



## **GRANT AGREEMENT**

### **Project 101114732 — ENSURE**

#### **PREAMBLE**

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

**on the one part,**

**SESAR3 Joint Undertaking** ('granting authority'), under the powers delegated by the European Commission ('European Commission'),

**and**

**on the other part,**

1. 'the coordinator':

**INDRA SISTEMAS SA (INDRA)**, PIC 999959130, established in AVENIDA DE BRUSELAS 35, ALCOBENDAS MADRID 28108, Spain,

and the following other beneficiaries, if they sign their 'accession form' (see Annex 3 and Article 40):

2. **STICHTING KONINKLIJK NEDERLANDS LUCHT - EN RUIMTEVAARTCENTRUM (NLR)**, PIC 999987066, established in ANTHONY FOKKERWEG 2, AMSTERDAM 1059 CM, Netherlands,

3. **HUNGAROCONTROL MAGYAR LEGIFORGALMISZOLGALAT ZARTKORUEN MUKODO RESZVENYTARSASAG (HC)**, PIC 941767472, established in IGLO UTCA 33 35, BUDAPEST 1185, Hungary,

4. **AKCINE BENDROVE ORO NAVIGACIJA (ON)**, PIC 919915991, established in BALIO KARVELIO G. 25, VILNIUS LT-02184, Lithuania,

5. **TERN SYSTEMS EHF (TERN)**, PIC 887286355, established in HLIOASMARA 15, KOPAVOGUR 201, Iceland,

6. **COLLINS AEROSPACE IRELAND, LIMITED (COLLINS)**, PIC 971136162, established in PENROSE QUAY PENROSE WHARF PENROSE BUSINESS CENTRE FOURTH FLOOR, CORK T23XN53, Ireland,

7. **AIRBUS OPERATIONS SL (AIRBUS)**, PIC 999944095, established in AVENIDA JOHN LENNON S/N, GETAFE 28906, Spain,

8. **UNIFLY (UNIFLY)**, PIC 924870557, established in LUCHTHAVENL 7A UNIT 6 AIRPORT BUSINESS CENTER, ANTWERPEN DEURNE 2100, Belgium,
9. **ENAV SPA (ENAV)**, PIC 998197513, established in VIA SALARIA 716, ROMA 00138, Italy,
10. **LEONARDO - SOCIETA PER AZIONI (LEONARDO)**, PIC 998627417, established in PIAZZA MONTE GRAPPA 4, ROMA 00195, Italy,
11. **ENAIRE (ENAIRE)**, PIC 997701843, established in AVENIDA DE ARAGON S/N BLOQUE 330, PORTAL 2 PARQUE EMPRESARIAL LAS MERCEDES, MADRID 28022, Spain,
12. **D-FLIGHT SPA (D-FLIGHT)**, PIC 902701983, established in VIA SALARIA 716, ROMA 00138, Italy,
13. **NEXTANT APPLICATIONS & INNOVATIVE SOLUTION SRL (NAIS)**, PIC 973988350, established in VIA ANDREA NOALE 345A, ROMA 00155, Italy,
14. **SOCIETE ANONYME BELGE DE CONSTRUCTIONS AERONAUTIQUES-S.A.B.C.A. (SABCA)**, PIC 999954959, established in Chaussee de Haecht 1470, BRUXELLES 1130, Belgium,
15. **EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL)**, PIC 999483733, established in Rue de la Fusée 96, BRUXELLES 1130, Belgium,
16. **LUFTHARTSVERKET (LFV)**, PIC 942346077, established in HOSPITALSGATAN 30, NORRKOPING 602 27, Sweden,
17. **AEROCAMARAS SL (AEROCAMARAS)**, PIC 886469227, established in AVDA DE BUENOS AIRES 100, LALIN 36500, Spain,
18. **UDARAS EITLIOCHTA NA HEIREANN THE IRISH AVIATION AUTHORITY (IAA)**, PIC 927009019, established in D'OLIER STREET 11-12 THE TIMES BUILDING, DUBLIN D02 T449, Ireland,

Unless otherwise specified, references to ‘beneficiary’ or ‘beneficiaries’ include the coordinator and affiliated entities (if any).

If only one beneficiary signs the grant agreement (‘mono-beneficiary grant’), all provisions referring to the ‘coordinator’ or the ‘beneficiaries’ will be considered — mutatis mutandis — as referring to the beneficiary.

The parties referred to above have agreed to enter into the Agreement.

By signing the Agreement and the accession forms, the beneficiaries accept the grant and agree to implement the action under their own responsibility and in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

The Agreement is composed of:

Preamble

Terms and Conditions (including Data Sheet)

- Annex 1 Description of the action<sup>1</sup>
- Annex 2 Estimated budget for the action
- Annex 2a Additional information on unit costs and contributions (if applicable)
- Annex 3 Accession forms (if applicable)<sup>2</sup>
- Annex 3a Declaration on joint and several liability of affiliated entities (if applicable)<sup>3</sup>
- Annex 4 Model for the financial statements
- Annex 5 Specific rules (if applicable)

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<sup>1</sup> Template published on [Portal Reference Documents](#).

<sup>2</sup> Template published on [Portal Reference Documents](#).

<sup>3</sup> Template published on [Portal Reference Documents](#).

## **TERMS AND CONDITIONS**

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## DATA SHEET

### **1. General data**

Project summary:

Project summary
<p>This project aims to refine and complete the definition of the common ATM U-space interface by identifying new working areas with impact and providing a consolidated interface with a standardized data model, architecture and an operation method to achieve a minimum TRL7. This proposal addresses the topic “ATM – U-space Interface and Services” which is composed of the following solutions: - Solution 1: ATM - U-space Interface: Achieve full integration of ATM and U-space systems, by refining and completing the definition of the common ATM U-space interface and identifying new working areas with impact on the already started common interface. - Solution 2: Dynamic Airspace Reconfiguration: Develop the complete service mentioned in U-space regulation and in their respective Guidance Material (GM) and Acceptable Means of Compliance (AMC), necessary to establish the operating methodology and develop the standard interface to help ATC actors in charge of airspace reconfigurations to maintain traffic segregation and to avoid proximity between manned and unmanned aircraft within the designated U-space airspace.</p>

Keywords:

- This project aims to refine and complete the definition of the common ATM U-space interface by identifying new working areas with impact and providing a consolidated interface with a standardized data

Project number: 101114732

Project name: atm-ospace iNterface and airSpace reconfigURation sERvice

Project acronym: ENSURE

Call: HORIZON-SESAR-2022-DES-IR-01

Topic: HORIZON-SESAR-2022-DES-IR-01-WA4-1

Type of action: HORIZON JU Innovation Actions

Granting authority: SESAR3 Joint Undertaking

Grant managed through EU Funding & Tenders Portal: Yes (eGrants)

Project starting date: fixed date: 1 June 2023

Project end date: 31 May 2026

Project duration: 36 months

Linked action: Linked with other action:

- H2020-SESAR-2019-1, funded by SESAR 3 JU, All projects funded under call H2020-SESAR-2019-1
  - Collaboration agreement: Yes
- H2020-SESAR-2020-2, funded by SESAR 3 JU, All projects funded under call H2020-SESAR-2020-2
  - Collaboration agreement: Yes
- HORIZON-SESAR-2022-DES-IR-01, funded by SESAR 3 JU, All projects funded under call HORIZON-SESAR-2022-DES-IR-01
  - Collaboration agreement: Yes

Consortium agreement: Yes

### **2. Participants**

**List of participants:**

Nº	Role	Short name	Legal name	Ctry	PIC	Total eligible costs (BEN and AE)	Max grant amount
1	COO	INDRA	INDRA SISTEMAS SA	ES	999959130	2 206 578.75	1 544 605.13
1.1	AE	UPM	UNIVERSIDAD POLITECNICA DE MADRID	ES	999974844	263 175.00	184 222.50
1.2	AE	IFT	INDRA FACTORIA TECNOLOGICA SL	ES	899914203	300 440.00	210 308.00
2	BEN	NLR	STICHTING KONINKLIJK NEDERLANDS LUCHT - EN RUIMTEVAARTCENTRUM	NL	999987066	389 287.00	272 500.90
3	BEN	HC	HUNGAROCONTROL MAGYAR LEGIFORGALMISZOLGALAT ZARTKORUEN MUKODO RESZVENYTARSASAG	HU	941767472	275 793.75	193 055.63
4	BEN	ON	AKCINE BENDROVE ORO NAVIGACIJA	LT	919915991	175 000.00	122 500.00
5	BEN	TERN	TERN SYSTEMS EHF	IS	887286355	513 151.25	359 205.88
6	BEN	COLLINS	COLLINS AEROSPACE IRELAND, LIMITED	IE	971136162	352 171.25	246 519.00
7	BEN	AIRBUS	AIRBUS OPERATIONS SL	ES	999944095	280 000.00	196 000.00
8	BEN	UNIFLY	UNIFLY	BE	924870557	627 187.50	439 031.25
9	BEN	ENAV	ENAV SPA	IT	998197513	145 806.25	102 064.38
9.1	AE	TECHNO SKY	TECHNO SKY SRL TECHNOLOGIES FOR AIR TRAFFIC MANAGEMENT	IT	941608877	46 875.00	32 812.50
9.2	AE	DTA	DISTRETTO TECNOLOGICO AEROSPAZIALE S.C. A R.L.	IT	983016237	93 750.00	65 625.00
10	BEN	LEONARDO	LEONARDO - SOCIETA PER AZIONI	IT	998627417	1 042 500.00	729 750.00
11	BEN	ENAIRE	ENAIRE	ES	997701843	282 582.50	197 807.75
11.1	AE	CRIDA	CENTRO DE REFERENCIA INVESTIGACION DESARROLLO E INNOVACION ATM, A.I.E.	ES	997605619	489 550.00	342 685.00
11.2	AE	INECO	INGENIERIA Y ECONOMIA DEL TRANSPORTE SME MP SA	ES	999537568	248 675.00	174 072.50
12	BEN	D-FLIGHT	D-FLIGHT SPA	IT	902701983	266 250.00	186 375.00
13	BEN	NAIS	NEXTANT APPLICATIONS & INNOVATIVE SOLUTION SRL	IT	973988350	555 500.00	388 850.00
14	BEN	SABCA	SOCIETE ANONYME BELGE DE CONSTRUCTIONS AERONAUTIQUES-S.A.B.C.A.	BE	999954959	75 925.00	53 147.00
15	BEN (IO)	EUROCONTROL	EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION	BE	999483733	795 233.75	0.00
16	BEN	LFV	LUFTFARTSVERKET	SE	942346077	365 125.00	255 587.50
17	BEN	AEROCAMARAS	AEROCAMARAS SL	ES	886469227	81 225.00	56 857.50
18	BEN	IAA	UDARAS EITLIOCHTA NA HEIREANN THE IRISH AVIATION AUTHORITY	IE	927009019	25 000.00	0.00
19	AP	NATS	NATS (EN ROUTE) PUBLIC LIMITED COMPANY	UK	997542763	0.00	0.00
20	AP	RCUK	ROCKWELL COLLINS UK LIMITED	UK	950569640	0.00	0.00
<b>Total</b>						9 896 782.00	6 353 582.42

**Coordinator:**

- INDRA SISTEMAS SA (INDRA)

**3. Grant****Maximum grant amount, total estimated eligible costs and contributions and funding rate:**

Total eligible costs (BEN and AE)	Funding rate (%)	Maximum grant amount (Annex 2)	Maximum grant amount (award decision)
9 896 782.00	70, 70	6 353 582.42	6 353 582.42

**Grant form:** Budget-based

**Grant mode:** Action grant

**Budget categories/activity types:**

- A. Personnel costs
  - A.1 Employees, A.2 Natural persons under direct contract, A.3 Seconded persons
  - A.4 SME owners and natural person beneficiaries
- B. Subcontracting costs
- C. Purchase costs
  - C.1 Travel and subsistence
  - C.2 Equipment
  - C.3 Other goods, works and services
- D. Other cost categories
  - D.2 Internally invoiced goods and services
- E. Indirect costs

**Cost eligibility options:**

- In-kind contributions eligible costs
- Parental leave
- Project-based supplementary payments
- Average personnel costs (unit cost according to usual cost accounting practices)
- Limitation for subcontracting
- Travel and subsistence:
  - Travel: Actual costs
  - Accommodation: Actual costs
  - Subsistence: Actual costs
- Equipment: full costs only
- Indirect cost flat-rate: 25% of the eligible direct costs (categories A-D, except volunteers costs, subcontracting costs, financial support to third parties and exempted specific cost categories, if any)
- VAT: Yes
- Other ineligible costs

**Budget flexibility:** Yes (no flexibility cap)

**4. Reporting, payments and recoveries**

**4.1 Continuous reporting** (art 21)

**Deliverables:** see Funding & Tenders Portal Continuous Reporting tool

**4.2 Periodic reporting and payments**

**Reporting and payment schedule (art 21, 22):**

Reporting					Payments	
Reporting periods			Type	Deadline	Type	Deadline (time to pay)
RP No	Month from	Month to				
					Initial prefinancing	30 days from entry into force/10 days before starting date – whichever is the latest
					Interim payment	90 days from receiving periodic report
					Final payment	90 days from receiving periodic report

**Prefinancing payments and guarantees:**

Prefinancing payment	
Type	Amount
Prefinancing 1 (initial)	5 082 865.94

**Reporting and payment modalities (art 21, 22):**

Mutual Insurance Mechanism (MIM): Yes

MIM contribution: 5% of the maximum grant amount (317 679.12), retained from the initial prefinancing

Restrictions on distribution of initial prefinancing: The prefinancing may be distributed only if the minimum number of beneficiaries set out in the call conditions (if any) have acceded to the Agreement and only to beneficiaries that have acceded.

Interim payment ceiling (if any): 90% of the maximum grant amount

Exception for revenues: Yes

No-profit rule: Yes

Late payment interest: ECB + 3.5%

Bank account for payments:

ES5700491500042710383419

Conversion into euros: Double conversion

Reporting language: Language of the Agreement

**4.3 Certificates (art 24):**

Certificates on the financial statements (CFS):

Conditions:

Schedule: only at final payment, if threshold is reached



Standard threshold (beneficiary-level):

- financial statement: requested EU contribution to costs  $\geq$  EUR 430 000.00

Special threshold for beneficiaries with a systems and process audit(see Article 24): financial statement: requested EU contribution to costs  $\geq$  EUR 725 000.00

#### **4.4 Recoveries** (art 22)

##### **First-line liability for recoveries:**

Beneficiary termination: Beneficiary concerned

Final payment: Each beneficiary for their own debt

After final payment: Beneficiary concerned

##### **Joint and several liability for enforced recoveries (in case of non-payment):**

Individual financial responsibility: Each beneficiary is liable only for its own debts (and those of its affiliated entities, if any)

Joint and several liability of the following affiliated entities with their beneficiary — up to the maximum grant amount for the affiliated entity indicated in Annex 2:

- CENTRO DE REFERENCIA INVESTIGACION DESARROLLO E INNOVACION ATM, A.I.E. (CRIDA), linked to ENAIRE (ENAIRE)

#### **5. Consequences of non-compliance, applicable law & dispute settlement forum**

##### **Suspension and termination:**

Additional suspension grounds (art 31)

Additional termination grounds (art 32)

##### **Applicable law** (art 43):

Standard applicable law regime: EU law + law of Belgium

Special applicable law regime:

- EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL): general principles governing the law of international organisations and the general rules of international law

##### **Dispute settlement forum** (art 43):

Standard dispute settlement forum:

EU beneficiaries: EU General Court + EU Court of Justice (on appeal)

Non-EU beneficiaries: Courts of Brussels, Belgium (unless an international agreement provides for the enforceability of EU court judgements)

Special dispute settlement forum:

- EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL): Arbitration

## **6. Other**

**Specific rules (Annex 5):** Yes

**Standard time-limits after project end:**

Confidentiality (for X years after final payment): 5

Record-keeping (for X years after final payment): 5 (or 3 for grants of not more than EUR 60 000)

Reviews (up to X years after final payment): 2

Audits (up to X years after final payment): 2

Extension of findings from other grants to this grant (no later than X years after final payment): 2

Impact evaluation (up to X years after final payment): 5 (or 3 for grants of not more than EUR 60 000)

## **CHAPTER 1 GENERAL**

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

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

### **ARTICLE 2 — DEFINITIONS**

For the purpose of this Agreement, the following definitions apply:

**Actions —** The project which is being funded in the context of this Agreement.

**Grant —** The grant awarded in the context of this Agreement.

**EU grants —** Grants awarded by EU institutions, bodies, offices or agencies (including EU executive agencies, EU regulatory agencies, EDA, joint undertakings, etc.).

**Participants —** Entities participating in the action as beneficiaries, affiliated entities, associated partners, third parties giving in-kind contributions, subcontractors or recipients of financial support to third parties.

**Beneficiaries (BEN) —** The signatories of this Agreement (either directly or through an accession form).

**Affiliated entities (AE) —** Entities affiliated to a beneficiary within the meaning of Article 187 of EU Financial Regulation 2018/1046<sup>4</sup> which participate in the action with similar rights and obligations as the beneficiaries (obligation to implement action tasks and right to charge costs and claim contributions).

**Associated partners (AP) —** Entities which participate in the action, but without the right to charge costs or claim contributions.

**Purchases —** Contracts for goods, works or services needed to carry out the action (e.g. equipment, consumables and supplies) but which are not part of the action tasks (see Annex 1).

**Subcontracting —** Contracts for goods, works or services that are part of the action tasks (see Annex 1).

**In-kind contributions —** In-kind contributions within the meaning of Article 2(36) of EU Financial

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<sup>4</sup> For the definition, see Article 187 Regulation (EU, Euratom) 2018/1046 of the European Parliament and of the Council of 18 July 2018 on the financial rules applicable to the general budget of the Union, amending Regulations (EU) No 1296/2013, (EU) No 1301/2013, (EU) No 1303/2013, (EU) No 1304/2013, (EU) No 1309/2013, (EU) No 1316/2013, (EU) No 223/2014, (EU) No 283/2014, and Decision No 541/2014/EU and repealing Regulation (EU, Euratom) No 966/2012 ('EU Financial Regulation') (OJ L 193, 30.7.2018, p. 1): "**affiliated entities** [are]:

- (a) entities that form a sole beneficiary [(i.e. where an entity is formed of several entities that satisfy the criteria for being awarded a grant, including where the entity is specifically established for the purpose of implementing an action to be financed by a grant)];
- (b) entities that satisfy the eligibility criteria and that do not fall within one of the situations referred to in Article 136(1) and 141(1) and that have a link with the beneficiary, in particular a legal or capital link, which is neither limited to the action nor established for the sole purpose of its implementation".

Regulation 2018/1046, i.e. non-financial resources made available free of charge by third parties.

**Fraud** — Fraud within the meaning of Article 3 of EU Directive 2017/1371<sup>5</sup> and Article 1 of the Convention on the protection of the European Communities' financial interests, drawn up by the Council Act of 26 July 1995<sup>6</sup>, as well as any other wrongful or criminal deception intended to result in financial or personal gain.

**Irregularities** — Any type of breach (regulatory or contractual) which could impact the EU financial interests, including irregularities within the meaning of Article 1(2) of EU Regulation 2988/95<sup>7</sup>.

**Grave professional misconduct** — Any type of unacceptable or improper behaviour in exercising one's profession, especially by employees, including grave professional misconduct within the meaning of Article 136(1)(c) of EU Financial Regulation 2018/1046.

**Applicable EU, international and national law** — Any legal acts or other (binding or non-binding) rules and guidance in the area concerned.

**Portal** — EU Funding & Tenders Portal; electronic portal and exchange system managed by the European Commission and used by itself and other EU institutions, bodies, offices or agencies for the management of their funding programmes (grants, procurements, prizes, etc.).

## **CHAPTER 2 ACTION**

### **ARTICLE 3 — ACTION**

The grant is awarded for the action **101114732 — ENSURE** ('action'), as described in Annex 1.

This action is linked to the action(s) set out in the Data Sheet (see Point 1) ('linked actions').

### **ARTICLE 4 — DURATION AND STARTING DATE**

The duration and the starting date of the action are set out in the Data Sheet (see Point 1).

## **CHAPTER 3 GRANT**

### **ARTICLE 5 — GRANT**

#### **5.1 Form of grant**

<sup>5</sup> Directive (EU) 2017/1371 of the European Parliament and of the Council of 5 July 2017 on the fight against fraud to the Union's financial interests by means of criminal law (OJ L 198, 28.7.2017, p. 29).

<sup>6</sup> OJ C 316, 27.11.1995, p. 48.

<sup>7</sup> Council Regulation (EC, Euratom) No 2988/95 of 18 December 1995 on the protection of the European Communities financial interests (OJ L 312, 23.12.1995, p. 1).



The grant is an action grant<sup>8</sup> which takes the form of a budget-based mixed actual cost grant (i.e. a grant based on actual costs incurred, but which may also include other forms of funding, such as unit costs or contributions, flat-rate costs or contributions, lump sum costs or contributions or financing not linked to costs).

## 5.2 Maximum grant amount

The maximum grant amount is set out in the Data Sheet (see Point 3) and in the estimated budget (Annex 2).

## 5.3 Funding rate

The funding rate for costs is 70% of the eligible costs for beneficiaries that are non-profit legal entities<sup>9</sup> and 70% of the eligible costs for beneficiaries that are profit legal entities.

Contributions are not subject to any funding rate.

## 5.4 Estimated budget, budget categories and forms of funding

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

It contains the estimated eligible costs and contributions for the action, broken down by participant and budget category.

Annex 2 also shows the types of costs and contributions (forms of funding)<sup>10</sup> to be used for each budget category.

If unit costs or contributions are used, the details on the calculation will be explained in Annex 2a.

## 5.5 Budget flexibility

The budget breakdown may be adjusted — without an amendment (see Article 39) — by transfers (between participants and budget categories), as long as this does not imply any substantive or important change to the description of the action in Annex 1.

However:

- changes to the budget category for volunteers (if used) always require an amendment
- changes to budget categories with lump sums costs or contributions (if used; including financing not linked to costs) always require an amendment
- changes to budget categories with higher funding rates or budget ceilings (if used) always require an amendment

<sup>8</sup> For the definition, see Article 180(2)(a) EU Financial Regulation 2018/1046: ‘**action grant**’ means an EU grant to finance “an action intended to help achieve a Union policy objective”.

<sup>9</sup> For the definition, see Article XX of the Horizon Europe Framework Programme and Rules for Participation Regulation (EU) XXX: ‘**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.

<sup>10</sup> See Article 125 EU Financial Regulation 2018/1046.

- addition of amounts for subcontracts not provided for in Annex 1 either require an amendment or simplified approval in accordance with Article 6.2
- other changes require an amendment or simplified approval, if specifically provided for in Article 6.2
- flexibility caps: not applicable.

## ARTICLE 6 — ELIGIBLE AND INELIGIBLE COSTS AND CONTRIBUTIONS

In order to be eligible, costs and contributions must meet the **eligibility** conditions set out in this Article.

### 6.1 General eligibility conditions

The **general eligibility conditions** are the following:

(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 4 (with the exception of costs relating to the submission of the final periodic report, which may be incurred afterwards; see Article 21)
- (iii) they must be declared under one of the budget categories set out in Article 6.2 and 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 or contributions (if any):

- (i) they must be declared under one of the budget categories set out in Article 6.2 and Annex 2
- (ii) the units must:
  - be actually used or produced by the beneficiary in the period set out in Article 4 (with the exception of units relating to the submission of the final periodic report, which may be used or produced afterwards; see Article 21)
  - be necessary for the implementation of the action and

- (iii) the number of units must be identifiable and verifiable, in particular supported by records and documentation (see Article 20)
- (c) for flat-rate costs or contributions (if any):
  - (i) they must be declared under one of the budget categories set out in Article 6.2 and Annex 2
  - (ii) the costs or contributions to which the flat-rate is applied must:
    - be eligible
    - relate to the period set out in Article 4 (with the exception of costs or contributions relating to the submission of the final periodic report, which may be incurred afterwards; see Article 21)
- (d) for lump sum costs or contributions (if any):
  - (i) they must be declared under one of the budget categories set out in Article 6.2 and Annex 2
  - (ii) the work must be properly implemented by the beneficiary in accordance with Annex 1
  - (iii) the deliverables/outputs must be achieved in the period set out in Article 4 (with the exception of deliverables/outputs relating to the submission of the final periodic report, which may be achieved afterwards; see Article 21)
- (e) for unit, flat-rate or lump sum costs or contributions according to usual cost accounting practices (if any):
  - (i) they must fulfil the general eligibility conditions for the type of cost concerned
  - (ii) the cost accounting practices must be applied in a consistent manner, based on objective criteria, regardless of the source of funding
- (f) for financing not linked to costs (if any): the results must be achieved or the conditions must be fulfilled as described in Annex 1.

In addition, for direct cost categories (e.g. personnel, travel & subsistence, subcontracting and other direct costs) only costs that are directly linked to the action implementation and can therefore be attributed to it directly are eligible. They must not include any indirect costs (i.e. costs that are only indirectly linked to the action, e.g. via cost drivers).

**In-kind contributions** provided by third parties free of charge may be declared as eligible direct costs by the beneficiaries which use them (under the same conditions as if they were their own, provided that they concern only direct costs and that the third parties and their in-kind contributions are set out in Annex 1 (or approved ex post in the periodic report, if 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; ‘simplified approval procedure’).

## 6.2 Specific eligibility conditions for each budget category

For each budget category, the **specific eligibility conditions** are as follows:

## **Direct costs**

### **A. Personnel costs**

**A.1 Costs for employees (or equivalent)** are eligible as personnel costs if they fulfil the general eligibility conditions and are related to personnel working for the beneficiary under an employment contract (or equivalent appointing act) and assigned to the action.

They must be limited to salaries (including net payments during parental leave), social security contributions, taxes and other costs linked to the remuneration, if they arise from national law or the employment contract (or equivalent appointing act) and be calculated on the basis of the costs actually incurred, in accordance with the following method:

{daily rate for the person  
multiplied by  
number of day-equivalents worked on the action (rounded up or down to the nearest half-day)}.

The daily rate must be calculated as:

{annual personnel costs for the person  
divided by  
215}.

The number of day-equivalents declared for a person must be identifiable and verifiable (see Article 20).

The actual time spent on parental leave by a person assigned to the action may be deducted from the 215 days indicated in the above formula.

The total number of day-equivalents declared in EU grants, for a person for a year, cannot be higher than 215, minus time spent on parental leave (if any).

For personnel which receives supplementary payments for work in projects (project-based remuneration), the personnel costs must be calculated at a rate which:

- corresponds to the actual remuneration costs paid by the beneficiary for the time worked by the person in the action over the reporting period
- does not exceed the remuneration costs paid by the beneficiary for work in similar projects funded by national schemes ('national projects reference')
- is defined based on objective criteria allowing to determine the amount to which the person is entitled

and

- reflects the usual practice of the beneficiary to pay consistently bonuses or supplementary payments for work in projects funded by national schemes.

The national projects reference is the remuneration defined in national law, collective labour

agreement or written internal rules of the beneficiary applicable to work in projects funded by national schemes.

If there is no such national law, collective labour agreement or written internal rules or if the project-based remuneration is not based on objective criteria, the national project reference will be the average remuneration of the person in the last full calendar year covered by the reporting period, excluding remuneration paid for work in EU actions.

If the beneficiary uses average personnel costs (unit cost according to usual cost accounting practices), the personnel costs must fulfil the general eligibility conditions for such unit costs and the daily rate must be calculated:

- using the actual personnel costs recorded in the beneficiary's accounts and excluding any costs which are ineligible or already included in other budget categories; the actual personnel costs may be adjusted on the basis of budgeted or estimated elements, if they are relevant for calculating the personnel costs, reasonable and correspond to objective and verifiable information

and

- according to usual cost accounting practices which are applied in a consistent manner, based on objective criteria, regardless of the source of funding.

**A.2 and A.3 Costs for natural persons working under a direct contract** other than an employment contract and costs for **seconded persons by a third party against payment** are also eligible as personnel costs, if they are assigned to the action, fulfil the general eligibility conditions and:

- (a) work 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) and
- (b) the result of the work belongs to the beneficiary (unless agreed otherwise).

They must be calculated on the basis of a rate which corresponds to the costs actually incurred for the direct contract or secondment and must not be significantly different from those for personnel performing similar tasks under an employment contract with the beneficiary.

**A.4 The work of SME owners** for the action (i.e. owners of beneficiaries that are small and medium-sized enterprises<sup>11</sup> not receiving a salary) or **natural person beneficiaries** (i.e. beneficiaries that are natural persons not receiving a salary) may be declared as personnel costs, if they fulfil the general eligibility conditions and are calculated as unit costs in accordance with the method set out in Annex 2a.

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<sup>11</sup> For the definition, see Commission Recommendation 2003/361/EC: micro, small or medium-sized enterprise (SME) are enterprises

- engaged in an economic activity, irrespective of their legal form (including, in particular, self-employed persons and family businesses engaged in craft or other activities, and partnerships or associations regularly engaged in an economic activity) and
- employing fewer than 250 persons (expressed in 'annual working units' as defined in Article 5 of the Recommendation) and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million.

## B. Subcontracting costs

**Subcontracting costs** for the action (including related duties, taxes and charges, such as non-deductible or non-refundable value added tax (VAT)) are eligible, if they are calculated on the basis of the costs actually incurred, fulfil the general eligibility conditions and are awarded using the beneficiary's usual purchasing practices — provided these ensure subcontracts with best value for money (or if appropriate the lowest price) and that there is no conflict of interests (see Article 12).

Beneficiaries that are 'contracting authorities/entities' within the meaning of the EU Directives on public procurement must also comply with the applicable national law on public procurement.

Subcontracting may cover only a limited part of the action.

The tasks to be subcontracted 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 (or may be approved ex post in the periodic report, if the use of subcontracting 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; 'simplified approval procedure').

## C. Purchase costs

**Purchase costs** for the action (including related duties, taxes and charges, such as non-deductible or non-refundable value added tax (VAT)) are eligible if they fulfil the general eligibility conditions and are bought using the beneficiary's usual purchasing practices — provided these ensure purchases with best value for money (or if appropriate the lowest price) and that there is no conflict of interests (see Article 12).

Beneficiaries that are 'contracting authorities/entities' within the meaning of the EU Directives on public procurement must also comply with the applicable national law on public procurement.

### C.1 Travel and subsistence

Purchases for **travel, accommodation and subsistence** must be calculated as follows:

- travel: on the basis of the costs actually incurred and in line with the beneficiary's usual practices on travel
- accommodation: on the basis of the costs actually incurred and in line with the beneficiary's usual practices on travel
- subsistence: on the basis of the costs actually incurred and in line with the beneficiary's usual practices on travel .

