on its behalf) has committed or is suspected of having committed:
  - (i) substantial errors, irregularities or fraud or
  - (ii) serious breach of obligations under the Agreement or during the award procedure (including improper implementation of the action, submission of false information, failure to provide required information, breach of ethical principles) or
- (b) a beneficiary (or a natural person who has the power to represent or take decision on its behalf) has committed — in other JU, EU or Euratom grants awarded to it under similar conditions — systemic or recurrent errors, irregularities, fraud or serious breach of obligations that have a material impact on this grant (**extension of findings from other grants to this grant**; see Article 22.5.2).

If payments are suspended for one or more beneficiaries, the JU will make partial payment(s) for the part(s) not suspended. If suspension concerns the payment of the balance, — once suspension is lifted



— the payment or the recovery of the amount(s) concerned will be considered the payment of the balance that closes the action.

## 48.2 Procedure

Before suspending payments, the JU will formally notify the coordinator or beneficiary concerned:

- informing it of its intention to suspend payments and the reasons why and
- inviting it to submit observations within 30 days of receiving notification.

If the JU does not receive observations or decides to pursue the procedure despite the observations it has received, it will formally notify **confirmation** of the suspension. Otherwise, it will formally notify that the suspension procedure is not continued.

The suspension will **take effect** the day the confirmation notification is sent by the JU.

If the conditions for resuming payments are met, the suspension will be **lifted**. The JU will formally notify the coordinator or beneficiary concerned.

During the suspension, the periodic report(s) for all reporting periods except the last one (see Article 20.3), must not contain any individual financial statements from the beneficiary concerned and its linked third parties. The coordinator must include them in the next periodic report after the suspension is lifted or — if suspension is not lifted before the end of the action — in the last periodic report.

The beneficiaries may suspend implementation of the action (see Article 49.1) or terminate the Agreement or the participation of the beneficiary concerned (see Article 50.1 and 50.2).

## ARTICLE 49 — SUSPENSION OF THE ACTION IMPLEMENTATION

### 49.1 Suspension of the action implementation, by the beneficiaries

#### 49.1.1 Conditions

The beneficiaries may suspend implementation of the action or any part of it, if exceptional circumstances — in particular *force majeure* (see Article 51) — make implementation impossible or excessively difficult.

#### 49.1.2 Procedure

The coordinator must immediately formally notify to the JU the suspension (see Article 52), stating:

- the reasons why and
- the expected date of resumption.

The suspension will **take effect** the day this notification is received by the JU.

Once circumstances allow for implementation to resume, the coordinator must immediately formally notify the JU and request an **amendment** of the Agreement to set the date on which the action will be resumed, extend the duration of the action and make other changes necessary to adapt the action



to the new situation (see Article 55) — unless the Agreement or the participation of a beneficiary has been terminated (see Article 50).

The suspension will be **lifted** with effect from the resumption date set out in the amendment. This date may be before the date on which the amendment enters into force.

Costs incurred during suspension of the action implementation are not eligible (see Article 6).

## 49.2 Suspension of the action implementation, by the JU

### 49.2.1 Conditions

The JU may suspend implementation of the action or any part of it, if:

- (a) a beneficiary (or a natural person who has the power to represent or take decisions on its behalf) has committed or is suspected of having committed:
  - (i) substantial errors, irregularities or fraud or
  - (ii) serious breach of obligations under the Agreement or during the award procedure (including improper implementation of the action, submission of false information, failure to provide required information, breach of ethical principles);
- (b) a beneficiary (or a natural person who has the power to represent or take decisions on its behalf) has committed — in other JU, EU or Euratom grants awarded to it under similar conditions — systemic or recurrent errors, irregularities, fraud or serious breach of obligations that have a material impact on this grant (**extension of findings from other grants to this grant**; see Article 22.5.2), or
- (c) the action is suspected of having lost its scientific or technological relevance.

### 49.2.2 Procedure

Before suspending implementation of the action, the JU will formally notify the coordinator or beneficiary concerned:

- informing it of its intention to suspend the implementation and the reasons why and
- inviting it to submit observations within 30 days of receiving notification.

If the JU does not receive observations or decides to pursue the procedure despite the observations it has received, it will formally notify **confirmation** of the suspension. Otherwise, it will formally notify that the procedure is not continued.

The suspension will **take effect** five days after confirmation notification is received (or on a later date specified in the notification).

It will be **lifted** if the conditions for resuming implementation of the action are met.

The coordinator or beneficiary concerned will be formally notified of the lifting and the Agreement will be **amended** to set the date on which the action will be resumed, extend the duration of the action and make other changes necessary to adapt the action to the new situation (see Article 55) — unless the Agreement has already been terminated (see Article 50).

The suspension will be lifted with effect from the resumption date set out in the amendment. This date may be before the date on which the amendment enters into force.

Costs incurred during suspension are not eligible (see Article 6).

The beneficiaries may not claim damages due to suspension by the JU (see Article 46).

Suspension of the action implementation does not affect the JU's right to terminate the Agreement or participation of a beneficiary (see Article 50), reduce the grant or recover amounts unduly paid (see Articles 43 and 44).

## **ARTICLE 50 — TERMINATION OF THE AGREEMENT OR OF THE PARTICIPATION OF ONE OR MORE BENEFICIARIES**

### **50.1 Termination of the Agreement, by the beneficiaries**

#### **50.1.1 Conditions and procedure**

The beneficiaries may terminate the Agreement.

The coordinator must formally notify termination to the JU (see Article 52), stating:

- the reasons why and
- the date the termination will take effect. This date must be after the notification.

If no reasons are given or if the JU considers the reasons do not justify termination, the Agreement will be considered to have been '**terminated improperly**'.

The termination will **take effect** on the day specified in the notification.

#### **50.1.2 Effects**

The coordinator must — within 60 days from when termination takes effect — submit:

- (i) a periodic report (for the open reporting period until termination; see Article 20.3) and
- (ii) the final report (see Article 20.4).

If the JU does not receive the reports within the deadline (see above), only costs which are included in an approved periodic report will be taken into account.

The JU will **calculate** the final grant amount (see Article 5.3) and the balance (see Article 21.4) on the basis of the reports submitted. Only costs incurred until termination are eligible (see Article 6). Costs relating to contracts due for execution only after termination are not eligible.

Improper termination may lead to a reduction of the grant (see Article 43).

After termination, the beneficiaries' obligations (in particular Articles 20, 22, 23, Section 3 of Chapter 4, 36, 37, 38, 40, 42, 43 and 44) continue to apply.

### **50.2 Termination of the participation of one or more beneficiaries, by the beneficiaries**

### 50.2.1 Conditions and procedure

The participation of one or more beneficiaries may be terminated by the coordinator, on request of the beneficiary concerned or on behalf of the other beneficiaries.

The coordinator must formally notify termination to the JU (see Article 52) and inform the beneficiary concerned.

If the coordinator's participation is terminated without its agreement, the formal notification must be done by another beneficiary (acting on behalf of the other beneficiaries).

The notification must include:

- the reasons why;
- the opinion of the beneficiary concerned (or proof that this opinion has been requested in writing);
- the date the termination takes effect. This date must be after the notification, and
- a request for amendment (see Article 55), with a proposal for reallocation of the tasks and the estimated budget of the beneficiary concerned (see Annexes 1 and 2) and, if necessary, the addition of one or more new beneficiaries (see Article 56). If termination takes effect after the period set out in Article 3, no request for amendment must be included unless the beneficiary concerned is the coordinator. In this case, the request for amendment must propose a new coordinator.

If this information is not given or if the JU considers that the reasons do not justify termination, the participation will be considered to have been **terminated improperly**.

The termination will **take effect** on the day specified in the notification.

### 50.2.2 Effects

The coordinator must — within 30 days from when termination takes effect — submit:

- (i) a report on the distribution of payments to the beneficiary concerned and
- (ii) if termination takes effect during the period set out in Article 3, a '**termination report**' from the beneficiary concerned, for the open reporting period until termination, containing an overview of the progress of the work, an overview of the use of resources, the individual financial statement and, if applicable, the certificate on the financial statement (see Articles 20.3 and 20.4).

The information in the termination report must also be included in the periodic report for the next reporting period (see Article 20.3).

If the request for amendment is rejected by the JU (because it calls into question the decision awarding the grant or breaches the principle of equal treatment of applicants), the Agreement may be terminated according to Article 50.3.1(c).

If the request for amendment is accepted by the JU, the Agreement is **amended** to introduce the necessary changes (see Article 55).

The JU will — on the basis of the periodic reports, the termination report and the report on the distribution of payments — **calculate** the amount which is due to the beneficiary and if the (pre-financing and interim) payments received by the beneficiary exceed this amount.

The **amount which is due** is calculated in the following steps:

Step 1 — Application of the reimbursement rate to the eligible costs

The grant amount for the beneficiary is calculated by applying the reimbursement rate(s) to the total eligible costs declared by the beneficiary and its linked third parties in the termination report and approved by the JU.

Only costs incurred by the beneficiary concerned until termination takes effect are eligible (see Article 6). Costs relating to contracts due for execution only after termination are not eligible.

Step 2 — Reduction due to substantial errors, irregularities or fraud or serious breach of obligations

In case of a reduction (see Article 43), the JU will calculate the reduced grant amount for the beneficiary by deducting the amount of the reduction (calculated in proportion to the seriousness of the errors, irregularities or fraud or breach of obligations, in accordance with Article 43.2) from the grant amount for the beneficiary.

If the payments received **exceed the amounts due**:

- if termination takes effect during the period set out in Article 3 and the request for amendment is accepted, the beneficiary concerned must repay to the coordinator the amount unduly received. The JU will formally notify the amount unduly received and request the beneficiary concerned to repay it to the coordinator within 30 days of receiving notification. If it does not repay the coordinator, the JU will draw upon the Guarantee Fund to pay the coordinator and then notify a **debit note** on behalf of the Guarantee Fund to the beneficiary concerned (see Article 44);
- in all other cases, in particular if termination takes effect after the period set out in Article 3, the JU will formally notify a **debit note** to the beneficiary concerned. If payment is not made by the date in the debit note, the Guarantee Fund will pay to the JU the amount due and the JU will notify a debit note on behalf of the Guarantee Fund to the beneficiary concerned (see Article 44);
- if the beneficiary concerned is the former coordinator, it must repay the new coordinator according to the procedure above, unless:
  - termination takes effect after an interim payment and
  - the former coordinator has not distributed amounts received as pre-financing or interim payments (see Article 21.7).

In this case, the JU will formally notify a **debit note** to the former coordinator. If payment is not made by the date in the debit note, the Guarantee Fund will pay to the JU the amount due. The JU will then pay the new coordinator and notify a debit note on behalf of the Guarantee Fund to the former coordinator (see Article 44).

If the payments received **do not exceed the amounts due**: amounts owed to the beneficiary concerned will be included in the next interim or final payment.

If the JU does not receive the termination report within the deadline (see above), only costs included in an approved periodic report will be taken into account.

If the JU does not receive the report on the distribution of payments within the deadline (see above), it will consider that:

- the coordinator did not distribute any payment to the beneficiary concerned and that
- the beneficiary concerned must not repay any amount to the coordinator.

Improper termination may lead to a reduction of the grant (see Article 43) or termination of the Agreement (see Article 50).

After termination, the concerned beneficiary's obligations (in particular Articles 20, 22, 23, Section 3 of Chapter 4, 36, 37, 38, 40, 42, 43 and 44) continue to apply.

### **50.3 Termination of the Agreement or the participation of one or more beneficiaries, by the JU**

#### **50.3.1 Conditions**

The JU may terminate the Agreement or the participation of one or more beneficiaries, if:

- (a) one or more beneficiaries do not accede to the Agreement (see Article 56);
- (b) a change to their legal, financial, technical, organisational or ownership situation (or those of its linked third parties) is likely to substantially affect or delay the implementation of the action or calls into question the decision to award the grant;
- (c) following termination of participation for one or more beneficiaries (see above), the necessary changes to the Agreement would call into question the decision awarding the grant or breach the principle of equal treatment of applicants (see Article 55);
- (d) implementation of the action is prevented by force majeure (see Article 51) or suspended by the coordinator (see Article 49.1) and either:
  - (i) resumption is impossible, or
  - (ii) the necessary changes to the Agreement would call into question the decision awarding the grant or breach the principle of equal treatment of applicants;
- (e) a beneficiary is declared bankrupt, being wound up, having its affairs administered by the courts, has entered into an arrangement with creditors, has suspended business activities, or is subject to any other similar proceedings or procedures under national law;
- (f) a beneficiary (or a natural person who has the power to represent or take decisions on its behalf) has been found guilty of professional misconduct, proven by any means;
- (g) a beneficiary does not comply with the applicable national law on taxes and social security;

- (h) the action has lost scientific or technological relevance;
- (i) not applicable;
- (j) not applicable;
- (k) a beneficiary (or a natural person who has the power to represent or take decisions on its behalf) has committed fraud, corruption, or is involved in a criminal organisation, money laundering or any other illegal activity;
- (l) a beneficiary (or a natural person who has the power to represent or take decisions on its behalf) has committed:
  - (i) substantial errors, irregularities or fraud or
  - (ii) serious breach of obligations under the Agreement or during the award procedure (including improper implementation of the action, submission of false information, failure to provide required information, breach of ethical principles);
- (m) a beneficiary (or a natural person who has the power to represent or take decisions on its behalf) has committed — in other JU, EU or Euratom grants awarded to it under similar conditions — systemic or recurrent errors, irregularities, fraud or serious breach of obligations that have a material impact on this grant (**extension of findings from other grants to this grant**; see Article 22.5.2);
- (n) despite a specific request by the JU, a beneficiary does not request — through the coordinator — an amendment to the Agreement to end the participation of one of its linked third parties or international partners that is in one of the situations under points (e), (f), (g), (k), (l) or (m) and to reallocate its tasks.

### 50.3.2 Procedure

Before terminating the Agreement or participation of one or more beneficiaries, the JU will formally notify the coordinator or beneficiary concerned:

- informing it of its intention to terminate and the reasons why and
- inviting it, within 30 days of receiving notification, to submit observations and — in case of Point (l.ii) above — to inform the JU of the measures to ensure compliance with the obligations under the Agreement.

If the JU does not receive observations or decides to pursue the procedure despite the observations it has received, it will formally notify to the coordinator or beneficiary concerned **confirmation** of the termination and the date it will take effect. Otherwise, it will formally notify that the procedure is not continued.

The termination will **take effect**:

- for terminations under Points (b), (c), (e), (g), (h), (j), (l.ii) and (n) above: on the day specified in the notification of the confirmation (see above);
- for terminations under Points (a), (d), (f), (i), (k), (l.i) and (m) above: on the day after the notification of the confirmation is received.

### 50.3.3 Effects

#### (a) for **termination of the Agreement**:

The coordinator must — within 60 days from when termination takes effect — submit:

- (i) a periodic report (for the last open reporting period until termination; see Article 20.3) and
- (ii) a final report (see Article 20.4).

If the Agreement is terminated for breach of the obligation to submit reports (see Articles 20.8 and 50.3.1(l)), the coordinator may not submit any reports after termination.

If the JU does not receive the reports within the deadline (see above), only costs which are included in an approved periodic report will be taken into account.

The JU will **calculate** the final grant amount (see Article 5.3) and the balance (see Article 21.4) on the basis of the reports submitted. Only costs incurred until termination takes effect are eligible (see Article 6). Costs relating to contracts due for execution only after termination are not eligible.

This does not affect the JU's right to reduce the grant (see Article 43) or to impose administrative sanctions (Article 45).

The beneficiaries may not claim damages due to termination by the JU (see Article 46).

After termination, the beneficiaries' obligations (in particular Articles 20, 22, 23, Section 3 of Chapter 4, 36, 37, 38, 40, 42, 43 and 44) continue to apply.

#### (b) for **termination of the participation of one or more beneficiaries**:

The coordinator must — within 60 days from when termination takes effect — submit:

- (i) a report on the distribution of payments to the beneficiary concerned;
- (ii) a request for amendment (see Article 55), with a proposal for reallocation of the tasks and estimated budget of the beneficiary concerned (see Annexes 1 and 2) and, if necessary, the addition of one or more new beneficiaries (see Article 56). If termination is notified after the period set out in Article 3, no request for amendment must be submitted unless the beneficiary concerned is the coordinator. In this case the request for amendment must propose a new coordinator, and
- (iii) if termination takes effect during the period set out in Article 3, a **termination report** from the beneficiary concerned, for the open reporting period until termination, containing an overview of the progress of the work, an overview of the use of resources, the individual financial statement and, if applicable, the certificate on the financial statement (see Article 20).

The information in the termination report must also be included in the periodic report for the next reporting period (see Article 20.3).

If the request for amendment is rejected by the JU (because it calls into question the decision



awarding the grant or breaches the principle of equal treatment of applicants), the Agreement may be terminated according to Article 50.3.1(c).

If the request for amendment is accepted by the JU, the Agreement is **amended** to introduce the necessary changes (see Article 55).

The JU will — on the basis of the periodic reports, the termination report and the report on the distribution of payments — **calculate** the amount which is due to the beneficiary and if the (pre-financing and interim) payments received by the beneficiary exceed this amount.

The **amount which is due** is calculated in the following steps:

Step 1 — Application of the reimbursement rate to the eligible costs

The grant amount for the beneficiary is calculated by applying the reimbursement rate(s) to the total eligible costs declared by the beneficiary and its linked third parties in the termination report and approved by the JU.

Only costs incurred by the beneficiary concerned until termination takes effect are eligible (see Article 6). Costs relating to contracts due for execution only after termination are not eligible.

Step 2 — Reduction due to substantial errors, irregularities or fraud or serious breach of obligations

In case of a reduction (see Article 43), the JU will calculate the reduced grant amount for the beneficiary by deducting the amount of the reduction (calculated in proportion to the seriousness of the errors, irregularities or fraud or breach of obligations, in accordance with Article 43.2) from the grant amount for the beneficiary.

If the payments received **exceed the amounts due**:

- if termination takes effect during the period set out in Article 3 and the request for amendment is accepted, the beneficiary concerned must repay to the coordinator the amount unduly received. The JU will formally notify the amount unduly received and request the beneficiary concerned to repay it to the coordinator within 30 days of receiving notification. If it does not repay the coordinator, the JU will draw upon the Guarantee Fund to pay the coordinator and then notify a **debit note** on behalf of the Guarantee Fund to the beneficiary concerned (see Article 44);
- in all other cases, in particular if termination takes effect after the period set out in Article 3, the JU will formally notify a **debit note** to the beneficiary concerned. If payment is not made by the date in the debit note, the Guarantee Fund will pay to the JU the amount due and the JU will notify a debit note on behalf of the Guarantee Fund to the beneficiary concerned (see Article 44);
- if the beneficiary concerned is the former coordinator, it must repay the new coordinator according to the procedure above, unless:
  - termination takes effect after an interim payment and



- the former coordinator has not distributed amounts received as pre-financing or interim payments (see Article 21.7).

In this case, the JU will formally notify a **debit note** to the former coordinator. If payment is not made by the date in the debit note, the Guarantee Fund will pay to the JU the amount due. The JU will then pay the new coordinator and notify a debit note on behalf of the Guarantee Fund to the former coordinator (see Article 44).

If the payments received **do not exceed the amounts due**: amounts owed to the beneficiary concerned will be included in the next interim or final payment.

If the JU does not receive the termination report within the deadline (see above), only costs included in an approved periodic report will be taken into account.

If the JU does not receive the report on the distribution of payments within the deadline (see above), it will consider that:

- the coordinator did not distribute any payment to the beneficiary concerned and that
- the beneficiary concerned must not repay any amount to the coordinator.

After termination, the concerned beneficiary's obligations (in particular Articles 20, 22, 23, Section 3 of Chapter 4, 36, 37, 38, 40, 42, 43 and 44) continue to apply.

## **SECTION 4 — FORCE MAJEURE**

### **ARTICLE 51 — FORCE MAJEURE**

'Force majeure' means any situation or event that:

- prevents either party from fulfilling their obligations under the Agreement,
- was unforeseeable, exceptional situation and beyond the parties' control,
- was not due to error or negligence on their part (or on the part of third parties involved in the action), and
- proves to be inevitable in spite of exercising all due diligence.

The following cannot be invoked as force majeure:

- any default of a service, defect in equipment or material or delays in making them available, unless they stem directly from a relevant case of force majeure,
- labour disputes or strikes, or
- financial difficulties.

Any situation constituting force majeure must be formally notified to the other party without delay, stating the nature, likely duration and foreseeable effects.

The parties must immediately take all the necessary steps to limit any damage due to force majeure and do their best to resume implementation of the action as soon as possible.

The party prevented by force majeure from fulfilling its obligations under the Agreement cannot be considered in breach of them.

## **CHAPTER 7 FINAL PROVISIONS**

### **ARTICLE 52 — COMMUNICATION BETWEEN THE PARTIES**

#### **52.1 Form and means of communication**

Communication under the Agreement (information, requests, submissions, ‘formal notifications’, etc.) must:

- be made in writing and
- bear the number of the Agreement.

All communication must be made through the Participant Portal **electronic** exchange system and using the forms and templates provided there.

If — after the payment of the balance — the JU finds that a formal notification was not accessed, a second formal notification will be made by registered post with proof of delivery (‘formal notification on **paper**’). Deadlines will be calculated from the moment of the second notification.

Communications in the electronic exchange system must be made by persons authorised according to the Participant Portal Terms & Conditions. For naming the authorised persons, each beneficiary must have designated — before the signature of this Agreement — a ‘legal entity appointed representative (LEAR)’. The role and tasks of the LEAR are stipulated in his/her appointment letter (see Participant Portal Terms & Conditions).

If the electronic exchange system is temporarily unavailable, instructions will be given on the JU and Commission websites.

#### **52.2 Date of communication**

**Communications** are considered to have been made when they are sent by the sending party (i.e. on the date and time they are sent through the electronic exchange system).

**Formal notifications** through the **electronic** exchange system are considered to have been made when they are received by the receiving party (i.e. on the date and time of acceptance by the receiving party, as indicated by the time stamp). A formal notification that has not been accepted within 10 days after sending is considered to have been accepted.

Formal notifications **on paper** sent by **registered post** with proof of delivery (only after the payment of the balance) are considered to have been made on either:

- the delivery date registered by the postal service or
- the deadline for collection at the post office.

If the electronic exchange system is temporarily unavailable, the sending party cannot be considered in breach of its obligation to send a communication within a specified deadline.

### 52.3 Addresses for communication

The **electronic** exchange system must be accessed via the following URL:

<https://ec.europa.eu/research/participants/portal/desktop/en/projects/>

The JU will formally notify the coordinator and beneficiaries in advance any changes to this URL.

**Formal notifications on paper** (only after the payment of the balance) addressed **to the JU** must be sent to the official mailing address indicated on the JU's website.

Formal notifications on paper (only after the payment of the balance) addressed **to the beneficiaries** must be sent to their legal address as specified in the Participant Portal Beneficiary Register.

## ARTICLE 53 — INTERPRETATION OF THE AGREEMENT

### 53.1 Precedence of the Terms and Conditions over the Annexes

The provisions in the Terms and Conditions of the Agreement take precedence over its Annexes.

Annex 2 takes precedence over Annex 1.

### 53.2 Privileges and immunities

Nothing in the Agreement may be interpreted as a waiver of any privileges or immunities accorded to the *EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION* by its constituent documents or international law.

## ARTICLE 54 — CALCULATION OF PERIODS, DATES AND DEADLINES

In accordance with Regulation No 1182/71<sup>30</sup>, periods expressed in days, months or years are calculated from the moment the triggering event occurs.

The day during which that event occurs is not considered as falling within the period.

## ARTICLE 55 — AMENDMENTS TO THE AGREEMENT

### 55.1 Conditions

The Agreement may be amended, unless the amendment entails changes to the Agreement which would call into question the decision awarding the grant or breach the principle of equal treatment of applicants.

Amendments may be requested by any of the parties.

<sup>30</sup> Regulation (EEC, Euratom) No 1182/71 of the Council of 3 June 1971 determining the rules applicable to periods, dates and time-limits (OJ L 124, 8.6.1971, p. 1).

## 55.2 Procedure

The party requesting an amendment must submit a request for amendment signed in the electronic exchange system (see Article 52).

The coordinator submits and receives requests for amendment on behalf of the beneficiaries (see Annex 3).

If a change of coordinator is requested without its agreement, the submission must be done by another beneficiary (acting on behalf of the other beneficiaries).

The request for amendment must include:

- the reasons why;
- the appropriate supporting documents, and
- for a change of coordinator without its agreement: the opinion of the coordinator (or proof that this opinion has been requested in writing).

The JU may request additional information.

If the party receiving the request agrees, it must sign the amendment in the electronic exchange system within 45 days of receiving notification (or any additional information the JU has requested). If it does not agree, it must formally notify its disagreement within the same deadline. The deadline may be extended, if necessary for the assessment of the request. If no notification is received within the deadline, the request is considered to have been rejected

An amendment **enters into force** on the day of the signature of the receiving party.

An amendment **takes effect** on the date agreed by the parties or, in the absence of such an agreement, on the date on which the amendment enters into force.

## ARTICLE 56 — ACCESSION TO THE AGREEMENT

### 56.1 Accession of the beneficiaries mentioned in the Preamble

The other beneficiaries must accede to the Agreement by signing the Accession Form (see Annex 3) in the electronic exchange system (see Article 52) within 30 days after its entry into force (see Article 58) and for beneficiaries for which the JU has requested joint and several liability of a linked third party, by also submitting — at accession — a declaration on joint and several liability (see Annex 3a) signed by the third party.

They will assume the rights and obligations under the Agreement with effect from the date of its entry into force (see Article 58).

If a beneficiary does not accede to the Agreement within the above deadline, the coordinator must — within 30 days — request an amendment to make any changes necessary to ensure proper implementation of the action. This does not affect the JU's right to terminate the Agreement (see Article 50).

### 56.2 Addition of new beneficiaries

In justified cases, the beneficiaries may request the addition of a new beneficiary.

For this purpose, the coordinator must submit a request for amendment in accordance with Article 55. It must include an Accession Form (see Annex 3) signed by the new beneficiary in the electronic exchange system (see Article 52).

New beneficiaries must assume the rights and obligations under the Agreement with effect from the date of their accession specified in the Accession Form (see Annex 3).

## **ARTICLE 57 — APPLICABLE LAW AND SETTLEMENT OF DISPUTES**

### **57.1 Applicable law**

The Agreement is governed by the applicable EU law, supplemented if necessary by the law of Belgium.

### **57.2 Dispute settlement**

If a dispute concerning the interpretation, application or validity of the Agreement cannot be settled amicably, the General Court — or, on appeal, the Court of Justice of the European Union — has sole jurisdiction. Such actions must be brought under Article 272 of the Treaty on the Functioning of the EU (TFEU).

As an exception, if such a dispute is between the JU and SINTEF AS, AVINOR AS, SKYGUIDE, SA SUISSE POUR LES SERVICES DE LA NAVIGATION AERIENNE CIVILS ET MILITAIRES, FLUGHAFEN ZURICH AG, the competent Belgian courts have sole jurisdiction.

As an exception, for the following beneficiaries:

- EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION

such disputes must — if they cannot be settled amicably — be referred to arbitration. Each party must formally notify to the other party its intention of resorting to arbitration and the identity of the arbitrator. The Permanent Court of Arbitration Optional Rules for Arbitration Involving International Organisations and States in force at the date of entry into force of the Agreement will apply. The appointing authority will be the Secretary-General of the Permanent Court of Arbitration following a written request submitted by either party. The arbitration proceedings must take place in Brussels and the language used in the arbitral proceedings will be English. The arbitral award will be binding on all parties and will not be subject to appeal.

If a dispute concerns administrative sanctions or offsetting, the beneficiaries must bring action before the General Court — or, on appeal, the Court of Justice of the European Union — under Article 263 TFEU.

## **ARTICLE 58 — ENTRY INTO FORCE OF THE AGREEMENT**

The Agreement will enter into force on the day of signature by the JU or the coordinator, depending on which is later.

### **SIGNATURES**

For the coordinator

For the JU



## **ANNEX 1 (part A)**

### **Coordination and Support Action**

**NUMBER — 874475 — PJ20-W2 AMPLE**

## Table of Contents

1.1. The project summary.....	3
1.2. The list of beneficiaries.....	4
1.3. Workplan Tables - Detailed implementation.....	6
1.3.1. WT1 List of work packages.....	6
1.3.2. WT2 List of deliverables.....	7
1.3.3. WT3 Work package descriptions.....	9
Work package 1.....	9
Work package 2.....	11
Work package 3.....	14
Work package 4.....	16
Work package 5.....	19
Work package 6.....	21
1.3.4. WT4 List of milestones.....	22
1.3.5. WT5 Critical Implementation risks and mitigation actions.....	23
1.3.6 WT6 Summary of project effort in person-months.....	24
1.3.7. WT7 Tentative schedule of project reviews.....	26



# 1.1. The project summary

Project Number <sup>1</sup>	874475	Project Acronym <sup>2</sup>	PJ20-W2 AMPLE
-----------------------------	--------	------------------------------	---------------

## One form per project

### General information

Project title <sup>3</sup>	PJ.20 W2 Master Planning
Starting date <sup>4</sup>	01/12/2019
Duration in months <sup>5</sup>	37
Call (part) identifier <sup>6</sup>	H2020-SESAR-2019-1
Topic	SESAR-IR-VLD-WAVE2-02-2019 PJ.20 W2 Master Planning
Fixed EC Keywords	
Free keywords	Master Plan, SESAR Vision, Performance Ambitions, Deployment Scenarios, Essential Operational changes

### Abstract <sup>7</sup>

PJ20 W2 “Master Planning” project is the continuation of the SESAR2020 Wave 1 PJ20 ATM Master Plan Maintenance project (AMPLE).

Within the Single European Sky technological pillar, the European ATM Master Plan (ATM MP) is the long-term roadmap to guide and connect ATM Research and Innovation and Deployment in building the future European ATM System. The ATM MP Editions are approved by the SESAR Joint Undertaking (SJU) Administrative Board and the European Commission. They set out Performance Ambitions and a Vision for European ATM, aligned with ICAO GANP.

The ATM MP is composed of three Levels; it can be consulted in the ATM MP Public Portal [www.atmmasterplan.eu](http://www.atmmasterplan.eu). By EU Regulation 409/2013, the ATM MP is the essential instrument allowing all European ATM civil and military stakeholders - Airspace users, Air Navigation Service providers, Airports, Network Manager, Airborne and Ground industry, SESAR Deployment Manager, Standardisation bodies and Professional Staff organisations - to share and further develop this common Vision for the future European ATM and setting forth the SESAR solutions which after successful research may be elicited to compose future Common Projects for operationally seamless and cost effective deployment.

The ATM MP needs to be a living plan, kept abreast of evolutions of the European ATM performance, progresses of the SESAR solutions research results and of deployment. The duty of SESAR2020 PJ20 W2 Master Planning like its predecessor in SESAR2020 Wave 1, is to ensure the maintenance, update and alignment of the ATM MP three Levels as a Common Support Activity of the SESAR2020 Programme.

Under the leadership of EUROCONTROL, through facilitated access to information rich performance based civil-military ATM data, PJ20 will bring together contributions of 24 SESAR2020 members, ensuring the broad ATM representativeness required from air navigation service providers, airports, airborne and ground industry and Network Manager.

## 1.2. List of Beneficiaries

Project Number <sup>1</sup>	874475	Project Acronym <sup>2</sup>	PJ20-W2 AMPLE
-----------------------------	--------	------------------------------	---------------

### List of Beneficiaries

No	Name	Short name	Country	Project entry month <sup>8</sup>	Project exit month
1	EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION	EUROCONTROL	Belgium	1	37
2	AIRBUS	AIRBUS	France	1	37
3	DEUTSCHES ZENTRUM FUER LUFT - UND RAUMFAHRT EV	DLR (AT-One)	Germany	1	37
4	VALSTYBES IMONE ORO NAVIGACIJA	ON (B4)	Lithuania	1	37
5	POLSKA AGENCJA ZEGLUGI POWIETRZNEJ	PANSA (B4)	Poland	1	37
6	AUSTRO CONTROL OSTERREICHISCHE GESELLSCHAFT FUR ZIVILLUFTFAHRT MBH	ACG/COOPANS	Austria	1	37
7	LUFTFARTSVERKET	LFV/COOPANS	Sweden	1	37
8	NAVIAIR	Naviar/COOPANS	Denmark	1	37
9	DFS DEUTSCHE FLUGSICHERUNG GMBH	DFS	Germany	1	37
10	DIRECTION DES SERVICES DE LA NAVIGATION AERIENNE	DSNA	France	1	37
11	ENAIRES	ENAIRES	Spain	1	37
12	ENAV SPA	ENAV	Italy	1	37
13	HUNGAROCNTRL MAGYAR LEGIFORGALMISZOLGALAT ZARTKORUEN MUKODO RESZVENYTARSASAG	HC (FSP)	Hungary	1	37
14	INDRA SISTEMAS SA	INDRA	Spain	1	37
15	LEONARDO - SOCIETA PER AZIONI	LDO	Italy	1	37
16	SAAB AKTIEBOLAG	SAAB (NATMIG)	Sweden	1	37
17	SINTEF AS	SINTEF (NATMIG)	Norway	1	37
18	NATS (EN ROUTE) PUBLIC LIMITED COMPANY	NATS	United Kingdom	1	37
19	AVINOR AS	Avinor-SEAC2020	Norway	1	37
20	HEATHROW AIRPORT LIMITED	HAL (SEAC2020)	United Kingdom	1	37
21	FLUGHAFEN MUNCHEN GMBH	MUC (SEAC2020)	Germany	1	37
22	SCHIPHOL NEDERLAND B.V.	SNBV (SEAC2020)	Netherlands	1	37
23	SKYGUIDE, SA SUISSE POUR LES SERVICES DE LA NAVIGATION AERIENNE CIVILS ET MILITAIRES	SKYGUIDE	Switzerland	1	37
24	THALES LAS FRANCE SAS	THALES AIR SYS	France	1	37

## 1.2. List of Beneficiaries

No	Name	Short name	Country	Project entry month <sup>8</sup>	Project exit month
25	STICHTING NATIONAAL LUCHT- EN RUIMTEVAARTLABORATORIUM	NLR (AT-One)	Netherlands	1	37
26	RIZENI LETOVEHO PROVOZU CESKE REPUBLIKY STATNI PODNIK	ANS CR (B4)	Czechia	1	37
27	LETOVE PREVADZKOVE SLUZBY SLOVENSKEJ REPUBLIKY, STATNY PODNIK	LPS SR (B4)	Slovakia	1	37
28	CROATIA CONTROL, CROATIAN AIR NAVIGATION SERVICES LTD	CCL/COOPANS	Croatia	1	37
29	UDARAS EITLIOCHTA NA HEIREANN THE IRISH AVIATION AUTHORITY	IAA/COOPANS	Ireland	1	37
30	ATOS BELGIUM	ATOS (FSP)	Belgium	1	37
31	FREQUENTIS AG	FRQ (FSP)	Austria	1	37
32	AIRTEL ATN LIMITED	AIRTEL (NATMIG)	Ireland	1	37
33	AEROPORTS DE PARIS SA	ADP (SEAC2020)	France	1	37
34	SWEDAVIA AB	Swed (SEAC2020)	Sweden	1	37
35	FLUGHAFEN ZURICH AG	ZRH (SEAC2020)	Switzerland	1	37

## 1.3. Workplan Tables - Detailed Implementation

Associated with document Ref. Ares(2019)6889956 - 07/11/2019

### 1.3.1. WT1 List of work packages

WP Number <sup>9</sup>	WP Title	Lead beneficiary <sup>10</sup>	Person-months <sup>11</sup>	Start month <sup>12</sup>	End month <sup>13</sup>
WP1	Project Management	1 - EUROCONTROL	55.00	1	37
WP2	Master Plan Campaign	1 - EUROCONTROL	338.85	1	37
WP3	MP Levels 1 and 2 Assessment	1 - EUROCONTROL	137.17	1	37
WP4	MP Level 3 Maintenance	1 - EUROCONTROL	187.72	1	37
WP5	Ad-Hoc SESAR Support	1 - EUROCONTROL	0.01	1	37
WP6	Ethics requirements	1 - EUROCONTROL	N/A	1	37
<b>Total</b>			718.75		

### 1.3.2. WT2 list of deliverables

Deliverable Number <sup>14</sup>	Deliverable Title	WP number <sup>9</sup>	Lead beneficiary	Type <sup>15</sup>	Dissemination level <sup>16</sup>	Due Date (in months) <sup>17</sup>
D1.1	Project Management Plan	WP1	1 - EUROCONTROL	Report	Confidential, only for members of the consortium (including the Commission Services)	4
D1.2	Communication Plan	WP1	1 - EUROCONTROL	Report	Confidential, only for members of the consortium (including the Commission Services)	4
D1.3	Management Progress Report 1	WP1	1 - EUROCONTROL	Report	Confidential, only for members of the consortium (including the Commission Services)	11
D1.4	Management Progress Report 2	WP1	1 - EUROCONTROL	Report	Confidential, only for members of the consortium (including the Commission Services)	23
D1.5	Final Project Report	WP1	1 - EUROCONTROL	Report	Confidential, only for members of the consortium (including the Commission Services)	34
D2.1	Master Plan 2022 Annotated Outline Document	WP2	1 - EUROCONTROL	Report	Public	23
D2.2	Preliminary Work Plan and Schedule for the Master Plan Update Campaign	WP2	1 - EUROCONTROL	Report	Public	23
D2.3	Proposed European ATM Master Plan 2022	WP2	1 - EUROCONTROL	Report	Public	29
D3.1	Master Plan Executive Planning Assessment Methodology	WP3	1 - EUROCONTROL	Report	Public	7
D3.2	Master Plan Executive Planning Assessment Report (2020)	WP3	1 - EUROCONTROL	Report	Public	13

<b>Deliverable Number<sup>14</sup></b>	<b>Deliverable Title</b>	<b>WP number<sup>9</sup></b>	<b>Lead beneficiary</b>	<b>Type<sup>15</sup></b>	<b>Dissemination level<sup>16</sup></b>	<b>Due Date (in months)<sup>17</sup></b>
D3.3	Master Plan Executive Planning Assessment Report (2021)	WP3	1 - EUROCONTROL	Report	Public	25
D3.4	European ATM Master Plan Level 2	WP3	1 - EUROCONTROL	Report	Public	29
D4.1	Master Plan Level 3 Guidance	WP4	1 - EUROCONTROL	Report	Public	7
D4.2	European ATM Master Plan Level 3 – Implementation Plan (2020)	WP4	1 - EUROCONTROL	Report	Public	7
D4.3	European ATM Master Plan Level 3 – Implementation Report (2020)	WP4	1 - EUROCONTROL	Report	Public	7
D4.4	European ATM Master Plan Level 3 – Implementation Plan (2021)	WP4	1 - EUROCONTROL	Report	Public	19
D4.5	European ATM Master Plan Level 3 – Implementation Report (2021)	WP4	1 - EUROCONTROL	Report	Public	19
D4.6	European ATM Master Plan Level 3 – Implementation Plan (2022)	WP4	1 - EUROCONTROL	Report	Public	31
D4.7	European ATM Master Plan Level 3 – Implementation Report (2022)	WP4	1 - EUROCONTROL	Report	Public	31
D5.1	Progress Report on Ad-hoc Activities	WP5	1 - EUROCONTROL	Report	Confidential, only for members of the consortium (including the Commission Services)	35
D6.1	GEN - Requirement No. 1	WP6	1 - EUROCONTROL	Ethics	Confidential, only for members of the consortium (including the Commission Services)	3

### 1.3.3. WT3 Work package descriptions

<b>Work package number</b> <sup>9</sup>	WP1	<b>Lead beneficiary</b> <sup>10</sup>	1 - EUROCONTROL
<b>Work package title</b>	Project Management		
<b>Start month</b>	1	<b>End month</b>	37

#### Objectives

WP1 – Project Management will coordinate and monitor the project's progress to accomplish the main objectives regarding time and resources. It will ensure PJ.20 W2 coordination with and support provision to the SESAR 2020 Programme/SJU and fulfil the administrative requirements of the grant agreement.

#### Description of work and role of partners

##### **WP1 - Project Management** [Months: 1-37]

##### **EUROCONTROL**

The Project Management task will ensure:

- Project coordination and monitoring:

1. Ensure Project Management and Coordination – PMP production, day-to-day monitoring and control of project progress (including risk management) with respect to project objectives, timetable and acceptance of deliverables. The Project Manager (PM) will be responsible to carry out the main management activities at project level and the reporting process, and ensure timed delivery.

2. Regular management meetings will be organised:

- Project Review meeting with SJU (annual),
- PMB (webex and F2F, monthly or on demand),
- EPMB (F2F – annual or on demand).

3. The PM, together with the PMB and EPMB, will act as project steering committee. Any Change Requests affecting the project, will be handled by the EPMB to allow flexibility.

4. Ensure Project Quality Management. PMP will describe the quality management.

5. Report and Communicate with the SJU in cooperation with all involved partners.

6. Ensure the administration of the project according to the grant agreement and H2020 obligations.

7. Ensure project dissemination and communication in cooperation with the SJU and the PJ.20 W2 WP Leaders and all involved partners. A communication plan will be produced and maintained to define and report on the project communication activity;

8. Report on a yearly basis the PJ.20 W2 activity – Management Progress Report. It will reflect the PJ.19 W2 activities such as support to the SJU, to Maturity Gates, EATMA and SE-DMF Training and Coaching, Cyber Security activity, ad-hoc activity, etc.

- SESAR2020 Programme/SJU coordination and support:

- Ensure Contribution to the SESAR2020 Program Management: i.e. Programme Committees (such as the Master Planning Committee (MPC)) and sub-committees (such as the Development Management Sub Committee (DMSC) and Operational and Technical Sub Committee (OTSC)).

- Like for SESAR 2020 Wave 1 programme, the PM will participate as an observer in the MPC of the SJU governance.

- Assess with the SJU and the WP leaders/Partners any request of Ad-hoc activity

- Ensure the project monitoring of the Maturity Gate progress:

- To get from the PJ.19 W2, the outcome and conclusions of the Maturity Gates; and ensure actions (if any allocated to PJ.20 W2) are completed.

#### Participation per Partner

<b>Partner number and short name</b>	<b>WP1 effort</b>
1 - EUROCONTROL	55.00
<b>Total</b>	55.00

### List of deliverables

Deliverable Number <sup>14</sup>	Deliverable Title	Lead beneficiary	Type <sup>15</sup>	Dissemination level <sup>16</sup>	Due Date (in months) <sup>17</sup>
D1.1	Project Management Plan	1 - EUROCONTROL	Report	Confidential, only for members of the consortium (including the Commission Services)	4
D1.2	Communication Plan	1 - EUROCONTROL	Report	Confidential, only for members of the consortium (including the Commission Services)	4
D1.3	Management Progress Report 1	1 - EUROCONTROL	Report	Confidential, only for members of the consortium (including the Commission Services)	11
D1.4	Management Progress Report 2	1 - EUROCONTROL	Report	Confidential, only for members of the consortium (including the Commission Services)	23
D1.5	Final Project Report	1 - EUROCONTROL	Report	Confidential, only for members of the consortium (including the Commission Services)	34

### Description of deliverables

D1.1 : Project Management Plan [4]

It defines common working methods (e.g. progress reporting, corrective action implementation, project control gates).

D1.2 : Communication Plan [4]

It defines and reports on the project communication activity in collaboration with the SJU and the SESAR 2020 projects.

D1.3 : Management Progress Report 1 [11]

Reports on a yearly basis the PJ.20 W2 activity

D1.4 : Management Progress Report 2 [23]

Reports on a yearly basis the PJ.20 W2 activity

D1.5 : Final Project Report [34]

Final Project Report

### Schedule of relevant Milestones

Milestone number <sup>18</sup>	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
--------------------------------	-----------------	------------------	----------------------	-----------------------



<b>Work package number</b> <sup>9</sup>	WP2	<b>Lead beneficiary</b> <sup>10</sup>	1 - EUROCONTROL
<b>Work package title</b>	Master Plan Campaign		
<b>Start month</b>	1	<b>End month</b>	37

### Objectives

WP02 – Master Plan Campaign will set up, run and coordinate the ATM Master Plan campaign. It will also prepare the Master Plan proposed update through refining the SESAR Vision & Performance Ambition. It will prioritise the Deployment Scenarios for the SESAR Solutions to compose the high-level rollout plan including the critical path for SESAR development and deployment activities). It will develop the Business View and update the Standardisation & Regulatory roadmaps.

### Description of work and role of partners

#### **WP2 - Master Plan Campaign** [Months: 1-37]

**EUROCONTROL**, AIRBUS, DLR (AT-One), ON (B4), PANSa (B4), ACG/COOPANS, LFV/COOPANS, Naviair/COOPANS, DFS, DSNA, ENAIRE, ENAV, HC (FSP), INDRA, LDO, SAAB (NATMIG), SINTEF (NATMIG), NATS, Avinor-SEAC2020, HAL (SEAC2020), MUC (SEAC2020), SNBV (SEAC2020), SKYGUIDE, THALES AIR SYS

This Master Plan Campaign work package will aim at initiating, monitoring the production of and delivering the next update of the ATM Master Plan to the SESAR 2020 governance. It will :

Provide the (support to) planning for the next Master Plan Update Campaign in 2022;

Provide the (support to) leadership for the next Master Plan Update Campaign;

Establish and run the Master Plan campaign Working Arrangement that augments PJ20 members with further expert bodies. The working arrangement will include ANSPs, Airports, Airspace User, Network Manager, PRB, Airframe Manufacturers, Ground Industry, Professional Staff Associations, the Military, as well as SESAR representatives from PJ19 and SJU and observers as applicable (EASA, SDM, etc.). Also, an ECAC-wide ATM expert consultation will be run during the update campaign. The working arrangement and expert consultation, (in addition to the ATM Master Planning Committee ran by the SJU) will allow transparent and broad communication and feedback on the proposed MP updates, ahead of the formal consultation for its approval.

Develop the Proposed updated ATM Master Plan Edition:

Review and update the ATM Vision and Performance Ambition;

Review and update the SESAR Rollout plan, critical path through review and update of the Deployment roadmaps (including Air/ground CNS and Infrastructure roadmap)

Review and update the Standardisation and Regulatory needs

Produce the Business View and Risk management

This Work Package is under the ATM Master Planning Committee guidance and also dependent on the entire programme for producing the updated MP edition.

### Participation per Partner

<b>Partner number and short name</b>	<b>WP2 effort</b>
1 - EUROCONTROL	172.10
2 - AIRBUS	25.00
BOEING	3.00
3 - DLR (AT-One)	6.00
4 - ON (B4)	7.78
5 - PANSa (B4)	12.80
6 - ACG/COOPANS	4.60
7 - LFV/COOPANS	1.00

Partner number and short name	WP2 effort
8 - Naviar/COOPANS	4.78
9 - DFS	14.00
10 - DSNA	14.10
11 - ENAIRE	13.30
NAV-PT	3.78
12 - ENAV	3.50
13 - HC (FSP)	6.00
14 - INDRA	7.11
IBC	5.00
15 - LDO	11.00
16 - SAAB (NATMIG)	2.00
17 - SINTEF (NATMIG)	1.00
18 - NATS	6.30
19 - Avinor-SEAC2020	2.00
20 - HAL (SEAC2020)	1.00
21 - MUC (SEAC2020)	1.00
22 - SNBV (SEAC2020)	1.00
23 - SKYGUIDE	1.70
24 - THALES AIR SYS	8.00
<b>Total</b>	<b>338.85</b>

#### List of deliverables

Deliverable Number <sup>14</sup>	Deliverable Title	Lead beneficiary	Type <sup>15</sup>	Dissemination level <sup>16</sup>	Due Date (in months) <sup>17</sup>
D2.1	Master Plan 2022 Annotated Outline Document	1 - EUROCONTROL	Report	Public	23
D2.2	Preliminary Work Plan and Schedule for the Master Plan Update Campaign	1 - EUROCONTROL	Report	Public	23
D2.3	Proposed European ATM Master Plan 2022	1 - EUROCONTROL	Report	Public	29

#### Description of deliverables

This Master Plan Campaign work package will

- prepare the work plan and the schedule for the Master Plan update campaign in time before the campaign start;
- furthermore provide an annotated outline as a starting point for the development of the new edition of the Master Plan;
- finally develop the updated Proposed ATM Master Plan Edition 2022 while involving all stakeholders.

D2.1 : Master Plan 2022 Annotated Outline Document [23]

It secures the Master Plan (MP) 2022 scope; it is produced and agreed with SJU at the start of the next MP update campaign.

D2.2 : Preliminary Work Plan and Schedule for the Master Plan Update Campaign [23]

It secures the Master Plan (MP) 2022 planning and schedule; it is produced and agreed with SJU at the start of the next MP update campaign.

D2.3 : Proposed European ATM Master Plan 2022 [29]

Proposed European ATM Master Plan 2022

### Schedule of relevant Milestones

Milestone number <sup>18</sup>	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS2	ATM Master Plan Campaign Charter approved	1 - EUROCONTROL	19	This milestone will track the achievement of the ATM MP Campaign Charter development (supported by PJ20 W2) and its approval by the Master Planning Committee.
MS3	Master Plan 2022 annotated outline approved	1 - EUROCONTROL	23	This milestone will track the approval of the of the ATM MP 2022 annotated outline.

<b>Work package number</b> <sup>9</sup>	WP3	<b>Lead beneficiary</b> <sup>10</sup>	1 - EUROCONTROL
<b>Work package title</b>	MP Levels 1 and 2 Assessment		
<b>Start month</b>	1	<b>End month</b>	37

### Objectives

WP3 - The Master Plan Levels 1 and 2 Assessment will monitor the evolution and publish Level 2 of the Master Plan to ensure that it remains “SESAR Solutions centric”. WP3 will contribute to the Dataset campaigns (led by PJ.19 W2). It will also assess the content of these Datasets and perform consistency checks between the evolving Level 2 and Level 1. This analysis will be based on clear and unambiguous information on every SESAR Solution, every R&D activity and every Essential Operational Change described in the Level 2 Dataset to assess and report on the progress of overall development activities in the perspective of the Master Plan Level 1.

### Description of work and role of partners

**WP3 - MP Levels 1 and 2 Assessment** [Months: 1-37]

**EUROCONTROL**, AIRBUS, DSNA, ENAIRE, ENAV, HC (FSP), LDO, NATS

The Master Plan Levels 1 and 2 Assessment work package will aim at assessing the Dataset in order to provide the high-level picture SESAR 2020 solution validation against the targets defined in the last released ATM Master Plan. This work package will also contribute to the production of the Dataset in order to raise change requests coming from the Master Plan and the SESAR Governance bodies; and to monitor requests for change that affect information of the Master Plan Level 1.

### Participation per Partner

Partner number and short name	WP3 effort
1 - EUROCONTROL	95.00
2 - AIRBUS	5.00
BOEING	3.00
10 - DSNA	2.40
11 - ENAIRE	13.35
12 - ENAV	3.22
13 - HC (FSP)	6.00
15 - LDO	5.10
18 - NATS	4.10
<b>Total</b>	137.17

### List of deliverables

Deliverable Number <sup>14</sup>	Deliverable Title	Lead beneficiary	Type <sup>15</sup>	Dissemination level <sup>16</sup>	Due Date (in months) <sup>17</sup>
D3.1	Master Plan Executive Planning Assessment Methodology	1 - EUROCONTROL	Report	Public	7

### List of deliverables

<b>Deliverable Number<sup>14</sup></b>	<b>Deliverable Title</b>	<b>Lead beneficiary</b>	<b>Type<sup>15</sup></b>	<b>Dissemination level<sup>16</sup></b>	<b>Due Date (in months)<sup>17</sup></b>
D3.2	Master Plan Executive Planning Assessment Report (2020)	1 - EUROCONTROL	Report	Public	13
D3.3	Master Plan Executive Planning Assessment Report (2021)	1 - EUROCONTROL	Report	Public	25
D3.4	European ATM Master Plan Level 2	1 - EUROCONTROL	Report	Public	29

### Description of deliverables

The Master Plan Levels 1 and 2 Assessment work package will

- develop the methodology for the Executive planning assessment and
- subsequently deliver two annual reports on the actual Executive planning assessments in line with the objectives.
- contribute to the production of the Master Plan Level 2 Dataset, including the raising and reviewing of change requests.

D3.1 : Master Plan Executive Planning Assessment Methodology [7]  
It describes the process and criteria applied to assess the consistency of the evolving Master Plan Level 2 (yearly Data Set) and performance assessments with the approved European ATM Master Plan Level 1.

D3.2 : Master Plan Executive Planning Assessment Report (2020) [13]  
It provides an Executive report on the assessed consistency of the evolving Master Plan Level 2 (yearly Data Set) and performance assessments with the approved European Master Plan ATM Level 1.

D3.3 : Master Plan Executive Planning Assessment Report (2021) [25]  
It captures the process and criteria used to assess the consistency of the evolving European ATM Master Plan Level 2 (yearly Data Set) and performance assessments with the approved Level 1.

D3.4 : European ATM Master Plan Level 2 [29]  
This Deliverable is constituted of the Data Set baselined and consistent with the updated European ATM MP Level 1. It will be released synchronised with the European ATM Master Plan (Level 1) publication.

### Schedule of relevant Milestones

<b>Milestone number<sup>18</sup></b>	<b>Milestone title</b>	<b>Lead beneficiary</b>	<b>Due Date (in months)</b>	<b>Means of verification</b>
--------------------------------------	------------------------	-------------------------	-----------------------------	------------------------------

<b>Work package number</b> <sup>9</sup>	WP4	<b>Lead beneficiary</b> <sup>10</sup>	1 - EUROCONTROL
<b>Work package title</b>	MP Level 3 Maintenance		
<b>Start month</b>	1	<b>End month</b>	37

### Objectives

WP4 – MP Level 3 Maintenance will maintain and deliver the MP L3 Plan and Report, providing an exhaustive view of SESAR deployment planning and progress (covering Solutions that are being deployed, but also on those not deployed the reasons, when available, for Solutions not deployed).

### Description of work and role of partners

#### **WP4 - MP Level 3 Maintenance** [Months: 1-37]

**EUROCONTROL**, AIRBUS, PANSA (B4), DFS, DSNA, ENAIRE, ENAV, HC (FSP), INDRA, LDO, NATS, SKYGUIDE, THALES AIR SYS, Swed (SEAC2020)

The L3 Maintenance work package will aim at delivering on a yearly basis:

- The Implementation Plan, consisting of Implementation Objectives and related Stakeholders Lines of Action of relevant mature Level 2 elements (Solution Deployment Scenarios), ensuring the link between development and deployment phases. To ensure its efficient use by decision-makers, the Implementation Plan will present different views: a Strategic View serving the executive levels, a Deployment view serving the intermediate levels, and an Engineering view serving the experts in the field.
- The Implementation Report: providing a complete ECAC-wide view on the status of progress of all the elements present in the Implementation Plan. In line with the Implementation Plan, the Report will also be structured to provide an exhaustive view of SESAR deployment planning progress (including Solutions that are being deployed, but also for those not deployed the reasons for the lack of deployment).
- Together, the Implementation Plan and Report will constitute the ATM MP Level 3 deliverable.
- Due to the timings associated to the required EUROCONTROL approvals and the launch of the yearly LSSIP cycles, the Master Plan Level 3 shall be reported yearly in Summer time.

### Participation per Partner

<b>Partner number and short name</b>	<b>WP4 effort</b>
1 - EUROCONTROL	136.40
2 - AIRBUS	6.00
BOEING	1.00
5 - PANSA (B4)	1.00
9 - DFS	3.00
10 - DSNA	3.40
11 - ENAIRE	10.10
12 - ENAV	3.50
13 - HC (FSP)	3.00
14 - INDRA	2.11
IBC	5.00
15 - LDO	7.00
18 - NATS	4.20
23 - SKYGUIDE	1.00

Partner number and short name	WP4 effort
24 - THALES AIR SYS	1.00
34 - Swed (SEAC2020)	0.01
<b>Total</b>	<b>187.72</b>

#### List of deliverables

Deliverable Number <sup>14</sup>	Deliverable Title	Lead beneficiary	Type <sup>15</sup>	Dissemination level <sup>16</sup>	Due Date (in months) <sup>17</sup>
D4.1	Master Plan Level 3 Guidance	1 - EUROCONTROL	Report	Public	7
D4.2	European ATM Master Plan Level 3 – Implementation Plan (2020)	1 - EUROCONTROL	Report	Public	7
D4.3	European ATM Master Plan Level 3 – Implementation Report (2020)	1 - EUROCONTROL	Report	Public	7
D4.4	European ATM Master Plan Level 3 – Implementation Plan (2021)	1 - EUROCONTROL	Report	Public	19
D4.5	European ATM Master Plan Level 3 – Implementation Report (2021)	1 - EUROCONTROL	Report	Public	19
D4.6	European ATM Master Plan Level 3 – Implementation Plan (2022)	1 - EUROCONTROL	Report	Public	31
D4.7	European ATM Master Plan Level 3 – Implementation Report (2022)	1 - EUROCONTROL	Report	Public	31

#### Description of deliverables

Deliverables will be comprised of a guidance document for the Implementation Plan and Report maintenance, and yearly the MP Level 3 Plan and the MP Level 3 Report.

D4.1 : Master Plan Level 3 Guidance [7]

It describes the process and proposed rules for translating Level 2 of the European ATM Master Plan into the implementation view (Level 3).

D4.2 : European ATM Master Plan Level 3 – Implementation Plan (2020) [7]

It provides an exhaustive view of SESAR deployment planning.

D4.3 : European ATM Master Plan Level 3 – Implementation Report (2020) [7]

It provides an exhaustive view of SESAR deployment progress.

D4.4 : European ATM Master Plan Level 3 – Implementation Plan (2021) [19]

It provides an exhaustive view of SESAR deployment planning.

D4.5 : European ATM Master Plan Level 3 – Implementation Report (2021) [19]

It provides an exhaustive view of SESAR deployment progress.

D4.6 : European ATM Master Plan Level 3 – Implementation Plan (2022) [31]

It provides an exhaustive view of SESAR deployment planning.

D4.7 : European ATM Master Plan Level 3 – Implementation Report (2022) [31]

It provides an exhaustive view of SESAR deployment progress.

#### Schedule of relevant Milestones

Milestone number <sup>18</sup>	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
--------------------------------	-----------------	------------------	----------------------	-----------------------



<b>Work package number</b> <sup>9</sup>	WP5	<b>Lead beneficiary</b> <sup>10</sup>	1 - EUROCONTROL
<b>Work package title</b>	Ad-Hoc SESAR Support		
<b>Start month</b>	1	<b>End month</b>	37

### Objectives

WP5 – Ad-Hoc SESAR Support will be dedicated to provide SESAR programme with expertise to participate, support and contribute to the definition of the future SESAR artefacts organised and delivered in ad-hoc or on demand basis by the SJU and to be shared at governance and consultation body levels, such as common projects or any specific mandate received from the SJU governance structure and related to Master Planning activities. Each ad-hoc request will be assessed to see its feasibility (to find the best way to identify potential impact on current activities and propose the best way to perform it). Each ad-hoc task agreed will be subject to a dedicated report

### Description of work and role of partners

#### **WP5 - Ad-Hoc SESAR Support** [Months: 1-37]

##### **EUROCONTROL**

The Ad-Hoc SESAR Support will aim to participate, support and contribute to the definition of the future SESAR artefacts organised and delivered in ad-hoc or on demand basis by the SJU and to be shared at governance and consultation body levels, such as common projects or any specific mandate received from the SJU governance structure and related to Master Planning activities.

At the start of the project, WP5 will be a placeholder and will be activated by WP1 Project Management as soon as an Ad-Hoc request is expressed by the SJU.

Effort will be taken out from other WPs after a thorough assessment of any impact on these other activities.

### Participation per Partner

<b>Partner number and short name</b>	<b>WP5 effort</b>
1 - EUROCONTROL	0.01
<b>Total</b>	0.01

### List of deliverables

<b>Deliverable Number</b> <sup>14</sup>	<b>Deliverable Title</b>	<b>Lead beneficiary</b>	<b>Type</b> <sup>15</sup>	<b>Dissemination level</b> <sup>16</sup>	<b>Due Date (in months)</b> <sup>17</sup>
D5.1	Progress Report on Ad-hoc Activities	1 - EUROCONTROL	Report	Confidential, only for members of the consortium (including the Commission Services)	35

### Description of deliverables

• No formal contractual deliverable but activity (list of Ad-hoc activities and result/achievements) will be reported in the yearly PJ.20 W2 Project report (PJ.20 W2 WP01).

Non contractual deliverable (providing results of a given activity and produced when needed):

• Ad-hoc activity Report for each Ad-hoc request.

D5.1 : Progress Report on Ad-hoc Activities [35]

The Progress Report on Ad-hoc Activities (consolidated overall list of Ad-hoc activities and result/achievements) will be produced together with the Final Project Report (D1.5) and appended to it.

#### Schedule of relevant Milestones

Milestone number <sup>18</sup>	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS1	Ad-Hoc activity description in PMP	1 - EUROCONTROL	4	This milestone will mark potentially the achievement of the description of the intended Ad-Hoc activities as part of the PMP.

<b>Work package number</b> <sup>9</sup>	WP6	<b>Lead beneficiary</b> <sup>10</sup>	1 - EUROCONTROL
<b>Work package title</b>	Ethics requirements		
<b>Start month</b>	1	<b>End month</b>	37

### Objectives

The objective is to ensure compliance with the 'ethics requirements' set out in this work package.

### Description of work and role of partners

**WP6 - Ethics requirements** [Months: 1-37]

**EUROCONTROL**

This work package sets out the 'ethics requirements' that the project must comply with.

### List of deliverables

<b>Deliverable Number</b> <sup>14</sup>	<b>Deliverable Title</b>	<b>Lead beneficiary</b>	<b>Type</b> <sup>15</sup>	<b>Dissemination level</b> <sup>16</sup>	<b>Due Date (in months)</b> <sup>17</sup>
D6.1	GEN - Requirement No. 1	1 - EUROCONTROL	Ethics	Confidential, only for members of the consortium (including the Commission Services)	3

### Description of deliverables

The 'ethics requirements' that the project must comply with are included as deliverables in this work package.

D6.1 : GEN - Requirement No. 1 [3]

12.2. A thorough analysis of the ethics issues raised by this project and the measures that will be taken to ensure compliance with the ethics standards of H2020 must be submitted as deliverable.