### C.2 Equipment

Purchases of **equipment, infrastructure or other assets** specifically for the action (or developed as part of the action tasks) may be declared as full capitalised costs if they fulfil the cost eligibility conditions applicable to their respective cost categories.

'Capitalised costs' means:

- costs incurred in the purchase or for the development of the equipment, infrastructure or other assets and
- which are recorded under a fixed asset account of the beneficiary in compliance with international accounting standards and the beneficiary's usual cost accounting practices.

If such equipment, infrastructure or other assets are rented or leased, full costs for **renting or leasing** are eligible, if they do not exceed the depreciation costs of similar equipment, infrastructure or assets and do not include any financing fees.

### C.3 Other goods, works and services

Purchases of **other goods, works and services** must be calculated on the basis of the costs actually incurred.

Such goods, works and services include, for instance, consumables and supplies, promotion, dissemination, protection of results, translations, publications, certificates and financial guarantees, if required under the Agreement.

## D. Other cost categories

### D.2 Internally invoiced goods and services

**Costs for internally invoiced goods and services** directly used for the action may be declared as unit cost according to usual cost accounting practices, if and as declared eligible in the call conditions, if they fulfil the general eligibility conditions for such unit costs and the amount per unit is calculated:

- using the actual costs for the good or service recorded in the beneficiary's accounts, attributed either by direct measurement or on the basis of cost drivers, and excluding any cost which are ineligible or already included in other budget categories; the actual costs may be adjusted on the basis of budgeted or estimated elements, if they are relevant for calculating the costs, reasonable and correspond to objective and verifiable information

and

- according to usual cost accounting practices which are applied in a consistent manner, based on objective criteria, regardless of the source of funding.

'Internally invoiced goods and services' means goods or services which are provided within the beneficiary's organisation directly for the action and which the beneficiary values on the basis of its usual cost accounting practices.

This cost will not be taken into account for the indirect cost flat-rate.

### Indirect costs

## E. Indirect costs

**Indirect costs** will be reimbursed at the flat-rate of 25% of the eligible direct costs (categories A-D, except volunteers costs, subcontracting costs, financial support to third parties and exempted specific cost categories, if any).

## **Contributions**

Not applicable

### **6.3 Ineligible costs and contributions**

The following costs or contributions are **ineligible**:

- (a) costs or contributions that do not comply with the conditions set out above (Article 6.1 and 6.2), in particular:
  - (i) costs related to return on capital and dividends paid by a beneficiary
  - (ii) debt and debt service charges
  - (iii) provisions for future losses or debts
  - (iv) interest owed
  - (v) currency exchange losses
  - (vi) bank costs charged by the beneficiary's bank for transfers from the granting authority
  - (vii) excessive or reckless expenditure
  - (viii) deductible or refundable VAT (including VAT paid by public bodies acting as public authority)
  - (ix) costs incurred or contributions for activities implemented during grant agreement suspension (see Article 31)
  - (x) in-kind contributions by third parties: not applicable
- (b) costs or contributions declared under other EU grants (or grants awarded by an EU Member State, non-EU country or other body implementing the EU budget), except for the following cases:
  - (i) Synergy actions: not applicable
  - (ii) if the action grant is combined with an operating grant<sup>12</sup> running during the same period and the beneficiary can demonstrate that the operating grant does not cover any (direct or indirect) costs of the action grant
- (c) costs or contributions for staff of a national (or regional/local) administration, for activities that are part of the administration's normal activities (i.e. not undertaken only because of the grant)
- (d) costs or contributions (especially travel and subsistence) for staff or representatives of EU institutions, bodies or agencies
- (e) other :

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<sup>12</sup> For the definition, see Article 180(2)(b) of EU Financial Regulation 2018/1046: '**operating grant**' means an EU grant to finance "the functioning of a body which has an objective forming part of and supporting an EU policy".



- (i) country restrictions for eligible costs: not applicable
- (ii) costs or contributions declared specifically ineligible in the call conditions.

## 6.4 Consequences of non-compliance

If a beneficiary declares costs or contributions that are ineligible, they will be rejected (see Article 27).

This may also lead to other measures described in Chapter 5.

## **CHAPTER 4 GRANT IMPLEMENTATION**

### **SECTION 1 CONSORTIUM: BENEFICIARIES, AFFILIATED ENTITIES AND OTHER PARTICIPANTS**

#### **ARTICLE 7 — BENEFICIARIES**

The beneficiaries, as signatories of the Agreement, are fully responsible towards the granting authority for implementing it and for complying with all its obligations.

They must implement the Agreement to their best abilities, in good faith and in accordance with all the obligations and terms and conditions it sets out.

They must have the appropriate resources to implement the action and implement the action under their own responsibility and in accordance with Article 11. If they rely on affiliated entities or other participants (see Articles 8 and 9), they retain sole responsibility towards the granting authority and the other beneficiaries.

They are jointly responsible for the *technical* implementation of the action. If one of the beneficiaries fails to implement their part of the action, the other beneficiaries must ensure that this part is implemented by someone else (without being entitled to an increase of the maximum grant amount and subject to an amendment; see Article 39). The *financial* responsibility of each beneficiary in case of recoveries is governed by Article 22.

The beneficiaries (and their action) must remain eligible under the EU programme funding the grant for the entire duration of the action. Costs and contributions will be eligible only as long as the beneficiary and the action are eligible.

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

- (a) Each beneficiary must:
  - (i) keep information stored in the Portal Participant Register up to date (see Article 19)
  - (ii) inform the granting authority (and the other beneficiaries) immediately of any events or circumstances likely to affect significantly or delay the implementation of the action (see Article 19)
  - (iii) submit to the coordinator in good time:



- the prefinancing guarantees (if required; see Article 23)
  - the financial statements and certificates on the financial statements (CFS) (if required; see Articles 21 and 24.2 and Data Sheet, Point 4.3)
  - the contribution to the deliverables and technical reports (see Article 21)
  - any other documents or information required by the granting authority under the Agreement
- (iv) submit via the Portal data and information related to the participation of their affiliated entities.
- (b) The coordinator must:
- (i) monitor that the action is implemented properly (see Article 11)
  - (ii) act as the intermediary for all communications between the consortium and the granting authority, unless the Agreement or granting authority specifies otherwise, and in particular:
    - submit the prefinancing guarantees to the granting authority (if any)
    - request and review any documents or information required and verify their quality and completeness before passing them on to the granting authority
    - submit the deliverables and reports to the granting authority
    - inform the granting authority about the payments made to the other beneficiaries (report on the distribution of payments; if required, see Articles 22 and 32)
  - (iii) distribute the payments received from the granting authority to the other beneficiaries without unjustified delay (see Article 22).

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

However, coordinators which are public bodies may delegate the tasks set out in Point (b)(ii) last indent and (iii) above to entities with ‘authorisation to administer’ which they have created or which are controlled by or affiliated to them. In this case, the coordinator retains sole responsibility for the payments and for compliance with the obligations under the Agreement.

Moreover, coordinators which are ‘sole beneficiaries’<sup>13</sup> (or similar, such as European research infrastructure consortia (ERICs)) may delegate the tasks set out in Point (b)(i) to (iii) above to one of their members. The coordinator retains sole responsibility for compliance with the obligations under the Agreement.

<sup>13</sup> For the definition, see Article 187(2) EU Financial Regulation 2018/1046: “Where several entities satisfy the criteria for being awarded a grant and together form one entity, that entity may be treated as the **sole beneficiary**, including where it is specifically established for the purpose of implementing the action financed by the grant.”

The beneficiaries must have **internal arrangements** regarding their operation and co-ordination, to ensure that the action is implemented properly.

If required by the granting authority (see Data Sheet, Point 1), these arrangements must be set out in a written **consortium agreement** between the beneficiaries, covering for instance:

- the internal organisation of the consortium
- the management of access to the Portal
- different distribution keys for the payments and financial responsibilities in case of recoveries (if any)
- additional rules on rights and obligations related to background and results (see Article 16)
- settlement of internal disputes
- liability, indemnification and confidentiality arrangements between the beneficiaries.

The internal arrangements must not contain any provision contrary to this Agreement.

For **linked actions**, the beneficiaries must have **arrangements** with the participants of the other action, to ensure that both actions are implemented and coordinated properly.

If required by the granting authority (see Data Sheet, Point 1), these arrangements must be set out in a written **collaboration agreement** with the participants of the other action or, if the consortium is the same, as part of their consortium agreement, covering for instance:

- the internal organisation and decision making processes
- the areas where close collaboration/synchronisation is needed (e.g. on management of outputs, common approaches towards standardisation, links with regulatory and policy activities, common communication and dissemination activities, sharing of information, access to background and results, etc.)
- settlement of disputes
- liability, indemnification and confidentiality arrangements between the beneficiaries in both actions.

The arrangements with the participants of the other action must not contain any provision contrary to this Agreement.

## ARTICLE 8 — AFFILIATED ENTITIES

The following entities which are linked to a beneficiary will participate in the action as ‘affiliated entities’:

- **UNIVERSIDAD POLITECNICA DE MADRID (UPM)**, PIC 999974844, linked to INDRA SISTEMAS SA (INDRA)
- **INDRA FACTORIA TECNOLOGICA SL (IFT)**, PIC 899914203, linked to INDRA SISTEMAS SA (INDRA)

- **TECHNO SKY SRL TECHNOLOGIES FOR AIR TRAFFIC MANAGEMENT (TECHNO SKY)**, PIC 941608877, linked to ENAV SPA (ENAV)
- **DISTRETTO TECNOLOGICO AEROSPAZIALE S.C. A R.L. (DTA)**, PIC 983016237, linked to ENAV SPA (ENAV)
- **CENTRO DE REFERENCIA INVESTIGACION DESARROLLO E INNOVACION ATM, A.I.E. (CRIDA)**, PIC 997605619, linked to ENAIRE (ENAIRE)
- **INGENIERIA Y ECONOMIA DEL TRANSPORTE SME MP SA (INECO)**, PIC 999537568, linked to ENAIRE (ENAIRE)

Affiliated entities can charge costs and contributions to the action under the same conditions as the beneficiaries and must implement the action tasks attributed to them in Annex 1 in accordance with Article 11.

Their costs and contributions will be included in Annex 2 and will be taken into account for the calculation of the grant.

The beneficiaries must ensure that all their obligations under this Agreement also apply to their affiliated entities.

The beneficiaries must ensure that the bodies mentioned in Article 25 (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.) can exercise their rights also towards the affiliated entities.

Breaches by affiliated entities will be handled in the same manner as breaches by beneficiaries. Recovery of undue amounts will be handled through the beneficiaries.

If the granting authority requires joint and several liability of affiliated entities (see Data Sheet, Point 4.4), they must sign the declaration set out in Annex 3a and may be held liable in case of enforced recoveries against their beneficiaries (see Article 22.2 and 22.4).

## ARTICLE 9 — OTHER PARTICIPANTS INVOLVED IN THE ACTION

### 9.1 Associated partners

The following entities which cooperate with a beneficiary will participate in the action as ‘associated partners’:

- **NATS (EN ROUTE) PUBLIC LIMITED COMPANY (NATS)**, PIC 997542763
- **ROCKWELL COLLINS UK LIMITED (RCUK)**, PIC 950569640

Associated partners must implement the action tasks attributed to them in Annex 1 in accordance with Article 11. They may not charge costs or contributions to the action and the costs for their tasks are not eligible.

The tasks must be set out in Annex 1.

The beneficiaries must ensure that their contractual obligations under Articles 11 (proper implementation), 12 (conflict of interests), 13 (confidentiality and security), 14 (ethics), 17.2

(visibility), 18 (specific rules for carrying out action), 19 (information) and 20 (record-keeping) also apply to the associated partners.

The beneficiaries must ensure that the bodies mentioned in Article 25 (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.) can exercise their rights also towards the associated partners.

## **9.2 Third parties giving in-kind contributions to the action**

Other third parties may give in-kind contributions to the action (i.e. personnel, equipment, other goods, works and services, etc. which are free-of-charge) if necessary for the implementation.

Third parties giving in-kind contributions do not implement any action tasks. They may not charge costs or contributions to the action, but the costs for the in-kind contributions are eligible and may be charged by the beneficiaries which use them, under the conditions set out in Article 6. The costs will be included in Annex 2 as part of the beneficiaries' costs.

The third parties and their in-kind contributions should be set out in Annex 1.

The beneficiaries must ensure that the bodies mentioned in Article 25 (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.) can exercise their rights also towards the third parties giving in-kind contributions.

## **9.3 Subcontractors**

Subcontractors may participate in the action, if necessary for the implementation.

Subcontractors must implement their action tasks in accordance with Article 11. The costs for the subcontracted tasks (invoiced price from the subcontractor) are eligible and may be charged by the beneficiaries, under the conditions set out in Article 6. The costs will be included in Annex 2 as part of the beneficiaries' costs.

The beneficiaries must ensure that their contractual obligations under Articles 11 (proper implementation), 12 (conflict of interest), 13 (confidentiality and security), 14 (ethics), 17.2 (visibility), 18 (specific rules for carrying out action), 19 (information) and 20 (record-keeping) also apply to the subcontractors.

The beneficiaries must ensure that the bodies mentioned in Article 25 (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.) can exercise their rights also towards the subcontractors.

## **9.4 Recipients of financial support to third parties**

If the action includes providing financial support to third parties (e.g. grants, prizes or similar forms of support), the beneficiaries must ensure that their contractual obligations under Articles 12 (conflict of interest), 13 (confidentiality and security), 14 (ethics), 17.2 (visibility), 18 (specific rules for carrying out action), 19 (information) and 20 (record-keeping) also apply to the third parties receiving the support (recipients).

The beneficiaries must also ensure that the bodies mentioned in Article 25 (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.) can exercise their rights also towards the recipients.

## **ARTICLE 10 — PARTICIPANTS WITH SPECIAL STATUS**

## 10.1 Non-EU participants

Participants which are established in a non-EU country (if any) undertake to comply with their obligations under the Agreement and:

- to respect general principles (including fundamental rights, values and ethical principles, environmental and labour standards, rules on classified information, intellectual property rights, visibility of funding and protection of personal data)
- for the submission of certificates under Article 24: to use qualified external auditors which are independent and comply with comparable standards as those set out in EU Directive 2006/43/EC<sup>14</sup>
- for the controls under Article 25: to allow for checks, reviews, audits and investigations (including on-the-spot checks, visits and inspections) by the bodies mentioned in that Article (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.).

Special rules on dispute settlement apply (see Data Sheet, Point 5).

## 10.2 Participants which are international organisations

Participants which are international organisations (IOs; if any) undertake to comply with their obligations under the Agreement and:

- to respect general principles (including fundamental rights, values and ethical principles, environmental and labour standards, rules on classified information, intellectual property rights, visibility of funding and protection of personal data)
- for the submission of certificates under Article 24: to use either independent public officers or external auditors which comply with comparable standards as those set out in EU Directive 2006/43/EC
- for the controls under Article 25: to allow for the checks, reviews, audits and investigations by the bodies mentioned in that Article, taking into account the specific agreements concluded by them and the EU (if any).

For such participants, nothing in the Agreement will be interpreted as a waiver of their privileges or immunities, as accorded by their constituent documents or international law.

Special rules on applicable law and dispute settlement apply (see Article 43 and Data Sheet, Point 5).

## 10.3 Pillar-assessed participants

Pillar-assessed participants (if any) may rely on their own systems, rules and procedures, in so far as they have been positively assessed and do not call into question the decision awarding the grant or breach the principle of equal treatment of applicants or beneficiaries.

‘Pillar-assessment’ means a review by the European Commission on the systems, rules and procedures which participants use for managing EU grants (in particular internal control system, accounting

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<sup>14</sup> 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 or similar national regulations (OJ L 157, 9.6.2006, p. 87).

system, external audits, financing of third parties, rules on recovery and exclusion, information on recipients and protection of personal data; see Article 154 EU Financial Regulation 2018/1046).

Participants with a positive pillar assessment may rely on their own systems, rules and procedures, in particular for:

- record-keeping (Article 20): may be done in accordance with internal standards, rules and procedures
- currency conversion for financial statements (Article 21): may be done in accordance with usual accounting practices
- guarantees (Article 23): for public law bodies, prefinancing guarantees are not needed
- certificates (Article 24):
  - certificates on the financial statements (CFS): may be provided by their regular internal or external auditors and in accordance with their internal financial regulations and procedures
  - certificates on usual accounting practices (CoMUC): are not needed if those practices are covered by an ex-ante assessment

and use the following specific rules, for:

- recoveries (Article 22): in case of financial support to third parties, there will be no recovery if the participant has done everything possible to retrieve the undue amounts from the third party receiving the support (including legal proceedings) and non-recovery is not due to an error or negligence on its part
- checks, reviews, audits and investigations by the EU (Article 25): will be conducted taking into account the rules and procedures specifically agreed between them and the framework agreement (if any)
- impact evaluation (Article 26): will be conducted in accordance with the participant's internal rules and procedures and the framework agreement (if any)
- grant agreement suspension (Article 31): certain costs incurred during grant suspension are eligible (notably, minimum costs necessary for a possible resumption of the action and costs relating to contracts which were entered into before the pre-information letter was received and which could not reasonably be suspended, reallocated or terminated on legal grounds)
- grant agreement termination (Article 32): the final grant amount and final payment will be calculated taking into account also costs relating to contracts due for execution only after termination takes effect, if the contract was entered into before the pre-information letter was received and could not reasonably be terminated on legal grounds
- liability for damages (Article 33.2): the granting authority must be compensated for 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 only if the damage is due to an infringement of the participant's internal rules and procedures or due to a violation of third



parties' rights by the participant or one of its employees or individual for whom the employees are responsible.

Participants whose pillar assessment covers procurement and granting procedures may also do purchases, subcontracting and financial support to third parties (Article 6.2) in accordance with their internal rules and procedures for purchases, subcontracting and financial support.

Participants whose pillar assessment covers data protection rules may rely on their internal standards, rules and procedures for data protection (Article 15).

The participants may however not rely on provisions which would breach the principle of equal treatment of applicants or beneficiaries or call into question the decision awarding the grant, such as in particular:

- eligibility (Article 6)
- consortium roles and set-up (Articles 7-9)
- security and ethics (Articles 13, 14)
- IPR (including background and results, access rights and rights of use), communication, dissemination and visibility (Articles 16 and 17)
- information obligation (Article 19)
- payment, reporting and amendments (Articles 21, 22 and 39)
- rejections, reductions, suspensions and terminations (Articles 27, 28, 29-32)

If the pillar assessment was subject to remedial measures, reliance on the internal systems, rules and procedures is subject to compliance with those remedial measures.

Participants whose assessment has not yet been updated to cover (the new rules on) data protection may rely on their internal systems, rules and procedures, provided that they ensure that personal data is:

- processed lawfully, fairly and in a transparent manner in relation to the data subject
- collected for specified, explicit and legitimate purposes and not further processed in a manner that is incompatible with those purposes
- adequate, relevant and limited to what is necessary in relation to the purposes for which they are processed
- accurate and, where necessary, kept up to date
- kept in a form which permits identification of data subjects for no longer than is necessary for the purposes for which the data is processed and
- processed in a manner that ensures appropriate security of the personal data.

Participants must inform the coordinator without delay of any changes to the systems, rules and procedures that were part of the pillar assessment. The coordinator must immediately inform the granting authority.



Pillar-assessed participants that have also concluded a framework agreement with the EU, may moreover — under the same conditions as those above (i.e. not call into question the decision awarding the grant or breach the principle of equal treatment of applicants or beneficiaries) — rely on the provisions set out in that framework agreement.

## **SECTION 2 RULES FOR CARRYING OUT THE ACTION**

### **ARTICLE 11 — PROPER IMPLEMENTATION OF THE ACTION**

#### **11.1 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, the call conditions and all legal obligations under applicable EU, international and national law.

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

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

### **ARTICLE 12 — CONFLICT OF INTERESTS**

#### **12.1 Conflict of interests**

The beneficiaries must take all measures to prevent any situation where the impartial and objective implementation of the Agreement could be compromised for reasons involving family, emotional life, political or national affinity, economic interest or any other direct or indirect interest ('conflict of interests').

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

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

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

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28) and the grant or the beneficiary may be terminated (see Article 32).

Such breaches may also lead to other measures described in Chapter 5.

### **ARTICLE 13 — CONFIDENTIALITY AND SECURITY**

#### **13.1 Sensitive information**

The parties must keep confidential any data, documents or other material (in any form) that is identified

as sensitive in writing ('sensitive information') — during the implementation of the action and for at least until the time-limit set out in the Data Sheet (see Point 6).

If a beneficiary requests, the granting authority may agree to keep such information confidential for a longer period.

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

The beneficiaries may disclose sensitive information to their personnel or other participants involved in the action only if they:

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

The granting authority may disclose sensitive information to its staff and to other EU institutions and bodies.

It may moreover disclose sensitive information to third parties, if:

- (a) this is necessary to implement the Agreement or safeguard the EU 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 becomes publicly available, without breaching any confidentiality obligation
- (c) the disclosure of the sensitive information is required by EU, international or national law.

Specific confidentiality rules (if any) are set out in Annex 5.

### **13.2 Classified information**

The parties must handle classified information in accordance with the applicable EU, international or national law on classified information (in particular, Decision 2015/444<sup>15</sup> and its implementing rules).

Deliverables which contain classified information must be submitted according to special procedures agreed with the granting authority.

Action tasks involving classified information may be subcontracted only after explicit approval (in writing) from the granting authority.

Classified information may not be disclosed to any third party (including participants involved in the action implementation) without prior explicit written approval from the granting authority.

Specific security rules (if any) are set out in Annex 5.

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<sup>15</sup> Commission Decision 2015/444/EC, Euratom of 13 March 2015 on the security rules for protecting EU classified information (OJ L 72, 17.3.2015, p. 53).

### **13.3 Consequences of non-compliance**

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

## **ARTICLE 14 — ETHICS AND VALUES**

### **14.1 Ethics**

The action must be carried out in line with the highest ethical standards and the applicable EU, international and national law on ethical principles.

Specific ethics rules (if any) are set out in Annex 5.

### **14.2 Values**

The beneficiaries must commit to and ensure the respect of basic EU values (such as respect for human dignity, freedom, democracy, equality, the rule of law and human rights, including the rights of minorities).

Specific rules on values (if any) are set out in Annex 5.

### **14.3 Consequences of non-compliance**

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

## **ARTICLE 15 — DATA PROTECTION**

### **15.1 Data processing by the granting authority**

Any personal data under the Agreement will be processed under the responsibility of the data controller of the granting authority in accordance with and for the purposes set out in the Portal Privacy Statement.

For grants where the granting authority is the European Commission, an EU regulatory or executive agency, joint undertaking or other EU body, the processing will be subject to Regulation 2018/1725<sup>16</sup>.

### **15.2 Data processing by the beneficiaries**

The beneficiaries must process personal data under the Agreement in compliance with the applicable EU, international and national law on data protection (in particular, Regulation 2016/679<sup>17</sup>).

<sup>16</sup> Regulation (EU) 2018/1725 of the European Parliament and of the Council of 23 October 2018 on the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data, and repealing Regulation (EC) No 45/2001 and Decision No 1247/2002/EC (OJ L 295, 21.11.2018, p. 39).

<sup>17</sup> Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural

They must ensure that personal data is:

- processed lawfully, fairly and in a transparent manner in relation to the data subjects
- collected for specified, explicit and legitimate purposes and not further processed in a manner that is incompatible with those purposes
- adequate, relevant and limited to what is necessary in relation to the purposes for which they are processed
- accurate and, where necessary, kept up to date
- kept in a form which permits identification of data subjects for no longer than is necessary for the purposes for which the data is processed and
- processed in a manner that ensures appropriate security of the data.

The beneficiaries may grant their personnel access to personal data only if it is strictly necessary for implementing, managing and monitoring the Agreement. The beneficiaries must ensure that the personnel is under a confidentiality obligation.

The beneficiaries must inform the persons whose data are transferred to the granting authority and provide them with the Portal Privacy Statement.

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

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

## **ARTICLE 16 — INTELLECTUAL PROPERTY RIGHTS (IPR) — BACKGROUND AND RESULTS — ACCESS RIGHTS AND RIGHTS OF USE**

### **16.1 Background and access rights to background**

The beneficiaries must give each other and the other participants access to the background identified as needed for implementing the action, subject to any specific rules in Annex 5.

‘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 is:

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

If background is subject to rights of a third party, the beneficiary concerned must ensure that it is able to comply with its obligations under the Agreement.

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persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (‘GDPR’) (OJ L 119, 4.5.2016, p. 1).

## 16.2 Ownership of results

The granting authority does not obtain ownership of the results produced under the action.

‘Results’ means any tangible or intangible effect of the action, such as data, know-how or information, whatever its form or nature, whether or not it can be protected, as well as any rights attached to it, including intellectual property rights.

## 16.3 Rights of use of the granting authority on materials, documents and information received for policy, information, communication, dissemination and publicity purposes

The granting authority has the right to use non-sensitive information relating to the action and materials and documents received from the beneficiaries (notably summaries for publication, deliverables, as well as any other material, such as pictures or audio-visual material, in paper or electronic form) for policy, information, communication, dissemination and publicity purposes — during the action or afterwards.

The right to use the beneficiaries’ materials, documents and information is granted in the form of a royalty-free, non-exclusive and irrevocable licence, which includes the following rights:

- (a) **use for its own purposes** (in particular, making them available to persons working for the granting authority or any other EU service (including institutions, bodies, offices, agencies, etc.) or EU Member State institution or body; copying or reproducing them in whole or in part, in unlimited numbers; and communication through press information services)
- (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** (including shortening, summarising, inserting other elements (e.g. 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) **storage** in paper, electronic or other form
- (f) **archiving**, in line with applicable document-management rules
- (g) the right to authorise **third parties** to act on its behalf or sub-license to third parties the modes of use set out in Points (b), (c), (d) and (f), if needed for the information, communication and publicity activity of the granting authority
- (h) **processing**, analysing, aggregating the materials, documents and information received and **producing derivative works**.

The rights of use are granted for the whole duration of the industrial or intellectual property rights concerned.

If materials or documents are subject to moral rights or third party rights (including intellectual property rights or rights of natural persons on their image and voice), the beneficiaries must ensure

that they comply with their obligations under this Agreement (in particular, by obtaining the necessary licences and authorisations from the rights holders concerned).

Where applicable, the granting authority will insert the following information:

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

#### **16.4 Specific rules on IPR, results and background**

Specific rules regarding intellectual property rights, results and background (if any) are set out in Annex 5.

#### **16.5 Consequences of non-compliance**

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such a breach may also lead to other measures described in Chapter 5.

### **ARTICLE 17 — COMMUNICATION, DISSEMINATION AND VISIBILITY**

#### **17.1 Communication — Dissemination — Promoting the action**

Unless otherwise agreed with the granting authority, the beneficiaries must promote the action and its results by providing targeted information to multiple audiences (including the media and the public), in accordance with Annex 1 and in a strategic, coherent and effective manner.

Before engaging in a communication or dissemination activity expected to have a major media impact, the beneficiaries must inform the granting authority.

#### **17.2 Visibility — European flag and funding statement**

Unless otherwise agreed with the granting authority, communication activities of the beneficiaries related to the action (including media relations, conferences, seminars, information material, such as brochures, leaflets, posters, presentations, etc., in electronic form, via traditional or social media, etc.), dissemination activities and any infrastructure, equipment, vehicles, supplies or major result funded by the grant must acknowledge EU support and display the European flag (emblem) and funding statement (translated into local languages, where appropriate):



Funded by the  
European Union



Co-funded by the  
European Union



Funded by the  
European Union



Co-funded by the  
European Union

The emblem must remain distinct and separate and cannot be modified by adding other visual marks, brands or text.

Apart from the emblem, no other visual identity or logo may be used to highlight the EU support.

When displayed in association with other logos (e.g. of beneficiaries or sponsors), the emblem must be displayed at least as prominently and visibly as the other logos.

For the purposes of their obligations under this Article, the beneficiaries may use the emblem without first obtaining approval from the granting authority. This does not, however, give them the right to exclusive use. Moreover, they may not appropriate the emblem or any similar trademark or logo, either by registration or by any other means.

### **17.3 Quality of information — Disclaimer**

Any communication or dissemination activity related to the action must use factually accurate information.

Moreover, it must indicate the following disclaimer (translated into local languages where appropriate):

“Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or [name of the granting authority]. Neither the European Union nor the granting authority can be held responsible for them.”

### **17.4 Specific communication, dissemination and visibility rules**

Specific communication, dissemination and visibility rules (if any) are set out in Annex 5.

### **17.5 Consequences of non-compliance**

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

## **ARTICLE 18 — SPECIFIC RULES FOR CARRYING OUT THE ACTION**

### **18.1 Specific rules for carrying out the action**

Specific rules for implementing the action (if any) are set out in Annex 5.

### **18.2 Consequences of non-compliance**

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such a breach may also lead to other measures described in Chapter 5.

## **SECTION 3 GRANT ADMINISTRATION**

### **ARTICLE 19 — GENERAL INFORMATION OBLIGATIONS**

#### **19.1 Information requests**

The beneficiaries must provide — during the action or afterwards and in accordance with Article 7 — any information requested in order to verify eligibility of the costs or contributions declared, proper implementation of the action and compliance with the other obligations under the Agreement.

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

#### **19.2 Participant Register data updates**

The beneficiaries must keep — at all times, during the action or afterwards — their information stored in the Portal Participant Register up to date, in particular, their name, address, legal representatives, legal form and organisation type.

#### **19.3 Information about events and circumstances which impact the action**

The beneficiaries must immediately inform the granting authority (and the other beneficiaries) of any of the following:

- (a) **events** which are likely to affect or delay the implementation of the action or affect the EU's financial interests, in particular:
  - (i) changes in their legal, financial, technical, organisational or ownership situation (including changes linked to one of the exclusion grounds listed in the declaration of honour signed before grant signature)
  - (ii) changes regarding the linked action (see Article 3)
- (b) **circumstances** affecting:
  - (i) the decision to award the grant or
  - (ii) compliance with requirements under the Agreement.

#### **19.4 Consequences of non-compliance**

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.



## ARTICLE 20 — RECORD-KEEPING

### 20.1 Keeping records and supporting documents

The beneficiaries must — at least until the time-limit set out in the Data Sheet (see Point 6) — keep records and other supporting documents to prove the proper implementation of the action in line with the accepted standards in the respective field (if any).

In addition, the beneficiaries must — for the same period — keep the following to justify the amounts declared:

- (a) for actual costs: adequate records and supporting documents to prove the costs declared (such as contracts, subcontracts, invoices and accounting records); in addition, the beneficiaries' usual accounting 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 documents
- (b) for flat-rate costs and contributions (if any): adequate records and supporting documents to prove the eligibility of the costs or contributions to which the flat-rate is applied
- (c) for the following simplified costs and contributions: the beneficiaries do not need to keep specific records on the actual costs incurred, but must keep:
  - (i) for unit costs and contributions (if any): adequate records and supporting documents to prove the number of units declared
  - (ii) for lump sum costs and contributions (if any): adequate records and supporting documents to prove proper implementation of the work as described in Annex 1
  - (iii) for financing not linked to costs (if any): adequate records and supporting documents to prove the achievement of the results or the fulfilment of the conditions as described in Annex 1
- (d) for unit, flat-rate and lump sum costs and contributions according to usual cost accounting practices (if any): the beneficiaries must keep any adequate records and supporting documents to prove that their cost accounting practices have been applied in a consistent manner, based on objective criteria, regardless of the source of funding, and that they comply with the eligibility conditions set out in Articles 6.1 and 6.2.

Moreover, the following is needed for specific budget categories:

- (e) for personnel costs: time worked for the beneficiary under the action must be supported by declarations signed monthly by the person and their supervisor, unless another reliable time-record system is in place; the granting authority may accept alternative evidence supporting the time worked for the action declared, if it considers that it offers an adequate level of assurance
- (f) additional record-keeping rules: not applicable

The records and supporting documents must be made available upon request (see Article 19) or in the context of checks, reviews, audits or investigations (see Article 25).

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 25), the beneficiaries must keep these 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 granting authority may accept non-original documents if they offer a comparable level of assurance.

## 20.2 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, costs or contributions insufficiently substantiated will be ineligible (see Article 6) and will be rejected (see Article 27), and the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

## ARTICLE 21 — REPORTING

### 21.1 Continuous reporting

The beneficiaries must continuously report on the progress of the action (e.g. **deliverables, milestones, outputs/outcomes, critical risks, indicators**, etc; if any), in the Portal Continuous Reporting tool and in accordance with the timing and conditions it sets out (as agreed with the granting authority).

Standardised deliverables (e.g. progress reports not linked to payments, reports on cumulative expenditure, special reports, etc; if any) must be submitted using the templates published on the Portal.

### 21.2 Periodic reporting: Technical reports and financial statements

In addition, the beneficiaries must provide reports to request payments, in accordance with the schedule and modalities set out in the Data Sheet (see Point 4.2):

- for additional prefinancings (if any): an **additional prefinancing report**
- for interim payments (if any) and the final payment: a **periodic report**.

The prefinancing and periodic reports include a technical and financial part.

The technical part includes an overview of the action implementation. It must be prepared using the template available in the Portal Periodic Reporting tool.

The financial part of the additional prefinancing report includes a statement on the use of the previous prefinancing payment.

The financial part of the periodic report includes:

- the financial statements (individual and consolidated; for all beneficiaries/affiliated entities)
- the explanation on the use of resources (or detailed cost reporting table, if required)

- the certificates on the financial statements (CFS) (if required; see Article 24.2 and Data Sheet, Point 4.3).

The **financial statements** must detail the eligible costs and contributions for each budget category and, for the final payment, also the revenues for the action (see Articles 6 and 22).

All eligible costs and contributions incurred should be declared, even if they exceed the amounts indicated in the estimated budget (see Annex 2). Amounts that are not declared in the individual financial statements will not be taken into account by the granting authority.

By signing the financial statements (directly in the Portal Periodic Reporting tool), the beneficiaries confirm that:

- the information provided is complete, reliable and true
- the costs and contributions declared are eligible (see Article 6)
- the costs and contributions can be substantiated by adequate records and supporting documents (see Article 20) that will be produced upon request (see Article 19) or in the context of checks, reviews, audits and investigations (see Article 25)
- for the final periodic report: all the revenues have been declared (if required; see Article 22).

Beneficiaries will have to submit also the financial statements of their affiliated entities (if any). In case of recoveries (see Article 22), beneficiaries will be held responsible also for the financial statements of their affiliated entities.

### 21.3 Currency for financial statements and conversion into euros

The financial statements must be drafted in euro.

Beneficiaries with general accounts 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* (ECB website), calculated over the corresponding reporting period.

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

Beneficiaries with general accounts in euro must convert costs incurred in another currency into euro according to their usual accounting practices.

### 21.4 Reporting language

The reporting must be in the language of the Agreement, unless otherwise agreed with the granting authority (see Data Sheet, Point 4.2).

### 21.5 Consequences of non-compliance

If a report submitted does not comply with this Article, the granting authority may suspend the payment deadline (see Article 29) and apply other measures described in Chapter 5.

If the coordinator breaches its reporting obligations, the granting authority may terminate the grant or the coordinator's participation (see Article 32) or apply other measures described in Chapter 5.

## **ARTICLE 22 — PAYMENTS AND RECOVERIES — CALCULATION OF AMOUNTS DUE**

### **22.1 Payments and payment arrangements**

Payments will be made in accordance with the schedule and modalities set out in the Data Sheet (see Point 4.2).

They will be made in euro to the bank account indicated by the coordinator (see Data Sheet, Point 4.2) and must be distributed without unjustified delay (restrictions may apply to distribution of the initial prefinancing payment; see Data Sheet, Point 4.2).

Payments to this bank account will discharge the granting authority from its payment obligation.

The cost of payment transfers will be borne as follows:

- the granting authority 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.

Payments by the granting authority will be considered to have been carried out on the date when they are debited to its account.

### **22.2 Recoveries**

Recoveries will be made, if — at beneficiary termination, final payment or afterwards — it turns out that the granting authority has paid too much and needs to recover the amounts undue.

Each beneficiary's financial responsibility in case of recovery is in principle limited to their own debt and undue amounts of their affiliated entities.

In case of enforced recoveries (see Article 22.4), affiliated entities will be held liable for repaying debts of their beneficiaries, if required by the granting authority (see Data Sheet, Point 4.4).

### **22.3 Amounts due**

#### **22.3.1 Prefinancing payments**

The aim of the prefinancing is to provide the beneficiaries with a float.

It remains the property of the EU until the final payment.

For **initial prefinancings** (if any), the amount due, schedule and modalities are set out in the Data Sheet (see Point 4.2).

For **additional prefinancings** (if any), the amount due, schedule and modalities are also set out in the Data Sheet (see Point 4.2). However, if the statement on the use of the previous prefinancing

payment shows that less than 70% was used, the amount set out in the Data Sheet will be reduced by the difference between the 70% threshold and the amount used.

The contribution to the Mutual Insurance Mechanism will be retained from the prefinancing payments (at the rate and in accordance with the modalities set out in the Data Sheet, see Point 4.2) and transferred to the Mechanism.

Prefinancing payments (or parts of them) may be offset (without the beneficiaries' consent) against amounts owed by a beneficiary to the granting authority — up to the amount due to that beneficiary.

For grants where the granting authority is the European Commission or an EU executive agency, offsetting may also be done against amounts owed to other Commission services or executive agencies.

Payments will not be made if the payment deadline or payments are suspended (see Articles 29 and 30).

### 22.3.2 Amount due at beneficiary termination — Recovery

In case of beneficiary termination, the granting authority will determine the provisional amount due for the beneficiary concerned. Payments (if any) will be made with the next interim or final payment.

The **amount due** will be calculated in the following step:

Step 1 — Calculation of the total accepted EU contribution

#### Step 1 — Calculation of the total accepted EU contribution

The granting authority will first calculate the 'accepted EU contribution' for the beneficiary for all reporting periods, by calculating the 'maximum EU contribution to costs' (applying the funding rate to the accepted costs of the beneficiary), taking into account requests for a lower contribution to costs and CFS threshold cappings (if any; see Article 24.5) and adding the contributions (accepted unit, flat-rate or lump sum contributions and financing not linked to costs, if any).

After that, the granting authority will take into account grant reductions (if any). The resulting amount is the 'total accepted EU contribution' for the beneficiary.

The **balance** is then calculated by deducting the payments received (if any; see report on the distribution of payments in Article 32), from the total accepted EU contribution:

$$\begin{aligned} & \{ \text{total accepted EU contribution for the beneficiary} \\ & \text{minus} \\ & \{ \text{prefinancing and interim payments received (if any)} \} \}. \end{aligned}$$

If the balance is **positive**, the amount will be included in the next interim or final payment to the consortium.

If the balance is **negative**, it will be **recovered** in accordance with the following procedure:

The granting authority will send a **pre-information letter** to the beneficiary concerned:

- formally notifying the intention to recover, the amount due, the amount to be recovered and the reasons why and
- requesting observations within 30 days of receiving notification.

If no observations are submitted (or the granting authority decides to pursue recovery despite the observations it has received), it will confirm the amount to be recovered and ask this amount to be paid to the coordinator (**confirmation letter**).

If payment is not made to the coordinator by the date specified in the confirmation letter, the granting authority may call on the Mutual Insurance Mechanism to intervene, if continuation of the action is guaranteed and the conditions set out in the rules governing the Mechanism are met.

In this case, it will send a **beneficiary recovery letter**, together with a **debit note** with the terms and date for payment.

The debit note for the beneficiary will include the amount calculated for the affiliated entities which also had to end their participation (if any).

If payment is not made by the date specified in the debit note, the granting authority will **enforce recovery** in accordance with Article 22.4.

The amounts will later on also be taken into account for the next interim or final payment.

### 22.3.3 Interim payments

Interim payments reimburse the eligible costs and contributions claimed for the implementation of the action during the reporting periods (if any).

Interim payments (if any) will be made in accordance with the schedule and modalities set out the Data Sheet (see Point 4.2).

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

The **interim payment** will be calculated by the granting authority in the following steps:

Step 1 — Calculation of the total accepted EU contribution

Step 2 — Limit to the interim payment ceiling

#### Step 1 — Calculation of the total accepted EU contribution

The granting authority will calculate the ‘accepted EU contribution’ for the action for the reporting period, by first calculating the ‘maximum EU contribution to costs’ (applying the funding rate to the accepted costs of each beneficiary), taking into account requests for a lower contribution to costs, and CFS threshold cappings (if any; see Article 24.5) and adding the contributions (accepted unit, flat-rate or lump sum contributions and financing not linked to costs, if any).

After that, the granting authority will take into account grant reductions from beneficiary termination (if any). The resulting amount is the ‘total accepted EU contribution’.

#### Step 2 — Limit to the interim payment ceiling

The resulting amount is then capped to ensure that the total amount of prefinancing and interim payments (if any) does not exceed the interim payment ceiling set out in the Data Sheet (see Point 4.2).

Interim payments (or parts of them) may be offset (without the beneficiaries' consent) against amounts owed by a beneficiary to the granting authority — up to the amount due to that beneficiary.

For grants where the granting authority is the European Commission or an EU executive agency, offsetting may also be done against amounts owed to other Commission services or executive agencies.

Payments will not be made if the payment deadline or payments are suspended (see Articles 29 and 30).

#### **22.3.4 Final payment — Final grant amount — Revenues and Profit — Recovery**

The final payment (payment of the balance) reimburses the remaining part of the eligible costs and contributions claimed for the implementation of the action (if any).

The final payment will be made in accordance with the schedule and modalities set out in the Data Sheet (see Point 4.2).

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

The **final grant amount for the action** will be calculated in the following steps:

Step 1 — Calculation of the total accepted EU contribution

Step 2 — Limit to the maximum grant amount

Step 3 — Reduction due to the no-profit rule

##### Step 1 — Calculation of the total accepted EU contribution

The granting authority will first calculate the 'accepted EU contribution' for the action for all reporting periods, by calculating the 'maximum EU contribution to costs' (applying the funding rate to the total accepted costs of each beneficiary), taking into account requests for a lower contribution to costs, CFS threshold cappings (if any; see Article 24.5) and adding the contributions (accepted unit, flat-rate or lump sum contributions and financing not linked to costs, if any).

After that, the granting authority will take into account grant reductions (if any). The resulting amount is the 'total accepted EU contribution'.

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

If the resulting amount is higher than the maximum grant amount set out in Article 5.2, it will be limited to the latter.

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

If the no-profit rule is provided for in the Data Sheet (see Point 4.2), the grant must not produce a profit (i.e. surplus of the amount obtained following Step 2 plus the action's revenues, over the eligible costs and contributions approved by the granting authority).



‘Revenue’ is all income generated by the action, during its duration (see Article 4), for beneficiaries that are profit legal entities (— with the exception of income generated by the exploitation of results, which are not considered as revenues).

If there is a profit, it will be deducted in proportion to the final rate of reimbursement of the eligible costs approved by the granting authority (as compared to the amount calculated following Steps 1 and 2 minus the contributions).

The **balance** (final payment) is then calculated by deducting the total amount of prefinancing and interim payments already made (if any), from the final grant amount:

$$\begin{aligned} &\{\text{final grant amount} \\ &\text{minus} \\ &\{\text{prefinancing and interim payments made (if any)}\}\}. \end{aligned}$$

If the balance is **positive**, it will be **paid** to the coordinator.

The amount retained for the Mutual Insurance Mechanism (see above) will be released and **paid** to the coordinator (in accordance with the rules governing the Mechanism).

The final payment (or part of it) may be offset (without the beneficiaries’ consent) against amounts owed by a beneficiary to the granting authority — up to the amount due to that beneficiary.

For grants where the granting authority is the European Commission or an EU executive agency, offsetting may also be done against amounts owed to other Commission services or executive agencies.

Payments will not be made if the payment deadline or payments are suspended (see Articles 29 and 30).

If — despite the release of the Mutual Insurance Mechanism contribution — the balance is **negative**, it will be **recovered** in accordance with the following procedure:

The granting authority will send a **pre-information letter** to the coordinator:

- formally notifying the intention to recover, the final grant amount, the amount to be recovered and the reasons why
- requesting a report on the distribution of payments to the beneficiaries within 30 days of receiving notification and
- requesting observations within 30 days of receiving notification.

If no observations are submitted (or the granting authority decides to pursue recovery despite the observations it has received) and the coordinator has submitted the report on the distribution of payments, it will calculate the **share of the debt per beneficiary**, by:

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

$$\begin{aligned} &\{\{\text{total accepted EU contribution for the beneficiary} \\ &\text{divided by} \end{aligned}$$



total accepted EU contribution for the action}  
 multiplied by  
 final grant amount for the action},  
 minus  
 {prefinancing and interim payments received by the beneficiary (if any)} }

and

(b) dividing the debt:

{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 to be recovered}.

and confirm the amount to be recovered from each beneficiary concerned (**confirmation letter**), together with **debit notes** with the terms and date for payment.

The debit notes for beneficiaries will include the amounts calculated for their affiliated entities (if any).

If the coordinator has not submitted the report on the distribution of payments, the granting authority will **recover** the full amount from the coordinator (**confirmation letter** and **debit note** with the terms and date for payment).

If payment is not made by the date specified in the debit note, the granting authority will **enforce recovery** in accordance with Article 22.4.

### 22.3.5 Audit implementation after final payment — Revised final grant amount — Recovery

If — after the final payment (in particular, after checks, reviews, audits or investigations; see Article 25) — the granting authority rejects costs or contributions (see Article 27) or reduces the grant (see Article 28), it will calculate the **revised final grant amount** for the beneficiary concerned.

The **beneficiary revised final grant amount** will be calculated in the following step:

Step 1 — Calculation of the revised total accepted EU contribution

#### Step 1 — Calculation of the revised total accepted EU contribution

The granting authority will first calculate the ‘revised accepted EU contribution’ for the beneficiary, by calculating the ‘revised accepted costs’ and ‘revised accepted contributions’.

After that, it will take into account grant reductions (if any). The resulting ‘revised total accepted EU contribution’ is the beneficiary revised final grant amount.

If the revised final grant amount is lower than the beneficiary's final grant amount (i.e. its share in the final grant amount for the action), it will be **recovered** in accordance with the following procedure:

The **beneficiary final grant amount** (i.e. share in the final grant amount for the action) is calculated as follows:

$$\left\{ \begin{array}{l} \text{total accepted EU contribution for the beneficiary} \\ \text{divided by} \\ \text{total accepted EU contribution for the action} \end{array} \right\} \times \text{final grant amount for the action}.$$

The granting authority will send a **pre-information letter** to the beneficiary concerned:

- formally notifying the intention to recover, the amount to be recovered and the reasons why and
- requesting observations within 30 days of receiving notification.

If no observations are submitted (or the granting authority decides to pursue recovery despite the observations it has received), it will confirm the amount to be recovered (**confirmation letter**), together with a **debit note** with the terms and the date for payment.

Recoveries against affiliated entities (if any) will be handled through their beneficiaries.

If payment is not made by the date specified in the debit note, the granting authority will **enforce recovery** in accordance with Article 22.4.

## 22.4 Enforced recovery

If payment is not made by the date specified in the debit note, the amount due will be recovered:

- (a) by offsetting the amount — without the coordinator or beneficiary's consent — against any amounts owed to the coordinator or beneficiary by the granting authority.

In exceptional circumstances, to safeguard the EU financial interests, the amount may be offset before the payment date specified in the debit note.

For grants where the granting authority is the European Commission or an EU executive agency, debts may also be offset against amounts owed by other Commission services or executive agencies.

- (b) financial guarantee(s): not applicable
- (c) joint and several liability of beneficiaries: not applicable
- (d) by holding affiliated entities jointly and severally liable (if any, see Data Sheet, Point 4.4)
- (e) by taking legal action (see Article 43) or, provided that the granting authority is the European Commission or an EU executive agency, by adopting an enforceable decision under Article 299 of the Treaty on the Functioning of the EU (TFEU) and Article 100(2) of EU Financial Regulation 2018/1046.

If the Mutual Insurance Mechanism was called on by the granting authority to intervene, recovery will be continued in the name of the Mutual Insurance Mechanism. If two debit notes were sent, the second one (in the name of the Mutual Insurance Mechanism) will be considered to replace the first one (in the name of the granting authority). Where the MIM intervened, offsetting, enforceable decisions or any other of the above-mentioned forms of enforced recovery may be used *mutatis mutandis*.

The amount to be recovered will be increased by **late-payment interest** at the rate set out in Article 22.5, from the day following the payment date in the debit note, up to and including the date the full payment is received.

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 2015/2366<sup>18</sup> applies.

For grants where the granting authority is an EU executive agency, enforced recovery by offsetting or enforceable decision will be done by the services of the European Commission (see also Article 43).

## 22.5 Consequences of non-compliance

**22.5.1** If the granting authority 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 the rate specified in the Data Sheet (Point 4.2). 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 on 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).

If payments or the payment deadline are suspended (see Articles 29 and 30), payment will not be considered as late.

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.

**22.5.2** If the coordinator breaches any of its obligations under this Article, the grant may be reduced (see Article 28) and the grant or the coordinator may be terminated (see Article 32).

Such breaches may also lead to other measures described in Chapter 5.

## ARTICLE 23 — GUARANTEES

<sup>18</sup> Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC (OJ L 337, 23.12.2015, p. 35).

Not applicable

## ARTICLE 24 — CERTIFICATES

### 24.1 Operational verification report (OVR)

Not applicable

### 24.2 Certificate on the financial statements (CFS)

If required by the granting authority (see Data Sheet, Point 4.3), the beneficiaries must provide certificates on their financial statements (CFS), in accordance with the schedule, threshold and conditions set out in the Data Sheet.

The coordinator must submit them as part of the periodic report (see Article 21).

The certificates must be drawn up using the template published on the Portal, cover the costs declared on the basis of actual costs and costs according to usual cost accounting practices (if any), and fulfil the following conditions:

- (a) be provided by a qualified approved external auditor which is independent and complies with Directive 2006/43/EC<sup>19</sup> (or for public bodies: by a competent independent public officer)
- (b) the verification must be carried out according to the highest professional standards to ensure that the financial statements comply with the provisions under the Agreement and that the costs declared are eligible.

The certificates will not affect the granting authority's right to carry out its own checks, reviews or audits, nor preclude the European Court of Auditors (ECA), the European Public Prosecutor's Office (EPPO) or the European Anti-Fraud Office (OLAF) from using their prerogatives for audits and investigations under the Agreement (see Article 25).

If the costs (or a part of them) were already audited by the granting authority, these costs do not need to be covered by the certificate and will not be counted for calculating the threshold (if any).

### 24.3 Certificate on the compliance of usual cost accounting practices (CoMUC)

Not applicable

### 24.4 Systems and process audit (SPA)

Beneficiaries which:

- use unit, flat rate or lump sum costs or contributions according to documented (i.e. formally approved and in writing) usual costs accounting practices (if any) or
- have formalised documentation on the systems and processes for calculating their costs and contributions (i.e. formally approved and in writing), have participated in at least 150 actions under Horizon 2020 or the Euratom Research and Training Programme (2014-2018 or

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<sup>19</sup> 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 or similar national regulations (OJ L 157, 9.6.2006, p. 87).

2019-2020) and participate in at least 3 ongoing actions under Horizon Europe or the Euratom Research and Training Programme (2021-2025 or 2026-2027)

may apply to the granting authority for a systems and process audit (SPA).

This audit will be carried out as follows:

Step 1 – Application by the beneficiary.

Step 2 – If the application is accepted, the granting authority will carry out the systems and process audit, complemented by an audit of transactions (on a sample of the beneficiary's Horizon Europe or the Euratom Research and Training Programme financial statements).

Step 3 – The audit result will take the form of a risk assessment classification for the beneficiary: low, medium or high.

Low-risk beneficiaries will benefit from less (or less in-depth) ex-post audits (see Article 25) and a higher threshold for submitting certificates on the financial statements (CFS; see Articles 21 and 24.2 and Data Sheet, Point 4.3).

## **24.5 Consequences of non-compliance**

If a beneficiary does not submit a certificate on the financial statements (CFS) or the certificate is rejected, the accepted EU contribution to costs will be capped to reflect the CFS threshold.

If a beneficiary breaches any of its other obligations under this Article, the granting authority may apply the measures described in Chapter 5.

## **ARTICLE 25 — CHECKS, REVIEWS, AUDITS AND INVESTIGATIONS — EXTENSION OF FINDINGS**

### **25.1 Granting authority checks, reviews and audits**

#### **25.1.1 Internal checks**

The granting authority may — during the action or afterwards — check the proper implementation of the action and compliance with the obligations under the Agreement, including assessing costs and contributions, deliverables and reports.

#### **25.1.2 Project reviews**

The granting authority may carry out reviews on the proper implementation of the action and compliance with the obligations under the Agreement (general project reviews or specific issues reviews).

Such project reviews may be started during the implementation of the action and until the time-limit set out in the Data Sheet (see Point 6). They will be formally notified to the coordinator or beneficiary concerned and will be considered to start on the date of the notification.

If needed, the granting authority may be assisted by independent, outside experts. If it uses outside experts, the coordinator or beneficiary concerned will be informed and have the right to object on grounds of commercial confidentiality or conflict of interest.

The coordinator or beneficiary concerned must cooperate diligently and 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 granting authority may request beneficiaries to provide such information to it directly. Sensitive information and documents will be treated in accordance with Article 13.

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

For **on-the-spot visits**, the beneficiary concerned must allow access to sites and premises (including to the outside experts) 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 **project review report** will be drawn up.

The granting authority will formally notify the project review report to the coordinator or beneficiary concerned, which has 30 days from receiving notification to make observations.

Project reviews (including project review reports) will be in the language of the Agreement.

### 25.1.3 Audits

The granting authority may carry out audits on the proper implementation of the action and compliance with the obligations under the Agreement.

Such audits may be started during the implementation of the action and until the time-limit set out in the Data Sheet (see Point 6). They will be formally notified to the beneficiary concerned and will be considered to start on the date of the notification.

The granting authority may use its own audit service, delegate audits to a centralised service or use external audit firms. If it uses an external firm, the beneficiary concerned will be informed and have the right to object on grounds of commercial confidentiality or conflict of interest.

The beneficiary concerned must cooperate diligently and provide — within the deadline requested — any information (including complete accounts, individual salary statements or other personal data) to verify compliance with the Agreement. Sensitive information and documents will be treated in accordance with Article 13.

For **on-the-spot visits**, the beneficiary concerned must allow access to sites and premises (including for the external audit firm) 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 auditors will formally notify the draft audit report to the beneficiary concerned, which has 30 days from receiving notification to make observations (contradictory audit procedure).

The **final audit report** will take into account observations by the beneficiary concerned and will be formally notified to them.

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

## **25.2 European Commission checks, reviews and audits in grants of other granting authorities**

Where the granting authority is not the European Commission, the latter has the same rights of checks, reviews and audits as the granting authority.

## **25.3 Access to records for assessing simplified forms of funding**

The beneficiaries must give the European Commission access to their statutory records for the periodic assessment of simplified forms of funding which are used in EU programmes.

## **25.4 OLAF, EPPO and ECA audits and investigations**

The following bodies may also carry out checks, reviews, audits and investigations — during the action or afterwards:

- the European Anti-Fraud Office (OLAF) under Regulations No 883/2013<sup>20</sup> and No 2185/96<sup>21</sup>
- the European Public Prosecutor's Office (EPPO) under Regulation 2017/1939
- the European Court of Auditors (ECA) under Article 287 of the Treaty on the Functioning of the EU (TFEU) and Article 257 of EU Financial Regulation 2018/1046.

If requested by these bodies, the beneficiary concerned must provide full, accurate and complete information in the format requested (including complete accounts, individual salary statements or other personal data, including in electronic format) and allow access to sites and premises for on-the-spot visits or inspections — as provided for under these Regulations.

To this end, the beneficiary concerned must keep all relevant information relating to the action, at least until the time-limit set out in the Data Sheet (Point 6) and, in any case, until any ongoing checks, reviews, audits, investigations, litigation or other pursuits of claims have been concluded.

## **25.5 Consequences of checks, reviews, audits and investigations — Extension of results of reviews, audits or investigations**

### **25.5.1 Consequences of checks, reviews, audits and investigations in this grant**

Findings in checks, reviews, audits or investigations carried out in the context of this grant may lead to rejections (see Article 27), grant reduction (see Article 28) or other measures described in Chapter 5.

Rejections or grant reductions after the final payment will lead to a revised final grant amount (see Article 22).

<sup>20</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>21</sup> Council Regulation (Euratom, EC) No 2185/96 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).



Findings in checks, reviews, audits or investigations during the action implementation may lead to a request for amendment (see Article 39), to change the description of the action set out in Annex 1.

Checks, reviews, audits or investigations that find systemic or recurrent errors, irregularities, fraud or breach of obligations in any EU grant may also lead to consequences in other EU grants awarded under similar conditions ('extension to other grants').

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

### 25.5.2 Extension from other grants

Results of checks, reviews, audits or investigations in other grants may be extended to this grant, if:

- (a) the beneficiary concerned is found, in other EU 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 — within the time-limit for audits set out in the Data Sheet (see Point 6).

The granting authority will formally notify the beneficiary concerned of the intention to extend the findings and the list of grants affected.

If the extension concerns **rejections of costs or contributions**: the 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 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.

If the extension concerns **grant reductions**: the notification will include:

- (a) an invitation to submit observations on the list of grants affected by the findings and
- (b) the **correction rate for extrapolation**, established on the basis of the systemic or recurrent errors and the principle of proportionality.

The beneficiary concerned has **60 days** from receiving notification to submit observations, revised financial statements or to propose a duly substantiated **alternative correction method/rate**.

On the basis of this, the granting authority will analyse the impact and decide on the implementation (i.e. start rejection or grant reduction procedures, either on the basis of the revised financial statements or the announced/alternative method/rate or a mix of those; see Articles 27 and 28).



## **25.6 Consequences of non-compliance**

If a beneficiary breaches any of its obligations under this Article, costs or contributions insufficiently substantiated will be ineligible (see Article 6) and will be rejected (see Article 27), and the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

## **ARTICLE 26 — IMPACT EVALUATIONS**

### **26.1 Impact evaluation**

The granting authority may carry out impact evaluations of the action, measured against the objectives and indicators of the EU programme funding the grant.

Such evaluations may be started during implementation of the action and until the time-limit set out in the Data Sheet (see Point 6). They will be formally notified to the coordinator or beneficiaries and will be considered to start on the date of the notification.

If needed, the granting authority may be assisted by independent outside experts.

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

### **26.2 Consequences of non-compliance**

If a beneficiary breaches any of its obligations under this Article, the granting authority may apply the measures described in Chapter 5.

## **CHAPTER 5 CONSEQUENCES OF NON-COMPLIANCE**

### **SECTION 1 REJECTIONS AND GRANT REDUCTION**

## **ARTICLE 27 — REJECTION OF COSTS AND CONTRIBUTIONS**

### **27.1 Conditions**

The granting authority will — at beneficiary termination, interim payment, final payment or afterwards — reject any costs or contributions which are ineligible (see Article 6), in particular following checks, reviews, audits or investigations (see Article 25).

The rejection may also be based on the extension of findings from other grants to this grant (see Article 25).

Ineligible costs or contributions will be rejected.

### **27.2 Procedure**

If the rejection does not lead to a recovery, the granting authority will formally notify the coordinator or beneficiary concerned of the rejection, the amounts and the reasons why. The coordinator or

beneficiary concerned may — within 30 days of receiving notification — submit observations if it disagrees with the rejection (payment review procedure).

If the rejection leads to a recovery, the granting authority will follow the contradictory procedure with pre-information letter set out in Article 22.

### **27.3 Effects**

If the granting authority rejects costs or contributions, it will deduct them from the costs or contributions declared and then calculate the amount due (and, if needed, make a recovery; see Article 22).

## **ARTICLE 28 — GRANT REDUCTION**

### **28.1 Conditions**

The granting authority may — at beneficiary termination, final payment or afterwards — reduce the grant for a beneficiary, if:

- (a) the beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed:
  - (i) substantial errors, irregularities or fraud or
  - (ii) serious breach of obligations under this Agreement or during its award (including improper implementation of the action, non-compliance with the call conditions, submission of false information, failure to provide required information, breach of ethics or security rules (if applicable), etc.), or
- (b) the beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed — in other EU 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 (see Article 25).

The amount of the reduction will be calculated for each beneficiary concerned and proportionate to the seriousness and the duration of the errors, irregularities or fraud or breach of obligations, by applying an individual reduction rate to their accepted EU contribution.

### **28.2 Procedure**

If the grant reduction does not lead to a recovery, the granting authority will formally notify the coordinator or beneficiary concerned of the reduction, the amount to be reduced and the reasons why. The coordinator or beneficiary concerned may — within 30 days of receiving notification — submit observations if it disagrees with the reduction (payment review procedure).

If the grant reduction leads to a recovery, the granting authority will follow the contradictory procedure with pre-information letter set out in Article 22.