### Schedule of relevant Milestones

<b>Milestone number</b> <sup>18</sup>	<b>Milestone title</b>	<b>Lead beneficiary</b>	<b>Due Date (in months)</b>	<b>Means of verification</b>
---------------------------------------	------------------------	-------------------------	-----------------------------	------------------------------

### 1.3.4. WT4 List of milestones

Milestone number <sup>18</sup>	Milestone title	WP number <sup>9</sup>	Lead beneficiary	Due Date (in months) <sup>17</sup>	Means of verification
MS1	Ad-Hoc activity description in PMP	WP5	1 - EUROCONTROL	4	This milestone will mark potentially the achievement of the description of the intended Ad-Hoc activities as part of the PMP.
MS2	ATM Master Plan Campaign Charter approved	WP2	1 - EUROCONTROL	19	This milestone will track the achievement of the ATM MP Campaign Charter development (supported by PJ20 W2) and its approval by the Master Planning Committee.
MS3	Master Plan 2022 annotated outline approved	WP2	1 - EUROCONTROL	23	This milestone will track the approval of the of the ATM MP 2022 annotated outline.

### 1.3.5. WT5 Critical Implementation risks and mitigation actions

Risk number	Description of risk	WP Number	Proposed risk-mitigation measures
1	High political influence, generating instability in project planning and scope, putting at risk resources and tasks execution.	WP2, WP3, WP5	Develop awareness of resource constraints both internally and externally to manage flexibility expectations. Secure the MP 2022 scope (with ATM MP 2022 annotated outline document) and timing (with Preliminary work plan and schedule for the MP update campaign) produced and agreed with SJU at the start of the next MP update campaign. Set-up a Grant Amendment if needed.
2	Lack of consistent corporate feedback from partners between working level and management level.	WP2, WP4	Ensure agreed and stable WP planning to enable Partners to communicate WP's results internally as soon as they are available.
3	Solution information not sufficient to support performance based deployment planning.	WP2, WP4	Ensure PJ.20 W2 and PJ.19 W2 establish a coordinated framework process to capture appropriate performance, CBA and architecture information from Solutions.
4	Master Plan campaign launch not aligned with strategic top-down vision and decision, generating instable planning and content expectations.	WP2	Start PJ.20 W2 with a Lesson Learned to develop awareness upward (SJU, EC and EUROCONTROL); Support Campaign Charter development early, ahead of MP Campaign; Set-up a Grant Amendment if needed.

### 1.3.6. WT6 Summary of project effort in person-months

	WP1	WP2	WP3	WP4	WP5	WP6	Total Person/Months per Participant
1 - EUROCONTROL	55	172.10	95	136.40	0.01	✓	458.51
2 - AIRBUS	0	25	5	6	0		36
· BOEING	0	3	3	1	0		7
3 - DLR (AT-One)	0	6	0	0	0		6
4 - ON (B4)	0	7.78	0	0	0		7.78
5 - PANSAs (B4)	0	12.80	0	1	0		13.80
6 - ACG/COOPANS	0	4.60	0	0	0		4.60
7 - LFV/COOPANS	0	1	0	0	0		1
8 - Naviair/COOPANS	0	4.78	0	0	0		4.78
9 - DFS	0	14	0	3	0		17
10 - DSNA	0	14.10	2.40	3.40	0		19.90
11 - ENAIRE	0	13.30	13.35	10.10	0		36.75
· NAV-PT	0	3.78	0	0	0		3.78
12 - ENAV	0	3.50	3.22	3.50	0		10.22
13 - HC (FSP)	0	6	6	3	0		15
14 - INDRA	0	7.11	0	2.11	0		9.22
· IBC	0	5	0	5	0		10
15 - LDO	0	11	5.10	7	0		23.10
16 - SAAB (NATMIG)	0	2	0	0	0		2
17 - SINTEF (NATMIG)	0	1	0	0	0		1
18 - NATS	0	6.30	4.10	4.20	0		14.60
19 - Avinor-SEAC2020	0	2	0	0	0		2
20 - HAL (SEAC2020)	0	1	0	0	0		1

	WP1	WP2	WP3	WP4	WP5	WP6	Total Person/Months per Participant
21 - MUC (SEAC2020)	0	1	0	0	0		1
22 - SNBV (SEAC2020)	0	1	0	0	0		1
23 - SKYGUIDE	0	1.70	0	1	0		2.70
24 - THALES AIR SYS	0	8	0	1	0		9
25 - NLR (AT-One)	0	0	0	0	0		0
26 - ANS CR (B4)	0	0	0	0	0		0
27 - LPS SR (B4)	0	0	0	0	0		0
28 - CCL/COOPANS	0	0	0	0	0		0
29 - IAA/COOPANS	0	0	0	0	0		0
30 - ATOS (FSP)	0	0	0	0	0		0
31 - FRQ (FSP)	0	0	0	0	0		0
32 - AIRTEL (NATMIG)	0	0	0	0	0		0
33 - ADP (SEAC2020)	0	0	0	0	0		0
34 - Swed (SEAC2020)	0	0	0	0.01	0		0.01
35 - ZRH (SEAC2020)	0	0	0	0	0		0
<b>Total Person/Months</b>	55	338.85	137.17	187.72	0.01		718.75

### *1.3.7. WT7 Tentative schedule of project reviews*

<b>Review number <sup>19</sup></b>	<b>Tentative timing</b>	<b>Planned venue of review</b>	<b>Comments, if any</b>
RV1	15	sju premises	linked to reporting period
RV2	27	sju premises	linked to reporting period



## 1. Project number

The project number has been assigned by the Commission as the unique identifier for your project. It cannot be changed. The project number **should appear on each page of the grant agreement preparation documents (part A and part B)** to prevent errors during its handling.

## 2. Project acronym

Use the project acronym as given in the submitted proposal. It can generally not be changed. The same acronym **should appear on each page of the grant agreement preparation documents (part A and part B)** to prevent errors during its handling.

## 3. Project title

Use the title (preferably no longer than 200 characters) as indicated in the submitted proposal. Minor corrections are possible if agreed during the preparation of the grant agreement.

## 4. Starting date

Unless a specific (fixed) starting date is duly justified and agreed upon during the preparation of the Grant Agreement, the project will start on the first day of the month following the entry into force of the Grant Agreement (NB : entry into force = signature by the JU). Please note that if a fixed starting date is used, you will be required to provide a written justification.

## 5. Duration

Insert the duration of the project in full months.

## 6. Call (part) identifier

The Call (part) identifier is the reference number given in the call or part of the call you were addressing, as indicated in the publication of the call in the Official Journal of the European Union. You have to use the identifier given by the Commission in the letter inviting to prepare the grant agreement.

## 7. Abstract

## 8. Project Entry Month

The month at which the participant joined the consortium, month 1 marking the start date of the project, and all other start dates being relative to this start date.

## 9. Work Package number

Work package number: WP1, WP2, WP3, ..., WPn

## 10. Lead beneficiary

This must be one of the beneficiaries in the grant (not a third party) - Number of the beneficiary leading the work in this work package

## 11. Person-months per work package

The total number of person-months allocated to each work package.

## 12. Start month

Relative start date for the work in the specific work packages, month 1 marking the start date of the project, and all other start dates being relative to this start date.

## 13. End month

Relative end date, month 1 marking the start date of the project, and all end dates being relative to this start date.

## 14. Deliverable number

Deliverable numbers: D1 - Dn

## 15. Type

Please indicate the type of the deliverable using one of the following codes:

R	Document, report
DEM	Demonstrator, pilot, prototype
DEC	Websites, patent filings, videos, etc.
OTHER	
ETHICS	Ethics requirement
ORDP	Open Research Data Pilot
DATA	data sets, microdata, etc.

## 16. Dissemination level

Please indicate the dissemination level using one of the following codes:

- PU        Public
- CO        Confidential, only for members of the consortium (including the Commission Services)
- EU-RES   Classified Information: RESTREINT UE (Commission Decision 2005/444/EC)
- EU-CON   Classified Information: CONFIDENTIEL UE (Commission Decision 2005/444/EC)
- EU-SEC   Classified Information: SECRET UE (Commission Decision 2005/444/EC)

## 17. Delivery date for Deliverable

Month in which the deliverables will be available, month 1 marking the start date of the project, and all delivery dates being relative to this start date.

## 18. Milestone number

Milestone number: MS1, MS2, ..., MSn

## 19. Review number

Review number: RV1, RV2, ..., RVn

## 20. Installation Number

Number progressively the installations of a same infrastructure. An installation is a part of an infrastructure that could be used independently from the rest.

## 21. Installation country

Code of the country where the installation is located or IO if the access provider (the beneficiary or linked third party) is an international organization, an ERIC or a similar legal entity.

## 22. Type of access

- VA        if virtual access,
- TA-uc    if trans-national access with access costs declared on the basis of unit cost,
- TA-ac    if trans-national access with access costs declared as actual costs, and
- TA-cb    if trans-national access with access costs declared as a combination of actual costs and costs on the basis of unit cost.

## 23. Access costs

Cost of the access provided under the project. For virtual access fill only the second column. For trans-national access fill one of the two columns or both according to the way access costs are declared. Trans-national access costs on the basis of unit cost will result from the unit cost by the quantity of access to be provided.



## **Coordination and Support Actions (CSA)**

***SESAR.IR-VLD.Wave2-01-2019 - PJ.20 W2***

***Master Planning***

**Description of Action (DoA)**

## History of changes

Version	Date	Changes
0.1	30-09-2019	<p>A - Addition of the table 'History of changes' to trace changes compared to the proposal.</p> <p>B - Deletion of information now included in Part A, this concerns:</p> <ul style="list-style-type: none"> <li>The list of participants;</li> <li>Tables 3.1a, 3.1b, and 3.1c from section 3.1;</li> <li>Tables 3.2a and 3.2b from section 3.2;</li> <li>Table 3.4a from section 3.4.</li> </ul> <p>C - <b>Clarifications introduced:</b></p> <p>1 - To address <b>shortcomings</b> and <b>minor shortcomings</b> identified in the <b>Evaluation Summary Report</b>. These concern sections:</p> <ul style="list-style-type: none"> <li>1.3 (b) Methodology – 'Master Planning working together': introduction of PJ20 W1 lessons learned and clarification of list of ATM Partners, including Airspace Users, ESOs and EC.</li> <li>3.1 addition of WP names where Airspace Users will contribute.</li> <li>3.4 Resources to be committed – <ul style="list-style-type: none"> <li>WP1 addition of 5 non-contractual Milestones for each Master Plan Level 1, 2 and 3 contractual Deliverables, and addition of non-contractual deliverable TFR.</li> <li>WP2 addition of 2 new Milestones M2 at T0 +19 months and M3 at T0 + 23 months.</li> <li>Addition of effort of Airbus LTP, Boeing to WP2, WP3 and WP4.</li> <li>WP 5 clarification of effort allocation process, addition of 0.01 person/month for EUROCONTROL, introduction of a new Milestone M1 at T0 + 4 months and addition of D5.1'Progress Report on Ad-hoc Activities'.</li> </ul> </li> <li>4.1.1.19 - Avinor AS: addition of the last paragraph about expertise under "Contribution".</li> <li>4.1.1.20 – Heathrow Airport Limited: new paragraph added under "Previous experience" starting with: " During the Master Plan update in Wave 1 ...."</li> <li>4.1.1.21 – Flughafen München: addition of the sentence between parentheses at the end of "Previous experience".</li> </ul> <p>2 - Section 3.4 Resources to be committed:</p> <ul style="list-style-type: none"> <li>Addition of mention 'Non contractual deliverable' for Tasks WP2.02, WP2.03, WP2.04, WP2.05.</li> <li>Work Package 2: Deliverables of Tasks WP2.03, WP2.04, and WP2.05 renamed from 'Proposed' to 'Draft' for consistency with WP2.02 and to avoid ambiguity with D2.2; update of person/month for LFV/COOPANS and SINTEF (NATMIG); deletion of COOPANS contribution to WP2.03.</li> <li>Work Package 3: Task WP3.02 missing Deliverable 'European ATM Master Plan Level 2' name and description added.</li> <li>Addition of table 3.4b for beneficiary ON(B4) and SINTEF (NATMIG) due to high mission costs (following a re-allocation of personnel cost for SINTEF).</li> <li>Estimated number of missions and costs in all 3.4b tables.</li> <li>Addition of budget instalment text.</li> </ul> <p>3- Section 4 clarification of tasks sub-contracted by Airbus LTP</p>

	<p>(4.2.2) and no sub-contracted task by LFV/COOPANS (4.2.7).</p> <p>4 – To address Ethics recommendations from the <b>Ethics Summary Report</b>: addition of WP6 Ethics requirements, deliverable D6.1 and correction of Section 5.1 Ethics.</p> <p>5 - Editorial changes:</p> <ul style="list-style-type: none"> <li>• Section 1 Excellence – Bullet ‘Master Plan Level 1’: last sentence of ‘Deployment Scenario’ paragraph clarified, various editorial correction in 1.3 (a) and 1.3 (b)..</li> <li>• Project, Work Packages and Deliverables naming and numbering normalised and brought in line with H2020 Portal:</li> <li>• systematically adding a dot between PJ and 20 to read ‘PJ.20’: in sections 1.1, 1.3 (b), 3.1,;</li> <li>• Deleting leading zero in Work Packages and Deliverables numbers, consistent use of abbreviations and capital letters in names of Work Packages and Deliverables: in sections 1.3 (b) - Figure 6, 3.1 - Figures 7, 8 and text, 3.2 - Figure 10, 3.4 and sections 4 and 5.</li> <li>• Consistent use of term ‘Data Set’ in sections 3.1 (table) and 3.2 (WP3).</li> <li>• For improved legibility, expanding abbreviations and completing names of WP2.02 and WP4.</li> <li>• Section 3.3 – clarified that Airports are part of Service Providers by removing reference to ANSPs only and corrected FSP consortium allocation as part of Ground Industry.</li> <li>• Section 3.4 – Corrected D2.3 deliverable number and duration, clarified non-contractual deliverable on Standardisation and Regulatory Needs yearly update in WP2.04 and WP3.03.</li> <li>• Replacing ‘Proposal Template’ by ‘Description of Action’ in footer.</li> <li>• Section 4.1.1.11 – ENAIRE: addition of text under Contribution (SESAR Vision update).</li> <li>• Section 4.1.1.12 ENAV: modified profile after “ENAV Group consists of”.</li> <li>• Section 4.1.1.18 – NATS: addition of text under Contribution section for WP2, WP3 and WP4.</li> <li>• Section 4.1.1.14 – Indra: replaced with new text the whole Contribution section and updated the text on IBC LTP.</li> </ul> <p><b>D – Change of Project start date to 01/12/2019 and project duration from 36 to 37 months. This change concerns the overall DoA part A and part B Work Packages, Milestones and Deliverables.</b></p> <p><b>E – Deletion of Section 4.3 ‘Global budget approach taken by the SJU Members’ – not applicable to the Grant Agreement.</b></p>
--	---

## Table of Contents

<b>1</b>	<b>EXCELLENCE .....</b>	<b>7</b>
1.1	OBJECTIVES .....	11
	[PJ.20 W2 - AMPLE]	

1.2	RELATION TO THE WORK PROGRAMME (SESAR JU SINGLE PROGRAMMING DOCUMENT 2019-2021) .....	13
1.3	CONCEPT AND METHODOLOGY; QUALITY OF THE MEASURES .....	15
<b>2</b>	<b>IMPACT .....</b>	<b>20</b>
2.1	EXPECTED IMPACTS .....	20
2.2	MEASURES TO MAXIMISE IMPACT .....	21
<b>3</b>	<b>IMPLEMENTATION .....</b>	<b>24</b>
3.1	WORK PLAN – WORK PACKAGES, DELIVERABLES .....	24
3.2	MANAGEMENT STRUCTURE, MILESTONES AND PROCEDURES .....	29
3.2.1	<i>Project Manager (PM)</i> .....	29
3.2.2	<i>Project Management Board (PMB)</i> .....	30
3.2.3	<i>Extended Project Management Board (EPMB)</i> .....	30
3.2.4	<i>Work Package Lead (WPL)</i> .....	30
3.2.5	<i>Work Package Team</i> .....	30
3.3	CONSORTIUM AS A WHOLE.....	31
3.4	RESOURCES TO BE COMMITTED.....	33
<b>4</b>	<b>MEMBERS OF THE CONSORTIUM.....</b>	<b>55</b>
4.1	PARTICIPANTS (APPLICANTS) .....	55
4.1.1	<i>Companies profile</i> .....	55
4.1.1.1	<i>EUROCONTROL - European Organisation for the safety of Air Navigation (coordinator)</i> .....	55
4.1.1.2	<i>AIRBUS SAS</i> .....	56
4.1.1.3	<i>DEUTSCHES ZENTRUM FUER LUFT - UND RAUMFAHRT EV</i> .....	58
4.1.1.4	<i>Valstybes imone "Oro navigacija"</i> .....	59
4.1.1.5	<i>POLSKA AGENCJA ZEGLUGI POWIETRZNEJ</i> .....	60
4.1.1.6	<i>Austro Control Österreichische Gesellschaft für Zivilluftfahrt MHB</i> .....	63
4.1.1.7	<i>Luftfartsverket</i> .....	65
4.1.1.8	<i>Naviair</i> .....	67
4.1.1.9	<i>DFS Deutsche Flugsicherung GMBH</i> .....	69
4.1.1.10	<i>Direction des Services de la Navigation Aérienne</i> .....	70
4.1.1.11	<i>Entidad Pública Empresarial ENAIRE</i> .....	71
4.1.1.12	<i>ENAV S.p.A.</i> .....	73
4.1.1.13	<i>HUNGAROCNTRAL MAGYAR LEGIFORGALMI SZOLGALAT ZARTKORUEN MUKODO RESZVENYTARSASAG</i> .....	76
4.1.1.14	<i>INDRA Sistemas, S.A</i> .....	77
4.1.1.15	<i>LEONARDO - Società Per Azioni</i> .....	78
4.1.1.16	<i>SAAB Aktiebolag</i> .....	80
4.1.1.17	<i>SINTEF AS</i> .....	81
4.1.1.18	<i>NATS (En Route) Public Limited Company</i> .....	82
4.1.1.19	<i>Avinor AS</i> .....	83
4.1.1.20	<i>Heathrow Airport Limited</i> .....	84
4.1.1.21	<i>Flughafen München</i> .....	86
4.1.1.22	<i>Schiphol Nederland b.v.</i> .....	87

4.1.1.23	<b>SKYGUIDE, SA Suisse pour les services de la navigation aérienne civils et militaires</b> .....	88
4.1.1.24	<b>Thales LAS France SAS</b> .....	91
4.1.1.25	<b>STICHTING NATIONAAL LUCHT- EN RUIMTEVAARTLABORATORIUM – silent partner</b> .....	93
4.1.1.26	<b>RIZENI LETOVEHO PROVOZU CESKE REPUBLIKY STATNI PODNIK – silent partner</b> .....	94
4.1.1.27	<b>Letové prevádzkové služby Slovenskej republiky, štátny podnik – silent partner</b> .....	94
4.1.1.28	<b>Croatia Control, Croatian Air Navigation Services ltd – silent partner</b> .....	95
4.1.1.29	<b>Irish Aviation Authority– silent partner</b> .....	97
4.1.1.30	<b>ATOS Belgium – silent partner</b> .....	97
4.1.1.31	<b>FREQUENTIS AG – silent partner</b> .....	98
4.1.1.32	<b>AIRTEL ATM Limited – silent partner</b> .....	99
4.1.1.33	<b>Groupe ADP– silent partner</b> .....	99
4.1.1.34	<b>Swedavia AB– silent partner</b> .....	100
4.1.1.35	<b>Flughafen Zürich AG – silent partner</b> .....	101
4.1.2	<b>Main profiles/CV (they may be the same person for more than one role)</b> .....	103
4.2	<b>THIRD PARTIES INVOLVED IN THE PROJECT (INCLUDING USE OF THIRD PARTY RESOURCES)</b> .....	106
4.2.1	<b>Linked to EUROCONTROL</b> .....	106
4.2.2	<b>Linked to AIRBUS</b> .....	106
4.2.3	<b>Linked to DLR (AT-One)</b> .....	107
4.2.4	<b>Linked to ON (B4)</b> .....	108
4.2.5	<b>Linked to PANSAs (B4)</b> .....	108
4.2.6	<b>Linked to ACG/COOPANS</b> .....	109
4.2.7	<b>Linked to LFV/COOPANS</b> .....	109
4.2.8	<b>Linked to NAVIAIR/COOPANS</b> .....	110
4.2.9	<b>Linked to DFS</b> .....	110
4.2.10	<b>Linked to DSNA</b> .....	111
4.2.11	<b>Linked to ENAIRE</b> .....	112
4.2.12	<b>Linked to ENAV</b> .....	112
4.2.13	<b>Linked to HC (FSP)</b> .....	113
4.2.14	<b>Linked to INDRA</b> .....	114
4.2.15	<b>Linked to LDO</b> .....	115
4.2.16	<b>Linked to SAAB (NATMIG)</b> .....	116
4.2.17	<b>Linked to SINTEF (NATMIG)</b> .....	116
4.2.18	<b>Linked to NATS</b> .....	117
4.2.19	<b>Linked to Avinor (SEAC2020)</b> .....	117
4.2.20	<b>Linked to HAL (SEAC2020)</b> .....	118
4.2.21	<b>Linked to MUC (SEAC2020)</b> .....	118
4.2.22	<b>Linked to SNBV (SEAC2020)</b> .....	119
4.2.23	<b>Linked to SKYGUIDE</b> .....	119
4.2.24	<b>Linked to THALES AIR SYS</b> .....	120
4.2.25	<b>Linked to NLR (AT-One) – silent partner</b> .....	121

4.2.26	<i>Linked to ANS CR (B4) – silent partner .....</i>	<i>121</i>
4.2.27	<i>Linked to LPS SR (B4) – silent partner .....</i>	<i>122</i>
4.2.28	<i>Linked to CCL/COOPANS – silent partner.....</i>	<i>122</i>
4.2.29	<i>Linked to IAA/COOPANS – silent partner .....</i>	<i>123</i>
4.2.30	<i>Linked to ATOS (FSP) – silent partner.....</i>	<i>123</i>
4.2.31	<i>Linked to FRQ (FSP) – silent partner .....</i>	<i>124</i>
4.2.32	<i>Linked to AIRTEL (NATMIG) – silent partner .....</i>	<i>124</i>
4.2.33	<i>Linked to ADP (SEAC2020) – silent partner.....</i>	<i>125</i>
4.2.34	<i>Linked to Swed (SEAC2020) – silent partner.....</i>	<i>126</i>
4.2.35	<i>Linked to ZRH (SEAC2020) – silent partner.....</i>	<i>127</i>
<b>5</b>	<b>ETHICS AND SECURITY .....</b>	<b>128</b>
5.1	ETHICS .....	128
5.2	SECURITY.....	128
	<b>REFERENCES .....</b>	<b>128</b>



## 1 Excellence

This project is included in the Single Programming Document 2019-2021 of the SESAR Joint Undertaking for SESAR 2020 Wave 2. It forms part of the Transversal Activities in the Industrial Research & Validation phase, developed under the SJU Private Public Partnership (PPP).

The SESAR Programme (called ‘the SESAR 2020 Research & Innovation (R&I) Programme’ for the period from 2015 to 2023) aims to modernise and harmonise the European ATM System from operational and technological perspective. It is an essential component of the Single European Sky (SES) initiative. It contributes to achieving its high-level goals and performance ambitions.



Figure 1: SESAR 2020 Programme phases

SESAR 2020 Programme activities are undertaken based on a phased work programme to help the development of key topics relevant for Air Transport evolution. The Programme enables transition along its phases from Exploratory Research (ER) to Industrial Research (IR) and to bridge the research and innovation with deployment (Very Large Scale Demonstrations (VLDs)). It also must support the need to focus on an integrated product, called SESAR Solution, its validation and Very Large-scale Demonstration. Transversal Activities ensure structured integration of the Solution validation results also supports the SESAR Programme. ‘Master Planning’ is one of such activities.

The SESAR 2020 Programme is the R&I part of the SESAR project defined in response to the Single European Sky (SES) initiative, which aims to achieve more sustainable and high-performing aviation in Europe<sup>1</sup>. The SESAR project (known as the SES technological pillar) is the vast European ATM modernisation initiative striving to coordinate European efforts for the research, development and deployment of next-generation of ATM Solutions. Therefore, the SESAR project relies on a continuous innovation loop strongly connected to European Union (EU) policy priorities, and bringing together performance based development and deployment processes as depicted in Figure 2 :

<sup>1</sup> COM (2008) 389/2 of 25 June 2008



Figure 2: SESAR continuous innovation loop

At the core of this continuous innovation loop, the main objective of the European ATM Master Plan (ATM MP) is **to provide direction to the two SESAR processes of development and deployment** and to document for the European aviation community the associated common roadmap of required SESAR Solutions.

This is in line with the EU Regulation No 409/2013 defining the ATM Master Plan as “*the roadmap driving the modernisation of the European ATM system and connecting SESAR research and development with deployment. It shall be the key SES instrument for the seamless operation of the EATMN and the timely, coordinated and synchronised SESAR deployment.*”

**The European ATM Master Plan hence defines the forward-looking Vision for the future European ATM system combined with the agreed roadmap that connects ATM research and development activities with deployment scenarios to achieve the associated SES performance objectives expressed in the form of performance ambitions.** Furthermore, the Master Plan defines following a **Business analysis**, the **Essential Operational Changes (EOC)**: the ‘*game changers*’ that contribute to achieve the Vision. It identifies related priority **Deployment Scenarios for SESAR Solutions** and actions that civil and military ATM stakeholders (Airspace Users, ANSPs, Airport Operators and Network Manager) will have to implement at a given time and place.

The ATM MP will be updated in collaboration and consultation with the entire ATM community. Updates will be delivered to the SJU which has the final responsibility of submission of the ATM MP to SJU Administrative Board for adoption.

The SJU is responsible for the execution and maintenance of the ATM MP, as the plan evolves following the results of the research and development activities coordinated by the SJU, and the deployment plans, implemented by the other stakeholders of the SESAR project. Nevertheless, at SESAR2020 programme level, the core part of the work to **maintain the ATM Master Plan is organised under one of its Transversal Activity projects. The proposal for PJ.20 W2 ‘Master Planning’ project is defined to fulfil this role.**

The European ATM Master Plan is composed of three Levels as described below and depicted in:



**Figure 3: The three levels of the European ATM Master Plan**

- **Master Plan Level 1: Executive view** is defined in order to steer SESAR development and deployment. It outlines the **SESAR vision**; defines **Performance Ambitions** associated with the vision; defines **Essential Operational Changes**; provides **Deployment Views**; presents a holistic **Business View** on costs and benefits for the deployment of SESAR; and identifies **Risks** associated with the ATM Master Plan implementation.

The **SESAR vision** provides a high-level view of the future European ATM system. It reflects the original goals captured in the SES II initiative, which calls for ‘more sustainable and better performing aviation’<sup>2</sup>], and takes on board the significant evolutions in insight, strategy and policy (e.g. Flightpath 2050 - Europe’s Vision for Aviation<sup>3</sup>), and ATM developments that have occurred since the previous Master Plan Level 1 edition.

The **Performance Ambitions** provide a common reference for the ATM stakeholder community with which to define SESAR development and deployment priorities. They remain so far compatible with the original SES II performance objectives.

The **Essential Operational Changes** (EOC) are on an abstract level the necessary blocks of changes to transform the ATM system delivering the SESAR Vision. In the draft MP 2019 Edition, SESAR Solution Deployment Scenarios are allocated to nine EOCs that embrace the entire ATM Master Plan up to its Vision Phase C.

A **Deployment Scenario** summarises a set of assumptions about the deployment of a SESAR Solution or a group of SESAR Solutions that belong to the same architectural capability, and for which a synchronised joint deployment would create synergies in the planned operating environment. A Deployment Scenario therefore represents one potential variant of future deployment. At the level 1 of the Master Plan, it allows for certain level of uncertainties, and is therefore not to be taken as a firm plan.

Deployment Scenarios are **prioritised top-down**, during the MP Level 1 update campaign, based on their alignment with the SESAR Vision and their expected contribution to performance and Cost Benefit Analysis (CBA) information.

<sup>2</sup> Regulation (EC) No 1070/2009 of The European Parliament and of The Council of 21 October 2009 amending Regulations (EC) No 549/2004, (EC) No 550/2004, (EC) No 551/2004 and (EC) No 552/2004 in order to improve the performance and sustainability of the European aviation system.

<sup>3</sup> <https://ec.europa.eu/transport/sites/transport/files/modes/air/doc/flightpath2050.pdf>

As a result of this top-down prioritisation, the **Operational & Deployment Views in the Level 1 document** show for each EOC, the SESAR development activities and Deployment Scenarios of mature and nearly mature Solutions. In addition, for mature Deployment Scenarios, these Views include a **high-level SESAR roll-out plan** to highlight required synchronised deployment by stakeholders and **critical** CNS & Infrastructure support for their deployment. In these Views, Standardisation and Regulatory Needs associated to the prioritised Deployment Scenarios are also included.

The **Business View** provides a holistic view of the socio-economic benefits and investment needs for deployment of SESAR Solutions. It also provides the business case for Essential Operational Changes considering the need for synchronisation and financial incentives mechanisms. The business case results from the part of SESAR already deployed are also provided.

In looking at **Risk management**, the Master Plan addresses the most significant **risks** associated with the delivery of the Essential Operational Changes for achieving the outlined Performance Ambitions. Determining risks does not imply that they will actually materialise, rather that these risks have been identified and shall be adequately managed so that they do not affect the delivery of the Master Plan. Mitigating actions are described to explain how the risks are to be managed.

- **MP Level 2: Planning & Architecture View** – provides the **Development planning and Reporting of SESAR 2020**. To do so, it analyses information captured in the current **Integrated Roadmap/Data Set**<sup>4</sup>, structured in the Architecture and showing the progress of the developments in the R&D Projects (potential SESAR Solutions). This information includes results of Solution projects in the form of Validation reports, Validation Targets and Performance Assessments linked to Level 1 Performance Ambitions, Deployment Scenarios, SESAR Solutions, **Operational Improvements (OI)**, **Operating Environments (OE)**, Standardisation needs, **System Enablers (EN)**, associated Stakeholders, etc. This Data Set information is part of the SESAR Architecture and is under a continuous and rolling data change control management to track and reflect changes over time.

The MP Level 2 is constituted of one Data Set baselined yearly and released on the ATM Master Plan publication.

Although only digitally available in the eATM portal (public area), the MP Level 2 is the basis:

- To carry-out yearly a business assessment (comparing the evolving MP Level 2 with the MP Level 1) to provide SESAR2020 development progress reporting to the SJU and its Governing bodies;
  - To produce the MP Level 3 (the Deployment Planning and Reporting), and in the MP update Campaign year, the MP Level 1 (e.g.. the Deployment Scenarios, the **Operational & Deployment Views roll-out plans**, Regulatory and Standardisation Needs).
- **MP Level 3: Implementation view** provides yearly the Deployment Planning & Reporting of SESAR Solutions<sup>5</sup> within the **Implementation Plan and Implementation Report**. The Master Plan Level 3 is developed in reference to the Levels 1 and 2. The Monitoring overview provides further information about the implementation progress.

The **Implementation Plan** brings together and provides the framework for the commonly agreed actions to be taken by ECAC stakeholders, for the implementation of SESAR.

The **Implementation Report** reports on the actual progress compared to the Plan.

---

<sup>4</sup> The terms ‘Data Set’ and ‘Integrated Roadmap’ were a source of lot of confusion and misunderstandings during SESAR 1 and SESAR 2020 Wave 1. In brief, any Data Set holds as a subset of its information: the Integrated Roadmap. The successive Data Sets –and therefore Integrated Roadmap subsets – are managed in the SESAR Architecture (EATMA) and used for programme execution and Master Plan update. To avoid further confusion in this document, only the term Data Set is used.

<sup>5</sup> The MP Level 3 also holds few Implementation Objectives, typically linked to a Regulation or preceding the existence of SESAR Solutions, which are not referenced to any SESAR Solution. Therefore, the MP Level 3 will be exhaustive in considering SESAR mature Solutions, but will also include more.

## 1.1 Objectives

As mentioned above, the SJU uses the ATM MP to steer the execution of the SESAR 2020 programme and the SESAR 2020 Solutions.

To maintain the ATM MP, PJ.20 W2 will be the continuation of PJ.20 (Master Plan Maintenance) of SESAR 2020 Wave 1 programme. Therefore, frameworks, methods and processes developed and used for SESAR 2020 Wave 1 will be reused and updated when needed for SESAR 2020 Wave 2.

According to the SESAR Joint Undertaking Single Programming Document 2019-2021, the mission of PJ.20 W2 is to **apply top-down logic to facilitate the strategic steering of the SESAR project in line with policy priorities**. To achieve this mission, a set of activities is defined (quoted below in italic) which is translated into PJ.20 W2 project objectives as follow:

- *Organising the Master Plan update campaign (one update campaign is tentatively planned to take place in 2022, precise year to be confirmed by the SESAR JU and its Governance Bodies) and publication of the ATM MP Level 1;*

**Objective 1.1 – Manage ATM MP Campaign** – PJ.20 W2 will run and monitor the ATM Master Plan update campaign. The scope of the campaigns includes all three ATM MP Levels, comprising the update of the “Executive Level-1” synchronised with the update and consolidation of the “Planning & Architecture Level-2” and of the “Implementation Level-3”. The **scope of the ATM Master Plan update will be agreed by the SJU Admin Board** upon recommendations from the SJU Executive Director taking advice from the Master Plan governance body: Master Planning Committee (MPC). The MPC includes representatives of the European Commission, EUROCONTROL, the Network Manager, Airspace Users, European Defence Agency (EDA), Air Navigation Service Providers, ground and airborne equipment manufacturers, airports, professional staff organisations in the air traffic management sector, the SESAR Deployment Manager (SDM), EASA and EUROCAE. **Once the scope of the campaign is agreed and to ensure a realistic, stable and timely updated European ATM Master Plan, PJ.20 W2 will initiate the campaign by setting up a transparent process and working arrangement at expert level including partner resources, data management and communication tools to ensure permanent engagement of and information sharing with all ATM Partners: i.e. beyond SJU and SESAR Partners, the European Commission, Airspace Users, ATM Professional Staff Organisation, the SESAR Deployment Manager (SDM), the European Aviation Safety Agency (EASA) EUROCAE, etc.**

**Objective 1.2 – Refine the SESAR Vision and Performance Ambitions** – from the last edition of the ATM Master Plan edition, the achievements and findings of SESAR Solutions, the SESAR Vision and Performance Ambitions will be revised using input prepared by PJ19-W2. Based on the EUROCONTROL long term forecast, PJ.19 W2 will carry-out trend analyses for the SES key performance areas to anticipate the evolution of the capability requirements of both the European civil and military ATM operating environments (airports, terminal areas, En-route and network) for the medium to long term time horizon. These performance long term requirements will be assessed in relation to the Performance Ambition level expressed in the last ATM MP Edition and the performance expected to be brought by the SESAR Solutions to guide the composition of Scenarios for Solutions deployment. The assessment may leave **to revision of the Performance Ambitions** set for the SESAR 2020 programme.

**Objective 1.3 – Refine high-level SESAR roll out plan and critical path** – PJ.20 W2 will **update the Deployment Scenarios** resulting from the successful validation of SESAR solutions and propose their prioritisation to define the **high-level rollout plan** showing Deployment Scenarios applicable to the various stakeholders.

PJ.20 W2 will also define the **critical path** identifying prioritised solution Deployment Scenarios and the key milestones for the deployment of the required CNS and Infrastructure changes.

**Objective 1.4 –Develop Business View** – including a holistic view of socio-economic benefits and investment needs of SESAR. In addition the Business View includes the following delivered by PJ.19 W2; the Business Case for Essential Operational Changes based consolidated CBAs and other Business Case Inputs (Safety, Human Performance, Environmental and other non-monetised performance assessments). The need to synchronise the deployment by different stakeholders and the use of financial incentives are



also addressed. In addition, the Business View comprises the Business Case of Results of SESAR deployment.

**Objective 1.5 – Review Standardisation and Regulatory Needs** - PJ.20 W2 will consider in the plan constraints stemming from links of Master Plan items (e.g. Deployment Scenarios and Implementation Objectives) with existing regulations. Also, it will identify as early as possible the potential need for new **regulatory actions** that might **foster the synchronised deployment of SESAR Solutions**. PJ.20 W2 will also benefit from PJ.19 W2 consolidation of the needs for new standardisation activities identified by SESAR solutions to support common industrialisation and interoperability. The timelines for standardisation activities will be monitored and taken into consideration to determine dates for the availability of SESAR solutions. This objective will also establish a clear **connection between the MP and EASA's EPAS as well as the ICAO GANP**.

**Objective 1.6 – Review SESAR Project Risk Management Plan** – PJ.20 W2 will identify the most significant **risks associated with the delivery of the Essential Operational Changes** for achieving the outlined performance ambitions. A Master Plan risk may be identified as an undesired event or series of events, which reduce confidence in the Master Plan. Their occurrence may represent a potential obstacle towards delivering the timely, coordinated and efficient deployment of the SESAR Solutions.

- *Publication of the ATM MP Level 2 and monitoring of its alignment and consistency with the Level 1*

**Objective 2.1 – Assess consistency between ATM MP Level 1 and Level 2** – on a yearly basis, PJ.20 W2 will provide a view of the progress of the SESAR development and validation activities. It will assess the progress of Solution development against the Master Plan Level 1: i.e. Solution timing, Solution scoping, % coverage of the different Vision phases, alignment with target maturity dates, expected % completion with regards to targeted performance ambitions. This assessment will rely upon clear and unambiguous information captured through PJ.19 W2 Content Integration on every SESAR Solution, every Deployment Scenario and every Essential Operational Change (EOC), and the readiness for deployment. This yearly assessment will be used to anticipate any change on the MP Level 1 and/or any SESAR Programme change, and the update of the MP Level 3. In case a change would affect substantially the Master Plan Level 1 or Level 3, PJ.20 W2 will bring the issue for consideration and decision making at the SESAR Governance bodies.

**Objective 2.2 – Contribute to the Data Set** – SESAR 2020 programme and Solutions are made of much information, changes which need to be properly controlled. A dedicated change management process (run by PJ.19 W2) will be used to support the evolution of SESAR 2020 information, especially information that is part of the SESAR Architecture including ATM Master Plan Level 1 and 2 information. This process will be a **transversal and rolling process involving not only PJ.19 W2, but also PJ.20 W2, SJU and the SESAR2020 Solution projects**. All the changes will be reflected in the **Data Set** (composed of OI, EN (including V3, IOC and FOC dates, and Stakeholders allocation), Deployment Scenario (DS) and mapping to the Essential Operational Change (EOC) – information stored into the SESAR Architecture. PJ.20 W2 will assess any change that may impact the ATM MP Level 1 and/or MP Level 3. PJ.20 W2 may also raise Data Set Change Requests when needed. In the year of the ATM MP update campaign, PJ.20 W2 will raise change requests to ensure full synchronisation of the Level 2 update with the Level 1 resulting from the MP update campaign.

**Objective 2.3 – to contribute to the ATM Master Plan update campaign** – to ensure a complete and consistent ATM Master Plan production, PJ.20 W2 will ensure the Level 2 update is synchronised with the MP Level 1.

- *Yearly Deployment Planning & Reporting of ATM MP Level 3*

**Objective 3.1 – to define a decision-making and monitoring process to promote SESAR Solutions defined in Level 2, as well as other elements, regulated or not (e.g. elements regulated through SES, or part of the ICAO GANP) into implementation view (Level 3)** – deployment planning translates a Solution in MP Level 2 into an implementation view. It relies upon a transparent and efficient decision-making and monitoring process. The proposed rules and process for promoting SESAR Solutions from Level 2 to Level 3 will be explicated in a formal method. The method will describe exceptional processing as well, explaining the rationale for treating a case as an exception calling for alternative decision making.

**Objective 3.2 – to deliver the Master Plan Level 3 Plan and Report** – Deployment Scenarios of the SESAR Solutions will be assessed to review and update the **Implementation Plan**, describing the Implementation Objectives and related Stakeholders Lines of Action. This will ensure full coordination with the SESAR Deployment Manager for the mutual alignment with the Deployment Programme. PJ.20 W2 will report on the SESAR Solution deployment status: i.e. it will report on the Solutions that are being deployed, and on Solutions not deployed (not part of any Stakeholder Lines of Actions) including, when available, reasons for this lack of deployment intention. The Implementation Plan will represent a common implementation reference, ensuring the link between development and deployment phases. It will be updated on a yearly basis.

Also the yearly **Implementation (Progress) Report** will provide a complete, consolidated ECAC-wide view on the status of progress of all the elements present in the Implementation Plan, using as sources existing implementation progress data (such as information collected via the EUROCONTROL LSSIP monitoring and reporting mechanism) and where possible other complementary, traceable sources (e.g. PRISME for air fleet, etc.), it takes due consideration of other reporting mechanisms due by regulations (e.g. SDM monitoring process, NM monitoring process, etc.).

**Objective 3.3 – to contribute to the ATM Master Plan update campaign** – to ensure a complete and consistent ATM Master Plan production, PJ.20 W2 will ensure the Level 3 Plan and Report update is synchronised with the MP Level 1.

- *The project will participate, support and contribute to the definition of the future SESAR artefacts organised and delivered in ad-hoc or on demand basis by the SJU and to be shared at governance and consultation bodies levels.*

**Objective 4 – to contribute to ad-hoc request from SJU** – PJ.20 W2 will provide expertise to participate, support and contribute to the definition of the future SESAR artefacts organised and delivered in ad-hoc or on demand basis by the SJU and to be shared at governance and consultation body levels, such as common projects or any specific mandate received from the SJU governance structure and related to Master Planning activities.

Each ad-hoc request will be assessed to see its feasibility (identify potential impact on current activities and propose the best way to perform it). Each ad-hoc request will be subject to a dedicated report.

## 1.2 Relation to the work programme (SESAR JU Single Programming Document 2019-2021)

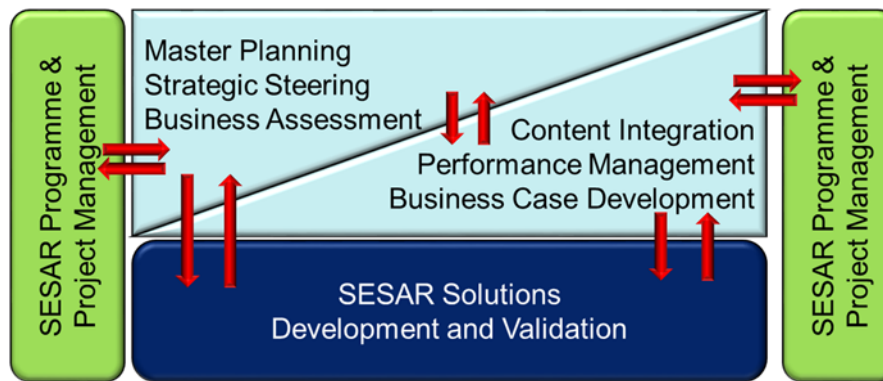
The SESAR 2020 Wave 2 Programme encompasses 11 projects working on 43 SESAR 2020 Solutions. As explained above, these projects need common guidance, tools and support to define a common architecture, to integrate, consolidate and ensure consistency and coherency of production and deliverables thus ensuring interoperability and scalability of results.

To ensure these common guidance and support to integrate and consolidate, the SESAR 2020 Wave 2 programme defines **Transversal Activities (TA)**:

- To apply top-down approach to facilitate the strategic steering of the SESAR Solution projects in line with Policy priorities. The focus of these Transversal Activities is to deliver and report against the three levels of the Master Plan;
- To support Programme execution and solution projects developments for delivering the SESAR Solutions in line with the ATM Master Plan.

The focus of these Transversal Activities is to coordinate and integrate operational and technological solution content (architecture, system engineering) and as such will support and guide the execution of the transversal processes (e.g. performance, security assessment, CBA, etc.). This to ensure their completeness, consistency and coherency from a holistic perspective.

Figure 4 illustrates the Transversal Activities within the SESAR 2020 W2 work programme and the interactions.



**Figure 4: SESAR 2020 W2 Work Programme structure**

Like the SESAR 2020 Wave 1 programme, Wave 2 structure is articulated with 2 major working processes:

1. The **Programme management processes** and life cycle aiming to streamline and manage work spread within the Programme and further broken down as follows:
  - Plan, monitor and control tasks and deliverables and enable collaboration and communication;
  - Enable the coordination of content integration output on a continuously iterative basis, using defined milestones (See Table 3.2 a) on work performed by SESAR Solutions, enabling development and validation levels;
  - Enable a release delivery mechanism, including validation roadmap maintenance processes, aimed at ensuring delivery of SESAR Solutions.
2. The **Business processes** aiming to steer, define, develop, integrate, develop and validate content that can be broken down as follows:
  - The **Master Planning process** aims to:
    - **Define the priorities** for both R&I and deployment based on performance ambition levels;
    - Consolidate Business Case information to **provide Business View**;
    - **Establish the link between development and deployment** phases by providing the high-level roadmap for the evolution of the ATM system in terms of performance, operation, technical aspects and architecture, standardisation and regulatory activities as well as the business implications and risks;
    - Support Programme progress monitoring and decision making at governance level by **carrying top-down analysis on Solution results** consolidated by the Content Integration, Performance Management and Business Case development processes.
  - **Content Integration, Performance Management and Business Case Development processes** and practices aim to:
    - **Maintain base-lined Programme-wide information**, and support and ensure its adaptation according to the work undertaken in the Programme in a controlled manner;
    - **Support the evolution and breakdown of the Master Plan** into configuration items (SESAR Solutions) and facilitate the evolution and change management of these (Data Set maintenance);
    - **Maintain a Performance Framework** as a reference within the S2020 Programme for structuring and conducting the assessment of the operational performance delivered by SESAR Solutions across all the KPAs in correspondence with SESAR performance-driven approach;
    - Ensure that **performance assessments and CBAs** developed by SESAR 2020 Solution are relevant, consistent, comparable and representative for all the SESAR Solutions as detailed in the SESAR2020 Performance Guidance Material (specifically setting common traffic days and assumptions, **setting baseline and reference Scenarios**, providing operating environments categorization) by giving guidance and support to SESAR 2020 Solution Projects.
    - **Integrate and consolidate** business, operational, technical and service content and architecture developed by SESAR 2020 Solutions and **ensure consistency and coherency**



at SESAR Programme level; produce the European ATM Architecture (EATMA) and the targeted architecture options for each phase of the MP Vision;

- **Consolidate and aggregate** business, operational and technical content, performance assessment and CBA; and **gather Business Case information**;
- **Support SESAR Solution maturity gate** related activities;
- Create reporting loop to **support decision-making at SESAR governance** and master planning levels.
- Through SE Data Management, **provide aggregate information** that will support the assessment and decision making processes described above.

Activities comprised in the block “SESAR Solutions Development & Validation” aim to structure and perform the work at SESAR 2020 project level and progressively increase SESAR Solution maturity, with the final objective of delivering a SESAR Solution Packages for industrialisation and deployment.

### 1.3 Concept and methodology; quality of the measures

#### (a) Concept

The main purpose of the European ATM Master plan is to steer development, validation and deployment of the SESAR Solutions necessary to reach the SES performance objectives. From the innovative ideas captured as embryonic SESAR Solutions, this plan is the bridge to realisation. Even if referred to in R&D as ‘solutions’, these ideas still have to become real, tangible ‘solutions’. Not all of these solutions can be expected to prove having sufficient capability and feasibility at the end of their development (R&D phase). The Master Planning process has to cope with this uncertainty and has to reflect the growing maturity of the individual ‘solutions’. It has also to establish transparent and traceable processes for prioritisation, in which stakeholders have to consolidate their viewpoints. Finally the European ATM Master Plan has to be ambitious, and at the same time realistic and credible for the European Aviation community.

To achieve this, **PJ.20 W2 follows a 2-phase approach for the planning**. There is a first phase of **high-level planning** when R&I have not yet provided detailed results: there are still many uncertainties and Deployment Scenarios provide top-down assumptions on where and when SESAR Solutions could improve the performance in the ECAC region. This high-level planning, provided in the Master Plan Level 1 document, is based on the vision and performance ambition, and is composed of deployment roadmaps and business impact. Then, a more **detailed planning** phase is made for each SESAR Solution individually, depending on its maturity (based on R&I results described in Master Plan L2 Data Set), leading to the Master Plan Level 3 with deployable items and concrete stakeholder actions on which implementation reporting is made.

An important element of the PJ.20 W2 approach in both planning phases is a **broad stakeholder involvement**, be it as partners in the project itself or as external experts in temporary working arrangements. Realism and credibility of the plans can thus be ensured prior to any formal consultation. The stakeholder involvement highly benefits from established EUROCONTROL mechanisms and well established know-how.

#### (b) Methodology

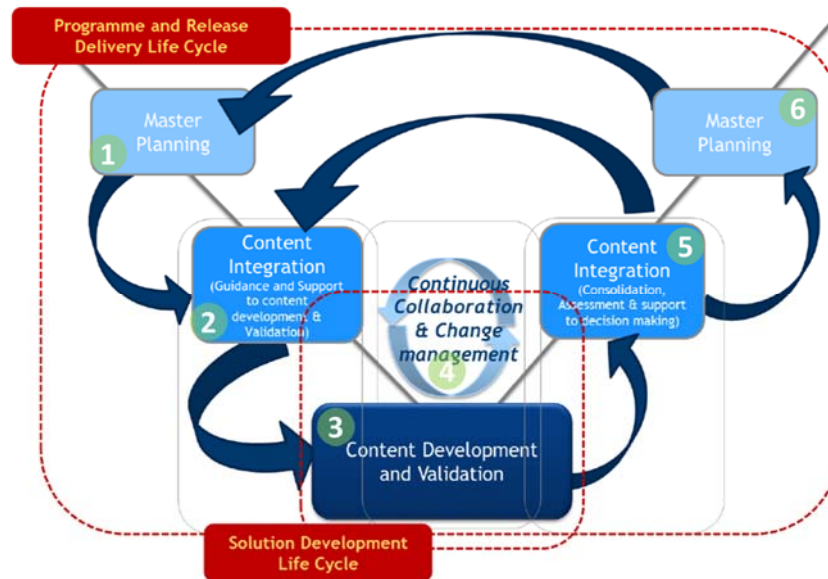
##### Master Planning life cycle within the SESAR 2020 Programme

SESAR 2020 ensures a constant flow of promising ideas from Exploratory Research (ER) through Industrial Research (IR) and demonstrations which can be then proposed for Industrialisation and Deployment. This is achieved through:

- Activities performed by SESAR 2020 Solution projects in charge of developing and maturing SESAR Solutions;
- Activities performed by Transversal projects in charge of steering and consolidating (through consistency and coherency checks) the SESAR Solutions.

Effective coordination between the Solution and Transversal layers is essential in contributing to the overall success of SESAR 2020. To facilitate this coordination, transversal activities repeatedly follow the same

annual cycle - the SESAR 2020 interwoven life cycle - and have the same annual set of deliverables. This SESAR 2020 life cycle is depicted in Figure 5.



**Figure 5: SESAR 2020 interwoven life cycle**

The SESAR 2020 interwoven life cycle follows six steps:

- Driving the modernisation of ATM and governing the transition from research to deployment, the Master Planning defines the strategic Executive view for SESAR 2020, through Performance Ambitions, associated prioritised Deployment and Business Views. The definition and maintenance of this strategic view is performed by the PJ.20 W2 project;
- Starting from this strategic view, Content Integration processes organise and enable tactical steering, and provide a development framework to support and integrate the work done by SESAR 2020 Solution projects. This ensures that the Programme delivers in time and scope the ambitions outlined in the ATM Master Plan. This work is performed by the PJ.19 W2 project (Content Integration, Performance Management and Business case).
- In line with the European ATM Architecture (EATMA), performance and System Engineering Data Management frameworks, and Performance Targets derived from the Master Plan Performance Ambitions, SESAR 2020 Solution projects develop, verify and validate SESAR Solutions in view of potential future deployment.

Work done by SESAR Solutions in this phase also provides identification of standardisation, regulation, industrialisation needs and deployment aspects of the SESAR Solutions developed thus providing major input to Master Planning through the established interface of PJ.20 W2 with PJ.19 W2 as part of the formal change management process.

Any request for a change to agreed objectives for SESAR 2020 Solution projects, is analysed at the Content Integration level, assessed in terms of impact and applied via a formal change management process.

Once validation activities at a given maturity level are completed, SESAR 2020 Solution projects go through a Maturity Gate process to assess the achieved maturity of the relevant SESAR Solution.

- Coherence and consistency of the work conducted within different SESAR 2020 Solution projects is ensured through a continuous and rolling collaboration process put in place at the Content Integration layer. The contributions from different SESAR Solution projects are integrated into the SESAR 2020 Architecture release, possible operational and/or technical inconsistencies identified and, communicated to SESAR Solution projects and SJU, and resolution actions taken. PJ.19 W2 performs

this with strong contribution from the PJ.20 W2 (especially on change management control of ATM MP Level 1 and Level 2 information, and the production of the Data Set).

- Content produced by SESAR 2020 Solutions projects is further consolidated into the released SESAR 2020 Architecture used to update the SESAR 2020 References material. This released information is used to start the performance aggregation and consolidation performed by PJ.19 W2.

The released SESAR 2020 Architecture includes the Data Set information used by PJ.20 W2 to support the yearly analysis of alignment and consistency between ATM MP Level 1 and Level 2, and to provide a view of the progress of the development activities in perspective of ATM MP Level 1. This analysis will provide clear and unambiguous information on every SESAR Solution and every Essential Operational Change (EOC).

While Level 2 of the ATM MP will serve as 'source' of all deployment activities, also for those included in Common Projects, PJ.20 W2 will develop the ATM MP Level 3 in order to maximise the complementarity between all deployment plans and the related reporting activities.

- At the end of this cycle, all materials are used to feed a possible next iteration update to the Master Plan documentation.

For a Master Plan update campaign, this work will comprise:

- The review and consolidation of the Deployment Scenarios,
- The review and consolidation of the Standardisation and Regulatory needs,
- The development of the Business View
- The synchronisation of the 3 ATM MP levels (level 1, 2 and 3).
- Production of written documents of these levels, and
- Updates to the description of the levels in the eATM Portal (public area).

**PJ.20 W2 is proposed to support Master Planning** by defining the strategic view for SESAR 2020 and through integration, consolidation, assessment and support for decision making. PJ.20 W2 will also contribute to the continuous collaboration process (change management).

PJ.20 W2 methodology **will always ensure engagement** of and information sharing as appropriate **with all ATM Partners**: i.e. SESAR Partners, Airspace User Associations, ATM Professional Staff Organisation, SESAR Governance bodies (SJU, Master Planning Committee, SJU Admin Board), the SESAR Deployment Manager (SDM), the European Aviation Safety Agency (EASA), the European Standardisation Organisations (ESO) and the Single European Sky Unit of the European Commission. The methodology will enable the gathering of feedback from these stakeholders.

PJ.20 W2 will set-up **a transparent process and work environment including partner resources, data management and communication tools** to ensure a realistic, stable and timely updated European ATM Master Plan. By making the ATM MP information available on the European ATM Portal, PJ.20 W2 will provide visibility on the performance issues to the overall SESAR Programme and each of its SESAR Solutions. This will enable the SESAR Solution projects to keep their work focussed on performance and will enable the SJU to re-focus its work programme in response to emerging needs revealed by performance assessment.

Owing to **coordination with the SDM**, PJ.20 W2 will enable seamlessly a timely, synchronised and coordinated deployment of agreed SESAR Common Projects. Furthermore, the overall MP Level 3 reporting will enable to provide feedback of the Implementation progress.

### **Master Planning working together**

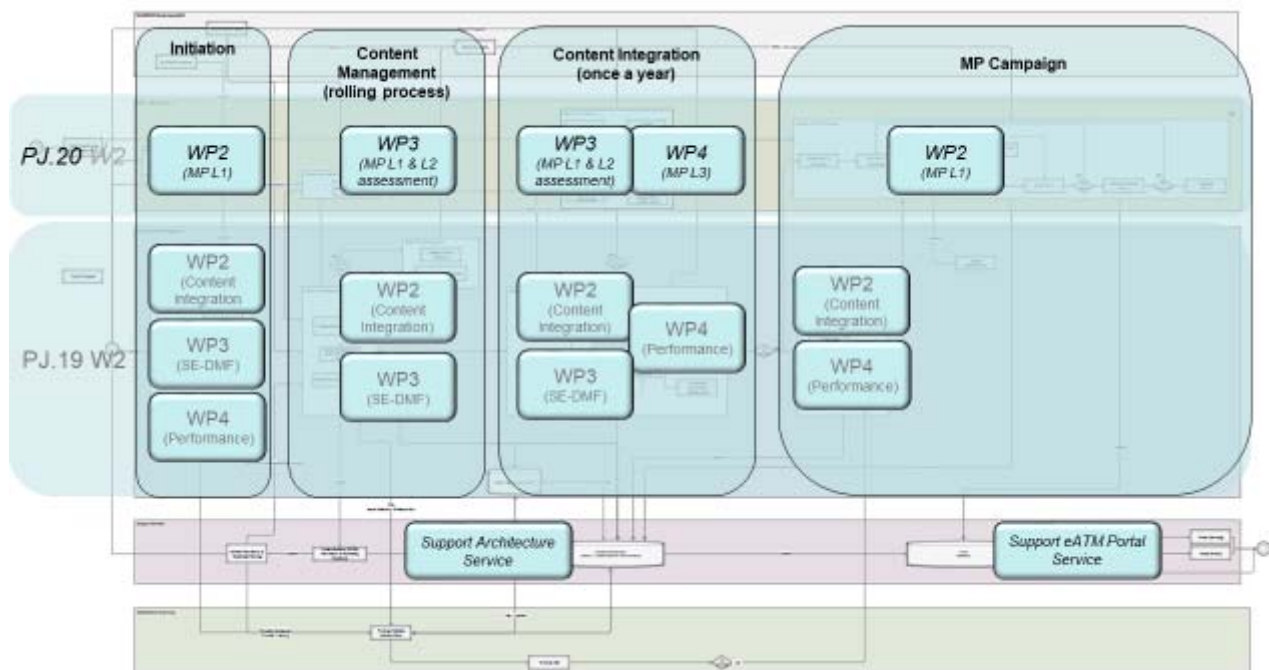
PJ.20 W2 will reuse any methodology/framework defined and used for SESAR 2020 Wave 1, and if and where necessary, amend it based on the lessons learned which will be appended to PJ.20 Wave 1 Final Project Report. These methodology amendments will be addressed during PJ.20 W2 initiation, thereafter changes will be still possible but decided carefully with full partner engagement.

To ensure that its deliverables will be credible, transparent and realistic, the methodology is based on an open, shared code of conduct established between PJ.20 W2 partners who will:

- demonstrate commitment and engagement;
- contribute from an impartial expert perspective;
- communicate openly and fairly, based on mutual trust and confidence;
- be pragmatic and work efficiently to develop high quality products;
- apply the 80/20 rule whenever possible (e.g. 80% project partner agreement on deliverables);
- work in small groups with clearly defined tasks and outputs - not all members need to be represented in all tasks and meetings;
- make all information accessible once an acceptable initial level of maturity has been achieved;
- acknowledge and benefit from our cultural and organisational diversity;
- respect opposing views, and document and track them;
- speak with each other personally, in critical situations via telecom, WebEx or one-to-one.

### Master Planning interaction with SESAR 2020 Projects & SESAR Governance

As described above, PJ.19 W2 and PJ.20 W2 activities are highly inter dependent. Strong collaboration is mandatory to ensure the most efficient transversal activities. In order to ensure this strong link and to avoid overlaps and gaps, an integrated working together process is defined between the two SESAR 2020 transversal projects as shown in the figure below.



**Figure 6: SESAR 2020 integrated working together process**

In this context, PJ.20 W2 will specifically:

- Contribute to the production of the Data Set (activity led by PJ.19 W2) and perform the yearly consistency check of ATM Master Plan Level 1 and 2. This analysis will include clear and unambiguous information on every SESAR Solution, every R&D activity and every Essential Operational Change, and the assessment of their readiness for deployment and eventual implementation.
- Once a year, using the content produced by the SESAR Solutions integrated into the SESAR Architecture (from PJ.19 W2), conduct a series of iterative analysis to support deployment planning, using as input:
  - the EUROCONTROL long term forecast,
  - associated future ATM capability requirements of the European ATM Operating Environments (airports, terminal areas, En-route and network) provided by PJ19-W2,



- the results of the Implementation monitoring provided by the ATM MP Level 3 Reports,
  - the known Performance Targets established within the Single European Sky Performance Scheme.
- After the capture of R&I results, establish whether SESAR performance ambitions would be met by these results. Using the aggregated and consolidated CBAs and the Business Cases inputs from PJ.19 W2.

The outcome is a set of Solution Deployment Scenarios with associated Business Cases, which when mature and closer to deployment start, are further developed to provide detailed Implementation Planning at ATM MP Level 3.

- At the time of the Master Plan update campaign, PJ.20 W2 will update and synchronise the 3 ATM MP levels (level 1, 2 and 3) by:
  - The review and consolidation of the Deployment Scenarios,
  - The review and consolidation of the Standardisation and Regulatory needs,
  - The development of the Business View
  - Production of written documents of these levels, and
  - Updates to the description of the levels in the eATM Portal (public area).
- The request for sufficient stakeholder commitment to the process and results will be addressed by a wide participation of partners in PJ.20 W2 and by informal consultations of experts and representatives of all relevant stakeholders during the campaign phase – before the formal stakeholder consultation.

This work will be collaborative to ensure the European wide buy-in of the ATM MP. This will be ensured by a continuous transparent information and constant contribution of project partners. As and when directed by the SJU, the involvement of, and communication to, the European ATM Stakeholders via EUROCONTROL Working Arrangements may be used to ensure this buy-in. Furthermore, if required by the SJU, the ATM Master Planning Committee, will be involved all along the development of the three levels of the Master Plan, as described in the section on dissemination and exploitation and communication activities.

In particular, for all projects interested in civil-military coordination, EUROCONTROL offers to organise the military involvement and military buy-in at technical level. States or military organisations will sign separate contracts with EUROCONTROL to join a coordination platform called MEPS (Military Engagement Plan for SESAR). This coordination platform will ensure the provision of consolidated military views and will use the established EUROCONTROL working arrangements coordinated with the European Defence Agency and NATO.

Also, PJ.20 W2 will cooperate to ensure access to appropriate Airspace User input during the ATM MP activities. This input will be ensured by EUROCONTROL signing separate contract(s) on behalf of PJ.20 W2 consortium to have access to Airspace User experts to support in particular MP Level 3 Maintenance, Performance View and Business View development.

In summary, PJ.20 W2 will interact actively with PJ.19 W2 to support the Data Set maintenance activities, the performance consolidation and business case production.

In parallel, PJ.20 W2 will closely support and interact with SJU to support SESAR 2020 Programme management and decision-making process and to participate, support and contribute to the definition of the future SESAR artefacts organised and delivered in ad-hoc or on demand basis by the SJU and to be shared at governance and consultation body levels, such as common projects or any specific mandate received from the SJU governance structure and related to Master Planning activities.