### **28.3 Effects**

If the granting authority reduces the grant, it will deduct the reduction and then calculate the amount due (and, if needed, make a recovery; see Article 22).

## **SECTION 2 SUSPENSION AND TERMINATION**

### **ARTICLE 29 — PAYMENT DEADLINE SUSPENSION**

#### **29.1 Conditions**

The granting authority may — at any moment — suspend the payment deadline if a payment cannot be processed because:

- (a) the required report (see Article 21) has not been submitted or is not complete or additional information is needed
- (b) there are doubts about the amount to be paid (e.g. ongoing audit extension procedure, queries about eligibility, need for a grant reduction, etc.) and additional checks, reviews, audits or investigations are necessary, or
- (c) there are other issues affecting the EU financial interests.

#### **29.2 Procedure**

The granting authority will formally notify the coordinator of the suspension and the reasons why.

The suspension will **take effect** the day the notification is sent.

If the conditions for suspending the payment deadline are no longer met, the suspension will be **lifted** — and the remaining time to pay (see Data Sheet, Point 4.2) will resume.

If the suspension exceeds two months, the coordinator may request the granting authority to confirm if the suspension will continue.

If the payment deadline has been suspended due to the non-compliance of the report and the revised report is not submitted (or was submitted but is also rejected), the granting authority may also terminate the grant or the participation of the coordinator (see Article 32).

### **ARTICLE 30 — PAYMENT SUSPENSION**

#### **30.1 Conditions**

The granting authority may — at any moment — suspend payments, in whole or in part for one or more beneficiaries, if:

- (a) a beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed or is suspected of having committed:
  - (i) substantial errors, irregularities or fraud or
  - (ii) serious breach of obligations under this Agreement or during its award (including

improper implementation of the action, non-compliance with the call conditions, submission of false information, failure to provide required information, breach of ethics or security rules (if applicable), etc.), or

- (b) a beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed — in other EU 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.

If payments are suspended for one or more beneficiaries, the granting authority will make partial payment(s) for the part(s) not suspended. If suspension concerns the final payment, the payment (or recovery) of the remaining amount after suspension is lifted will be considered to be the payment that closes the action.

## 30.2 Procedure

Before suspending payments, the granting authority will send a **pre-information letter** to the beneficiary concerned:

- formally notifying the intention to suspend payments and the reasons why and
- requesting observations within 30 days of receiving notification.

If the granting authority does not receive observations or decides to pursue the procedure despite the observations it has received, it will confirm the suspension (**confirmation letter**). Otherwise, it will formally notify that the procedure is discontinued.

At the end of the suspension procedure, the granting authority will also inform the coordinator.

The suspension will **take effect** the day after the confirmation notification is sent.

If the conditions for resuming payments are met, the suspension will be **lifted**. The granting authority will formally notify the beneficiary concerned (and the coordinator) and set the suspension end date.

During the suspension, no prefinancing will be paid to the beneficiaries concerned. For interim payments, the periodic reports for all reporting periods except the last one (see Article 21) must not contain any financial statements from the beneficiary concerned (or its affiliated entities). 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.

## ARTICLE 31 — GRANT AGREEMENT SUSPENSION

### 31.1 Consortium-requested GA suspension

#### 31.1.1 Conditions and procedure

The beneficiaries may request the suspension of the grant or any part of it, if exceptional circumstances — in particular *force majeure* (see Article 35) — make implementation impossible or excessively difficult.

The coordinator must submit a request for **amendment** (see Article 39), with:

- the reasons why
- the date the suspension takes effect; this date may be before the date of the submission of the amendment request and
- the expected date of resumption.

The suspension will **take effect** on the day specified in the amendment.

Once circumstances allow for implementation to resume, the coordinator must immediately request another **amendment** of the Agreement to set the suspension end date, the resumption date (one day after suspension end date), extend the duration and make other changes necessary to adapt the action to the new situation (see Article 39) — unless the grant has been terminated (see Article 32). The suspension will be **lifted** with effect from the suspension end date set out in the amendment. This date may be before the date of the submission of the amendment request.

During the suspension, no prefinancing will be paid. Costs incurred or contributions for activities implemented during grant suspension are not eligible (see Article 6.3).

## 31.2 EU-initiated GA suspension

### 31.2.1 Conditions

The granting authority may suspend the grant or any part of it, if:

- (a) a beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed or is suspected of having committed:
  - (i) substantial errors, irregularities or fraud or
  - (ii) serious breach of obligations under this Agreement or during its award (including improper implementation of the action, non-compliance with the call conditions, submission of false information, failure to provide required information, breach of ethics or security rules (if applicable), etc.), or
- (b) a beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed — in other EU 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
- (c) other:
  - (i) the linked action (see Article 3) has not started as specified in Annex 1, has been suspended or can no longer contribute, and this impacts the implementation of the action under this Agreement
  - (ii) the action has lost its scientific or technological relevance, for EIC Accelerator actions: the action has lost its economic relevance, for challenge-based EIC Pathfinder actions and Horizon Europe Missions: the action has lost its relevance as part of the Portfolio for which it has been initially selected

### 31.2.2 Procedure

Before suspending the grant, the granting authority will send a **pre-information letter** to the coordinator:

- formally notifying the intention to suspend the grant and the reasons why and
- requesting observations within 30 days of receiving notification.

If the granting authority does not receive observations or decides to pursue the procedure despite the observations it has received, it will confirm the suspension (**confirmation letter**). Otherwise, it will formally notify that the procedure is discontinued.

The suspension will **take effect** the day after the confirmation notification is sent (or on a later date specified in the notification).

Once the conditions for resuming implementation of the action are met, the granting authority will formally notify the coordinator a **lifting of suspension letter**, in which it will set the suspension end date and invite the coordinator to request an amendment of the Agreement to set the resumption date (one day after suspension end date), extend the duration and make other changes necessary to adapt the action to the new situation (see Article 39) — unless the grant has been terminated (see Article 32). The suspension will be **lifted** with effect from the suspension end date set out in the lifting of suspension letter. This date may be before the date on which the letter is sent.

During the suspension, no prefinancing will be paid. Costs incurred or contributions for activities implemented during suspension are not eligible (see Article 6.3).

The beneficiaries may not claim damages due to suspension by the granting authority (see Article 33).

Grant suspension does not affect the granting authority's right to terminate the grant or a beneficiary (see Article 32) or reduce the grant (see Article 28).

## ARTICLE 32 — GRANT AGREEMENT OR BENEFICIARY TERMINATION

### 32.1 Consortium-requested GA termination

#### 32.1.1 Conditions and procedure

The beneficiaries may request the termination of the grant.

The coordinator must submit a request for **amendment** (see Article 39), with:

- the reasons why
- the date the consortium ends work on the action ('end of work date') and
- the date the termination takes effect ('termination date'); this date must be after the date of the submission of the amendment request.

The termination will **take effect** on the termination date specified in the amendment.

If no reasons are given or if the granting authority considers the reasons do not justify termination, it may consider the grant terminated improperly.

### 32.1.2 Effects

The coordinator must — within 60 days from when termination takes effect — submit a **periodic report** (for the open reporting period until termination).

The granting authority will calculate the final grant amount and final payment on the basis of the report submitted and taking into account the costs incurred and contributions for activities implemented before the end of work date (see Article 22). Costs relating to contracts due for execution only after the end of work are not eligible.

If the granting authority does not receive the report within the deadline, only costs and contributions which are included in an approved periodic report will be taken into account (no costs/contributions if no periodic report was ever approved).

Improper termination may lead to a grant reduction (see Article 28).

After termination, the beneficiaries' obligations (in particular Articles 13 (confidentiality and security), 16 (IPR), 17 (communication, dissemination and visibility), 21 (reporting), 25 (checks, reviews, audits and investigations), 26 (impact evaluation), 27 (rejections), 28 (grant reduction) and 42 (assignment of claims)) continue to apply.

## 32.2 Consortium-requested beneficiary termination

### 32.2.1 Conditions and procedure

The coordinator may request the termination of the participation of one or more beneficiaries, on request of the beneficiary concerned or on behalf of the other beneficiaries.

The coordinator must submit a request for **amendment** (see Article 39), with:

- the reasons why
- the opinion of the beneficiary concerned (or proof that this opinion has been requested in writing)
- the date the beneficiary ends work on the action ('end of work date')
- the date the termination takes effect ('termination date'); this date must be after the date of the submission of the amendment request.

If the termination concerns the coordinator and is done without its agreement, the amendment request must be submitted by another beneficiary (acting on behalf of the consortium).

The termination will **take effect** on the termination date specified in the amendment.

If no information is given or if the granting authority considers that the reasons do not justify termination, it may consider the beneficiary to have been terminated improperly.

### 32.2.2 Effects

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 **termination report** from the beneficiary concerned, for the open reporting period until termination, containing an overview of the progress of the work, the financial statement, the explanation on the use of resources, and, if applicable, the certificate on the financial statement (CFS; see Articles 21 and 24.2 and Data Sheet, Point 4.3)
- (iii) a second **request for amendment** (see Article 39) with other amendments needed (e.g. reallocation of the tasks and the estimated budget of the terminated beneficiary; addition of a new beneficiary to replace the terminated beneficiary; change of coordinator, etc.).

The granting authority will calculate the amount due to the beneficiary on the basis of the report submitted and taking into account the costs incurred and contributions for activities implemented before the end of work date (see Article 22). Costs relating to contracts due for execution only after the end of work are not eligible.

The information in the termination report must also be included in the periodic report for the next reporting period (see Article 21).

If the granting authority does not receive the termination report within the deadline, only costs and contributions which are included in an approved periodic report will be taken into account (no costs/contributions if no periodic report was ever approved).

If the granting authority does not receive the report on the distribution of payments within the deadline, 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.

If the second request for amendment is accepted by the granting authority, the Agreement is **amended** to introduce the necessary changes (see Article 39).

If the second request for amendment is rejected by the granting authority (because it calls into question the decision awarding the grant or breaches the principle of equal treatment of applicants), the grant may be terminated (see Article 32).

Improper termination may lead to a reduction of the grant (see Article 31) or grant termination (see Article 32).

After termination, the concerned beneficiary's obligations (in particular Articles 13 (confidentiality and security), 16 (IPR), 17 (communication, dissemination and visibility), 21 (reporting), 25 (checks, reviews, audits and investigations), 26 (impact evaluation), 27 (rejections), 28 (grant reduction) and 42 (assignment of claims)) continue to apply.

### 32.3 EU-initiated GA or beneficiary termination

#### 32.3.1 Conditions

The granting authority may terminate the grant or the participation of one or more beneficiaries, if:

- (a) one or more beneficiaries do not accede to the Agreement (see Article 40)
- (b) a change to the action or the legal, financial, technical, organisational or ownership situation





of a beneficiary is likely to substantially affect the implementation of the action or calls into question the decision to award the grant (including changes linked to one of the exclusion grounds listed in the declaration of honour)

- (c) following termination of one or more beneficiaries, the necessary changes to the Agreement (and their impact on the action) would call into question the decision awarding the grant or breach the principle of equal treatment of applicants
- (d) implementation of the action has become impossible or the changes necessary for its continuation would call into question the decision awarding the grant or breach the principle of equal treatment of applicants
- (e) a beneficiary (or person with unlimited liability for its debts) is subject to bankruptcy proceedings or similar (including insolvency, winding-up, administration by a liquidator or court, arrangement with creditors, suspension of business activities, etc.)
- (f) a beneficiary (or person with unlimited liability for its debts) is in breach of social security or tax obligations
- (g) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has been found guilty of grave professional misconduct
- (h) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed fraud, corruption, or is involved in a criminal organisation, money laundering, terrorism-related crimes (including terrorism financing), child labour or human trafficking
- (i) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) was created under a different jurisdiction with the intent to circumvent fiscal, social or other legal obligations in the country of origin (or created another entity with this purpose)
- (j) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed:
  - (i) substantial errors, irregularities or fraud or
  - (ii) serious breach of obligations under this Agreement or during its award (including improper implementation of the action, non-compliance with the call conditions, submission of false information, failure to provide required information, breach of ethics or security rules (if applicable), etc.)
- (k) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed — in other EU 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 25)
- (l) despite a specific request by the granting authority, a beneficiary does not request — through the coordinator — an amendment to the Agreement to end the participation of one of its

affiliated entities or associated partners that is in one of the situations under points (d), (f), (e), (g), (h), (i) or (j) and to reallocate its tasks, or

(m) other:

- (i) the linked action (see Article 3) has not started as specified in Annex 1, has been terminated or can no longer contribute, and this impacts the implementation of the action under this Agreement
- (ii) the action has lost its scientific or technological relevance, for EIC Accelerator actions: the action has lost its economic relevance, for challenge-based EIC Pathfinder actions and Horizon Europe Missions: the action has lost its relevance as part of the Portfolio for which it has been initially selected

### 32.3.2 Procedure

Before terminating the grant or participation of one or more beneficiaries, the granting authority will send a **pre-information letter** to the coordinator or beneficiary concerned:

- formally notifying the intention to terminate and the reasons why and
- requesting observations within 30 days of receiving notification.

If the granting authority does not receive observations or decides to pursue the procedure despite the observations it has received, it will confirm the termination and the date it will take effect (**confirmation letter**). Otherwise, it will formally notify that the procedure is discontinued.

For beneficiary terminations, the granting authority will — at the end of the procedure — also inform the coordinator.

The termination will **take effect** the day after the confirmation notification is sent (or on a later date specified in the notification; ‘termination date’).

### 32.3.3 Effects

(a) for **GA termination**:

The coordinator must — within 60 days from when termination takes effect — submit a **periodic report** (for the last open reporting period until termination).

The granting authority will calculate the final grant amount and final payment on the basis of the report submitted and taking into account the costs incurred and contributions for activities implemented before termination takes effect (see Article 22). Costs relating to contracts due for execution only after termination are not eligible.

If the grant is terminated for breach of the obligation to submit reports, the coordinator may not submit any report after termination.

If the granting authority does not receive the report within the deadline, only costs and contributions which are included in an approved periodic report will be taken into account (no costs/contributions if no periodic report was ever approved).

Termination does not affect the granting authority's right to reduce the grant (see Article 28) or to impose administrative sanctions (see Article 34).

The beneficiaries may not claim damages due to termination by the granting authority (see Article 33).

After termination, the beneficiaries' obligations (in particular Articles 13 (confidentiality and security), 16 (IPR), 17 (communication, dissemination and visibility), 21 (reporting), 25 (checks, reviews, audits and investigations), 26 (impact evaluation), 27 (rejections), 28 (grant reduction) and 42 (assignment of claims)) continue to apply.

(b) for **beneficiary termination**:

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 **termination report** from the beneficiary concerned, for the open reporting period until termination, containing an overview of the progress of the work, the financial statement, the explanation on the use of resources, and, if applicable, the certificate on the financial statement (CFS; see Articles 21 and 24.2 and Data Sheet, Point 4.3)
- (iii) a **request for amendment** (see Article 39) with any amendments needed (e.g. reallocation of the tasks and the estimated budget of the terminated beneficiary; addition of a new beneficiary to replace the terminated beneficiary; change of coordinator, etc.).

The granting authority will calculate the amount due to the beneficiary on the basis of the report submitted and taking into account the costs incurred and contributions for activities implemented before termination takes effect (see Article 22). Costs relating to contracts due for execution only after termination are not eligible.

The information in the termination report must also be included in the periodic report for the next reporting period (see Article 21).

If the granting authority does not receive the termination report within the deadline, only costs and contributions included in an approved periodic report will be taken into account (no costs/contributions if no periodic report was ever approved).

If the granting authority does not receive the report on the distribution of payments within the deadline, 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.

If the request for amendment is accepted by the granting authority, the Agreement is **amended** to introduce the necessary changes (see Article 39).

If the request for amendment is rejected by the granting authority (because it calls into question the decision awarding the grant or breaches the principle of equal treatment of applicants), the grant may be terminated (see Article 32).

After termination, the concerned beneficiary's obligations (in particular Articles 13 (confidentiality and security), 16 (IPR), 17 (communication, dissemination and visibility), 21 (reporting), 25 (checks, reviews, audits and investigations), 26 (impact evaluation), 27 (rejections), 28 (grant reduction) and 42 (assignment of claims)) continue to apply.

## **SECTION 3 OTHER CONSEQUENCES: DAMAGES AND ADMINISTRATIVE SANCTIONS**

### **ARTICLE 33 — DAMAGES**

#### **33.1 Liability of the granting authority**

The granting authority cannot be held liable for any damage caused to the beneficiaries or to third parties as a consequence of the implementation of the Agreement, including for gross negligence.

The granting authority cannot be held liable for any damage caused by any of the beneficiaries or other participants involved in the action, as a consequence of the implementation of the Agreement.

#### **33.2 Liability of the beneficiaries**

The beneficiaries must compensate the granting authority 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, provided that it was caused by gross negligence or wilful act.

The liability does not extend to indirect or consequential losses or similar damage (such as loss of profit, loss of revenue or loss of contracts), provided such damage was not caused by wilful act or by a breach of confidentiality.

### **ARTICLE 34 — ADMINISTRATIVE SANCTIONS AND OTHER MEASURES**

Nothing in this Agreement may be construed as preventing the adoption of administrative sanctions (i.e. exclusion from EU award procedures and/or financial penalties) or other public law measures, in addition or as an alternative to the contractual measures provided under this Agreement (see, for instance, Articles 135 to 145 EU Financial Regulation 2018/1046 and Articles 4 and 7 of Regulation 2988/95<sup>22</sup>).

## **SECTION 4 FORCE MAJEURE**

### **ARTICLE 35 — FORCE MAJEURE**

A party prevented by force majeure from fulfilling its obligations under the Agreement cannot be considered in breach of them.

‘Force majeure’ means any situation or event that:

- prevents either party from fulfilling their obligations under the Agreement,

<sup>22</sup> Council Regulation (EC, Euratom) No 2988/95 of 18 December 1995 on the protection of the European Communities financial interests (OJ L 312, 23.12.1995, p. 1).

- was unforeseeable, exceptional situation and beyond the parties' control,
- was not due to error or negligence on their part (or on the part of other participants involved in the action), and
- proves to be inevitable in spite of exercising all due diligence.

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.

## **CHAPTER 6 FINAL PROVISIONS**

### **ARTICLE 36 — COMMUNICATION BETWEEN THE PARTIES**

#### **36.1 Forms and means of communication — Electronic management**

EU grants are managed fully electronically through the EU Funding & Tenders Portal ('Portal').

All communications must be made electronically through the Portal, in accordance with the Portal Terms and Conditions and using the forms and templates provided there (except if explicitly instructed otherwise by the granting authority).

Communications must be made in writing and clearly identify the grant agreement (project number and acronym).

Communications must be made by persons authorised according to the Portal Terms and 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 their appointment letter (see Portal Terms and Conditions).

If the electronic exchange system is temporarily unavailable, instructions will be given on the Portal.

#### **36.2 Date of communication**

The sending date for communications made through the Portal will be the date and time of sending, as indicated by the time logs.

The receiving date for communications made through the Portal will be the date and time the communication is accessed, as indicated by the time logs. Formal notifications that have not been accessed within 10 days after sending, will be considered to have been accessed (see Portal Terms and Conditions).

If a communication is exceptionally made on paper (by e-mail or postal service), general principles apply (i.e. date of sending/receipt). Formal notifications by registered post with proof of delivery will be considered to have been received either on 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.

### **36.3 Addresses for communication**

The Portal can be accessed via the Europa website.

The address for paper communications to the granting authority (if exceptionally allowed) is the official mailing address indicated on its website.

For beneficiaries, it is the legal address specified in the Portal Participant Register.

## **ARTICLE 37 — INTERPRETATION OF THE AGREEMENT**

The provisions in the Data Sheet take precedence over the rest of the Terms and Conditions of the Agreement.

Annex 5 takes precedence over the Terms and Conditions; the Terms and Conditions take precedence over the Annexes other than Annex 5.

Annex 2 takes precedence over Annex 1.

## **ARTICLE 38 — CALCULATION OF PERIODS AND DEADLINES**

In accordance with Regulation No 1182/71<sup>23</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.

‘Days’ means calendar days, not working days.

## **ARTICLE 39 — AMENDMENTS**

### **39.1 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.

### **39.2 Procedure**

The party requesting an amendment must submit a request for amendment signed directly in the Portal Amendment tool.

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).

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<sup>23</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).

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 granting authority may request additional information.

If the party receiving the request agrees, it must sign the amendment in the tool within 45 days of receiving notification (or any additional information the granting authority 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 of entry into force or other date specified in the amendment.

## ARTICLE 40 — ACCESSION AND ADDITION OF NEW BENEFICIARIES

### 40.1 Accession of the beneficiaries mentioned in the Preamble

The beneficiaries which are not coordinator must accede to the grant by signing the accession form (see Annex 3) directly in the Portal Grant Preparation tool, within 30 days after the entry into force of the Agreement (see Article 44).

They will assume the rights and obligations under the Agreement with effect from the date of its entry into force (see Article 44).

If a beneficiary does not accede to the grant within the above deadline, the coordinator must — within 30 days — request an amendment (see Article 39) to terminate the beneficiary and make any changes necessary to ensure proper implementation of the action. This does not affect the granting authority's right to terminate the grant (see Article 32).

### 40.2 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 39. It must include an accession form (see Annex 3) signed by the new beneficiary directly in the Portal Amendment tool.

New beneficiaries will assume the rights and obligations under the Agreement with effect from the date of their accession specified in the accession form (see Annex 3).

Additions are also possible in mono-beneficiary grants.

## ARTICLE 41 — TRANSFER OF THE AGREEMENT



In justified cases, the beneficiary of a mono-beneficiary grant may request the transfer of the grant to a new beneficiary, provided that this would not call into question the decision awarding the grant or breach the principle of equal treatment of applicants.

The beneficiary must submit a request for **amendment** (see Article 39), with

- the reasons why
- the accession form (see Annex 3) signed by the new beneficiary directly in the Portal Amendment tool and
- additional supporting documents (if required by the granting authority).

The new beneficiary will assume the rights and obligations under the Agreement with effect from the date of accession specified in the accession form (see Annex 3).

## **ARTICLE 42 — ASSIGNMENTS OF CLAIMS FOR PAYMENT AGAINST THE GRANTING AUTHORITY**

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

If the granting authority has not accepted the assignment or if 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 granting authority.

## **ARTICLE 43 — APPLICABLE LAW AND SETTLEMENT OF DISPUTES**

### **43.1 Applicable law**

The Agreement is governed by the applicable EU law, supplemented if necessary by the law of Belgium.

Special rules may apply for beneficiaries which are international organisations (if any; see Data Sheet, Point 5).

### **43.2 Dispute settlement**

If a dispute concerns the interpretation, application or validity of the Agreement, the parties must bring action before the EU General Court — or, on appeal, the EU Court of Justice — under Article 272 of the Treaty on the Functioning of the EU (TFEU).

For non-EU beneficiaries (if any), such disputes must be brought before the courts of Brussels, Belgium — unless an international agreement provides for the enforceability of EU court judgements.

For beneficiaries with arbitration as special dispute settlement forum (if any; see Data Sheet, Point 5), the dispute will — in the absence of an amicable settlement — be settled in accordance with the Rules for Arbitration published on the Portal.





If a dispute concerns administrative sanctions, offsetting or an enforceable decision under Article 299 TFEU (see Articles 22 and 34), the beneficiaries must bring action before the General Court — or, on appeal, the Court of Justice — under Article 263 TFEU.

For grants where the granting authority is an EU executive agency (see Preamble), actions against offsetting and enforceable decisions must be brought against the European Commission (not against the granting authority; see also Article 22).

#### **ARTICLE 44 — ENTRY INTO FORCE**

The Agreement will enter into force on the day of signature by the granting authority or the coordinator, depending on which is later.

#### **SIGNATURES**

For the coordinator

For the granting authority



## **ANNEX 1**



# **Horizon Europe (HORIZON)**

## **Description of the action (DoA)**

**Part A**

**Part B**

## DESCRIPTION OF THE ACTION (PART A)

### COVER PAGE

*Part A of the Description of the Action (DoA) must be completed directly on the Portal Grant Preparation screens.*

<b>PROJECT</b>	
<i>Grant Preparation (General Information screen) — Enter the info.</i>	
<b>Project number:</b>	101114732
<b>Project name:</b>	atm-uspacE iNterface and airSpace reconfigURation sErvice
<b>Project acronym:</b>	ENSURE
<b>Call:</b>	HORIZON-SESAR-2022-DES-IR-01
<b>Topic:</b>	HORIZON-SESAR-2022-DES-IR-01-WA4-1
<b>Type of action:</b>	HORIZON-JU-IA
<b>Service:</b>	SESAR
<b>Project starting date:</b>	fixed date: 1 June 2023
<b>Project duration:</b>	36 months

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List of critical risks .....	31
Project reviews .....	32
JU contributions .....	32

## PROJECT SUMMARY

### Project summary

*Grant Preparation (General Information screen) — Provide an overall description of your project (including context and overall objectives, planned activities and main achievements, and expected results and impacts (on target groups, change procedures, capacities, innovation etc)). This summary should give readers a clear idea of what your project is about.*

*Use the project summary from your proposal.*

This project aims to refine and complete the definition of the common ATM U-space interface by identifying new working areas with impact and providing a consolidated interface with a standardized data model, architecture and an operation method to achieve a minimum TRL7.

This proposal addresses the topic “ATM – U-space Interface and Services” which is composed of the following solutions:

- Solution 1: ATM - U-space Interface:. Achieve full integration of ATM and U-space systems, by refining and completing the definition of the common ATM U-space interface and identifying new working areas with impact on the already started common interface.

- Solution 2: Dynamic Airspace Reconfiguration: Develop the complete service mentioned in U-space regulation and in their respective Guidance Material (GM) and Acceptable Means of Compliance (AMC), necessary to establish the operating methodology and develop the standard interface to help ATC actors in charge of airspace reconfigurations to maintain traffic segregation and to avoid proximity between manned and unmanned aircraft within the designated U-space airspace.

## LIST OF PARTICIPANTS

### PARTICIPANTS

*Grant Preparation (Beneficiaries screen) — Enter the info.*

Number	Role	Short name	Legal name	Country	PIC
1	COO	INDRA	INDRA SISTEMAS SA	ES	999959130
1.1	AE	UPM	UNIVERSIDAD POLITECNICA DE MADRID	ES	999974844
1.2	AE	IFT	INDRA FACTORIA TECNOLOGICA SL	ES	899914203
2	BEN	NLR	STICHTING KONINKLIJK NEDERLANDS LUCHT - EN RUIMTEVAARTCENTRUM	NL	999987066
3	BEN	HC	HUNGAROCONTROL MAGYAR LEGIFORGALMISZOLGALAT ZARTKORUEN MUKODO RESZVENYTARSASAG	HU	941767472
4	BEN	ON	AKCINE BENDROVE ORO NAVIGACIJA	LT	919915991
5	BEN	TERN	TERN SYSTEMS EHF	IS	887286355
6	BEN	COLLINS	COLLINS AEROSPACE IRELAND, LIMITED	IE	971136162
7	BEN	AIRBUS	AIRBUS OPERATIONS SL	ES	999944095
8	BEN	UNIFLY	UNIFLY	BE	924870557
9	BEN	ENAV	ENAV SPA	IT	998197513
9.1	AE	TECHNO SKY	TECHNO SKY SRL TECHNOLOGIES FOR AIR TRAFFIC MANAGEMENT	IT	941608877

<b>PARTICIPANTS</b>					
<i>Grant Preparation (Beneficiaries screen) — Enter the info.</i>					
<b>Number</b>	<b>Role</b>	<b>Short name</b>	<b>Legal name</b>	<b>Country</b>	<b>PIC</b>
9.2	AE	DTA	DISTRETTO TECNOLOGICO AEROSPAZIALE S.C. A R.L.	IT	983016237
10	BEN	LEONARDO	LEONARDO - SOCIETA PER AZIONI	IT	998627417
11	BEN	ENAIRE	ENAIRE	ES	997701843
11.1	AE	CRIDA	CENTRO DE REFERENCIA INVESTIGACION DESARROLLO E INNOVACION ATM, A.I.E.	ES	997605619
11.2	AE	INECO	INGENIERIA Y ECONOMIA DEL TRANSPORTE SME MP SA	ES	999537568
12	BEN	D-FLIGHT	D-FLIGHT SPA	IT	902701983
13	BEN	NAIS	NEXTANT APPLICATIONS & INNOVATIVE SOLUTION SRL	IT	973988350
14	BEN	SABCA	SOCIETE ANONYME BELGE DE CONSTRUCTIONS AERONAUTIQUES-S.A.B.C.A.	BE	999954959
15	BEN	EUROCONTROL	EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION	BE	999483733
16	BEN	LFV	LUFTFARTSVERKET	SE	942346077
17	BEN	AEROCAMARAS	AEROCAMARAS SL	ES	886469227
18	BEN	IAA	UDARAS EITLIOCHTA NA HEIREANN THE IRISH AVIATION AUTHORITY	IE	927009019
19	AP	NATS	NATS (EN ROUTE) PUBLIC LIMITED COMPANY	UK	997542763
20	AP	RCUK	ROCKWELL COLLINS UK LIMITED	UK	950569640

## LIST OF WORK PACKAGES

Work packages						
Grant Preparation (Work Packages screen) — Enter the info.						
Work Package No	Work Package name	Lead Beneficiary	Effort (Person-Months)	Start Month	End Month	Deliverables
WP1	Project Management	1 - INDRA	36.00	1	36	D1.1 – Project Management Plan (PMP) D1.2 – Data Management Plan (DMP) D1.3 – Project Management Plan (PMP) Update #1 D1.4 – Data Management Plan (DMP) Intermediate D1.5 – Data Management Plan (DMP) Final
WP2	ATM-U-space Interface	1 - INDRA	460.60	1	36	D2.1 – REG Initial Sol1 D2.2 – STAND Initial Sol1 D2.3 – STAND Intermediate #1 Sol1 D2.4 – REG Intermediate #1 Sol1 D2.5 – STAND Intermediate #2 Sol1 D2.6 – REG Intermediate #2 Sol1 D2.7 – VALP Sol1 Final D2.8 – TS/IRS Sol1 Final D2.9 – SPR/INTEROP-OSED Sol1 Final D2.10 – STAND Sol1 Final D2.11 – REG Sol1 Final D2.12 – CBA Sol1 Final D2.13 – VALR Sol1 Final D2.14 – Contextual Note Sol1
WP3	Dynamic Airspace Reconfiguration	11 - ENAIRE	502.68	1	36	D3.1 – REG Initial Sol2 D3.2 – STAND Initial Sol2 D3.3 – REG Intermediate #1 Sol2 D3.4 – STAND Intermediate #1 Sol2 D3.5 – STAND Intermediate #2 Sol2 D3.6 – REG Intermediate #2 Sol2

<b>Work packages</b> <i>Grant Preparation (Work Packages screen) — Enter the info.</i>						
Work Package No	Work Package name	Lead Beneficiary	Effort (Person-Months)	Start Month	End Month	Deliverables
						D3.7 – VALP Sol2 Final D3.8 – REG Sol2 Final D3.9 – CBA Sol2 Final D3.10 – STAND Sol2 Final D3.11 – TS/IRS Sol2 Final D3.12 – SPR/INTEROP-OSED Sol2 Final D3.13 – Contextual Note Sol2 D3.14 – VALR Sol2 Final
WP4	Communication, dissemination and exploitation	1 - INDRA	19.30	1	36	D4.1 – Communications, Dissemination & Exploitation Plan (CDE) D4.2 – Communications, Dissemination & Exploitation Plan (CDE) Intermediate #1 D4.3 – Communications, Dissemination & Exploitation Plan (CDE) Intermediate #2 D4.4 – Communications, Dissemination & Exploitation Plan (CDE) Final

**Work package WP1 – Project Management**

<b>Work Package Number</b>	WP1	<b>Lead Beneficiary</b>	1. INDRA
<b>Work Package Name</b>	Project Management		
<b>Start Month</b>	1	<b>End Month</b>	36

**Objectives**

The project management objectives are to coordinate the activities among the partners, monitor the project's progress regarding time and quality, as well as coordinate with the SESAR 3 programme and fulfil the administrative requirements of the grant agreement, more specifically this will include:

- Providing administration and management of the project and the GA;
- Securing effective and efficient assignment of partner contributions;
- Facilitating separation of solution-based works from the administrative work necessary to carry out the project;
- Ensuring consistency of the project, including quality monitoring against proposed metrics.
- Reaching milestones as well as project objectives.
- Delivering regular progress reports, which describe the technical progress done by the project during the considered period.
- Monitoring of the risks and application of related mitigation actions

**Description**

Description of work

Project Management and Coordination (M1-M36):

- Day-to-day monitoring and control of project progress with respect to project objectives, timetable and acceptance of deliverables.
- Carry out main management activities at project level, reporting process and assure timely delivery. Organise meetings: annual S3JU review meeting, Project Management Board (PMB, on demand), Extended PMB (annual and on demand).
- The Project Manager (PjM), together with the members of the PMB and Extended PMB, will act as project steering committee.
- Change requests will be handled by the committee.
- Develop de PMP and DMP

Project Quality Management and Standardisation (M1-M36):

- The coordinator will ensure the quality of the project. Project quality processes will be produced and those processes monitored.