## 2 Impact

### 2.1 Expected impacts

PJ.20 W2 updates and delivers the European ATM Master Plan thus supporting and enabling the positive impacts on Aviation and Society that are expected from SESAR within the 2035+ timeframe. In application of Article 3 of Regulation (EU) No 409/2013, the ATM-Master Plan (ATM-MP) has been given the status of being *“the roadmap driving the modernisation of the European ATM system and connecting SESAR research and development with deployment. It shall be the key SES instrument for the seamless operation of the EATMN and the timely, coordinated and synchronised SESAR deployment. The updates of the ATM Master Plan shall contribute to achieving the European Union-wide performance targets and maintain consistency between these targets, SESAR deployment and SESAR research, development, innovation and validation activities. For this purpose, the ATM Master Plan updates shall take into account the Network Strategy Plan and the Network Operation plan.”* It defines the essential operational changes that need to occur in order to achieve the SES objectives and identifies the related functionalities that operational stakeholders will have to implement at a given time and place. It provides the basis for the timely, coordinated and efficient deployment of new technologies and procedures, whilst ensuring alignment with International Civil Aviation Organisation (ICAO) standards for global interoperability and synchronisation.

#### a) Technical Impact

PJ.20 W2 provides a platform (planning process, tool access and using EATMA) for all SESAR 2020 projects to understand how the SESAR Solutions fit into the long-term deployment perspective. This PJ.20 W2 platform therefore supports overall SESAR 2020 Programme R&I coherence and provides for deployment, an overall integrated implementation view, encompassing both incentivised elements (Common Projects) and individual, local endeavours.

By developing a consolidated, realistic timescale, addressing all deployment aspects including cost benefit analyses and standardisation and regulatory dependencies, and developed in coordination with all ATM stakeholders, PJ.20 W2 will maximise the probability of a timely and synchronised deployment of validated, harmonised and globally interoperable SESAR Solutions to meet the above ambitions.

PJ.20 W2, by delivering the ATM MP Level 1, 2 & 3 and all related deliverables, will constitute an essential enabler of the implementing instruments of the Single European Sky technical pillar.

#### b) Economic Impact

PJ.20 W2 does not have direct economic impact. It rather promotes the impacts of SESAR. The economic impact of SESAR cannot be achieved if SESAR Solutions work independently without transversal oversight and support. PJ.20 W2 provide the needed oversight and support to ensure optimisation of impact through integration, alignment, consistency and coherency. The timely, synchronised and coordinated deployment of SESAR in accordance with the Master Plan will contribute to achieving the SES high-level goals and performance ambitions and overall economic benefits expected from ATM modernisation at European network level.

In the European ATM Master Plan Edition 2015, SESAR economic benefit were estimated to potentially reach between EUR 8 Billion and EUR 15 Billion per year by 2035 through costs savings and performance benefits for European ATM and aviation. This value has now been updated in the proposed draft ATM MP, 2019, and other benefits added, such as a more competitive and innovative EU aviation industry in the global (worldwide) aviation landscape and SESAR direct and indirect contributions to EU GDP.

#### c) Social Impact

As an enabler of SESAR, PJ.20 W2 contributes to realise the SESAR performance ambitions of sustaining traffic growth, while maintaining costs and, where possible, increasing the level of safety and security in ATM. PJ.20 W2 facilitates the setting and planning of increased mobility with a lower environmental impact.

In addition, the PJ.20 W2 by providing a roadmap for SESAR with early involvement and participation of Social Partners will facilitate long-term transition and social factors planning by individual ATM organisations.

## 2.2 Measures to maximise impact

Within PJ.20 W2, dissemination, exploitation of results and communication activities will be undertaken by each Work Package in accordance with its scope of activities. Beyond PJ.20 W2, these dissemination and communication activities will be undertaken by PJ.20 W2, as directed by the SJU following pre-coordination. In addition, any project communication will be subject to a dedicated SJU Governance decision.

### a) Dissemination and exploitation of results

PJ.20 W2 provides essential support for dissemination of SESAR Solutions as wide as possible within and beyond the SESAR 2020 Programme. All information will be made available via the SJU Extranet. In addition, a web based application – the **European ATM (eATM) Portal** will provide architecture information linked with an Executive view of the ATM Master Plan and European ATM Deployment monitoring tools.

The European ATM Portal has been developed in the context of the SESAR 1 Programme and further updated for SESAR 2020 Wave 1. It provides a web based presentation of the key elements of the European ATM Master Plan amongst other things. The portal is intended to be used primarily for internal SESAR 2020 purposes to support the MP update campaign. The portal is intended to be used for disseminating the SESAR 2020 results and worldwide communication. Therefore, the portal is made of public and restricted areas. The working (restricted) website is accessible only to SESAR 2020 contributors and provides them with information to support achieving their project objectives; while the public website provides consultation possibilities world-wide. Both sites allow access to information on Level 1, 2 and 3 of the ATM MP described, in reference to PJ.19 W2 Architecture information. They will also provide a mapping of the Master Plan with the GANP produced by ICAO. However, the working site provides access to more performance, programmatic and Architecture information and enables visualisations of past and future information status.



The targeted user categories of the portal are Executives, Deployment and Investment planners, Architects (Business, Operational and Technical) and Project managers of development projects. These roles are applicable both in the SESAR 2020 Programme and amongst the ATM Stakeholders.

The European ATM Portal can be accessed at the following web address: <https://www.eatmportal.eu/>. There are two options, access to the public area (without restriction) or the working area (requires login with suitable credentials).

***The maintenance of the eATM portal will be subject to a specific Service Support agreement between EUROCONTROL and the SJU. This agreement will cover mainly:***

- *The provision and maintenance of hosting the web infrastructure needed to deploy the eATM Portal;*
- *The administration of the eATM Portal access;*
- *The management of the eATM Portal evolution (capture and assess requests for evolution or changes; and their specifications, implementation and deployment;*
- *The maintenance of the eATM content (with a weekly update of the information displayed).*

### b) Communication activities

PJ.20 W2 will support manifold communication activities foreseen at Programme level. Furthermore, the project will perform 2 types of communication:

- Communication external to the project but internal to the SESAR 2020 programme;
- Communication completely external to SESAR.

The communication activities include several events such as the World ATM Congress taking place on a yearly basis. Additional publications on ATM Master Planning are envisaged as well. Therefore, communication activities will not be limited to the SESAR 2020 audience only, but will be wider to share knowledge, to learn and to capture any feedback from non-ATM audience.

To ensure that communication activity is given prominence in the project and that they are properly coordinated, a dedicated communication task will be defined at the PJ.20 W2 management level and a dedicated communication plan will be produced in collaboration with the SJU and the SESAR 2020 projects. Project Manager and Work Package Leaders will take the role of communication manager. Team members will support as required depending on the topics.

The goal of the PJ.20 W2 communication plan is to:

- Ensure that all stakeholders are equally informed of how, when, and why communication will happen. Stakeholders in this context are those individuals who have interest and influence in the project;
- Create a dialogue among team members and key stakeholders to gain acceptance of the project results;
- Provide opportunities for knowledge sharing, learning from similar work in ATM or in non-ATM domains and to capture feedback from stakeholder groups (be it SESAR 2020, ATM and non-ATM stakeholder groups);
- Take care of ambiguity;
- Increase knowledge about the project and why it is important.

**The ATM MP Update Campaign is a major activity** which will gain a high level of civil and military stakeholder and political interest. Communication activity will differ for each MP Levels:

- Communication activities for the **ATM MP Level 1** during the MP Campaign will normally include:
  - a high-level, political kick-off event to scope the ATM MP intended update;
  - the set-up of a dedicated working arrangement at expert contributor level including all ATM constituents to develop and recommend prioritisation of the MP contents.

In particular, the following PJ.20 W2 activities will be carried out to facilitate broad stakeholder input during the Campaign and will generate contents and tools useful in support of communication activities:

- the running of minimum two dedicated EUROCONTROL Member States Expert workshops to review and gather comments on the draft ATM MP contents;
- the development of the ATM MP Portal versions in support of this Expert consultation;
- the development of the public ATM MP Portal version to support worldwide communication of the synchronised 3 ATM MP levels once formal endorsement has been reached.

Following acceptance of the Master Plan Level 1 document by the political layer, its publication will be announced via a press release, formal communication to the EU, ICAO (Montreal and Paris) and links from high profile websites such as the SJU, European Commission and EUROCONTROL. These communication activities on the ATM MP should be undertaken directly by the SJU, PJ.20 W2 could support these communication activities if required.

- Communication for the **ATM MP Level 2** will be supported essentially by the eATM Portal developed, which consists basically in a database holding ATM MP information structured within SESAR Reference Architecture (maintained by PJ.19 W2).

The Portal will allow the users to browse through the Deployment Scenarios for SESAR Solutions, the Operational Improvement Steps and enablers composing the solutions. All the related information, such as Stakeholders involved in the deployment for a given solution, the deployment dates, the performance assessment, etc. will be made visible and understandable for the general public through the Portal.

Interoperability between SESAR/NextGen will be communicated and updated via the ATM Portal as well, if a synthetic roadmap for the avionics and ground systems is made available.

The standardisation roadmap will allow a comparison and synchronisation of regional/global standardisation plans. In particular, it will support the activities of the European ATM Standardisation Coordination Group (EASCG) and of the European UTM Standardisation Coordination Group



(EUSCG) help achieving the necessary level of interoperability between SESAR and NextGen and feed European's input to the development of ICAO's standardisation roadmap.

- The development and publication of the annual **ATM MP Level 3** Plan and Report documents involves wide stakeholder communication, including via the EUROCONTROL consultation bodies.

Publication of the Level 3 documents will be communicated via a wide range of methods including:

- EUROCONTROL website (in addition to the ATM MP Portal),
- direct transmission in hard and soft copy to State Focal Points,
- distribution in final form to participants in the above mentioned consultation bodies (States, ANSPs, Industry, military etc.).

### 3 Implementation

#### 3.1 Work plan – Work packages, deliverables

The project is organised with 5 different work packages. There is one Management related work package (WP1) and four others, each split into a certain number of activities and to a certain extent, coordinated independently by its WP Leader. The project structure is provided in Figure 6: PJ.20 W2 Work Breakdown Structure.

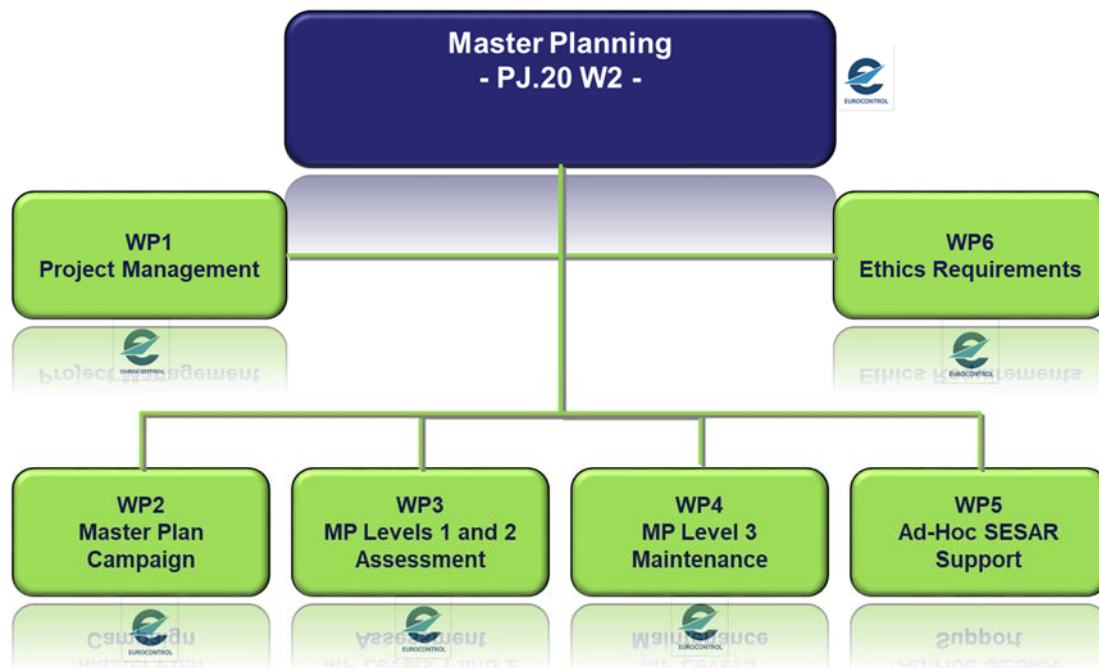


Figure 7: PJ.20 W2 Work Break Down Structure

The four main PJ.20 W2 Work Packages (WP) are defined as follow:

- **WP2 – Master Plan Campaign** will set up and coordinate the ATM Master Plan campaign. It will also update the ATM Vision & Performance Ambition, refine the high-level SESAR Solutions roll-out plan including critical path (SESAR development vs deployment activities); develop the Business View and update the Standardisation & Regulatory roadmaps;
- **WP3 - MP Levels 1 and 2 Assessment** will monitor the evolution and publish Level 2 of the Master Plan to ensure that it remains “SESAR Solutions centric”. WP3 will contribute to the Data Set campaigns (led by PJ.19 W2). It will also assess the content of this Data Set and perform consistency check between evolving Level 2 and Level 1. This analysis will be based on a clear and unambiguous information on every SESAR Solution, every R&D activity and every Essential Operational Change described in the Level 2 Data Set to assess and report on the progress of overall development activities in the perspective of the MP Level 1.
- **WP4 – MP Level 3 Maintenance** will maintain and deliver the MP L3 Plan and Report, providing an exhaustive view of SESAR deployment planning and progress (covering Solutions that are being deployed, but also on those not deployed, when available, the reasons for their non-deployment);

- **WP5 – Ad-Hoc SESAR Support** will be dedicated to provide SESAR programme with **expertise to participate, support and contribute to the definition of the future SESAR artefacts** organised and delivered **in ad-hoc or on demand basis by the SJU** and to be shared at governance and consultation body levels, such as common projects or any specific mandate received from the SJU governance structure and related to Master Planning activities. Each ad-hoc request will be assessed to see its feasibility (to find the best way to identify potential impact on current activities and propose the best way to perform it). Each ad-hoc request will be subject to a dedicated report.

Two other WPs are defined to comply with the H2020 regulations and to ensure coordination and support to the SESAR2020 Programme and SJU:

- **WP1 – Project Management** will **coordinate and monitor the project's** progress to accomplish the main objectives regarding time and resources. It will ensure PJ.20 W2 **coordination with and support provision to SESAR 2020 Programme/SJU** and fulfil the administrative requirements of the grant agreement.
- **WP6 – Ethics Requirements** will ensure the H2020 Ethics regulations are properly defined and applied for PJ.20 W2.

A detailed work package description follows in chapter 3.4 and detailed planning is available in the Gantt Charts in A detailed work package description follows in chapter 3.4 and detailed planning is available in the Gantt Charts in Figure 8: Project 20 Gantt Chart – WP1 & WP2 and Figure 9: Project 20 Gantt Chart – WP3, WP4, WP5 & WP6.

- Each Work Package covers several objectives (Ref. Section 1.1). The table below provides the mapping between PJ.20 W2 project objectives and the project Work Packages. It indicates also the role of the Work Package towards achieving each objectives:
- **Deliver** when WP is leading and responsible to deliver a specific item;
- **Contribute** when WP is contributing to an activity but not leading it.

PJ.20 Objectives	WP1 PJ Management & WP6 Ethics Requirements	WP2 Master Plan Campaign	WP3 MP Levels 1 and 2 Assessment	WP4 MP Level 3 Maintenance	WP5 Ad-Hoc SESAR Support
Objective 1.1 – Manage ATM MP Campaign	Contribute	Deliver (MP Level 1)	Contribute	Contribute	
Objective 1.2 – Refine the ATM Vision and Performance Ambitions		Deliver (ATM Vision & Performance Ambitions)			
Objective 1.3 – Refine high-level SESAR roll out plan and critical path		Deliver (SESAR Roll out plan & Critical Path)			
Objective 1.4 – Develop Business View		Deliver (Business View)			
Objective 1.5 – Review Standardisation and Regulatory Needs		Deliver (Standardisation & Regulatory Needs)			
Objective 1.6 – Review SESAR Project Risk Management Plan		Deliver (Risk Management Plan)			
Objective 2.1 – Contribute to the Data Set		Contribute	Contribute	Contribute	
Objective 2.2 – Assess consistency between ATM MP Level 1 and Level 2	Contribute		Deliver (Assessment report)		
Objective 2.3 – to contribute to the ATM Master Plan update campaign			Contribute (MP Level 2)		
Objective 3.1 – to define decision-making and monitoring process to promote SESAR Solutions defined in Level 2 into implementation view (level 3)				Deliver (deployment promoting method)	
Objective 3.2 – to deliver the Master Plan Level 3 Plan and Report	Contribute			Deliver (MP Level 3)	
Objective 3.3 – to contribute to the ATM Master Plan update campaign				Deliver (MP Level 3)	
Objective 4 – to contribute to ad-hoc request from SJU	Lead				Contribute

<b>PJ20 W2</b>	<b>Sun 01-12-19</b>	<b>Fri 30-12-22</b>
<b>WP1- Project Management</b>	<b>Sun 01-12-19</b>	<b>Fri 30-12-22</b>
Project Management	Sun 01-12-19	Fri 30-12-22
<b>DEL - Project Management Plan (PMP)</b>	<b>Fri 27-03-20</b>	<b>Fri 27-03-20</b>
Communication		
<b>DEL - Communication Plan</b>	<b>Fri 27-03-20</b>	<b>Fri 27-03-20</b>
Project Reporting 2020	Mon 04-01-21	Fri 26-03-21
<b>DEL - Management Progress Report 2020</b>	<b>Fri 26-03-21</b>	<b>Fri 26-03-21</b>
Project Reporting 2021	Mon 03-01-22	Fri 25-03-22
<b>DEL - Management Progress Report 2021</b>	<b>Fri 25-03-22</b>	<b>Fri 25-03-22</b>
Project Reporting 2022	Mon 05-09-22	Fri 25-11-22
<b>DEL - Final Project Report</b>	<b>Fri 25-11-22</b>	<b>Fri 25-11-22</b>
<b>PMB</b>	<b>Mon 06-01-20</b>	<b>Mon 05-12-22</b>
<b>EPMB</b>	<b>Wed 16-09-20</b>	<b>Wed 21-09-22</b>
<b>WP2 - Master Plan Campaign</b>	<b>Sun 01-12-19</b>	<b>Fri 15-07-22</b>
WP2.00 - Management		
<b>WP2.01 - ATM Master Plan update campaign management</b>	<b>Sun 01-12-19</b>	<b>Fri 15-07-22</b>
Assess feedback of SESAR 2020 Wave1 ATM MP	Sun 01-12-19	Wed 30-06-21
Define the ATM MP 2022 content	Fri 01-01-21	Fri 22-10-21
<b>DEL - Master Plan 2022 Annotated Outline Document</b>	<b>Fri 22-10-21</b>	<b>Fri 22-10-21</b>
Set up ATM MP 2022 production	Fri 01-01-21	Mon 29-11-21
<b>DEL - Preliminary Work Plan and Schedule for the Master Plan Update Campaign</b>	<b>Mon 29-11-21</b>	<b>Mon 29-11-21</b>
MIL - Inputs for the MP L1 delivered ro PJ.20 W2	Wed 05-01-22	Wed 05-01-22
MIL - BC information for MP 2022 delivered	Wed 05-01-22	Wed 05-01-22
Produce ATM MP 2022 draft	Mon 17-01-22	Fri 15-07-22
<b>DEL - Proposed European ATM Master Plan 2022</b>	<b>Fri 15-07-22</b>	<b>Fri 15-07-22</b>
<b>WP2.02 - SESAR Performance Ambitions and Vision update</b>	<b>Mon 25-10-21</b>	<b>Fri 14-01-22</b>
Review and Update the SESAR Performance Ambitions and Vision	Mon 25-10-21	Fri 14-01-22
Draft ATM MP 2022 – SESAR Performance Ambitions and Vision sections	Fri 14-01-22	Fri 14-01-22
<b>WP2.03 - Deployment Scenario, stakeholder and CNS and Infrastructure roadmaps</b>	<b>Mon 25-10-21</b>	<b>Fri 14-01-22</b>
Consolidate and optimise Deployment Scenarios and Roadmaps	Mon 25-10-21	Fri 14-01-22
Draft ATM MP 2022 - Deployment Scenario, Stakeholder and CNS and Infrastructure roadmaps sections	Fri 14-01-22	Fri 14-01-22
<b>WP2.04 - Standardisation and Regulatory Needs</b>	<b>Mon 25-10-21</b>	<b>Fri 14-01-22</b>
Review and Update the Standardisation and Regulatory needs	Mon 25-10-21	Fri 14-01-22
Draft ATM MP 2022 - Standardisation and Regulatory needs	Fri 14-01-22	Fri 14-01-22
<b>WP2.05 – Business View development</b>	<b>Mon 25-10-21</b>	<b>Fri 14-01-22</b>
Business View development	Mon 25-10-21	Fri 14-01-22
Draft ATM MP 2022 - Business View Section	Fri 14-01-22	Fri 14-01-22
Business View Companion Document	Fri 14-01-22	Fri 14-01-22
Business View Model	Fri 14-01-22	Fri 14-01-22

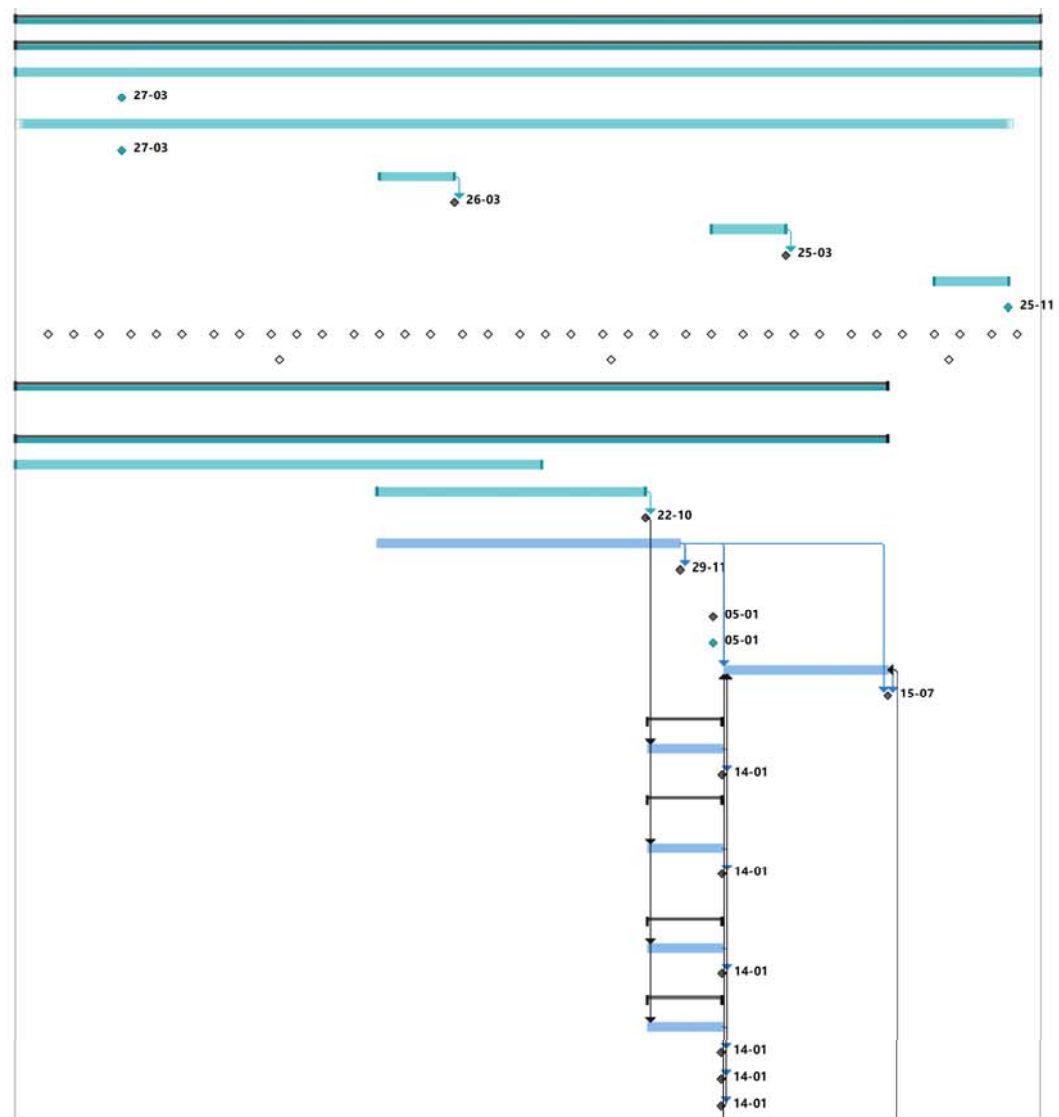


Figure 8: Project 20 Gantt Chart – WP1 & WP2

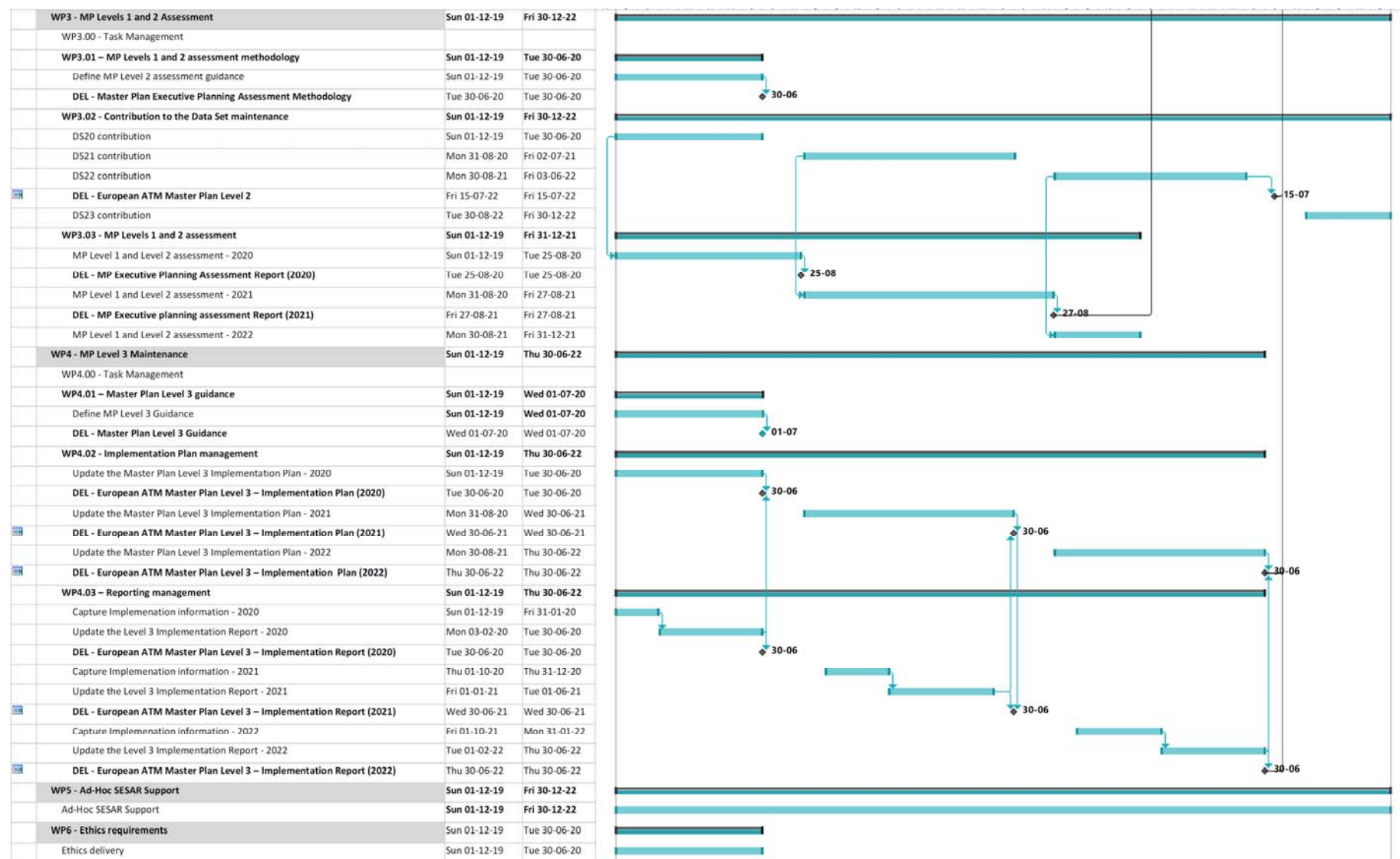


Figure 9: Project 20 Gantt Chart – WP3, WP4, WP5 & WP6

## 3.2 Management structure, milestones and procedures

A lean and efficient management structure will be applied that allows for fast decision making to ensure that the pursued objectives are met. The Project Management Plan will further refine management processes in line with the governance rules defined in the Grant Agreement and in the SJU Membership Agreement. All of the administrative and organisational management activities are hosted in WP1. This approach will allow an effective and efficient assignment of partner contributions, while facilitating separation of subject matter tasks from the administrative work necessary to carry out the project.

The project management structure is composed of two main levels that are presented in Figure 10. This is a generic project management structure given to explain the management structure and is not intended to show the WPs defined for PJ.20 W2.

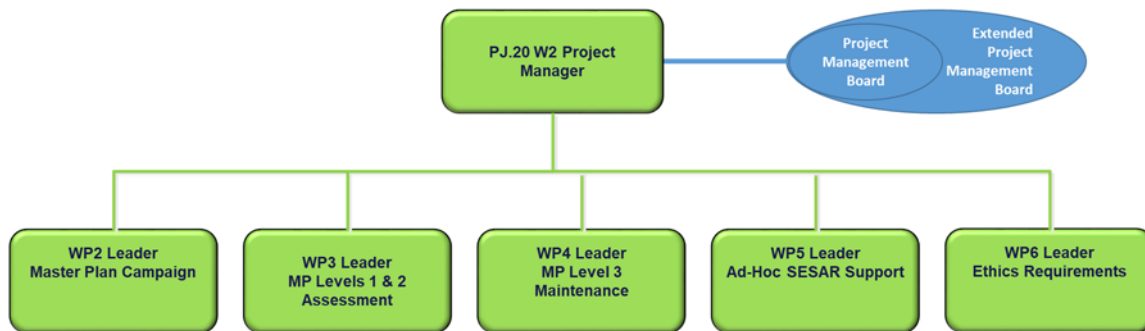


Figure 10: Project Structure for PJ.20 TA project

The combined legislative-executive level is composed of the Project Manager (PM) and a set of dedicated panels. The PM, as a central point of reference, participates in the Project Management Board, ensuring the overall coordination and follow-up of Project activities. The PM reports to the SESAR Joint Undertaking (SJU) on behalf of the project partners. At the implementation level Work Package Leaders (WPLs) and sub Work Package Leaders manage the execution of technical development and control implementation steps.

### 3.2.1 Project Manager (PM)

The Project Manager acts as the Specific Grant Agreement point of contact (SGA Coordinator) with the SJU for all contractual matters, and is responsible for:

- Checking the quality of the deliverables and verifying their completeness and correctness;
- Submitting the deliverables and reports on behalf of the SGA beneficiaries;
- The escalation of issues relevant to the Grant Agreement or to the overall SESAR program and management of changes to the Grant Agreement;
- Preparing and contributing to the formal contractual closure of the activity.

In addition, the Project Manager is responsible for:

- the timely delivery of the deliverables;
- the timely execution of SESAR key documents of the transversal activities;
- the preparation, execution and maintenance of a Project Management plan;
- the application of common methods, as defined within the Programme Management Plan (e.g. progress reporting, corrective action implementation, project control gates);
- the provision of a comprehensive oversight of the Project and management of the operational relationship between the Members involved at the Project level;
- the engagement of 3rd parties (such as but not limited to airspace users, staff associations, etc.), where applicable;
- escalation of issues internal to the Project that cannot be resolved by the PMB to the Contribution Managers of the Project Partners;
- proper and timely communication of information, within and outside of the Project; and
- an appropriate preparation and contribution to the operational closure of the Project.



### 3.2.2 Project Management Board (PMB)

The Project Management Board will ensure that all key management decisions of the project are taken with as far as possible the full support of contributors of the projects. Decision will be made by consensus of all partners involved in a given work package, or in the project if the decision applies to the whole project. In case of disagreement, the escalation process foreseen in Appendix F of the SESAR Private Public Partnership Agreement will apply.

The Project Management Board should meet periodically (WebEx or Face to Face as required) to:

- review progress of the project (WP progress, Ad-Hoc activities, coordination with Mater Plan, SJU governance);
- decide corrective actions;
- review project risks and associated mitigation actions;
- review any potential Change Request to the SGA when necessary.

The Project Management Board will be composed of:

- Project Manager (chairman);
- WP and Sub-WP leads;
- Representatives of key contributor to the project (if not already part of the above categories) and
- SJU representative.

### 3.2.3 Extended Project Management Board (EPMB)

An Extended Project Management Board meeting (including all contributors of the project) will need to be convened annually at a minimum.

In addition in case of significant changes to the project, the Extended Project Management Board shall be asked for approval by correspondence, e.g. for:

- critical deliverables of the project: Initial PMP and updates
- Change Request to the SGA.

Decision making principles are the same as for the Project Management Board.

### 3.2.4 Work Package Lead (WPL)

The Work Package Lead is the person responsible for the operational and technical leading of the work packages; in particular they are responsible for the project deliverables. In particular, the WPL will:

- Organise and coordinate the activities of the work package team (within the team and with other PJ.20 W2 WPs and other SESAR 2020 Solution projects);
- Report to the Project Manager on progresses and issues;
- Make proposal for update and amendments of the activities roadmap, to be agreed at project level;
- Participate to the PMB.

### 3.2.5 Work Package Team

Composed of all contributors to the work, the main role of the Work Package Team is to:

- Define the SESAR work package and produce the associated deliverables.
- Identify and initiate required changes to the SESAR work package.
- Carry-out the activities in accordance with the work package roadmap and raise potential issues as appropriate to the WPL, and PM if necessary.

The Work Package Team is composed of all contributors to the work of a given work package.



### 3.3 Consortium as a whole

The members of the SESAR Joint Undertaking PPP work and cooperate together to the best of their abilities with a view of implementing SESAR 2020 in a correct, efficient, open and timely manner and of attaining the objectives and the deliverables as envisaged by the ATM Master Plan. The Consortium involves key stakeholders of the Airborne Systems, Ground ATM Systems, Service Provision and EUROCONTROL hence providing a wide range of expertise covering all aspects of European ATM.

At the time of the submission, this consortium comprises 21 active organisations from 13 member States of the European Union and 3 organisations from 2 States outside the EU. The consortium was carefully selected according to the skills and experiences required to accomplish the proposed work. The operational expertise, which is crucial for the conceptualisation and implementation phase of the project, is found in the widespread representation of organisations in the consortium. The work is structured in a very collaborative way throughout all work packages and will ensure the transfer of knowledge and know-how between all participants.

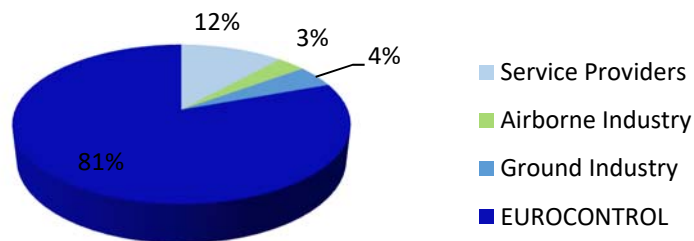


Figure 11 Budget Share

SKYGUIDE<sup>6</sup> participation is fully justified even if it belongs to a non EU country. SKYGUIDE is the civil and military ANSP of Switzerland located in the middle of the European ATM Network. SKYGUIDE is able to provide front-end expertise of a dynamic ANSP, dealing with the highest density and complexity airspace of Europe (EUROCONTROL Performance Review Unit assessment). In order to ensure the required level of performance in this specific operational environment, SKYGUIDE must be innovative in all fields of ATC/ATM, in particular new technologies, advanced automated ATC support tools and HMIs, centralised ATC data processing systems. SKYGUIDE actively participated to SESAR1 by leading the WP4.2 "En-route operational concept definition and validation" in cooperation with DSNA. It includes in particular, the lead of the Detailed Operational Description document development. SKYGUIDE was also actively involved in the preparation of the SESAR 1 OPS Concept (CONOPS) and the transition CONOPS documents. SKYGUIDE is playing major role in several task forces (e.g. Free Routing and Trajectory Management Task Forces). The PJ.20 W2 Work package is seen as the follow-up of these activities and as link to other PJs. SKYGUIDE has a recognised operational expertise and technological knowledge to provide valuable contribution to concept development and therefore be an essential contributor to SESAR2020.

EUROCONTROL will coordinate and participate in the project actions without requesting funding. EUROCONTROL will, however, fully engage in the project and in particular is committed to providing the effort, contributions to deliverables and to other activities as set out in this tender and in the accompanying administrative forms.

To achieve PJ.20 W2 objectives, various roles, some with specific ATM related skills are needed:

- Operations expertise in:
  - o ATM Business Planner
  - o ATM Business Analysis (CBA and Business Case)

<sup>6</sup> 3 Skyguide is the civil and military ANSP of Switzerland located in the middle of the European ATM Network. Switzerland and Skyguide are included in the exhaustive lists of eligible countries and entities in Section 3.5.1 of the amended Annual Work Plan 2015.

- ATM Operational (including ATM domain expertise such as CNS, Drone, Digitalisation, Automation)
  - ATM Architecture (Business, Operational, Technical, Service, Information)
  - ATM Performance (including also Safety, Security & Cyber security, Human Factors, Environment)
  - Standardisation & Regularisation
- Project Support expertise in:
  - Project coordination, management (with strong experience in large and multi-organisation projects)
  - Communication,
  - Quality insurance
- Communication expertise

PJ.20 W2 is represented by members from Service Providers: Air Navigation Service Providers (ANSPs) and Airports, Ground and Airborne Industry and EUROCONTROL:

- **Service Providers**

ANSP members will provide expertise of ATM Business/Operational/Technical planner comprising also Communication Navigation Surveillance (CNS) systems and services. ANSP will provide expertise mainly related to SESAR Solutions in their respective own field of interest. Airport members and certain ANSPs will provide expertise of airport operations management, airside and landside,

ANSP will in particular provide a realistic view on implementation dates and locations.'

Service Providers are: AT-ONE, B4, COOPANS, DFS, DSNA, ENAV, ENAIRE, NATS, SEAC2020 and SKYGUIDE.

- **Ground Industry**

Ground industry members will provide ATM technical expertise on the Air Traffic Management and Communication Navigation Surveillance systems, their functionality, their system, service and information architecture. In addition, Ground Industry will bring the expertise in the ATM architecture and Service Oriented Architecture (SOA). Ground Industry will bring expertise on cyber security.

Ground Industry members are: AT-ONE, FSP, INDRA, LDO, NATMIG and THALES AIR SYS.

- **Airborne Industry**

Airborne Industry members will provide technical expertise on the Air Traffic Management and Communication Navigation Surveillance systems, their functionality, their system, service and information architecture. In addition, Airborne Industry will bring the expertise in the ATM architecture and Service Oriented Architecture (SOA). Airborne Industry will bring expertise on cyber security.

Airborne Industry member is AIRBUS

- **EUROCONTROL**

EUROCONTROL will bring ATM technical expertise on the Air Traffic Management (Network Management, ATS, Airport, CNS, AIM/MET and Civil-Military coordination). In addition, EUROCONTROL will bring the expertise in the ATM architecture (including Service Oriented Architecture (SOA)) and modelling. EUROCONTROL will bring expertise on cyber security. In addition, EUROCONTROL will bring expertise in performance assessment, CBA, Business Case, Business planning and tracked record in Master Planning.

### 3.4 Resources to be committed

Work package number	1	Lead beneficiary		EUROCONTROL
Work package title	Project Management			
Participant number	1			
Short name of participant	EUROCONTROL			
Person/months per participant:	55			
Start month	T0	end	T0 + 37 months	

#### Objectives

WP1 – Project Management will **coordinate and monitor the project's progress** to accomplish the main objectives regarding time and resources. It will ensure PJ.20 W2 **coordination with and support provision to the SESAR 2020 Programme/SJU** and fulfil the administrative requirements of the grant agreement.

#### Description of work

The Project Management task will ensure:

- **Project coordination and monitoring:**
  1. Ensure Project Management and Coordination – **PMP** production, day-to-day monitoring and control of project progress (including risk management) with respect to project objectives, timetable and acceptance of deliverables. The Project Manager (PM) will be responsible to carry out the main management activities at project level and the reporting process, and ensure timed delivery.
  2. Regular management meetings will be organised:
    - **Project Review** meeting with SJU (annual),
    - **PMB** (webex and F2F, monthly or on demand),
    - **EPMB** (F2F – annual or on demand).
  3. The PM, together with the PMB and EPMB, will act as project steering committee. Any Change Requests affecting the project, will be handled by the EPMB to allow flexibility.
  4. Ensure Project Quality Management. PMP will describe the **quality management**.
  5. Report and Communicate with the SJU in cooperation with all involved partners.
  6. Ensure the administration of the project according to the grant agreement and H2020 obligations.
  7. Ensure project dissemination and communication in cooperation with the SJU and the PJ.20 W2 WP Leaders and all involved partners. A **communication plan** will be produced and maintained to define and report on the project communication activity;
  8. Report on a yearly basis the PJ.20 W2 activity – **Management Progress Report**. It will reflect the PJ.19 W2 activities such as support to the SJU, to Maturity Gates, EATMA and SE-DMF Training and Coaching, Cyber Security activity, ad-hoc activity, etc.
- **SESAR2020 Programme/SJU coordination and support:**
  - Ensure Contribution to the SESAR2020 Program Management: i.e. Programme Committees (such as the Master Planning Committee (MPC)) and sub-committees (such as the Development Management Sub Committee (DMSC) and Operational and Technical Sub Committee (OTSC)).
  - Like for SESAR 2020 Wave 1 programme, the PM will participate as an **observer in the MPC** of the SJU governance.
  - Assess with the SJU and the WP leaders/Partners any request of **Ad-hoc activity**
  - Ensure the project monitoring of the **Maturity Gate** progress:
    - To get from the PJ.19 W2, the outcome and conclusions of the Maturity Gates; and ensure actions (if any allocated to PJ.20 W2) are completed.

Non-contractual Milestones will be achieved for each Master Plan Level 1, 2 and 3 contractual Deliverables as follows:

- 3 Milestones for Master Plan Level at T0 + 7, T0 + 19 & T0 + 31 months;
- 1 Milestone for Master Plan Level 2 at T0 + 29;
- 1 Milestone for Master Plan Level 1, 2 & 3 together at T0 + 31 months.

Non-contractual Deliverable:

- Technical and Financial Report (TFR) at T0 + 3 months.

**Deliverables**

<b>D1.1</b>	Project Management Plan	T0 + 4 months
<b>D1.2</b>	Communication Plan	T0 + 4 months
<b>D1.3</b>	Management Progress Report 2020	T0 + 11 months
<b>D1.4</b>	Management Progress Report 2021	T0 + 23 months
<b>D1.5</b>	Final Project Report	T0 + 34 months

Work package number	2	Lead beneficiary								EUROCONTROL						
Work package title	Master Plan Campaign															
Participant number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Short name of participant	EUROCONTROL	AIRBUS	DLR (AT-One)	ON(B4)	PANSA (B4)	ACG/COOPANS	LFV/COOPANS	Naviair/COOPANS	DFS	DSNA	ENAIRES	ENAV	HC (FSP)	INDRA	LDO	
Person/months per participant:	172,1	25	6	7,78	12,8	4,6	1	4,78	14	14,1	17,08	3,5	6	12,11	11	
Participant number	16	20	18	19	20	21	22	24	24							
Short name of participant	SAAB (NATMIG)	SINTEF (NATMIG)	NATS	Avinor (SEAC2020)	HAL (SEAC2020)	MUC (SEAC2020)	SNBV (SEAC2020)	SKYGUIDE	THALES AIR SYS							
Person/months per participant:	2	1	6,3	2	1	1	1	1,7	8							
Start month	T0		end	T0 + 37												

### Objectives

WP2 – Master Plan Campaign will **set up, run and coordinate the ATM Master Plan campaign**. It will also prepare the MP proposed update through refining the **SESAR Vision & Performance Ambition**. It will prioritise the **Deployment Scenarios** for the SESAR Solutions to compose the **high-level rollout plan** including the **critical path** for SESAR development and deployment activities). It will develop the **Business View** and update the **Standardisation & Regulatory roadmaps**.

### Description of work

This Master Plan Campaign work package will aim at initiating, monitoring the production of and delivering the next update of the ATM Master Plan to the SESAR 2020 governance. It will :

- Provide the (support to) planning for the next Master Plan Update Campaign in 2022;
- Provide the (support to) leadership for the next Master Plan Update Campaign;
- Establish and run the Master Plan campaign Working Arrangement that augments PJ.20 members with further expert bodies. The working arrangement will include ANSPs, Airports, Airspace User, Network Manager, PRB, Airframe Manufacturers, Ground Industry, Professional Staff Associations, the Military, as well as SESAR representatives from PJ19 and SJU and observers as applicable (EASA, SDM, etc.). Also, an ECAC-wide ATM expert consultation will be run during the update campaign. The working arrangement and expert consultation, (in addition to the ATM Master Planning Committee ran by the SJU) will allow transparent and broad communication and feedback on the proposed MP updates, ahead of the formal consultation for its approval.
- Develop the Proposed updated ATM Master Plan Edition:
  - Review and update the ATM Vision and Performance Ambition;
  - Review and update the SESAR Rollout plan, critical path through review and update of the Deployment roadmaps (including Air/ground CNS and Infrastructure roadmap)

- Review and update the Standardisation and Regulatory needs;
- Produce the Business View and Risk management.

This Work Package is under the ATM Master Planning Committee guidance and also dependent on the entire programme for producing the updated MP edition.

WP2 is broken into several tasks:

- WP2.00 - Task management
- WP2.01 - ATM Master Plan update campaign management
- WP2.02 – ATM vision update
- WP2.03 – Deployment Scenario, stakeholder, CNS and Infrastructure roadmaps
- WP2.04 - Standardisation and Regulatory Needs
- WP2.05 - Business View development

And also To respond to the SESAR 2020 Wave 2 Call technical Specifications (*ref SJU H2020-SESAR-2019-1 IR LVD WAVE 2 Call Technical Specifications*) as described in the following table.

<i>SJU H2020-SESAR-2019-1 IR LVD WAVE 2 Call Technical Specifications</i>	WP2.01	WP2.02	WP2.03	WP2.04	WP2.05
- <i>Organising the Master Plan update campaign (one update campaign is tentatively planned to take place in 2022, precise year to be confirmed by the SJU and its Governance Bodies), and in particular, from the review of SESAR 2020 and SESAR Deployment results:</i>	✓				
○ <i>Refine the core SESAR Vision and Performance Ambition based on latest results from SESAR development and deployment activities as well as broader changes in policy priorities;</i>		✓			
○ <i>Refine the critical path for rolling out SESAR with a particular attention to priorities for future development and deployment activities;</i>			✓		
○ <i>Refine the high-level SESAR roll-out plan showing clearly what belongs to respectively SESAR development and deployment activities;</i>			✓		
○ <i>Develop the Business view of the Master Plan, including a holistic view of the SESAR performance gains in time as well as investment needs;</i>					✓
○ <i>Review the standardisation and regulatory needs developed by the Solution Projects to allow the development of S&amp;R needs in the Master Plan Level 1, fully aligned with the EPAS and the EASCG rolling plan;</i>				✓	
○ <i>Review the SESAR project Risk Management Plan taking into account the main risks reported via SESAR development and deployment activities (Levels 2 and 3);</i>	✓				
○ <i>Establish a clear connection between the MP and EASA's EPAS as well as the ICAO GANP.</i>	✓		✓		

#### **WP2.00 Task Management (Lead EUROCONTROL)**

This task will organise and coordinate the activities of the WP2 team (within the team and with other PJ.20 W2 WPs and other SESAR 2020 Solution and Enabling projects); report to the Project Manager on progress and issues, and participate in the PMB.

This task will not produce any contractual deliverable but will support the overall PJ.20 W2 management to produce the project reports.



## WP2.01 – ATM Master Plan update campaign management

- **Lead EUROCONTROL**
- **Contributors: AIRBUS, PANSO (B4), COOPANS, DFS, DSN, ENAIRE, ENAV, INDRA, LDO, SAAB (NATMIG), SINTEF (NATMIG), NATS, SKYGUIDE**
- **Reviewers: DLR (AT-One), ON (B4), HC (FSP), SEAC2020**

This task will:

- **Assess the feedback of the SESAR 2020 Wave 1 ATM Master Plan** to prepare the next ATM Master Plan update campaign;
- **Run and monitor the SESAR 2020 Wave 2 ATM Master Plan update campaign.** The scope of the campaigns includes all three ATM MP Levels, comprising the update of the “Executive Level 1” synchronised with the update and consolidation of the “Planning & Architecture Level 2” and of the “Implementation Level 3”. The scope of the ATM Master Plan update will be decided by the SJU and its governance bodies. Once endorsed, the scope will be reflected in the **ATM Master Plan Campaign Charter** (produced by SJU) and the MP update campaign will be able to start.

Based on the MP Campaign Charter, this task will plan a realistic, stable and timely updated European ATM Master Plan. PJ.20 W2 will initiate the campaign by setting up a transparent process and working arrangement at expert level work environment including partner resources, data management and communication tools. This shall ensure permanent engagement of and information sharing with all ATM Partners: i.e. beyond SJU and SESAR Partners, the European Commission, Airspace Users, ATM Professional Staff Organisation, the SESAR Deployment Manager (SDM), the European Aviation Safety Agency (EASA), EUROCAE, etc.

One year before its delivery, the intended content of the ATM Master Plan update will be reviewed and confirmed with the SJU and the MPC. This will be materialised by the delivery of the **ATM Master Plan annotated outline document**.

Together with the annotated outline document, a **preliminary work plan and schedule** for the MP campaign update campaign will be set up. With the MP Campaign Charter, it will be a major measure to properly set and manage the tasks needed to update the MP. At the bid time, the assumption is that the next MP update will made of:

- Introduction section setting the context of the new edition of the Master Plan, the Priorities and significant changes since the last Master Plan reflecting SESAR deployment and the Single European Sky High-Level Goals and Performance;
- The SESAR Vision including strategy for transforming European ATM and path for changing the ATM paradigm;
- The Performance View; describing the Performance Ambitions for SESAR;
- The Operational View including SESAR Target Concept, the Essential Operational Changes (EOCs) and maturity of Solution Deployment Scenarios related to the EOCs. ;
- The Deployment View describing How and When the SESAR vision can be rolled-out including the Deployment Scenario, the Stakeholder Deployment Roadmaps, the critical path for the CNS and infrastructure roadmap and the Standardisation & Regulatory needs;
- The Business View including holistic view of socio-economic impact of SESAR, Business Case for EOCs, Incentives and Regulation, Business Case Results from Deployment of SESAR;
- The Risk Management.

This work will be performed with the PJ.20 W2 experts primarily. When needed, it will involve external experts working on specific/transversal topic (Drone, Digitalisation, Automation, etc. ...) and to support refinement and consolidation activities. If confirmed, a dedicated Key Focus Team (KFT – concept used already for the last ATM Master Plan 2018 campaign) will be set up in order to capture the inputs of these external experts.

The task will ensure the iterative development of the Master Plan drafts including the management of their successive review cycles and administering of related comments.

MP update information (SESAR Vision, Performance View; Operational View Deployment View Deployment Scenario, the Deployment Roadmaps, the critical deployment path and the Standardisation & Regulatory roadmap, Business View) will be made available via the eATM working Portal to support the MP update campaign. Once

formally approved by SESAR Admin Board, this MP update information will be made public in the eATM Portal public area.

- **Milestone M2 ‘ATM Master Plan Campaign Charter approved’** is included at T0 + 19 months. This milestone will track the achievement of the ATM MP Campaign Charter development (supported by PJ20 W2) and its approval by the Master Planning Committee.
- **Milestone M3 ‘Master Plan 2022 annotated outline approved’** is included at T0 + 23 months. This milestone will track the approval of the of the ATM MP 2022 annotated outline.

**Inputs:**

- ATM MP 2022 Campaign Charter
- ATM Master Plan latest edition
- Latest version of SESAR 2020 Architecture (EATMA) information which includes the Data Set
- Draft ATM MP 2022 – Performance Ambitions and Vision sections
- Draft ATM MP 2022 - Deployment Scenario, Stakeholder and CNS and Infrastructure roadmaps sections
- Draft ATM MP 2022 - Standardisation and Regulatory needs
- Draft ATM MP 2022 – Business View Section

**Deliverables:**

- **Master Plan 2022 annotated outline document**
- **Preliminary Work Plan and Schedule for the Master Plan Update Campaign**
- **Proposed European ATM MP 2022**

**WP2.02 – SESAR Performance Ambitions and Vision update**

**Contributors:** AIRBUS, COOPANS, DFS, DSNA, ENAIRE, INDRA, LDO, SAAB (NATMIG), SINTEF (NATMIG), NATS

**Reviewer:** ON (B4)

This task will review and update the **SESAR Performance Ambitions and Vision** starting from the last release of the MP. It will take into consideration several inputs:

- Priorities defined at the European level (such as sustainable and high-performing aviation in Europe, ATM performance-driven and technologically-enhanced, inter-modality, digitalisation, new market forces, etc. ...);
- Long-term forecasts with horizons of up to 20 years and potential economic, political and societal changes.
- New or emerging concept (such as digitalisation, virtualisation big data, automation, etc.) and technology (such as Drone, Artificial Intelligence (AI), internet of things, virtual reality) which could impact and/or drive the evolution of the European ATM system in the decades to come;
- results of SESAR 2020 programme activity (R&D and R&I activities) which would impact the evolution of the European ATM system

This task will review, update and complement the vision defined in the last edition of the MP taking on board the significant changes in insight, strategy and policy and ATM developments that have occurred since the last MP edition and looking ahead to deploy the future ATM systems.

The updated SESAR Performance Ambitions and Vision will be one of the major input for the SESAR CONOPS update (PJ.19 W2 production).

This task will be performed with the PJ.20 W2 experts primarily. It will also likely need support from PJ19 W2 experts and involvement of external ATM and Transport experts. If confirmed, dedicated Key Focus Team(s) will be set up in order to capture the inputs of these external experts.

**Inputs:**

- Last released SESAR Performance Ambitions and Vision
- Latest EUROCONTROL Long Term Forecast



- Latest PJ19-W2 Performance Assessment Report

**Deliverables:**

- Non contractual deliverable **Draft ATM MP 2022** – SESAR Performance Ambitions and Vision sections

**WP2.03 – Deployment Scenario, stakeholder and CNS and Infrastructure roadmaps**

**Contributors: EUROCONTROL, AIRBUS, DFS, DSNA, ENAIRE, INDRA, LDO, SAAB (NATMIG), SINTEF (NATMIG), NATS, THALES AIR SYS**

From information retrieved from the SESAR 2020 Architecture, PJ.19 W2 will produce the initial Deployment Scenario (based on SESAR Solution dependencies and the last released Deployment Scenarios). This information is part of the SESAR 2020 Architecture. Furthermore and for the next MP update campaign, this task will optimise the Deployment Scenarios and produce the technology roadmaps. Other roadmaps (such as digitalisation roadmap) might be needed but, at the time of this proposal, are not confirmed.

Deployment Scenarios are prioritised top-down based on their alignment with the SESAR Vision and their expected contribution to performance and Cost Benefit Analysis (CBA) information, PJ19-W2 support and input are essential to realise this prioritisation. Each Deployment Scenario will indicate the operating environment(s) in which performance gains can be realised. It will also indicate the timescales for deployment and expected benefits.

From the Deployment Scenarios, several roadmaps will be produced:

- The **Stakeholder roadmaps** provide the timeline for the changes introduced by the EOC. Roadmaps are structured by stakeholder type (ANSPs, Airport Operators, Airspace Users and Network Manager). For each stakeholder type, all associated EOC are listed and within each EOC, a list of supporting Deployment Scenarios is provided.
- The **CNS Infrastructure roadmap** will support a coherent rationalisation of the total CNS infrastructure while delivering improved services. It will show the underlying CNS technologies, services and the evolution needed by the mature, approaching maturity and key R&D deployment scenarios and the critical path in support of the EOC.

Following the top-down prioritisation, the Operational & Deployment Views will be produced. These views show for each EOC, the prioritised SESAR development activities and Solutions per Deployment Scenarios. In addition, for mature Deployment Scenarios, these Views include the **high-level SESAR roll-out plan** to highlight required synchronised deployment by stakeholders and **critical path** for CNS & Infrastructure to support their deployment. In these Views, Standardisation and Regulatory Needs associated to the prioritised Deployment Scenarios are also included.

This task will be performed with the PJ.20 W2 experts primarily. It will also likely need to involvement of external ATM experts. If confirmed, a dedicated Key Focus Team will be set up in order to capture the inputs of these external experts.

The Deployment Scenarios and these 2 roadmaps were one of the major input for the last MP edition. At the time of the present bid, no additional Roadmap was identified and the two above-described roadmaps are supposed to be needed for the next MP update campaign. Additional Roadmap might be required for the next MP update campaign. Any additional roadmaps will be identified as soon as possible and not later than the MP 2022 annotated outline delivery. Any new roadmap might have huge impact in the data management, with potential impact on the SESAR Architecture information (and framework).

The consolidated and optimised Deployment Scenario, Stakeholder and Technology roadmaps will be integrated into the next MP edition.

**Inputs:**

- Last released Deployment Scenario, Stakeholder and Technology roadmaps
- SESAR 2020 Architecture (EATMA) including the Data Set

**Deliverables:**

<p>Non contractual deliverable</p> <ul style="list-style-type: none"> <li>• <b>Draft ATM MP 2022</b> - Deployment Scenario, Stakeholder and CNS and Infrastructure roadmaps sections</li> </ul>
<b>WP2.04 – Standardisation and Regulatory Needs</b>
<b>Contributors: EUROCONTROL, AIRBUS, DFS, DSNA, INDRA, LDO, SAAB (NATMIG), SINTEF (NATMIG), THALES AIR SYS</b>
<p>From information retrieved from the SESAR 2020 Architecture (including the Data Set), PJ.19 W2 will produce the inputs for the Master Plan Level 1: i.e. Solution groupings, identification of impacted ATM systems/Services, Essential Operational Changes, Deployment Scenarios, Deployment Roadmaps (Stakeholders, technology). This information will be further assessed and consolidated by PJ.20 W2 experts to update:</p> <ul style="list-style-type: none"> <li>• the Deployment (including digitalisation, CNS and Avionics) scenario and needs</li> <li>• the Standardisation &amp; Regulatory needs;</li> </ul> <p>This task will consider in the plan constraints stemming from links of Master Plan items (e.g. Deployment Scenarios and Implementation Objectives) with existing regulation. Also, it will identify as early as possible the potential need for new regulatory actions that might foster the common realisation of SESAR Solutions.</p> <p>From the SESAR Architecture, PJ.20 W2 assess in collaboration with PJ.19 W2, the need for new standardisation activities to support common industrialisation and interoperability of SESAR solutions. The timelines for standardisation activities will be monitored and taken into consideration to determine dates for the commercial availability of SESAR solutions.</p> <p>This task will:</p> <ul style="list-style-type: none"> <li>• help an efficient planning of the industrialisation phase and increase the robustness of the Deployment Scenarios.</li> <li>• propose updates of the SESAR related part of the European Commission’s standardisation roadmap to enable an accurate and early identification of all developments giving rise to a need for standardisation, thereby avoiding gaps and enhancing global and regional harmonisation.</li> </ul> <p>The Standardisation and Regulatory needs will be aligned with EASA and the European Plan for Aviation Safety (EPAS), the European UAS Standards Coordination Group (EUSCG) and the European ATM Standardisation Coordination Group (EASCG), helping achieving the necessary level of interoperability between SESAR and NextGen and feeding European’s input to the development of ICAO’s standardisation roadmap.</p> <p><b>Inputs:</b></p> <ul style="list-style-type: none"> <li>• Last released Standardisation and Regulatory needs</li> <li>• SESAR 2020 Architecture (EATMA) including the Data Set</li> <li>• EPAS and the EASCG and EUSCG rolling plans</li> </ul> <p><b>Deliverables:</b></p> <p>Non contractual deliverable</p> <ul style="list-style-type: none"> <li>• Yearly update of Standardisation and Regulatory Needs for WP3.03 Master Plan Executive Planning Assessment Report development</li> <li>• <b>Draft ATM MP 2022</b> - Standardisation and Regulatory needs</li> </ul>
<b>WP2.05 – Business View development</b>
<b>Contributors: EUROCONTROL, AIRBUS, DFS, ENAIRE, INDRA, LDO, SAAB (NATMIG), SINTEF (NATMIG), NATS, THALES AIR SYS</b>
<p>This task will develop the Business View which will include:</p> <ul style="list-style-type: none"> <li>• a holistic socio-economic view of the SESAR benefits as well as investment needs.</li> </ul>

- The Business Case for Essential Operational Changes developed using the consolidated CBAs and other Business Case inputs (Safety, Human Performance, Environment and non-monetised performance assessments) provided by PJ19
- The use of Financial Incentives and Regulation to synchronise deployment across different stakeholders and optimise benefits
- Business Case Results from the part of SESAR already deployed

A Key Focus Group led by EUROCONTROL will be set up to develop the Business View. It will have wide stakeholder participation: ANSPs, Airports, Airspace Users, Air and Ground Manufacturing Industry.

**Inputs:**

- Current ATM Master Plan and supporting Business View material;
  - Master Plan Companion Document for the Performance Ambitions and Business View
  - Excel Model used for the Holistic View
- Supporting Document for the consolidated CBAs produced by PJ.19 W2
- Other Business Case Inputs gathered by PJ19 W2 such as Safety, Environment, Human Performance and other non-monetised Performance Assessments
- Performance Ambitions
- Deployment Scenarios
- Essential Operational Changes
- Results from SESAR deployment

**Deliverables:**

Non contractual deliverable

- **Draft ATM MP 2022** – Business View Section
- Business View Companion Document
- Business View Model

**Deliverables**

D2.1	Master Plan 2022 Annotated Outline Document	T0 + 23 months
D2.2	Preliminary Work Plan and Schedule for the Master Plan Update Campaign.	T0 + 23 months
D2.3	Proposed European ATM Master Plan 2022	T0 + 31 months

Work package number	3	Lead beneficiary							EUROCONTROL						
Work package title	MP Levels 1 and 2 Assessment														
Participant number	1	2	10	11	12	13	15	18							
Short name of participant	EUROCONTROL	AIRBUS	DSNA	ENAIRE	ENAV	HC (FSP)	LDO	NATS							
Person/months per participant:	95	8	2,4	13,35	3,22	6	5,1	4,1							
Start month	T0		end	T0 + 37											

### Objectives

WP3 - MP Levels 1 and 2 Assessment will monitor the evolution and publish Level 2 of the Master Plan to ensure that it remains “SESAR Solutions centric”. WP3 will contribute to the Data Set campaigns (led by PJ.19 W2). It will also assess the content of this Data Set and perform consistency check between evolving Level 2 and Level 1. This analysis will be based on a clear and unambiguous information on every SESAR Solution, every R&D activities and every Essential Operational Change described in the Level 2 Data Set to assess and report on the progress of overall development activities in the perspective of the MP Level 1.