Reporting and Communication with the S3JU (M1-M36):

- In cooperation with all involved partners, the POC for Communication Activities provide the required periodic and final reports to the S3JU/EC.

SESAR3 Program Management (M1-M36):

- Participate in Programme Committee and sub-committees as agreed.

Administration (M1-M36):

- Ensure that the EU Grant Agreement administration processes are deployed throughout the project and acted upon by partners as required

**Work package WP2 – ATM-U-space Interface**

<b>Work Package Number</b>	WP2	<b>Lead Beneficiary</b>	1. INDRA
<b>Work Package Name</b>	ATM-U-space Interface		
<b>Start Month</b>	1	<b>End Month</b>	36

**Objectives**

Full integration of ATM and U-space systems, by refining and completing the definition of the common ATM U-space interface, identifying new working areas with impact and interest on the already started common interface.



Description
<p>Description of work</p> <p>WP2.0. – Management (INDRA): Encompasses all of the coordination work necessary to advance the solution. Includes the organization of progress meetings, coordination between individual sprints and with the other ENSURE work packages, tracking of project objectives and challenges, and generally ensuring that the project remains on track, in time and within budget.</p> <p>WP2.1. - Literature Review and State-of-Art (INDRA, UPM, UNIFLY, EUROCONTROL, NATS, COLLINS): Detailed study of the state-of-the-art of ATM-U-space Interface, evaluating the work performed in SESAR Wave 3.</p> <ul style="list-style-type: none"> <li>• PJ34 AURA Results obtained main conclusions and gap analysis.</li> <li>• Operational concept and standardization coming from 2021/665 and 664 Regulations.</li> <li>• Review of acceptable means of compliance and guidance material to support the U-space regulation (AMC/GM).</li> <li>• U-space concepts of operation (CORUS, CORUS XUAM, DACUS, AMULED, etc.)</li> <li>• Other concepts of operation for UTM (FAA UTM ConOps, FAA UAM ConOps, SUSI Concept, etc.)</li> </ul> <p>WP2.2. - Operational Concept and Requirements (INDRA, ENAIRE, NAIS, ON, LEONARDO, UPM, UNIFLY, AIRBUS, EUROCONTROL, NATS, COLLINS, ENAV, D-FLIGHT, HC, TERN): Operational Concept and Method to be developed and the necessary requirements to be generated so to comply with the creation of a harmonized U-space – ATM interface.</p> <p>This activity will be split under the following working schema:</p> <ul style="list-style-type: none"> <li>• OSED: Led by INDRA with the participation of ENAIRE, ON, UPM, UNIFLY, AIRBUS, EUROCONTROL, NATS, COLLINS, LEONARDO, ENAV, D-FLIGHT, NAIS, HC, TERN.</li> <li>• INTEROP-SPR: Led by ENAIRE with the participation of INDRA, ON, UPM, UNIFLY, AIRBUS, EUROCONTROL, NATS, COLLINS, LEONARDO, ENAV, D-FLIGHT, NAIS, HC, TERN.</li> <li>• SAR: Led by NAIS with the participation of INDRA, ENAIRE, ON, EUROCONTROL, COLLINS, HC, TERN.</li> <li>• HPAR: Led by NAIS with the participation of INDRA, ENAIRE, UNIFLY, EUROCONTROL, NATS, COLLINS, HC.</li> <li>• ENVAR: Led by NAIS with the participation of EUROCONTROL.</li> <li>• SecAR: Led by NAIS with the participation of LEONARDO.</li> <li>• PAR: Led by ENAIRE with the participation of ON, EUROCONTROL, LEONARDO.</li> <li>• TS/IRS: Led by INDRA with the participation of ENAIRE, ON, UPM, AIRBUS, EUROCONTROL, COLLINS, LEONARDO, D-FLIGHT, TERN.</li> </ul> <p>It will be divided in several sub-activities:</p> <ul style="list-style-type: none"> <li>• Activity 2.1: IEX services definition.</li> </ul> <p>Refinement of IEX services already defined in SESAR Wave 3.</p> <p>New IEX services considering the in-and-out requirements for the two systems as well as the necessary interface for the connection to the SWIM: Collaborative Interface with ATC; Capacity Management; Dynamic Airspace Reconfiguration; Strategic Conflict Resolution; Emergency Management Service and Contingency Plan; ATM-U-space interface complete development to be integrated in TS/IRS.</p> <ul style="list-style-type: none"> <li>• Activity 2.2: Use Cases and Requirements Definition.</li> </ul> <p>Relevant uses cases were the data exchange between U-space and ATM is necessary will be identified.</p> <p>Use cases will be described in detail considering the relevant in-and-output data for both systems and which information has to be sent via SWIM.</p> <p>Operational requirements will be translated into functional requirements (which will be traced to TS/IRS) and non-functional requirements (which will be traced to SPR/INTEROP-OSED).</p> <p>UC and operational requirements based on them will be the input for the development of the operational concept (OSED).</p> <ul style="list-style-type: none"> <li>• Activity 2.3: KPAs and Focus areas impact.</li> </ul> <p>Analyse the impact on KPAs and Focus areas already identified in activity 2.2 through the results coming from validation exercises.</p> <p>Gather information from activity 4 (Validation and Assessment Plans) to provide a baseline.</p> <p>Determine the functionalities and modifications required for increasing the efficiency and performance of both ATM and U-space users developed, to reduce the impact on the focus areas identified.</p> <p>WP2.3. - Standards and Regulations (EUROCONTROL, INDRA, LEONARDO, COLLINS, AIRBUS, UNIFLY, TERN, EASA): Development/alignment of/with mature and robust standards which will support both the industrialization of the systems, procedures or services in question, and provide the basis for means of compliance for any necessary regulations.</p> <p>Aims to:</p> <ul style="list-style-type: none"> <li>• Identify the needs/alignment for/with standards and develop the required specifications for further consideration by the Standardization Bodies.</li> </ul>

- Propose SESAR acceptable means of compliance to EASA to illustrate means to establish compliance with the Basic Regulation and its Implementing Rules.

- Propose SESAR input to standardization activities (e.g. EUROCAE, European Organization for Civil Aviation Equipment).

This activity and related deliverables (STAND and REG) will be led by EUROCONTROL

WP2.4. - Validations and reports (INDRA, COLLINS, NAIS, UNIFLY, ENAIRE, UPM, EUROCONTROL, NATS, HC, TERNS): Develop validation plans and reports based on exercises defined. Two activities are defined at this stage:

- Activity 4.1 Prototype and solution development

Development activities associated to platform and prototype which is going to be used for the validation exercises to be executed by each partner. Software developments, integrations and platform's requirements definition are an example of tasks to be considered at this stage.

- Activity 4.2: Validation plans of high maturity exercises

For the validation plan the following working schema will be applied:

- o Initial VALP: Led by INDRA with the participation of ENAIRE, UNIFLY, TERN, COLLINS, NAIS, HC.

- o VALP part 1: Led by INDRA with the participation of ENAIRE, UNIFLY, TERN, COLLINS, NAIS, HC.

- o SAP: Led by NAIS with the participation of ENAIRE, INDRA, TERN, COLLINS, HC.

- o SecAP: Led by NAIS with the participation of TERN.

- o HPAP: Led by NAIS with the participation of ENAIRE, INDRA, EUROCONTROL, NATS, COLLINS, HC.

Validate information exchange requirements defined in Activity 2 through the validation exercises proposed. All these validation exercises' validations will be supported by operational staff.

These exercises comply with the following objectives:

- o Each exercise has selected a set of U-space SWIM candidate services and the information exchange will be validated.

- o The validation activities will follow the approach of being divided in 'clusters' following what said in the previous bullet. Each cluster will be composed of several partners providing different platforms or operational expertise.

- o From all the clusters a common approach will be followed, validating the collaborative interface ATM-U-space according to the requirements defined.

Having said this, the proposed exercises are the following (already exposed in detail in Table 3):

- Exercise 1 (Lead by INDRA) addressing 5 different use cases.

- Exercise 2 (Lead by COLLINS, Contribution from RCUK, IAA (support)) addressing 8 different use cases.

- Exercise 3 (Lead by TERN, Contribution from HC and UNIFLY) addressing 3 different use cases.

Taking into account the above descriptions, the table below shows the traceability of each one of the exercises against the Information Exchange Services proposed in the Solution:

- Operation Plan:

- Exercise 1: UC1, UC2, UC3, UC4, UC5, UC6

- Exercise 2: UC1, UC2, UC3, UC4, UC5, UC6, UC7, UC8

- Exercise 3: UC1, UC2, UC3

Geofence:

- Exercise 1: -

- Exercise 2: UC2, UC3, UC4, UC5, UC6

- Exercise 3: -

Tracking:

- Exercise 1: UC1, UC2, UC3, UC4, UC5, UC6

- Exercise 2: UC1, UC2, UC3, UC4, UC5, UC6, UC7, UC8

- Exercise 3: UC1, UC2, UC3

Traffic Non-Conformance monitoring:

- Exercise 1: UC1, UC2, UC5

- Exercise 2: UC1, UC2, UC3, UC4, UC5, UC6, UC7, UC8

- Exercise 3: UC3

Tactical Operational Message:

- Exercise 1: -

- Exercise 2: UC2, UC3, UC4, UC5, UC6

- Exercise 3: UC1

**Collaborative Interface with ATC:**

- Exercise 1: UC1, UC3, UC4
- Exercise 2: UC1, UC3, UC7, UC8
- Exercise 3: UC1, UC2

**Capacity Management:**

- Exercise 1: -
- Exercise 2: UC2
- Exercise 3: UC3

**Dynamic Airspace Reconfiguration:**

- Exercise 1: -
- Exercise 2: UC2
- Exercise 3: UC3

**Strategic Conflict Resolution:**

- Exercise 1: UC4
- Exercise 2: UC3
- Exercise 3: -

**Emergency Management Service and contingency plan:**

- Exercise 1: UC2
- Exercise 2: UC6
- Exercise 3: UC2

## • Activity 4.3: Validation reports

Gather, analyse and provide outputs coming from validation exercises.

Study the impact regarding the operating method already defined.

Elaborate workshops to gather opinions coming from partners involved in validations.

For the validation report the following working schema will be applied:

- o VALR: Led by INDRA with the participation of ENAIRE, COLLINS, NAIS, HC, TERN.

For the generation of the CBA the following working schema will be applied:

- o CBA: Led by ON with the participation of NAIS.

WP2.5. – HMI (TERNS, INDRA, HC, ENAIRE, NAIS): Improvements applying to Controller Working Position are one of the most important issues to address when defining a reliable and feasible interface. By this, Solution 1 counts on operational support and inclusion of all concepts, requirements and impacts associated to Human Machine Interface.

**Contributions from partners to TRL7 exercise activities****Exercise 1 led by INDRA:**

- INDRA will coordinate the exercise that will be performed in Spain (ROZAS aerodrome as critical environment). In addition, INDRA will provide its ATM platform (iTEC) and its CIS platform including the ATM/U-space interface solution at TRL7 maturity that will enable the communication between ATM and U-space through CIS platform.
- ENAIRE will participate supporting the validation procedures and providing ATCO personnel to cover the expected functions in the ATM side.
- UNIFLY: will provide its USSP in order to receive the information from ATM through CIS platform and establish a bidirectional communication with the respective drone operators.
- SABCA: as the drone operator will provide its drones and pilots integrated with the USSP of UNIFLY to receive the information/instructions coming from ATM and provide the respective answers (acknowledges).
- COLLINS: will provide its USSP in order to receive the information from ATM through CIS platform and establish a bidirectional communication with the respective drone operators.

**Exercise 2 led by COLLINS:**

- COLLINS and RCUK will coordinate and execute the validation activities within Shannon Airport (Ireland) using its USSP platform WebUAS that will be integrated with the Irish ATM environment and will validate the ATM/U-space interface solution at TRL7 maturity that will enable the communication between ATM and U-space.
- IAA, the ATC stakeholder, and controllers from Shannon airport will participate to validate the new ATM/U-space interface.

**Exercise 3 led by TERN:**

- TERN will be in charge of coordinating the exercise that will be performed in Budapest airport (Hungary). Also will provide the ATM system (Polaris)
- HC: as ANSP will provide the ATM side of the validation to support the activities from ATS perspective.
- UNIFLY: will provide its CIS and USS platforms that will interface with ATM system from TERN in order to exchange information between ATM and U-space reaching the respective drone operators.

### Work package WP3 – Dynamic Airspace Reconfiguration

<b>Work Package Number</b>	WP3	<b>Lead Beneficiary</b>	11. ENAIRE
<b>Work Package Name</b>	Dynamic Airspace Reconfiguration		
<b>Start Month</b>	1	<b>End Month</b>	36

#### Objectives

Develop a refined and complete Dynamic Reconfiguration Service mentioned in U-space regulation, necessary to establish the operating methodology and develop the standard interface to help ATC actors in charge of airspace reconfigurations to implement airspace reconfiguration changes.

#### Description

Description of work

WP3.0. – Management (ENAIRE): Encompasses all of the coordination work necessary to advance the solution. This WP includes the elaboration and refinement of the project management plan, organization of progress meetings, coordination between individual sprints and with the other ENSURE work packages, tracking of project objectives and challenges, and generally ensuring that the project remains on track, in time and within budget.

WP3.1. - Operational Services and Environment for Dynamic Airspace Reconfiguration (ENAIRE, NAIS, INDRA, NATS, UNIFLY, LFV, EUROCONTROL, NLR, LEONARDO, ENAV, D-FLIGHT, DTA, TERN, HC, AIRBUS, COLLINS): This WP covers all of the operational aspects related to the DAR service.

This activity will be split under the following working schema:

- OSED: Led by LFV with the participation of ENAIRE, ON, INDRA, UNIFLY, EUROCONTROL, NATS, NLR, ENAV, D-FLIGHT, LEONARDO, AIRBUS, HC, TERN, COLLINS.
- INTEROP-SPR: Led by LFV with the participation of ENAIRE, ON, INDRA, UNIFLY, EUROCONTROL, NATS, NLR, ENAV, D-FLIGHT, LEONARDO, AIRBUS, HC, TERN, COLLINS.
- SAR: Led by NAIS with the participation of ENAIRE, ON, INDRA, EUROCONTROL, LEONARDO, NLR, HC, TERN.
- HPAR: Led by NLR with the participation of ENAIRE, INDRA, EUROCONTROL, HC, NAIS, LFV, NATS.
- ENVAR: Led by NAIS with the participation of EUROCONTROL.
- SecAR: Led by NAIS with the participation of LEONARDO.
- PAR: Led by ENAIRE with the participation of ON, LEONARDO, EUROCONTROL, LFV, NLR.
- TS/IRS: Led by UNIFLY with the participation of INDRA, ON, AIRBUS, EUROCONTROL, D-FLIGHT, LEONARDO, TERN, NLR, COLLINS.

Summary Report on Literature Review and State-of-Art of DAR (NATS, ENAIRE, INDRA, EUROCONTROL, NLR, LFV, UNIFLY, AIRBUS, LEONARDO, D-FLIGHT, NAIS, DTA, COLLINS): A detailed study of the state-of-the-art of Dynamic Airspace Reconfiguration will be conducted, evaluating the work performed in SESAR Wave 2 and other U-space/UTM initiatives. Baseline reference projects/documents are the same considered for WP02.

Operational Concept and Requirements: Operational Concept and Method to be developed and the necessary requirements to be generated.

- Operational procedures, actors and interactions between U-space and ATC for the management of DAR. (OP 1): Includes all operational elements required to make the DAR function. Emphasis is predominantly on the human actors, processes, roles and responsibilities regarding the use of the DAR service.
- Capability to dynamically change the airspace (CAP 1): Encompasses the DAR service's core functionalities related to segregation using geofences, dynamic reassignment of airspace to either ATM or U-space, IEX processes, airspace visualization, notifications and management of DAR requests.

- Capability to respond to contingency situations (CAP 2): Targets the functionalities of the DAR service in response to contingency situations.
- Capability to relay information between ATM and U-space actors (CAP 3): Covers the DAR service's connectivity with the ATM-U-space interface and the wider ecosystem of services within which it is embedded.
- Capability to provide all involved actors with situational awareness (CAP 4): Covers in particular the HMI requirements for actors involved in the DAR process.

The execution of this activity will be divided into several sub-activities:

- DAR concept definition: Operational concept to be defined considering the proposed features and capabilities. The operational concept presented in this solution will also aim to answer some important pending questions and gaps regarding DAR.
- Operational requirements to be defined considering both functional requirements (traced to TS/IRS) and non-functional requirements (traced to SPR/INTEROP-OSED).

WP3.2. - Prototype development (INDRA, UNIFLY, LEONARDO, EUROCONTROL, AIRBUS, NLR, D-FLIGHT, TERN, ON, COLLINS): Development of the DAR service prototypes to support the validation exercises. Prototype development will follow the proposed agile methodology, focusing in particular in developing the core capabilities (CAP 1, 2, 3 and 4) into functional prototypes and the design of adequate supporting HMIs to validate the operational procedures established for the DAR service.

WP3.3 Validations (ENAIRES, INDRA, NAIS, LEONARDO, UNIFLY, AIRBUS, D-FLIGHT, EUROCONTROL, NATS, LFV, NLR, ENAV, DTA, COLLINS): In this WP, validation activities will be performed. In particular it encompasses all the activities for real time and fast time simulations and demo activities:

- Validation planning. Validation plan of the simulation and demo activity will be defined. Collect feedback on the concept. Validate DAR systems and management requirements defined in WP3.1.

Validation exercises to be proposed complying with a common DAR Management and IEX (Information Exchange) services.

Ensure alignment with WP02 and the correspondent IEX services defined.

Different platforms and operational expertise to be provided by different partners.

Operational Staff supporting validation exercises.

For the validation plan the following working schema will be applied:

- o Initial VALP: Led by LEONARDO with the participation of ENAIRES, INDRA, LFV, NLR, ENAV, D-FLIGHT, UNIFLY, AIRBUS, NATS, EUROCONTROL, NAIS, DTA, COLLINS.
- o VALP part 1: Led by LEONARDO with the participation of ENAIRES, INDRA, LFV, NLR, ENAV, D-FLIGHT, UNIFLY, AIRBUS, NATS, EUROCONTROL, NAIS, DTA, COLLINS.
- o SAP: Led by NAIS with the participation of ENAIRES, INDRA, EUROCONTROL, NLR, LEONARDO.
- o SecAP: Led by NAIS with the participation of AIRBUS, LEONARDO.
- o HPAP: Led by NLR with the participation of ENAIRES, INDRA, AIRBUS, NAIS.

- Validation reporting. This activity contains a methodological process which describes in detail the results of the exercise. Report the feedback obtained on the concept and relevant requirements. Report conclusions and recommendations for the subsequent operational implementation.

Describe the demo outcomes and recommendations based on the execution of the demo sessions performed.

Gather, analyse and provide outputs coming from validation exercises.

Study the impact regarding the operating method already defined.

Elaborate workshops to gather opinions coming from partners involved in validations.

For the validation report the following working schema will be applied:

- o VALR: Led by ENAIRES with the participation of INDRA, AIRBUS, EUROCONTROL, NATS, LFV, DTA, NAIS, ENAV, D-FLIGHT, LEONARDO, NLR, COLLINS.

For the generation of the CBA the following working schema will be applied:

- o CBA: Led by ON with the participation of ENAIRES, NAIS, AIRBUS, ENAV.

WP3.3.1.-Medium maturity exercises: A combination of real-time and fast-time simulations to mature the DAR concept to TRL 4. In order to test the concept at TRL 4 level of maturity, the consortium will perform several simulation exercises (already exposed in detail in Table 4) in parallel, each focusing on specific use cases:

- ENAIRES RTS addressing OP1 and CAP4.
- AIRBUS RTS addressing OP1 and CAP3.
- AIRBUS FTS addressing OP1 and CAP3.
- NLR addressing OP1, CAP1, CAP2 and CAP4.

WP3.3.2.-High maturity exercises: A combination of real-time and fast-time simulations to mature the DAR concept



to TRL 7. TRL 7 level of maturity validations will be performed in four different clusters, one in Spain, one in the Netherlands, one in Poland and another in Italy. The clusters (already exposed in detail in Table 4) will develop and perform live demonstrations of the DAR concept and supporting systems within a real operational environment:

- Spanish Cluster addressing CAP1, CAP2, CAP3 and CAP4.
- Italian Cluster addressing CAP1, CAP2, CAP3 and CAP4.
- Dutch Cluster addressing OPI, CAP1 and CAP4.

W3.4. - Conclusions and Recommendations (EUROCONTROL, EASA, ON, ENAIRE, UNIFLY, INDRA, AIRBUS, NLR, LEONARDO, ENAV, NAIS, TERN): Provision of recommendations for updating existing regulations and standards, or proposing new ones. Target audience of this work package will be the relevant regulatory and standardization bodies at EU-level (EUROCAE, EASA).

Standards and Regulations (EUROCONTROL, INDRA, AIRBUS, NLR, LEONARDO, UNIFLY, TERN): Development/alignment of/with mature and robust standards which will support both the industrialization of the systems, procedures or services in question, and provide the basis for means of compliance for any necessary regulations. Aims to:

- Standardize the U-space volume definition (sectors).
- Standardize the U-space volume modification through Dynamic Airspace Reconfiguration.
- Standardization of data models and information exchange. Development of interfaces up to V3 level.

Moreover, this work package will also provide a cost benefit analysis of the proposed DAR concept.

This activity and related deliverables (STAND and REG) will be led by EUROCONTROL

Contributions from partners to TRL7 exercise activities

Spanish Cluster led by INDRA:

- INDRA will coordinate the exercise that will be performed in Spain (ROZAS aerodrome as critical environment). In addition, INDRA will provide its ATM platform (iTEC) and its CIS platform including the DAR service solution at TRL7 maturity that will allow ATS units to execute dynamic airspace reconfiguration that will be distributed to the CISP and from the CISP to the USSPs connected.
- ENAIRE will participate supporting the validation procedures and providing ATCO personnel to cover the DAR functions in the ATM side.
- UNIFLY: will provide its USSP in order to receive the DAR information from ATM through CIS platform and establish a bidirectional communication with the respective drone operators to provide also the acknowledgement of the reconfiguration by affected drone operators.
- AEROCAMARAS: as the drone operator will provide its drones and pilots integrated with the USSP of UNIFLY to receive the DAR information (including instructions) coming from ATM and provide the respective answers (acknowledgement).
- COLLINS: will provide its USSP in order to receive the DAR information from ATM through CIS platform and establish a bidirectional communication with the respective drone operators.

Italian Cluster led by LEONARDO:

- LEONARDO will be in charge of coordinating the exercise that will be performed in Grottaglie providing its ATM platform.
- ENAV will contribute providing the Common Information Service (CIS) for exchanges of services and information between ATM with USSP, Air Traffic Controllers to cover the expected functions in the ATM side.
- TECHNO-SKY, ENAV affiliate, as certified BVLOS operator will participate with UAS systems/vehicles and remote pilots
- DTA, ENAV affiliate, will contribute through the provision of Italian Test Bed in Grottaglie (airport infrastructure and environment + Manduria Airfield), UAS operator and remote pilot, G/A aircraft
- D-FLIGHT will act as USSP and will make available the use of USSP infrastructure and U-space platform and u-space services during the execution of validation exercise.
- NAIS will support the preparation and execution of the exercise contributing to the validation process with all the activities related to KPA assessment, validation plan set-up and reporting final outcome and recommendations.

Dutch Cluster led by NLR:

- NLR will be in charge of coordinating the exercise that will be performed in Den Helder Airport. The demonstration activity will be carried out together with the Royal Navy in a military training area. In that area, missions can be flown that potentially would have an impact on Schiphol approach.
- As interference with real operations is undesirable, approach control will be simulated during the demonstration with the NARSIM human-in-the-loop real-time simulation platform that includes the earlier developed DAR HMI

**Work package WP4 – Communication, dissemination and exploitation**

<b>Work Package Number</b>	WP4	<b>Lead Beneficiary</b>	1. INDRA
<b>Work Package Name</b>	Communication, dissemination and exploitation		
<b>Start Month</b>	1	<b>End Month</b>	36

**Objectives**

Develop communication and dissemination activities associated to ENSURE project.

**Description**

Ensure that all communications related to the project are consistent and in line with the SESAR 3 JU. Share clear and transparent information and make it accessible to all audiences. Promote awareness of the development of ENSURE through the explanation of concepts related to the project, encouraging interaction and active participation of stakeholders. Highlight milestones, social, economic and technological benefits. Distribute project results in a public and accessible way coordinating the messages between all communication channels to maximize the visibility and reach of the results through quality content.

## STAFF EFFORT

<b>Staff effort per participant</b> <i>Grant Preparation (Work packages - Effort screen) — Enter the info.</i>					
Participant	WP1	WP2	WP3	WP4	Total Person-Months
1 - INDRA	36.00	162.00	92.00	10.00	300.00
1.1 - UPM		36.30			36.30
1.2 - IFT		40.60			40.60
2 - NLR			23.20	1.50	24.70
3 - HC		31.00	6.00	0.50	37.50
4 - ON		8.00	11.80		19.80
5 - TERN		38.00	2.80	0.50	41.30
6 - COLLINS		19.00	9.00	1.00	29.00
7 - AIRBUS		2.00	20.40		22.40
8 - UNIFLY		33.00	35.00	0.50	68.50
9 - ENAV		1.50	10.00	0.50	12.00
9.1 - TECHNO SKY			4.00		4.00
9.2 - DTA			10.00		10.00
10 - LEONARDO		9.00	106.18	1.00	116.18
11 - ENAIRE		7.90	10.50		18.40
11.1 - CRIDA		7.00	43.00	3.00	53.00
11.2 - INECO		17.00	13.50		30.50
12 - D-FLIGHT		3.00	19.00		22.00
13 - NAIS		25.00	43.00		68.00



<b>Staff effort per participant</b> <i>Grant Preparation (Work packages - Effort screen) — Enter the info.</i>					
Participant	WP1	WP2	WP3	WP4	Total Person-Months
14 - SABCA		5.30		0.30	5.60
15 - EUROCONTROL		13.00	23.00		36.00
16 - LFV			15.00	0.50	15.50
17 - AEROCAMARAS			5.30		5.30
18 - IAA		2.00			2.00
<b>Total Person-Months</b>	36.00	460.60	502.68	19.30	1018.58

## LIST OF DELIVERABLES

<b>Deliverables</b> <i>Grant Preparation (Deliverables screen) — Enter the info.</i> <i>The labels used mean:</i> <i>Public — fully open (🚩 automatically posted online)</i> <i>Sensitive — limited under the conditions of the Grant Agreement</i> <i>EU classified — RESTREINT-UE/EU-RESTRICTED, CONFIDENTIEL-UE/EU-CONFIDENTIAL, SECRET-UE/EU-SECRET under Decision <a href="#">2015/444</a></i>						
Deliverable No	Deliverable Name	Work Package No	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
D1.1	Project Management Plan (PMP)	WP1	1 - INDRA	R — Document, report	SEN - Sensitive	3
D1.2	Data Management Plan (DMP)	WP1	1 - INDRA	DMP — Data Management Plan	PU - Public	3
D1.3	Project Management Plan (PMP) Update #1	WP1	1 - INDRA	R — Document, report	SEN - Sensitive	8
D1.4	Data Management Plan (DMP) Intermediate	WP1	1 - INDRA	DMP — Data Management Plan	PU - Public	18
D1.5	Data Management Plan (DMP) Final	WP1	1 - INDRA	DMP — Data Management Plan	PU - Public	35
D2.1	REG Initial Sol1	WP2	15 - EUROCONTROL	R — Document, report	SEN - Sensitive	4
D2.2	STAND Initial Sol1	WP2	15 - EUROCONTROL	R — Document, report	SEN - Sensitive	4
D2.3	STAND Intermediate #1 Sol1	WP2	15 - EUROCONTROL	R — Document, report	SEN - Sensitive	8
D2.4	REG Intermediate #1 Sol1	WP2	15 - EUROCONTROL	R — Document, report	SEN - Sensitive	8
D2.5	STAND Intermediate #2 Sol1	WP2	15 - EUROCONTROL	R — Document, report	SEN - Sensitive	21
D2.6	REG Intermediate #2 Sol1	WP2	15 - EUROCONTROL	R — Document, report	SEN - Sensitive	21
D2.7	VALP Sol1 Final	WP2	1 - INDRA	R — Document, report	PU - Public	26
D2.8	TS/IRS Sol1 Final	WP2	1 - INDRA	R — Document, report	PU - Public	32

**Deliverables**

Grant Preparation (Deliverables screen) — Enter the info.