### Description of work

The MP Levels 1 and 2 Assessment work package will aim at assessing the Data Set in order to provide high-level picture SESAR 2020 solution validation against the targets defined in the last released ATM Master Plan. This work package will also contribute to the production of the Data Set in order to raise change request coming from the MP and the SESAR Governance bodies; and to monitor request for change that affects information of the MP Level 1.

WP3 is broken into several tasks:

- WP3.00 - Task management
- WP3.01 - MP Levels 1 and 2 assessment methodology
- WP3.02 – Contribution to the Data Set maintenance
- WP3.03 – MP Levels 1 and 2 assessment

And also to respond to the SESAR 2020 Wave 2 Call technical Specifications (*ref SJU H2020-SESAR-2019-1 IR LVD WAVE 2 Call Technical Specifications*) as described in the following table.

<i>SJU H2020-SESAR-2019-1 IR LVD WAVE 2 Call Technical Specifications</i>	WP3.01	WP3.02	WP3.03
- <i>Yearly Development Planning &amp; Reporting ATM MP Level 2: monitor the evolution and publish Level 2 of the Master Plan to ensure that it remains “SESAR Solutions centric”:</i>	✓	✓	✓
○ <i>Provide yearly planning alignment analysis of consistency between MP Level 1 and 2 and provide a view of the progress of the development activities in the perspective of Level 1 of the MP (in time and in scope, % coverage of the different phases, alignment with targeted maturity dates, expected % completion with regards to targeted performance ambition, any issues to be brought the attention to the SJU Governance with regards to the contribution of development activities to Level 1 of the MP – e.g. could trigger major update of Level 1). This analysis should include a clear and unambiguous information on every SESAR Solution and every Essential Operational Change, and the assessment of their readiness for deployment and eventual implementation. The analysis should include an executive summary and be readable by SJU ADB member;</i>	✓		✓

<ul style="list-style-type: none"> <li>○ <i>To this effect, participate in CR process as conducted by the TA content integration project (Data Set maintenance) and in particular for the purpose to ensure that CRs do not affect MP Level 1. In case a change would or may affect substantially the Master Plan, bring the issue for consideration of the decision-making level, i.e. the SJU and its Governance Bodies;</i></li> </ul>		✓	
<ul style="list-style-type: none"> <li>○ <i>In the year of a Master Plan update campaign, the delivery planning of the ATM MP Level 2 shall be synchronised with that of Level 1.</i></li> </ul>			✓
<b>WP3.00 Task management (Lead EUROCONTROL)</b>			
<p>This task will organise and coordinate the activities of the WP3 team (within the team and with other PJ.20 W2 WPs, PJ.19 W2 WPs and other SESAR 2020 Solution and Enabling projects); report to the Project Manager on progress and issues, and participate in the PMB.</p> <p>This task will not produce any contractual deliverable but will support the overall PJ.20 W2 management to produce the project reports.</p>			
<b>WP3.01 – MP Levels 1 and 2 assessment methodology</b>			
<b>Contributors: EUROCONTROL, AIRBUS, ENAIRE, ENAV, HC (FSP), LDO</b>			
<p>This task will describe the process and criteria used to assess the consistence of the Master Plan Level 2 and the Level 1. It will describe which information is needed, how to capture it, and the criteria and process to perform the assessment. This information will be captured in the MP Executive planning assessment Methodology deliverable.</p> <p>This task will be performed in close cooperation with PJ.19 W2 to automate as much as possible the production of information from the SESAR Architecture (such as Operational Improvement steps, Enablers (system, standard, including Stakeholder allocation, IOC and FOC dates), Deployment Scenario, Essential Operational Changes, SESAR Solution).</p> <p>This task will start as soon as PJ.20 W2 will be launched to be ready when starting the first MP executive planning assessment.</p> <p><b>Inputs:</b></p> <ul style="list-style-type: none"> <li>• This is a brand new activity with no inputs available yet</li> </ul> <p><b>Deliverables:</b></p> <ul style="list-style-type: none"> <li>• <b>MP Executive Planning Assessment Methodology</b></li> </ul>			
<b>WP3.02 – Contribution to the Data Set maintenance</b>			
<b>Contributors: EUROCONTROL, AIRBUS, DSNA, ENAIRE, HC (FSP), LDO</b>			
<p>The European ATM Architecture (EATMA) Framework is a structure composed of Performance/Business, ATM capability, Business and Operational concept, System, Services, Operational Improvement steps, Enablers (system, standard, including Stakeholder allocation, IOC and FOC dates), Deployment Scenario, Essential Operational Changes, SESAR Solution elements and the relationships between them. The content is produced mainly by the SESAR Solutions, but includes also information from the Master Plan Level 1 and Level 2. This information constitutes the Data Set and is fully part of the SESAR Reference Architecture. This information is subject to a strict Change Management Process to ensure full consistency and coherency. PJ.19 W2 is in charge of running and monitoring this change management process. This process is a rolling process with request for changes raised at any time from any SESAR Solution.</p> <p>This task will ensure permanent contribution to the Data Set campaign to perform an ATM <b>business analysis</b> of the proposed change request. This will safeguard MP Level 1 content and enable the identification of any major change compared to the released MP. It will escalate CRs to appropriate SJU governance bodies in case a CR would affect substantially the MP Level 1 (such as Common Project, Deployment Scenario, etc. ...).</p> <p>This activity will be reported in the regular Project Report produced at WP1 (management) level.</p>			

At the time of the ATM Master Plan update campaign, this task will produce the **ATM Master Plan Level 2** based on the Data Set synchronised and consistent with the proposed ATM Master Plan Level 1.

**Inputs:**

- CR raised in the context of the Data Set provided by PJ.19 W2

**Deliverables:**

In 2020 and 2021, no formal contractual deliverable but activity (CR assessment activity and findings) will be reported in the yearly PJ.20 W2 Project report (PJ.20 W2 WP1).

- **European ATM Master Plan Level 2**

**WP3.03 – MP Levels 1 and 2 assessment**

**Contributors: EUROCONTROL, AIRBUS, DSNA, ENAIRE, ENAV, LDO, NATS**

This task will provide planning consistency report written for an Executive readership to inform on a **yearly basis the consistency and alignment of the ongoing SESAR 2020 solution development and validation against the targets set by the last realised ATM Master Plan**. This will be a way to anticipate the next ATM Master Plan update campaign.

This analysis will be based on a clear and unambiguous information on every SESAR Solution, every R&D activities and every Essential Operational Change described in the Level 1, to assess and report on the progress of overall development activities in the perspective of the MP Level 1.

PJ.19 W2 Content Integration task consolidates the SESAR 2020 Solution results and achievements at programme level, for every R&D activities and every Essential Operational Change. The Stakeholders roadmaps and Deployment Scenario are updated also. The Data Set will captures these results and is part of the Reference SESAR Architecture (EATMA). It will thus provide the rough information used to assess the MP Executive planning by ATM Master Plan experts (ATM Business Analyst, Operational, Technical, Architecture expert and Business Planner).

It will consider alignment in terms of:

- time and in scope,
- % coverage of the different phases of the MP Vision,
- alignment with targeted maturity dates,
- expected % completion with regards to targeted performance ambition,
- any issues to be brought the attention to the SJU Governance with regards to the contribution of development activities to Level 1 of the MP and
- evolution of the Standardisation and Regulatory needs.

The MP Executive planning assessment will be performed on a yearly basis, thus providing:

- The first year with a very early and initial assessment report made mainly to run and fine tune the process if needed;
- The second year with an intermediate SESAR 2020 production results, which will provide some guidance for the next ATM Master Plan, update campaign.

At the time of the ATM Master Plan update campaign; this task will be superseded by the ATM Master Plan update campaign.

Also, the Standardisation and Regulatory Needs will be updated on a yearly basis. At the time of the MP update campaign, these Needs will be listed into the next MP Level 1 edition (WP2.04).

**Inputs:**

- Data Set provided by PJ.19 W2
- Performance Dashboard from PJ.19 W2
- Yearly update of Standardisation and Regulatory Needs from WP2.04

**Deliverables:**

- **Master Plan Executive Planning Assessment Report** (for 2020 and 2021).

**Deliverables**

D3.1	Master Plan Executive Planning Assessment Methodology	T0 + 7 months
D3.2	Master Plan Executive Planning Assessment Report (2020)	T0 + 13 months
D3.3	Master Plan Executive Planning Assessment Report (2021)	T0 + 25 months
D3.4	European ATM Master Plan Level 2	T0 + 29 months



Work package number	4	Lead beneficiary								EUROCONTROL					
Work package title	MP Level 3 Maintenance														
Participant number	1	2	5	9	10	11	12	13	14	15	18	23	24		
Short name of participant	EUROCONTROL	AIRBUS	PANSA (B4)	DFS	DSNA	ENAIRES	ENAV	HC (FSP)	INDRA	LDO	NATS	SKYGUIDE	THALES AIR SYS		
Person/months per participant:	136,4	7	1	3	3,4	10,1	3,5	3	7,11	7	4,2	1	1		
Start month	T0		end	T0 + 37											

### Objectives

WP4 – MP Level 3 Maintenance will **maintain and deliver the MP L3 Plan and Report**, providing an exhaustive **view of SESAR deployment planning and progress** (covering Solutions that are being deployed, but also on those not deployed the reasons, when available, for Solutions not deployed).

### Description of work

The MP Level 3 Maintenance work package will aim at delivering on a **yearly basis**:

- The **Implementation Plan**, consisting of **Implementation Objectives** and related Stakeholders Lines of Action of relevant mature Level 2 elements (Solution Deployment Scenarios), ensuring the link between development and deployment phases. To ensure its efficient use by decision-makers, the Implementation Plan will present different views: a Strategic View serving the executive levels, a Deployment view serving the intermediate levels, and an Engineering view serving the experts in the field.
- The **Implementation Report**: providing a complete ECAC-wide view on the status of progress of all the elements present in the Implementation Plan. In line with the Implementation Plan, the Report will also be structured to provide an exhaustive view of SESAR deployment planning progress (including Solutions that are being deployed, but also for those not deployed the reasons for the lack of deployment).
- Together, the Implementation Plan and Report will constitute the ATM MP Level 3 deliverable.
- Due to the timings associated to the required EUROCONTROL approvals and the launch of the **yearly LSSIP cycles**, the Master Plan Level 3 shall be reported yearly in Summer time.

WP4 is broken into several tasks:

- WP4.00 - Task management
- WP4.01 - Master Plan Level 3 guidance
- WP4.02 – Implementation Plan management
- WP4.03 – Reporting management

And also to respond to the SESAR 2020 Wave 2 Call technical Specifications (*ref SJU H2020-SESAR-2019-1 IR LVD WAVE 2 Call Technical Specifications*) as described in the following table.

<i>SJU H2020-SESAR-2019-1 IR LVD WAVE 2 Call Technical Specifications</i>	WP4.01	WP4.02	WP4.03
- <i>Yearly Deployment Planning &amp; Reporting ATM MP Level 3:</i>	✓	✓	✓
○ <i>Ensure update, maintenance and evolution of the Level 3 of the Master Plan ensuring that at its heart it is SESAR Solutions centric;</i>	✓	✓	✓

<ul style="list-style-type: none"> <li>Deployment planning translates Level 2 of the ATM MP into an implementation view (Level 3); it relies upon a transparent and efficient decision-making and monitoring process;</li> </ul>		✓	
<ul style="list-style-type: none"> <li>The project shall deliver each year a Master Plan Level 3 Plan and Report, providing an exhaustive view of SESAR deployment planning and progress. In the year of Master Plan update campaign, the delivery planning of the Level 3 plan and report shall be synchronised with that of Level 1;</li> </ul>	✓	✓	✓
<ul style="list-style-type: none"> <li>This requires a very strong coordination with the Deployment Manager to avoid duplication, gaps or contradiction with the Deployment Manager reporting obligations on the deployment of common projects through its Deployment Programme (Regulation (EU) No 409/2013, Article 9 (h) and (i));</li> </ul>		✓	✓
<ul style="list-style-type: none"> <li>In line with the audit recommendations and the 2018 Master Plan update campaign, the Master Plan Level 3 Report will provide an exhaustive view of the state of deployment of all SESAR Solutions, meaning that it will not only report on the Solutions that are being deployed, but also on those not deployed and will expose the reasons for this lack of deployment;</li> </ul>			✓
<ul style="list-style-type: none"> <li>Deliver: <ul style="list-style-type: none"> <li>Proposed rules for promoting SESAR Solutions from Level 2 to Level 3. If decisions are taken on a case by case basis, the rationale should be clearly described in the Level 3 plan;</li> </ul> </li> </ul>	✓		
<ul style="list-style-type: none"> <li>Yearly update proposal of the MP level 3 Plan ensuring the maximum possible coverable of SESAR Solutions;</li> </ul>		✓	✓
<ul style="list-style-type: none"> <li>Yearly update proposal for MP Level 3 Plan taking into account validated data provided via EUROCONTROL, the SESAR Deployment Manager as well as other relevant SES reporting mechanisms.</li> </ul>			✓

#### WP4.00 Task Management (Lead EUROCONTROL)

This task will organise and coordinate the activities of the WP4 team (within the team and with other PJ.20 W2 WPs, PJ.19 W2 WPs and other SESAR 2020 Solution and Enabling projects); report to the Project Manager on progress and issues, and participate in the PMB.

This task will not produce any contractual deliverable but will support the overall PJ.20 W2 management to produce the project reports.

#### WP4.01 – Master Plan Level 3 guidance

**Lead: EUROCONTROL**

**Contributors: AIRBUS, PANS (B4), DFS, ENAIRE, ENAV, INDRA, LDO**

This task will **describe the process and proposed rules for translating Level 2 of the ATM MP into an implementation view (Level 3)** based upon a transparent and efficient decision-making and monitoring process that will ensure that resulting Level 3 is and remains SESAR Solutions centric.

It will describe which information is needed, how to capture it, and the criteria and rules to promote a SESAR Solution from Level 2 to Level 3. The proposed rules and process for promoting SESAR Solutions will be explicated in a formal method. It will describe the exceptional processing as well, explaining the rationale for treating a case as an exception that calls for specific alternative decision making. These proposed rules will be captured in the ATM Master Plan Level 3 Guidance deliverable.

This task will start as soon as PJ.20 W2 will be launched to provide guidance for the Implementation Plan and Report maintenance.

#### Inputs:

- ATM Master Plan Level 3 process, Edition 00.01.00, Edition Date 22 December 2017 (LOC\_D001)

#### Deliverables:

- **Master Plan Level 3 Guidance**

#### **WP4.02 – Implementation Plan management**

**Lead: EUROCONTROL**

**Contributors: AIRBUS, PANSa (B4), DFS, DSNA, ENAIRE, ENAV, HC (FSP), INDRA, LDO, NATS, SKYGUIDE**

**Reviewer: THALES AIR SYS**

This task will **update the Master Plan Level 3 Implementation Plan on a yearly basis**. This update is based on the Deployment Scenarios of SESAR Solutions (MP Level 2), the NOP and the Network Strategy Plan, the Common Project Regulation(s) and associated Deployment Programme(s), and any other relevant EU Regulations and ICAO Standards.

It will create new, and update existing, Implementation Objectives and related Stakeholders Lines of Action. It will maintain the MP L3 Implementation Plan document in line with the above changes. In particular, it will update:

- the **Strategic View** serving the executive levels that provides a strategic outlook for each major ATM change in each SESAR Key Feature;
- the **Deployment view** serving the intermediate levels and that provides a summary of the main elements (what, who, when, where) vis-à-vis the operational change per each Implementation Objective;
- It will update the **Engineering view** serving the experts in the field that provides a complete description for each Implementation Objective, including detailed descriptions of Stakeholder Lines of Action (SLoAs) and reference to relevant supporting material. This view will be available online, on the European ATM Master Plan Portal.

At the time of the ATM Master Plan update campaign, it will ensure full synchronization with the MP Level 1 information.

**Inputs:**

- Deployment Scenarios of SESAR Solutions
- the NOP and the Network Strategy Plan,
- the Common Project Regulation(s) and associated Deployment Programme(s),
- any other relevant EU Regulations and ICAO Standards.

**Deliverables:**

- **European 01-ATM Master Plan Level 3 – Implementation Plan**

#### **WP4.03 – Reporting management**

**Lead: EUROCONTROL**

**Contributors: AIRBUS, PANSa (B4), DFS, DSNA, ENAIRE, ENAV, LDO**

This task will **update the Level 3 Implementation Report on a yearly basis**. This update is based on the National LSSIP documents collected via the EUROCONTROL LSSIP monitoring and reporting mechanism, complemented by any other traceable information provided through SES reporting mechanism.

The Report will also be structured to provide an **exhaustive view of SESAR deployment planning progress** (covering Solutions that are being deployed, but also for those not deployed the possible reasons for the **lack of deployment**).

**Inputs:**

- The National LSSIP documents
- Traceable information provided through SES reporting mechanism.

**Deliverables:**

- **European ATM Master Plan Level 3 – Implementation Report**

#### **Deliverables**

D4.1	Master Plan Level 3 Guidance	T0 + 7 months
D4.2	European ATM Master Plan Level 3 – Implementation Plan (2020)	T0 + 7 months
D4.3	European ATM Master Plan Level 3 – Implementation Report (2020)	T0 + 7 months
D4.4	European ATM Master Plan Level 3 – Implementation Plan (2021)	T0 + 19 months
D4.5	European ATM Master Plan Level 3 – Implementation Report (2021)	T0 + 19 months
D4.6	European ATM Master Plan Level 3 – Implementation Plan (2022)	T0 + 31 months
D4.7	European ATM Master Plan Level 3 – Implementation Report (2022)	T0 + 31 months

Work package number	5	Leading beneficiary	
Work package title	Ad-Hoc SESAR Support		
Participant number	1		
Short name of participant	EUROCONTROL		
Person/months per participant:	0.01		
Start Month	T0	End month	T0 + 37

### Objectives

**WP5 – Ad-Hoc SESAR Support** will be dedicated to provide SESAR programme with **expertise to participate, support and contribute to the definition of the future SESAR artefacts** organised and delivered **in ad-hoc or on demand basis by the SJU** and to be shared at governance and consultation body levels, such as common projects or any specific mandate received from the SJU governance structure and related to Master Planning activities. Each ad-hoc request will be assessed to see its feasibility (to find the best way to identify potential impact on current activities and propose the best way to perform it). Each ad-hoc task agreed will be subject to a dedicated report.

### Description of work

The Ad-Hoc SESAR Support will aim to participate, support and contribute to the definition of the future SESAR artefacts organised and delivered in ad-hoc or on demand basis by the SJU and to be shared at governance and consultation body levels, such as common projects or any specific mandate received from the SJU governance structure and related to Master Planning activities.

At the start of the project, WP5 will be a placeholder and will be activated by WP1 Project Management as soon as an Ad-Hoc request is expressed by the SJU.

No effort is reserved a priori for this WP5 as long as the ad-hoc requests are unknown.

Effort will be taken out from other WPs after a thorough assessment of any impact on these other activities.

**Milestone M1 ‘Ad-Hoc activity description in PMP’** is included at T0 + 4 months. This milestone will mark the achievement of the description of the intended Ad-Hoc activities as part of the PMP, enabling potentially allocation of resources with a Grant Amendment.

#### Inputs:

- Ad-hoc request from SJU

#### Deliverables:

Non contractual deliverable (providing results of a given activity and produced when needed):

- **Ad-hoc activity Report** for each Ad-hoc request.
- **Progress Report on Ad-hoc Activities** (consolidated overall list of Ad-hoc activities and result/achievements) will be produced together with the Final Project Report (D1.5) and appended to it.

### Deliverables

D5.1	Progress Report on Ad-hoc Activities	T0 + 35 months

Work package number	6	Lead beneficiary	EUROCONTROL
Work package title	Ethics Requirements		
Participant number	1		
Short name of participant	EUROCONTROL		
Person/months per participant:			
Start Month	T0	End month	T0 + 6

### Objectives

WP6– Ethics Requirements will ensure compliance with the ‘ethics’ requirements set out for the PJ.20 W2 project.

### Description of work

This work package sets out the ‘ethics’ requirements that the project must comply with.

### Deliverables

D6.1	GEN - Requirement No. 1	T0 + 4 months

**Table 3.4b ‘Other direct cost’ items (travel, equipment, infrastructure, goods & services, large research infrastructure)**

ON (B4)	Cost (€)	Justification
<b>Travel costs and related subsistence allowances</b>	€ 8 350,00	2 Quarterly progress F2F meetings per year – one person - EUR 1391/trip In total 6 trips Vilnius-Brussels during the whole project’s period (EUR 1391/trip)
<b>Equipment costs</b>	€ 0	
<b>Costs of other goods and services</b>	€ 0	
<b>Capitalised and operating costs of ‘large research infrastructure’</b>	€ 0	
<b>Costs of internally invoiced goods and services</b>	€ 0	
<b>Total</b>	€ 8 350,00	

PANSA (B4)	Cost (€)	Justification
<b>Travel</b>	€ 26 000,00	Expenses for travelling take into account the European nature of this project. PANSA will contribute to two Work Packages. This amount covers expenses for estimated 17 trips in total for the duration of the project. Estimated unit cost round 1525 Euro/trip, destination Brussels.
<b>Equipment</b>	€0	
<b>Other goods and services</b>	€ 0	
<b>Total</b>	€ 26 000,00	

ACG/COOPANS	Cost (€)	Justification
<b>Travel</b>	€ 8.973,00	Most meetings are held in Brussels, sometimes in other countries. To be able to participate it often requires a higher cost for ACG/COOPANS, since Personnel has to travel a day in advance to be there in time. The distance to other countries in Europe is also a factor for higher costs. Estimated number of travels is 9 at an average of 997.
<b>Equipment</b>		
<b>Other goods and services</b>	€ 3.069,40	Audit cost, catering for meetings at ACG/COOPANS premises with external guests.
<b>Total</b>	€ 12.042,40	



LFV/COOPANS	Cost (€)	Justification
<b>Travel</b>	€ 4.000,00	Most meetings are held in Brussels, sometimes in other countries. To be able to participate it often requires a higher cost for LFV/COOPANS, since Personnel has to travel a day in advance to be there in time. The distance to other countries in Europe is also a factor for higher costs. Estimated number of travels is 3 at an average of 1333.
<b>Equipment</b>		
<b>Other goods and services</b>	€ 5.600,00	LFV/COOPANS will conclude a contract with an external entity that will provide support in non-core activities.
<b>Total</b>	€ 9.600,00	

Naviar /COOPANS	Cost (€)	Justification
<b>Travel</b>	€ 6.500,00	Most meetings are held in Brussels, sometimes in other countries. To be able to participate it often requires a higher cost for Naviar/COOPANS, since Personnel has to travel a day in advance to be there in time. The distance to other countries in Europe is also a factor for higher costs. Estimated number of travels is 6 at an average of 1083.
<b>Equipment</b>		
<b>Other goods and services</b>	€ 2.016,40	Audit costs, catering for meetings at Naviar/COOPANS premises with external guests.
<b>Total</b>	€ 8.516,40	

HC(FSP)	Cost (€)	Justification
<b>Travel</b>	€ 12.000,00	Travel costs are based on HungaroControl's participation at project or solution meetings, coordination meetings and workshops at non-HungaroControl site. Trips for PJ20 includes an average of 4 travels per year for 3 years to Brussels for 1 person, on the approximated cost of €1000 per travel and person.
<b>Equipment</b>	€	
<b>Other goods and services</b>	€ 600,00	Publicity for the results of the project (electronic press, social media etc.).
<b>Total</b>	€12.600,00	

Participant SINTEF (NATMIG)	Cost (€)	Justification
<b>Travel</b>	€ 9.000,00	SINTEF has a relatively small budget in PJ 20, and are planning to contribute through participation to Project meetings and Work Shops. All meetings are held in other countries, generally in Brussels, and travel from Trondheim often requires a higher cost since personnel has to travel a day in advance to be there in time. Estimated number of travels is 2 per year [2x3yearsx1500€].
<b>Equipment</b>		
<b>Other goods and services</b>		
<b>Total</b>	€9.000,00	

As per Sections 2.4 and 2.5 of the SJU Single Programming Document 2019-2021, “It is also envisaged that the same grant budget amendment procedure used for Wave 1 projects will be applied for Wave 2 projects in 2020”. Therefore, the SJU contribution to the Action shall be broken down into several instalments.

The first instalment (“First SJU Contribution” of the Action), corresponding to the initial “maximum grant amount” as per Article 5.1 of the Grant Agreement, will be calculated in proportion of:

- the maximum grant amount after evaluation for the Action,
- the number of grants awarded under the IR call, and
- the 95 M€ SJU budget available.

On the basis of the First SJU Contribution for this Action established at a maximum grant amount of 1,347,931.20 EUR it is clarified that as a consequence, at the date of signature of the Grant Agreement and without prejudice to the total amount of the budget agreed for this Action, notwithstanding the activities described in the Annex 1, the work to be performed under the First SJU Contribution as per Article 5.1 of the Grant Agreement is limited as summarized below:

- D1.1 Project Management Plan
- D1.2 Communication Plan
- D1.3 Management Progress Report 2020
- D3.1 Master Plan Executive Planning Assessment Methodology
- D3.2 Master Plan Executive Assessment Report (2020)
- D4.1 Master Plan Level 3 Guidance
- D4.2 European ATM Master Plan Level 3 – Implementation Plan (2020)
- D4.3 European ATM Master Plan Level 3 – Implementation Report (2020)
- D6.1 GEN - Requirement No. 1

Any further SJU contribution resulting from further budget availability, will be implemented through a Grant Amendment as per Sections 2.4 and 2.5 of the SJU Single Programming Document 2019-2021, and will result in an update of the Maximum Grant amount in Article 5.1 of the Grant Agreement.

In the event of unavailability of further SJU Budget, beneficiaries may terminate their participation in the action as per article 50.2 and this shall not be regarded as a case of improper termination.

## 4 Members of the consortium

### 4.1 Participants (applicants)

#### 4.1.1 Companies profile

##### 4.1.1.1 EUROCONTROL - European Organisation for the safety of Air Navigation (*coordinator*)

Organisation	1	EUROCONTROL	Intergovernmental Organisation
Description	<p>EUROCONTROL, the European Organisation for the Safety of Air Navigation, is an intergovernmental Organisation with 41 Member States, committed to building, together with its partners, a Single European Sky that will deliver the ATM performance required for the 21st century. EUROCONTROL employs more than 1,900 highly qualified professionals spread over four European countries. Their expertise is deployed to address ATM challenges in a number of key roles:</p> <ul style="list-style-type: none"> <li>• The Network Manager has extended the role of the former Central Flow Management Unit to proactively manage the entire ATM Network (nearly ten million flights every year), in close liaison with ANSPs, airspace users, the military and airports.</li> <li>• The Maastricht Upper Area Control Centre provides air traffic control services for the Netherlands, Belgium, Luxembourg and northern Germany.</li> <li>• The Central Route Charges Office handles billing, collection and redistribution of aviation charges.</li> <li>• It provides a unique platform for civil-military aviation coordination in Europe.</li> <li>• EUROCONTROL is a major player in European ATM research, development and validation and in this respect makes the largest contribution to the SESAR Joint Undertaking.</li> <li>• EUROCONTROL is supporting the deployment through contributions to the Deployment Programme and is supporting the European Commission, EASA and National Supervisory Authorities in their regulatory activities.</li> </ul>		
Previous experience	<p>EUROCONTROL has led the Master Plan work package in SESAR 1 and in SESAR 2020 Wave 1 (project coordinator for PJ20 (Master Plan Campaign)).</p> <p>Also, EUROCONTROL has led the SESAR Definition phase acquiring crucial experience to lead this project. EUROCONTROL's experience includes also the creation and management of the e-Master Plan portal, performance, deployment planning and incentives, standards and regulations and business cases.</p> <p>EUROCONTROL has led the CBA tasks during the SESAR Definition Phase and the Business Cases project during SESAR 1. It has also coordinated the CBA in support of the Master Plan in SESAR 1, acquiring the experience, stakeholder trust, and knowledge of SESAR necessary to lead this activity in PJ20.</p>		
Entity Profile matching the task	<p>The EUROCONTROL teams working in this project come mainly from the ATM Strategy and SESAR and R&amp;D divisions. They have been working in creation and management of the e-Master Plan portal performance, deployment planning and incentives, standards and regulations and business cases since SESAR Definition phase. In relation to PJ.20 W2 main dependency on PJ.19 W2 input, it is worthwhile to note that the EUROCONTROL teams working in PJ.19 W2 are fully integrated in the same division thus facilitating the close collaboration, cross fertilisation and synergies.</p> <p>EUROCONTROL is willing to take the coordinator role of PJ.20 W2 and also the lead of all the WPs.</p>		

	<p>EUROCONTROL will support the project with staff knowledge and capabilities in:</p> <ul style="list-style-type: none"> <li>• Large pan European project management</li> <li>• ATM business expertise;</li> <li>• ATM operational expertise;</li> <li>• ATM System engineering expertise;</li> <li>• ATM Architecture expertise (business, operational, technical, service and information architecture)</li> <li>• European ATM Architecture (EATMA) expertise</li> <li>• ATM service expertise</li> <li>• Performance expertise</li> <li>• CBA and Business case expertise</li> </ul>
Contribution	<p>EUROCONTROL will be the PJ.20 W2 project coordinator and will lead WP2 (Master Plan Campaign), WP3 (MP levels 1 and 2 Assessment), WP4 (MP Level 3 Maintenance) and WP5 (Ad-Hoc SESAR Support).</p> <p>EUROCONTROL will contribute to this project on operational concepts, on operational, system, service and information architecture, and on performance management, performance framework, and consolidation of performance assessment.</p> <p><i>EUROCONTROL will provide to the whole SESAR2020 Partners free access to the ATM architecture repository (MEGA) and the eATM portal with associated support service agreed with the SJU.</i></p>

#### 4.1.1.2 AIRBUS SAS

Organisation	2	AIRBUS	Airborne Industry
Description	<p>Airbus is a leading global manufacturer of the most innovative commercial aircraft. Its comprehensive product line comprises highly successful families of aircraft, from the single-aisle A220 Family to the double-deck A380.</p> <p>Over the last years, Airbus has built a reputation on reacting to market demands, developing and evolving its products to meet the needs of customers and the wider world. As such, technological innovation has been at the core of Airbus' strategy since its creation.</p> <p>The A320 is one aircraft in four sizes (A318, A319, A320 and A321), representing the most successful and versatile jetliner family ever. Seating from 100 to 240 passengers and flying throughout the world – and landing on every continent – an A320 takes off or lands every 1.6 seconds. The A320neo (new engine option) is the latest upgrade to the A320 Family. These new A319, A320 and A321 models feature new engines and large wingtip devices known as Sharklets. Together they result in a 15% fuel-burn reduction, corresponding to an annual CO2 reduction of 3,600 tonnes per aircraft. The A220 expand the Airbus single-aisle family to cover the 100-150 seat segment – and respond to a worldwide market demand for smaller single-aisle jetliners.</p> <p>In the wide-body segment, the A330neo is powered by high-bypass ratio, new generation engines and designed with an advanced high-span wing vastly improving the aerodynamics. New materials have also been used across the wing including titanium pylon and composite nacelle. All these features combined, ensures that the A330neo has the lowest seat-mile cost of any mid-size widebody and burns 25% less fuel burn than the previous generation A330.</p> <p>The A350 XWB brings together the very latest in aerodynamics, design and advanced technologies to shape the efficiency of medium- to long-haul operations. The aircraft's innovative all-new carbon fibre reinforced plastic fuselage results in lower fuel burn as</p>		

	<p>well as easier maintenance. Meanwhile, the combination of low operating costs, flexibility and optimised performance makes the A330 Family popular with an ever-increasing operator base.</p> <p>The A380 provides airlines with the best opportunities to optimise revenue across their networks, with more seats for growth, connecting traffic and higher yields by offering more capacity when and where people want to fly.</p> <p>Continuously striving to develop new technologies, Airbus is a world leader in the modern aviation industry. Helping it stay at the forefront is the introduction of new systems, materials and designs that improve the quality and efficiency of aircraft to benefit everyone – from the passengers to airlines.</p>
Previous experience	<p>AIRBUS has thorough ATM knowledge of commercial air transport operations. More specifically for this operational project:</p> <ul style="list-style-type: none"> <li>• Participation to Performance Planning, defining the capability requirements per Operating Environment</li> <li>• Airbus has contributed to Data Generation &amp; Coordination, in identifying the links with existing regulation and potential needs for new regulatory actions, assessing standardisation needs and timelines, defining Solutions deployment earliest availability dates, and developing the standardisation and regulatory roadmaps</li> <li>• Airbus has contributed to the definition of MP Level 2 Deployment Scenarios (DS) of the SESAR Solutions</li> <li>• Airbus was involved also in the Implementation planning and monitoring, in developing MP Level 3 process description, and develop on a yearly basis the Master Plan Level 3</li> <li>• Important involvement in the Business Cases activities, in consolidating Business Cases, performing Impact Assessment and developing incentives schemes</li> <li>• Airbus was a key contributor to the MP Campaign, in ensuring consistency of Level 1 roadmaps with Level 3 industrial roadmaps and helping identifying the Essential Operational Changes</li> <li>• Airbus strongly contributed to the work-package, support to Common Project, in providing expert support on request from the SJU on the technical and business aspects of the task.</li> <li>• Airbus was key contributor to the Roadmap for the Safe integration of Drones document.</li> </ul> <p>Previous ATM projects (details):</p> <ul style="list-style-type: none"> <li>• SESAR 1 (WP C02, WP C03)</li> <li>• SESAR 2020 Wave 1 (PJ 19, PJ 20)</li> </ul>
Entity Profile matching the task	<p>As the leader aircraft manufacturer, capable of managing large complex programmes, AIRBUS staffs are highly skilled professionals, competent and motivated in their fields and well accustomed to working within an international, multicultural environment.</p>
Contribution	<p>AIRBUS SAS will act as a contributor to the following Work packages :</p> <p><b>WP2 – Master Plan Campaign</b></p> <ul style="list-style-type: none"> <li>• ATM Master Plan update campaign management</li> <li>• ATM vision update</li> <li>• Deployment Scenario and technology roadmaps</li> <li>• Standardisation and Regulatory Needs</li> <li>• Business View development</li> </ul> <p><b>WP3 - MP Levels 1 and 2 Assessment</b></p> <ul style="list-style-type: none"> <li>• MP Levels 1 and 2 assessment methodology</li> <li>• Contribution to the DataSet maintenance</li> <li>• MP Levels 1 and 2 assessment</li> </ul> <p><b>WP4 – MP Level 3 Maintenance</b></p> <ul style="list-style-type: none"> <li>• Master Plan Level 3 guidance</li> <li>• Implementation Plan management</li> <li>• Reporting management</li> </ul>

**WP5 – Ad-Hoc SESAR Support**

- Provide expert support on request from the SJU for Ad-Hoc activities, the current one identified is the definition of Common Projects.

Of course, as the major global aircraft manufacturer, capable of managing large complex programmes, Airbus is also ready and willing to lead the Airborne Industry Coordination.

**4.1.1.3 DEUTSCHES ZENTRUM FUER LUFT - UND RAUMFAHRT EV**

Organisation	3	DLR (AT-One)	Service Ground Industry	Provider
Description	<p>The German Aerospace Center (DLR) is the national aeronautics and space research centre of the Federal Republic of Germany. Its extensive research and development work in aeronautics, space, energy, transport, digitalisation and security is integrated into national and international cooperative ventures. In addition to its own research, as Germany's space agency, DLR has been given responsibility by the federal government for the planning and implementation of the German space programme. DLR is also the umbrella organisation for one of Germany's largest project management agencies. DLR has approximately 8000 employees at 20 locations in Germany.</p> <p>Several DLR research institutes are participating in SESAR which are shortly introduced in the following:</p> <p>DLR Institute of Flight Guidance develops innovative air traffic concepts – from the idea towards the implementation. The goal is to ensure an air transport system that is safe, efficient, environmentally friendly and reliable. In the field of air traffic management (ATM) and airports, the institute acts as a supplier of know-how and ideas while balancing the conflicting interests between fundamental research and applied science. As the largest German research facility for flight guidance, it strives to validate and deliver solutions to one of the greatest challenges in aviation – how to increase the efficiency and capacity of air transport in a safe and green way. Key tasks of the institute are to explore how the interplay of flight guidance on board and on the ground is optimized and how the complex interdependencies between the increasingly optimized aviation systems can be handled in a robust and resilient manner.</p> <p>DLR Institute of Communications and Navigation develops and investigates new systems and methods for radio transmission and positioning. Its work in aviation focusses on enabling technologies for air-traffic management. The Institute has a profound expertise in communications, navigation, and surveillance (CNS) technologies. It actively performs research and development in air-ground, air-air, and satellite communications as well as on the networking concept for the future communications infrastructure. In navigation, the Institute has largely contributed to the development of GBAS as well as future ARAIM. It has developed means to protect navigation systems from harmful interference, spoofing and space weather effects and conceptualized integrity monitoring standards for all phases of flight.</p> <p>The DLR Institute of Atmospheric Physics focusses on the research of the physical and chemical processes of the atmosphere and meteorological applications. On both regional and global scales, the relevant processes and changes of the state of the atmosphere are quantified and systematically investigated using remote sensing, research aircraft and computational models. The knowledge of dynamical, cloud physical, and chemical processes constitute the basis for many aeronautical applications.</p> <p>DLR Institute of Flight Systems is active in the topics of flight mechanics and measurement and system technology of all flying systems. The Institute has extensive knowledge in wake turbulence and aviation flight safety, originating from numerous wake-vortex related research projects.</p>			



	AT-One Consortium is composed of its two members Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR) and Netherlands Aerospace Centre (NLR)
Previous experience	DLR was involved in the Definition Phase of SESAR from 2005 to 2008. In SESAR 1 DLR has been a subcontractor to DFS and Thales and was selected as an Associate Partner of the SJU. In SESAR2020 DLR is coordinating the membership of the AT-One consortium. DLR was and is participating in all kind of projects ranging from WP E Exploratory Research over several Exploratory Research, Industrial Research and Very Large-Scale Demonstrations. In addition DLR is or was leading several projects like the Industrial Research project PJ05, the Very Large Scale Demos PJ28 and Audio and the Exploratory Research projects Minima, Malorca and Airpass.
Entity Profile matching the task	DLR as a non-profit research organization with a very broad knowledge and more than 110 years of experience will bring its interdisciplinary knowledge ranging from very basic to applied research into the master planning.
Contribution	DLR, with its wide area of knowledge, will contribute to the to the Ad-Hoc support work package dealing with the support to the SESAR programme on-request. DLR (AT-One) will act as reviewer in WP2.

#### 4.1.1.4 Valstybes imone "Oro navigacija"

Organisation	4 ON (B4)	Service Provider
Description	<p>Founded by the Ministry of Transport and Communications of the Republic of Lithuania in 1995, valstybes imone Oro navigacija (ON) is a state-owned enterprise providing Air Navigation Services, including Air Traffic Management Services, Communication, Navigation and Surveillance Services, Aeronautical Information Services, as well as Search and Rescue, in the airspace of Republic of Lithuania and over the part of Baltic Sea.</p> <p>With a total staff of 290 (including 90 ATCOs) and altogether five operational units, among them one ACC (Vilnius), three APPs (Vilnius, Kaunas, Palanga), one TWR (Siauliai), ON controls the airspace of Republic of Lithuania and over the part of Baltic Sea (Vilnius FIR) of the total size of 76 126 km<sup>2</sup> and provides ATC services at four designated Lithuanian international airports.</p> <p>In 2018, compared to the previous year, an increase in air traffic was seen in the Vilnius FIR, namely from 243,022 to 265,919 IFR movements, i.e. by 9.4 %. The European-wide increase in air traffic is also reflected in the evolution seen in the airspace of Republic of Lithuania in the last decade when the total number of IFR movements increased by 47%. Each year providing safe and efficient air traffic control services to more than 250 thousand flights ON continues to maintain zero delays level and to meet users' expectations.</p> <p>ON is a Member of Baltic FAB, a part of B4 Consortium composed of four ANSPs from Central and Eastern European countries and a Member of SESAR Joint Undertaking. Being a member of SESAR Joint Undertaking via B4 Consortium, ON actively participates in the industrial and transversal projects by SESAR 2020 Programme while participation in SESAR Deployment Programme allows to implement several projects. In 2017, ON officially joined the European iTEC (Interoperability Through European Collaboration) alliance developing a high-end air traffic management system for busy and complex airspace.</p>	



Previous experience	<p>ON participates in 6 projects and 8 solutions (Work Packages (WPs)) under SESAR 2020 Programme in Wave 1 within the framework of Horizon 2020 Programme (EU Research and Innovation Programme). Currently, ON actively participates in the following SESAR 2020 Wave 1 projects:</p> <ul style="list-style-type: none"> <li>• PJ.05: Remote Tower for Multiple Airports</li> <li>• PJ.06: Trajectory based Free Routing</li> <li>• PJ.14: Essential and Efficient Communication Navigation and Surveillance Integrated System</li> <li>• PJ.19: Content Integration</li> <li>• PJ.20: Master Plan Maintenance</li> <li>• PJ.22: Validation and Demonstration Engineering</li> </ul> <p>and solutions (Work Packages (WPs)):</p> <ul style="list-style-type: none"> <li>• PJ.05-02: Remotely Provided Air Traffic Service for Multiple Aerodromes</li> <li>• PJ.05-03: Remotely Provided Air Traffic Services from a Remote Tower Centre with a Flexible Allocation of Aerodromes to Remote Tower Modules</li> <li>• PJ.06-02: Management of Performance Based Free Routing in Lower Airspace</li> <li>• PJ.14-01: CNS Environment Evolution</li> <li>• PJ.19-04: Performance Management</li> <li>• PJ.20-02: Master Plan Maintenance</li> <li>• PJ.22-03: Maintenance of the Platform Development Methodology</li> <li>• PJ.22-04: Communalization of Validation Tools and Interoperability Solutions</li> </ul> <p>ON has experience in contribution and development of all main projects deliverables and performing solutions validation exercises. ON has a SESAR 2020 Programme Management team and an internal team of experts specializing in different ATM related fields.</p>
Entity Profile matching the task	<p>Working on SESAR 2020 Wave 1 project PJ.20 (Master Plan Maintenance) ON contributes to WP2 (Master Plan Maintenance) with a special focus on the following sub-Work Packages (sWPs): Performance Planning, Business Cases, Support to Master Plan Update Campaign. ON leads sWP 2.2 (Performance Planning) and coordinates all activities related with description and categorization of Operating Environments (OEs) and Sub-OEs. During SESAR2020 Wave 1 ON introduced a new classification approach of OEs shifting from airspace perspective to ATM service provision perspective with the focus on different flight phases instead of airspace elements. ON with partners updated OEs datasets with actual and forecasted traffic data including different characteristics of OEs.</p> <p>ON experts worked as Master Planning Group Performance Key Focus Team members during the Master Plan Update Campaign for the latest edition of the European ATM Master Plan (2019). In addition, ON experts contributed to two Chapters (Performance View and Business View: Costs and Benefits) of the latest edition of the European ATM Master Plan (2019).</p> <p>ON has experience in cooperation with all main partners (ENAI, EUROCONTROL, DFS, NATS, ENAV, INDRA) gained during SESAR2020 Wave 1.</p>
Contribution	<ul style="list-style-type: none"> <li>• ON will contribute as reviewer to WP2 (Master Plan Campaign) in particular to sWP2.01 (ATM Master Plan update campaign management) and sWP2.02 (ATM vision update).</li> </ul>

#### 4.1.1.5 POLSKA AGENCJA ZEGLUGI POWIETRZNEJ

Organisation	5 PANSA (B4)	Service Provider
--------------	--------------	------------------

Description	<p>PANSA (Polish Air Navigation Services Agency) is the national entity acting pursuant to the Act on the Polish Air Navigation Services Agency (2006) to provide air navigation services in Poland. PANSA provides air traffic management services, communication, navigation and surveillance services as well as an aeronautical information services in the Polish airspace and in airspace over the part of Baltic Sea. It operates one combined En-route/TMA control centre at Warsaw, 3 independent TMA control centres (Gdańsk, Kraków, Poznań) and 14 tower units at Polish international airports. Each year PANSA, being one of the biggest ANSPs in the Central and Eastern part of Europe, provides safe, effective and highly efficient air traffic control services.</p> <p>In 2018 PANSA handled over 830 thousands movements (IFR traffic).</p> <p>PANSA is constituent entity of B4 Consortium, composed of four ANSPs from Central and Eastern part of Europe and their Linked Third Parties. B4 Consortium is a member of A6+ on SESAR 2020 Programme content.</p> <p>PANSA is a Member of the Baltic FAB and Gate One, a regional platform of Central and Eastern European ANSPs.</p> <p>PANSA is also a founding member of the SESAR Deployment Alliance that was mandated by the European Commission to perform functions of the SESAR Deployment Manager that is responsible for synchronisation and coordination of PCP-related implementation projects.</p>
Previous experience	<p>Previous projects:</p> <ul style="list-style-type: none"> <li>• Baltic Functional Airspace Block (FAB) Feasibility Study (Poland and Lithuania). Preparation of Baltic FAB Feasibility Study, Baltic FAB Implementation plan, Baltic FAB Initial development study and Baltic FAB Final Development Study;</li> <li>• Establishment of the Baltic Functional Airspace Block (Baltic FAB) - preparation and following submission of Baltic FAB Safety Case to the European Commission. Cooperation and coordination in the area of Safety Management and its supervision (2010 – 2011);</li> <li>• Baltic FAB project on ATM Systems Convergence.</li> </ul> <p>General SESAR experience:</p> <p>PANSA, with the support of its Linked Third Parties, has been actively involved in various industrial topics and engaged in all four key areas (Key Features) of the ATM Master Plan.</p> <p>Currently, PANSA is active contributor in the following Wave 1 SESAR Projects:</p> <p>PJ.02 EARTH, PJ.03b SAFE, PJ.04 TAM, PJ.06 ToBeFree, PJ.08 AAM, PJ.10 PROSA, PJ.18 4DTM</p> <p>Since 2015, PANSA has been a member of SESAR Deployment Alliance that is the entity – as mandated by the EC – responsible for the overall coordination and synchronization of the deployment of the Pilot Common Project (PCP) regulation. In line with the Regulation 409/2013, PANSA – being a member of the Deployment Manager – has been carrying out implementation projects that fall under the PCP and the SESAR Deployment Programme.</p> <p>PANSA has been deploying numerous implementation projects that fall under ATM Functionalities that are required by the PCP regulation to be deployed by PANSA (ATM Functionalities # 3, #4, #5 and #6). Part of implementation projects has been and will be deployed with EU co-funding, the major one are:</p>

	<ul style="list-style-type: none"> <li>Family 3.2.1 – Upgrade of ATM Systems (NM, ANSPs, AUs) to support Direct Routings (DCTs) and Free Route Airspace (FRA)</li> <li>Governance for SWIM and Data Link Services The implementation of SWIM (System Wide Information Management) and a performant DLS (Data Link Services).</li> </ul> <p>As the A6 member PANSA is one of the ANSPs that launched together with EUROCONTROL in September 2018 of a joint initiative to establish a “digital backbone” to underpin the Europe-wide systems and technology developments supporting the move towards a Single European Sky (SES). Proposed concept of the SES Digital Backbone (SDB) provide the essential data exchange infrastructure to create a framework for the wide range of SES implementation projects and is based on the successful story of PENS and NewPENS in which PANSA is actively participating.</p>
Entity Profile matching the task	<p>Based on latest developments and participation in many EU-wide projects of SESAR R&amp;D as well as deployment nature, PANSA can bring to the SESAR 2020 Wave2 broadly experienced and highly motivated staff with solid expertise in successful implementation of ATM MP goals through flexible ATC/ATS OPS centre concept of operation and new technology utilisation.</p> <p>PANSA has a unique expertise in development of the U-Space environment, in cooperation and joint implementation with business partners, and of solutions aiming at safe and massive integration of UAVs into airspace.</p> <p>Based on previous and current experience, PANSA experts will provide the regional and national fit-for-purpose focus on planning and efficient ATM MP coordination and implementation key functionalities identified in SESAR 2020:</p> <ul style="list-style-type: none"> <li>Higher levels of autonomy and connectivity of all aircrafts coupled with a smarter, more automated management of traffic, and enabled by an ‘intranet of flight’;</li> <li>Mobile, terrestrial and satellite-based communications, which are used to provide real-time vehicle trajectory information, shared between vehicles and with the ground infrastructure;</li> <li>Cyber-secured digital and automated tools provided on board the air vehicle itself, or as part of the ground-based infrastructure;</li> <li>Virtual technologies to decouple the physical infrastructure such as sensors, communication or navigation devices from the services that are provided to manage the airspace;</li> <li>High-tech video, synthetic and enhanced sensor technologies to operate air traffic services for airports or to enable aircraft to land in low-visibility conditions;</li> <li>Big data analytics and open source data usage to encourage the creation of new services and to allow for better flight planning, airport operations and increased predictability of the overall traffic;</li> <li>System flexibility to handle the increasing number of air vehicles, such as drones;</li> </ul> <p>Traffic management digital services to handle the increasing number of air vehicles, such as drones in the U-Space context.</p>
Contribution	<p>PANSA contribution is targeted to proper establishment and timely updates of ATM Master Plan taking into account challenges, driving manned aviation efforts towards step changes in ATM performance and deliver rapid and substantial ATM MP changes/proposals created by the need to successfully carry out the digital transformation of aviation, supported by a high degree of automation, connectivity and virtualisation of services.</p> <p>WP2 – Master Plan Campaign</p> <p>PANSA intends to participate in activities related to planning, preparation and conducting the Master Plan Update Campaign for the next edition of the European ATM Master Plan (2022) in support of the objectives set by the governance bodies and to contribute to the</p>

achievement of the SES and the European ATM Master Plan vision and ambition across the main performance areas.

PANSA intends to contribute to the following activities:

- WP2 - Master Plan Campaign:
  - maintaining the consistency of the three levels of the European ATM MP (L1 - level 1 Executive View, L2 - level 2 Planning and Architecture View, and L3 - level 3 Implementation View);
  - impact assessment of the functionality traffic management digital services to handle the increasing number of air vehicles, such as drones in the U-space context;
  - L1 and L2 planning for the big data analytics and open source data usage to encourage the creation of new services and to allow for better flight planning, airport operations and increased predictability of the overall traffic;
  - development of the regulatory and standardisation roadmaps taking into account the progress of deployment scenarios.
  - assist in development of the European ATM MP data portal, inter alia to consolidate the efforts towards coordination and mapping with ICAO ASBU / ICAO GANP.
  - provide its expertise in relation to Drones MP Add / U-Space ConOps
- WP4 – MP Level 3 Maintenance

PANSA intends to provide its expertise in a role of Reviewer to the following activities:

- impact assessment of Deployment Scenarios taking into account airspace users expectations, planning and programs;
- development of recommendations for various incentives financial and or operational based on business modelling, analysis and assessment of economic branches for U-space / UTM implementation scenarios;
- implementation concepts and scenarios for the UAS traffic management (UTM).

#### 4.1.1.6 Austro Control Österreichische Gesellschaft für Zivilluftfahrt MHB

Organisation	6	ACG/COOPANS	Service Provider
Description	<p>Austro Control is a state-owned limited liability company.</p> <p>Location: The headquarter is located in Vienna and subdivisions are situated in Linz, Salzburg, Klagenfurt, Graz and Innsbruck.</p> <p>Organizational setup: Two main divisions - Air Navigation Services (operational functions) comprising Air Traffic Management, Engineering Services, Meteorological Services and Aviation Agency (regulatory matters) supported by corporate services</p> <p>Governance structure: A Supervisory Board and a Management Board are responsible for the corporate governance. An audit committee is also established.</p> <p>The primary business of the ANS part of Austro Control is the provision of air navigation services, pursuing the basic principle of a high level of air traffic safety in compliance with Single European Sky framework</p> <p>Austro Control is a member of COOPANS Consortium consisting of 5 Air Navigation Service Providers: Austro Control (ACG), Croatia Control (CCL), Irish Aviation Authority (IAA), Naviar and Luftfartsverket (LFV). All five Air Navigation Service Providers have already for a long time been working under a common framework</p>		

	<p>agreement together with Thales in COOPANS. COOPANS is a joint program based on the incremental development of a common ATM platform. The overarching goal for COOPANS is to enable each individual ANSP to achieve financial savings through cost, resource, and competence sharing and to meet the EU objective of harmonizing ATM systems. This work is now expanded to Research &amp; Innovation by the establishment of the COOPANS Consortium.</p> <p>Austro Control has many years of experience in the delivery of Air Traffic Services, the design of concepts and in development, validation and implementation of Air Traffic Management tools.</p> <p>The enterprise is certified according to ISO 9001.</p>
Previous experience	<p>Austro Control has participated in SESAR via NORACON consortium in the following WPs:</p> <ul style="list-style-type: none"> <li>• WP00 SESAR2020 preparation: 00.15</li> <li>• WP3 Validation infrastructure adaptation and integration: 03.03.02, 03.03.03</li> <li>• WP5 TMA Operations: 05.03.00, 05.06.02, 05.06.04, 05.06.07, 05.07.02, 05.09</li> <li>• WP6 Airport Operations: 06.05.05, 06.06.01, 06.07.01, 06.08.08, 06.09.03</li> <li>• WP7 Network Operations: 07.05.04</li> <li>• WP8 Information Management: 08.01.01, 08.01.06, 08.03.03, 08.03.06, 08.03.10</li> <li>• WP10 En-Route &amp; Approach ATM Systems: 10.02.01, 10.02.03, 10.03.01, 10.03.08, 10.07.01, 10.10.03</li> <li>• WP12 Airport Systems : 12.02.01, 12.06.03</li> <li>• WP13 Network Information Management Systems: 13.02.02</li> <li>• WP14 SWIM Technical Architecture: 14.02.03, 14.04</li> <li>• WP16 R&amp;D Transversal Areas: 16.01.01, 16.06.01, 16.06.01.b</li> <li>• WP B Target Concept and Architecture Maintenance: B.04.05</li> <li>• WP C: Master Plan Maintenance C.02, C.03</li> </ul> <p>Austro Control has participated in SESAR 2 Wave 1 in the following Projects, Solutions or VLDs:</p> <ul style="list-style-type: none"> <li>• PJ.01-01</li> <li>• PJ.02-01</li> <li>• PJ.03a-01</li> <li>• PJ.04-02</li> <li>• PJ.05-02</li> <li>• PJ.05-03</li> <li>• PJ.06-01</li> <li>• PJ.09-02</li> <li>• PJ.10-02A</li> <li>• PJ.10-02B</li> <li>• PJ.16-03</li> <li>• PJ.16-04</li> <li>• PJ.17-08</li> <li>• PJ.18.02</li> <li>• PJ.18.04</li> <li>• PJ.19-CI01</li> <li>• PJ.19-CI02</li> <li>• PJ.20</li> <li>• PJ.24</li> <li>• PJ.27</li> </ul>
Entity Profile matching the task	<p>ACG/COOPANS experience from ICB work, from SESAR 1 C.2/C.3, from Wave 1 and from being involved in the LSSIP/ESSIP process will be valuable in this project. ACG/COOPANS also has an involvement in the Deployment Manager work, which is</p>



	also linked to the work in this project. Participants from strategic planning departments are engaged in the work.
Contribution	Austro Control will contribute its above mentioned expertise with the European planning process as well as the knowledge gained in the SESAR R&D programmes to updates of the ATM Masterplan.

#### 4.1.1.7 Luftfartsverket

Organisation	7	LFV/COOPANS	Service Provider
Description	<p>Luftfartsverket (LFV) is a state enterprise with headquarter located in Norrköping, Sweden. LFV has subdivisions located in 22 different sites, most important being in Stockholm (Arlanda) and Malmö (Sturup), where the two area control centres are located.</p> <p>LFV has three main divisions:</p> <ul style="list-style-type: none"> <li>• Operational Systems &amp; Development</li> <li>• ATM Operations</li> <li>• Sales</li> </ul> <p>All supported by corporate services.</p> <p>Governance Structure:</p> <ul style="list-style-type: none"> <li>• LFV has a Board of Directors having responsibility for the corporate governance. The Director general is appointed by the Board of Directors.</li> <li>• LFV is a member of COOPANS Consortium consisting of five Air Navigation Service Providers: Austro Control (ACG), Croatia Control (CCL), Irish Aviation Authority (IAA), Naviar, Navegação Aérea de Portugal (NAV Portugal) and Luftfartsverket (LFV). Cooperation between COOPANS partners goes beyond SESAR- partners has for a long time worked together with Thales under a common framework agreement in a joint program based on the incremental development of a common ATM platform. The overarching goal for COOPANS is to enable each individual ANSP to achieve financial savings through cost, resource, and competence sharing and to meet the EU objective of harmonizing ATM systems. This work is expanded to Research &amp; Innovation by the establishment of the COOPANS Consortium.</li> </ul> <p>Luftfartsverket (LFV) has many years of experience, both in the delivery of Air Traffic Services; design of concepts and in development, validation and implementation of Air Traffic Management tools.</p> <p>LFV has an extensive experience and a close interaction with the industry and Swedish Transport Agency, developing new technology. The effect of this is a flexible product portfolio of functional and cost efficient solutions, like the development of Remote Tower Services (RTS) that went from idea to reality in record time.</p> <p>The enterprise is certified ISO 9001.</p>		
Previous experience	<p>LFV has participated, contributing to and also been leading projects in SESAR 1 within NORACON Consortium in the following WPs:</p> <ul style="list-style-type: none"> <li>• WP00 - SESAR2020 preparation: 00.14, 00.15</li> <li>• WP3 - Validation infrastructure adaptation and integration: 03.01.01, 03.02.01, 03.02.02, 03.03.02, 03.03.03</li> <li>• WP4 - En-route Operations: 04.08.04, 04.10</li> <li>• WP5 - TMA Operations: 05.03.00, 05.06.01 (Lead), 05.06.02, 05.06.04, 05.06.07, 05.07.02, 05.09</li> </ul>		

	<ul style="list-style-type: none"> <li>• WP6 - Airport Operations: 06.06.02, 06.07.01, 06.08.01, 06.08.02, 06.08.04, 06.08.08, 06.09.03(Lead)</li> <li>• WP7 - Network Operations: 07.05.02, 07.05.03, 07.05.04</li> <li>• WP8 - Information Management: 08.00 (Lead), 08.01.03, 08.01.04, 08.01.05, 08.01.06, 08.01.09, 08.03.00, 08.03.03, 08.03.04, 08.03.06, 08.03.10</li> <li>• WP9 - Aircraft Systems : 09.48</li> <li>• WP10 - En-Route &amp; Approach ATM Systems: 10.02.01, 10.02.03, 10.03.01, 10.03.08, 10.04.04, 10.07.01, 10.09.04, 10.10.03</li> <li>• WP12 - Airport Systems : 12.02.01, 12.04.06, 12.04.07, 12.04.08, 12.04.10</li> <li>• WP14 - SWIM Technical Architecture: 14.01.03, 14.04</li> <li>• WP15 - Non-Avionic CNS System: 15.01.06, 15.01.07, 15.02.04, 15.04.05.a, 15.04.05.b</li> <li>• WP16 - R&amp;D Transversal Areas: 16.01.02, 16.04.01, 16.04.03, 16.04.04, 16.05.04, 16.06.01.b</li> <li>• WP B - Target Concept and Architecture Maintenance: B.04.01, B.04.02, B.04.03, B.04.05</li> <li>• WP C - Master Plan Maintenance: C.02, C.03</li> </ul> <p>Of special relevance for this project is WPB4.2 Update and maintenance of the development of the Concept of Operations (CONOPS) and associated ATM Services (with NORACON-partners lead on CONOPS work), WPB4.3 Development of the high level logical system architecture (SOA) and the technical system architecture (SoS), WPC.2 Deployment/Performance planning and reporting and WPC.3 Maintain Standardisation and Regulatory Roadmaps.</p> <p>In SESAR 2020, wave 1, LFV has contributed to and also been leading solutions within COOPANS Consortium in the following solutions:</p> <ul style="list-style-type: none"> <li>• PJ.01-01 - Extended Arrival Management with overlapping AMAN operations and interaction with DCB</li> <li>• PJ.01-03B - Use of Arrival and Departure Management Information for Traffic Optimisation in the TMA</li> <li>• PJ.02-08 - Traffic optimisation on single and multiple runway airports (lead)</li> <li>• PJ.02-11 - Enhanced Terminal Area for efficient curved operation</li> <li>• PJ.05-02 - Remotely Provided Air Traffic Service for Multiple Aerodromes (lead)</li> <li>• PJ.05-03 - Remotely Provided Air Traffic Services from a Remote Tower Centre with a flexible allocation of aerodromes to Remote Tower Modules (lead)</li> <li>• PJ.06-01 - Optimized traffic management to enable Free Routing in high and very high complexity environments</li> <li>• PJ.10-01a - High Productivity Controller Team Organisation</li> <li>• PJ.10-02b - Controller Automated Support Tools in En-Route Environment</li> <li>• PJ.10-05 - IFR RPAS Integration</li> <li>• PJ.15-09 - Data Centre Service for Virtual Centres Service</li> <li>• PJ.16-03 - Virtual Centre Concept</li> <li>• PJ.16-04 - Workstation, Controller productivity</li> <li>• PJ.18-02 - Integration of trajectory management processes</li> <li>• PJ.19-CI01 - ATM operations</li> <li>• PJ.19-CI02 - Systems and services</li> <li>• PJ.19-CI04 - Support and Evolution of the Content Integration Framework</li> <li>• PJ20 - Masterplan maintenance</li> <li>• PJ.25 - E-AMAN VLD</li> <li>• PJ.27 - Flight Object Interoperability VLD</li> <li>• PJ.31 - Initial Trajectory Information Sharing VLD</li> </ul>
Entity Profile matching the task	<p>Expertise is present in the company in many areas:</p> <ul style="list-style-type: none"> <li>• Remote airport ATC</li> <li>• Development and supervision of operational concepts</li> </ul>



	<ul style="list-style-type: none"> <li>• Safety concepts &amp; Safety Assessments</li> <li>• Airport safety support tools</li> <li>• Collaborative Decision Making</li> <li>• Air traffic forecast/Capacity planning incl. runway capacity enhancement</li> <li>• CWP design</li> <li>• Development and implementation of ATM systems &amp; Tools (common development and implementation of TopSky)</li> <li>• Trajectory management (core functionality in TopSky)</li> <li>• Development and implementation of safety and monitoring tools (core functionality in TopSky – 4D MTCD)</li> <li>• Flight procedures, special approach procedures (incl. RNAV)</li> <li>• Performance Based Navigation</li> <li>• Integration, validation and analysis of test result</li> <li>• Extended lab environment including NARSIM and Thales IBP</li> <li>• Participation in European deployment activities (IDSG)</li> <li>• Human performance assessment</li> </ul>
Contribution	LFV will participate with operational experts, with focus on concepts and operational impact. This work will take the full life cycle in consideration. LFV will contribute with Master plan reviews, updates and interaction with the implementations plan.

#### 4.1.1.8 Naviair

Organisation	8	Naviair/COOPANS	Service Provider
Description	<p>Naviair is a 100% state owned company originating in “Statens Luftfartsvæsen” founded in 1938. Headquarter is located in Copenhagen (TWR/APP/En-route) and subdivisions are located in Roskilde, Billund, Århus, Rønne and Ålborg (TWR/APP) and in Vagar &amp; Nuuk (FIS/FIC).</p> <p>Naviair has three main divisions - Operations, Technical Maintenance and ATM Projects &amp; Engineering supported by Corporate Services.</p> <p>Naviair is a member of COOPANS Consortium consisting of 5 Air Navigation Service Providers: Austro Control (ACG), Croatia Control (CCL), Irish Aviation Authority (IAA), Luftfartsverket (LFV) and Naviair. Cooperation between COOPANS partners goes beyond SESAR – partners has for a long time worked together with Thales under a common framework agreement in a joint program based on the incremental development of a common ATM platform.</p> <p>The overarching goal for COOPANS is to enable each individual ANSP to achieve financial savings through cost, resource, and competence sharing and to meet the EU objective of harmonizing ATM systems. This work is now expanded to Research &amp; Innovation by the establishment of the COOPANS Consortium.</p> <p>Naviair has many years of experience, both in the delivery of Air Traffic Services; design of concepts and in development, validation and implementation of Air Traffic Management tools. The company is certified ISO 9001.</p>		
Previous experience	<p>SESAR 1 experience: Naviair has participated in SESAR via NORACON consortium in the following WPs:</p> <ul style="list-style-type: none"> <li>• WP00 SESAR2020 preparation 00.14, 00.15</li> <li>• WP3 Validation infrastructure adaptation and integration: 3.2.1, 3.2.2, 3.3.2, 3.3.3</li> <li>• WP5 TMA Operations: 5.3, 5.6.1, 5.6.4, 5.6.7, 5.9</li> <li>• WP6 Airport Operations: 6.8.4</li> <li>• WP7 Network Operations: 7.5.4</li> <li>• WP 8 Information Management: 08.1.3, 8.1.5, 8.1.9, 8.3.4, 8.3.10</li> </ul>		

	<ul style="list-style-type: none"> <li>• WP 10 En-Route &amp; Approach ATM Systems: 10.2.1, 10.2.3, 10.3.1, 10.3.8, 10.9.4, 10.10.3</li> <li>• WP 14 SWIM Technical Architecture: 14.1.3, 14.4</li> <li>• WP 16 R&amp;D Transversal Areas: 16.2.3, 16.6.2</li> <li>• WP B Target Concept and Architecture Maintenance: B4.2, B4.3, B4.5</li> <li>• WP C Master Plan Maintenance: C2 &amp; C3</li> </ul> <p>SESAR 2020 experience: Naviar as participated and contributed in several projects during Wave 1</p> <ul style="list-style-type: none"> <li>• PJ.01-01 E-AMAN - Extended Arrival Management with overlapping AMAN operations and interaction with DCB</li> <li>• PJ.06-01 Free Route - Optimized traffic management to enable Free Routing in high and very high complexity environments</li> <li>• PJ.10-02A Separation Management - Improved Performance in the Provision of Separation</li> <li>• PJ.10-02B Separation Management - Advanced Separation Management</li> <li>• PJ.14-02-02 Future Satellite Communications Data Link</li> <li>• PJ.14-04-01 Surveillance Performance Monitoring (Task 1)</li> <li>• PJ.14-04-03 New use and evolution of Cooperative and Non-Cooperative Surveillance (Task 3)</li> <li>• PJ.15-9 Common Services, Virtual Centre data centre service</li> <li>• PJ.16-3 CWP Controller productivity - Workstation, Service Interface Definition &amp; Virtual Centre Concept</li> <li>• PJ.16-4 CWP Virtual Centre concept - Solution Workstation, Controller Productivity (Advanced Speech Recognition)</li> <li>• PJ.18-2 Trajectory Management Process</li> <li>• PJ.18-6 Performance Based Trajectory Prediction</li> <li>• PJ.19 CI1/WP2 ATM Operations (SESAR CONOPS)</li> <li>• PJ.20 Master Plan Maintenance</li> <li>• PJ.25 E-AMAN VLD</li> <li>• PJ.27 Flight Object Interoperability VLD</li> <li>• PJ.31 Initial Trajectory Information Sharing VLD</li> </ul> <p>Of special relevance for this project is PJ19 Update and maintenance of the development of the Concept of Operations (CONOPS) and associated ATM Services and PJ20:</p> <ul style="list-style-type: none"> <li>• WP2.3 Standardisation and regulatory roadmap, developing the standardisation and regulatory roadmap</li> <li>• WP2.4 Deployment scenarios, developing the deployment scenarios used for MP2019 as well as the baseline for Essential operational changes.</li> <li>• WP2.9 Drone addendum for Masterplan, developing the MP addendum for the integration of drones in the MP</li> <li>• WP2.8 Support to Common Project, developing the recommendation for CP2 especially working on Deployment scenarios laying the baseline for later CP2</li> </ul>
Entity Profile matching the task	<p>Expertise is present in the company in many areas:</p> <ul style="list-style-type: none"> <li>• Development and supervision of operational concepts</li> <li>• Safety concepts &amp; Safety Assessments</li> <li>• Airport safety support tools</li> <li>• Collaborative Decision Making</li> <li>• Air traffic forecast/Capacity planning incl. runway capacity enhancement</li> <li>• CWP design</li> <li>• Development and implementation of ATM systems &amp; Tools (common development and implementation of TopSky)</li> <li>• Trajectory management (core functionality in TopSky)</li> <li>• Development and implementation of safety and monitoring tools (core functionality in TopSky – 4D MTCD)</li> </ul>

	<ul style="list-style-type: none"> <li>• Flight procedures, special approach procedures (incl. RNAV)</li> <li>• Performance Based Navigation</li> <li>• Validation and Integration</li> <li>• Participation in European deployment activities (IDSG)</li> <li>• Human Performance Assessment</li> <li>• Remote Tower</li> <li>• CNS</li> <li>• RPAS/Drones</li> </ul>
Contribution	Naviair will participate with operational and technical experts (ATCOs) with focus on concepts, operational issues as well as technical aspect of the MP maintenance

#### 4.1.1.9 DFS Deutsche Flugsicherung GMBH

Organisation	9	DFS	Service Provider
Description	<p>DFS DEUTSCHE FLUGSICHERUNG GMBH (DFS) is responsible for air traffic control in Germany and is headquartered in the town of Langen, near Frankfurt. It is a company organised under private law and is wholly owned by the Federal Republic of Germany.</p> <p>The main business of air navigation services provided by DFS is defined by the tasks set out in Section 27c of the German Aviation Act (LuftVG). DFS provides air traffic services as a sovereign function, coordinates the air traffic flow and manages airspace utilisation (as a company entrusted with State functions). For this purpose, it develops and operates air traffic service systems as well as communications, surveillance and navigation systems. DFS operates control centres in Langen, Bremen, Karlsruhe and Munich as well as 16 control towers at Germany's designated international airports. With its approximately 5,400 operational and administrative staff, DFS ensures that approximately three million flights under instrument flight rules (IFR) reach their destinations safely and on time each year.</p> <p>The development of SESAR 2020 should be built on the methods of and expertise gained in SESAR 1 and SESAR2020 Wave1 and should guarantee the enhancement of the results from SESAR.</p>		
Previous experience	<p>DFS was contributor to the SESAR 1 Work Package C 'Master Plan Maintenance' and in particular in Work Package 'C.2 Deployment / Performance planning and reporting' and 'C.3 Maintain Standardisation and Regulatory Roadmaps' from the very beginning of the project.</p> <p>DFS was also contributor to SESAR2020 Wave 1 in the transversal project PJ 20 AMPLE (Master Plan Maintenance), in particular in work packages:</p> <ul style="list-style-type: none"> <li>• 'WP2.3 Data Generation &amp; Coordination',</li> <li>• 'WP2.4 Deployment Scenarios',</li> <li>• 'WP2.5 Implementation planning and monitoring',</li> <li>• 'WP2.6 Business Cases' and</li> <li>• 'WP2.8 Support to CP'</li> </ul> <p>and their relevant deliverables.</p>		
Entity Profile matching the task	DFS' department 'Innovation and Planning', which will perform the contribution to PJ20 Wave 2, accommodates the central planning unit of DFS. Among others, the DFS ATM Master Plan is maintained here.		
Contribution	Besides participating in PJ.20 PMB and ePMB meetings as necessary, DFS will contribute to the following work packages:		

	<ul style="list-style-type: none"> <li>• WP2 Master Plan Campaign DFS will contribute to the ATM MP update campaign, specifically to: <ul style="list-style-type: none"> <li>• refine the SESAR Vision,</li> <li>• refine deployment scenarios and roadmaps,</li> <li>• refine the high-level SESAR roll-out plan and the critical path,</li> <li>• develop the business view,</li> <li>• review standardisation and regulatory need - for particular themes with DFS interest.</li> </ul> </li> <li>• WP4 Level 3 maintenance DFS will contribute to <ul style="list-style-type: none"> <li>• develop yearly the MP Level 3 Plan – in regard to implementations with DFS interest.</li> </ul> </li> <li>• WP5 Ad-hoc SESAR support DFS will provide ad-hoc expert support upon request of the SJU on the definition of Common Projects.</li> </ul>
--	---

#### 4.1.1.10 Direction des Services de la Navigation Aérienne

Organisation	10	DSNA	Service Provider
Description	DSNA (Direction des Services de la Navigation Aérienne) is the national air navigation services provider of France. DSNA is entrusted with the provision of air traffic services, associated communication, navigation and surveillance services and aeronautical information services in all airspace under French responsibility and at designated airports. DSNA is member of A6, FABEC and SESAR JU. DSNA has supported the principle of the SESAR programme since its inception and has participated as a major contributor to its definition phase study, has been a major active contributor to the SESAR 1 development phase and is an active contributor to SESAR2020 wave 1. DSNA is also involved in the deployment of many PCP and non PCP SESAR solutions.		
Previous experience	Within SESAR 1 programme, DSNA has been an active contributor to project C.02 'Deployment/Performance planning and reporting' and C.03 'Maintain Standardisation and Regulatory Roadmaps'. Within SESAR2020 wave 1 PJ 20 (AMPLE) project, DSNA has also actively contributed to the preparation of CP2 proposal and to the new update of the Master Plan. It has especially been a key player for all previous update campaigns of the Master Plan being the ANSPs representative in the Master Planning Group.		
Entity Profile matching the task	European master planning experts with the experience of SESAR 1 and SESAR 2020 wave 1 will continue to be involved in this project with the support of other experts involved in most of the SESAR PJ, in the SESAR deployment and in standardisation and regulatory activities.		
Contribution	DSNA will act as a contributor to the project with respect to the following Work Packages: <ul style="list-style-type: none"> <li>• WP2 - Master Plan Campaign DSNA will contribute to the delivery of the proposed ATM MP revision Solutions, to the development of the standardisation and regulatory roadmaps, to identify links with existing regulation or potential needs for new regulatory actions and to assess standardisation needs and timelines.</li> <li>• WP3 - MP Levels 1 and 2 Assessment</li> </ul>		

	<p>DSNA will contribute to the definition at MP Level 2 of the Deployment Scenarios (DS) of the SESAR solutions and of capability requirements for operating environments</p> <ul style="list-style-type: none"> <li>• WP4 - MP Level 3 Maintenance</li> </ul> <p>DSNA will provide required input on deployed and non-deployed solutions for France.</p> <p>In addition, DSNA will provide expertise support on request from the SJU on the definition of Common Projects.</p>
--	---

#### 4.1.1.11 Entidad Pública Empresarial ENAIRE

Organisation	11	ENAIRE	Service Provider
Description	<p>The Spanish Business Public Entity “Entidad Pública Empresarial ENAIRE”, hereinafter referred to as “ENAIRE”, is the entity designated by the Spanish State to provide Air Navigation Services for En-Route and Approach phases, ruling 7 En-route/TMA ATC Centres and 22 Control Towers, being one of the major Air Navigation Service Providers in Europe.</p> <p>Airspace under ENAIRE control includes the Peninsula Ibérica (except Portugal), Balearic and Canary Island, and part of North Atlantic, West Mediterranean and West Sahara.</p> <p>ENAIRE is a major European company in ATM, R&amp;D and project management in the field of Airspace and Air Navigation and a founding member of the A6 alliance, which represents the ANSPs common view within SESAR Programme.</p> <p>ENAIRE has already been an active part of SESAR Programme from the very beginning and has substantially contributed as a SJU member in the different fields of airport and air navigation services management, planning and provision, and other ATM R&amp;D related activities, in order to support the cooperative accomplishment of the European ATM Target Network and the associated European ATM Master Plan. As a quantitative illustration of this commitment, the more than ninety SESAR projects in which ENAIRE has been involved up to the present could be mentioned, playing a leading role in sixteen of them.</p> <p>As a services provider and also as owner of related systems and infrastructure, proactive promoter of research and development activities which are at the leading edge and highly experienced executor of validation and system integration processes, ENAIRE expects to maintain its participation in the SJU as one of its major members in those areas of activity where its technical and managerial expertise and know-how, systems and projects can bring the most added value to the deployment of the European ATM Master Plan.</p> <p>The added value provided to SESAR 2020 by ENAIRE and its linked third parties is based in the large set of available assets:</p> <ul style="list-style-type: none"> <li>• Up to 7 En-route/TMA ATC centres, covering both Continental and Oceanic Airspaces, fitted with an advanced and evolving ATM system (SACTA/LIS ATM and in the future iTEC). Four of them, those covering the Continental Spanish Airspace, interconnected and working as a network;</li> <li>• Platforms are able to assume validations and simulations in a wide range of maturity levels, covering from the more immature phases of the R&amp;D till complex simulations using both industrial products and also prototypes;</li> <li>• ATCOs from different ACC's, who are familiar with traffics, contingencies and events of multiple characteristics; and also from towers of different categories;</li> <li>• Engineers/ATCOs with vast expertise on the definition of future CNS and ATM;</li> </ul>		



	Paving the way for deployment of mature concepts, especially those included in the PCP, will constitute a paramount and permanent priority for ENAIRE.
Previous experience	<p>The development of SESAR 2020 Wave 2 should be built on the methods of and expertise gained in SESAR 1 and ESAR 2020 Wave 1 and should guarantee the enhancement of the results from SESAR.</p> <p>ENAIRE has been involved in SESAR from the beginning. Within the SESAR 1 Development Phase, ENAIRE's involvement included the contribution to SESAR 1 Work Package C 'Master Plan Maintenance' and in particular in sub-work packages 'C.2 Deployment / Performance planning and reporting' and 'C.3 Maintain Standardisation and Regulatory Roadmaps'.</p> <p>Within the SESAR 2020 Wave 1 phase, ENAIRE's involvement has included the membership in and substantive contributions to WP2.2 Performance Planning, WP2.3 Data Generation &amp; Coordination, WP2.4 Deployment Scenarios, WP2.5 Implementation Planning and Monitoring, WP2.6 Business Cases, and WP2.7 Support to Common Project (CP2 definition). Co-chairmanship of KFT on Operational and Deployment View during MP update campaign 2018-2019 was also performed by ENAIRE.</p> <p>In addition to SESAR experience, ENAIRE also has stunning experience in European wide implementation planning and monitoring activities such as:</p> <p>Since the starting of LSSIP (Local Single Sky Implementation Plan) initiative in early 90's, ENAIRE has accomplished the national coordination of LSSIP in Spain. Currently it implies the coordination and consolidation of national stakeholders' contributions to LSSIP, namely: DGAC, AESA (National Supervisory Authority), Spanish Air Force, AENA (main Spanish airport operator) and ENAIRE.</p> <p>ENAIRE contributed to the definition of the Pilot Common Project (PCP) proposed by SJU in response to the mandate received from the European Commission on 2 August 2012. It outlined the main steps and drivers to move from the implementation view in the ATM Master plan to a business view identifying the main deployment requirements. Specifically ENAIRE led transversal group (impact assessment &amp; scenario optimisation) and conflict management &amp; automation expert group.</p> <p>Last, ENAIRE as member of SESAR Deployment Alliance (SDA), had also contributed to the elaboration of Deployment Programme (DP). Deployment Programme provides a unique, consulted, agreed and supported, ATM technological implementation plan by and for industry describing how to get organised to ensure synchronised, coordinated and timely PCP implementation. It turns the 6 ATM functionalities and their sub-functionalities contained in the Pilot Common project (PCP) into families of implementation projects. Deployment Programme represents the blueprint for the ATM technological investment plans by the operational stakeholders impacted by PCP Regulation and constitutes the main reference document to specify the priorities in the Connecting Europe Facilities (CEF) Calls for Proposals of INEA (Innovation and Networks Executive Agency).</p>
Entity Profile matching the task	ENAIRE will provide with recognized experienced experts in the ATM Master Plan and Deployment Planning and Reporting.
Contribution	<p>Besides our participation in PJ20 PMB and ePMB meetings as necessary, ENAIRE will work as contributor to the project in the following Work Packages:</p> <p><b>WP2 Master Plan Campaign</b></p> <p>Contribute to the ATM MP campaign, specifically to the following areas of work:</p> <ul style="list-style-type: none"> <li>• SESAR Vision update</li> <li>• Deployment Scenario and technology roadmaps</li> </ul>

	<ul style="list-style-type: none"> <li>• Business View development</li> <li>• SESAR Rollout plan, critical path and Risk management</li> </ul> <p><b>WP3 Master Plan levels 1 &amp;2 Assessment</b></p> <p>Develop the MP Levels 1 and 2 assessment methodology which will describe the process and criteria to be used to assess the consistence of the Master Plan Level 2 and the Level 1. Once the methodology is developed and agreed, ENAIRE will contribute to the assessment of MP Levels 1 and 2.</p> <p>Contribute to the DataSet maintenance as the major input for the MP Executive planning assessment (levels 1 and 2).</p> <p><b>WP4 Level 3 maintenance</b></p> <p>Develop MP Level 3 guidance which will describe the information needed, how to capture it, and the criteria and rules to promote a SESAR Solution from Level 2 to Level 3.</p> <p>Develop yearly the MP Level 3 Plan and MP Level 3 Report.</p> <p><b>WP5 Ad-hoc SESAR support</b></p> <p>Provide ad-hoc expert support on request from the SJU on the definition of Common Projects.</p>
--	--

#### 4.1.1.12 ENAV S.p.A.

Organisation	12	ENAV	Service Provider
Description	<p>ENAV S.p.A. (ENAV) is one of the 5 largest European Air Navigation Service Provider in terms of traffic managed, investments in innovation technology and R&amp;D and is one of the top performers in terms of quality of services provided.</p> <p>ENAV is fully committed to the Single European Sky and, since 2006, operates under the Common Requirement for ANS provision and from 2012 is subject to the European Performance Scheme, as all other European ANSPs.</p> <p>ENAV is a Joint-Stock Company, the only ANSP worldwide listed on a stock exchange, 53% of the share capital is held by the Italian Government, in charge of the provision of air traffic control and navigation services within the airspace and the airports placed under its own responsibility by national law without time limit.</p> <p>ENAV's core business is to manage the regulated Air Traffic Control Services (ATCS), for which it is entrusted, allowing aircraft to fly within the assigned airspace with constantly enhanced levels of safety, optimizing the effectiveness of the service provided and the efficiency of the company, in particular:</p> <ul style="list-style-type: none"> <li>• “En route” services: handling of air traffic crossing Italian airspace managed from 4 Areas Control Centres located in Rome, Milan, Padua and Brindisi;</li> <li>• “Terminal” services: assistance during the phases of approach, takeoff and landing from 45 Control Towers located throughout Italy and divided into 3 charging zones.</li> </ul> <p>Thanks to these complex operational units, ENAV provides around the clock air traffic services ensuring air traffic flow and regularity, with absolute safety.</p> <p>ENAV provides ATCS to more than 1.8 million flights per year, with peaks of up to 6,575 per day.</p> <p>ENAV provides also supporting services to other ANSP on a commercial basis, forming an independent source of revenue which is not regulated.</p>		



ENAV leverages its significant experience and reputation for promoting development projects worldwide, pursuing further opportunities for growth: currently delivers services in Malaysia, Saudi Arabia, Kenya, Morocco, Albania, UAE and Libya.

As in all high complexity sectors, a constant and consistent technological innovation has to be placed side by side to human skill and experience.

For this reason, ENAV continues to invest in modernisation, new technologies and professional training. ENAV is a component of the European ATM (Air Traffic Management) system and it participates with full rights in all the activities of development, operational validation, research and coordination with systems that are perfectly integrated with the international technological context.

ENAV Group consists of:

- Techno Sky, responsible for the operational management, the support, the maintenance and the hardware/software development of entire range of systems and equipment used to provide flight assistance services.
- IDS AirNav is the company of the ENAV Group that serves the world of Air Traffic Management (ATM) and airports with Commercial Off-The-Shelf (COTS) solutions and software products aimed at supporting the transition from Aeronautical Information Services (AIS) to Aeronautical Information Management (AIM) in full compliancy with the ICAO and EUROCONTROL mandates for Aeronautical Data Quality (ADQ).
- D-flight Is the first public-private partnership created by ENAV and its partners for the timely development and deployment of U-space, in order to safely and seamlessly integrate complex drones operations within the civil aviation airspace. The company is controlled by ENAV, with a 60% stake, with the remainder of the share capital held by a group of leading Italian technological partners.
- ENAV Asia Pacific, set up in 2013 with head office in Kuala Lumpur, provides air traffic control management and consultancy services, as part of marketing and sales activity, as well as other essential air navigation services.
- ENAV North Atlantic is a company established in USA on January 2014 for the purpose of managing the acquisition of 12.5% of the Aireon LLC share capital. Aireon is the company responsible for the development, financing and deployment of a global satellite surveillance system.
- ESSP - with a 16.6% stake in the Company, ENAV provides the European satellite navigation service EGNOS.

The services supplied by the Company are Planning, management and provision of Air Navigation Services (ANS) including:

- Air Traffic Services (ATS), including Air Traffic Control Service (ATC), Flight Information Service (FIS) and Alerting Service (ALRS);
- Aeronautical Information Service and related publications (AIS);
- Meteorological Services for Air Navigation (MET);
- Communication, Navigation, Surveillance Services (CNS);
- Air Space Management;
- Air space design and air traffic capacity planning;
- Flight procedures design and obstacles analysis;
- ATM system definition, acquisition, operation and maintenance of operational infrastructures;
- Flight inspection services of radio navaids, broadcasting and surveillance systems for Air Traffic Services;
- Training of ATM personnel.

ENAV is among the main players in SESAR (Single European Sky ATM Research), the ambitious initiative launched by the European Commission to implement the Single

	<p>European Sky by supporting technical developments for fully interconnected and interoperable systems at European level.</p> <p>ENAV is also member of the SESAR Joint Undertaking, created under European Community law on 27 February 2007, with EUROCONTROL and the European Union as founding members, in order to manage the SESAR Development Phase. ENAV contributes to SJU in a lot of projects providing the technical and operational expertise and infrastructures necessary to develop and validate the evolution of the operational concepts.</p>
Previous experience	<p>ENAV is involved in R&amp;D, strategic planning, technical co-operation and service provision programs with international organisations (e.g. SESAR Joint Undertaking, EUROCONTROL, European Commission, ESSP) and foreign countries, aiming at contributing to the advancement of ATM technology and processes and at improving the service level provided.</p> <p>ENAV has a long-lasting experience in international initiatives and has been participating, managing, coordinating and actively contributing to several international projects and large scale researches, developments and validations.</p> <p>ENAV has been participating in SESAR Programme since its very beginning (SESAR 1 and SESAR 2020 Wave 1) and is strongly determined to support the successful outcome of the initiative in line with its strategic objectives.</p> <p>Previous R&amp;D projects:</p> <ul style="list-style-type: none"> <li>• SESAR 1 (2009-2016): WPB, WPC, WP3, WP4, WP5, WP6, WP7, WP8, WP10, WP12, WP13, WP14, WP15, WP16</li> <li>• SESAR 1 Large Scale Demonstrations: <ul style="list-style-type: none"> <li>○ ATC Full Datalink (AFD)</li> <li>○ WE-FREE</li> <li>○ MEDALE</li> <li>○ RACOON</li> <li>○ FREE SOLUTIONS</li> </ul> </li> <li>• BEYOND (H2020, 2015-2017)</li> <li>• DARWIN (H2020, 2015-2018)</li> <li>• SAWSOC (FP7, 2013-2016)</li> <li>• GAMMA (FP7, 2013-2017)</li> <li>• FUTURE SKY SAFETY (H2020, 2015-2019)</li> <li>• OPTIMAL (FP6, 2004-2008)</li> <li>• AD4 (FP6, 2005-2007)</li> <li>• RETINA (H2020, 2016-2018)</li> <li>• BLUEGNSS (H2020, 2016-2018)</li> </ul> <p>Current R&amp;D projects:</p> <ul style="list-style-type: none"> <li>• SESAR 2020 Wave 1 IR Projects (H2020, 2016-2019): PJ01, PJ02, PJ03a, PJ03b, PJ05, PJ06, PJ08, PJ09, PJ10, PJ15, PJ16, PJ18, PJ19, PJ20, PJ22</li> <li>• SESAR2020 Wave 1 VLD PJ31 (H2020, 2016-2020)</li> <li>• DIODE VLD (SJU/CEF2017, 2018-2020)</li> <li>• CORUS ER (H2020, 2017-2019)</li> </ul>
Entity Profile matching the task	<p>ENAV profiles matching the tasks include:</p> <ul style="list-style-type: none"> <li>• ATM Operational expert</li> <li>• Planning expert</li> <li>• Deployment expert</li> <li>• Performance expert</li> </ul>

	All those skills will be made available by ENAV to support the project developments
Contribution	<p>As a natural continuation of the work done under the SESAR 2020 Wave 1 PJ.20 Project, ENAV confirms its commitment towards the maintenance and evolution of the European ATM Master Plan in all its three levels. Specifically, ENAV is proposing to contribute to WP2, WP3 and WP4 by supporting with its technical, operational and planning expertise the MP update campaign, the Levels 1 &amp; 2 assessment and Level 3 maintenance.</p> <p>Additional contribution from ENAV is also envisaged in the Ad-Hoc SESAR support activities (WP05) according to ENAV and Programme needs and priorities.</p>

#### 4.1.1.13 HUNGAROCONTROL MAGYAR LEGIFORGALMI SZOLGALAT ZARTKORUEN MUKODO RESZVENYTARSASAG

Organisation	13 HC (FSP)	Service Provider
Description	<p>HUNGAROCONTROL MAGYAR LEGIFORGALMI SZOLGALAT ZARTKORUEN MUKODO RESZVENYTARSASAG is a state-owned company in Hungary, which provides air navigation services in the Hungarian airspace and (on a NATO assignment) in the upper airspace over Kosovo, trains air control personnel and conducts air navigation research and development. HC (FSP) is member of the Frequentis SESAR Partners consortium together with the companies Atos Belgium and Frequentis AG which was founded in 2014 for the main purpose of joining SESAR2020 activities. Frequentis SESAR Partners is member of the SESAR Joint Undertaking. The consortium is comprised of companies having a variety of complementary capabilities. Having former SESAR1 experience within its framework, an ANSP whose expertise will result in early feedback loops during certain projects, and the wide range IT, data management and security expertise of the consortium forming entities, Frequentis SESAR Partners believes in the high added value of its participation in SESAR2020 efforts. Previous experience HC (FSP) has more than 50 years of experience in ATM and it has implemented several technical and operational updates for the entire Hungarian airspace. Since its foundation, it has a very strong relation with universities and scientific centres. HC (FSP) is active in ATM research, in SESAR 1 demonstration activities (REACT-Plus), won a grant of SESAR JU for a Large Scale Demonstration project (Budapest 2.0).</p>	
Previous experience	<p>HC (FSP) has participated in SESAR 2020 Wave 1 as a member of FSP Consortium in the following projects, solutions or VLDs:</p> <ul style="list-style-type: none"> <li>• PJ.03-A</li> <li>• PJ.05-02</li> <li>• PJ.05-03</li> <li>• PJ.10-01B</li> <li>• PJ.16-03</li> <li>• PJ.16-04</li> <li>• PJ.28 (as a linked third-party)</li> <li>• SESAR Exploratory research - USIS project</li> </ul>	
Entity Profile matching the task	<p>Air Navigation Service Providers including the profiles:</p> <ul style="list-style-type: none"> <li>• ATM Operational and Technical expertise</li> <li>• Safety expertise</li> <li>• Security expertise</li> </ul>	
Contribution	<p>The main contribution of HungaroControl Zrt. (as a member of FSP), as ANSP, will be in PJ20:</p> <ul style="list-style-type: none"> <li>• Technology Specialist</li> </ul>	

- ATM system experts
- Technical experts
- Legal expertise
- Strategic analyst

#### 4.1.1.14 INDRA Sistemas, S.A

Organisation	14	INDRA	Ground Industry
Description	<p>Indra is one of the leading global technology and consulting companies and the technological partner for core business operations of its customers world-wide. It is a world-leader in providing proprietary solutions in specific segments in Transport and Defence markets, and the leading firm in Digital Transformation Consultancy and Information Technologies in Spain and Latin America through its affiliate Minsait. Its business model is based on a comprehensive range of proprietary products, with a high-value focus and with a high innovation component. In the 2017 financial year, Indra achieved revenue of €3.011 billion, with 40,000 employees, a local presence in 46 countries and business operations in over 140 countries. Indra ranks second in Europe by R&amp;D spent. .</p> <p>With the aim to provide our Customers with comprehensive, full and turnkey solutions, Indra product range covers the whole range of Air Traffic Management Systems, including Surveillance, Automation, Communications, Simulators and NAVAIDs.</p> <p>At Indra we have developed air traffic management systems that are deployed across the world, with over 4,000 installations in 160 countries. We are positioned as the market's leading supplier of air traffic management and communications, navigation and surveillance (ATM-CNS) systems. In the field of R&amp;D, we are one of the leading companies in the SESAR program, the key technology behind the Single European Sky initiative.</p> <p>Indra has the in-depth experience and products necessary to undertake any Air Traffic Management programme, with both a proven international management approach and a history of responsible program execution. That experience, together with a solid technology base, permanent innovations and quality in processes and projects are the pillars sustaining Indra leadership position in Air Traffic Management, completely oriented towards Customer needs and aimed to provide our Customers with the highest level of service.</p> <p>Indra is the world leader for Flight Data Processing Systems, having supplied over 40 installations worldwide and has grown to be leader Air Traffic Management system supplier in Europe. In December 2008, Indra supplied EUROCONTROL with the new next-generation interoperable Flight Data Processing System at Maastricht Upper Area Control Centre, one of the busiest and most complex en-route Air Traffic Control Centres in Europe.</p> <p>The implementation of this Flight Data Processing System is a high technological advance directed to improve the safety, capacity, efficiency and environmental performance of Air Traffic management in Europe, and actively contributing to achieving the European's Commission Single European Sky objectives.</p> <p>Indra has been selected by the most advanced European Air Navigation Service Providers to develop the future Air Traffic Management systems following the Single Sky Concept, through the iTEC Program (Interoperability Through European Collaboration). This is currently formed by ENAIRE (Spain), DFS (Germany), NATS (United Kingdom) and LVNL (The Netherlands), with Indra as industrial partner. Recent new partners are PANSA (Poland), AVINOR (Norway), Oro Navigacija (Lithuania). iTEC is currently the</p>		

	most advanced next-generation air traffic management system, after entering full operational service at the Prestwick control center in Scotland
Previous experience	<p>Since 2009, Indra is full member of the SESAR Joint Undertaking. In SESAR 1 Indra participated in more than 120 projects within the Programme and co-leading both WP10 (En Route and Approach ATC) and WP12 (Airports), as well as playing a key role in many projects under WP14 (SWIM), WP15 (Non-Avionics CNS) and WP13 (NIMS).</p> <p>In SESAR2020 Wave 1, Indra participated in IR/VLD Projects 01, 02, 03a, 03b, 04, 05, 06, 07, 08, 09, 10, 11, 14, 15, 16, 17, 18, 19, 20, 22, 24, 25, 27 and 31, being Project Coordinator in PJ15 and PJ18. We have also participated in other SESAR related projects (VLDs and RPAS).</p>
Entity Profile matching the task	As explained in the previous sections, Indra has a solid entity profile in ATM Research due to the background knowledge, human resources and facilities to perform the R&D activities. The ATM background has continuously grown from the 80's first developments for the Spanish ATM system, to joint ventures with other ATM worldwide companies, until alliances with key European ANSPs. In term of human resources, hundreds of skilled personnel support the activities, while in terms of facilities, a significant number of laboratories and hardware resources equipped with the latest technology are used.
Contribution	<p>The main contribution of Indra, as Ground Industry Supplier, to the project will be to WP2 and WP4 as follows:</p> <ul style="list-style-type: none"> <li>• <b>In WP2 – Master Plan Campaign</b>, participating in: <ul style="list-style-type: none"> <li>○ Management of ATM Master Plan update campaign (task WP2.01)</li> <li>○ Update of ATM vision (task WP2.02)</li> <li>○ Definition of deployment scenario, stakeholder, CNS and Infrastructure roadmaps (task WP2.03)</li> <li>○ Standardization and Regulatory Needs (task WP2.04)</li> <li>○ Business View development (task WP2.05)</li> </ul> </li> <li>• <b>In WP4 – Master Plan Level 3 maintenance</b>, supporting the maintenance of the Master Plan Level 3, including contributions to: <ul style="list-style-type: none"> <li>○ Master Plan Level 3 guidance (task WP4.01) and</li> <li>○ Yearly update of the European ATM Master Plan Level 3 Implementation Plan (task WP4.02)</li> </ul> </li> </ul> <p>Whilst both Indra and its affiliate Indra Business Consulting (IBC) will contribute to WP2, only IBC will contribute to WP4.</p>

#### 4.1.1.15 LEONARDO - Società Per Azioni

Organisation	15	LDO	Ground Industry
Description	<p>LEONARDO S.p.A. is a global player in the high-tech sectors and a major operator worldwide in the Aerospace, Defence and Security sectors. LEONARDO S.p.A. is based in Italy, has over 45,000 employees, of whom about 36% abroad, and in 2017 recorded 11.5 billion euro in revenues and received orders in the amount of 11.5 billion. Gianni De Gennaro has been the President since 4 July 2013 and Alessandro Profumo has been the CEO since 16 May 2017. LEONARDO S.p.A. designs and creates products, systems, services and integrated solutions both for the defence sector and for public and private customers of the civil sector, both in Italy and abroad.</p> <p>The wide range of defence and security solutions that LEONARDO S.p.A. offers Governments, private citizens and institutions includes every possible intervention scenario: airborne and terrestrial, naval and maritime, space and cyberspace. In close contact with local customers and partners, LEONARDO S.p.A. works every day to strengthen global security, provide essential physical protection and cybersecurity</p>		



	<p>services for people, territories and infrastructure networks and supports scientific and technological research.</p> <p>LEONARDO S.p.A. operates in about 20 countries with offices and industrial plants in all of the five continents and can rely on a very large network of subsidiaries, joint ventures and international partnerships, with significant industrial presence in three main markets, United Kingdom, Poland and United States and structured partnerships in the most important high potential markets in the world.</p> <p>The new LEONARDO S.p.A. is the culmination of a radical renewal and transformation process: from a financial holding company to a great integrated industry focused on <b>five</b> divisions:</p> <ul style="list-style-type: none"> <li>• Helicopters</li> <li>• Aircraft</li> <li>• Aerostructures</li> <li>• Electronics</li> <li>• Cyber Security</li> </ul> <p>LEONARDO S.p.A. also retains Parent Company and Corporate Centre functions for participated companies and joint ventures not included in the divisional scope.</p> <p>These are: the US subsidiary DRS Technologies, which deals with the supply of products, services and integrated support for the military, intelligence agencies and defence companies; ATR, the joint venture established with Airbus Group for the manufacture of regional aircraft; MBDA, the joint venture established with BAE Systems and Airbus Group for missile systems; Telespazio and Thales Alenia Space, the two joint ventures established with Thales as part of the Space Alliance, for satellite services and the manufacture of satellites and orbiting infrastructures, respectively.</p>
Previous experience	<p>LEONARDO S.p.A. involvement in the ATC domain extends to the participation several international programs; among others:</p> <ul style="list-style-type: none"> <li>• SESAR – The European program carried out by a large Consortium of stakeholders (Air Navigation Service Providers, Aircraft Operators, Airport Companies, EUROCONTROL etc.) for the implementation of the Single European Sky concept for the operational and technical interoperability in Europe.</li> <li>• EUROCAE: LEONARDO S.p.A. participates to several Working Group in order to provide its contribution to future aviation standards</li> <li>• EMMA1 – Preoperational validation of A-SMGCS level 1, 2 (ICAO Spec.)</li> <li>• SWIM-SUIT – A European program carried out by a Consortium led by LEONARDO S.p.A. (former SELEX) for the technical implementation of the System Wide Information Management (SWIM) concept, i.e. the information sharing among different actors (Air Navigation Service Providers, Aircraft Operators, Airport Companies, CFMU, etc.)</li> <li>• Faraway I /Faraway II – Fusion of Radar and ADS data through two way data link</li> <li>• ADS MEDUP – ADS Mediterranean Upgrade Program</li> <li>• MFF– Mediterranean Free Flight</li> <li>• EGNOS – European Geo-stationary Navigation Overlay System</li> <li>• HLM – High Level Modelling for ATM system design through advanced modelling technique</li> <li>• ICOG IOP – Feasibility and high level specification for IOP between European FDP</li> <li>• CATM – Ground Based Collaborative Management</li> </ul>

	<ul style="list-style-type: none"> <li>• GAMMA – European project to develop solutions to emerging ATM vulnerabilities</li> <li>• backed up by practical proposals for the implementation of these solutions.</li> <li>• Coflight – A project for the design, development, testing and deployment of a European Flight Data</li> </ul> <p>LEONARDO S.p.A. is also participating in current SESAR PJ20 Wave1 activities.</p>
Entity Profile matching the task	<p>The contribution will be provided by the Chief Technical Officer of the Line of Business “Traffic Control System” whose main tasks are:</p> <ul style="list-style-type: none"> <li>• Analyse national and international R&amp;D initiatives to check for matching with the LEONARDO S.p.A. strategy, and collaborate to the preparation of related technical documentation and reporting; in particular this include the alignment of LEONARDO S.p.A. investments with respect to ATM Master Plan</li> <li>• Planning and sustaining the evolution of LEONARDO S.p.A. products and services in ATM domain and their competitiveness in terms of costs, features, timing and quality</li> <li>• Participation to international working groups for standardization, and to meetings with partners and technology providers</li> <li>• Propose possible collaborations with Universities and Research Centres, that could be necessary for the evolution of technologies and products</li> </ul>
Contribution	<p>LEONARDO S.p.A. will contribute to following PJ20-W2 activities:</p> <ul style="list-style-type: none"> <li>• WP2 - Master Plan Campaign</li> <li>• WP3 - MP Levels 1 and 2 Assessment</li> <li>• WP4 - MP Level 3 Maintenance</li> <li>• WP5 - Ad-Hoc SESAR Support</li> </ul> <p>The contribution will be provided through the involvement of relevant experts to support the constant maintenance and evolution of ATM Masterplan.</p>

#### 4.1.1.16 SAAB Aktiebolag

Organisation	16 SAAB (NATMIG)	Ground Industry
Description	<p>SAAB AKTIEBOLAG is part North European ATM Industry Group (NATMIG) Consortium. The NATMIG consortium consists of Airtel ATN (SME - Ireland), Saab AB (multinational industrial concern - Sweden) and SINTEF AS (non-profit research organisation - Norway).</p> <p>While SAAB AKTIEBOLAG originates in military and civil aircraft manufacturing and is one of the few companies in the world with the ability to develop, integrate and maintain complete aircraft systems, we are today active in several transport modes and a global supplier in the ATM domain.</p> <p>SAAB AKTIEBOLAG’s over 75 years of history in aeronautics, over 4000 civil and military aircraft produced and as well as our broad involvement in ATM businesses, provide a solid background and deep competence in aeronautics in general and RPAS in specific. For the future, we plan to continue to be able to provide market-leading aeronautical products including manned and unmanned (RPAS) products that can operate safely in civil airspace, as well as solutions to facilitate others to allow safe RPAS operations in their airspace, whether it is an RPA, a Detect &amp; Avoid system or related ATM components.</p> <p>SAAB AKTIEBOLAG is a global supplier in the ATM domain and has a long history of developing and delivering ATM solutions. SAAB AKTIEBOLAG has pioneered future concepts such as the Remote Tower, which in operational use in Sweden and is undergoing</p>	



	<p>trials in several other countries. In total, SAAB AKTIEBOLAG has deployed 240 ATM systems and subsystems to serve over 60 customers in 40 countries. Our Air Traffic Management systems and tools serve 18 of the 20 busiest airports in the world, 10 of the 12 largest Air Navigation Service Providers (ANSPs), and the 3 largest airlines by passenger count. SAAB AKTIEBOLAG ATM systems guide 2 million aircraft movements each month via our airport surface safety systems.</p> <p>SAAB AKTIEBOLAG's main areas of interest are:</p> <ul style="list-style-type: none"> <li>• RPAS</li> <li>• Remote Tower</li> </ul>
Previous experience	<p>SAAB (NATMIG) has been a SESAR member from the start with the SESAR project experience:</p> <ul style="list-style-type: none"> <li>• SESAR 1 (WP05, WP06, WP10, WP12 and WP16): The main areas of contribution were in AMAN/DMAN, Remote Tower and safety.</li> <li>• SESAR 2020 W1 (PJ05): The main area of contribution is in Remote Tower</li> </ul>
Entity Profile matching the task	<p>SAAB (NATMIG) has a long-term experience as an ATM Ground Manufacturing Industry in ground surveillance infrastructure, Airport CDM, Tower Automation systems, Remote Tower, RPAS and more. The contribution will be provided by ATM expertise with experience in planning of development and deployment activities and roadmaps, in particular from an ATM Ground Manufacturing Industry perspective.</p>
Contribution	<p>Saab (NATMIG) will contribute to project PJ20 WP2 by bringing in its knowledge and experience of Air Traffic Control systems, its knowledge and experience from the SESAR program and knowledge of future developments with a focus on support to the ATM Master Plan campaign.</p>

#### 4.1.1.17 SINTEF AS

Organisation	17 SINTEF (NATMIG)	Ground Industry
Description	<p>SINTEF is a part of North European ATM Industry Group (NATMIG) Consortium. The NATMIG consortium consists of Airtel ATN (SME - Ireland), Saab AB (multinational industrial concern - Sweden) and SINTEF AS (non-profit research organisation - Norway).</p> <p>SINTEF (<a href="http://www.sintef.no/">http://www.sintef.no/</a>) is the largest independent research organisation in Scandinavia and is a non-profit research organisation. We employ 2000 people most of whom are located in Trondheim and Oslo (Norway). More than 90% of our annual turnover derives from contract research for industry and the public sector in Norway and internationally, and we receive minimal state funding (around 6%). Contract research carried out by SINTEF covers all scientific and technical areas, and ranges from basic research through applied research to commercialisation of results into new products and business ideas, for both the domestic and international markets.</p> <p>Although SINTEF DIGITAL has gained competence in state-of-the-art ATM research for several decades, the increased focus through the SESAR 1 (32 projects) and SESAR 2020 involvement has substantially improved our technology and aligned it further to the needs of the aviation industry and airspace users. The activity in SESAR has also increased SINTEF's aeronautical research portfolio outside SESAR. SINTEF is a multidisciplinary research organisation, and can still bring added value to the ATM domain through our state-of-the-art research in other domains like Oil &amp; Gas, Space, Health &amp; Medicine, Constructions, Energy, Marine, Railway, Roads, Harbours, and Resilience etc.</p> <p>The SINTEF contribution to SESAR is focused around optimisation, (traffic sequencing, routing, taxiing, dynamic airspace, A-CDM), Human Computer Interface, system</p>	

	architecture and development, Digitalisation, Automation, 3D modelling, Safety, Resilience, Cyber Security and navigation (GBAS).
Previous experience	SINTEF has been a member in SESAR from 2008 and is managing the membership of NATMIG in both SESAR 1 and SESAR 2020. SINTEF participated in and/or managed approximately 35 projects in SESAR 1, including WP E Exploratory Research and many Transversal activities and approximately 12 projects in SESAR 2020 Wave 1, spanning from Exploratory Research, Industrial Research and Very Large-Scale Demonstrations.
Entity Profile matching the task	SINTEF is a broad range non-profit research organization and can bring both the applied research perspective to the master planning, and also experience from all other transport modes and related domains, in addition to our engagement in aviation for more than 50 years.
Contribution	SINTEF (NATMIG) will contribute to project PJ20 WP2 by bringing in its knowledge and experience of Air Traffic Control systems, its knowledge and experience from the SESAR program and knowledge of research future developments with a focus on support to the ATM Master Plan campaign.

#### 4.1.1.18 NATS (En Route) Public Limited Company

Organisation	18 NATS	Service provider
Description	<p>NATS (En Route) plc is the core business and the sole provider of ATC services for aircraft flying 'en route' in UK airspace and the eastern part of the North Atlantic. NATS manages 11% of European's airspace and circa 25% of European's traffic. It is regulated by the UK Civil Aviation Authority (CAA) within the framework of the European Commission's (EC) Single European Sky (SES) and operates under licence from the UK Secretary of State for Transport. It operates from two ATC centres at Swanwick in Hampshire (England) and Prestwick in Ayrshire (Scotland).</p> <p>NATS (En Route) plc purpose is to provide safe, efficient and effective air traffic control services to aircraft operating within airspace where such services are either required or provided, specifically providing:</p> <ul style="list-style-type: none"> <li>• En-route and Terminal Air Traffic Control (ATC) for all UK airspace under a 30 year operating licence to UK Government. In 2017, NATS handled over 2.5 million flights, carrying more than 200 million passengers safely through some of the busiest and most complex airspace in the world.</li> <li>• The design and management of airspace, engineering project and maintenance activities for ANS communications, navigation and surveillance systems, and IT and network management.</li> <li>• Cross business support to UK Ministry of Defence (MoD) which includes the provision of a joint ATC service in the UK FIR, and support to communications systems, radar, facilities and training.</li> <li>• Provision of Instrument Flight Procedure design services, publication of the International Air Pilot Publication (IAIP), Notice to Airmen (NOTAM) documentation, data management and charting services for the UK.</li> <li>• Consultancy services to UK and overseas customers in air traffic management, airspace design, instrument flight procedures, control tower system integration and transition, safety management, engineering, project management.</li> <li>• Training of ATC staff, both as ab-initio controllers, for transition to new airspace or facilities and via supplementary courses including Supervisor Management, On Job Training (OJTI) and Incident Management.</li> <li>• Training of engineering staff.</li> </ul>	
Previous experience	NATS has been involved in SESAR from the beginning. Within the SESAR 1 Development Phase, NATS's involvement has included:	

	<ul style="list-style-type: none"> <li>Membership of Work Packages C.02 (Master Planning), C.03 (Regulation and Standardisation) and 16.6.6 (CBAs)</li> <li>Membership of the Master Planning Group for the 2015 Master Planning Campaign</li> <li>Leadership of C.02 Task 002 – Performance Planning, identifying the “Performance Needs” for different Operational Environments.</li> <li>Involvement in the development of the SESAR overall CBA, early Regulatory Impact Assessments for a number of potential SESAR Solutions, the development of each year’s ESSIP Document (Master Plan Level 3), contribution to work on deployment scenarios and potential incentives.</li> </ul> <p>Within the SESAR 2020 Wave 1 phase, NATS’ involvement has included:</p> <ul style="list-style-type: none"> <li>Membership in and substantive contributions to WP1.2 Performance Planning, WP1.3 Data Generation &amp; Coordination, WP1.4 Deployment Scenarios, WP1.5 Implementation Planning and Monitoring, WP1.6 Business Cases, and WP1.7 Support to the Master Planning Campaign.</li> </ul>
Entity Profile matching the task	NATS will provide personnel with experience in the ATM Master Plan, Regulatory Development, Deployment Planning, ESSIP/LSSIP and Performance/CBAs.
Contribution	<p>NATS will act as a contributor to the project in the following Work Packages:</p> <p>WP2 – Master Plan Campaign</p> <ul style="list-style-type: none"> <li>Provide support where required, including insight and rational evaluation of plans to change the ATM vision and performance ambitions with regard to air navigation services. Specifically, NATS will participate in WP2.01 (ATM Master Plan Update campaign management), WP2.02 (ATM vision update), WP2.03 (Deployment Scenario, Stakeholder, CNS and Infrastructure roadmaps), and WP2.05 (Business View Development).</li> </ul> <p>WP3 – Master Plan Levels 1 and 2 Assessment</p> <ul style="list-style-type: none"> <li>Providing rational evaluation of deployment scenarios, roadmaps for standardisation and regulation, and other details of the progress of the SESAR vision. NATS will participate in WP3.03 (MP Levels 1 and 2 assessment).</li> </ul> <p>WP4 – MP Level 3 Maintenance</p> <ul style="list-style-type: none"> <li>Provide expert support in the development of the European Single Sky Implementation Plan (ATM Master Plan Level 3). NATS will participate in WP4.02 (Implementation Plan management).</li> </ul> <p>WP5 – Ad Hoc SESAR Support</p> <ul style="list-style-type: none"> <li>Ad hoc expert support on request of SJU in defining the common projects.</li> </ul>

#### 4.1.1.19 Avinor AS

Organisation	19	Avinor (SEAC2020)	Airport
Description	<p>Avinor AS (Avinor (SEAC2020)) is a state-owned limited liability company tasked with facilitating safe, environmentally friendly, and efficient aviation across Norway. Operations encompass a network of 45 airports and air navigation services throughout Norway.</p> <p>53 million passengers travelled to or from Avinor’s airports (scheduled, charter, and offshore) in 2017. There was a total of 697,000 movements (take-offs and landings) at Avinor’s airports in 2017. Oslo airport is the hub of Norwegian aviation and a transit</p>		

	<p>airport for traffic between Norway and the rest of the world. The profit generated by Oslo airport is crucial for the financing of the network of airports spread across the rest of Norway. 27.5 million passengers used Oslo airport in 2017.</p> <p>Avinor AS (Avinor (SEAC2020)) has built world-leading expertise in its development and operation of a network of many small and large airports in a challenging climate and topography. The company is used to implementing multi-airport solutions in a cost-efficient way.</p>
Previous experience	<p>Avinor AS (Avinor (SEAC2020)) has participated in multiple projects during SESAR 1 and SESAR 2020 Wave 1:</p> <ul style="list-style-type: none"> <li>• SESAR 1 06.05.04 –Airport Operations Centre Definition (VALP, VAL EXE, VALR),</li> <li>• SESAR 1 06.06.02 –Integration of airport - airline/ground handlers - ATC processes (incl. turnaround) in ATM (SPR, VALP, VAL EXE).</li> <li>• SESAR 2020 W1 (PJ04): Project contribution to solutions PJ.04-01 and PJ.04-02.</li> <li>• SESAR 2020 W1 (PJ02): Project contributor to PJ02-11 (OSD task lead)</li> </ul>
Entity Profile matching the task	<p>Avinor AS (Avinor (SEAC2020)) operates an airport network with Oslo Airport as an important node. The 45 airports of the network have produced a diverse understanding of the airport management issues and their dynamic effects within airports and on multiple stakeholders, most importantly passengers and airspace users. Among others, Avinor AS (Avinor (SEAC2020)) has extensive experience in addressing themes such as:</p> <ul style="list-style-type: none"> <li>• Performance management,</li> <li>• Innovation and technology development,</li> <li>• Information management including decision support systems,</li> <li>• Winter weather operations,</li> <li>• Resilience Engineering,</li> <li>• Landside and Airside integration,</li> <li>• Environmental Management</li> </ul>
Contribution	<p>Avinor AS (Avinor (SEAC2020)) will contribute to project PJ20 by participating in expert groups bringing in its knowledge and experience of ANS, airport operations management, airside and landside, and knowledge of future developments.</p> <p>With the experience from operating 45 airports in Norway ranging from Oslo Airport as the main airport to smaller local airports, Avinor AS will bring knowledge of many different airport groups to the Master Plan Campaign both from operational and business case perspective. In addition, Avinor are building up an extensive experience with digital airport operations and digital towers. As part of SEAC2020, along with the other member airports participating in the campaign, Avinor will contribute to the Master Plan update to ensure that the opinion of all airports of various sizes and complexity can be considered and included in the creation of the Master Plan. This will help with industry acceptance of the Master Plan and will be a valuable contribution to the next update campaign.</p>

#### 4.1.1.20 Heathrow Airport Limited

Organisation	20	HAL (SEAC2020)	Airport
Description	<p>Heathrow is the UK's premier international airport and one of the world's major hub airports flying people for business, tourism and to visit friends and relatives around the world. We provide the infrastructure and services for over 80 airlines flying 80 million passengers a year to over 204 destinations worldwide. Heathrow is also an important national economic asset for London and the UK, supporting our capital city and contributing an estimated £3.3 billion annually to the UK economy. As one of the largest single site employers, there are over 76,500 people working at Heathrow for over 400</p>		

	<p>companies, and we are the UK's largest port by value too, with around £86 billion of UK goods exported annually through the airport.</p> <p>Heathrow sits within the largest long-haul travel market in the world connecting business and people across the UK to growing economies around the world and is the UK's gateway for international tourism and travellers. We offer excellent passenger service through our two newest Terminals – Terminal 5 and Terminal 2 – and through upgrades to Terminals 3 and 4. We are currently voted by passengers through Skytrax to have the world's best airport terminal for terminal 2, and to have the World's best airport shopping, to be the best airport in Western Europe and to be in the World's top 10 airports. We are committed to be a responsible airport, being a good neighbour to our local communities and taking a lead on environmental measures, giving passengers a strong reason to keep choosing Heathrow. The UK government have recently approved Heathrow's expansion plans with 70% of MPs in support of the development.</p>
Previous experience	<p>Along with its airport partners in SEAC, Heathrow Airport Limited (HAL (SEAC2020)) referred to as HAL in this section, demonstrated a substantial involvement in the SESAR 1 programme and showed strong leadership particularly in developing the Airport Operations Management concept.</p> <p>HAL participated in eight WP6 "Airport Operations" projects addressing topics such as the integration of airport processes including the turnaround phase, definition and development of the APOC, integrated validation activities for the airport in the ATM environment, GBAS operational implementation and collaborative airport planning. Additionally, HAL provided effort to the WP6 management (06.00) and federating (06.02) projects to ensure consistency of results being passed to transversal documents, performance goals and other ATM stakeholders. HAL provided leadership to OFA05.01.01 (Airport Operations Management) to develop new solutions for testing, validation and eventual deployment into live airport operations.</p> <p>HAL developed innovative concepts such as the Airport Operations Plan (AOP) and Airport Operations Centre (APOC), which have now been introduced into the current baseline for Airport Collaborative Decision Making (A-CDM). The APOC and AOP are successfully operating at Heathrow and will be used in Wave 1 as part of the VLD PJ24 to validate Target Time of Arrival Management (TTA) using Demand Capacity Balance (DCB) tools. User Driven Prioritisation (UDPP) has also been developed in the AOP. HAL is involved therefore in practical AOP/NOP data exchanges to facilitate a seamless integration of airports into the Network. In SESAR 2020 Wave 1 HAL has further developed the concept contributing to PJ04 Solution 1 New Operating Methods and Solution 2 concept development. As part of SEAC 2020 HAL has contributed to a white paper on UDPP operation in SEAC airports.</p> <p>HAL also participated in transversal projects in PJ20 and contributed to all aspects of the development of the ATM Master Plan 2018.</p> <p>During the Master Plan update in Wave 1 HAL contributed by actively participating in the Master Planning Group (MPG) review meetings, with particular focus on including the voice of the airport and the passenger to the ATM Master Plan. By participation in the MPGs and subsequent external reviews HAL gained a thorough understanding of the Master Plan update campaign and its management, and its participants members were noted for their thorough and consistent contribution. HAL will continue this work and continue to influence thinking to include for example, passenger/ seat mile metrics in the document where appropriate. In addition, to the MPGs HAL contributed extensively to PJ20 WP2.6 and the business case chapter of the ATM Master Plan level 1 and will therefore be able to provide valuable insight during the expert review of those sections. Due to budget constraints within the project itself HAL, with SEAC will utilize internal</p>



	SEAC technical meetings, plus links to industry bodies, to ensure that the opinion of all airports of various sizes and complexity can be considered and included in the creation of the Master Plan. To achieve this, HAL as part of SEAC2020, along with the other member airports participating in the campaign, will therefore represent the views of those airports in the Master Plan. This will help with industry acceptance of the Master Plan and will be a valuable contribution to the next update campaign.
Entity Profile matching the task	<p>In addition to managing the operations on a day-to-day basis, HAL (SEAC2020) has unique skills, knowledge and experience with respect to airport operations and ATM including:</p> <ul style="list-style-type: none"> <li>• Operating a large, busy complex hub airport,</li> <li>• Integrated Airside &amp; Landside Operations,</li> <li>• Capacity Management &amp; Enhancement,</li> <li>• APOC operations with an integrated AOP</li> <li>• Strategic Planning &amp; Forecasting,</li> <li>• Performance Management,</li> <li>• Information Technology,</li> <li>• Environmental Management in varying weather conditions,</li> <li>• Contingency &amp; Crisis Management.</li> </ul> <p>HAL (SEAC2020) will provide specific airport input based on the knowledge and experience of a capacity constrained airport located in a capacity constrained Terminal Manoeuvring Area within the core area of the European ATM system.</p>
Contribution	<p>HAL (SEAC2020) will contribute to project PJ20 by bringing in its knowledge and experience of current airport operations management, airside and landside, its knowledge and experience from actual APOC and AOP operations and its extensive knowledge of innovative future developments.</p> <p>HAL will contribute to project PJ20 by being available for expert review groups</p>

#### 4.1.1.21 Flughafen München

Organisation	21 MUC (SEAC2020)	Airport
Description	<p>Flughafen München GmbH (MUC (SEAC2020)) is the operating company of Munich Airport. Within just a few years of opening in 1992, the airport's outstanding growth performance elevated it to join the ranks of Europe's busiest passenger airports. Munich Airport is a 26-year success story. It has a track record for steady growth, from 12 million to 46 million passengers per year, and from an airport to a self-contained city.</p> <p>Our company has significantly expanded its business activities: We're not only an international hub, but rather an urban center offering a wide range of goods and services. More and more, we're marketing the airport as a world of experience as well as offering real estate and consulting services. Services are offered far beyond Munich.</p> <p>The essence of our brand, Living ideas – Connecting lives, sums up everything that Munich Airport stands for and is an ideal expression of the multifaceted character of the airport. We connect people in every sense of the word: As an international hub we connect people on every continent. As a high-efficiency cargo airport we connect global markets. Together with our partners we connect strengths, competencies and innovations. And internally we are connected within the airport family. But Living ideas – Connecting lives means more than that: The core of our brand stands for a spirit of partnership in dealings with external parties, not only with our business partners, but also with the airport's neighbors and the residents of Munich. It also stands for the commitment of all employees to the way we, as the FMG Group, intend to behave in the future, both internally and externally – to an inner attitude.</p>	

Previous experience	<p>Flughafen München GmbH (MUC (SEAC2020)) was involved in SESAR 1 with a focus on concept development and validation activities. This is reflected with a participation in the 6.2, operational concept definition where we have put an emphasis on Validation Strategy and DoD. Furthermore we participated in 6.5.2, Airport Operations Plan Validation and 6.5.4, APOC Definition. Another strong focus was projects 6.6.1, CDM in adverse conditions and 6.7.2/6.7.3 ASMGCS Routing, Planning and Guidance. The main focus, however, was in 6.3 projects on validation, where we had placed most of our effort. In April 2015 we have hosted our own validation exercise on “Follow-the-Greens” (FtG) which turned out to be very successful with FtG established as a standard solution in the ATM Masterplan later on. Particular attention was also made to transversal activities with participation in C2 in various work packages and being the airport representative in the Masterplan campaign.</p> <p>In SESAR 2020 we have been involved as contributor mainly in PJ04 TAM, PJ03a ASMGCS and PJ20 Masterplan Update (active participation at MPC level).</p>
Entity Profile matching the task	<p>In addition to managing the operations on a day-to-day basis, Flughafen München GmbH (MUC (SEAC2020)) has unique skills, knowledge and experience with respect to airport operations including:</p> <ul style="list-style-type: none"> <li>• Operating a large and busy hub airport,</li> <li>• Integrated Airside &amp; Landside Operations,</li> <li>• Strategic Planning &amp; Forecasting,</li> <li>• Performance Management,</li> <li>• Information Technology,</li> <li>• Contingency and Crisis Management,</li> <li>• Off Campus Business in M&amp;A and Terminal Operations</li> </ul>
Contribution	<p>Flughafen München GmbH (MUC (SEAC2020)) will contribute to project PJ20 by participating in expert groups bringing in its knowledge and experience of current airport operations management, airside and landside, its knowledge and experience from SESAR 1, SESAR 2020 and knowledge of future developments.</p>

#### 4.1.1.22 Schiphol Nederland b.v.

Organisation	22	SNBV (SEAC2020)	Airport
Description	<p>Schiphol Nederland B.V. (SNBV) is the operator of Schiphol Airport; one of the busiest and largest hub airports in Europe. Started in 1916 as a small military airfield, Schiphol Airport has evolved towards a world class airport by continuous adaption to and initiation of new and innovative process developments in the Air Transport Industry.</p> <p>In 2018 Schiphol Airport welcomed over 71 million passengers, using almost 500.000 flights to/from 322 destinations worldwide. For this Amsterdam Airport consists of a complex system of terminals, concourses, aircraft parking aprons and runways.</p> <p>Schiphol Airport has a complex infrastructure lay-out consisting of six runways, many of them converging or even crossing. The operating environment is unique in such that runway combination changes take place 15 to 20 times a day. Not only dictated by a pronounced demand asking the full capacity of three runways simultaneously (2 landing + 1 take-off runway during inbound peak periods and 1 landing + 2 take-off runways during outbound peak periods), but also dictated by strict environmental regulations limiting the use of certain runways.</p> <p>Schiphol Nederland B.V. is part of the Schiphol Group. Next to Schiphol Airport, the smaller Dutch airports of Rotterdam, Eindhoven and Lelystad are part of the group. Schiphol Group also operates the International Terminal T-4 at New York JFK airport</p>		



Previous experience	<p>Schiphol Nederland has a strong involvement in the SESAR 1 program, being involved in 10 projects of Work Package 6 “Airport Operations”. Among a long list of contributions and activities this includes:</p> <ul style="list-style-type: none"> <li>• Project management of P6.5.1 (Airport Operations Plan Definition); AOP</li> <li>• Contributor to P6.5.3 (Airport Capacity and Flow Management); Airport -DCB</li> <li>• Contributor to P6.5.4 (Airport Operations Centre definition); APOC</li> <li>• Contributor to the development of the OFA 05.01.01 “Airport Operations Planning” guidance documents OSIED and INTEROP.</li> <li>• Contributor to the development of the validation plans (VALP) for different validation exercises for AOP, APOC and Airport-DCB (RMAN – Runway Manager),</li> <li>• Contributor to the execution of validation exercises for AOP, APOC and Airport-DCB (RMAN).</li> <li>• Task-leader / co-writer activities for multiple tasks within projects of Work Package 6 including P6.2 - Initial Detailed Operational Description – DOD step 1 and P6.5.4 APOC Initial Operational Concept.</li> </ul> <p>In SESAR2020 Wave 1 Schiphol Nederland B.V. continued the work from SESAR1 and took the task lead for the SPR-INTEROP/OSIED together with NLR. The projects Schiphol Nederland B.V. was involved in SESAR2020 are:</p> <ul style="list-style-type: none"> <li>• Task Lead for SPR-INTEROP/OSIED PJ04-01 TAM</li> <li>• Contributor in PJ04-02 TAM</li> <li>• Contributor in PJ-09 DCB</li> <li>• Contributor in PJ-20 Masterplan</li> </ul>
Entity Profile matching the task	<p>As one of the main hub- airports in Europe, Schiphol Nederland has extensive experience with respect to Airport Operations and Air Traffic Management, including;</p> <ul style="list-style-type: none"> <li>• (Integrated) Airside &amp; Landside Operations,</li> <li>• Capacity Management &amp; Enhancement,</li> <li>• Infrastructure Design &amp; Construction,</li> <li>• Strategic Planning &amp; Forecasting,</li> <li>• Performance Management,</li> <li>• Information Technology,</li> <li>• Safety Management,</li> <li>• Environmental Management in varying weather conditions,</li> <li>• Political and Regulatory Affairs,</li> <li>• Contingency &amp; Crisis Management.</li> </ul> <p>Schiphol Nederland employs skilled staff with a wide variety of expertise in operating a complex and busy airport. Skills vary from day-to-day operational management to implementing new or improved infrastructure and procedures in a 24/7 operational environment.</p>
Contribution	<p>SNBV (SEAC2020) will contribute to project PJ20 by bringing in its knowledge and experience of current airport operations management, airside and landside and its extensive knowledge of innovative future developments.</p> <p>SNBV will contribute to project PJ20 by being available for expert review groups.</p>

#### 4.1.1.23 SKYGUIDE, SA Suisse pour les services de la navigation aérienne civils et militaires

Organisation	23	SKYGUIDE	Service Provider
Description	Skyguide is the civil and military ANSP of Switzerland.		