The labels used mean:

Public — fully open (⚠ automatically posted online)

Sensitive — limited under the conditions of the Grant Agreement

EU classified — RESTREINT-UE/EU-RESTRICTED, CONFIDENTIEL-UE/EU-CONFIDENTIAL, SECRET-UE/EU-SECRET under Decision [2015/444](#)

Deliverable No	Deliverable Name	Work Package No	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
D2.9	SPR/INTEROP-OSED Sol1 Final	WP2	1 - INDRA	R — Document, report	PU - Public	32
D2.10	STAND Sol1 Final	WP2	15 - EUROCONTROL	R — Document, report	SEN - Sensitive	32
D2.11	REG Sol1 Final	WP2	15 - EUROCONTROL	R — Document, report	SEN - Sensitive	32
D2.12	CBA Sol1 Final	WP2	4 - ON	R — Document, report	PU - Public	32
D2.13	VALR Sol1 Final	WP2	1 - INDRA	R — Document, report	PU - Public	32
D2.14	Contextual Note Sol1	WP2	1 - INDRA	R — Document, report	PU - Public	32
D3.1	REG Initial Sol2	WP3	15 - EUROCONTROL	R — Document, report	SEN - Sensitive	4
D3.2	STAND Initial Sol2	WP3	15 - EUROCONTROL	R — Document, report	SEN - Sensitive	4
D3.3	REG Intermediate #1 Sol2	WP3	15 - EUROCONTROL	R — Document, report	SEN - Sensitive	8
D3.4	STAND Intermediate #1 Sol2	WP3	15 - EUROCONTROL	R — Document, report	SEN - Sensitive	8
D3.5	STAND Intermediate #2 Sol2	WP3	15 - EUROCONTROL	R — Document, report	SEN - Sensitive	21
D3.6	REG Intermediate #2 Sol2	WP3	15 - EUROCONTROL	R — Document, report	SEN - Sensitive	21
D3.7	VALP Sol2 Final	WP3	10 - LEONARDO	R — Document, report	PU - Public	26
D3.8	REG Sol2 Final	WP3	15 - EUROCONTROL	R — Document, report	SEN - Sensitive	32
D3.9	CBA Sol2 Final	WP3	4 - ON	R — Document, report	PU - Public	32
D3.10	STAND Sol2 Final	WP3	15 - EUROCONTROL	R — Document, report	SEN - Sensitive	32
D3.11	TS/IRS Sol2 Final	WP3	8 - UNIFLY	R — Document, report	PU - Public	32

**Deliverables**

*Grant Preparation (Deliverables screen) — Enter the info.*

*The labels used mean:*

*Public — fully open (🚩 automatically posted online)*

*Sensitive — limited under the conditions of the Grant Agreement*

*EU classified — RESTREINT-UE/EU-RESTRICTED, CONFIDENTIEL-UE/EU-CONFIDENTIAL, SECRET-UE/EU-SECRET under Decision [2015/444](#)*

Deliverable No	Deliverable Name	Work Package No	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
D3.12	SPR/INTEROP-OSED Sol2 Final	WP3	16 - LFV	R — Document, report	PU - Public	32
D3.13	Contextual Note Sol2	WP3	11 - ENAIRE	R — Document, report	PU - Public	32
D3.14	VALR Sol2 Final	WP3	11 - ENAIRE	R — Document, report	PU - Public	32
D4.1	Communications, Dissemination & Exploitation Plan (CDE)	WP4	1 - INDRA	R — Document, report	PU - Public	3
D4.2	Communications, Dissemination & Exploitation Plan (CDE) Intermediate #1	WP4	1 - INDRA	R — Document, report	PU - Public	8
D4.3	Communications, Dissemination & Exploitation Plan (CDE) Intermediate #2	WP4	1 - INDRA	R — Document, report	PU - Public	21
D4.4	Communications, Dissemination & Exploitation Plan (CDE) Final	WP4	1 - INDRA	R — Document, report	PU - Public	35

**Deliverable D1.1 – Project Management Plan (PMP)**

<b>Deliverable Number</b>	D1.1	<b>Lead Beneficiary</b>	1. INDRA
<b>Deliverable Name</b>	Project Management Plan (PMP)		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	SEN - Sensitive
<b>Due Date (month)</b>	3	<b>Work Package No</b>	WP1

Description
Project Management Plan

**Deliverable D1.2 – Data Management Plan (DMP)**

<b>Deliverable Number</b>	D1.2	<b>Lead Beneficiary</b>	1. INDRA
<b>Deliverable Name</b>	Data Management Plan (DMP)		
<b>Type</b>	DMP — Data Management Plan	<b>Dissemination Level</b>	PU - Public
<b>Due Date (month)</b>	3	<b>Work Package No</b>	WP1

Description
Data Management Plan

**Deliverable D1.3 – Project Management Plan (PMP) Update #1**

<b>Deliverable Number</b>	D1.3	<b>Lead Beneficiary</b>	1. INDRA
<b>Deliverable Name</b>	Project Management Plan (PMP) Update #1		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	SEN - Sensitive
<b>Due Date (month)</b>	8	<b>Work Package No</b>	WP1

Description
Project Management Plan

**Deliverable D1.4 – Data Management Plan (DMP) Intermediate**

<b>Deliverable Number</b>	D1.4	<b>Lead Beneficiary</b>	1. INDRA
<b>Deliverable Name</b>	Data Management Plan (DMP) Intermediate		
<b>Type</b>	DMP — Data Management Plan	<b>Dissemination Level</b>	PU - Public
<b>Due Date (month)</b>	18	<b>Work Package No</b>	WP1

Description
Data Management Plan

**Deliverable D1.5 – Data Management Plan (DMP) Final**

<b>Deliverable Number</b>	D1.5	<b>Lead Beneficiary</b>	1. INDRA
<b>Deliverable Name</b>	Data Management Plan (DMP) Final		
<b>Type</b>	DMP — Data Management Plan	<b>Dissemination Level</b>	PU - Public
<b>Due Date (month)</b>	35	<b>Work Package No</b>	WP1

Description
Data Management Plan

**Deliverable D2.1 – REG Initial Sol1**

<b>Deliverable Number</b>	D2.1	<b>Lead Beneficiary</b>	15. EUROCONTROL
<b>Deliverable Name</b>	REG Initial Sol1		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	SEN - Sensitive
<b>Due Date (month)</b>	4	<b>Work Package No</b>	WP2

Description
SESAR acceptable means of compliance to EASA to illustrate means to establish compliance with the Basic Regulation and its Implementing Rules

**Deliverable D2.2 – STAND Initial Sol1**

<b>Deliverable Number</b>	D2.2	<b>Lead Beneficiary</b>	15. EUROCONTROL
<b>Deliverable Name</b>	STAND Initial Sol1		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	SEN - Sensitive
<b>Due Date (month)</b>	4	<b>Work Package No</b>	WP2

Description
Needs/alignment for/with standards and develop the required specifications for further consideration by the Standardization Bodies

**Deliverable D2.3 – STAND Intermediate #1 Sol1**

<b>Deliverable Number</b>	D2.3	<b>Lead Beneficiary</b>	15. EUROCONTROL
<b>Deliverable Name</b>	STAND Intermediate #1 Sol1		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	SEN - Sensitive
<b>Due Date (month)</b>	8	<b>Work Package No</b>	WP2

Description
Needs/alignment for/with standards and develop the required specifications for further consideration by the Standardization Bodies

**Deliverable D2.4 – REG Intermediate #1 Sol1**

<b>Deliverable Number</b>	D2.4	<b>Lead Beneficiary</b>	15. EUROCONTROL
<b>Deliverable Name</b>	REG Intermediate #1 Sol1		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	SEN - Sensitive
<b>Due Date (month)</b>	8	<b>Work Package No</b>	WP2

Description
SESAR acceptable means of compliance to EASA to illustrate means to establish compliance with the Basic Regulation and its Implementing Rules

**Deliverable D2.5 – STAND Intermediate #2 Sol1**

<b>Deliverable Number</b>	D2.5	<b>Lead Beneficiary</b>	15. EUROCONTROL
<b>Deliverable Name</b>	STAND Intermediate #2 Sol1		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	SEN - Sensitive
<b>Due Date (month)</b>	21	<b>Work Package No</b>	WP2

Description
Needs/alignment for/with standards and develop the required specifications for further consideration by the Standardization Bodies

**Deliverable D2.6 – REG Intermediate #2 Sol1**

<b>Deliverable Number</b>	D2.6	<b>Lead Beneficiary</b>	15. EUROCONTROL
<b>Deliverable Name</b>	REG Intermediate #2 Sol1		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	SEN - Sensitive
<b>Due Date (month)</b>	21	<b>Work Package No</b>	WP2

Description
SESAR acceptable means of compliance to EASA to illustrate means to establish compliance with the Basic Regulation and its Implementing Rules

**Deliverable D2.7 – VALP Sol1 Final**

<b>Deliverable Number</b>	D2.7	<b>Lead Beneficiary</b>	1. INDRA
<b>Deliverable Name</b>	VALP Sol1 Final		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	PU - Public
<b>Due Date (month)</b>	26	<b>Work Package No</b>	WP2

Description
Plan for validation exercises

**Deliverable D2.8 – TS/IRS Sol1 Final**

<b>Deliverable Number</b>	D2.8	<b>Lead Beneficiary</b>	1. INDRA
<b>Deliverable Name</b>	TS/IRS Sol1 Final		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	PU - Public
<b>Due Date (month)</b>	32	<b>Work Package No</b>	WP2

Description
Technical and interface requirements specification

**Deliverable D2.9 – SPR/INTEROP-OSED Sol1 Final**

<b>Deliverable Number</b>	D2.9	<b>Lead Beneficiary</b>	1. INDRA
<b>Deliverable Name</b>	SPR/INTEROP-OSED Sol1 Final		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	PU - Public
<b>Due Date (month)</b>	32	<b>Work Package No</b>	WP2

Description
Operating method of the generation of an ATM-U-space interface. Operational, safety and performance requirements

**Deliverable D2.10 – STAND Sol1 Final**

<b>Deliverable Number</b>	D2.10	<b>Lead Beneficiary</b>	15. EUROCONTROL
<b>Deliverable Name</b>	STAND Sol1 Final		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	SEN - Sensitive
<b>Due Date (month)</b>	32	<b>Work Package No</b>	WP2

Description
Needs/alignment for/with standards and develop the required specifications for further consideration by the Standardization Bodies

**Deliverable D2.11 – REG Sol1 Final**

<b>Deliverable Number</b>	D2.11	<b>Lead Beneficiary</b>	15. EUROCONTROL
<b>Deliverable Name</b>	REG Sol1 Final		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	SEN - Sensitive
<b>Due Date (month)</b>	32	<b>Work Package No</b>	WP2

Description
SESAR acceptable means of compliance to EASA to illustrate means to establish compliance with the Basic Regulation and its Implementing Rules



**Deliverable D2.12 – CBA Sol1 Final**

<b>Deliverable Number</b>	D2.12	<b>Lead Beneficiary</b>	4. ON
<b>Deliverable Name</b>	CBA Sol1 Final		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	PU - Public
<b>Due Date (month)</b>	32	<b>Work Package No</b>	WP2

Description
Assesses the economic feasibility of Solution 1

**Deliverable D2.13 – VALR Sol1 Final**

<b>Deliverable Number</b>	D2.13	<b>Lead Beneficiary</b>	1. INDRA
<b>Deliverable Name</b>	VALR Sol1 Final		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	PU - Public
<b>Due Date (month)</b>	32	<b>Work Package No</b>	WP2

Description
Results of the validation exercises defined how they have been conducted. Set of relevant conclusions and recommendations

**Deliverable D2.14 – Contextual Note Sol1**

<b>Deliverable Number</b>	D2.14	<b>Lead Beneficiary</b>	1. INDRA
<b>Deliverable Name</b>	Contextual Note Sol1		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	PU - Public
<b>Due Date (month)</b>	32	<b>Work Package No</b>	WP2

Description
Contextual Note Sol1

**Deliverable D3.1 – REG Initial Sol2**

<b>Deliverable Number</b>	D3.1	<b>Lead Beneficiary</b>	15. EUROCONTROL
<b>Deliverable Name</b>	REG Initial Sol2		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	SEN - Sensitive
<b>Due Date (month)</b>	4	<b>Work Package No</b>	WP3

Description
SESAR acceptable means of compliance to EASA to illustrate means to establish compliance with the Basic Regulation and its Implementing Rules

**Deliverable D3.2 – STAND Initial Sol2**

<b>Deliverable Number</b>	D3.2	<b>Lead Beneficiary</b>	15. EUROCONTROL
<b>Deliverable Name</b>	STAND Initial Sol2		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	SEN - Sensitive
<b>Due Date (month)</b>	4	<b>Work Package No</b>	WP3

Description
Needs/alignment for/with standards and develop the required specifications for further consideration by the Standardization Bodies

**Deliverable D3.3 – REG Intermediate #1 Sol2**

<b>Deliverable Number</b>	D3.3	<b>Lead Beneficiary</b>	15. EUROCONTROL
<b>Deliverable Name</b>	REG Intermediate #1 Sol2		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	SEN - Sensitive
<b>Due Date (month)</b>	8	<b>Work Package No</b>	WP3

Description
SESAR acceptable means of compliance to EASA to illustrate means to establish compliance with the Basic Regulation and its Implementing Rules

**Deliverable D3.4 – STAND Intermediate #1 Sol2**

<b>Deliverable Number</b>	D3.4	<b>Lead Beneficiary</b>	15. EUROCONTROL
<b>Deliverable Name</b>	STAND Intermediate #1 Sol2		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	SEN - Sensitive
<b>Due Date (month)</b>	8	<b>Work Package No</b>	WP3

Description
Needs/alignment for/with standards and develop the required specifications for further consideration by the Standardization Bodies

**Deliverable D3.5 – STAND Intermediate #2 Sol2**

<b>Deliverable Number</b>	D3.5	<b>Lead Beneficiary</b>	15. EUROCONTROL
<b>Deliverable Name</b>	STAND Intermediate #2 Sol2		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	SEN - Sensitive
<b>Due Date (month)</b>	21	<b>Work Package No</b>	WP3

Description
Needs/alignment for/with standards and develop the required specifications for further consideration by the Standardization Bodies

**Deliverable D3.6 – REG Intermediate #2 Sol2**

<b>Deliverable Number</b>	D3.6	<b>Lead Beneficiary</b>	15. EUROCONTROL
<b>Deliverable Name</b>	REG Intermediate #2 Sol2		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	SEN - Sensitive
<b>Due Date (month)</b>	21	<b>Work Package No</b>	WP3

Description
SESAR acceptable means of compliance to EASA to illustrate means to establish compliance with the Basic Regulation and its Implementing Rules

**Deliverable D3.7 – VALP Sol2 Final**

<b>Deliverable Number</b>	D3.7	<b>Lead Beneficiary</b>	10. LEONARDO
<b>Deliverable Name</b>	VALP Sol2 Final		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	PU - Public
<b>Due Date (month)</b>	26	<b>Work Package No</b>	WP3

Description
Plan for validation exercises

**Deliverable D3.8 – REG Sol2 Final**

<b>Deliverable Number</b>	D3.8	<b>Lead Beneficiary</b>	15. EUROCONTROL
<b>Deliverable Name</b>	REG Sol2 Final		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	SEN - Sensitive
<b>Due Date (month)</b>	32	<b>Work Package No</b>	WP3

Description
SESAR acceptable means of compliance to EASA to illustrate means to establish compliance with the Basic Regulation and its Implementing Rules

**Deliverable D3.9 – CBA Sol2 Final**

<b>Deliverable Number</b>	D3.9	<b>Lead Beneficiary</b>	4. ON
<b>Deliverable Name</b>	CBA Sol2 Final		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	PU - Public
<b>Due Date (month)</b>	32	<b>Work Package No</b>	WP3

Description
Assesses the economic feasibility of Solution 2

**Deliverable D3.10 – STAND Sol2 Final**

<b>Deliverable Number</b>	D3.10	<b>Lead Beneficiary</b>	15. EUROCONTROL
<b>Deliverable Name</b>	STAND Sol2 Final		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	SEN - Sensitive
<b>Due Date (month)</b>	32	<b>Work Package No</b>	WP3

Description
Needs/alignment for/with standards and develop the required specifications for further consideration by the Standardization Bodies

**Deliverable D3.11 – TS/IRS Sol2 Final**

<b>Deliverable Number</b>	D3.11	<b>Lead Beneficiary</b>	8. UNIFLY
<b>Deliverable Name</b>	TS/IRS Sol2 Final		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	PU - Public
<b>Due Date (month)</b>	32	<b>Work Package No</b>	WP3

Description
Technical and interface requirements specification

**Deliverable D3.12 – SPR/INTEROP-OSED Sol2 Final**

<b>Deliverable Number</b>	D3.12	<b>Lead Beneficiary</b>	16. LFV
<b>Deliverable Name</b>	SPR/INTEROP-OSED Sol2 Final		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	PU - Public
<b>Due Date (month)</b>	32	<b>Work Package No</b>	WP3

Description
Operating method of the generation of an ATM-U-space interface. Operational, safety and performance requirements

**Deliverable D3.13 – Contextual Note Sol2**

<b>Deliverable Number</b>	D3.13	<b>Lead Beneficiary</b>	11. ENAIRE
<b>Deliverable Name</b>	Contextual Note Sol2		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	PU - Public
<b>Due Date (month)</b>	32	<b>Work Package No</b>	WP3

Description
Contextual Note Sol2

**Deliverable D3.14 – VALR Sol2 Final**

<b>Deliverable Number</b>	D3.14	<b>Lead Beneficiary</b>	11. ENAIRE
<b>Deliverable Name</b>	VALR Sol2 Final		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	PU - Public
<b>Due Date (month)</b>	32	<b>Work Package No</b>	WP3

Description
Results of the validation exercises defined how they have been conducted. Set of relevant conclusions and recommendations

**Deliverable D4.1 – Communications, Dissemination & Exploitation Plan (CDE)**

<b>Deliverable Number</b>	D4.1	<b>Lead Beneficiary</b>	1. INDRA
<b>Deliverable Name</b>	Communications, Dissemination & Exploitation Plan (CDE)		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	PU - Public
<b>Due Date (month)</b>	3	<b>Work Package No</b>	WP4

Description
Objectives and overall strategy for communication, dissemination and exploitation actions

**Deliverable D4.2 – Communications, Dissemination & Exploitation Plan (CDE) Intermediate #1**

<b>Deliverable Number</b>	D4.2	<b>Lead Beneficiary</b>	1. INDRA
<b>Deliverable Name</b>	Communications, Dissemination & Exploitation Plan (CDE) Intermediate #1		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	PU - Public
<b>Due Date (month)</b>	8	<b>Work Package No</b>	WP4

Description
Objectives and overall strategy for communication, dissemination and exploitation actions

**Deliverable D4.3 – Communications, Dissemination & Exploitation Plan (CDE) Intermediate #2**

<b>Deliverable Number</b>	D4.3	<b>Lead Beneficiary</b>	1. INDRA
<b>Deliverable Name</b>	Communications, Dissemination & Exploitation Plan (CDE) Intermediate #2		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	PU - Public
<b>Due Date (month)</b>	21	<b>Work Package No</b>	WP4

Description
Objectives and overall strategy for communication, dissemination and exploitation actions

**Deliverable D4.4 – Communications, Dissemination & Exploitation Plan (CDE) Final**

<b>Deliverable Number</b>	D4.4	<b>Lead Beneficiary</b>	1. INDRA
<b>Deliverable Name</b>	Communications, Dissemination & Exploitation Plan (CDE) Final		
<b>Type</b>	R — Document, report	<b>Dissemination Level</b>	PU - Public
<b>Due Date (month)</b>	35	<b>Work Package No</b>	WP4

<b>Description</b>
Objectives and overall strategy for communication, dissemination and exploitation actions

## LIST OF MILESTONES

Milestones					
Grant Preparation (Milestones screen) — Enter the info.					
Milestone No	Milestone Name	Work Package No	Lead Beneficiary	Means of Verification	Due Date (month)
1	Kick of meeting (KoM)	WP1	1-INDRA	Meeting really held	1
2	Sol1 Inputs for Project Review #1	WP2	1-INDRA	Supporting material for project review #1: SPR-INTEROP/OSED, VALP and TS/IRS. Supporting slides & maturity self-assessment.	8
3	Sol2 Inputs for Project Review #1	WP3	11-ENAIRe	Supporting material for project review #1: SPR-INTEROP/OSED, VALP and TS/IRS. Supporting slides & maturity self-assessment.	8
4	Technical Project Review Meeting #1	WP1	1-INDRA	Meeting and correspondent minutes of the PJ Technical review #1	9
5	Sol1 Inputs for Project Review #2	WP2	1-INDRA	Supporting material for project review #1: SPR-INTEROP/OSED, VALP, TS/IRS, VALR and CBA. Supporting slides & maturity self-assessment.	21
6	Sol2 Inputs for Project Review #2	WP3	11-ENAIRe	Supporting material for project review #2: SPR-INTEROP/OSED, VALP, TS/IRS, VALR and CBA. Supporting slides & maturity self-assessment.	21
7	Technical Project Review Meeting #2	WP1	1-INDRA	Meeting and correspondent minutes of the PJ Technical review #2	22
8	CDE Action Sol2 - TRL4 Dissemination	WP4, WP3	11-ENAIRe	TRL4 dissemination	26
9	CDE Action Sol1 - TRL4-5 Dissemination	WP2, WP4	1-INDRA	TRL4-5 dissemination	27
10	CDE Action Sol1 - TRL7 Dissemination	WP2, WP4	1-INDRA	TRL7 dissemination	31
11	CDE Action Sol2 - TRL7 Dissemination	WP4, WP3	11-ENAIRe	TRL7 dissemination	31

Milestones					
<i>Grant Preparation (Milestones screen) — Enter the info.</i>					
Milestone No	Milestone Name	Work Package No	Lead Beneficiary	Means of Verification	Due Date (month)
12	CDE Action - Overall results	WP2, WP4, WP3	1-INDRA	Final Event of both Solutions' results' reporting	32
13	Sol1 Maturity Gate	WP2	1-INDRA	Maturity gate meeting addressed	34
14	Sol2 Maturity Gate	WP3	11-ENAIRE	Maturity gate meeting addressed	34

## LIST OF CRITICAL RISKS

Critical risks & risk management strategy			
<i>Grant Preparation (Critical Risks screen) — Enter the info.</i>			
Risk number	Description	Work Package No(s)	Proposed Mitigation Measures
1	Force majeure situation such as, and not limited to, pandemic, war, energy shortage. (Likelihood Low, Severity High)	WP2, WP1, WP4, WP3	Reduce project scope. Extend project timeline.
2	The project relies on the access to various information sources, including forecast information from airspace users. There is a risk that forecast information is either not available or cannot be accessed. (Likelihood: low, severity: high)	WP2, WP3	Identify at the beginning of the project all potential information sources; coordinate with stakeholders/ data providers for identifying data availability and access conditions to data.
3	Availability of ATCOs to participate in activities Likelihood Low, Severity Medium	WP2, WP3	Specific activities and milestones to cover their works in design and HMI actions



## PROJECT REVIEWS

Project Reviews			
Grant Preparation (Reviews screen) — Enter the info.			
Review No	Timing (month)	Location	Comments
RV1	22	Brussels (TBC)	Intermediate project review

## JU CONTRIBUTIONS

PIC	Legal Name	Membership	IKOP	Financial Contribution	IKA
886469227	AEROCAMARAS SL	No	€ 0.00	€ 0.00	€ 0.00
887286355	Tern Systems ehf	No	€ 0.00	€ 0.00	€ 0.00
899914203	INDRA FACTORIA TECNOLOGICA SL	No	€ 0.00	€ 0.00	€ 0.00
902701983	D-FLIGHT SPA	No	€ 0.00	€ 0.00	€ 0.00
919915991	VALSTYBES IMONE ORO NAVIGACIJA	No	€ 0.00	€ 0.00	€ 0.00
924870557	UNIFLY	No	€ 0.00	€ 0.00	€ 0.00
927009019	UDARAS EITLIOCHTA NA HEIREANN THE IRISH AVIATION AUTHORITY	No	€ 0.00	€ 0.00	€ 0.00
941608877	TECHNO SKY SRL TECHNOLOGIES FOR AIR TRAFFIC MANAGEMENT	No	€ 0.00	€ 0.00	€ 0.00
941767472	HUNGAROCONTROL MAGYAR LEGIFORGALMISZOLGALAT ZARTKORUEN MUKODO RESZVENYTARSASAG	No	€ 0.00	€ 0.00	€ 0.00
942346077	LUFTFARTSVERKET	No	€ 0.00	€ 0.00	€ 0.00

PIC	Legal Name	Membership	IKOP	Financial Contribution	IKAA
950569640	ROCKWELL COLLINS UK LIMITED	No	€ 0.00	€ 0.00	€ 0.00
971136162	COLLINS AEROSPACE IRELAND, LIMITED	No	€ 0.00	€ 0.00	€ 0.00
973988350	NEXTANT APPLICATIONS & INNOVATIVE SOLUTION SRL	No	€ 0.00	€ 0.00	€ 0.00
983016237	DISTRETTO TECNOLOGICO AEROSPAZIALE S.C. A R.L.	No	€ 0.00	€ 0.00	€ 0.00
995562023	POLSKA AGENCJA ZEGLUGI POWIETRZNEJ	No	€ 0.00	€ 0.00	€ 0.00
997542763	NATS (EN ROUTE) PUBLIC LIMITED COMPANY	No	€ 0.00	€ 0.00	€ 0.00
997605619	CENTRO DE REFERENCIA INVESTIGACION DESARROLLO E INNOVACION ATM, A.I.E.	No	€ 0.00	€ 0.00	€ 0.00
997701843	ENAIRE	No	€ 0.00	€ 0.00	€ 0.00
998197513	ENAV SPA	No	€ 0.00	€ 0.00	€ 0.00
998627417	LEONARDO - SOCIETA PER AZIONI	No	€ 0.00	€ 0.00	€ 0.00
999483733	EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION	No	€ 0.00	€ 0.00	€ 0.00
999537568	INGENIERIA Y ECONOMIA DEL TRANSPORTE SME MP SA	No	€ 0.00	€ 0.00	€ 0.00
999944095	AIRBUS OPERATIONS SL	No	€ 0.00	€ 0.00	€ 0.00
999954959	SOCIETE ANONYME BELGE DE CONSTRUCTIONS AERONAUTIQUES-S.A.B.C.A.	No	€ 0.00	€ 0.00	€ 0.00
999959130	INDRA SISTEMAS SA	No	€ 0.00	€ 0.00	€ 0.00
999974844	UNIVERSIDAD POLITECNICA DE MADRID	No	€ 0.00	€ 0.00	€ 0.00
999987066	STICHTING KONINKLIJK NEDERLANDS LUCHT - EN RUIMTEVAARTCENTRUM	No	€ 0.00	€ 0.00	€ 0.00

Page/section	Nature of change and reason (if applicable)
<b>Part A</b>	
Beneficiaries	Update of short names of the companies
Deliverables	Deliverable SPR/INTEROP-OSED now includes the different annexes (SAR, HPAR, ENVAR, SecAR and PAR). These annexes are not deliverables anymore. This affects Solution 1 and Solution 2
Deliverables	Deliverable VALP now includes the different parts (SAP, SecAP and HPAP). These annexes are not deliverables anymore. This affects Solution 1 and Solution 2
Deliverables	Contextual notes for the two solutions have been added as deliverables. Change to address identified shortcoming
Deliverables	Grant management and availability notes deliverables has been removed
WPs	Objectives and descriptions for WP01 improved. Change to address identified shortcoming
WPs	Partnership include for SPR/INTEROP-OSED and VALP annexes
Milestones	Identified milestones in the different sprints have been reshuffled. Change to address identified shortcoming
Deliverables	Deliverables review including intermediate version of some documents as PMP, CDE, DMP, STAND and REG
WP02	Deletion of PANSA as WP partner, deleting former exercise 3 they were leading. Table 8 with the traceability of Exercises/UCs with Information exchanges, updated, including a new UC6 for Exercise 1. Modification of contributors for Exercise 1, now including to COLLINS
WP03	Deletion of PANSA as WP partner, deleting former exercise and cluster (the polish one) they were leading. Changes in the leader of the PAR now led by ENAIRE/CRIDA. Modification of contributors in the Spanish cluster, now including COLLINS
Efforts	Modifications of efforts: <ul style="list-style-type: none"> <li>- WP2 &amp; WP3: PANSA efforts are removed and ENAIRE and COLLINS ones are increased</li> <li>- WP4: PANSA efforts are removed</li> </ul>
Budget	Removal of budget assigned to PANSA and increase of COLLINS & ENAIRE (personal costs and consequently indirect and total costs).
Beneficiaries	Removal of NATS and RCUK (former affiliated of COLLINS) as project members, been now just associated.
Researchers	TERN included one researcher
Activities and deliverables	In WP2 and WP3: Clarifications on the leadership of standardization and regulation activities and associated deliverables were added In WP3: Changes in tasks and deliverables participants with the inclusion of COLLINS contributing in Literature review, OSED, INTEROP/SPR, TS/IRS, VALP & VALR
Deliverables	PMP, DMP and CED delivery date changed to M3
Milestones	M5, M16 and M17 related to reporting periods and project ends, deleted
Budget	Modifications to reduce <i>Other goods, works and services</i> costs by HungaroControl related to audit costs, affecting the overall budget. Modification to increase <i>Other goods, works and services</i> costs by Indra related to EASA participation, affecting the overall budget. Modification to move some costs from <i>Travel and Subsistence</i> to <i>Other goods, works and services</i> for ENAV..

Budget	Shift of some costs from <i>equipment</i> to <i>Other goods works and services</i> for AEROCAMARAS
<b>Part B</b>	
ALL	Update of short names of the companies, aligning then with the changes made in Part A
Pages 4, 5, 6 Section 1.1.1	Objectives for solution 1 improved. Change to address identified shortcoming
Pages 10, 11, 12 Section 1.2.2.1	Changes related to better explain how the applied methodology address the transit to TRL7, for both solutions. Change to address identified shortcoming
Page 24, 25 Section 2.1	Impact section is improved. Change to address identified shortcoming
Page 15, 16, 17 Section 1.2.3	Identified milestones in the different sprints have been reshuffled. Change to address identified shortcoming
Page 30 Section 3.1	Figure 7 for project Gantt updated
Page 31, 32 Section 3.1	Improvements in ENAIRE description for subcontracting, LEONARDO for travel, equipment and other goods and services, TECHNO-SKY for equipment, SABCA for travels, HC for travel and other goods and services and AEROCAMARAS splitting equipment and other goods and services, improving description.
Page 14 Section 1.2.2.3	Modification to delete from Solution 1 exercise led by PANSA and the description of Exercise 1 to include UC from this deleted exercise (new UC6 added).
Page 37 Section 4.2.1	Modification in the contribution of RCUK making references to their contribution to the Spanish cluster
Page 16-18 Section 1.2.3 Tables 5 & 6	Modifications in the tables that summarizing the sprints' structure, addressing appropriate reference to Deliverables and Milestones
Page 38 Section 5	New section to include budget information from NATS and RCUK now deleted from Part A
Page 16 Table 5 & 6	Because of the deletion of some milestones in Part A, the id of some milestones has changed, affecting milestones in the structure of sprints
Page 31	Modification of audit costs for HC.
Page 31, 32 & 33	Cost table for AEROCAMARAS shifting some costs from <i>equipment</i> to <i>Other goods works and services</i> . Cost table for INDRA added to explain how part of the budget will be used for contracting EASA services. Cost table for LEONARDO removes references to “depreciation” when referring to equipment costs. Cost table for HC includes cost breakdown on <i>Other goods works and services</i> costs and corrections in the total costs.
Page 30	Figure 7 updated to make only reference to formal milestones, aligned now with the ones included in Part A

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## 1 Excellence

The modernisation of Air Traffic Management (ATM) across Europe targets the Digital European Sky following the planning described under the European ATM Master Plan, which is a living document regularly updated to respond to the evolving aviation landscape and that also defines the development and deployment priorities needed to deliver the Single European Sky ATM Research (SESAR) vision. This document is complemented by the Strategic Research and Innovation Agenda (SRIA) defined to present the strategic research and innovation (R&I) roadmaps for the years 2021 to 2027 for the implementation of the European ATM Master Plan 2020. SRIA identifies nine research and innovation flagships with their underlying Research & Innovation needs/challenges. These are the basis for identifying future SESAR Solutions addressing Phase D of the upgrade of the European ATM system, as targeted by the Digital European Sky.

In this context, SESAR 3 aims at delivering a coherent set of SESAR solutions aligned at content level with the direction set by the SRIA and the ambition set in the European ATM Master Plan. SESAR research and innovation pipeline is constructed on Exploratory Research, Industrial Research and Digital Sky Demonstrators activities. The Industrial Research includes Fast-Track Innovation and Uptake activities, designed to accelerate the development of high-risk / high-gain SESAR Solutions with a view to shortening their time to market. The HORIZON-SESAR-2022-DES-IR-01 call for proposals launched by S3JU through Horizon Europe aims to financially support the Industrial Research activities, embracing six work areas (WA) (WA1 to WA6), where WA4 and WA5 cover fast-track innovation and uptake activities.

This proposal belongs to WA4 working area, addressing topic WA4.1 Fast-track innovation and uptake for U-space and urban air mobility. Specifically, it addresses the topic “ATM – U-space Interface and Services” which is composed of the following solutions:

- **Solution 1 ATM - U-space Interface:** Achieve full integration of ATM and U-space systems, by refining

and completing the definition of the common ATM U-space interface and identifying new working areas with impact on the already started common interface.

- **Solution 2 Dynamic Airspace Reconfiguration:** Develop the complete service mentioned in U-space regulation, necessary to establish the operating methodology and develop the standard interface to help ATC actors in charge of airspace reconfigurations to request airspace reconfiguration changes.

The topic of “Human Machine Interface” has been introduced into both solutions as a transversal area to be considered due to the impact and importance it has on both solutions regarding the operational environment.

This project aims to refine and complete the definition of the common ATM U-space interface by identifying new working areas with impact and providing a consolidated interface with a standardized data model, architecture and an operation method to achieve a minimum maturity level of TRL7. Developing all those concepts, which may have significant relevance in the definition of the interface, is the basis for this project to reach the desired maturity. In this regard, developing a refined and complete Dynamic Reconfiguration Service, as mentioned in U-space regulation, is necessary to establish the operating methodology (aim of Solution 2). The execution of the operating methodology shall be supported by a standard interface to help ATC actors in charge of airspace reconfigurations to implement airspace reconfiguration changes (aim of Solution 1).

This project proposal places a strong focus on analysing the impact on human performance and safety, as well as determining the system functionalities and modifications required for increasing the efficiency and performance of both ATM and U-space users. The project will aim to reduce the impact of the new operating method and supporting systems on human performance whilst maintaining the current level of safety in ATM. As one of the primary ways to achieve this, support from the operational experts in the ATM-U-space integration will be provided, as considered essential in the following steps, for progressing in the refinement and subsequent consolidation of the common interface that is to be achieved, confirming the services included and operating methods expected.

## 1.1 Objectives and ambition

U-space and its integration with Air Traffic Management (ATM) ecosystem is one of the key architecture principles and technology enablers of the future Digital European Sky, following the four transitional phases (from A to D) pointing towards a fully scalable system for manned and unmanned aviation. The development of U-space started in phase B and it does not require human always in the loop. The final objective is to create the building blocks of a system that provides services that are scalable for large numbers of small UASs, creating an ecosystem that is very different from ATM but seamlessly integrated with it. Phase D implies full U-space service (U4), representing the evolution from the foundation services (U1) and initial services (U2) in phase B together with the advanced services (U3) being targeted at the end of phase C.

This proposal addresses U3 and U4 services, including high levels of automation, connectivity (vehicle-to-vehicle and vehicle-to-infrastructure), and digitalisation of the UA, U-space Service Providers (USSPs), ATM, as well as ATM–U-space interface.

The ATM – U-space interface will build on the work performed under PJ34 AURA Horizon 2020 Industrial Research (IR) project, focusing on the standardisation of data models and information exchanges required between ATM and U-space system. In addition, the operating methods derived from the common interface will be refined as well as the U-space services available, adding new ones according to the identified needs. The main objective is the consolidation of the common ATM/U-space interface with a standardized data model, architecture and an operation method refined and complete to achieve a minimum TRL7.

The project is also focused on the development of a refined and complete Dynamic Reconfiguration Service mentioned in U-space regulation, necessary to establish the operating methodology and develop the standard interface to help ATC actors in charge of airspace reconfigurations to implement necessary changes.

With all these novel concepts, there is a need to analyse the impact on human performance and safety. The project will determine the necessary functionalities and modifications to the ATM system and necessary U-space supporting services in order to achieve a harmonious coexistence of the human operators within the ATM environment and automated U-space systems. The project will count on operational experts from both domains throughout the development lifecycle of the concept, in order to refine and consolidate the common interface and operating methods in a way that addresses the expectations of operational stakeholders and performance limitations human operators.

The project will take special care to adhere to current industry regulation and standardization efforts to adhere as closely as possible to the established operating requirements. Moreover, the project intends to expand on - and address gaps in - these regulations with regards to the ATM-U-space interface and Dynamic Airspace Reconfiguration concepts. One of the key outputs of the project will include proposed modifications to regulations and standards to allow for the swift implementation of the concept.



The maturity evolution of both solution under ENSURE project will be accelerated according to the characteristics of fast-track projects. The early maturities of Solution 1 and 2 aims to achieve TRL7 at the end of the project.

The new services on the ATM – U-space interface proposed under Solution 1 already have gone through the proof of concept validation, the technical feasibility has been verified and have been validated in laboratory environment. Therefore, the technological readiness in this case is considered to be TRL4. This maturity has been achieved under PJ34 AURA project, which is aimed to be continued in SESAR3 under Solution 1 focusing on the standardisation of data models and information exchanges. The evolution to TRL7 is aimed to be achieved by applying the agile methodology designed for this fast-track project, building the final solution incrementally based on new capabilities defined and validated throughout the duration of the project.

The Dynamic Airspace Reconfiguration Service under Solution 2 is currently not as mature as Solution 1, starting at TRL2 at the beginning of the project. The maturity evolution is more challenging in this case, quick progress being expected in the early steps of the project by building a rapid demonstrable environment to validate the services proposed. The validation of the proof of concept, its testing in laboratory environment and early prototype implementation will be feasible quickly after the project kick-off thanks to the incremental development specific for agile project, driving the methodology of this project.

The development of Solution 1 and Solution 2 to increase their maturity will follow the criteria defined in the SESAR3 MAWP Annex E to ensure the progress goes in the right direction, despite the fact that there will be no maturity gates. However, the maturity evolution will be guided by TRL4-5-6 characteristics for Solution 1, including prototyping in representative environment, technology elements integration to fully demonstrate feasibility in actual system application. Solution 2 will also consider the maturity criteria for TRL3 at the beginning, especially for analytical and laboratory studies, including verification of technical feasibility using early prototype implementation.

Both Solution 1 and Solution 2 target maturity level is TRL 7 at the end of the project. This requires system demonstration in an operational environment where the system is at, or near, scale of the operational system, with most functions available for demonstration and test. It should be well integrated with collateral and ancillary systems, although limited documentation available.

To sum up, ENSURE project supports complex operations in dense areas and provides means for dynamic capacity management and assistance for conflict detection. The final goal is to contribute to the full operational capability of U-space, by providing very high levels of automation, connectivity and digitalisation for the U-space system.

This project is aligned with the characteristics of fast-track innovation and uptake projects, where the maturity assessment and its evolution is different with respect to what has been performed so far in SESAR programme. The new approach is presented and detailed under the next section 1.2 “Methodology” that captured the elements and structure essential for this type of projects.

### 1.1.1 Solution 1 ATM-U-space Interface and Services

The foundation of this solution lies on the refinement, generation and validation, from the operational point of view, of the set of services for the consolidation of the ATM-U-space Interface.

We consider the SESAR PJ34 project as the basis and state of the art of this project. Current information exchange services used in PJ34 will need to be refined and matured and validated. These services are: Operation Plan Information Exchange, Geofence Information Exchange, Tracking Information Exchange, Conformance Monitoring Information Exchange, Conflict Alerts Information Exchange.

Considering the refinement to be done through the information exchange services, the following aspects will be taken into consideration:

- Confirmation of the Information Exchanges performed between both systems throughout already defined services included in the common interface, are the expected including all the information required from the both operational and technical point of view.
- Confirmation of the operating methods derived from the services already defined are the expected by the operational experts and affected roles involved.

The solution will include a process of confirmation of the Information Exchanges performed between both systems in the different services included, so that there is no missing information considered as relevant or needed. As a result of this process, the second step would be considering new services to be deployed on the ATM U-space interface as part of the interface.

At this stage, Solution 1 proposes the following services:

- Collaborative Interface with ATC: Offering verbal or textual (digital) communication between the remote


pilot and ATC when a UAS is in a controlled area within U-space. This service enables UASs to receive instructions and clearances in a standard and efficient manner as manned aviation. This contributes to the integration of UASs in Very Low-Level (VLL) airspace together with manned aviation since it allows UAS traffic to be managed in a similar way to manned traffic. This also allows for greater security, efficiency and situational awareness in the control of air traffic in high-risk/very high-risk environments. Voice system communication or any kind of CPDLC between Controller and ATM-U-space UAS pilot is required.

- Capacity Management Service: This service seeks to exploit the availability of airspace to its fullest extent. In this way, airspace is divided into grids so that each grid can be evaluated in terms of being occupied or not by manned aviation. In case there is no manned aviation flying in these grids, ATM will inform to CISP and CISP will delegate them to U-space operations sending an acknowledge message back to ATM and making U-spaces users aware of this new airspace delegation (note that a risk assessment should have been carried out previously regarding these areas). It shall be considered that, as within the rest of AUSA, ATM could originate a new DAR in any moment so that they would be again no longer delegated to U-space operations.
- Dynamic Airspace Reconfiguration Service: This service encompasses U-space volume modifications and information exchanges between ATM and U-space for defining the new airspace boundaries. Within the designated U-space airspace in controlled airspace, air navigation service providers remain responsible for the provision of air navigation services to operators of manned aircraft. Specific procedures and communication facilities should be established between appropriate air traffic service units, U-space service providers, UAS operators and, where applicable, single common information service providers to ensure a coordinated application of the dynamic reconfiguration of U-space airspace by all operational stakeholders. WP02 Solution 1 aims to define, in this way, the interface needed to allow a feasible implementation of this service (WP03 Solution 2 will be in charge of the complete definition of the service itself).
- Strategic Conflict Resolution: In high to very high-risk environments, when ATM intervention is required, checking for possible conflicts in a specific operation plan, and proposing solutions, during operational plan processing. This could complement the Operational Plan Information Exchange Service, not only by approving or denying the operating plan, but also proposing alternatives to a given flight plan which cannot be approved.
- Emergency Management Service and Contingency Plan: Focused on U-space communication of forwarding information to ATM when considered relevant, in order for both systems have a common view of the procedures and actions to be taken when this situation happens. Through this service, the U-space system shares the emergency procedures (contingency plan) that a UA is going to follow in a particular emergency situation with the ATM system. (E.g. alternative FP to be followed provide ATM systems situational awareness).
- HMI aspects: Consider the information about UAS within AUSA and their impact on manned aircraft operations will need to be provided to the ATCO when requested. The need to monitor manned aircraft and some specific high-risk UAs in delegated AUSA airspace in parallel will have an impact on the ATCO's performance. Provision of U-space information to improve the situational awareness of the ATCO, by allowing them to identify UA which may pose a safety risk to manned operations. On the other hand, the need to track additional "targets" may have a significant effect on the ATCO's workload and would need to be supported by additional operational procedures and HMI tools to assure that they remain within acceptable levels. Some particular information about UAV flights in CTR (especially those in conflict with IFP procedures) shall be visible not only in U-space system, but also on the digital flight strip bay of ATCO.

Based on this set of services, an action plan is proposed in order to follow a range of tasks to be completed in order to consolidate its validation:

1. Definition of standard operational procedures to be followed for human actors involved in the ATC environment and U-space system with regards to the services included in the ATM-U-space Common Interface.
2. Definition of roles and responsibilities for human actors involved in the ATC environment and U-space system with regards to the services included in the ATM-U-space Common Interface.
3. Development of operational scenarios, including different situations for the application of all services defined and included in the ATM-U-space Common Interface. These scenarios will permit to realize real operational situations that could happen and they will permit to test the information exchanges services performed between U-space and ATM. These scenarios will highlight adequate actions that ATC and/or other impacted roles will need to implement in response to the different situations.



4. Review of the current regulation and standardization  ensuring the alignment in definition and provide inputs to fill the gaps. Ensure standardization of data models and information exchanges included in the ATM-U-space Common Interface.
- Identify the needs/alignment for/with standards and develop the required specifications for further consideration by the Standardization Bodies.
  - Propose SESAR input to standardization activities in compliance with the Basic Regulation and its Implementing Rules.
5. Proposal of validation exercises to be executed considering a “cluster” structure in which each one will be designated for the validation of certain information exchange services.
6. Set of requirements to be built on the basis of the obvious relationship between each of them because of the importance they lend to the generation of the interface.
7. “Cluster” structure objective of creating a clear and defined architecture which allows each service to be validated under different circumstances and thus be fully consolidated considering that the maturity level should reach a TRL7.

### 1.1.2 Solution 2 Dynamic Airspace Reconfiguration

The aim of Solution 2 is to develop a refined and complete Dynamic Reconfiguration Service. It was decided to assign a specific service to this solution given the complexity of the Dynamic Airspace Reconfiguration (DAR) concept. This service is currently mentioned in U-space regulation but at a very high-level, but several open questions and gaps regarding the operational concept and system supporting the service will need to be addressed in order to mature it to TRL7. It is necessary to establish the operating methodology and develop the standard interface to help ATC actors in charge of airspace reconfigurations to implement the proposed changes. The service will allow to dynamically assign different volumes to either ATC or U-space-control according to manned and unmanned traffic demands (aligned with ATM-U-space Interface DAR Service definition):

- Review current regulation to ensure alignment.
- Establish the operating methodology for performing DAR.
- Review the proposed PJ34 (and other projects) concept.
- Mature the OIs, features and capabilities to enable DAR which were proposed by PJ34.
- Standardize the U-space volume definition (sectors).
- Standardize the U-space volume modification through DAR.
- Standardization of data models and information exchange mechanisms to support DAR. Development of interfaces up to V3 level.
- Determine new functionalities/services required to help ATC users to establish segregation and allow airspace users to adhere to them.

Moreover, Solution 2 will aim to provide answers to the following open points regarding DAR which have not yet been resolved in previous studies, including:

- Definition of standard operational procedures for human actors within the ATC environment and for U-space services to follow with regards to the DAR process.
- Definition of roles and responsibilities of the DAR manager as an additional member of the ATC unit in charge of the airspace in which DAR will take place.
- Definition of “common criteria” for when a DAR process can be launched by either ATC or U-space, as well as a supporting rationale for why such criteria shall be applied (in terms of ATC/U-space safety, security, environmental impact, social impact, etc.)
- Development of “standard scenarios” for the management of contingency situations related to DAR provisions. These scenarios will highlight adequate actions that ATC will need to implement in response to such situations.
- Define the frequency in which DAR can be applied to change the airspace configuration, and within which ATC time horizons (strategic, pre-tactical, and tactical) the use of DAR makes sense in the short term.

Considering HMI aspects:

- Consider the information to be provided to the ATCO about UAs within AUSA and their impact on manned aircraft operations. The need to monitor manned aircraft and some specific high-risk UAs in delegated AUSA airspace will have, in parallel, an impact on the ATCO’s performance, as well as the overall safety and efficiency of the airspace.
- Provision of U-space information to improve the situational awareness to the ATCO, by allowing them to identify UA which may pose a safety risk to manned operations. On the other hand, the need to track additional “targets” may have a significant effect on the ATCO’s workload and would need to be supported by additional operational procedures and HMI tools to assure that they remain within “acceptable levels.

Moreover, specific U-space performance information  is also relevant to the ATCO, in order for them to implement DAR decisions which minimize disruptions to the flow of U-space traffic.

- Some particular information about UAV flights in CTR (especially those in conflict with IFP procedures) shall be visible not only in U-space system, but also on the digital flight strip bay of the ATCO.
- Need to be tested in VLL and also identify if this is applicable above VLL, in particular to support Urban Air Mobility (UAM) flight operations.

## 1.2 Methodology

The delivery of the Digital European Sky by 2040 as targeted by the Master Plan is ambitious and requires a new way of working within SESAR, combined with changes to the regulatory framework to further shorten innovation cycles and time to market. The methodology proposed for the development of ENSURE solutions is driven by agile thinking and structuring to be able to deliver the proposed products and services at the desired maturity TRL7.

This project proposes solutions aligned with U-space advanced and full services deployment phases. Building very high levels of automation, connectivity and digitalisation require a methodology able to absorb and adapt to high changing rates, high complexity and risks. The agile approach proposed for the development of ENSURE solutions is Scrum combined with the SESAR3 framework. This section demonstrates how the development will be able to readapt according to the incremental evolution of the solutions and the feedback within short lifecycles to reach the desired outcomes.

### 1.2.1 Agile methodology overview

Agile lifecycles follow an approach that is both iterative and incremental in order to refine work items and be able to deliver frequently. The key aspects characterising the Scrum methodology proposed for the development of ENSURE solutions includes short feedback loops, frequent adaptation of the process, redefinition of priorities, regularly updated plans and frequent deliveries.

Figure 1 below provides an overview of the methodology to be applied for the development of each of the proposed solutions. Each solution will follow its path, adapted to its initial maturity level and aiming at TRL7 by the end of the project.



Figure 1: Agile methodology overview

Solutions development will be subdivided into segments called sprints and the project develops from one sprint to another until the final product is finished. Sprints are time periods of one month during which specific elements of product must be completed. The project starts with the definition of each ENSURE Solution, followed by the sprint cycles broken down into five different sprint processes (P) with different type of meetings (M):

**P1: Vision.** The team comes up with a unified vision regarding the entire process and decides what will be delivered. Additionally, the team plans and agrees on what is necessary to successfully complete the cycle.

**P2: Solution Backlog.** The Product Backlog is a list of User Stories (US) that must be completed before the product is released. It defines all necessary items to be covered by the team during the sprints.

**M1: Sprint planning.** The team discusses the top priority US and decides what will be delivered in the sprint.

**P3: Sprint Backlog.** It is a list, agreed upon by the entire team, which states the specific User Stories that must be completed by the team during the sprint.

**P4: Sprint execution.** This part is the time frame in which the actual incremental work (decided in M1) must be completed.

**M2: Daily Scrum.** Short daily meeting in which the team discusses completed tasks, work-in-progress tasks and any issues that are blocking the work.

**M3: Sprint review.** Meeting in which the team delivers and shows the work performed during the sprint.

**P5: Product increment.** The outcome of the sprint is a hypothetically usable product. The stakeholder can decide if the product is ready or if additional features need to be implemented.

**M4: Sprint retrospective.** The team discusses what could improve the process.

The steps from 1 to 5 are iterative and the project team will adapt to the evolution of the project, to the identified needs and the issues encountered. Agile methodology allows for flexibility and customisation of the solution as the

project progresses. The Sprint duration proposed for ENSURE solutions development is 4/8 weeks, each solution following its own process and timings with the selected team. Agile methodology application requires mind-set change as it involves new way of working and especially flexible and incremental deliveries. The following roles are defined to build the suitable teams able to work in an agile environment and deliver as rapidly as possible:

- **Product owner** - guides the development the product, classifies the work, defines product backlog and works with the teams on a monthly basis, providing product feedback and setting the direction for the next piece of functionality that will be developed and delivered. The product owner works with the stakeholders, users/customers and the development teams to define the direction of the solution.
- **Scrum Master** - ensures team coordination and supports the progress of the project between individual teams and all members. He/she takes the instruction defined by the Product Owner and ensures that the tasks are performed accordingly.
- **Development team** - team members with all the skills needed to produce a functional product. The Development Team will include prototype developers, designers, test specialists, operations experts and data analysts.
- **Stakeholders** – project members interested in the development of the solution, such as final users, benefitted actors from the implementation or grant managers. This group provides feedback and insights on the solution definition, solution backlog and User stories. Validation results from each Sprint are shared and confirmed with this group to ensure the correct evolution of the solution’s development and maturity.

### 1.2.2 Solutions development methodology

The agile approach, the scrum elements and the key roles represent the main pillars to build the agile methodology proposed for the development and validation of ENSURE solutions. The figure below presents how the methodology will be applied to ensure the rapid and flexible evolution of the project within the envisaged timeframe.

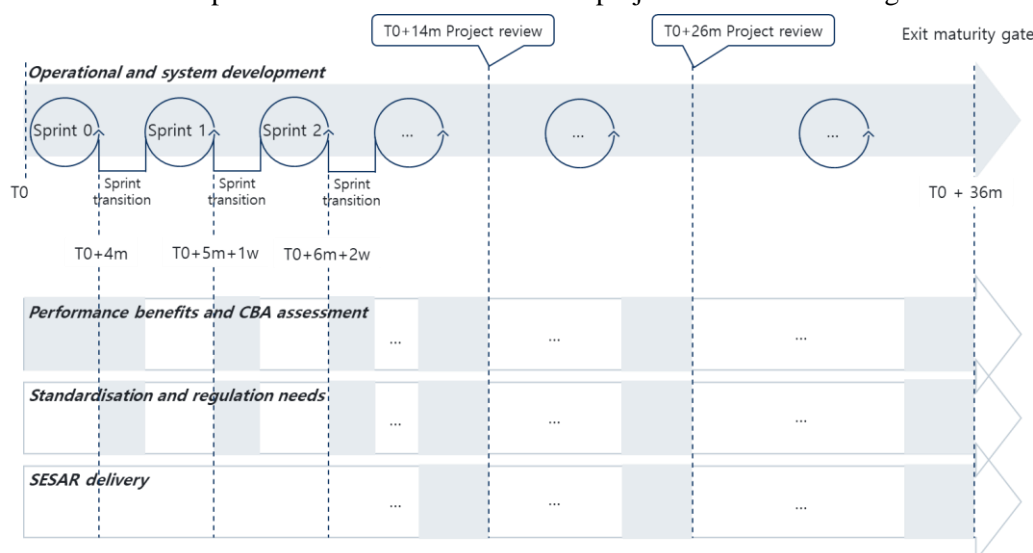


Figure 2: Timeframe agile methodology

There are four (4) threads of work throughout the duration of the project, combining the agile methodology and the activities requested for the SESAR3 Solutions development and assessment:

- **Operational and system development** – represents the core thread of the project, i.e. operational and system, and is driven by agile methodology and structured on Sprints. This thread combines the following activities in each Solution Work Package (WP02 and WP03) under one line of execution: **WP2.1. 2** and **4** throughout the duration of the project and **WP2.5**. When applicable. The definition and execution of all necessary activities and assessments are defined and executed by this combined thread to prove that the Solution is operationally and technically feasible, deployable in the relevant operating environments, capable of delivering valuable/tangible performance benefits in line with the ambitions set out in the ATM MP and at an acceptable cost for the ATM stakeholders. The expected solution outcomes are documented using the set of deliverables defined for each Solution exit maturity gate. These deliverables are prepared throughout the duration of the project and are adjusted to the evolution of the solutions, the final version to be delivered at the exit maturity gate. In addition, the modelling and integration of the Solutions into SESAR architecture is done by the Operational team, following the indications and guidelines of the optimised modelling & methods defined by the SESAR3 Transversal Project in line with the maturity evolution.

- **Performance benefits and CBA (cost-benefit analysis) assessment** describe the performance areas that are expected to be impacted by each SESAR Solution under development and how this impact will be measured. Performance benefits are then monetised and analysed under the CBA, providing key measures on expected costs and benefits for key stakeholders. This thread is captured under each **WP2.2**. Defined for Solution 1 in WP02 and Solution 2 in WP03.
- **Standardisation and regulation needs** - addresses the regulatory issues and considers the need for developing standards. Contact with the National Authorities and EASA as required. This thread is captured under each **WP2.3**. Defined for Solution 1 in WP2 and Solution 2 in WP03.
- **SESAR delivery** – established the link between the management and the technical part, ensuring the maturity of the solution evolved as expected targeting TRL7. The key of agile methodology is delivering new versions of the solution in an incremental way. The leader of this thread ensures that every increment brings together the elements from all 4 threads in line with the activities defined and the content of the document to be elaborated throughout the progress of the project, such as the content for the annual Project review regarding the maturity self-assessment. In addition, aspects as Data Management and Dissemination, exploitation and communication plan are defined and executed by this thread.

The defined threads are closely linked and should not be seen as individual lines of work as the Solution backlog addressed within each Sprint will include elements necessary for each one of the threads.

The performance assessment is a work thread that covers multiple Key Performance Areas and impacts, aiming to contribute to the Environment, Capacity, Cost-efficiency, Operational efficiency and Safety KPAs. The assessment in each one of these areas counts with specific guidance material, designed by Performance Transversal activity. The recommended methodologies and assessment approach for CBA, environment, safety and digitalisation & automation will be followed to ensure alignment with SESAR3 framework. In addition, the remaining KPA defined under the SESAR Performance Framework will be evaluated, including security and human factor, to evaluate if the solution has any impact and/or ensure there is no negative impact.

The list of deliverables set by SESAR3 JU for TRL7 is detailed in section 3.1.1. These deliverables aim at capturing the required elements to describe the proposed Solutions and demonstrate their readiness for deployment at a larger scale.

### 1.2.2.1 Sprint 0

The initial step into the project development will be represented by Sprint 0 that will focus on the Vision and Solution backlog definition. The Solution team will define a unified vision regarding the entire development process and will build the initial Solution backlog. The figure below presents the three tasks foreseen for Sprint 0 to prepare and kick-off the agile solution development. This first Sprint will take 16 weeks, but the following ones are planned to be of 4/8 weeks each in order to maintain the flexibility and adaptability of the process. This duration will depend on the service to be validated in each sprint. Its definition and development complexity, may imply a timeline of 4 or 8 weeks. This will be stated during the project.



*Figure 3: Sprint 0 tasks*

**Solution concept definition** will provide the overview of the targeted solution to be delivered at the end of the project and will be under the responsibility of the Solution Leader as follows:

- Details the Solution to be developed and shares it with the contributors for refinement.
- Define the expected impact of the solution and the KPAs/KPIs it contributes to.
- Identify the list of documentation to be prepared and the Solution maturity evolution.
- Assign agile methodology roles to the Solution Teams.

Agile methodology roles (i.e. Solution Leader, Scrum Master, Development Team and Stakeholders) are complemented by additional ones needed to complete the Solutions' assessments and evaluation to demonstrate the contribution and the maturity evolution during the duration of the project. The following aspects will be covered by:

- SESAR performance expert – ensures the needed indicators for performance assessment and CBA are captured and measured within the Sprints. He/she will be attending the Sprint review and planning meetings to collect results and complete the assessments required to evaluate Solutions' evolution and impact, including performance, environment, safety, security, human performance, digitalisation and CBA



- Standardisation and regulation expert – identifies if there is a need for standardisation and regulation consideration for the solution. He/she will be attending the Sprint review and planning meetings to ensure the needs are detected in the early steps and that will be tackled in parallel to the development of the affected Solution.

The second task will focus on building the **Solution backlog list and their linked priorities** to be able to plan Sprint 1 and start the development. The activities under this task are:

1. Each contributor defines a set of User Stories under each Epic from its own perspective.
2. The Solution Leader gathers the Users Stories and builds a list of unique USs with a priority assigned.
3. All Solution contributors agree on the User Stories priorities and identify those for Sprint.

Agile Scrum elements and definition have been adapted to SESAR3 context, proposing the main elements needed to build the methodology for the solutions development. Each Solution can be defined through a set of Epics, defined as the business objectives on the use of the proposed solution, including dedicated activities for solution validation, able to describe the targeted outcome of the development. Each of the defined Epics will a set of User stories that capture the needs of the user and the functionalities that the developed solution should have and provide.

The Solution backlog is composed of Epics and User Stories. ENSURE proposes the development of 2 solutions, each one including different services and products. The initial list of Epics to group User Stories definition is aligned with the set of services and products targeted within each solution.

The maturity progress all along the Solutions execution is one of the key element of this project so that, the main objectives to achieve at each one of the maturity levels respond to the following key aspects:

- The start point for each one of the solutions, considering the concepts already defined under each solution, is **TRL4 in case of Solution 1 and TRL2 in case of Solution 2**. Anyhow, as considering new services to be developed in Solution 1, in this particular case a second approach has been suggested considering a TRL2 point of start and two target maturity level.