	<p>Skyguide performs its services under a legal mandate issued by the Swiss Confederation and the Federal Office of Civil Aviation (FOCA), Switzerland's national aviation authority. This mandate requires skyguide to ensure the safe, fluid and cost-effective management of air traffic in Swiss airspace and in the adjacent airspace of neighbouring countries that has been delegated to its control. Skyguide's legally-prescribed duties and tasks entail providing civil and military air navigation services, aeronautical information and telecommunications services and the technical services required to install, operate and maintain the associated air navigation systems and facilities.</p> <p>Skyguide is fully committed to its public service mandate. Switzerland's air navigation service provider is an entrepreneurially-minded and customer-focused joint-stock company under Swiss private law which has its head office in Geneva.</p> <p>Skyguide manages En Route operations from Geneva and Zurich Area Control Centres (ACC) and provides Terminal and Aerodrome control for Geneva and Zurich international airports and for regional and military airports located in Alpnach, Bern, Buochs, Dübendorf, Emmen, Grenchen, Locarno, Lugano, Meiringen, Payerne, St. Gallen-Altenrhein and Sion.</p> <p>Located in the middle of the European ATM Network, Skyguide is able to provide front-end expertise of a dynamic ANSP, dealing with the highest density and complexity airspace of Europe. In 2017, Skyguide handled 1.4 Million IFR flights, 204000 VFR flights and 2400 tactical air force missions with a very high safety and punctuality levels. In order to ensure the required level of performance in this really specific operational environment, Skyguide adopts innovative approaches in various domains like new technologies (e.g. satellite navigation), advanced automated ATC support tools and HMIs, centralised ATC data processing systems. As confirmed by the European air traffic control agency EUROCONTROL, Skyguide has continuously both increased airspace capacity and enhanced the punctuality of the flights over the past 15 years.</p> <p>For further information visit us at: <a href="http://www.skyguide.ch">www.skyguide.ch</a></p>
Previous experience	<p>SESAR 1 : Skyguide is associate partner of DSNA and DFS and contributes in following Work Packages :</p> <ul style="list-style-type: none"> <li>• WP-4.2 (DSNA) : Consolidation of operational concept definition and validation including operating mode and air-ground task sharing</li> <li>• WP-4.3 (DSNA) : Integrated and pre-operational validation &amp; cross-validation <ul style="list-style-type: none"> <li>- IOP validation exercises</li> <li>- Free Route validation exercises performed on Skyguide SCCD platform</li> </ul> </li> <li>• WP-4.7.1 – WP13.2.3 (DFS) : Complexity Management in En-route <ul style="list-style-type: none"> <li>- Dynamic - Demand Capacity Balancing</li> <li>- STAM Measures validation exercises</li> <li>- Flight Adherence to Constraints for regulated flight at arrival</li> </ul> </li> <li>• WP-10.2.5 (DSNA) : Flight Object IOP System Requirement &amp; Validation <ul style="list-style-type: none"> <li>- Participation to IOP Requirements</li> </ul> </li> <li>• WP-C2 (DSNA) : Deployment Performance Planning and Reporting <ul style="list-style-type: none"> <li>- Participation to the Master Plan maintenance</li> </ul> </li> <li>• WP-16.6.5 (DFS) : Human Performance Support and Coordination Function • WP-B4.4 (DSNA) : Workstation, Service Interface Definition <ul style="list-style-type: none"> <li>- Definition of interface between CWP and external services</li> <li>- Set-up of a demonstrator using Coflight services connected to skyvisu HMI</li> </ul> </li> <li>• OFA-03.01.01 (DSNA) : Free Route and Advanced Flexible Use of Airspace <ul style="list-style-type: none"> <li>- Participation to the Free Route &amp; AFUA concept</li> <li>- Free Route exercises Validation on Skyguide SCCD platform</li> </ul> </li> </ul>

	<p>In addition Skyguide is participating to several large scale demonstrations :</p> <ul style="list-style-type: none"> <li>• WeFree (Air France) : Week-end Free Route trials (Swiss, Italy and France airspace)</li> <li>• Fairstream (DSNA) : Enhanced Arrival Management trials</li> <li>• Pegase (Airbus) : "Providing Effective Ground &amp; Air data Sharing via Extended projected profile"</li> <li>• iStream (DSNA) : "Integrated SESAR Trials for Enhanced Arrival Management"</li> <li>• Free Solutions (ENAV) : "Free Route Environmental and Efficient Solutions"</li> <li>• ODP (DFS) : "Optimised Descent Profile" • AAL (Netjets) : "Augmented Approach"</li> <li>• Proud (IdS) : PBN Rotorcraft Operations Under Demonstration</li> <li>• In SESAR 2020, wave 1, Skyguide is full member of SESAR and contributes in the following solutions:</li> <li>• PJ.02-08 : Traffic optimisation on single and multiple runway airports (lead)</li> <li>• PJ.06-01 : Optimized traffic management to enable Free Routing in high and very high complexity environments</li> <li>• PJ.06-02: Management of Performance Based Free Routing in Lower Airspace</li> <li>• PJ.09.02: Integrated Local DCB Processes Functions</li> <li>• PJ.10-01a: High Productivity Controller Team Organisation</li> <li>• PJ.10-02a: Separation Management - Improved Performance in the Provision of Separation</li> <li>• PJ.10-02b : Controller Automated Support Tools in En-Route Environment</li> <li>• PJ.10-06 : IFR RPAS Integration</li> <li>• PJ.15-09 : Data Centre Service for Virtual Centres Service</li> <li>• PJ.16-03 : Virtual Centre Concept</li> <li>• PJ.16-04 : Workstation, Controller productivity</li> <li>• PJ.18-02 : Integration of trajectory management processes</li> <li>• PJ.19: Content Integration - ATM Operations</li> <li>• PJ.20 - Masterplan maintenance</li> <li>• PJ.25 : E-AMAN VLD</li> </ul> <p>Previous experience in other European Programmes :</p> <ul style="list-style-type: none"> <li>• EUROCONTROL FASTI : First Air traffic control Support Tools Implementation programme. Awarded as FASTI Pioneer</li> <li>• FASTI SYSCO : Full Electronic System Intercentre Coordination live trials</li> <li>• CATS (EUROCONTROL) :Contract Based Air Transportation System simulation</li> </ul>
Entity Profile matching the task	Air Navigation Service provider including job profiles of Air Traffic Controllers, Operations and Air Traffic Management experts in the fields of operational concepts development, safety, human factors and validation activities
Contribution	<p>Skyguide will act as a contributor to the project in the following Work Packages:</p> <ul style="list-style-type: none"> <li>• WP2 – Master Plan Campaign <ul style="list-style-type: none"> <li>○ Provide support where required, including insight and rational evaluation of plans to change the ATM vision and performance ambitions with regard to air navigation services.</li> </ul> </li> <li>• WP4 – MP Level 3 Maintenance <ul style="list-style-type: none"> <li>○ Provide expert support in the development of the European Single Sky Implementation Plan (ATM Master Plan Level 3).</li> </ul> </li> <li>• WP5 – Ad Hoc SESAR Support <ul style="list-style-type: none"> <li>○ Ad hoc expert support on request of SJU in defining the common projects.</li> </ul> </li> </ul>

#### 4.1.1.24Thales LAS France SAS

Organisation	24 THALES AIR SYS	Ground Industry
Description	<p>Thales ATM, from take-off to touchdown and everything in between.</p> <p>World leader in ATM, Thales, represented in SESAR 2020 by the Thales LAS France company and its Linked Third Parties, offers integrated gate-to-gate solutions, from pre-flight to landing, ensuring airport safety, efficient traffic handling operations, data sharing on aircraft and seamless handover operations between territories. Thales has the largest installed base of solutions and technologies with over 360 TopSky - ATM Solutions, 7,000 nav aids, 700 surveillance radars, and 1,800 ADS-B and multilateration equipment.</p> <p>Thales is trusted by key ATM decision makers across 170 nations, and helps key decision makers master complexity and make timely decisions for better outcomes.</p> <p>At the forefront of all major modernisation initiatives around the world</p> <p>Growing aircraft numbers make Air Traffic Management more complex. Thales solutions help to make the skies safer, greener and more efficient.</p> <p>A key player in all major ATM modernisation initiatives, ICAO Aviation System Block Upgrades (ASBU), SESAR and NextGen, Thales focuses on international harmonization. Our product roadmaps are aligned with ICAO ASBU concepts, NextGen and SESAR.</p> <p>Thales has an important experience in En-Route, Approach and Tower systems developing and deploying systems across the world.</p>	
Previous experience	<p>Previous main projects:</p> <p>SESAR 1: Thales has been involved in all SESAR 1 Work Packages. Thales has been Co-Leader for :</p> <ul style="list-style-type: none"> <li>• WP10 (En-Route &amp; Approach ATC Systems)</li> <li>• WP14 (SWIM technical architecture)</li> <li>• WP15 (Communication, Navigation, Surveillance)</li> </ul> <p>SESAR 2020 Wave 1: THALES is a key contributor to the programme and is being involved in all S2020 Wave 1 projects.</p> <p>Thales is project coordinator for :</p> <ul style="list-style-type: none"> <li>• PJ16 (Controller Working Position / Human Machine Interface)</li> <li>• PJ17 (SWIM Technical Infrastructure)</li> </ul> <p>4-FLIGHT: Thales is delivering the future innovative Air Traffic Management system for France, 4-Flight. DSN A will enjoy a new generation ATM system to respond to the increasing complexity and density of air traffic, integrating a new advanced flight data processing system (CoFlight) with Thales's latest generation human machine interface (TopSky - Controller HMI) and sophisticated new controller tools, to better detect conflicts, facilitate traffic analysis.</p> <p>COFLIGHT: Coflight is a new advanced Flight Data Processing System (FDPS), jointly developed by DSN A and ENAV and Skyguide ANSPs, together with industrial partners Thales and Leonardo. Designed to meet SESAR performance objectives, Coflight is a unique product, a fundamental enabler to achieve interoperability throughout Europe.</p>	

COOPANS (CO-Operation of Air Navigation Service providers) is a unique innovative partnership, between five major ANSPs together with Thales as industry provider. IAA, LFV, Naviair, Austro Control and Croatia Control have implemented an advanced and unified Air Traffic Control system thanks to harmonized functionalities and joint investments. With Thales TopSky - ATC system in operation, the five countries members benefit from a unified solution, through an open architecture which allows them to introduce the latest innovations via regular stepwise evolutions.

OneSKY: The OneSKY project for the Australian ANSP Airservices of Australia consists of merging civil and military airspace into one unique airspace managed by the same integrated system. It is the most complex 'system of system' project that THALES ATM has ever competed for, including TopSky - ATC solutions deployed in 15 interconnected civil and military ATC centres.

MARSHALL: The Marshall Project is a transformational infrastructure programme for UK MoD, seeking to ensure safe, efficient and sustainable Air Traffic Management (ATM) service for the UK Armed Forces. Thales provides a complete civil ATM capability for Military Airbases with:

- Efficient and secure solutions for Approach, Tower and Runway operations
- A totally harmonized solution for operations between civil and military ATC
- Civil-military data control

TAAATS : provides the Air Traffic Management Service (En-Route and Approach) for the whole of Australia and for the related oceanic areas as well as the civil-military co-ordination. It is the only system in the world that simultaneously provides fully integrated ADS/CPDLC facilities and allows integrated display of radar tracks, ADS-C tracks, ADS-B tracks and Flight Plan tracks.

NESACC: aims at providing the Air Traffic Management Service (En-Route and Approach) for the whole north east of China controlling around 60% of Chinese total air traffic. Air traffic control of areas outside radar coverage is also provided. The Beijing, Shanghai and Guangzhou ATC centres are connected to the three (3) control towers of the largest Chinese airports.

## MODERNISATION INITIATIVES

### NextGen

Thales has a unique position in the ATM Industry, participating to both SESAR and NextGen. NextGen is transforming the US National Airspace System (NAS) to meet future needs and avoid gridlock in the sky and at airports.

Thales is a key contributor to NextGen

Member of RTCA NextGen Advisory Committee

Key technology provider for ADS-B program

Enabling data comm with Thales automation platform



	<p>Providing analysis work with the areas of safety and security</p> <p>ICAO ASBUs</p> <p>All Thales solutions are compliant with Block 0, and on the way to meet Block 1 requirements. Thales has the knowledge and expertise in the ASBUs together with the largest worldwide ATM installed base to advise our users about implementing them wherever they are.</p>
Entity Profile matching the task	<p>THALES AIR SYS will support the project with several profile/expertise in:</p> <ul style="list-style-type: none"> <li>• ATM Systems</li> <li>• System engineering;</li> <li>• ATM Architecture</li> </ul>
Contribution	<p>THALES AIR SYS will contribute to the project providing its unique expertise to the following activities by participating in the Master Plan Campaign:</p> <ul style="list-style-type: none"> <li>• Support on standardisation and regulation aspects, from manufacturing industry's perspective.</li> <li>• Support in the development of Cost Benefits Analysis, Business Cases and Performance Assessment, based on manufacturing industry experience and perspective.</li> <li>• Support in the definition of Deployment Scenarios from manufacturing industry's perspective (timeline for deployment).</li> </ul>

#### 4.1.1.25 STICHTING NATIONAAL LUCHT- EN RUIMTEVAARTLABORATORIUM – silent partner

Organisation	25	NLR (AT-One)	Service Provider	Ground Industry
Description	<p>NLR is the Netherlands Aerospace Centre for identifying, developing and applying advanced technological knowledge in the area of aerospace. NLR activities are relevant to society. They are market-oriented and carried out on a non-profit basis. NLR strengthens the innovativeness, competitiveness and effectiveness of government and business.</p> <p>The mission of NLR is to increase the sustainability, safety and efficiency of air transport. NLR is renowned for its leading expertise, professional approach and independent consultancy. NLR moreover possesses an impressive array of high quality research facilities. The activities of NLR span the full spectrum of Research Development Test &amp; Evaluation. NLR thereby bridges the gap between research and practical applications, while working for both government and industry. Founded in 1919, and employing some 650 people.</p> <p>NLR is participating with two divisions in SESAR which are shortly introduced in the following:</p> <p>The division Aerospace Operations of NLR supports its customers – worldwide- with the realization of an excellent operation. With our extensive expertise and unique simulation facilities we contribute to the sustainable performance of air traffic: futureproof, safer, more efficient and more environmentally friendly. Through consultancy and R&amp;D our flexible and state-of-the-art activities find their way to customers such as airlines, air traffic control, airports, ATM industry and governments. We find our customers both in The Netherlands and beyond its borders and also contribute to European programmes such as SESAR and CleanSky. From the integration of drones in civil airspace to new airport concepts, with our passion for aerospace and our excellence and extensive knowledge of air traffic we always strive for the best result for the customer.</p>			

	<p>The division Aerospace Systems of NLR is active in several domains: avionics technology, definition and flight testing of aircraft systems, application and testing of military systems, and application of space systems. Experts are active in the recent developments of RPAS technology, their certification and integration into non-segregated airspace. Furthermore the division is active in defining and facilitating experimental flight testing. The division has wide expertise in the certification of civil and military aircraft and systems. In the field of navigation NLR has deep expertise in GNSS.</p> <p>AT-One Consortium is composed of its two members Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR) and Netherlands Aerospace Centre (NLR).</p>
Previous experience	Not applicable
Entity Profile matching the task	Not applicable, NLR initially will not participate directly in this action.
Contribution	NLR will provide support to participating members of B4 Consortium if required.

#### 4.1.1.26 RIZENI LETOVEHO PROVOZU CESKE REPUBLIKY STATNI PODNIK – silent partner

Organisation	26	ANS CR (B4)	Service Provider
Description	<p>Air Navigation Services of the Czech Republic (ANS CR) is a progressive provider of safe and cost-effective air traffic services designated by Czech Ministry of Transport. Its task is to provide services to airspace users within the Czech airspace and at 4 international airports - Prague, Brno, Ostrava and Karlovy Vary. Covering rather small but very complex airspace, the company handled more than 850.000 flights in 2017, reaching to 900.000 flights in 2018, with minimal level of delay.</p> <p>Operating fleet of jet and propeller calibration aircraft, ANS CR offers wide range of flight inspection services. In addition, ANS CR provides specialized aviation training. The portfolio includes ATC training, pilot and other aviation staff training using its own facilities including ATC and aircraft simulators. The above-mentioned activities together with ATM consultancy services are provided to international customers on commercial basis by subsidiary companies CANI (Czech Air Navigation Institute) and CATC (Czech Aviation Training Centre).</p> <p>Being member of SESAR Joint Undertaking via B4 Consortium, ANS CR actively contributes to SESAR 2020 Programme. Participation in SESAR Deployment Programme is ensured by involvement in several implementation projects. Together with other central European countries the Functional Airspace Block Central Europe (FAB CE) was formally established. All such activities contribute to implementation of the Single European Sky (SES) legislation.</p>		
Previous experience	Not applicable		
Entity Profile matching the task	Not applicable, ANS CR initially will not participate directly in this action.		
Contribution	ANS CR will provide support to participating members of B4 Consortium if required.		

#### 4.1.1.27 Letové prevádzkové služby Slovenskej republiky, štátny podnik – silent partner

Organisation	27	LPS SR (B4)	Service Provider
--------------	----	-------------	------------------



Description	<p>Founded by the Ministry of Transport, Construction and Regional Development of the Slovak Republic in January 2000, LPS SR (Letové prevádzkové služby Slovenskej republiky, štátny podnik) is a state enterprise providing Air Navigation Services, including Air Traffic Services, Aeronautical Telecommunication Services, Aeronautical Information Services, as well as Search and Rescue, in the Slovak Republic.</p> <p>With a total staff of 500 (including 118 ATCOs) and altogether nine Operational units, among them one ACC (Bratislava), two APPs (Bratislava, Košice), five TWRs (Bratislava, Košice, Piešťany, Poprad, Žilina) and Central ATS Reporting Office (Bratislava), LPS SR controls the Slovak airspace (Bratislava FIR) of the total size of 48,800 km<sup>2</sup> and provides ATC services at five designated Slovak international airports as well as within small parts of the Hungarian airspace.</p> <p>In 2017, compared to the previous year, an increase in traffic was seen in the FIR Bratislava, namely from 505,155 to 522,353 movements, i.e. by 3.4%. August 5 was the day with the highest number of movements; on that day LPS SR provided air navigation services to record-breaking 2,163 flights. The European-wide increase in air traffic is also reflected in the evolution seen in the Slovak airspace in the last decade when the total number of movements increased by 59%.</p> <p>As far as provision of air traffic control is concerned, there were no delays which would exceed the determined limit of 0.5 minute per 1 flight. The average delay was only 0.039 minutes per flight.</p> <p>LPS SR is a part of B4 Consortium, Member of SESAR Joint Undertaking.</p> <p>LPS SR is a Member of the FAB CE and a founding member of the Gate One, a regional platform of Central and Eastern European ANSPs.</p>
Previous experience	Not applicable
Entity Profile matching the task	Not applicable, LPS SR initially will not participate directly in this action.
Contribution	LPS SR will provide support to participating members of B4 Consortium if required.

#### 4.1.1.28 Croatia Control, Croatian Air Navigation Services ltd – silent partner

Organisation	28 CCL/COOPANS	Service Provider
Description	<p>Croatia Control is a state-owned limited liability company.</p> <p>Location: The headquarter is located in Zagreb and subsidiaries are located in Pula, Rijeka, Lošinj, Split/Brač, Zadar, Dubrovnik and Osijek.</p> <p>Divisions: Air Traffic Management, Technical Division, Aeronautical Meteorology, Military Operations and Human Resources Management, Legal and Financial Affairs.</p> <p>Governance structure: An Assembly, a Supervisory Board and main Management. The Assembly consists of the Chairman - the Minister responsible for transport, Minister of Finance and the Minister of Defence. The Supervisory Board monitors the activities of the organization. Supervisory Board appoints the Director General.</p> <p>Director General manages and represents the organization.</p> <p>The primary business of Croatia Control is provision of air navigation services, pursuing the basic principle of a high level of air traffic safety in compliance with Single</p>	

	<p>European Sky framework, and Croatia Control has been certified for provision of the following services:</p> <ul style="list-style-type: none"> <li>• Air Traffic Services (ATS)</li> <li>• Communication, Navigation and Surveillance Services (CNS)</li> <li>• Aeronautical Information Services (AIS)</li> <li>• Aeronautical Meteorological Services (MET)</li> </ul> <p>Croatia Control is a member of COOPANS Consortium consisting of 5 Air Navigation Service Providers: Austro Control (ACG), Croatia Control (CCL), Irish Aviation Authority (IAA), Naviair and LFV. Cooperation between COOPANS partners goes beyond SESAR – partners has for a long time worked together with Thales under a common framework agreement in a joint program based on the incremental development of a common ATM platform. The overarching goal for COOPANS is to enable each individual ANSP to achieve financial savings through cost, resource, and competence sharing and to meet the EU objective of harmonizing ATM systems. This work is now expanded to Research &amp; Innovation by the establishment of the COOPANS Consortium.</p> <p>Croatia Control has many years of experience, both in the delivery of Air Traffic Services, design of concepts and in development, validation and implementation of Air Traffic Management tools.</p> <p>Croatia Control is certified ISO 9001, ISO 14001 and BS OHSAS 18001.</p>
Previous experience	<p>Croatia Control has many years of experience in ATM, ATFCM and ASM, as well in operational use of CPDLC, Mode S and automated system coordination tools in cross border FRA operations which are now an integrated part of the ATM-system Topsky and previously in EUROCAT-E.</p> <p>Croatia Control has participated in SESAR 2020 Wave 1 as a member of COOPANS Consortium in the following projects, solutions or VLDs:</p> <ul style="list-style-type: none"> <li>• PJ.01-01</li> <li>• PJ.04-02</li> <li>• PJ.05-02</li> <li>• PJ.05-03</li> <li>• PJ.06-01</li> <li>• PJ.09-02</li> <li>• PJ.10-02A</li> <li>• PJ.10-02B</li> <li>• PJ.10-05</li> <li>• PJ.15-09</li> <li>• PJ.16-03</li> <li>• PJ.16-04</li> <li>• PJ.18.02</li> <li>• PJ.18.04</li> <li>• PJ.18-06</li> <li>• PJ.19-CI02</li> <li>• PJ.19-CI05</li> <li>• PJ.20</li> <li>• PJ.24</li> </ul>
Entity Profile matching the task	Not applicable, Croatia Control will not initially participate directly in this action
Contribution	CCL will provide support to participating COOPANS members if required

4.1.1.29 Irish Aviation Authority – silent partner

Organisation	29	IAA/COOPANS	Service Provider
Description	<p>Irish Aviation Authority is a state-owned limited liability company</p> <p>Locations: The headquarter is located in Dublin and subdivisions are located in Shannon and Cork</p> <p>Divisions: Two main divisions - Operations and Strategy, Technology and Training supported by corporate services. Furthermore, Irish Aviation Authority has a Safety Regulation Directorate, as Irish Aviation Authority oversees and regulates the implementation of standards for the Irish civil aviation industry.</p> <p>Governance structure: Irish Aviation Authority has a Board of Directors having responsibility for the corporate governance.</p> <p>Irish Aviation Authority (IAA) is a member of COOPANS Consortium consisting of 5 Air Navigation Service Providers: Austro Control (ACG), Croatia Control (CCL), Irish Aviation Authority (IAA), Naviar and LFV. Cooperation between COOPANS partners goes beyond SESAR – partners has for a long time worked together with Thales under a common framework agreement in a joint program based on the incremental development of a common ATM platform. The overarching goal for COOPANS is to enable each individual ANSP to achieve financial savings through cost, resource, and competence sharing and to meet the EU objective of harmonizing ATM systems. This work is now expanded to Research &amp; Innovation by the establishment of the COOPANS Consortium.</p> <p>Irish Aviation Authority (IAA) has many years of experience, both in the delivery of Air Traffic Services; design of concepts and in development, validation and implementation of Air Traffic Management tools.</p> <p>The enterprise is certified ISO 9001.</p>		
Previous experience	<p>Irish Aviation Authority (IAA) has participated in SESAR via NORACON consortium in the following WPs:</p> <ul style="list-style-type: none"> <li>• WP5 TMA Operations (5.3, 5.6.1, 5.6.4, 5.6.7, 5.9),</li> <li>• WP6 Airport Operations (6.7.1),</li> <li>• WP 10 En-Route &amp; Approach ATM Systems (10.2.1, 10.3.8, 10.10.3),</li> <li>• WP 16 R&amp;D Transversal Areas (16.4.3, 16.6.1),</li> <li>• WP C Master Plan Maintenance (C3)</li> </ul> <p>IAA has participated in SESAR 2020 wave 1 in the following projects:</p> <ul style="list-style-type: none"> <li>• PJ.10,</li> <li>• PJ.16,</li> <li>• PJ.17,</li> <li>• PJ.25 and</li> <li>• PJ.27</li> </ul>		
Entity Profile matching the task	Not applicable, Irish Aviation Authority (IAA) will not initially participate directly in this action		
Contribution	IAA will provide support to participating COOPANS members if required		

4.1.1.30 ATOS Belgium – silent partner

Organisation	30	ATOS (FSP)	Ground Industry
--------------	----	------------	-----------------

Description	<p>Atos Belgium is a company within Atos SE (Societas Europaea) group. Atos is a leader in digital services with 2014 pro forma annual revenue of €10 billion and 86,000 employees in 66 countries. Serving a global client base, the Group provides Consulting &amp; Systems Integration services, Managed Services, Cloud operations, Big Data &amp; Security solutions, as well as transactional services. Throughout Europe, more than 300 Atos ATM experts provide solutions and architecture support to Air Navigation Service Providers, Airports, Airlines and EUROCONTROL Network Manager.</p> <p>Atos Belgium is member of the Frequentis SESAR Partners consortium together with the companies HUNGAROCONTROL MAGYAR LEGIFORGALMI SZOLGALAT ZARTKORUEN MUKODO RESZVENYTARSASAG and Frequentis AG which was founded in 2014 for the main purpose of joining SESAR2020 activities. Frequentis SESAR Partners is member of the SESAR Joint Undertaking.</p> <p>The consortium is comprised of companies having a variety of complementary capabilities. Having former SESAR1 experience within its framework, an ANSP whose expertise will result in early feedback loops during certain projects, and the wide range IT, data management and security expertise of the consortium forming entities, Frequentis SESAR Partners believes in the high added value of its participation in SESAR2020 efforts.</p>
Previous experience	Atos (FSP) is participating in PJ04, PJ07, PJ08 and PJ09 in SESAR 2020 wave1 implementation.
Entity Profile matching the task	Not applicable, ATOS (FSP) initially will not participate actively in this action.
Contribution	ATOS (FSP) will provide support to participating members of Frequentis SESAR Partners if required.

#### 4.1.1.31 FREQUENTIS AG – silent partner

Organisation	31 FRQ (FSP)	Ground Industry
Description	<p>Frequentis AG, member of SESAR1, is an international expert for communication and information systems for control centres with safety-critical tasks. Frequentis AG maintains a worldwide network of subsidiaries and local representatives in more than 50 countries to ensure closeness to our customers.</p> <p>Frequentis AG successfully designs and supplies systems and solutions for the domains of communication, networks, SWIM, aeronautical information management, and airport traffic optimization, both in service and infrastructure as well as in the visualisation part of the independent CWP; based on service oriented and open, standardised architecture. In SESAR1 we have demonstrated remarkable achievements towards the next generation ATM system architecture.</p> <p>Special interest is given to the users of ATM systems. Our expertise and tooling guarantees early indications of the future user acceptance.</p> <p>Frequentis AG is member of the Frequentis SESAR Partners consortium together with the companies HUNGAROCONTROL MAGYAR LEGIFORGALMI SZOLGALAT ZARTKORUEN MUKODO RESZVENYTARSASAG and Atos Belgium and was founded in 2014 for the main purpose of joining SESAR2020 activities. Frequentis SESAR Partners is member of the SESAR Joint Undertaking.</p> <p>The consortium is comprised of companies having a variety of complementary capabilities. Having former SESAR1 experience within its framework, an ANSP whose expertise will result in early feedback loops during certain projects, and the wide range</p>	

	IT, data management and security expertise of the consortium forming entities, Frequentis SESAR Partners believes in the high added value of its participation in SESAR2020 efforts.
Previous experience	Frequentis actively contributes within S2020 wave 1 in PJ03A, PJ03B, PJ05, PJ10, PJ14, PJ15, PJ16, PJ17, PJ18 and PJ19. In SESAR 1 FRQ was involved in 41 different projects.
Entity Profile matching the task	Not applicable, FRQ (FSP) will not initially participate directly in this action
Contribution	FRQ (FSP) will provide support to participating Frequentis SESAR Partners if required

#### 4.1.1.32 AIRTEL ATM Limited – silent partner

Organisation	32 Airtel (NATMIG)	Ground Industry
Description	<p>AIRTEL ATN LTD is a part of North European ATM Industry Group (NATMIG) Consortium. NATMIG is a member of SESAR 1. The NATMIG consortium consists of Airtel ATN (SME - Ireland), Saab AB (multinational industrial concern - Sweden) and Stiftelsen SINTEF (non-profit research foundation - Norway).</p> <p>AIRTEL ATN LTD is an SME which has an extensive line of ATN &amp; FANS data link products and technology used in 35 countries worldwide. Its operational systems include ATN/OSI routers deployed on more than 2,500 aircraft. Its ground systems include Air/Ground Data Link Servers deployed in several European Countries and Air/Ground routers used in VDL Mode-2 networks. It provides data link test and monitoring equipment. It has developed experimental version of future data link systems such as ATN/IPS, SATCOM and AeroMACS.</p> <p>AIRTEL ATN LTD is providing Test and Monitoring equipment to the FAA DCIS program. It has extended its research collaboration to include organisations in China. It is also providing Data Link networking equipment in collaboration with Russian companies.</p> <p>AIRTEL ATN LTD also provides Data Link test services and products in support of Aircraft Data Link certification for ACARS, FANS and ATN/OSI, in particular EU Data Link and US DCIS aircraft testing.</p>	
Previous experience		
Entity Profile matching the task	Not applicable, Airtel (NATMIG) initially will not participate actively in this action.	
Contribution	Airtel (NATMIG) will provide support to participating members of Frequentis SESAR Partners if required.	

#### 4.1.1.33 Groupe ADP – silent partner

Organisation	33 ADP (SEAC2020)	Airport
Description	<p>Groupe ADP (formerly Aéroports de Paris) manages the 3 Paris airports:</p> <ul style="list-style-type: none"> <li>• Paris-Charles de Gaulle, 2nd largest airport in Europe and 10th worldwide,</li> <li>• Paris-Orly, 2nd largest airport in France, dedicated to point to point traffic,</li> <li>• Paris-le Bourget, the leading business airport in Europe.</li> </ul>	

	<p>and 10 aerodromes in the Paris area plus one heliport. Paris airports welcomed 101,5 million of passengers in 2017 and 105,3 million of passengers in 2018, serving more than 3570 destinations.</p> <p>ADP (SEAC2020) also manages directly or indirectly 26 airports worldwide (228,2 million of passengers in 2017) and exports its know-how and expertise to 4 continents.</p> <p>According to the latest study conducted by the BIPE (bureau for economic information and forecast) in 2011, the overall economic activity generated by the Paris airport system was 5.8% of the one of Ile-de-France (Paris region) GDP, i.e. 1.7% of the French GDP. With 340,300 jobs, the economic activity generated by the presence of the Paris airports represents 8.3% of paid employment in Ile-de-France, i.e. 2% of paid employment in France. The direct employment associated with companies present at the airports represents 1/3 of these jobs, i.e. 115,400 jobs, of which 96% are long-term contracts.</p>
Previous experience	<p>Previous projects:</p> <ul style="list-style-type: none"> <li>• SESAR 1 WP06: P6.5.4 project manager (APOC definition), contribution to P6.7.1/P6.3.1 (RWSL aspects) and to 9 individual project in WP06; OFA.05.01.01 Core Team (Airport Operations Management).</li> <li>• SESAR 1 WPC: contributions to cost benefit analysis (C.2),</li> <li>• SESAR 1 WP16: contribution on environmental aspects addressed by WP16 (P16.3.1 and P16.3.2).</li> <li>• SESAR 2020 W1 (PJ04): Project coordinator, contribution to solutions PJ.04-01 and PJ.04-02.</li> <li>• SESAR 2020 W1 (PJ03b): Project contributor to PJ.03b-06</li> </ul>
Entity Profile matching the task	Not applicable, Groupe ADP (ADP (SEAC2020)) will not participate directly to this action.
Contribution	Groupe ADP will provide support to participating SEAC2020 members when required.

#### 4.1.1.34 Swedavia AB – silent partner

Organisation	34	Swed (SEAC2020)	Airport
Description	<p>Swedavia AB (Swed (SEAC2020)) task is to own, operate and develop ten strategically located airports all over Sweden. Together, the airports constitute a network that links Sweden's regions together, while also serving as a bridge to and from the world beyond. Swedavia's vision is "Together we bring the world closer". That means Swedavia shall help to make air travel and cargo transport – regionally, but also to and from Sweden – as accessible, efficient and attractive as possible.</p> <p>In 2018, Swedavia AB (Swed (SEAC2020)) had a net revenue of SEK 5.9 billion and some 3,000 employees. The Swedavia group of airports served in 2018 around 42 million passengers.</p> <p>Stockholm-Arlanda Airport is Sweden's largest airport (26,7 million passengers and 916 000 aircraft movements in 2018) and acts as an important domestic and international hub for the Stockholm region and for Scandinavia - owing to flights to 180 destinations around the globe, and good ground transportation to and from other parts of the Stockholm region.</p> <p>Stockholm-Arlanda Airport operates three runways which are subject to strict environmental conditions. Capacity is in 2018 84 aircraft movements per hour. In total some 20,000 people work at the airport</p>		



Previous experience	<p>Swedavia AB (Swed (SEAC2020)) has been involved since SESAR1 as a member of NORACON. Swedavia AB (Swe (SEAC2020)) was an active in a number of Work Package 6 projects both as project leader and as project contributor. Swedavia AB (Swedavia (SEAC2020)) has also been involved in validation exercises under the SJU/AIRE umbrella. Examples of various Swed (SEAC2020) engagement below:</p> <ul style="list-style-type: none"> <li>• WP6.6.2 as Project Leader for “Integration of Airport/Airline/Ground Handlers/ATC.</li> <li>• Swed (SEAC2020) has been contributing to: <ul style="list-style-type: none"> <li>○ WP6.7.1 “Airport safety support tools”,</li> <li>○ WP6.8.8 “Enhanced arrival procedures to “reduce occupancy time using GBAS &amp; P03 - Curved Approach based on GBAS,</li> <li>○ WP6.9.3 “Remote &amp; Virtual tower.</li> </ul> </li> </ul> <p>Swedavia AB (Swed (SEAC2020)) airports (Stockholm-Arlanda airport / Göteborg-Landvetter airport) have been participating in SJU/AIRE exercises “Green Connections”, “MINT” and “VINGA”.</p> <p>Swedavia AB (Swed (SEAC2020))) have been involved as consortium member and as contributor in two FP7 financed projects “MANaging System Change in Aviation, MASCA” and project “PROactive Safety PERformance for Operations, PROSPERO</p> <p>In SESAR2020 Swedavia AB (Swed (SEAC2020))) joined the SEAC consortium where Swedavia AB (Swed (SEAC2020))) have contributed in:</p> <ul style="list-style-type: none"> <li>• PJ02/11 – EARTH</li> <li>• PJ04 – TAM</li> <li>• PJ05 – Remote Tower</li> <li>• PJ20 – ATM Masterplan</li> </ul> <p>Within PJ04, Swedavia AB (Swedavia (SEAC2020))) have focused on assisting other partners with operational expertise and personal for validation activities.</p>
Entity Profile matching the task	Not applicable, Swed (SEAC2020) initially will not participate directly in this action.
Contribution	Swed (SEAC2020) will provide support to participating SEAC2020 members when required.

#### 4.1.1.35 Flughafen Zürich AG – silent partner

Organisation	35 ZRH (SEAC2020)	Service Provider
Description	<p>According to the terms agreed with the Swiss Confederation in 2001, Flughafen Zürich AG (ZRH (SEAC2020)) has the right and obligation to operate Zurich Airport and maintain its infrastructure for the duration of the 50-year concession. The 2004 aviation policy report summarised the Federal Council’s position: “Because Zurich Airport is a key infrastructure, it is vital for Switzerland that it runs smoothly. It must continue to provide the infrastructure that airlines need to maintain the best possible direct connections between Zurich and Europe and the world’s major cities and to thereby satisfy the needs of the market”.</p> <p>Flughafen Zürich AG (ZRH (SEAC2020)) has around 1,600 employees across four business areas. The company focuses on its core activities: national and international airport operator, operation of the commercial centres in the landside and airside areas, as well as income-oriented management and further development of real estate at the Zurich location.</p>	



	In the formulation and implementation of its strategy, Flughafen Zürich AG (ZRH (SEAC2020)) underpins the three aspects of cost-efficiency, environment and social responsibility. In this way it aims to increase the company's competitiveness and credibility and achieve sustainable value creation. It constantly has to strike a balance between capacity, complexity and noise.
Previous experience	<p>Flughafen Zürich AG (ZRH (SEAC2020)) participates to SESAR through the SESAR European Airports Consortium and was mainly involved in WP6 Projects: 6.8.4 Coupled AMAN DMAN, 6.5.3 Airport-DCB, 6.5.1 Airport Operations Plan Definition, 6.5.4 Airport Operations Centre definition and the OFA 5.1.1, as well as in the projects 6.7.1 and 6.7.2 and the Validations of 6.3.1 and 6.3.2.</p> <p>Additionally Flughafen Zürich AG (ZRH (SEAC2020)) provided effort to the management of WP6 and to the federating 6.2 project to ensure consistency of results being passed to transversal documents to determine performance goals and inform other ATM stakeholders.</p> <p>Additionally Flughafen Zürich AG (ZRH (SEAC2020)) took part in WP12 "Airport Systems" project 12.06.02 Airport Operations Plan and several environmental projects. Furthermore Flughafen Zürich AG (ZRH (SEAC2020)) has been involved in the BAFO III project 6.8.8 and in several AIRE projects (AIRE 1 and AIRE 2) covering ground aspects and the LSD projects iStream &amp; AAL.</p>
Entity Profile matching the task	Not applicable, Flughafen Zürich AG (ZRH (SEAC2020)) initially will not participate directly in this action.
Contribution	Flughafen Zürich AG (ZRH (SEAC2020)) will provide support to participating SEAC2020 members when required.

#### 4.1.2 Main profiles/CV (they may be the same person for more than one role)

- **Activity Coordinator (PM/Transversal activity Coordinator - WP1 & WP6)**

- **Marie-France Deslandes (EUROCONTROL) – PJ20 Coordinator EUROCONTROL  
Gender F**

*Currently, Coordinator and Project Manager of SESAR2020 Wave 1 - PJ20 – AMPLE.*

*From 2010 to 2016, in SESAR 1, she was already active in Master Planning as Manager of project C.02.'Deployment, Performance, Incentives Planning and Reporting'.*

*Marie-France is a Civil Aviation Study and Operations Engineer from the French Directorate General for Civil Aviation (DGAC) with strong background in automation of AIS and ATC Operations.*

*Following Civil Aviation Technician studies at the ENAC in Toulouse, she started her career in 1981 as a NOTAM Officer in the French AIS. In 1994, after her engineer graduation, she became deputy Head of the Operations room in Paris ACC, where she worked for 18 months and licensed as a Private Pilot in the same period.*

*In December 1995, she started her career at EUROCONTROL as an expert within the AIS Domain. There, she led the development of many significant AIS/AIM deliverables and developed strong stakeholder management and intercultural skills before becoming the EATM AIS Team Secretary.*

*In 2006, she began her involvement with SESAR, when joining the ATM Content Integration Group, an interdisciplinary, cross-Directorate group set-up in EUROCONTROL to facilitate coordinated contributions to the SESAR Definition phase.*

*She then managed the SESAR project C.02 for six years its inception in December 2010. Her C.02 Project Manager work aimed to facilitate the link between R & D planning and Deployment planning. C.02 project already sought to enable timely availability and performance based deployment of SESAR Solutions. In her C.02 Project Manager role, she brought together successfully contributions from no less than 12 SESAR partners from across the European ATM Industry.*

*She further confirmed her strengths as Project Manager, Coordinator and skills in Master Planning for SESAR2020 Wave 1 - PJ20 – AMPLE, which she has led successfully too with 24 (twice as many) partners.*

- **Work Package Leaders (WPL)**

- **Jens Fischer - EUROCONTROL (WP02)**  
**Gender M**

*Jens Fischer holds a Master's Degree in Computer Science from University of Munich.*

*He joined EUROCONTROL in 1998 in the Central Route Charges Office, working inter alia on continuous improvement of the route charges system and on business planning. Subsequently, he moved into the business planning function for the EUROCONTROL Agency and developed the first Agency Business Plan.*

*In early 2011, Jens took over the duties of the SESAR Project Manager for project C.01, responsible for the administration of the European ATM Master Plan updates. His work within the Master Plan Maintenance Unit comprises the facilitation of the update campaigns for the Master Plan document and the management of the Master Plan Portal. He was also facilitating - together with SESAR partners - the data change management process for the underlying database, which reflects the latest status of the programme.*

*In 2012 he was part of the team, comprising a great diversity of stakeholders, which delivered the updated 2nd Edition of the European ATM Master Plan.*

*In SESAR 1, Jens was also chairing the System Engineering Review of the SJU, determining whether SESAR Solutions were mature and could transit from the R&D phase into the industrialisation phase.*

*His Master Plan update work in both SESAR1 and SESAR2020, has been on delivering the Master Plan 2015 Edition and recently the draft Master Plan edition 2019. The work consists of producing a proposed Master Plan version, together with a broad representation of ATM Stakeholders, which is then handed over to the SESAR Joint Undertaking (SJU) who is putting it into a formal consultation process for endorsement by the SJU Administrative Board.*

- **Daniela Muresan - EUROCONTROL (WP3)**

**Gender F**

*Daniela holds a Master degree in aeronautics engineering from Romanian Polytechnic University of Bucharest.*

*She has more than 20 years of experience in aviation. She served from 1995 to 2000 as expert in Human Resource Department in ROMATSA, dealing with training, licences and promotion procedures for technical and operational ATM staff and its interface with Civil Aviation Authority.*

*From 2000, she started the work at EUROCONTROL, as an official staff in the Business Planning and Support Division. From 2009 Daniela worked as an expert in the Master Plan Unit. She supported the delivery of two ATM European Master Plan editions in 2012 and 2015, being involved in the Performance area, Deployment Scenario and Master Plan Level 2 data generation and maintenance. In SESAR1 Project C.02, she led task T024, that provided project C.02 content and quality contribution to the Change Management Process for the Master Plan Level 2 Data Sets.*

*In S2020 PJ20 AMPLE (Wave 1) currently, she leads WP2.4 Deployment Scenarios after having led the ad-hoc WP 2.8 on CP2 proposal.*

• **Luca Dell' Orto - EUROCONTROL (WP4)**  
**Gender M**

*Luca holds an Engineering degree in aeronautics from the Italian Polytechnic University of Milan. He has more than 20 years of experience in aviation. He served from 1995 to 2001 as technical officer in the European Operations and Infrastructure office of IATA (the International Association of Transport Airlines), after which he worked as consultant for EUROCONTROL, in the ADS and Mode S programmes.*

*From 2005 he is an official of EUROCONTROL, starting in the European Convergence Implementation and Planning Unit and dealing with the production of the ESSIP Plan and Report.*

*From 2008 he is also involved in the EUROCONTROL LSSIP process (leading to the annual monitoring and reporting, at national level, of the progress of ESSIP objectives).*

*In 2012 and 2013 Luca was part of the EUROCONTROL Support Cell created to assist the SESAR Joint Undertaking in developing a proposal for the Pilot Common Project.*

*From October 2013 to October 2015 he was part of the EUROCONTROL team providing secretariat and expert support to the NSA Coordination Platform (NCP) and related Working Groups, and acted as secretary of the SESAR Deployment Working Group.*

*Since then, he is representing EUROCONTROL as Observer in the NCS SESAR Working Group (formerly NCP SESAR Deployment WG).*

*He is part of the EUROCONTROL / DECMA / ACS / Planning, Reporting and Monitoring (PRM) Unit and is currently leading the work of WP2.5 (Planning and Monitoring) in SESAR2020 PJ20-AMPLE.*

## 4.2 Third parties involved in the project (including use of third party resources)

### 4.2.1 Linked to EUROCONTROL

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	Y
<i>EUROCONTROL will subcontract Airspace User input to the Master Plan update campaign (WP2) and the Master Plan L3 plans and reports (WP4).EUROCONTROL, as an international organisation, follows strict rules in terms of external assistance selection and procurement. These rules will be applied for the selection of the subcontracting parties in the framework of PJ.20 W2.</i>	
Does the participant envisage that part of its work is performed by linked third parties <sup>7</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?	N
N/A	

### 4.2.2 Linked to AIRBUS

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	Y
<p>Boeing R&amp;T-Europe as linked third party of Airbus SAS will subcontract part of its activities so as to incorporate into the results the inputs from Boeing experts on the FAA NextGen program as well as on Boeing's ATM-related roadmaps. The subcontract will include contributions to the following tasks:</p> <ul style="list-style-type: none"> <li>• Identification of earliest availability dates of Solutions considering Boeing and FAA roadmaps</li> <li>• Identification of the need for future global standards, operational and airworthiness requirements</li> <li>• Inputs to the Deployment Plans and Scenarios considering equivalent plans in the US</li> <li>• Monitoring of the Boeing Avionics systems availability in support to Solutions deployment</li> </ul>	

<sup>7</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

Does the participant envisage that part of its work is performed by linked third parties <sup>8</sup>	Y
<p>For the present proposal, Boeing is linked third party of Airbus SAS, as declared in the Airbus Proposal for Membership Accession -REF. SJU/LC/0122-CFP.</p> <p>In the continuity of SESAR 1 and SESAR2020 Wave 1, Airbus linked third party will actively participate to:</p> <ul style="list-style-type: none"> <li>• Identification of Solutions deployment earliest availability dates</li> <li>• Identification of the need for future standards, operational and airworthiness requirements</li> <li>• the development of the ATM business model, including incentives schemes for Airspace users, and bringing an understanding of the air transport value chain with cost and benefit structures.</li> <li>• the development of Deployment Plans, Deployment Scenarios</li> <li>• The monitoring of the Avionics systems availability in support to Solutions deployment</li> </ul>	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

#### 4.2.3 Linked to DLR (AT-One)

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>9</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	

<sup>8</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

<sup>9</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

#### 4.2.4 **Linked to ON (B4)**

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>10</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

#### 4.2.5 **Linked to PANSa (B4)**

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>11</sup>	N
N/A	

<sup>10</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

<sup>11</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).



Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

#### 4.2.6 Linked to ACG/COOPANS

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>12</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

#### 4.2.7 Linked to LFV/COOPANS

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	

<sup>12</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

Does the participant envisage that part of its work is performed by linked third parties <sup>13</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

#### 4.2.8 Linked to NAVIAIR/COOPANS

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>14</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

#### 4.2.9 Linked to DFS

Objective
-----------

<sup>13</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

<sup>14</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>15</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

#### 4.2.10 Linked to DSNA

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>16</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

<sup>15</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

<sup>16</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

#### 4.2.11 Linked to ENAIRE

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>17</sup>	Y
<p><u>NAV Portugal.</u></p> <p>NAVEGAÇÃO AEREA DE PORTUGAL - NAV PORTUGAL EPE (short name: NAV PORTUGAL) is the Portuguese ANSP. Given the collateral nature of the respective airspaces of Spain and Portugal, collaboration between NAV PORTUGAL and ENAIRE is considered of paramount importance. Close contact and joint effort has been maintained historically by both entities, as also reflected in SESAR Programme so far. The two countries constitute the South West FAB (Functional Airspace Block) in the context of the Single European Sky (SES) initiative, with a specific signed agreement regarding the implementation and operation of this FAB. Also interoperability matters and issues with non-European ATM entities (Africa, America...) require a common approach by ENAIRE and NAV PORTUGAL.</p> <p>NAV PORTUGAL participation will focus on PJ20 WP2 and WP5.</p>	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	Y
<p>Several companies have been collaborating by means of third party in kind contribution with ENAIRE for long time, and a close collaboration exists in this sense. This has been the habitual practice in SESAR1 and in SESAR 2020 Wave 1 activities and the results have become optimal in terms of efficiency and mutual collaboration.</p> <p>The use of this in kind contribution is identified as a key factor for the proper development of the activities under this project. The complementarity of the know-how and expertise profile obtained by this form of collaboration is necessary to achieve the targets with the expected level of quality.</p> <p>This contribution corresponds to the one referred to in Art. 11 of the AMGA (in-kind contributions against payment), in turn corresponding to category "A.3- seconded persons" of the Annex 2 of the Grant Agreement, and currently is estimated to amount to around 90.000 € (direct costs) for the work developed on ENAIRE's premises (since there is no specific place in Annex 2 to indicate these costs).</p>	
Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?	N
N/A	

#### 4.2.12 Linked to ENAV

Objective
-----------

<sup>17</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>18</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

#### 4.2.13 Linked to HC (FSP)

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>19</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

<sup>18</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

<sup>19</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

#### 4.2.14 Linked to INDRA

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>20</sup>	Y
<p><i>Indra Business Consulting</i></p> <p><i>IBC is a Spanish consulting firm that provides comprehensive strategic consultancy solutions. Since 1988, it has been offering services ranging from development strategy to implementation, covering the entire life cycle of businesses and transport infrastructure (including air transportation), territorial development and logistics for the public and private sectors, under the brand ALG (Advanced Logistics Group) being an affiliate company of Indra. Its expertise is found within a team of over 120 highly-qualified consultants employing a multidisciplinary approach covering the fields of business management, public administration, engineering, traffic modelling, operations, economics, and information systems.</i></p> <p><i>Over the course of twenty-five years, it has built a broad portfolio of services, creating value through more than 1,000 projects in 35 countries, and serving over 350 clients.</i></p> <p><i>IBC, as affiliate of Indra, has contributed to the following projects in SESAR I:</i></p> <ul style="list-style-type: none"> <li><i>• Contribution to Project B.04.02 – Update and maintenance of the CONOPS;</i></li> <li><i>• Contribution to Project C.02 – Deployment/Performance planning and reporting;</i></li> <li><i>• Contribution to Project C.03 – Maintain Standardisation and Regulatory Roadmaps;</i></li> <li><i>• Contribution to Project 16.06.06 – Business Case maintenance, support and coordination;</i></li> </ul> <p><i>IBC has a deep knowledge of the ATM Master Plan and its different levels thanks to its participation to the update activities in the context of SESAR C0.2 project. IBC acquired a clear understanding of the needs in terms of regulation and standardisation for the synchronised and coherent SESAR deployment, providing its industrial expertise in SESAR C0.3 project, leading several eRIAs and the SESAR regulatory monitoring report.</i></p> <p><i>IBC has wide expertise in CBAs and Business Case maintenance, in ATM, mainly due to its involvement in SESAR, by providing support and coordination;</i></p> <p><i>Regarding Wave 1 of SESAR 2020, (formerly ALG) contributed to the following Work Packages:</i></p> <ul style="list-style-type: none"> <li><i>• PJ19.4 – Performance Management, providing expertise on maintenance of Validation Targets and in the review and consolidation of the performance assessments undertaken by SESAR 2020 Projects;</i></li> <li><i>• PJ20 – Master Planning, in particular within the 2018 MP update campaign and to the development of the vision and Cost benefit Analysis models, the business management of the SESAR common baseline and assumptions and the running of costing exercises representing the ground industry.</i></li> </ul> <p><i>Additionally, IBC has gained wide experience in operational, economic and technical analysis by developing Feasibility Analysis, Cost Benefit Analysis and Business Cases related to the implementation of new operational concepts, procedures and functions for different ANSPs and CAAs around the world..</i></p> <p><i>All this background and relevant experience will be spent in support of activities in WP2 and WP4. In particular:</i></p>	

<sup>20</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

<ul style="list-style-type: none"> <li>• <i>WP2.01 – ATM Master Plan update campaign management, IBC will participate to the MPG activities and by drafting specific sections of the MPL1 document as required</i></li> <li>• <i>WP2.02 – ATM Vision Update, IBC will provide strategic inputs and technical inputs in support of the Vision</i></li> <li>• <i>WP2.03 – Deployment Scenario, stakeholder and CNS and Infrastructure roadmaps, IBC will support in the grouping and prioritisation of solution in DSs, based on the ground system needs</i></li> <li>• <i>WP2.04 – Standardisation and Regulatory Needs, IBC will contribute to the activities by identifying regulatory and standardisation needs in coordination with partners</i></li> <li>• <i>WP2.05 – Business View development, IBC will provide inputs and modelling support to the monetisation of benefits and the formulation of business cases</i></li> <li>• <i>WP4.01 – Master Plan Level 3 guidance, IBC will support the mapping of MP L2 elements into L3 focusing on SESAR Solutions which are ground-domain centric</i></li> <li>• <i>WP4.02 – Implementation Plan management, IBC will support the mapping of external inputs to the implementation objectives and the SLoAs</i></li> </ul>	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?	N
N/A	

#### 4.2.15 Linked to LDO

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>21</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?	N

<sup>21</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).



N/A

#### 4.2.16 Linked to SAAB (NATMIG)

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>22</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

#### 4.2.17 Linked to SINTEF (NATMIG)

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>23</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N

<sup>22</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

<sup>23</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

#### 4.2.18 Linked to NATS

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>24</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

#### 4.2.19 Linked to Avinor (SEAC2020)

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>25</sup>	N
N/A	

<sup>24</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

<sup>25</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

#### 4.2.20 Linked to HAL (SEAC2020)

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>26</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

#### 4.2.21 Linked to MUC (SEAC2020)

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	

<sup>26</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

Does the participant envisage that part of its work is performed by linked third parties <sup>27</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

#### 4.2.22 Linked to SNBV (SEAC2020)

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>28</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

#### 4.2.23 Linked to SKYGUIDE

Objective
-----------

<sup>27</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

<sup>28</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>29</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

#### 4.2.24 Linked to THALES AIR SYS

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>30</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

<sup>29</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

<sup>30</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

#### 4.2.25 Linked to NLR (AT-One) – silent partner

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>31</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

#### 4.2.26 Linked to ANS CR (B4) – silent partner

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>32</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N

<sup>31</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

<sup>32</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

N/A

#### 4.2.27 Linked to LPS SR (B4) – silent partner

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>33</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

#### 4.2.28 Linked to CCL/COOPANS – silent partner

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>34</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N

<sup>33</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

<sup>34</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).



N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

#### 4.2.29 Linked to IAA/COOPANS – silent partner

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>35</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

#### 4.2.30 Linked to ATOS (FSP) – silent partner

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>36</sup>	N

<sup>35</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

<sup>36</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

#### 4.2.31 Linked to FRQ (FSP) – silent partner

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>37</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

#### 4.2.32 Linked to AIRTEL (NATMIG) – silent partner

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N

<sup>37</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>38</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

#### 4.2.33 Linked to ADP (SEAC2020) – silent partner

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>39</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

<sup>38</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

<sup>39</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

#### 4.2.34 Linked to Swed (SEAC2020) – silent partner

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>40</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?	N
N/A	

<sup>40</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

#### 4.2.35 Linked to ZRH (SEAC2020) – silent partner

Objective	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
N/A	
Does the participant envisage that part of its work is performed by linked third parties <sup>41</sup>	N
N/A	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
N/A	
<i>Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)?</i>	N
N/A	

<sup>41</sup> A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

## 5 Ethics and Security

### 5.1 Ethics

In the Ethics self-assessment, no ethics issue had been identified in PJ20 proposal.

However, during the Ethics evaluation, independent experts issued a series of requirements. WP6 Ethics requirements includes deliverable D6.1 to take into consideration this expert evaluation.

In this deliverable D6.1, PJ20 will provide an analysis of potential ethics issues raised by the project and the measures that would be taken to ensure compliance with H2020 ethics standards. The analysis will also address the opportunity to appoint an Ethics advisor to monitor the ethics issues involved in the project and how they are handled all along the project lifecycle.

### 5.2 Security<sup>42</sup>

Please indicate if your project will involve:

- activities or results raising security issues: NO
- 'EU-classified information' as background or results: NO

## References

- (1) European Commission: **H2020 CALL: SESAR2020 IR-VLD WAVE2**, Brussels, 10 January 2019  
<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/sesar-ir-vld-wave2-01-2019;freeTextSearchKeyword=:typeCodes=0,1;statusCodes=31094501,31094502,31094503;programCode=null;programDivisionCode=null;focusAreaCode=null;crossCuttingPriorityCode=null;callCode=H2020-SESAR-2019-1;sortQuery=openingDate;orderBy=asc;onlyTenders=false>,
- (2) SESAR Joint Undertaking - **Single Programming Document 2019-2021**, Edition 01.00, Brussels, 12<sup>th</sup> December 2018
- (3) SESAR Joint Undertaking - **H2020-SESAR-2019-1 IR VLD WAVE 2 Call Technical Specifications**, Edition 01.00, Brussels, 17<sup>th</sup> December 2018
- (4) SESAR Joint Undertaking - **Project Handbook (Programme Execution Guidance)**, Edition 02.00.00, Brussels, 18<sup>th</sup> December 2018

## Abbreviations

This list extends the list given in [2] and [3]

ATM	Air Traffic Management
EC	European Commission
EPMB	Extended Project Management Board
EU	European Union
H2020	HORIZON 2020 (research and innovation program of the EU, 2014-2020)

---

<sup>42</sup> Article 37.1 of the Model Grant Agreement: *Before disclosing results of activities raising security issues to a third party (including affiliated entities), a beneficiary must inform the coordinator — which must request written approval from the Commission/Agency.* Article 37.2: *Activities related to 'classified deliverables' must comply with the 'security requirements' until they are declassified. Action tasks related to classified deliverables may not be subcontracted without prior explicit written approval from the Commission/Agency. The beneficiaries must inform the coordinator — which must immediately inform the Commission/Agency — of any changes in the security context and — if necessary — request for Annex I to be amended (see Article 55).*

IP Internet Protocol

PEG Programme Execution Guidance [4]

PJ00 Project No. 00 described in [2] corresponds to the Topic of the call

PJ00-01 Solution No 01 in PJ00

PM Project Manager (is used as synonym for SGA coordinator [SESAR] as well as for Action Coordinator [H2020; PPP Membership Agreement Appendix E] in this proposal)

PMB Project Management Board

SJU SESAR Joint Undertaking

TA Transversal Activities

VLD Very Large Demonstration

WAN Wide Area Network

WP Work Package

WPL Work Package Lead



ESTIMATED BUDGET FOR THE ACTION

	Estimated eligible <sup>1</sup> costs (per budget category)										JU contribution			Additional information		
	A. Direct personnel costs				B. Direct costs of subcontracting	[C. Direct costs of fin. support]	D. Other direct costs		E. Indirect costs <sup>2</sup>	Total costs	Reimbursement rate %	Maximum JU contribution <sup>3</sup>	Maximum grant amount <sup>4</sup>	Information for indirect costs	Information for auditors	Other information:
	A.1 Employees (or equivalent)		A.4 SME owners without salary				D.1 Travel	D.5 Costs of internally invoiced goods and services						Estimated costs of in-kind contributions not used on premises	Declaration of costs under Point D.4	Estimated costs of beneficiaries/ linked third parties not receiving JU funding/ international partners
A.2 Natural persons under direct contract		A.5 Beneficiaries that are natural persons without salary		D.2 Equipment												
A.3 Seconded persons				D.3 Other goods and services												
	[A.6 Personnel for providing access to research infrastructure]						[D.4 Costs of large research infrastructure]									
Form of costs <sup>6</sup>	Actual	Unit <sup>7</sup>	Unit <sup>8</sup>		Actual	Actual	Actual	Unit <sup>9</sup>	Flat-rate <sup>10</sup>							
									25%							
	a	Total b	No hours	Total c	d	[e]	f	Total g	h = 0,25 x (a +b+c+f+g +[i1] <sup>13</sup> + [i2] <sup>13</sup> -n)	j = a+b+c+d +[e]/+f+g+h +[i1]/+[i2]	k	l	m	n	Yes/No	
1. EUROCONTROL <sup>14</sup>	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	12 356 561.25
2. AIRBUS	0.00	330 477.80	0.00	0.00	0.00	0.00	22 000.00	0.00	88 119.45	440 597.25	70.00	308 418.08	199 026.43	0.00	No	n/a
- BOEING	0.00	18 000.00	0.00	0.00	32 000.00	0.00	4 400.00	0.00	5 600.00	60 000.00	70.00	42 000.00	27 103.24	0.00	No	n/a
Total beneficiary	0.00	348 477.80			32 000.00	0.00	26 400.00	0.00	93 719.45	500 597.25		350 418.08	226 129.67	n/a	n/a	0.00
3. DLR (AT-One)	52 143.00	0.00	0.00	0.00	0.00	0.00	5 000.00	0.00	14 285.75	71 428.75	70.00	50 000.13	32 265.85	0.00	No	n/a
4. ON (B4)	55 650.00	0.00	0.00	0.00	0.00	0.00	8 350.00	0.00	16 000.00	80 000.00	70.00	56 000.00	36 137.65	0.00	No	n/a
5. PANSА (B4)	38 000.00	0.00	0.00	0.00	0.00	0.00	26 000.00	0.00	16 000.00	80 000.00	70.00	56 000.00	36 137.65	0.00	No	n/a
6. АCG/ COOPANS	59 820.00	0.00	0.00	0.00	0.00	0.00	12 042.00	0.00	17 965.50	89 827.50	70.00	62 879.25	40 576.94	0.00	No	n/a
7. LFV/COOPANS	14 400.00	0.00	0.00	0.00	0.00	0.00	9 600.00	0.00	6 000.00	30 000.00	70.00	21 000.00	13 551.62	0.00	No	n/a
8. Naviair/ COOPANS	43 050.00	0.00	0.00	0.00	0.00	0.00	8 516.00	0.00	12 891.50	64 457.50	70.00	45 120.25	29 116.78	0.00	No	n/a
9. DFS	184 221.00	0.00	0.00	0.00	0.00	0.00	18 000.00	0.00	50 555.25	252 776.25	70.00	176 943.38	114 184.26	0.00	No	n/a
10. DSNА	213 600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53 400.00	267 000.00	70.00	186 900.00	120 609.42	0.00	No	n/a
11. ENAIRE	175 000.00	0.00	0.00	0.00	0.00	0.00	25 000.00	0.00	50 000.00	250 000.00	70.00	175 000.00	112 930.17	0.00	No	n/a
- NAV-PT	42 525.20	0.00	0.00	0.00	0.00	0.00	5 038.00	0.00	11 890.80	59 454.00	70.00	41 617.80	26 856.60	0.00	No	n/a
Total beneficiary	217 525.20	0.00			0.00	0.00	30 038.00	0.00	61 890.80	309 454.00		216 617.80	139 786.77	n/a	n/a	0.00
12. ENAV	113 448.00	0.00	0.00	0.00	0.00	0.00	12 605.00	0.00	31 513.25	157 566.25	70.00	110 296.38	71 175.93	0.00	No	n/a
13. HC (FSP)	67 400.00	0.00	0.00	0.00	0.00	0.00	12 600.00	0.00	20 000.00	100 000.00	70.00	70 000.00	45 172.07	0.00	No	n/a
14. INDRA	38 278.00	0.00	0.00	0.00	0.00	0.00	4 253.00	0.00	10 632.75	53 163.75	70.00	37 214.63	24 015.17	0.00	No	n/a
- IBC	110 000.00	0.00	0.00	0.00	0.00	0.00	10 000.00	0.00	30 000.00	150 000.00	70.00	105 000.00	67 758.10	0.00	No	n/a
Total beneficiary	148 278.00	0.00			0.00	0.00	14 253.00	0.00	40 632.75	203 163.75		142 214.63	91 773.27	n/a	n/a	0.00
15. LDO	115 000.00	0.00	0.00	0.00	0.00	0.00	16 429.00	0.00	32 857.25	164 286.25	70.00	115 000.38	74 211.50	0.00	No	n/a
16. SAAB (NATMIG)	24 163.00	0.00	0.00	0.00	0.00	0.00	3 500.00	0.00	6 915.75	34 578.75	70.00	24 205.13	15 619.94	0.00	No	n/a
17. SINTEF (NATMIG)	0.00	18 658.00	0.00	0.00	0.00	0.00	9 000.00	0.00	6 914.50	34 572.50	70.00	24 200.75	15 617.11	0.00	No	n/a
18. NATS	174 542.00	0.00	0.00	0.00	0.00	0.00	25 458.00	0.00	50 000.00	250 000.00	70.00	175 000.00	112 930.16	0.00	No	n/a
19. Avinor- SEAC2020	28 800.00	0.00	0.00	0.00	0.00	0.00	3 200.00	0.00	8 000.00	40 000.00	70.00	28 000.00	18 068.83	0.00	No	n/a
20. HAL (SEAC2020)	14 000.00	0.00	0.00	0.00	0.00	0.00	2 000.00	0.00	4 000.00	20 000.00	70.00	14 000.00	9 034.41	0.00	No	n/a
21. MUC (SEAC2020)	14 400.00	0.00	0.00	0.00	0.00	0.00	1 600.00	0.00	4 000.00	20 000.00	70.00	14 000.00	9 034.41	0.00	No	n/a
22. SNBV (SEAC2020)	13 915.00	0.00	0.00	0.00	0.00	0.00	2 085.00	0.00	4 000.00	20 000.00	70.00	14 000.00	9 034.41	0.00	No	n/a

ESTIMATED BUDGET FOR THE ACTION

	Estimated eligible <sup>1</sup> costs (per budget category)										JU contribution			Additional information						
	A. Direct personnel costs				B. Direct costs of subcontracting	<i>[C. Direct costs of fin. support]</i>	D. Other direct costs		E. Indirect costs <sup>2</sup>	Total costs	Reimbursement rate %	Maximum JU contribution <sup>3</sup>	Maximum grant amount <sup>4</sup>	Information for indirect costs	Information for auditors	Other information:				
	A.1 Employees (or equivalent)		A.4 SME owners without salary				D.1 Travel	D.5 Costs of internally invoiced goods and services						Estimated costs of in-kind contributions not used on premises	Declaration of costs under Point D.4	Estimated costs of beneficiaries/ linked third parties not receiving JU funding/ international partners				
A.2 Natural persons under direct contract		A.5 Beneficiaries that are natural persons without salary		D.2 Equipment																
A.3 Seconded persons				D.3 Other goods and services																
<i>[A.6 Personnel for providing access to research infrastructure]</i>				<i>[D.4 Costs of large research infrastructure]</i>																
Form of costs <sup>6</sup>	Actual	Unit <sup>7</sup>	Unit <sup>8</sup>				Actual										Actual	Actual	Unit <sup>9</sup>	Flat-rate <sup>10</sup>
																				25%
	a	Total b	No hours	Total c	d	<i>[e]</i>	f	Total g	$h = 0,25 \times (a + b + c + f + g + [i1]^{13} + [i2]^{13} - n)$	$j = a + b + c + d + [e] + f + g + h + [i1] + [i2]$	k	l	m	n	Yes/No					
23. SKYGUIDE	56 000.00	0.00	0.00	0.00	0.00	0.00	8 000.00	0.00	16 000.00	80 000.00	70.00	56 000.00	36 137.65	0.00	No	n/a				
24. THALES AIR SYS	84 428.00	0.00	0.00	0.00	0.00	0.00	7 000.00	0.00	22 857.00	114 285.00	70.00	79 999.50	51 624.90	0.00	No	n/a				
25. NLR (AT-One) <sup>14</sup>	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.00				
26. ANS CR (B4) <sup>14</sup>	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.00				
27. LPS SR (B4) <sup>14</sup>	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.00				
28. CCL/ COOPANS <sup>14</sup>	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.00				
29. IAA/ COOPANS <sup>14</sup>	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.00				
30. ATOS (FSP) <sup>14</sup>	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.00				
31. FRQ (FSP) <sup>14</sup>	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.00				
32. AIRTEL (NATMIG) <sup>14</sup>	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.00				
33. ADP (SEAC2020) <sup>14</sup>	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.00				
34. Swed (SEAC2020) <sup>14</sup>	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.00				
35. ZRH (SEAC2020) <sup>14</sup>	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.00				
Total consortium	1 732 783.20	367 135.80			32 000.00	0.00	261 676.00	0.00	590 398.75	2 983 993.75		2 088 795.66	1 347 931.20			12 356 561.25				

<sup>1</sup> See Article 6 for the eligibility conditions.

<sup>2</sup> Indirect costs already covered by an operating grant (received under any EU or Euratom funding programme; see Article 6.5.(b)) are ineligible under the GA. Therefore, a beneficiary/linked third party that receives an operating grant during the action's duration cannot declare indirect costs for the year(s)/reporting period(s) covered by the operating grant, unless it can demonstrate that the operating grant does not cover any costs of the action (see Article 6.2.E).

<sup>3</sup> This is the theoretical amount of JU contribution that the system calculates automatically (by multiplying all the budgeted costs by the reimbursement rate). This theoretical amount is capped by the 'maximum grant amount' (that the JU decided to grant for the action) (see Article 5.1).

<sup>4</sup> The 'maximum grant amount' is the maximum grant amount decided by the JU. It normally corresponds to the requested grant, but may be lower.

<sup>5</sup> Depending on its type, this specific cost category will or will not cover indirect costs. Specific unit costs that include indirect costs are: costs for energy efficiency measures in buildings, access costs for providing trans-national access to research infrastructure and costs for clinical studies.

<sup>6</sup> See Article 5 for the forms of costs.

<sup>7</sup> Unit : hours worked on the action; costs per unit (hourly rate) : calculated according to the beneficiary's usual accounting practice.

<sup>8</sup> See Annex 2a 'Additional information on the estimated budget' for the details (costs per hour (hourly rate)).

<sup>9</sup> Unit and costs per unit : calculated according to the beneficiary's usual accounting practices.

<sup>10</sup> Flat rate : 25% of eligible direct costs, from which are excluded: direct costs of subcontracting, costs of in-kind contributions not used on premises, direct costs of financial support, and unit costs declared under budget category F if they include indirect costs (see Article 6.2.E).

<sup>11</sup> See Annex 2a 'Additional information on the estimated budget' for the details (units, costs per unit).

<sup>12</sup> See Annex 2a 'Additional information on the estimated budget' for the details (units, costs per unit, estimated number of units, etc).

<sup>13</sup> Only specific unit costs that do not include indirect costs.

<sup>14</sup> See Article 9 for beneficiaries not receiving JU funding.

<sup>15</sup> Only for linked third parties that receive JU funding.

**ANNEX 2a****ADDITIONAL INFORMATION ON THE ESTIMATED BUDGET**

- Instructions and footnotes in blue will not appear in the text generated by the IT system (since they are internal instructions only).
- For options [in square brackets]: the applicable option will be chosen by the IT system. Options not chosen will automatically not appear.
- For fields in [grey in square brackets] (even if they are part of an option as specified in the previous item): IT system will enter the appropriate data.

**⚠ Transitory period:** Until SyGMA fully supports Annex 2a, you must prepare it manually (using this template by choosing and deleting the options/entering the appropriate data).  
 For the 'unit cost tables': either fill them out manually or use currently existing tables from Annex 1 or the proposal.  
 The document can then be uploaded in SyGMA and attached to the grant agreement.

**Unit cost for SME owners/natural beneficiaries without salary****1. Costs for a [SME owner//beneficiary that is a natural person] not receiving a salary**

Units: hours worked on the action

Amount per unit ('hourly rate'): calculated according to the following formula:

{the monthly living allowance for researchers in MSCA-IF actions / 143 hours}  
 multiplied by  
 {country-specific correction coefficient of the country where the beneficiary is established}

The monthly living allowance and the country-specific correction coefficients are set out in the Work Programme (section 3 MSCA) in force at the time of the call:

- for calls *before* Work Programme 2018-2020:
  - for the monthly living allowance: **EUR 4 650**
  - for the country-specific correction coefficients: see Work Programme 2014-2015 and Work Programme 2016-2017 (available on the [Participant Portal Reference Documents](#) page)
- for calls *under* Work Programme 2018-2020:
  - for the monthly living allowance: **EUR 4 880**
  - for the country-specific correction coefficients: see Work Programme 2018-2020 (available on the [Participant Portal Reference Documents](#) page)

**[additional OPTION for beneficiaries/linked third parties that have opted to use the unit cost (in the proposal/with an amendment):** For the following beneficiaries/linked third parties, the amounts per unit (hourly rate) are fixed as follows:

- beneficiary/linked third party [short name]: EUR [insert amount]
  - beneficiary/linked third party [short name]: EUR [insert amount]
- [same for other beneficiaries/linked third parties, if necessary] ]

Estimated number of units: see Annex 2

**Energy efficiency measures unit cost****2. Costs for energy efficiency measures in buildings**

Unit: m<sup>2</sup> of eligible 'conditioned' (i.e. built or refurbished) floor area

Amount per unit\*: see (for each beneficiary/linked third party and BEST table) the 'unit cost table' attached

\* Amount calculated as follows:

{EUR 0.1 x estimated total kWh saved per m<sup>2</sup> per year x 10}

Estimated number of units: see (for each beneficiary/linked third party and BEST table) the 'unit cost table' attached

Unit cost table (energy efficiency measures unit cost)<sup>1</sup>

Short name beneficiary/linked third party	BEST No	Amount per unit	Estimated No of units	Total unit cost (cost per unit x estimated no of units)

---

<sup>1</sup> Data from the 'building energy specification table (BEST)' that is part of the proposal and Annex 1.

## **Research infrastructure unit cost**

### **3. Access costs for providing trans-national access to research infrastructure**

Units<sup>2</sup>: see (for each access provider and installation) the ‘unit cost table’ attached

Amount per unit<sup>\*</sup>: see (for each access provider and installation) the ‘unit cost table’ attached

\* Amount calculated as follows:

$$\frac{\text{average annual total access cost to the installation (over past two years}^3\text{)}}{\text{average annual total quantity of access to the installation (over past two years}^4\text{)}}$$

Estimated number of units: see (for each access provider and installation) the ‘unit cost table’ attached

Unit cost table (access to research infrastructure unit cost)<sup>5</sup>

Short name access provider	Short name infrastru cture	Installation		Unit of access	Amount per unit	Estimated No of units	Total unit cost (cost per unit x estimated no of units)
		No	Short name				

## **Clinical studies unit cost**

### **4. Costs for clinical studies**

Units: patients/subjects that participate in the clinical study

Amount per unit<sup>\*</sup>: see (for each sequence (if any), clinical study and beneficiary/linked third party) the ‘unit cost table’ attached

\* Amount calculated, for the cost components of each task, as follows:

For **personnel costs**:

For personnel costs of doctors: ‘average hourly cost for doctors’, i.e.:

{certified or auditable total personnel costs for doctors for year N-1

{ 1720 \* number of full-time-equivalent for doctors for year N-1 }

multiplied by

estimated number of hours to be worked by doctors for the task (per participant)}

For personnel costs of other medical personnel: ‘average hourly cost for other medical personnel’, i.e.:

{certified or auditable total personnel costs for other medical personnel for year N-1

{ 1720 \* number of full-time-equivalent for other medical personnel for year N-1 }

<sup>2</sup> Unit of access (e.g. beam hours, weeks of access, sample analysis) fixed by the access provider in proposal.

<sup>3</sup> In exceptional and duly justified cases, the Commission/Agency may agree to a different reference period.

<sup>4</sup> In exceptional and duly justified cases, the Commission/Agency may agree to a different reference period.

<sup>5</sup> Data from the ‘table on estimated costs/quantity of access to be provided’ that is part of the proposal and Annex 1.

**H2020 Templates: Annex 2a (Additional information on the estimated budget)**

multiplied by  
estimated number of hours to be worked by other medical personnel for the task (per participant)}

For personnel costs of technical personnel: 'average hourly cost for technical personnel', i.e.:

$$\frac{\{\text{certified or auditable total personnel costs for technical personnel for year N-1}\}}{\{1720 * \text{number of full-time-equivalent for technical personnel for year N-1}\}}$$

multiplied by  
estimated number of hours to be worked by technical personnel for the task (per participant)}

'total personnel costs' means actual salaries + actual social security contributions + actual taxes and other costs included in the remuneration, provided they arise from national law or the employment contract/equivalent appointing act

For **consumables**:

For each cost item: 'average price of the consumable', i.e.:

$$\frac{\{\{\text{certified or auditable total costs of purchase of the consumable in year N-1}\}}{\text{total number of items purchased in year N-1}\}}$$

multiplied by  
estimated number of items to be used for the task (per participant)}

'total costs of purchase of the consumable' means total value of the supply contracts (including related duties, taxes and charges such as non-deductible VAT) concluded by the beneficiary for the consumable delivered in year N-1, provided the contracts were awarded according to the principle of best value- for-money and without any conflict of interests

For **medical equipment**:

For each cost item: 'average cost of depreciation and directly related services per unit of use', i.e.:

$$\frac{\{\{\text{certified or auditable total depreciation costs in year N-1} + \text{certified or auditable total costs of purchase of services in year N-1 for the category of equipment concerned}\}}{\text{total capacity in year N-1}}$$

multiplied by  
estimated number of units of use of the equipment for the task (per participant)}

'total depreciation costs' means total depreciation allowances as recorded in the beneficiary's accounts of year N-1 for the category of equipment concerned, provided the equipment was purchased according to the principle of best value for money and without any conflict of interests + total costs of renting or leasing contracts (including related duties, taxes and charges such as non-deductible VAT) in year N-1 for the category of equipment concerned, provided they do not exceed the depreciation costs of similar equipment and do not include finance fees

For **services**:

For each cost item: 'average cost of the service per study participant', i.e.:

$$\frac{\{\text{certified or auditable total costs of purchase of the service in year N-1}\}}{\text{total number of patients or subjects included in the clinical studies for which the service was delivered in year N-1}\}}$$

'total costs of purchase of the service' means total value of the contracts concluded by the beneficiary (including related duties, taxes and charges such as non-deductible VAT) for the specific service delivered in year N-1 for the conduct of clinical studies, provided the contracts were awarded according to the principle of best value for money and without any conflict of interests

For **indirect costs**:

$$\{\{\{\text{cost component 'personnel costs'} + \text{cost component 'consumables'} + \text{cost component 'medical equipment'}\}\}$$

minus

$$\{\text{costs of in-kind contributions provided by third parties which are not used on the beneficiary's premises} + \text{costs of providing financial support to third parties (if any)}\}$$

multiplied by

$$25\% \}$$

**H2020 Templates: Annex 2a (Additional information on the estimated budget)**

The estimation of the resources to be used must be done on the basis of the study protocol and must be the same for all beneficiaries/linked third parties/third parties involved.

The year N-1 to be used is the last closed financial year at the time of submission of the grant application.

Estimated number of units: see (for each clinical study and beneficiary/linked third party) the 'unit cost table' attached

Unit cost table: clinical studies unit cost<sup>6</sup>

Task, Direct cost categories	Resource per patient	Costs year N-1 Beneficiary 1 [short name]	Costs year N-1 Linked third party 1a [short name]	Costs year N-1 Beneficiary 2 [short name]	Costs year N-1 Linked third party 2a [short name]	Costs year N-1 Third party giving in-kind contributions 1 [short name]
<b>Sequence No. 1</b>						
<b>Task No. 1</b> Blood sample						
(a) <b>Personnel costs:</b>						
- Doctors	n/a					
- Other Medical Personnel	Phlebotomy (nurse), 10 minutes	8,33 EUR	11,59 EUR	10,30 EUR	11,00 EUR	9,49 EUR
- Technical Personnel	Sample Processing (lab technician), 15 minutes	9,51 EUR	15,68 EUR	14,60 EUR	15,23 EUR	10,78 EUR
(b) <b>Costs of consumables:</b>	Syringe	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
	Cannula	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
	Blood container	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
(c) <b>Costs of medical equipment:</b>	Use of -80° deep freezer, 60 days	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
	Use of centrifuge, 15 minutes	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
(d) <b>Costs of services</b>	Cleaning of XXX	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
(e) <b>Indirect costs (25% flat-rate)</b>		XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
<b>Task No. 2</b>						
...						
<b>Amount per unit (unit cost sequence 1):</b>		XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
<b>Sequence No. 2</b>						
<b>Task No. 1</b>						

<sup>6</sup> Same table as in proposal and Annex 1.



## H2020 Templates: Annex 2a (Additional information on the estimated budget)

XXX						
(a) <b>Personnel costs:</b>						
- Doctors	XXX	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
- Other Medical Personnel	XXX	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
- Technical Personnel	XXX	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
(b) <b>Costs of consumables:</b>	XXX	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
	XXX	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
	XXX	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
(c) <b>Costs of medical equipment:</b>	XXX	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
	XXX	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
(d) <b>Costs of services</b>	XXX	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
(e) <b>Indirect costs</b> (25% flat-rate)		XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
<b>Task No. 2</b>						
...						
<b>Amount per unit (unit cost sequence 2):</b>		XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
...						
<b>Amount per unit (unit cost entire study):</b>		XX EUR	XX EUR	XX EUR	XX EUR	XX EUR

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**AIRBUS (AIRBUS)**, established in 2 ROND POINT EMILE DEWOITINE, BLAGNAC 31700, France, VAT number: FR89383474814, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('2')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**DEUTSCHES ZENTRUM FUER LUFT - UND RAUMFAHRT EV (DLR (AT-One))**, established in Linder Hoehe, KOELN 51147, Germany, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('3')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**VALSTYBES IMONE ORO NAVIGACIJA (ON (B4))**, established in RODUNIOS KEL 2, VILNIAUS 02188, Lithuania, VAT number: LT100604610, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('4')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**POLSKA AGENCJA ZEGLUGI POWIETRZNEJ (PANSa (B4))**, established in UL. WIEZOWA 8, WARSZAWA 02 147, Poland, VAT number: PL5222838321, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('5')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**AUSTRO CONTROL OSTERREICHISCHE GESELLSCHAFT FUR ZIVILLUFTFAHRT MBH (ACG/COOPANS)**, established in WAGRAMER STRASSE 19, WIEN 1220, Austria, VAT number: ATU37259408, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary No ('6')**

**in Grant Agreement No 874475 ('the Agreement')**

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.**

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**LUFTFARTSVERKET (LFV/COOPANS)**, established in HOSPITALSGATAN 30, NORRKOPING 602 27, Sweden, VAT number: SE202100079501, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('7')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary



## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**NAVIAIR (Naviair/COOPANS)**, established in NAVIAIR ALLE 1, KASTRUP 2770, Denmark, VAT number: DK26059763, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('8')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**DFS DEUTSCHE FLUGSICHERUNG GMBH (DFS)**, established in AM DFS CAMPUS 10, LANGEN 63225, Germany, VAT number: DE114110232, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('9')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**DIRECTION DES SERVICES DE LA NAVIGATION AERIENNE (DSNA)**, established in 50 RUE HENRY FARMAN, PARIS 75720, France, VAT number: FR29120064019, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('10')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**ENAIRE (ENAIRE)**, established in AVENIDA DE ARAGON S/N BLOQUE 330, PORTAL 2 PARQUE EMPRESARIAL LAS MERCEDES, MADRID 28022, Spain, VAT number: ESQ2822001J, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('11')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**ENAV SPA (ENAV)**, established in VIA SALARIA 716, ROMA 00138, Italy, VAT number: IT02152021008, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('12')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**HUNGAROCONTROL MAGYAR LEGIFORGALMISZOLGALAT ZARTKORUEN MUKODO RESZVENYTARSASAG (HC (FSP))**, established in IGLO UTCA 33 35, BUDAPEST 1185, Hungary, VAT number: HU13851325, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary No ('13')**

**in Grant Agreement No 874475 ('the Agreement')**

**between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION and the Single European Sky ATM Research Joint Undertaking ('the JU'),**

**for the action entitled 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.**

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**INDRA SISTEMAS SA (INDRA)**, established in AVENIDA DE BRUSELAS 35, ALCOBENDAS MADRID 28108, Spain, VAT number: ESA28599033, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('14')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary



## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**LEONARDO - SOCIETA PER AZIONI (LDO)**, established in PIAZZA MONTE GRAPPA 4, ROMA 00195, Italy, VAT number: IT00881841001, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('15')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**SAAB AKTIEBOLAG (SAAB (NATMIG))**, established in ., LINKOPING 581 88, Sweden, VAT number: SE556036079301, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('16')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**SINTEF AS (SINTEF (NATMIG))**, established in STRINDVEGEN 4, TRONDHEIM 7034, Norway, VAT number: NO919303808MVA, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('17')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**NATS (EN ROUTE) PUBLIC LIMITED COMPANY (NATS)**, established in 4000 PARKWAY WHITELEY, FAREHAM PO15 7FL, United Kingdom, VAT number: GB440379456, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('18')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**AVINOR AS (Avinor-SEAC2020)**, established in DRONNING EUFEMIAS GATE 6, OSLO 2061, Norway, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('19')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**HEATHROW AIRPORT LIMITED (HAL (SEAC2020))**, established in NELSON ROAD THE COMPASS CENTRE HOUNSLOW, LONDON TW6 2GW, United Kingdom, VAT number: GB927365404, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary No ('20')**

**in Grant Agreement No 874475 ('the Agreement')**

**between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION and the Single European Sky ATM Research Joint Undertaking ('the JU'),**

**for the action entitled 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.**

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**FLUGHAFEN MUNCHEN GMBH (MUC (SEAC2020))**, established in NORDALLEE 25, MUNCHEN 85326, Germany, VAT number: DE129352365, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('21')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary



## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**SCHIPHOL NEDERLAND B.V. (SNBV (SEAC2020))**, established in EVERT VAN DE BEEKSTRAAT 202, LUCHTHAVEN SCHIPHOL 1118CP, Netherlands, VAT number: NL810336406B01, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary No ('22')**

**in Grant Agreement No 874475 ('the Agreement')**

**between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION and the Single European Sky ATM Research Joint Undertaking ('the JU'),**

**for the action entitled 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.**

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**SKYGUIDE, SA SUISSE POUR LES SERVICES DE LA NAVIGATION AERIENNE CIVILS ET MILITAIRES (SKYGUIDE)**, established in ROUTE DE PRE BOIS 15-17, GENEVA 1215, Switzerland, VAT number: CH514204, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('23')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**THALES LAS FRANCE SAS (THALES AIR SYS)**, established in AVENUE GAY LUSSAC 2, ELANCOURT 78990, France, VAT number: FR15319159877, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('24')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**STICHTING NATIONAAL LUCHT- EN RUIMTEVAARTLABORATORIUM (NLR (AT-One))**, established in Anthony Fokkerweg 2, AMSTERDAM 1059CM, Netherlands, VAT number: NL002760551B01, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary No ('25')**

**in Grant Agreement No 874475 ('the Agreement')**

**between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION and the Single European Sky ATM Research Joint Undertaking ('the JU'),**

**for the action entitled 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.**

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**RIZENI LETOVEHO PROVOZU CESKE REPUBLIKY STATNI PODNIK (ANS CR (B4))**, established in JENEC NAVIGACNI 787, JENEC 252 61, Czechia, VAT number: CZ699004742, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('26')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**LETOVE PREVADZKOVE SLUZBY SLOVENSKEJ REPUBLIKY, STATNY PODNIK (LPS SR (B4))**, established in IVANSKA CESTA 93, BRATISLAVA 823 07, Slovakia, VAT number: SK2020244699, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('27')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**CROATIA CONTROL, CROATIAN AIR NAVIGATION SERVICES LTD (CCL/COOPANS)**, established in RUDOLFA FIZIRA 2, VELIKA GORICA 10410, Croatia, VAT number: HR33052761319, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary No ('28')**

**in Grant Agreement No 874475 ('the Agreement')**

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.**

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary



## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**UDARAS EITLIOCHTA NA HEIREANN THE IRISH AVIATION AUTHORITY (IAA/ COOPANS)**, established in D'OLIER STREET 11-12 THE TIMES BUILDING, DUBLIN D02 T449, Ireland, VAT number: IE8211082B, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary No ('29')**

**in Grant Agreement No 874475 ('the Agreement')**

**between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION and the Single European Sky ATM Research Joint Undertaking ('the JU'),**

**for the action entitled 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.**

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**ATOS BELGIUM (ATOS (FSP))**, established in DA VINCILAAN 5, ZAVENTEM 1930, Belgium, VAT number: BE0401848135, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('30')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**FREQUENTIS AG (FRQ (FSP))**, established in Innovationsstrasse 1, WIEN 1100, Austria, VAT number: ATU14715600, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('31')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**AIRTEL ATN LIMITED (AIRTEL (NATMIG))**, established in 2 HARBOUR SQUARE CROFTON ROAD, DUN LOAGHAIRE DUBLIN A96D6R0, Ireland, VAT number: IE8287698U, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('32')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**AEROPORTS DE PARIS SA (ADP (SEAC2020))**, established in 1 RUE DE FRANCE, TREMBLAY-EN-FRANCE 93290, France, VAT number: FR33552016628, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('33')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**SWEDAVIA AB (Swed (SEAC2020))**, established in SWEDAVIA, STOCKHOLM ARLANDA 190 45, Sweden, VAT number: SE556797081801, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('34')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

## ANNEX 3

### ACCESSION FORM FOR BENEFICIARIES

**FLUGHAFEN ZURICH AG (ZRH (SEAC2020))**, established in FLUGHAFEN KLOTEN, ZURICH 8058, Switzerland, VAT number: CHE101921104MWST, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

**hereby agrees**

**to become beneficiary** No ('35')

**in Grant Agreement No** 874475 ('the Agreement')

**between** EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

**for the action entitled** 'PJ.20 W2 Master Planning (PJ20-W2 AMPLE)'.

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary



**DECLARATION ON JOINT AND SEVERAL LIABILITY OF  
LINKED THIRD PARTIES**

**INDRA BUSINESS CONSULTING (IBC)**, established in CALLE TANGER 98 PLANTA 7, BARCELONA 08018, Spain, VAT number: ESB82627019, ('the linked third party'), represented for the purpose of signing this Declaration on joint and several liability by its legal representative(s) [forename and surname, function of the legal representative(s) of the linked third party],

linked to beneficiary No 14 **INDRA SISTEMAS SA (INDRA)**, established in AVENIDA DE BRUSELAS 35, ALCOBENDAS MADRID 28108, Spain, VAT number: ESA28599033, ('the beneficiary'),

**hereby accepts joint and several liability with the beneficiary**

for any amount owed to the JU by the beneficiary under Grant Agreement No 874475 (PJ20-W2 AMPLE), up to the maximum JU contribution indicated, for the linked third party, in the estimated budget (see Annex 2).

The linked third party irrevocably and unconditionally agrees to pay amounts requested under this Declaration to the JU, immediately and at first demand.

For the linked third party  
[forename/surname/function]

Done in English at [place], on [date]

FINANCIAL STATEMENT FOR [BENEFICIARY [name]/ LINKED THIRD PARTY [name]] FOR REPORTING PERIOD [reporting period]

	Eligible <sup>1</sup> costs (per budget category)													Receipts	EU contribution			Additional information	
	A. Direct personnel costs			B. Direct costs of subcontracting	[C. Direct costs of fin. support]	D. Other direct costs			E. Indirect costs <sup>2</sup>	[F. Costs of ... ]		Total costs	Receipts	Reimburse ment rate %	Maximum EU contribution <sup>3</sup>	Requested EU contribution	Information for indirect costs :		
	A.1 Employees (or equivalent)	A.2 Natural persons under direct contract	A.3 Seconded persons  [A.6 Personnel for providing access to research infrastructure]	A.4 SME owners without salary	A.5 Beneficiaries that are natural persons without salary	[C.1 Financial support]	[C.2 Prizes]	D.1 Travel	[D.4 Costs of large research infrastructure]	D.5 Costs of internally invoiced goods and services		[F.1 Costs of ...]	[F.2 Costs of ...]		Receipts of the action, to be reported in the last reporting period, according to Article 5.3.3				Costs of in-kind contributions not used on premises
Form of costs <sup>4</sup>	Actual	Unit	Unit	Actual	Actual	Actual	Actual	Unit	Flat-rate <sup>5</sup>	Unit	[Unit][Lump sum]								
									25%										
	a	Total b	No hours	Total c	d	[e]	f	[g]	Total h	i=0,25 x (a+b+c+f+[g] + h+ [j 1] <sup>6</sup> +[j2] <sup>6</sup> -p)	No units	Total [j1]	Total [j2]	k = a+b+c+d+[e] +f+ [g] +h+ i + [j1] +[j2]	l	m	n	o	p
[short name beneficiary/linked third party]																			

**The beneficiary/linked third party hereby confirms that:**  
The information provided is complete, reliable and true.  
The costs declared are eligible (see Article 6).  
The costs can be substantiated by adequate records and supporting documentation that will be produced upon request or in the context of checks, reviews, audits and investigations (see Articles 17, 18 and 22).  
For the last reporting period: that all the receipts have been declared (see Article 5.3.3).

📌 Please declare all eligible costs, even if they exceed the amounts indicated in the estimated budget (see Annex 2). Only amounts that were declared in your individual financial statements can be taken into account lateron, in order to replace other costs that are found to be ineligible.

<sup>1</sup> See Article 6 for the eligibility conditions

<sup>2</sup> The indirect costs claimed must be free of any amounts covered by an operating grant (received under any EU or Euratom funding programme; see Article 6.2.E). If you have received an operating grant during this reporting period, you cannot claim indirect costs unless you can demonstrate that the operating grant does not cover any costs of the action.

<sup>3</sup> This is the *theoretical* amount of EU contribution that the system calculates automatically (by multiplying the reimbursement rate by the total costs declared). The amount you request (in the column 'requested EU contribution') may be less,

<sup>4</sup> See Article 5 for the forms of costs

<sup>5</sup> Flat rate : 25% of eligible direct costs, from which are excluded: direct costs of subcontracting, costs of in-kind contributions not used on premises, direct costs of financial support, and unit costs declared under budget category F if they include indirect costs (see Article 6.2.E)

<sup>6</sup> Only specific unit costs that do not include indirect costs

## ANNEX 5

### MODEL FOR THE CERTIFICATE ON THE FINANCIAL STATEMENTS

- For options [*in italics in square brackets*]: choose the applicable option. Options not chosen should be deleted.
- For fields in [grey in square brackets]: enter the appropriate data

#### TABLE OF CONTENTS

TERMS OF REFERENCE FOR AN INDEPENDENT REPORT OF FACTUAL FINDINGS ON COSTS DECLARED UNDER A GRANT AGREEMENT FINANCED UNDER THE HORIZON 2020 RESEARCH FRAMEWORK PROGRAMME

INDEPENDENT REPORT OF FACTUAL FINDINGS ON COSTS DECLARED UNDER A GRANT AGREEMENT FINANCED UNDER THE HORIZON 2020 RESEARCH FRAMEWORK PROGRAMME

**Terms of Reference for an Independent Report of Factual Findings on costs declared under a Grant Agreement financed by [Clean Sky 2] [Bio Based Industries][ECSEL][Fuel Cells and Hydrogen 2][Innovative Medicines Initiative 2][Single European Sky Air Traffic Management Research (SESAR)][Shift2Rail] JU under the Horizon 2020 Research and Innovation Framework Programme**

This document sets out the ‘**Terms of Reference (ToR)**’ under which

[OPTION 1: *[insert name of the beneficiary]* (*‘the Beneficiary’*)] [OPTION 2: *[insert name of the linked third party]* (*‘the Linked Third Party’*), third party linked to the Beneficiary *[insert name of the beneficiary]* (*‘the Beneficiary’*)]

agrees to engage

**[insert legal name of the auditor]** (*‘the Auditor’*)

to produce an independent report of factual findings (*‘the Report’*) concerning the Financial Statement(s)<sup>1</sup> drawn up by the *[Beneficiary]* *[Linked Third Party]* for the Horizon 2020 grant agreement *[insert number of the grant agreement, title of the action, acronym and duration from/to]* (*‘the Agreement’*), and

to issue a Certificate on the Financial Statements’ (*‘CFS’*) referred to in Article 20.4 of the Agreement based on the compulsory reporting template stipulated by the European Commission (*‘the Commission’*).

The Agreement has been concluded under the Horizon 2020 Research and Innovation Framework Programme (H2020) between the Beneficiary and the *[Clean Sky 2][Bio Based Industries][ECSEL][Fuel Cells and Hydrogen 2][Innovative Medicines Initiative 2][Single European Sky Air Traffic Management Research (SESAR)][Shift2Rail]* Joint Undertaking (*“the JU”*).

The JU is mentioned as a signatory of the Agreement with the Beneficiary only. The JU is not a party to this engagement.

### **1.1 Subject of the engagement**

The coordinator must submit to the JU the final report within 60 days following the end of the last reporting period which should include, amongst other documents, a CFS for each beneficiary and for each linked third party that requests a total contribution of EUR 325 000 or more, as reimbursement of actual costs and unit costs calculated on the basis of its usual cost accounting practices (see Article 20.4 of the Agreement). The CFS must cover all reporting periods of the beneficiary or linked third party indicated above.

The Beneficiary must submit to the coordinator the CFS for itself and for its linked third party(ies), if the CFS must be included in the final report according to Article 20.4 of the Agreement.

The CFS is composed of two separate documents:

- The Terms of Reference (*‘the ToR’*) to be signed by the *[Beneficiary]* *[Linked Third Party]* and the Auditor;

---

<sup>1</sup> By which costs under the Agreement are declared (see template ‘Model Financial Statements’ in Annex 4 to the Grant Agreement).



- The Auditor's Independent Report of Factual Findings ('the Report') to be issued on the Auditor's letterhead, dated, stamped and signed by the Auditor (or the competent public officer) which includes the agreed-upon procedures ('the Procedures') to be performed by the Auditor, and the standard factual findings ('the Findings') to be confirmed by the Auditor.

If the CFS must be included in the final report according to Article 20.4 of the Agreement, the request for payment of the balance relating to the Agreement cannot be made without the CFS. However, the payment for reimbursement of costs covered by the CFS does not preclude the JU, the Commission, the European Anti-Fraud Office and the European Court of Auditors from carrying out checks, reviews, audits and investigations in accordance with Article 22 of the Agreement.

## 1.2 Responsibilities

The *[Beneficiary]* *[Linked Third Party]*:

- must draw up the Financial Statement(s) for the action financed by the Agreement in compliance with the obligations under the Agreement. The Financial Statement(s) must be drawn up according to the *[Beneficiary's]* *[Linked Third Party's]* accounting and book-keeping system and the underlying accounts and records;
- must send the Financial Statement(s) to the Auditor;
- is responsible and liable for the accuracy of the Financial Statement(s);
- is responsible for the completeness and accuracy of the information provided to enable the Auditor to carry out the Procedures. It must provide the Auditor with a written representation letter supporting these statements. The written representation letter must state the period covered by the statements and must be dated;
- accepts that the Auditor cannot carry out the Procedures unless it is given full access to the *[Beneficiary's]* *[Linked Third Party's]* staff and accounting as well as any other relevant records and documentation.

The Auditor:

- *[Option 1 by default: is qualified to carry out statutory audits of accounting documents in accordance with Directive 2006/43/EC of the European Parliament and of the Council of 17 May 2006 on statutory audits of annual accounts and consolidated accounts, amending Council Directives 78/660/EEC and 83/349/EEC and repealing Council Directive 84/253/EEC or similar national regulations].*
- *[Option 2 if the Beneficiary or Linked Third Party has an independent Public Officer: is a competent and independent Public Officer for which the relevant national authorities have established the legal capacity to audit the Beneficiary].*
- *[Option 3 if the Beneficiary or Linked Third Party is an international organisation: is an [internal] [external] auditor in accordance with the internal financial regulations and procedures of the international organisation].*

The Auditor:

- must be independent from the Beneficiary *[and the Linked Third Party]*, in particular, it must not have been involved in preparing the *[Beneficiary's]* *[Linked Third Party's]* Financial Statement(s);
- must plan work so that the Procedures may be carried out and the Findings may be assessed;
- must adhere to the Procedures laid down and the compulsory report format;
- must carry out the engagement in accordance with this ToR;
- must document matters which are important to support the Report;
- must base its Report on the evidence gathered;
- must submit the Report to the *[Beneficiary]* *[Linked Third Party]*.

The Commission sets out the Procedures to be carried out by the Auditor. The Auditor is not responsible for their suitability or pertinence. As this engagement is not an assurance engagement, the Auditor does not provide an audit opinion or a statement of assurance.

### 1.3 Applicable Standards

The Auditor must comply with these Terms of Reference and with<sup>2</sup>:

- the International Standard on Related Services ('ISRS') 4400 *Engagements to perform Agreed-upon Procedures regarding Financial Information* as issued by the International Auditing and Assurance Standards Board (IAASB);
- the *Code of Ethics for Professional Accountants* issued by the International Ethics Standards Board for Accountants (IESBA). Although ISRS 4400 states that independence is not a requirement for engagements to carry out agreed-upon procedures, the JU requires that the Auditor also complies with the Code's independence requirements.

The Auditor's Report must state that there is no conflict of interests in establishing this Report between the Auditor and the Beneficiary *[and the Linked Third Party]*, and must specify - if the service is invoiced - the total fee paid to the Auditor for providing the Report.

### 1.4 Reporting

The Report must be written in the language of the Agreement (see Article 20.7).

Under Article 22 of the Agreement, the JU, the Commission, the European Anti-Fraud Office and the Court of Auditors have the right to audit any work that is carried out under the action and for which costs are declared from the European Union budget. This includes work related to this engagement. The Auditor must provide access to all working papers (e.g. recalculation of hourly rates, verification of the time declared for the action) related to this assignment if the JU, the Commission, the European Anti-Fraud Office or the European Court of Auditors requests them.

### 1.5 Timing

The Report must be provided by [dd Month yyyy].

### 1.6 Other terms

*[The [Beneficiary] [Linked Third Party] and the Auditor can use this section to agree other specific terms, such as the Auditor's fees, liability, applicable law, etc. Those specific terms must not contradict the terms specified above.]*

[legal name of the Auditor]	[legal name of the [Beneficiary][Linked Third Party]]
[name & function of authorised representative]	[name & function of authorised representative]
[dd Month yyyy]	[dd Month yyyy]
Signature of the Auditor	Signature of the [Beneficiary][Linked Third Party]

---

<sup>2</sup> Supreme Audit Institutions applying INTOSAI-standards may carry out the Procedures according to the corresponding International Standards of Supreme Audit Institutions and code of ethics issued by INTOSAI instead of the International Standard on Related Services ('ISRS') 4400 and the Code of Ethics for Professional Accountants issued by the IAASB and the IESBA.

**Independent Report of Factual Findings on costs declared  
under a grant agreement financed by the [Clean Sky 2] [Bio Based Industries][ECSEL][Fuel  
Cells and Hydrogen 2][Innovative Medicines Initiative 2][Single European Sky Air Traffic  
Management Research (SESAR)][Shift2Rail] JU under the Horizon 2020 Research and  
Innovation Framework Programme**

*(To be printed on the Auditor's letterhead)*

To  
[ name of contact person(s)], [Position]  
[ [Beneficiary's] [Linked Third Party's] name ]  
[ Address]  
[ dd Month yyyy]

Dear [Name of contact person(s)],

As agreed under the terms of reference dated [dd Month yyyy]

with [OPTION 1: [insert name of the beneficiary] ('the Beneficiary')] [OPTION 2: [insert name of  
the linked third party] ('the Linked Third Party'), third party linked to the Beneficiary [insert name of  
the beneficiary] ('the Beneficiary')],

we

[name of the auditor] ('the Auditor'),  
established at  
[full address/city/state/province/country],  
represented by  
[name and function of an authorised representative],

have carried out the procedures agreed with you regarding the costs declared in the Financial  
Statement(s)<sup>3</sup> of the [Beneficiary] [Linked Third Party] concerning the grant agreement  
[insert grant agreement reference: number, title of the action and acronym] ('the Agreement'),

with a total cost declared of  
[total amount] EUR,

and a total of actual costs and unit costs calculated in accordance with the [Beneficiary's] [Linked  
Third Party's] usual cost accounting practices' declared of

[sum of total actual costs and total direct personnel costs declared as unit costs calculated in  
accordance with the [Beneficiary's] [Linked Third Party's] usual cost accounting practices] EUR

and **hereby provide our Independent Report of Factual Findings ('the Report')** using the  
compulsory report format agreed with you.

### **The Report**

---

<sup>3</sup> By which the Beneficiary declares costs under the Agreement (see template 'Model Financial Statement' in  
Annex 4 to the Agreement).





Our engagement was carried out in accordance with the terms of reference ('the ToR') appended to this Report. The Report includes the agreed-upon procedures ('the Procedures') carried out and the standard factual findings ('the Findings') examined.

The Procedures were carried out solely to assist the JU in evaluating whether the [Beneficiary's] [Linked Third Party's] costs in the accompanying Financial Statement(s) were declared in accordance with the Agreement. The JU draws its own conclusions from the Report and any additional information it may require.

The scope of the Procedures was defined by the European Commission ('the Commission'). Therefore, the Auditor is not responsible for their suitability or pertinence. Since the Procedures carried out constitute neither an audit nor a review made in accordance with International Standards on Auditing or International Standards on Review Engagements, the Auditor does not give a statement of assurance on the Financial Statements.

Had the Auditor carried out additional procedures or an audit of the [Beneficiary's] [Linked Third Party's] Financial Statements in accordance with International Standards on Auditing or International Standards on Review Engagements, other matters might have come to its attention and would have been included in the Report.

### **Not applicable Findings**

We examined the Financial Statement(s) stated above and considered the following Findings not applicable:

#### *Explanation (to be removed from the Report):*

*If a Finding was not applicable, it must be marked as 'N.A.' ('Not applicable') in the corresponding row on the right-hand column of the table and means that the Finding did not have to be corroborated by the Auditor and the related Procedure(s) did not have to be carried out.*

*The reasons of the non-application of a certain Finding must be obvious i.e.*

- i) if no cost was declared under a certain category then the related Finding(s) and Procedure(s) are not applicable;*
- ii) if the condition set to apply certain Procedure(s) are not met the related Finding(s) and those Procedure(s) are not applicable. For instance, for 'beneficiaries with accounts established in a currency other than euro' the Procedure and Finding related to 'beneficiaries with accounts established in euro' are not applicable. Similarly, if no additional remuneration is paid, the related Finding(s) and Procedure(s) for additional remuneration are not applicable.*

**List here all Findings considered not applicable for the present engagement and explain the reasons of the non-applicability.**

....

### **Exceptions**

Apart from the exceptions listed below, the [Beneficiary] [Linked Third Party] provided the Auditor all the documentation and accounting information needed by the Auditor to carry out the requested Procedures and evaluate the Findings.

#### *Explanation (to be removed from the Report):*

- If the Auditor was not able to successfully complete a procedure requested, it must be marked as 'E' ('Exception') in the corresponding row on the right-hand column of the table. The reason such as the inability to reconcile key information or the unavailability of data that prevents the Auditor from carrying out the Procedure must be indicated below.*
- If the Auditor cannot corroborate a standard finding after having carried out the corresponding procedure, it must also be marked as 'E' ('Exception') and, where possible, the reasons why the Finding was not fulfilled and its possible impact must be explained here below.*

**List here any exceptions and add any information on the cause and possible consequences of each exception, if known. If the exception is quantifiable, include the corresponding amount.**

....

*Example (to be removed from the Report):*

1. *The Beneficiary was unable to substantiate the Finding number 1 on ... because ....*
2. *Finding number 30 was not fulfilled because the methodology used by the Beneficiary to calculate unit costs was different from the one approved by the Commission. The differences were as follows: ...*
3. *After carrying out the agreed procedures to confirm the Finding number 31, the Auditor found a difference of \_\_\_\_\_ EUR. The difference can be explained by ...*

### **Further Remarks**

In addition to reporting on the results of the specific procedures carried out, the Auditor would like to make the following general remarks:

*Example (to be removed from the Report):*

1. *Regarding Finding number 8 the conditions for additional remuneration were considered as fulfilled because ...*
2. *In order to be able to confirm the Finding number 15 we carried out the following additional procedures: ....*

### **Use of this Report**

This Report may be used only for the purpose described in the above objective. It was prepared solely for the confidential use of the [Beneficiary] [Linked Third Party], the JU and the Commission, and only to be submitted to the JU in connection with the requirements set out in Article 20.4 of the Agreement. The Report may not be used by the [Beneficiary] [Linked Third Party], by the JU or the Commission for any other purpose, nor may it be distributed to any other parties. The JU or the Commission may only disclose the Report to authorised parties, in particular to the European Anti-Fraud Office (OLAF) and the European Court of Auditors.

This Report relates only to the Financial Statement(s) submitted to the JU by the [Beneficiary] [Linked Third Party] for the Agreement. Therefore, it does not extend to any other of the [Beneficiary's] [Linked Third Party's] Financial Statement(s).

There was no conflict of interest<sup>4</sup> between the Auditor and the Beneficiary [and Linked Third Party] in establishing this Report. The total fee paid to the Auditor for providing the Report was EUR [ ] (including EUR [ ] of deductible VAT).

We look forward to discussing our Report with you and would be pleased to provide any further information or assistance.

[legal name of the Auditor]

<sup>4</sup> A conflict of interest arises when the Auditor's objectivity to establish the certificate is compromised in fact or in appearance when the Auditor for instance:

- was involved in the preparation of the Financial Statements;
- stands to benefit directly should the certificate be accepted;
- has a close relationship with any person representing the beneficiary;
- is a director, trustee or partner of the beneficiary; or
- is in any other situation that compromises his or her independence or ability to establish the certificate impartially.

Grant Agreement number: [insert number] [insert acronym] [insert call identifier]  Associated with document Ref. Ares(2019)6889956 - 07/11/2019

[name and function of an authorised representative]

[dd Month yyyy]

Signature of the Auditor

**Agreed-upon procedures to be performed and standard factual findings to be confirmed by the Auditor**

The European Commission ('the Commission') reserves the right to i) provide the auditor with additional guidance regarding the procedures to be followed or the facts to be ascertained and the way in which to present them (this may include sample coverage and findings) or to ii) change the procedures, by notifying the Beneficiary in writing. The procedures carried out by the auditor to confirm the standard factual finding are listed in the table below.

If this certificate relates to a Linked Third Party, any reference here below to 'the Beneficiary' is to be considered as a reference to 'the Linked Third Party'.

The 'result' column has three different options: 'C', 'E' and 'N.A.':

- 'C' stands for 'confirmed' and means that the auditor can confirm the 'standard factual finding' and, therefore, there is no exception to be reported.
- 'E' stands for 'exception' and means that the Auditor carried out the procedures but cannot confirm the 'standard factual finding', or that the Auditor was not able to carry out a specific procedure (e.g. because it was impossible to reconcile key information or data were unavailable),
- 'N.A.' stands for 'not applicable' and means that the Finding did not have to be examined by the Auditor and the related Procedure(s) did not have to be carried out. The reasons of the non-application of a certain Finding must be obvious i.e. i) if no cost was declared under a certain category then the related Finding(s) and Procedure(s) are not applicable; ii) if the condition set to apply certain Procedure(s) are not met then the related Finding(s) and Procedure(s) are not applicable. For instance, for 'beneficiaries with accounts established in a currency other than the euro' the Procedure related to 'beneficiaries with accounts established in euro' is not applicable. Similarly, if no additional remuneration is paid, the related Finding(s) and Procedure(s) for additional remuneration are not applicable.

Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
A	<b>ACTUAL PERSONNEL COSTS AND UNIT COSTS CALCULATED BY THE BENEFICIARY IN ACCORDANCE WITH ITS USUAL COST ACCOUNTING PRACTICE</b>		
	<p>The Auditor draws a sample of persons whose costs were declared in the Financial Statement(s) to carry out the procedures indicated in the consecutive points of this section A.</p> <p><i>(The sample should be selected randomly so that it is representative. Full coverage is required if there are fewer than 10 people (including employees, natural persons working under a direct contract and personnel seconded by a third party), otherwise the sample should have a minimum of 10 people, or 10% of the total, whichever number is the highest)</i></p> <p>The Auditor sampled [ ] people out of the total of [ ] people.</p>		

Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
A.1	<p><b>PERSONNEL COSTS</b></p> <p><u>For the persons included in the sample and working under an employment contract or equivalent act (general procedures for individual actual personnel costs and personnel costs declared as unit costs)</u></p> <p>To confirm standard factual findings 1-5 listed in the next column, the Auditor reviewed following information/documents provided by the Beneficiary:</p> <ul style="list-style-type: none"> <li>○ a list of the persons included in the sample indicating the period(s) during which they worked for the action, their position (classification or category) and type of contract;</li> <li>○ the payslips of the employees included in the sample;</li> <li>○ reconciliation of the personnel costs declared in the Financial Statement(s) with the accounting system (project accounting and general ledger) and payroll system;</li> <li>○ information concerning the employment status and employment conditions of personnel included in the sample, in particular their employment contracts or equivalent;</li> <li>○ the Beneficiary's usual policy regarding payroll matters (e.g. salary policy, overtime policy, variable pay);</li> <li>○ applicable national law on taxes, labour and social security and</li> <li>○ any other document that supports the personnel costs declared.</li> </ul> <p>The Auditor also verified the eligibility of all components of the retribution (see Article 6 GA) and recalculated the personnel costs for employees included in the sample.</p>	1) The employees were i) directly hired by the Beneficiary in accordance with its national legislation, ii) under the Beneficiary's sole technical supervision and responsibility and iii) remunerated in accordance with the Beneficiary's usual practices.	
		2) Personnel costs were recorded in the Beneficiary's accounts/payroll system.	
		3) Costs were adequately supported and reconciled with the accounts and payroll records.	
		4) Personnel costs did not contain any ineligible elements.	
		5) There were no discrepancies between the personnel costs charged to the action and the costs recalculated by the Auditor.	
	<p><i>Further procedures if 'additional remuneration' is paid</i></p> <p>To confirm standard factual findings 6-9 listed in the next column, the Auditor:</p> <ul style="list-style-type: none"> <li>○ reviewed relevant documents provided by the Beneficiary (legal form, legal/statutory</li> </ul>	6) The Beneficiary paying "additional remuneration" was a non-profit legal entity.	

Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
	<p>obligations, the Beneficiary's usual policy on additional remuneration, criteria used for its calculation, the Beneficiary's usual remuneration practice for projects funded under national funding schemes ...);</p> <ul style="list-style-type: none"> <li>recalculated the amount of additional remuneration eligible for the action based on the supporting documents received (full-time or part-time work, exclusive or non-exclusive dedication to the action, usual remuneration paid for projects funded by national schemes) to arrive at the applicable FTE/year and pro-rata rate (see data collected in the course of carrying out the procedures under A.2 'Productive hours' and A.4 'Time recording system').</li> </ul> <p><i>'ADDITIONAL REMUNERATION' MEANS ANY PART OF THE REMUNERATION WHICH EXCEEDS WHAT THE PERSON WOULD BE PAID FOR TIME WORKED IN PROJECTS FUNDED BY NATIONAL SCHEMES.</i></p> <p><i>IF ANY PART OF THE REMUNERATION PAID TO THE EMPLOYEE IS QUALIFIED AS "ADDITIONAL REMUNERATION" AND IS ELIGIBLE UNDER THE PROVISIONS OF ARTICLE 6.2.A.1, THIS CAN BE CHARGED AS ELIGIBLE COST TO THE ACTION UP TO THE FOLLOWING AMOUNT:</i></p> <p>(A) <i>IF THE PERSON WORKS FULL TIME AND EXCLUSIVELY ON THE ACTION DURING THE FULL YEAR: UP TO EUR 8 000/YEAR;</i></p> <p>(B) <i>IF THE PERSON WORKS EXCLUSIVELY ON THE ACTION BUT NOT FULL-TIME OR NOT FOR THE FULL YEAR: UP TO THE CORRESPONDING PRO-RATA AMOUNT OF EUR 8 000, OR</i></p> <p>(C) <i>IF THE PERSON DOES NOT WORK EXCLUSIVELY ON THE ACTION: UP TO A PRO-RATA AMOUNT CALCULATED IN ACCORDANCE TO ARTICLE 6.2.A.1.</i></p>	<p>7) The amount of additional remuneration paid corresponded to the Beneficiary's usual remuneration practices and was consistently paid whenever the same kind of work or expertise was required.</p>	
		<p>8) The criteria used to calculate the additional remuneration were objective and generally applied by the Beneficiary regardless of the source of funding used.</p>	
		<p>9) The amount of additional remuneration included in the personnel costs charged to the action was capped at EUR 8,000 per FTE/year (up to the equivalent pro-rata amount if the person did not work on the action full-time during the year or did not work exclusively on the action).</p>	
	<p><i>Additional procedures in case "unit costs calculated by the Beneficiary in accordance with its usual cost accounting practices" is applied:</i></p> <p>Apart from carrying out the procedures indicated above to confirm standard factual findings 1-5 and, if applicable, also 6-9, the Auditor carried out following procedures to confirm standard</p>	<p>10) The personnel costs included in the Financial Statement were calculated in accordance with the Beneficiary's usual cost accounting practice. This methodology was consistently</p>	

Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
	factual findings 10-13 listed in the next column:	used in all H2020 actions.	
	<ul style="list-style-type: none"> <li>obtained a description of the Beneficiary's usual cost accounting practice to calculate unit costs;</li> <li>reviewed whether the Beneficiary's usual cost accounting practice was applied for the Financial Statements subject of the present CFS;</li> <li>verified the employees included in the sample were charged under the correct category (in accordance with the criteria used by the Beneficiary to establish personnel categories) by reviewing the contract/HR-record or analytical accounting records;</li> <li>verified that there is no difference between the total amount of personnel costs used in calculating the cost per unit and the total amount of personnel costs recorded in the statutory accounts;</li> <li>verified whether actual personnel costs were adjusted on the basis of budgeted or estimated elements and, if so, verified whether those elements used are actually relevant for the calculation, objective and supported by documents.</li> </ul>	11) The employees were charged under the correct category.	
		12) Total personnel costs used in calculating the unit costs were consistent with the expenses recorded in the statutory accounts.	
		13) Any estimated or budgeted element used by the Beneficiary in its unit-cost calculation were relevant for calculating personnel costs and corresponded to objective and verifiable information.	
	<p><u>For natural persons included in the sample and working with the Beneficiary under a direct contract other than an employment contract, such as consultants (no subcontractors).</u></p> <p>To confirm standard factual findings 14-17 listed in the next column the Auditor reviewed following information/documents provided by the Beneficiary:</p> <ul style="list-style-type: none"> <li>the contracts, especially the cost, contract duration, work description, place of work, ownership of the results and reporting obligations to the Beneficiary;</li> <li>the employment conditions of staff in the same category to compare costs and;</li> <li>any other document that supports the costs declared and its registration (e.g. invoices, accounting records, etc.).</li> </ul>	14) The natural persons worked under conditions similar to those of an employee, in particular regarding the way the work is organised, the tasks that are performed and the premises where they are performed.	
		15) The results of work carried out belong to the Beneficiary, or, if not, the Beneficiary has obtained all necessary rights to fulfil its obligations as if those	



Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
		results were generated by itself.	
		16) Their costs were not significantly different from those for staff who performed similar tasks under an employment contract with the Beneficiary.	
		17) The costs were supported by audit evidence and registered in the accounts.	
	<u>For personnel seconded by a third party and included in the sample (not subcontractors)</u> To confirm standard factual findings 18-21 listed in the next column, the Auditor reviewed following information/documents provided by the Beneficiary: <ul style="list-style-type: none"> <li>○ their secondment contract(s) notably regarding costs, duration, work description, place of work and ownership of the results;</li> <li>○ if there is reimbursement by the Beneficiary to the third party for the resource made available (in-kind contribution against payment): any documentation that supports the costs declared (e.g. contract, invoice, bank payment, and proof of registration in its accounting/payroll, etc.) and reconciliation of the Financial Statement(s) with the accounting system (project accounting and general ledger) as well as any proof that the amount invoiced by the third party did not include any profit;</li> <li>○ if there is no reimbursement by the Beneficiary to the third party for the resource made available (in-kind contribution free of charge): a proof of the actual cost borne by the Third Party for the resource made available free of charge to the Beneficiary such as a statement of costs incurred by the Third Party and proof of the registration in the Third Party's accounting/payroll;</li> </ul>	18) Seconded personnel reported to the Beneficiary and worked on the Beneficiary's premises (unless otherwise agreed with the Beneficiary).	
		19) The results of work carried out belong to the Beneficiary, or, if not, the Beneficiary has obtained all necessary rights to fulfil its obligations as if those results were generated by itself.	
		<i>If personnel is seconded against payment:</i> 20) The costs declared were supported with documentation and recorded in the Beneficiary's accounts. The	

Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
	<ul style="list-style-type: none"> <li>any other document that supports the costs declared (e.g. invoices, etc.).</li> </ul>	third party did not include any profit.	
		<i>If personnel is seconded free of charge:</i> 21) The costs declared did not exceed the third party's cost as recorded in the accounts of the third party and were supported with documentation.	
A.2	<b>PRODUCTIVE HOURS</b>  To confirm standard factual findings 22-27 listed in the next column, the Auditor reviewed relevant documents, especially national legislation, labour agreements and contracts and time records of the persons included in the sample, to verify that: <ul style="list-style-type: none"> <li>the annual productive hours applied were calculated in accordance with one of the methods described below,</li> <li>the full-time equivalent (FTEs) ratios for employees not working full-time were correctly calculated.</li> </ul> If the Beneficiary applied method B, the auditor verified that the correctness in which the total number of hours worked was calculated and that the contracts specified the annual workable hours.  If the Beneficiary applied method C, the auditor verified that the 'annual productive hours' applied when calculating the hourly rate were equivalent to at least 90 % of the 'standard annual workable hours'. The Auditor can only do this if the calculation of the standard annual workable	22) The Beneficiary applied method [choose one option and delete the others] [A: 1720 hours] [B: the 'total number of hours worked'] [C: 'standard annual productive hours' used correspond to usual accounting practices]	
		23) Productive hours were calculated annually.	
		24) For employees not working full-time the full-time equivalent (FTE) ratio was correctly applied.	

Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
	<p>hours can be supported by records, such as national legislation, labour agreements, and contracts.</p> <p><i>BENEFICIARY'S PRODUCTIVE HOURS' FOR PERSONS WORKING FULL TIME SHALL BE ONE OF THE FOLLOWING METHODS:</i></p> <p><i>A. 1720 ANNUAL PRODUCTIVE HOURS (PRO-RATA FOR PERSONS NOT WORKING FULL-TIME)</i></p> <p><i>B. THE TOTAL NUMBER OF HOURS WORKED BY THE PERSON FOR THE BENEFICIARY IN THE YEAR (THIS METHOD IS ALSO REFERRED TO AS 'TOTAL NUMBER OF HOURS WORKED' IN THE NEXT COLUMN). THE CALCULATION OF THE TOTAL NUMBER OF HOURS WORKED WAS DONE AS FOLLOWS: ANNUAL WORKABLE HOURS OF THE PERSON ACCORDING TO THE EMPLOYMENT CONTRACT, APPLICABLE LABOUR AGREEMENT OR NATIONAL LAW PLUS OVERTIME WORKED MINUS ABSENCES (SUCH AS SICK LEAVE OR SPECIAL LEAVE).</i></p> <p><i>C. THE STANDARD NUMBER OF ANNUAL HOURS GENERALLY APPLIED BY THE BENEFICIARY FOR ITS PERSONNEL IN ACCORDANCE WITH ITS USUAL COST ACCOUNTING PRACTICES (THIS METHOD IS ALSO REFERRED TO AS 'STANDARD ANNUAL PRODUCTIVE HOURS' IN THE NEXT COLUMN). THIS NUMBER MUST BE AT LEAST 90% OF THE STANDARD ANNUAL WORKABLE HOURS.</i></p> <p><i>'ANNUAL WORKABLE HOURS' MEANS THE PERIOD DURING WHICH THE PERSONNEL MUST BE WORKING, AT THE EMPLOYER'S DISPOSAL AND CARRYING OUT HIS/HER ACTIVITY OR DUTIES UNDER THE EMPLOYMENT CONTRACT, APPLICABLE COLLECTIVE LABOUR AGREEMENT OR NATIONAL WORKING TIME LEGISLATION.</i></p>	<p><i>If the Beneficiary applied method B.</i></p> <p>25) The calculation of the number of 'annual workable hours', overtime and absences was verifiable based on the documents provided by the Beneficiary.</p> <p>25.1) The Beneficiary calculates the hourly rates per full financial year following procedure A.3 (method B is not allowed for beneficiaries calculating hourly rates per month).</p>	
		<p><i>If the Beneficiary applied method C.</i></p> <p>26) The calculation of the number of 'standard annual workable hours' was verifiable based on the documents provided by the Beneficiary.</p>	

Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
		27) The 'annual productive hours' used for calculating the hourly rate were consistent with the usual cost accounting practices of the Beneficiary and were equivalent to at least 90 % of the 'annual workable hours'.	
A.3	<p><b>HOURLY PERSONNEL RATES</b></p> <p><u>I) For unit costs calculated in accordance to the Beneficiary's usual cost accounting practice (unit costs):</u></p> <p>If the Beneficiary has a "Certificate on Methodology to calculate unit costs " (CoMUC) approved by the Commission, the Beneficiary provides the Auditor with a description of the approved methodology and the Commission's letter of acceptance. The Auditor verified that the Beneficiary has indeed used the methodology approved. If so, no further verification is necessary.</p> <p>If the Beneficiary does not have a "Certificate on Methodology" (CoMUC) approved by the Commission, or if the methodology approved was not applied, then the Auditor:</p> <ul style="list-style-type: none"> <li>○ reviewed the documentation provided by the Beneficiary, including manuals and internal guidelines that explain how to calculate hourly rates;</li> <li>○ recalculated the unit costs (hourly rates) of staff included in the sample following the results of the procedures carried out in A.1 and A.2.</li> </ul> <p><u>II) For individual hourly rates:</u></p> <p>The Auditor:</p> <ul style="list-style-type: none"> <li>○ reviewed the documentation provided by the Beneficiary, including manuals and internal guidelines that explain how to calculate hourly rates;</li> <li>○ recalculated the hourly rates of staff included in the sample (recalculation of all hourly</li> </ul>	<p>28) The Beneficiary applied [<i>choose one option and delete the other</i>]:</p> <p>[Option I: "Unit costs (hourly rates) were calculated in accordance with the Beneficiary's usual cost accounting practices"]</p> <p>[Option II: Individual hourly rates were applied]</p> <p><i>For option I concerning unit costs and if the Beneficiary applies the methodology approved by the Commission (CoMUC):</i></p> <p>29) The Beneficiary used the Commission-approved methodology to calculate hourly rates. It corresponded to the organisation's usual cost accounting practices and was applied consistently for all</p>	

Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
	<p>rates if the Beneficiary uses annual rates, recalculation of three months selected randomly for every year and person if the Beneficiary uses monthly rates) following the results of the procedures carried out in A.1 and A.2;</p> <ul style="list-style-type: none"> <li>○ (only in case of monthly rates) confirmed that the time spent on parental leave is not deducted, and that, if parts of the basic remuneration are generated over a period longer than a month, the Beneficiary has included only the share which is generated in the month.</li> </ul> <p><u>“UNIT COSTS CALCULATED BY THE BENEFICIARY IN ACCORDANCE WITH ITS USUAL COST ACCOUNTING PRACTICES”:</u>  <i>IT IS CALCULATED BY DIVIDING THE TOTAL AMOUNT OF PERSONNEL COSTS OF THE CATEGORY TO WHICH THE EMPLOYEE BELONGS VERIFIED IN LINE WITH PROCEDURE A.1 BY THE NUMBER OF FTE AND THE ANNUAL TOTAL PRODUCTIVE HOURS OF THE SAME CATEGORY CALCULATED BY THE BENEFICIARY IN ACCORDANCE WITH PROCEDURE A.2.</i>  <u>HOURLY RATE FOR INDIVIDUAL ACTUAL PERSONAL COSTS:</u>  <i>IT IS CALCULATED FOLLOWING ONE OF THE TWO OPTIONS BELOW:</i></p> <p><i>A) [OPTION BY DEFAULT] BY DIVIDING THE ACTUAL ANNUAL AMOUNT OF PERSONNEL COSTS OF AN EMPLOYEE VERIFIED IN LINE WITH PROCEDURE A.1 BY THE NUMBER OF ANNUAL PRODUCTIVE HOURS VERIFIED IN LINE WITH PROCEDURE A.2 (FULL FINANCIAL YEAR HOURLY RATE);</i></p> <p><i>B) BY DIVIDING THE ACTUAL MONTHLY AMOUNT OF PERSONNEL COSTS OF AN EMPLOYEE VERIFIED IN LINE WITH PROCEDURE A.1 BY 1/12 OF THE NUMBER OF ANNUAL PRODUCTIVE HOURS VERIFIED IN LINE WITH PROCEDURE A.2.(MONTHLY HOURLY RATE).</i></p>	activities irrespective of the source of funding.	
		<p><i>For option I concerning unit costs and if the Beneficiary applies a methodology not approved by the Commission:</i></p> <p>30) The unit costs re-calculated by the Auditor were the same as the rates applied by the Beneficiary.</p>	
		<p><i>For option II concerning individual hourly rates:</i></p> <p>31) The individual rates re-calculated by the Auditor were the same as the rates applied by the Beneficiary.</p> <p>31.1) The Beneficiary used only one option (per full financial year or per month) throughout each financial year examined.</p> <p>31.2) The hourly rates do not include additional remuneration.</p>	

Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
A.4	<b>TIME RECORDING SYSTEM</b> To verify that the time recording system ensures the fulfilment of all minimum requirements and that the hours declared for the action were correct, accurate and properly authorised and supported by documentation, the Auditor made the following checks for the persons included in the sample that declare time as worked for the action on the basis of time records: <ul style="list-style-type: none"> <li>○ description of the time recording system provided by the Beneficiary (registration, authorisation, processing in the HR-system);</li> <li>○ its actual implementation;</li> <li>○ time records were signed at least monthly by the employees (on paper or electronically) and authorised by the project manager or another manager;</li> <li>○ the hours declared were worked within the project period;</li> <li>○ there were no hours declared as worked for the action if HR-records showed absence due to holidays or sickness (further cross-checks with travels are carried out in B.1 below) ;</li> <li>○ the hours charged to the action matched those in the time recording system.</li> </ul>	32) All persons recorded their time dedicated to the action on a <b>daily/ weekly/ monthly</b> basis using a <b>paper/computer-based</b> system. <i>(delete the answers that are not applicable)</i>	
		33) Their time-records were authorised at least monthly by the project manager or other superior.	
		34) Hours declared were worked within the project period and were consistent with the presences/absences recorded in HR-records.	
		35) There were no discrepancies between the number of hours charged to the action and the number of hours recorded.	
	<p><i>ONLY THE HOURS WORKED ON THE ACTION CAN BE CHARGED. ALL WORKING TIME TO BE CHARGED SHOULD BE RECORDED THROUGHOUT THE DURATION OF THE PROJECT, ADEQUATELY SUPPORTED BY EVIDENCE OF THEIR REALITY AND RELIABILITY (SEE SPECIFIC PROVISIONS BELOW FOR PERSONS WORKING EXCLUSIVELY FOR THE ACTION WITHOUT TIME RECORDS).</i></p> <p><u>If the persons are working exclusively for the action and without time records</u></p> <p>For the persons selected that worked exclusively for the action without time records, the Auditor verified evidence available demonstrating that they were in reality exclusively dedicated to the action and that the Beneficiary signed a declaration confirming that they have worked exclusively for the action.</p>	36) The exclusive dedication is supported by a declaration signed by the Beneficiary and by any other evidence gathered.	

Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
<b>B</b>	<b>COSTS OF SUBCONTRACTING</b>		
<b>B.1</b>	<p><b>The Auditor obtained the detail/breakdown of subcontracting costs and sampled cost items selected randomly</b> <i>(full coverage is required if there are fewer than 10 items, otherwise the sample should have a minimum of 10 item, or 10% of the total, whichever number is highest).</i></p> <p>To confirm standard factual findings 37-41 listed in the next column, the Auditor reviewed the following for the items included in the sample:</p> <ul style="list-style-type: none"> <li>○ the use of subcontractors was foreseen in Annex 1;</li> <li>○ subcontracting costs were declared in the subcontracting category of the Financial Statement;</li> <li>○ supporting documents on the selection and award procedure were followed;</li> <li>○ the Beneficiary ensured best value for money (key elements to appreciate the respect of this principle are the award of the subcontract to the bid offering best price-quality ratio, under conditions of transparency and equal treatment. In case an existing framework contract was used the Beneficiary ensured it was established on the basis of the principle of best value for money under conditions of transparency and equal treatment).</li> </ul> <p>In particular,</p> <ol style="list-style-type: none"> <li>i. if the Beneficiary acted as a contracting authority within the meaning of Directive 2004/18/EC (or 2014/24/EU) or of Directive 2004/17/EC (or 2014/25/EU), the Auditor verified that the applicable national law on public procurement was followed and that the subcontracting complied with the Terms and Conditions of the Agreement.</li> <li>ii. if the Beneficiary did not fall under the above-mentioned category the Auditor verified that the Beneficiary followed their usual procurement rules and respected the Terms and Conditions of the Agreement..</li> </ol>	<p>37) The use of claimed subcontracting costs was foreseen in Annex 1 and costs were declared in the Financial Statements under the subcontracting category.</p> <p>38) There were documents of requests to different providers, different offers and assessment of the offers before selection of the provider in line with internal procedures and procurement rules. Subcontracts were awarded in accordance with the principle of best value for money.</p> <p><i>(When different offers were not collected the Auditor explains the reasons provided by the Beneficiary under the caption “Exceptions” of the Report. The JU will analyse this information to evaluate whether these costs might be accepted as eligible)</i></p> <p>39) The subcontracts were not awarded to other Beneficiaries</p>	



Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
	For the items included in the sample the Auditor also verified that: <ul style="list-style-type: none"> <li>○ the subcontracts were not awarded to other Beneficiaries in the consortium;</li> <li>○ there were signed agreements between the Beneficiary and the subcontractor;</li> <li>○ there was evidence that the services were provided by subcontractor;</li> </ul>	of the consortium.	
		40) All subcontracts were supported by signed agreements between the Beneficiary and the subcontractor.	
		41) There was evidence that the services were provided by the subcontractors.	
<b>C</b>	<b>COSTS OF PROVIDING FINANCIAL SUPPORT TO THIRD PARTIES</b>		
<b>C.1</b>	<p><b>The Auditor obtained the detail/breakdown of the costs of providing financial support to third parties and sampled [ ] cost items selected randomly</b> <i>(full coverage is required if there are fewer than 10 items, otherwise the sample should have a minimum of 10 item, or 10% of the total, whichever number is highest).</i></p> <p>The Auditor verified that the following minimum conditions were met:</p> <ul style="list-style-type: none"> <li>a) the maximum amount of financial support for each third party did not exceed EUR 60 000, unless explicitly mentioned in Annex 1;</li> <li>b) the financial support to third parties was agreed in Annex 1 of the Agreement and the other provisions on financial support to third parties included in Annex 1 were respected.</li> </ul>	42) All minimum conditions were met	

D	OTHER ACTUAL DIRECT COSTS		
D.1	<b>COSTS OF TRAVEL AND RELATED SUBSISTENCE ALLOWANCES</b>  <b>The Auditor sampled [ ] cost items selected randomly</b> <i>(full coverage is required if there are fewer than 10 items, otherwise the sample should have a minimum of 10 item, or 10% of the total, whichever number is the highest).</i>  The Auditor inspected the sample and verified that: <ul style="list-style-type: none"> <li>○ travel and subsistence costs were consistent with the Beneficiary's usual policy for travel. In this context, the Beneficiary provided evidence of its normal policy for travel costs (e.g. use of first class tickets, reimbursement by the Beneficiary on the basis of actual costs, a lump sum or per diem) to enable the Auditor to compare the travel costs charged with this policy;</li> <li>○ travel costs are correctly identified and allocated to the action (e.g. trips are directly linked to the action) by reviewing relevant supporting documents such as minutes of meetings, workshops or conferences, their registration in the correct project account, their consistency with time records or with the dates/duration of the workshop/conference;</li> <li>○ no ineligible costs or excessive or reckless expenditure was declared (see Article 6.5 MGA).</li> </ul>	43) Costs were incurred, approved and reimbursed in line with the Beneficiary's usual policy for travels.	
		44) There was a link between the trip and the action.	
		45) The supporting documents were consistent with each other regarding subject of the trip, dates, duration and reconciled with time records and accounting.	
		46) No ineligible costs or excessive or reckless expenditure was declared.	
D.2	<b>DEPRECIATION COSTS FOR EQUIPMENT, INFRASTRUCTURE OR OTHER ASSETS</b>  <b>The Auditor sampled [ ] cost items selected randomly</b> <i>(full coverage is required if there are fewer than 10 items, otherwise the sample should have a minimum of 10 item, or 10% of the total, whichever number is the highest).</i>  For “equipment, infrastructure or other assets” [from now on called “asset(s)”] selected in the sample the Auditor verified that: <ul style="list-style-type: none"> <li>○ the assets were acquired in conformity with the Beneficiary's internal guidelines and procedures;</li> <li>○ they were correctly allocated to the action (with supporting documents such as delivery</li> </ul>	47) Procurement rules, principles and guides were followed.	
		48) There was a link between the grant agreement and the asset charged to the action.	
		49) The asset charged to the action was traceable to the accounting records and the underlying documents.	

	<p>note invoice or any other proof demonstrating the link to the action)</p> <ul style="list-style-type: none"> <li>○ they were entered in the accounting system;</li> <li>○ the extent to which the assets were used for the action (as a percentage) was supported by reliable documentation (e.g. usage overview table);</li> </ul> <p>The Auditor recalculated the depreciation costs and verified that they were in line with the applicable rules in the Beneficiary's country and with the Beneficiary's usual accounting policy (e.g. depreciation calculated on the acquisition value).</p> <p>The Auditor verified that no ineligible costs such as deductible VAT, exchange rate losses, excessive or reckless expenditure were declared (see Article 6.5 GA).</p>	<p>50) The depreciation method used to charge the asset to the action was in line with the applicable rules of the Beneficiary's country and the Beneficiary's usual accounting policy.</p>	
		<p>51) The amount charged corresponded to the actual usage for the action.</p>	
		<p>52) No ineligible costs or excessive or reckless expenditure were declared.</p>	
<b>D.3</b>	<p><b>COSTS OF OTHER GOODS AND SERVICES</b></p> <p><b>The Auditor sampled [ ] cost items selected randomly</b> (<i>full coverage is required if there are fewer than 10 items, otherwise the sample should have a minimum of 10 item, or 10% of the total, whichever number is highest</i>).</p> <p>For the purchase of goods, works or services included in the sample the Auditor verified that:</p> <ul style="list-style-type: none"> <li>○ the contracts did not cover tasks described in Annex 1;</li> <li>○ they were correctly identified, allocated to the proper action, entered in the accounting system (traceable to underlying documents such as purchase orders, invoices and accounting);</li> <li>○ the goods were not placed in the inventory of durable equipment;</li> <li>○ the costs charged to the action were accounted in line with the Beneficiary's usual accounting practices;</li> <li>○ no ineligible costs or excessive or reckless expenditure were declared (see Article 6 GA).</li> </ul> <p>In addition, the Auditor verified that these goods and services were acquired in conformity with the Beneficiary's internal guidelines and procedures, in particular:</p> <ul style="list-style-type: none"> <li>○ if Beneficiary acted as a contracting authority within the meaning of Directive</li> </ul>	<p>53) Contracts for works or services did not cover tasks described in Annex 1.</p>	
		<p>54) Costs were allocated to the correct action and the goods were not placed in the inventory of durable equipment.</p>	
		<p>55) The costs were charged in line with the Beneficiary's accounting policy and were adequately supported.</p>	
		<p>56) No ineligible costs or excessive or reckless expenditure were declared. For internal invoices/charges only the cost element was charged, without any mark-ups.</p>	

	<p>2004/18/EC (or 2014/24/EU) or of Directive 2004/17/EC (or 2014/25/EU), the Auditor verified that the applicable national law on public procurement was followed and that the procurement contract complied with the Terms and Conditions of the Agreement.</p> <ul style="list-style-type: none"> <li>○ if the Beneficiary did not fall into the category above, the Auditor verified that the Beneficiary followed their usual procurement rules and respected the Terms and Conditions of the Agreement.</li> </ul> <p>For the items included in the sample the Auditor also verified that:</p> <ul style="list-style-type: none"> <li>○ the Beneficiary ensured best value for money (key elements to appreciate the respect of this principle are the award of the contract to the bid offering best price-quality ratio, under conditions of transparency and equal treatment. In case an existing framework contract was used the Auditor also verified that the Beneficiary ensured it was established on the basis of the principle of best value for money under conditions of transparency and equal treatment);</li> </ul> <p><i>SUCH GOODS AND SERVICES INCLUDE, FOR INSTANCE, CONSUMABLES AND SUPPLIES, DISSEMINATION (INCLUDING OPEN ACCESS), PROTECTION OF RESULTS, SPECIFIC EVALUATION OF THE ACTION IF IT IS REQUIRED BY THE AGREEMENT, CERTIFICATES ON THE FINANCIAL STATEMENTS IF THEY ARE REQUIRED BY THE AGREEMENT AND CERTIFICATES ON THE METHODOLOGY, TRANSLATIONS, REPRODUCTION.</i></p>	<p>57) Procurement rules, principles and guides were followed. There were documents of requests to different providers, different offers and assessment of the offers before selection of the provider in line with internal procedures and procurement rules. The purchases were made in accordance with the principle of best value for money.</p> <p><i>(When different offers were not collected the Auditor explains the reasons provided by the Beneficiary under the caption "Exceptions" of the Report. The JU will analyse this information to evaluate whether these costs might be accepted as eligible)</i></p>	
<b>D.4</b>	<p><b>AGGREGATED CAPITALISED AND OPERATING COSTS OF RESEARCH INFRASTRUCTURE</b></p> <p>The Auditor ensured the existence of a positive ex-ante assessment (issued by the EC Services) of the cost accounting methodology of the Beneficiary allowing it to apply the guidelines on direct costing for large research infrastructures in Horizon 2020.</p> <p><i>In the cases that a positive ex-ante assessment has been issued (see the standard factual findings 58-59 on the next column),</i></p>	<p>58) The costs declared as direct costs for Large Research Infrastructures (in the appropriate line of the Financial Statement) comply with the methodology described in the positive ex-ante assessment report.</p>	

	<p>The Auditor ensured that the beneficiary has applied consistently the methodology that is explained and approved in the positive ex ante assessment;</p> <p><b><i>In the cases that a positive ex-ante assessment has NOT been issued (see the standard factual findings 60 on the next column),</i></b></p> <p>The Auditor verified that no costs of Large Research Infrastructure have been charged as direct costs in any costs category;</p> <p><b><i>In the cases that a draft ex-ante assessment report has been issued with recommendation for further changes (see the standard factual findings 60 on the next column),</i></b></p> <ul style="list-style-type: none"> <li>• The Auditor followed the same procedure as above (when a positive ex-ante assessment has NOT yet been issued) and paid particular attention (testing reinforced) to the cost items for which the draft ex-ante assessment either rejected the inclusion as direct costs for Large Research Infrastructures or issued recommendations.</li> </ul>	59) Any difference between the methodology applied and the one positively assessed was extensively described and adjusted accordingly.	
		60) The direct costs declared were free from any indirect costs items related to the Large Research Infrastructure.	
<b>D.5</b>	<p><b>Costs of internally invoiced goods and services</b></p> <p><b>The Auditor sampled cost items selected randomly</b> (<i>full coverage is required if there are fewer than 10 items, otherwise the sample should have a minimum of 10 item, or 10% of the total, whichever number is highest</i>).</p> <p>To confirm standard factual findings 61-65 listed in the next column, the Auditor:</p> <ul style="list-style-type: none"> <li>○ obtained a description of the Beneficiary's usual cost accounting practice to calculate costs of internally invoiced goods and services (unit costs);</li> <li>○ reviewed whether the Beneficiary's usual cost accounting practice was applied for the Financial Statements subject of the present CFS;</li> <li>○ ensured that the methodology to calculate unit costs is being used in a consistent manner, based on objective criteria, regardless of the source of funding;</li> <li>○ verified that any ineligible items or any costs claimed under other budget categories, in particular indirect costs, have not been taken into account when calculating the costs of internally invoiced goods and services (see Article 6 GA);</li> <li>○ verified whether actual costs of internally invoiced goods and services were adjusted on</li> </ul>	<p>61) The costs of internally invoiced goods and services included in the Financial Statement were calculated in accordance with the Beneficiary's usual cost accounting practice.</p> <p>62) The cost accounting practices used to calculate the costs of internally invoiced goods and services were applied by the Beneficiary in a consistent manner based on objective criteria regardless of the source of funding.</p> <p>63) The unit cost is calculated using the actual costs for the good or service recorded in the Beneficiary's accounts, excluding any ineligible cost or</p>	

	<p>the basis of budgeted or estimated elements and, if so, verified whether those elements used are actually relevant for the calculation, and correspond to objective and verifiable information.</p> <ul style="list-style-type: none"> <li>o verified that any costs of items which are not directly linked to the production of the invoiced goods or service (e.g. supporting services like cleaning, general accountancy, administrative support, etc. not directly used for production of the good or service) have not been taken into account when calculating the costs of internally invoiced goods and services.</li> <li>o verified that any costs of items used for calculating the costs internally invoiced goods and services are supported by audit evidence and registered in the accounts.</li> <li>o</li> </ul>	<p>costs included in other budget categories.</p> <p>64) The unit cost excludes any costs of items which are not directly linked to the production of the invoiced goods or service.</p> <p>65) The costs items used for calculating the actual costs of internally invoiced goods and services were relevant, reasonable and correspond to objective and verifiable information.</p>	
<b>E</b>	<b>USE OF EXCHANGE RATES</b>		
<b>E.1</b>	<p>a) For Beneficiaries with accounts established in a currency other than euros</p> <p><b>The Auditor sampled [ ] cost items selected randomly and verified that the exchange rates used for converting other currencies into euros were in accordance with the following rules established in the Agreement</b> (<i>full coverage is required if there are fewer than 10 items, otherwise the sample should have a minimum of 10 item, or 10% of the total, whichever number is highest</i>):</p> <p><i>COSTS RECORDED IN THE ACCOUNTS IN A CURRENCY OTHER THAN EURO SHALL BE CONVERTED INTO EURO AT THE AVERAGE OF THE DAILY EXCHANGE RATES PUBLISHED IN THE C SERIES OF OFFICIAL JOURNAL OF THE EUROPEAN UNION (<a href="https://www.ecb.int/stats/exchange/eurofxref/html/index.en.html">https://www.ecb.int/stats/exchange/eurofxref/html/index.en.html</a> ), DETERMINED OVER THE CORRESPONDING REPORTING PERIOD.</i></p> <p><i>IF NO DAILY EURO EXCHANGE RATE IS PUBLISHED IN THE OFFICIAL JOURNAL OF THE EUROPEAN UNION FOR THE CURRENCY IN QUESTION, CONVERSION SHALL BE MADE AT THE AVERAGE OF THE MONTHLY ACCOUNTING RATES ESTABLISHED BY THE COMMISSION AND PUBLISHED ON ITS WEBSITE (<a href="http://ec.europa.eu/budget/contracts_grants/info_contracts/inforeuro/inforeuro_en.cfm">http://ec.europa.eu/budget/contracts_grants/info_contracts/inforeuro/inforeuro_en.cfm</a> ),</i></p>	<p>66) The exchange rates used to convert other currencies into Euros were in accordance with the rules established of the Grant Agreement and there was no difference in the final figures.</p>	

	<i>DETERMINED OVER THE CORRESPONDING REPORTING PERIOD.</i>		
	<p>b) For Beneficiaries with accounts established in euros</p> <p><b>The Auditor sampled [ ] cost items selected randomly and verified that the exchange rates used for converting other currencies into euros were in accordance with the following rules established in the Agreement</b> (<i>full coverage is required if there are fewer than 10 items, otherwise the sample should have a minimum of 10 item, or 10% of the total, whichever number is highest</i>):</p> <p><i>COSTS INCURRED IN ANOTHER CURRENCY SHALL BE CONVERTED INTO EURO BY APPLYING THE BENEFICIARY'S USUAL ACCOUNTING PRACTICES.</i></p>	67) The Beneficiary applied its usual accounting practices.	

[legal name of the audit firm]

[name and function of an authorised representative]

[dd Month yyyy]

&lt;Signature of the Auditor&gt;

## ANNEX 6

### MODEL FOR THE CERTIFICATE ON THE METHODOLOGY

- For options [*in italics in square brackets*]: choose the applicable option. Options not chosen should be deleted.
- For fields in [grey in square brackets]: enter the appropriate data.

#### TABLE OF CONTENTS

TERMS OF REFERENCE FOR AN AUDIT ENGAGEMENT FOR A METHODOLOGY CERTIFICATE IN CONNECTION WITH ONE OR MORE GRANT AGREEMENTS FINANCED UNDER THE HORIZON 2020 RESEARCH AND INNOVATION FRAMEWORK PROGRAMME

INDEPENDENT REPORT OF FACTUAL FINDINGS ON THE METHODOLOGY CONCERNING GRANT AGREEMENTS FINANCED UNDER THE HORIZON 2020 RESEARCH AND INNOVATION FRAMEWORK PROGRAMME



**Terms of reference for an audit engagement for a methodology certificate  
in connection with one or more grant agreements financed  
by [Clean Sky 2] [Bio Based Industries][ECSEL][Fuel Cells and Hydrogen 2][Innovative  
Medicines Initiative 2][Single European Sky Air Traffic Management Research  
(SESAR)][Shift2Rail] JU under the Horizon 2020 Research and Innovation Framework  
Programme**

This document sets out the ‘**Terms of Reference (ToR)**’ under which

[OPTION 1: *[insert name of the beneficiary]* (*‘the Beneficiary’*)] [OPTION 2: *[insert name of the linked third party]* (*‘the Linked Third Party’*), third party linked to the Beneficiary *[insert name of the beneficiary]* (*‘the Beneficiary’*)]

agrees to engage

**[insert legal name of the auditor]** (*‘the Auditor’*)

to produce an independent report of factual findings (*‘the Report’*) concerning the *[Beneficiary’s]* *[Linked Third Party’s]* usual accounting practices for calculating and claiming direct personnel costs declared as unit costs (*‘the Methodology’*) in connection with grant agreements financed under the Horizon 2020 Research and Innovation Framework Programme.

The procedures to be carried out for the assessment of the methodology will be based on the grant agreement(s) detailed below:

**[title and number of the grant agreement(s)]** (*‘the Agreement(s)’*)

The Agreement(s) has(have) been concluded between the Beneficiary and the *[Clean Sky 2][Bio Based Industries][ECSEL][Fuel Cells and Hydrogen 2][Innovative Medicines Initiative 2][Single European Sky Air Traffic Management Research (SESAR)][Shift2Rail]* Joint Undertaking (*‘the JU’*).

The JU is mentioned as a signatory of the Agreement with the Beneficiary only. The JU is not a party to this engagement.

## **1.1 Subject of the engagement**

According to Article 18.1.2 of the Agreement, beneficiaries *[and linked third parties]* that declare direct personnel costs as unit costs calculated in accordance with their usual cost accounting practices may submit to the JU, for approval by the European Commission (*‘the Commission’*), a certificate on the methodology (*‘CoMUC’*) stating that there are adequate records and documentation to prove that their cost accounting practices used comply with the conditions set out in Point A of Article 6.2.

The subject of this engagement is the CoMUC which is composed of two separate documents:

- the Terms of Reference (*‘the ToR’*) to be signed by the *[Beneficiary]* *[Linked Third Party]* and the Auditor;
- the Auditor’s Independent Report of Factual Findings (*‘the Report’*) issued on the Auditor’s letterhead, dated, stamped and signed by the Auditor which includes; the standard statements (*‘the Statements’*) evaluated and signed by the *[Beneficiary]* *[Linked Third Party]*, the agreed-upon procedures (*‘the Procedures’*) performed by the Auditor and the standard factual findings (*‘the Findings’*) assessed by the Auditor. The Statements, Procedures and Findings are summarised in the table that forms part of the Report.

The information provided through the Statements, the Procedures and the Findings will enable the Commission to draw conclusions regarding the existence of the *[Beneficiary's] [Linked Third Party's]* usual cost accounting practice and its suitability to ensure that direct personnel costs claimed on that basis comply with the provisions of the Agreement. The Commission draws its own conclusions from the Report and any additional information it may require.

## 1.2 Responsibilities

The parties to this agreement are the *[Beneficiary] [Linked Third Party]* and the Auditor.

The *[Beneficiary] [Linked Third Party]*:

- is responsible for preparing financial statements for the Agreement(s) ('the Financial Statements') in compliance with those Agreements;
- is responsible for providing the Financial Statement(s) to the Auditor and enabling the Auditor to reconcile them with the *[Beneficiary's] [Linked Third Party's]* accounting and bookkeeping system and the underlying accounts and records. The Financial Statement(s) will be used as a basis for the procedures which the Auditor will carry out under this ToR;
- is responsible for its Methodology and liable for the accuracy of the Financial Statement(s);
- is responsible for endorsing or refuting the Statements indicated under the heading 'Statements to be made by the Beneficiary/ Linked Third Party' in the first column of the table that forms part of the Report;
- must provide the Auditor with a signed and dated representation letter;
- accepts that the ability of the Auditor to carry out the Procedures effectively depends upon the *[Beneficiary] [Linked Third Party]* providing full and free access to the *[Beneficiary's] [Linked Third Party's]* staff and to its accounting and other relevant records.

The Auditor:

- *[Option 1 by default: is qualified to carry out statutory audits of accounting documents in accordance with Directive 2006/43/EC of the European Parliament and of the Council of 17 May 2006 on statutory audits of annual accounts and consolidated accounts, amending Council Directives 78/660/EEC and 83/349/EEC and repealing Council Directive 84/253/EEC or similar national regulations].*
- *[Option 2 if the Beneficiary or Linked Third Party has an independent Public Officer: is a competent and independent Public Officer for which the relevant national authorities have established the legal capacity to audit the Beneficiary].*
- *[Option 3 if the Beneficiary or Linked Third Party is an international organisation: is an [internal] [external] auditor in accordance with the internal financial regulations and procedures of the international organisation].*

The Auditor:

- must be independent from the Beneficiary *[and the Linked Third Party]*, in particular, it must not have been involved in preparing the Beneficiary's *[and Linked Third Party's]* Financial Statement(s);
- must plan work so that the Procedures may be carried out and the Findings may be assessed;
- must adhere to the Procedures laid down and the compulsory report format;
- must carry out the engagement in accordance with these ToR;
- must document matters which are important to support the Report;
- must base its Report on the evidence gathered;
- must submit the Report to the *[Beneficiary] [Linked Third Party]*.

The Commission sets out the Procedures to be carried out and the Findings to be endorsed by the Auditor. The Auditor is not responsible for their suitability or pertinence. As this engagement is not an assurance engagement the Auditor does not provide an audit opinion or a statement of assurance.

### 1.3 Applicable Standards

The Auditor must comply with these Terms of Reference and with<sup>1</sup>:

- the International Standard on Related Services ('ISRS') 4400 *Engagements to perform Agreed-upon Procedures regarding Financial Information* as issued by the International Auditing and Assurance Standards Board (IAASB);
- the *Code of Ethics for Professional Accountants* issued by the International Ethics Standards Board for Accountants (IESBA). Although ISRS 4400 states that independence is not a requirement for engagements to carry out agreed-upon procedures, the Commission requires that the Auditor also complies with the Code's independence requirements.

The Auditor's Report must state that there was no conflict of interests in establishing this Report between the Auditor and the Beneficiary *[and the Linked Third Party]* that could have a bearing on the Report, and must specify – if the service is invoiced - the total fee paid to the Auditor for providing the Report.

### 1.4 Reporting

The Report must be written in the language of the Agreement (see Article 20.7 of the Agreement).

Under Article 22 of the Agreement, the JU, the Commission, the European Anti-Fraud Office and the Court of Auditors have the right to audit any work that is carried out under the action and for which costs are declared from the European Union budget. This includes work related to this engagement. The Auditor must provide access to all working papers related to this assignment if the JU, the Commission, the European Anti-Fraud Office or the European Court of Auditors requests them.

### 1.5 Timing

The Report must be provided by [dd Month yyyy].

### 1.6 Other Terms

*[The [Beneficiary] [Linked Third Party] and the Auditor can use this section to agree other specific terms, such as the Auditor's fees, liability, applicable law, etc. Those specific terms must not contradict the terms specified above.]*

[legal name of the Auditor]  
[name & title of authorised representative]  
[dd Month yyyy]  
Signature of the Auditor

[legal name of the [Beneficiary] [Linked Third Party]]  
[name & title of authorised representative]  
[dd Month yyyy]  
Signature of the [Beneficiary] [Linked Third Party]

---

<sup>1</sup> Supreme Audit Institutions applying INTOSAI-standards may carry out the Procedures according to the corresponding International Standards of Supreme Audit Institutions and code of ethics issued by INTOSAI instead of the International Standard on Related Services ('ISRS') 4400 and the Code of Ethics for Professional Accountants issued by the IAASB and the IESBA.

**Independent report of factual findings on the methodology concerning grant agreements  
financed by *[Clean Sky 2] [Bio Based Industries] [ECSEL] [Fuel Cells and Hydrogen  
2] [Innovative Medicines Initiative 2] [Single European Sky Air Traffic Management Research  
(SESAR)] [Shift2Rail] JU*  
under the Horizon 2020 Research and Innovation Framework Programme**

*(To be printed on letterhead paper of the auditor)*

To

[ name of contact person(s)], [Position]  
[[Beneficiary's] [Linked Third Party's] name]  
[ Address]  
[ dd Month yyyy]

Dear [Name of contact person(s)],

As agreed under the terms of reference dated [dd Month yyyy]

with [OPTION 1: *[insert name of the beneficiary]* ('the Beneficiary')] [OPTION 2: *[insert name of the linked third party]* ('the Linked Third Party'), third party linked to the Beneficiary *[insert name of the beneficiary]* ('the Beneficiary')],

we

[ name of the auditor] ('the Auditor'),

established at

[full address/city/state/province/country],

represented by

[name and function of an authorised representative],

have carried out the agreed-upon procedures ('the Procedures') and provide hereby our Independent Report of Factual Findings ('the Report'), concerning the *[Beneficiary's] [Linked Third Party's]* usual accounting practices for calculating and declaring direct personnel costs declared as unit costs ('the Methodology').

You requested certain procedures to be carried out in connection with the grant(s)

[title and number of the grant agreement(s)] ('the Agreement(s)').

## **The Report**

Our engagement was carried out in accordance with the terms of reference ('the ToR') appended to this Report. The Report includes: the standard statements ('the Statements') made by the *[Beneficiary] [Linked Third Party]*, the agreed-upon procedures ('the Procedures') carried out and the standard factual findings ('the Findings') confirmed by us.

The engagement involved carrying out the Procedures and assessing the Findings and the documentation requested appended to this Report, the results of which the European Commission ('the Commission') uses to draw conclusions regarding the acceptability of the Methodology applied by the *[Beneficiary] [Linked Third Party]*.

The Report covers the methodology used from [dd Month yyyy]. In the event that the [Beneficiary] [Linked Third Party] changes this methodology, the Report will not be applicable to any Financial Statement<sup>1</sup> submitted thereafter.

The scope of the Procedures and the definition of the standard statements and findings were determined solely by the Commission. Therefore, the Auditor is not responsible for their suitability or pertinence.

Since the Procedures carried out constitute neither an audit nor a review made in accordance with International Standards on Auditing or International Standards on Review Engagements, we do not give a statement of assurance on the costs declared on the basis of the [Beneficiary's] [Linked Third Party's] Methodology. Had we carried out additional procedures or had we performed an audit or review in accordance with these standards, other matters might have come to its attention and would have been included in the Report.

## Exceptions

Apart from the exceptions listed below, the [Beneficiary] [Linked Third Party] agreed with the standard Statements and provided the Auditor all the documentation and accounting information needed by the Auditor to carry out the requested Procedures and corroborate the standard Findings.

**List here any exception and add any information on the cause and possible consequences of each exception, if known. If the exception is quantifiable, also indicate the corresponding amount.**

.....

*Explanation of possible exceptions in the form of examples (to be removed from the Report):*

- i. the [Beneficiary] [Linked Third Party] did not agree with the standard Statement number ... because...;
- ii. the Auditor could not carry out the procedure ... established because .... (e.g. due to the inability to reconcile key information or the unavailability or inconsistency of data);
- iii. the Auditor could not confirm or corroborate the standard Finding number ... because ....

## Remarks

We would like to add the following remarks relevant for the proper understanding of the Methodology applied by the [Beneficiary] [Linked Third Party] or the results reported:

*Example (to be removed from the Report):*

*Regarding the methodology applied to calculate hourly rates ...*

*Regarding standard Finding 15 it has to be noted that ...*

*The [Beneficiary] [Linked Third Party] explained the deviation from the benchmark statement XXIV concerning time recording for personnel with no exclusive dedication to the action in the following manner:*

...

## Annexes

Please provide the following documents to the auditor and annex them to the report when submitting this CoMUC to the JU:

<sup>1</sup> Financial Statement in this context refers solely to Annex 4 of the Agreement by which the Beneficiary declares costs under the Agreement.

1. Brief description of the methodology for calculating personnel costs, productive hours and hourly rates;
2. Brief description of the time recording system in place;
3. An example of the time records used by the [Beneficiary] [Linked Third Party];
4. Description of any budgeted or estimated elements applied, together with an explanation as to why they are relevant for calculating the personnel costs and how they are based on objective and verifiable information;
5. A summary sheet with the hourly rate for direct personnel declared by the [Beneficiary] [Linked Third Party] and recalculated by the Auditor for each staff member included in the sample (the names do not need to be reported);
6. A comparative table summarising for each person selected in the sample a) the time claimed by the [Beneficiary] [Linked Third Party] in the Financial Statement(s) and b) the time according to the time record verified by the Auditor;
7. A copy of the letter of representation provided to the Auditor.

### Use of this Report

This Report has been drawn up solely for the purpose given under Point 1.1 Reasons for the engagement.

#### The Report:

- is confidential and is intended to be submitted to the JU by the [Beneficiary] [Linked Third Party] in connection with Article 18.1.2 of the Agreement;
- may not be used by the [Beneficiary] [Linked Third Party], by the JU or by the Commission for any other purpose, nor distributed to any other parties;
- may be disclosed by the JU or by the Commission only to authorised parties, in particular the European Anti-Fraud Office (OLAF) and the European Court of Auditors.
- relates only to the usual cost accounting practices specified above and does not constitute a report on the Financial Statements of the [Beneficiary] [Linked Third Party].

No conflict of interest<sup>2</sup> exists between the Auditor and the Beneficiary [and the Linked Third Party] that could have a bearing on the Report. The total fee paid to the Auditor for producing the Report was EUR [ ] (including EUR [ ] of deductible VAT).

We look forward to discussing our Report with you and would be pleased to provide any further information or assistance which may be required.

Yours sincerely

[legal name of the Auditor]

[name and title of the authorised representative]

[dd Month yyyy]

Signature of the Auditor

---

<sup>2</sup> A conflict of interest arises when the Auditor's objectivity to establish the certificate is compromised in fact or in appearance when the Auditor for instance:

- was involved in the preparation of the Financial Statements;
- stands to benefit directly should the certificate be accepted;
- has a close relationship with any person representing the beneficiary;
- is a director, trustee or partner of the beneficiary; or
- is in any other situation that compromises his or her independence or ability to establish the certificate impartially.



**Statements to be made by the Beneficiary/Linked Third Party ('the Statements') and Procedures to be carried out by the Auditor ('the Procedures') and standard factual findings ('the Findings') to be confirmed by the Auditor**

The European Commission ('the Commission') reserves the right to provide the auditor with guidance regarding the Statements to be made, the Procedures to be carried out or the Findings to be ascertained and the way in which to present them. The Commission reserves the right to vary the Statements, Procedures or Findings by written notification to the Beneficiary/Linked Third Party to adapt the procedures to changes in the grant agreement(s) or to any other circumstances.

If this methodology certificate relates to the Linked Third Party's usual accounting practices for calculating and claiming direct personnel costs declared as unit costs any reference here below to 'the Beneficiary' is to be considered as a reference to 'the Linked Third Party'.

<i>Please explain any discrepancies in the body of the Report.</i>	
Statements to be made by Beneficiary	Procedures to be carried out and Findings to be confirmed by the Auditor
<b>A. Use of the Methodology</b>  I. The cost accounting practice described below has been in use since [dd Month yyyy].  II. The next planned alteration to the methodology used by the Beneficiary will be from [dd Month yyyy].	<b>Procedure:</b>  ✓ The Auditor checked these dates against the documentation the Beneficiary has provided.  <b>Factual finding:</b>  1. The dates provided by the Beneficiary were consistent with the documentation.
<b>B. Description of the Methodology</b>  III. The methodology to calculate unit costs is being used in a consistent manner and is reflected in the relevant procedures.  <i>[Please describe the methodology your entity uses to calculate <u>personnel</u> costs, productive hours and hourly rates, present your description to the Auditor and annex it to this certificate]</i>  <i>[If the statement of section "B. Description of the methodology" cannot be endorsed by the Beneficiary or there is no written methodology to calculate unit costs it should be listed here below and reported as exception by the Auditor in the main Report of Factual Findings:            - ...]</i>	<b>Procedure:</b>  ✓ The Auditor reviewed the description, the relevant manuals and/or internal guidance documents describing the methodology.  <b>Factual finding:</b>  2. The brief description was consistent with the relevant manuals, internal guidance and/or other documentary evidence the Auditor has reviewed.  3. The methodology was generally applied by the Beneficiary as part of its usual costs accounting practices.
<b>C. Personnel costs</b>	<b>Procedure:</b>

<b><i>Please explain any discrepancies in the body of the Report.</i></b>	
<b>Statements to be made by Beneficiary</b>	<b>Procedures to be carried out and Findings to be confirmed by the Auditor</b>
<u>General</u>	
IV. The unit costs (hourly rates) are limited to salaries including during parental leave, social security contributions, taxes and other costs included in the remuneration required under national law and the employment contract or equivalent appointing act;	<p><i>The Auditor draws a sample of employees to carry out the procedures indicated in this section C and the following sections D to F.</i>  <i>[The Auditor has drawn a random sample of 10 employees assigned to Horizon 2020 action(s). If fewer than 10 employees are assigned to the Horizon 2020 action(s), the Auditor has selected all employees assigned to the Horizon 2020 action(s), complemented by other employees irrespective of their assignments until he has reached 10 employees.].</i> For this sample:</p> <ul style="list-style-type: none"> <li>✓ the Auditor reviewed all documents relating to personnel costs such as employment contracts, payslips, payroll policy (e.g. salary policy, overtime policy, variable pay policy), accounting and payroll records, applicable national tax, labour and social security law and any other documents corroborating the personnel costs claimed;</li> <li>✓ in particular, the Auditor reviewed the employment contracts of the employees in the sample to verify that: <ul style="list-style-type: none"> <li>i. they were employed directly by the Beneficiary in accordance with applicable national legislation;</li> <li>ii. they were working under the sole technical supervision and responsibility of the latter;</li> <li>iii. they were remunerated in accordance with the Beneficiary's usual practices;</li> <li>iv. they were allocated to the correct group/category/cost centre for the purposes of calculating the unit cost in line with the Beneficiary's usual cost accounting practices;</li> </ul> </li> <li>✓ the Auditor verified that any ineligible items or any costs claimed under other costs categories or costs covered by other types of grant or by other grants financed from the European Union budget have not been taken into account when calculating the personnel costs;</li> <li>✓ the Auditor numerically reconciled the total amount of personnel costs used to calculate the unit cost with the total amount of personnel costs recorded in the statutory accounts and the payroll system.</li> <li>✓ to the extent that actual personnel costs were adjusted on the basis of budgeted or estimated elements, the Auditor carefully examined those elements and checked the information source to confirm that they correspond to objective and verifiable information;</li> </ul>
V. Employees are hired directly by the Beneficiary in accordance with national law, and work under its sole supervision and responsibility;	
VI. The Beneficiary remunerates its employees in accordance with its usual practices. This means that personnel costs are charged in line with the Beneficiary's usual payroll policy (e.g. salary policy, overtime policy, variable pay) and no special conditions exist for employees assigned to tasks relating to the European Union or Euratom, unless explicitly provided for in the grant agreement(s);	
VII. The Beneficiary allocates its employees to the relevant group/category/cost centre for the purpose of the unit cost calculation in line with the usual cost accounting practice;	
VIII. Personnel costs are based on the payroll system and accounting system.	
IX. Any exceptional adjustments of actual personnel costs resulted from relevant budgeted or estimated elements and were based on objective and verifiable information. <i>[Please describe the 'budgeted or estimated elements' and their relevance to personnel costs, and explain how they were reasonable and based on objective and verifiable information, present your explanation to the Auditor and annex it to this certificate].</i>	
X. Personnel costs claimed do not contain any of the following ineligible costs: costs related to return on capital; debt and debt service charges; provisions for future losses or debts; interest owed; doubtful debts; currency exchange losses; bank costs charged by the Beneficiary's bank for transfers from the JU; excessive or reckless expenditure; deductible VAT or costs incurred during suspension of the implementation of the action.	
XI. Personnel costs were not declared under another EU or Euratom grant (including grants awarded by a Member State and financed by the EU budget and grants awarded by bodies other than the JU for the purpose of implementing the EU or Euratom budget in the same period, unless the Beneficiary can demonstrate that the operating grant does not cover any costs of the action).	



<i>Please explain any discrepancies in the body of the Report.</i>	
Statements to be made by Beneficiary	Procedures to be carried out and Findings to be confirmed by the Auditor
<p><u>If additional remuneration as referred to in the grant agreement(s) is paid</u></p> <p>XII. The Beneficiary is a non-profit legal entity;</p> <p>XIII. The additional remuneration is part of the beneficiary's usual remuneration practices and paid consistently whenever the relevant work or expertise is required;</p> <p>XIV. The criteria used to calculate the additional remuneration are objective and generally applied regardless of the source of funding;</p> <p>XV. The additional remuneration included in the personnel costs used to calculate the hourly rates for the grant agreement(s) is capped at EUR 8 000 per full-time equivalent (reduced proportionately if the employee is not assigned exclusively to the action).</p> <p><i>[If certain statement(s) of section "C. Personnel costs" cannot be endorsed by the Beneficiary they should be listed here below and reported as exception by the Auditor in the main Report of Factual Findings:</i> - ...]</p>	<p>✓ if additional remuneration has been claimed, the Auditor verified that the Beneficiary was a non-profit legal entity, that the amount was capped at EUR 8 000 per full-time equivalent and that it was reduced proportionately for employees not assigned exclusively to the action(s).</p> <p>✓ the Auditor recalculated the personnel costs for the employees in the sample.</p> <p><b>Factual finding:</b></p> <ol style="list-style-type: none"> <li>All the components of the remuneration that have been claimed as personnel costs are supported by underlying documentation.</li> <li>The employees in the sample were employed directly by the Beneficiary in accordance with applicable national law and were working under its sole supervision and responsibility.</li> <li>Their employment contracts were in line with the Beneficiary's usual policy;</li> <li>Personnel costs were duly documented and consisted solely of salaries, social security contributions (pension contributions, health insurance, unemployment fund contributions, etc.), taxes and other statutory costs included in the remuneration (holiday pay, thirteenth month's pay, etc.);</li> <li>The totals used to calculate the personnel unit costs are consistent with those registered in the payroll and accounting records;</li> <li>To the extent that actual personnel costs were adjusted on the basis of budgeted or estimated elements, those elements were relevant for calculating the personnel costs and correspond to objective and verifiable information. The budgeted or estimated elements used are: — (indicate the elements and their values).</li> <li>Personnel costs contained no ineligible elements;</li> <li>Specific conditions for eligibility were fulfilled when additional remuneration was paid: a) the Beneficiary is registered in the grant agreements as a non-profit legal entity; b) it was paid according to objective criteria generally applied regardless of the source of funding used and c) remuneration was capped at EUR 8 000 per full-time equivalent (or up to up to the equivalent pro-rata amount if the person did not work on the action full-time during the year or did not work</li> </ol>

<i>Please explain any discrepancies in the body of the Report.</i>	
Statements to be made by Beneficiary	Procedures to be carried out and Findings to be confirmed by the Auditor
	exclusively on the action).
<p><b>D. Productive hours</b></p> <p>XVI. The number of productive hours per full-time employee applied is <i>[delete as appropriate]</i>:</p> <p>A. 1720 productive hours per year for a person working full-time (corresponding pro-rata for persons not working full time).</p> <p>B. the total number of hours worked in the year by a person for the Beneficiary</p> <p>C. the standard number of annual hours generally applied by the beneficiary for its personnel in accordance with its usual cost accounting practices. This number must be at least 90% of the standard annual workable hours.</p> <p><u>If method B is applied</u></p> <p>XVII. The calculation of the total number of hours worked was done as follows: annual workable hours of the person according to the employment contract, applicable labour agreement or national law plus overtime worked minus absences (such as sick leave and special leave).</p> <p>XVIII. ‘Annual workable hours’ are hours during which the personnel must be working, at the employer’s disposal and carrying out his/her activity or duties under the employment contract, applicable collective labour agreement or national working time legislation.</p> <p>XIX. The contract (applicable collective labour agreement or national working time legislation) do specify the working time enabling to calculate the annual workable hours.</p> <p><u>If method C is applied</u></p> <p>XX. The standard number of productive hours per year is that of a full-time equivalent.</p> <p>XXI. The number of productive hours per year on which the hourly rate is based i) corresponds to the Beneficiary’s usual accounting practices; ii) is at least 90% of the standard number of workable (working) hours per year.</p>	<p><b>Procedure (same sample basis as for Section C: Personnel costs):</b></p> <ul style="list-style-type: none"> <li>✓ The Auditor verified that the number of productive hours applied is in accordance with method A, B or C.</li> <li>✓ The Auditor checked that the number of productive hours per full-time employee is correct.</li> <li>✓ If method B is applied the Auditor verified i) the manner in which the total number of hours worked was done and ii) that the contract specified the annual workable hours by inspecting all the relevant documents, national legislation, labour agreements and contracts.</li> <li>✓ If method C is applied the Auditor reviewed the manner in which the standard number of working hours per year has been calculated by inspecting all the relevant documents, national legislation, labour agreements and contracts and verified that the number of productive hours per year used for these calculations was at least 90% of the standard number of working hours per year.</li> </ul> <p><b>Factual finding:</b></p> <p><u>General</u></p> <p>12. The Beneficiary applied a number of productive hours consistent with method A, B or C detailed in the left-hand column.</p> <p>13. The number of productive hours per year per full-time employee was accurate.</p> <p><u>If method B is applied</u></p> <p>14. The number of ‘annual workable hours’, overtime and absences was verifiable based on the documents provided by the Beneficiary and the calculation of the total number of hours worked was accurate.</p> <p>15. The contract specified the working time enabling to calculate the annual workable hours.</p> <p><u>If method C is applied</u></p> <p>16. The calculation of the number of productive hours per year corresponded</p>

<b>Please explain any discrepancies in the body of the Report.</b>	
<b>Statements to be made by Beneficiary</b>	<b>Procedures to be carried out and Findings to be confirmed by the Auditor</b>
<p>XXII. Standard workable (working) hours are hours during which personnel are at the Beneficiary's disposal performing the duties described in the relevant employment contract, collective labour agreement or national labour legislation. The number of standard annual workable (working) hours that the Beneficiary claims is supported by labour contracts, national legislation and other documentary evidence.</p> <p><i>[If certain statement(s) of section "D. Productive hours" cannot be endorsed by the Beneficiary they should be listed here below and reported as exception by the Auditor: - ...]</i></p>	<p>to the usual costs accounting practice of the Beneficiary.</p> <p>17. The calculation of the standard number of workable (working) hours per year was corroborated by the documents presented by the Beneficiary.</p> <p>18. The number of productive hours per year used for the calculation of the hourly rate was at least 90 % of the number of workable (working) hours per year.</p>
<p><b>E. Hourly rates</b></p> <p>The hourly rates are correct because:</p> <p>XXIII. Hourly rates are correctly calculated since they result from dividing annual personnel costs by the productive hours of a given year and group (e.g. staff category or department or cost centre depending on the methodology applied) and they are in line with the statements made in section C. and D. above.</p> <p><i>[If the statement of section 'E. Hourly rates' cannot be endorsed by the Beneficiary they should be listed here below and reported as exception by the Auditor: - ...]</i></p>	<p><b>Procedure</b></p> <ul style="list-style-type: none"> <li>✓ The Auditor has obtained a list of all personnel rates calculated by the Beneficiary in accordance with the methodology used.</li> <li>✓ The Auditor has obtained a list of all the relevant employees, based on which the personnel rate(s) are calculated.</li> </ul> <p>For 10 employees selected at random (same sample basis as Section C: Personnel costs):</p> <ul style="list-style-type: none"> <li>✓ The Auditor recalculated the hourly rates.</li> <li>✓ The Auditor verified that the methodology applied corresponds to the usual accounting practices of the organisation and is applied consistently for all activities of the organisation on the basis of objective criteria irrespective of the source of funding.</li> </ul> <p><b>Factual finding:</b></p> <p>19. No differences arose from the recalculation of the hourly rate for the employees included in the sample.</p>
<p><b>F. Time recording</b></p> <p>XXIV. Time recording is in place for all persons with no exclusive dedication to one Horizon 2020 action. At least all hours worked in connection with the grant agreement(s) are registered on a <b>daily/weekly/monthly</b> basis <i>[delete as appropriate]</i> using a <b>paper/computer-based system</b> <i>[delete as appropriate]</i>;</p> <p>XXV. For persons exclusively assigned to one Horizon 2020 activity the Beneficiary has either signed a declaration to that effect or has put</p>	<p><b>Procedure</b></p> <ul style="list-style-type: none"> <li>✓ The Auditor reviewed the brief description, all relevant manuals and/or internal guidance describing the methodology used to record time.</li> </ul> <p>The Auditor reviewed the time records of the random sample of 10 employees referred to under Section C: Personnel costs, and verified in particular:</p>

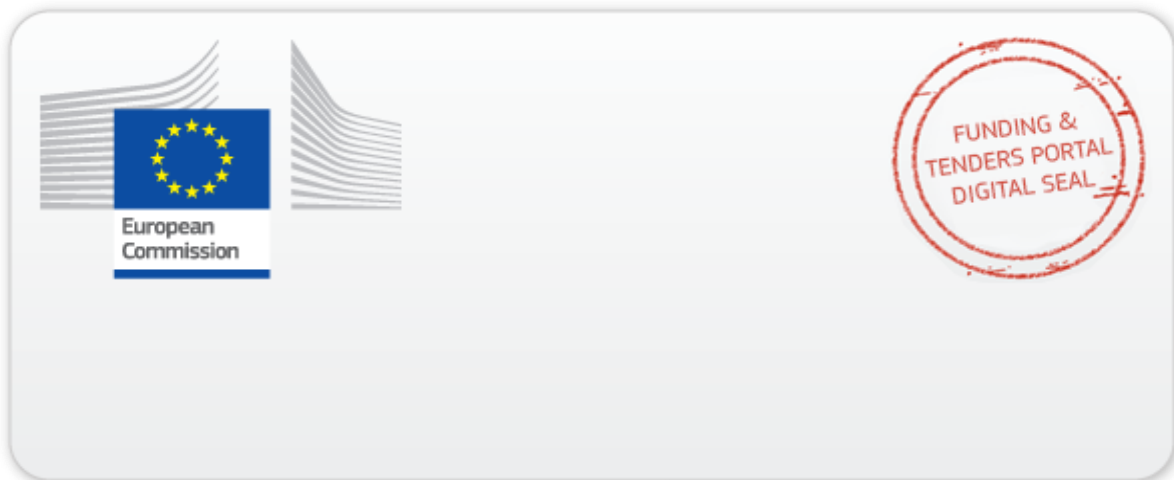
<i>Please explain any discrepancies in the body of the Report.</i>	
Statements to be made by Beneficiary	Procedures to be carried out and Findings to be confirmed by the Auditor
<p>arrangements in place to record their working time;</p> <p>XXVI. Records of time worked have been signed by the person concerned (on paper or electronically) and approved by the action manager or line manager at least monthly;</p> <p>XXVII. Measures are in place to prevent staff from:</p> <ul style="list-style-type: none"> <li>i. recording the same hours twice,</li> <li>ii. recording working hours during absence periods (e.g. holidays, sick leave),</li> <li>iii. recording more than the number of productive hours per year used to calculate the hourly rates, and</li> <li>iv. recording hours worked outside the action period.</li> </ul> <p>XXVIII. No working time was recorded outside the action period;</p> <p>XXIX. No more hours were claimed than the productive hours used to calculate the hourly personnel rates.</p> <p><i>[Please provide a brief description of the <u>time recording system</u> in place together with the measures applied to ensure its reliability to the Auditor and annex it to the present certificate<sup>1</sup>].</i></p> <p><i>[If certain statement(s) of section “F. Time recording” cannot be endorsed by the Beneficiary they should be listed here below and reported as exception by the Auditor: - ...]</i></p>	<ul style="list-style-type: none"> <li>✓ that time records were available for all persons with not exclusive assignment to the action;</li> <li>✓ that time records were available for persons working exclusively for a Horizon 2020 action, or, alternatively, that a declaration signed by the Beneficiary was available for them certifying that they were working exclusively for a Horizon 2020 action;</li> <li>✓ that time records were signed and approved in due time and that all minimum requirements were fulfilled;</li> <li>✓ that the persons worked for the action in the periods claimed;</li> <li>✓ that no more hours were claimed than the productive hours used to calculate the hourly personnel rates;</li> <li>✓ that internal controls were in place to prevent that time is recorded twice, during absences for holidays or sick leave; that more hours are claimed per person per year for Horizon 2020 actions than the number of productive hours per year used to calculate the hourly rates; that working time is recorded outside the action period;</li> <li>✓ the Auditor cross-checked the information with human-resources records to verify consistency and to ensure that the internal controls have been effective. In addition, the Auditor has verified that no more hours were charged to Horizon 2020 actions per person per year than the number of productive hours per year used to calculate the hourly rates, and verified that no time worked outside the action period was charged to the action.</li> </ul> <p><b>Factual finding:</b></p> <p>20. The brief description, manuals and/or internal guidance on time recording provided by the Beneficiary were consistent with management</p>

<sup>1</sup> The description of the time recording system must state among others information on the content of the time records, its coverage (full or action time-recording, for all personnel or only for personnel involved in H2020 actions), its degree of detail (whether there is a reference to the particular tasks accomplished), its form, periodicity of the time registration and authorisation (paper or a computer-based system; on a daily, weekly or monthly basis; signed and countersigned by whom), controls applied to prevent double-charging of time or ensure consistency with HR-records such as absences and travels as well as its information flow up to its use for the preparation of the Financial Statements.

<i>Please explain any discrepancies in the body of the Report.</i>	
<b>Statements to be made by Beneficiary</b>	<b>Procedures to be carried out and Findings to be confirmed by the Auditor</b>
	<p>reports/records and other documents reviewed and were generally applied by the Beneficiary to produce the financial statements.</p> <ol style="list-style-type: none"> <li>21. For the random sample time was recorded or, in the case of employees working exclusively for the action, either a signed declaration or time records were available;</li> <li>22. For the random sample the time records were signed by the employee and the action manager/line manager, at least monthly.</li> <li>23. Working time claimed for the action occurred in the periods claimed;</li> <li>24. No more hours were claimed than the number productive hours used to calculate the hourly personnel rates;</li> <li>25. There is proof that the Beneficiary has checked that working time has not been claimed twice, that it is consistent with absence records and the number of productive hours per year, and that no working time has been claimed outside the action period.</li> <li>26. Working time claimed is consistent with that on record at the human-resources department.</li> </ol>

*[official name of the [Beneficiary] [Linked Third Party]]*  
*[name and title of authorised representative]*  
*[dd Month yyyy]*  
 <Signature of the [Beneficiary] [Linked Third Party]>

*[official name of the Auditor]*  
*[name and title of authorised representative]*  
*[dd Month yyyy]*  
 <Signature of the Auditor>



This document is digitally sealed. The digital sealing mechanism uniquely binds the document to the modules of the Funding & Tenders Portal of the European Commission, to the transaction for which it was generated and ensures its integrity and authenticity.

Any attempt to modify the content will lead to a breach of the electronic seal, which can be verified at any time by clicking on the digital seal validation symbol.