The main objective is to consolidate these TRLs along the first steps of the project, validating in laboratory the refinements of the concepts address during PJ34 AURA and the new prior concepts generated for ENSURE.


- A second step going through **TRL5** will be reached, consolidating:
  - In the case of Solution 1, both the possible refinements made on the services already defined previously as well as the new services defined into the interface,
  - And in the case of Solution 2 the refinements of the DAR concept validated in PJ34 and the afterwards new concept of operations for ENSURE.

In this way, the project will reach in this phase the development of the prototype by integrating its components so that the configuration of the system is similar to its application final in almost all its characteristics, but its operability is still at the laboratory level. The resulting prototyping is tested in a representative environment with implementations conform to the target environment and interfaces.

- Then, **TRL6** will take place, involving the validation of the prototype in conditions similar to those that are expected to work, so the prototype must be able to develop all the functions required by the operational systems involved. The feasibility is fully demonstrated in the actual systems.
- Finally, **TRL7** system demonstration in an operational environment will be carried out in a way that the system is near scale of the operational system. Operational environment demonstration in actual or simulated operational environment will take place.

After having introduced this detail, the following User Stories are detailed:

Solution 1 ATM U-space interface	Solution 2 Dynamic airspace configuration
<b>APPROACH a):</b> Going from TRL4 to TRL7	✓ <u>TRL2 consolidation:</u>
✓ <u>TRL 4 consolidation:</u> <ul style="list-style-type: none"> <li>▪ Initial OSED. General concept of operations and main KPAs and KPIs. Backlog information gathering.</li> <li>▪ Review and definition of improvements regarding services validated in PJ34 AURA.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Initial OSED. General concept of operations and main KPAs and KPIs. Backlog information gathering.</li> <li>▪ Review and definition of improvements regarding OIs, features and capabilities validated in PJ34 AURA.</li> <li>▪ Review and definition of DAR and AUSA.</li> </ul>
✓ <u>TRL 5 approach:</u> <ul style="list-style-type: none"> <li>▪ Definition of functional and non-functional</li> </ul>	

<p>requirements.</p> <ul style="list-style-type: none"> <li>▪ Contribution to OSED and TS/IRS.</li> <li>▪ Testing and developing services.</li> <li>▪ Consolidating the possible refinements made on the services already defined previously.</li> <li>▪ Reach the development of the prototype by integrating its components.</li> <li>▪ TRL5 Validation.</li> </ul> <p>✓ <u>TRL6 approach:</u></p> <ul style="list-style-type: none"> <li>▪ Platform and exercise preparation</li> <li>▪ Validation in conditions expected to work.</li> </ul> <p>✓ <u>TRL 7 approach:</u></p> <ul style="list-style-type: none"> <li>▪ Definition of scenarios and scope for TRL7.</li> <li>▪ Validation exercises planning.</li> <li>▪ Testing and developing services for TRL7.</li> <li>▪ TRL7 Final Validation.</li> </ul> <p>✓ Final version of deliverables.</p> <p>✓ Maturity Gate.</p> <p>✓ Project closure.</p>	<p>✓  Associated with document Ref. Ares(2023)4012788 - 09/06/2023</p> <p>✓ <u>TRL4 approach:</u></p> <ul style="list-style-type: none"> <li>▪ Definition of functional and non-functional requirements.</li> <li>▪ Contribution to OSED and TS/IRS.</li> <li>▪ Testing and developing services.</li> <li>▪ Review and definition of Dynamic Airspace Reconfiguration Service.</li> <li>▪ Medium-maturity (TRL4) validation exercise planning.</li> <li>▪ Conduct TRL4 validation exercises.</li> </ul> <p>✓ <u>TRL 5 approach:</u></p> <ul style="list-style-type: none"> <li>▪ Consolidating both the possible refinements made on the services already defined previously as well as the new services defined into the interface.</li> <li>▪ Reach the development of the prototype by integrating its components</li> </ul> <p>✓ <u>TRL6 approach:</u></p> <ul style="list-style-type: none"> <li>▪ Platform and exercise preparation</li> <li>▪ Validation in conditions expected to work.</li> </ul>
<p><b>APPROACH b): Going from TRL2 to TRL5/TRL7</b></p> <p>✓ <u>TRL 2 consolidation:</u></p> <ul style="list-style-type: none"> <li>▪ Research on previous concept of operations for those services which have their bases in previous U-space services.</li> <li>▪ Generate early concept of operations.</li> <li>▪ Concrete potential analysis and tools to be used.</li> </ul> <p>✓ <u>TRL 3/TRL4 approach:</u></p> <ul style="list-style-type: none"> <li>▪ Research and development considering laboratory studies to analyse technical feasibility.</li> <li>▪ Definition of main KPAs and KPIs.</li> <li>▪ Initial OSED.</li> <li>▪ Definition of functional and non-functional requirements.</li> <li>▪ Contribution to OSED and TS/IRS.</li> <li>▪ Configure early prototype (TRL3).</li> <li>▪ Development and first laboratory test of services (TRL4).</li> </ul> <p>✓ <u>TRL 5 approach:</u></p> <ul style="list-style-type: none"> <li>▪ Consolidating possible refinements through the services defined to be integrated into the interface.</li> <li>▪ Reach the development of the prototype by integrating its components.</li> <li>▪ TRL5 Final Validation.</li> </ul> <p>Some of the services defined may just reach TRL5, not being feasible to test them in more realistic environmental conditions as is done in TRL6. Only those services prepared for this test phase will pass to the next validation phase.</p> <p>✓ <u>TRL6 approach:</u></p> <ul style="list-style-type: none"> <li>▪ Validation in conditions expected to work.</li> <li>▪ Platform and exercise preparation</li> <li>▪ TRL6 Final Validation.</li> </ul> <p>✓ <u>TRL 7 approach:</u></p> <ul style="list-style-type: none"> <li>▪ Definition of scenarios and scope for TRL7.</li> <li>▪ Validation exercises planning.</li> </ul>	<p>✓ <u>TRL 7 approach:</u></p> <ul style="list-style-type: none"> <li>▪ Definition of scenarios and scope for TRL7.</li> <li>▪ Validation exercises planning.</li> <li>▪ Testing and developing services for TRL7.</li> <li>▪ Conduct TRL7 validation exercises.</li> </ul> <p>✓ Final version of deliverables.</p> <p>✓ Maturity Gate.</p> <p>✓</p>


<ul style="list-style-type: none"> <li>▪ Testing and developing services for TRL7.</li> <li>▪ TRL7 Final Validation.</li> <li>✓ Final version of deliverables.</li> <li>✓ Maturity Gate.</li> </ul>	 Associated with document Ref. Ares(2023)4012788 - 09/06/2023
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Table 1: Initial Epics proposal for ENSURE

For each one the Epics exposed in Table 1, the project team will define an initial set of User Stories. User stories build the product backlog and are articulated in a simple language that outlines who and how they will generate value. The following card will be used to define each of the User story under the scope of the proposed solution.

User Story 1	
Solution	Solution to which this US applies. It might cover several solutions if there is a need for consolidation among solutions
Epic	Epic to which this US belongs to
Description	As a [role], I want [objective], So I [benefit]>
Acceptance criteria	Functional requirements: ... Non-functional requirements: ...
Dependency	USs linked to this User Story and how
Indicators to be measured	List of indicators defined to be measured to capture the evidence required by the performance assessment and CBA experts
Standardisation need	YES/NO
Regulation need	YES/NO

Table 2: User Story Template

One of the advantages of following an agile approach for solution development is the possibility of quickly increasing the maturity and allowing solving problems in parallel to its evolution. The progress of the project is demonstrated through the solution maturity self-assessment, which is linked to a set of documentation and evidences that should be presented and fulfilled on a yearly basis. Due to the iterative process and the dynamicity of the project, the **maturity evolution and metrics definition** needed for the document preparation should be identified and produced during the Sprints development. Therefore, the third task under Sprint 0 will include:

- Perform/review the initial maturity assessment (e.g. done in the Grant Agreement phase or SESAR2020);
- Build a dashboard (e.g. Excel or PowerBI) where the maturity criteria defined by S3JU for Horizon Europe TRL<sup>1</sup> are defined and linked to the Solution backlog;
- Define a list of indicators to support the performance benefits and CBA assessment;
- Establish the key elements that would cause standardisation and regulation needs;
- Identify the User Stories that would trigger the measurement of each of the defined indicators and metrics.

The output of the initial Sprint will settle the framework for the agile methodology to be rolling and will assign the necessary roles and responsibilities to ensure it will be sustainable and effective during the duration of the project.

### 1.2.2.2 Sprint 1 to n

Sprints, except Sprint 0, are planned to have a duration of 4/8 weeks. This duration will depend on the service to be validated in each sprint. Its definition and development complexity, may imply a timeline of 4 or 8 weeks. This will be stated during the project.

Each sprint starts according to the plan defined at the Sprint planning meeting and finishes with the Sprint review meeting. The period between the Sprint review and Sprint Planning represents the Sprint transition and takes approximately 3-5 days.

<sup>1</sup> Annex E Maturity criteria of SESAR3 JU MAWP 2022-2031

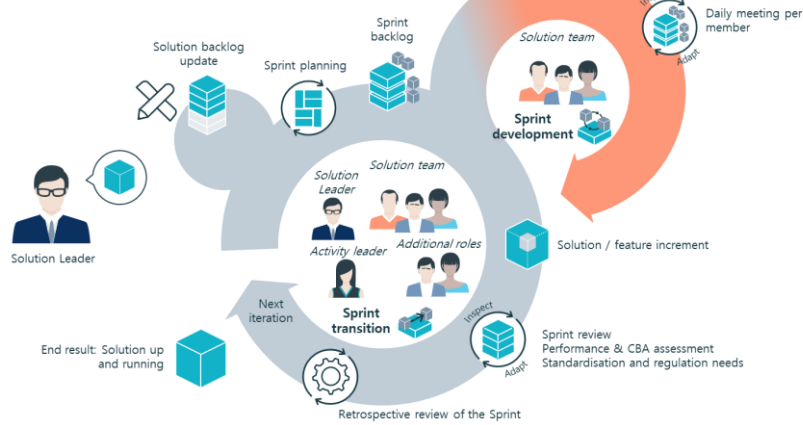


Figure 4: Sprint period and processes

The **Sprint development** is represented by the orange arrow in the figure above. Its objective is to develop, test and deliver a set of User Stories from the Solution backlog. The objective of the Solution Team under these steps within the process is twofold: address the planned User Stories for that specific Sprint and plan & refine the User Stories to be address in the next Sprint.

The evolution from one Sprint to another is key within the agile methodology as it determines the pace at which the product increases and the direction of the development towards the defined scope of the project. Therefore, the **Sprint transition** is foreseen to take from 3 to 5 days to ensure the closure of one Sprint and prepare the next one.

The Solution Leader in collaboration with the stakeholders and supported by the Activity leader/Scrum master will review the work done in the last Sprint and so far within the project to refine the list of User Stories, define new ones driven by the latest findings and update the Solution backlog. The maturity dashboard capturing the maturity criteria will be reviewed at the end of each Sprint to update that criterion that have been fulfilled and identify additional activities to allow reflecting the evolution of the solution.

The SESAR performance experts, as additional roles, will be in charge of reviewing the results of the Sprint and ensure the list of Performance Indicators and metrics have been measured and addressed for them to be able to evaluate the performance benefits provided by the solution and build the CBA assessment.

Along the development and validation of the SESAR Solutions, standardisation and regulation aspects will be under the responsibility of dedicated expert, who will be in charge of identifying the need to engage with the National Authorities and EASA (when required). Regulatory issues and the need for developing standards will be within the meeting point at each Sprint review, so that actions will be taken in due time and the necessary actors will be involved.

Solutions development will need to be integrated into SESAR architecture following the guidelines to be defined by the Transversal Project under the framework of SESAR3. In addition, the Development team will be in charge of filling in the TRL7 requested documentation during the Sprint transition phases. This will ensure the project progress is captured under the specific template and the effort of reflecting the work done is not concentrated at the end of the project, when details can be left out or there are missing elements.

### 1.2.2.3 Solutions maturity evolution and validation

Solution 1 ATM – U-space interface under ENSURE project starts at maturity level TRL4, while Solution 2 Dynamic airspace reconfiguration starts at low maturity level, TRL2-3, all targeting new products and services at TRL7. The defined iterative approach allows fast prototyping to rapidly test the desirability, feasibility and viability of new services and technologies with end users.

The initial low maturity levels and the targeted evolution throughout the duration of the project will only be possible by introducing bold methodology changes to the past and current SESAR Solution development method. The aviation infrastructure has to be able to effectively and sustainably cope with the entry of new service types to shape the future of aviation.

For this purpose, agile approach introduces new elements and ways of working allowing an iterative and incremental development and validation to deliver frequently and visualise evolution. The assessment of the maturity level during the execution of the project has been adapted to ensure that relevant questions and checklists are used, namely the Maturity criteria defined by SESAR3 JU under Annex E in MAWP for each TRL level.

One of the key elements to be considered within each Solution development are the validation exercises aiming to demonstrate the feasibility and readiness of the designed prototypes. The past and current SESAR Solution



development and maturity evolution depend on specific validation exercises aiming to demonstrate the maturity evolution. This approach has evolved under the Fast track proposals, to which the present solutions contribute to, and the dependency between validation exercises and intermediate maturity gates has been replaced by elementary validations within each Sprint and dedicated Epic and/or User Stories addressing validation exercises. The incremental development of each solution is validated in each Sprint. Validation exercises aim at demonstrating the feasibility of the solution from an operational perspective, the technical aspects being ensured throughout the Sprints. This approach allows maturity to be maintained, increased or even reduced from one Sprint to the next one, being part of the process and not representing an issue, as long as causal factors and next steps are captured under the User Stories and the Solution backlog.

The validation exercises to be developed in solution 1 (WP02) are briefly exposed in the following table:

<b>Exercise 1 (INDRA)</b>	Validation exercise addresses 5 different use cases which will cover scenarios like the following: <u>UC1</u> : Bird control mission implies UAS deviation from its trajectory. ATCO communicates with RP to resume its trajectory as soon as possible. <u>UC2</u> : Taxi-way inspection. An emergency is declared so that UAS has to leave the area immediately using a previously presented contingency plan. <u>UC3</u> : Runway measure mission while a manned aircraft failure occurs, and it has to evacuate through the U-space area. ATCO communicates with RP and solve situation. <u>UC4</u> : Night photography mission in a non-preferable used runway. Due to environmental conditions, the usage of the runway must be resumed and UAS has to leave it. <u>UC5</u> : UAS is operating in a runway threshold and a helicopter has to land immediately. DAR is declared, conformance alert arises and the UAS operation plan has to be revoked. <u>UC6</u> : BVLOS UAV starts his flight outside the U-space. It is equipped in ADS-B or any other tracking device. Information with live tracking will be send to ATM services during whole operation. CISP connects UTM/U-space with ATM and provides cybersecurity.
<b>Exercise 2 (COLLINS)</b>	Validation exercise addresses 8 different use cases which will cover scenarios like the following: <u>UC1</u> : UAS operation in the vicinity of Shannon Airport. <u>UC2</u> : Beginning from the previous UC, a DAR is originated and USSPs have to act consequently as one of the USSP's operations is affected. <u>UC3</u> : Beginning from first UC, a conflict arises between two UAS operations. <u>UC4</u> : Flight is planned and initiated in accordance with the base sUAS nominal scenario. UAS operator receives surveillance track information from their USSP via a Supplemental Data Service Provider (SDSP). <u>UC5</u> : UAS operator receives live conformance monitoring via its USSP. This status is propagated to other airspace users via ASTM UTM compliant Inter-USS exchange. <u>UC6</u> : An emergency occurs. This is transmitted to U-space users and ANSP. ANSP asks for more information and requests USSP logs related to the incident. <u>UC7</u> : UAM operator wishes to conduct operation between Shannon airport and a nearby Vertiport. Operator connects to UAM USSP, receives basic airspace awareness. <u>UC8</u> : Variation on above sUAS scenarios highlighting AAM specific variations.
<b>Exercise 3 (TERN)</b>	Validation exercise addresses 3 different use cases which will cover scenarios like the following: <u>UC1</u> : UAS operates in CTR Parallel to its flight path, IFR traffic is landing and a manned aircraft will experience an emergency so that UAS will have to leave the area. <u>UC2</u> : During UAS mission C2 link is lost between RP and UAS pilot. Contingency procedure has to be carried out. <u>UC3</u> : UAS operation diverts from its planned trajectory and leaves U-space.

Table 3: Solution 1 (WP02) validation exercises

The validation exercises to be developed in solution 2 (WP03) are briefly exposed in the following table:

<b>TRL 4</b>	<b>ENAIRES RTS</b>	DAR to support UAM operations above VLL airspace within the CTR of an airport. Focus on tactical DAR procedures for maintaining separation and segregation from manned aircraft.
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	<b>AIRBUS RTS</b>	Validate strategic and tactical re-planning and authorization processes from a U-space system perspective (mainly USSP-UAS Operator negotiation cycle).
	<b>AIRBUS FTS</b>	Safety and efficiency analysis of different DAR operational rules for drones when the airspace is changed.
	<b>NLR</b>	Assess operational feasibility and human performance of DAR processes in strategic (nominal) and tactical (contingency) planning.
<b>TRL 7</b>	<b>Spanish Cluster</b>	Operational validation of DAR service management within the airport environment. The airport environment for validation purposes will be Rozas Aerodrome (LERO).
	<b>Italian Cluster</b>	Investigate the application of DAR in support of emergency and special mission management, in terms of human performance and safety.
	<b>Dutch Cluster</b>	Demonstrate that DAR processes can be applied in strategic and tactical planning of drone operations with specific (military) missions.

Table 4: Solution 2 (WP03) validation exercises

These Validation Exercises are translated into User Stories and planned according to the development of each Solution. The progressive increase of the TRL towards the TRL-7 target will be adapted to the evolution of the project and the results obtained as the project rolled out. Validation results are captured after each Sprint and also after specific User Stories addressing the operational validations.

### 1.2.3 ENSURE sprints strategy

The following tables show the proposed sprints' structure for ENSURE project. This structure responds to the methodology above explained and addresses the package of deliverables and milestones according to SESAR 3 Multiannual Work Programme 2022-2031.

Previous to the definition of the set of sprints linked to the agile methodology, three deliverables will be generated with regard to the management and communication planning of the project:

- The Project Management Plan (PMP) in T0+4,
- The Communications, Dissemination & Exploitation Plan (CDE) in T0+4

Now, focusing on the deliverables associated to each one of the solutions the following tables show the correspondent dedicated sprints structure.

**IMPORTANT:** Please, note that those milestones appearing with a “\*” are linked to STELLAR milestones which are not then formally included in the grant to minimize management overhead and are not included in the HE. They have been kept in this Part B to maintain an adequate traceability with the project planning.

For further clarification, the milestones with “\*” in both tables 5 and 6 are not included in the HE, just the ones without asterisk.

Regarding solution 1:

#	Scope	Deliverables impacted	Milestones
<b>Sprint 0</b>	<b>Initial solution concept and backlog completion KPA/KPI definition and measurement needs definition</b>	D4, D5	<b>M1. Kick off meeting (KoM) (T0+1)</b>

<b>Sprint 1.a, 2.a, 3.a, 4.a, 5.a, 6.a</b>	<b>Service definition (Part I to Part VI)</b> <b>Service's Requirements definition (Part I to Part VI)</b> <b>Inputs for project reviews #1 and 2 and corresponding reviews</b>	D8, D9, D12, D13, D14, D15, D16, D19, D20	<b>M18*. Sol1 Initial solution definition and backlog (T0+1)</b> <b>M19*. Sol1 Definition Part I (T0+6)</b> <b>M21*. Sol1 Definition Part II (T0+10)</b> <b>M23*. Sol1 Definition Part III (T0+14)</b> <b>M25*. Sol1 Definition Part IV (T0+17)</b> <b>M27*. Sol1 Definition Part V (T0+20)</b> <b>M29*. Sol1 Definition Part VI (T0+23)</b> <b>M2. Sol1 Inputs for Project Review #1 (T0+8)</b> <b>M4. Technical Project Review Meeting #1 (T0+9)</b> <b>M5. Sol1 Inputs for project review #2 (T0+21)</b> <b>M7. Technical Project Review Meeting #2 (T0+22)</b>
<b>Sprint 1.b, 2.b, 3.b, 4.b, 5.b, 6.b</b>	<b>Validations and testing (Part I to Part VI): TRL4/TRL5</b> validations specifically dedicated to the service defined in the previous sprint	D15, D17, D18	<b>M20*. Sol1 Validation Part I (T0+8)</b> <b>M22*. Sol1 Validation Part II (T0+12)</b> <b>M24*. Sol1 Validation Part III (T0+15)</b> <b>M26*. Sol1 Validation Part IV (T0+18)</b> <b>M28*. Sol1 Validation Part V (T0+21)</b> <b>M30*. Sol1 Validation Part VI (T0+25)</b>
<b>Sprint 7</b>	<b>TRL 4-5 Final Validation</b>	<i>Whole work package</i>	<b>M31*. Maturity self-assessment after TRL4-5 (T0+26)</b>
<b>Sprint 8</b>	<b>Services definition TRL7</b> <b>Requirements definition TRL7 &amp; TRL6 validation</b> <b>Dissemination action</b>	D14, D15, D16, D19, D20	<b>M9. CDE Action Sol1 - TRL4-5 Dissemination (T0+27)</b> <b>M32*. Sol1 Validation TRL6 (T0+27)</b> <b>M33*. Sol1 Definition TRL7 (T0 + 28)</b>
<b>Sprint 9</b>	<b>Validations and testing TRL7</b>	D15, D19, D20	<b>M34*. Sol1 Validation TRL7 (T0 + 30)</b>
<b>Sprint 10</b>	<b>TRL7 Final Validation</b> <b>Dissemination action</b>	<i>Whole work package</i>	<b>M35*. Sol1 Maturity self-assessment after TRL7 (T0 +31)</b> <b>M10. CDE Action Sol1 - TRL7 Dissemination (T0+31)</b>
<b>Sprint 11</b>	<b>Final version of deliverables completed</b> <b>Dissemination action</b>	<i>Whole work package</i>	<b>M36*. Sol1 Data Pack delivery (T0+32)</b> <b>M12. CDE Action - Overall results (T0+32)</b>
<b>Sprint 12</b>	<b>Maturity Gate preparation</b>	-	<b>M13. Sol1 Maturity Gate (T0 + 34)</b>

Table 5: ENSURE Sprints' structure WP02

Regarding Solution 2:

#	Scope	Deliverables impacted	Milestones
<b>Sprint 0</b>	<b>Initial solution concept and backlog completion</b> <b>KPA/KPI definition and measurement needs definition</b>	D24, D25	

<b>Sprint 1.a, 2.a, 3.a, 4.a, 5.a, 6.a</b>	<b>DAR concept and service capability (CAP1, 2, 3 &amp; 4) refinement – in parallel (Part I to Part VI)</b> <b>DAR service Requirements definition (Part I)</b> <b>Inputs for project reviews #1 and 2 and corresponding reviews</b>	D26, D27, D28, D29, D30, D31, D32, D35, D36	<b>M37*. Sol2 Initial solution definition and backlog (T0+5)</b> <b>M38*. Sol2 Definition Part I (T0+6)</b> <b>M3. Sol2 Inputs for project review #1 (T0+8)</b> <b>M40*. Sol2 Definition Part II (T0+10)</b> <b>M42*. Sol2 Definition Part III (T0+14)</b> <b>M44*. Sol2 Definition Part IV (T0+17)</b> <b>M46*. Sol2 Definition Part V (T0+20)</b> <b>M6. Sol2 Inputs for project review #2 (T0+21)</b> <b>M48*. Sol2 Definition Part VI (T0+23)</b>
<b>Sprint 1.b, 2.b, 3.b, 4.b, 5.b, 6.b</b>	<b>Validations and testing (Part I to Part VI):</b> TRL4 validations specifically dedicated to the DAR service concept and capabilities defined in the previous sprint. Affects all exercises (those aiming for TRL4 and TRL7)	D31, D33, D34	<b>M39*. Sol2 Validation Part I (T0+8)</b> <b>M41*. Sol2 Validation Part II (T0+12)</b> <b>M43*. Sol2 Validation Part III (T0+15)</b> <b>M45*. Sol2 Validation Part IV (T0+18)</b> <b>M47*. Sol2 Validation Part V (T0+21)</b> <b>M49*. Sol2 Validation Part VI (T0+25)</b>
<b>Sprint 7</b>	<b>TRL 4 Final Validation Dissemination action</b>	<i>Whole work package</i>	<b>M50*. Sol2 Maturity self-assessment after TRL4 (T0+26)</b> <b>M8. CDE Action - TRL4 Dissemination (T0+26)</b>
<b>Sprint 8</b>	<b>DAR concept and service capability (CAP1, 2, 3 &amp; 4) refinement – in parallel TRL7 DAR service Requirements definition TRL7 &amp; TRL6 validation</b>	D30, D31, D32, D35, D36	<b>M51*. Sol2 Validation TRL6 (T0+27)</b> <b>M52*. Sol2 Definition TRL7 (T0+28)</b>
<b>Sprint 9</b>	<b>Validations and testing TRL7</b>	D31, D33, D34	<b>M53*. Validation of TRL7 (T0+30)</b>
<b>Sprint 10</b>	<b>TRL7 Final Validation Dissemination action</b>	<i>Whole work package</i>	<b>M54*. Maturity self-assessment after TRL7 (T0+31)</b> <b>M11. CDE Action - TRL7 Dissemination (T0+31)</b>
<b>Sprint 11</b>	<b>Final version of deliverables completed</b>	<i>Whole work package</i>	<b>M55*. Data Pack delivery (T0 + 32)</b>
<b>Sprint 12</b>	<b>Maturity Gate</b>	-	<b>M14. Sol2 Maturity Gate (T0 + 34)</b>

Table 6: ENSURE Sprints' structure WP03

Results from current research and innovation activities

During AURA project, two solutions were addressed. Both aim to define a common ATM-U-space interface which would allow feasible and safe UAS operations together with manned aviation ones.

The first solution, Collaborative ATM-U-space interface addressed short term solutions, while Highly Automated ATM U-space interface looked to a more distant deployment implying new concepts like Dynamic Airspace Reconfiguration inclusion in AUSA.

In this way, validation exercises have taken place during the project with the purpose of analysing the feasibility of this implementation together with the possible impacts regarding human performance, safety, security and environmental aspects.

The aim of ENSURE is to have as main input the results obtained from these executions. By this, several issues coming from Information Exchange Services validation have been raised as a starting point for this project:

- Improvement of already proposed services (Operational plan information exchange service, Geofence information exchange service, Tracking information exchange service, Traffic non-conformance Monitoring Information Exchange Service and Tactical Operational Message Information Exchange Service). These services show some shortcomings which directly affect to the information exchange process making it not as smooth and fast as expected.  
By the inclusion of the adequate extra flows these services can be highly improve so to make this interface feasible, avoiding unnecessary extra data exchanges.
- Operational support should be considered. During AURA validation executions, only technical support was provided so that no opinion was provided from the operational perspective. This is one of the main points to allow a project reaching TRL7 and it is another issue to be covered by AURA.
- Several Information Exchanges have been detected as a need for the correct and complete implementation of ATM-U-space interface. With this purpose, ENSURE is going to introduce validation exercises regarding the incorporation of these needed services (Collaborative Interface with ATC, Dynamic Airspace Reconfiguration Service, Strategic Conflict Resolution Service, Emergency Management Service and Contingency Plan).
- Moreover, ENSURE solutions will feed back to each other throughout the project in order to serve as input to themselves.

#### 1.2.4 Interdisciplinary within the project

ENSURE project integrates different techniques, tools and data from different fields as well as a multi-disciplinary team to develop the Solutions under the scope of this proposal. U-space brings together aviation and urban mobility, defining new services to respond to the current needs and prepare for the future development supporting the economy expansion.

The interdisciplinary within the proposal is also reflected through the participating partners, which include operational actors involved in air service provision, operators, developers and key industry players. This brings together different perspectives that are combined to develop new services and fully integrate them into ATM.

In addition, agile methodology has been adopted and incorporated into SESAR industrial research to allow quick evolution of the solutions. System engineering is combined with the operational concept development to provide solutions that are feasible to be implemented into real environment. The proposed methodology structured on Sprints with iterative loops of activities and incremental deliveries allow the presence of interdisciplinary within the project and allows specific knowledge from the partners to be included in the development. Additional knowledge is brought into the project by profiles with wide expertise on performance assessment and CBA analysis, standardisation and regulatory aspects as well as validation exercises.

Social sciences and humanities focus on human life, which are not under the objective of this proposal. These disciplines are not integrated into the project as there are not relevant for the development of the targeted Solutions. The provision of new services within U-space might have an indirect impact on human life as air traffic will increase in urban areas. This potential impact will be captured under the safety and security assessment throughout the development of the solutions. The main objective is to ensure that there is no negative impact on human life as a result of the full integration of ATM and U-space systems and the Dynamic Airspace Reconfiguration.

#### 1.2.5 Open science practices

Research programmes, like Horizon Europe in the present case, promote openness, integrity and reproducibility in research to build a more open research environment and culture. ENSURE project aims to contribute to the research community, particularly to aviation, in terms of airport operations and their integration into the network.

Therefore, the practices taken on-board by ENSURE project are:

- Open access to publications – SESAR Solutions data pack is published by SJU on their website once available. The Grant agreement will identify the level of openness of each contract deliverable. Additional publications aimed for dissemination, exploitation and communication will be developed by the project team, which will be openly available both inside and outside SESAR community.
- Research output management – data management has already been considered as part of the methodology under SESAR Delivery thread. Key elements in terms of structure and FAIR principles have been identified and presented in section 2.3 that will be further elaborated and delivered to the SJU under the Data Management Plan (DMP) 6 months after the initiation of the project. DMP is a living document, updated in line with project progress and adjusted according to the evolution of the Solutions.
- Open access to data – data and project outputs are as open as possible as closed as necessary. Solutions'



development are based on industry partners building prototypes and preparing products for deployment. The knowledge gained by the project members and the details of the systems and prototypes developed will have restricted access and will be confidential to the developer and its potential users/clients. The effort dedicated by the participating partners and industry players is recognised and valued by limiting the public access to the Solution development details, mainly for market confidentiality. However, access to the progress evolution status, validation results and also to performance impact will be accessible to the SESAR3 community during the project lifetime. This will be than openly accessible through the Solution data pack on SJU's website.

The hybrid publishing venue in SESAR programme is the SJU website on one hand ([www.sesarju.eu](http://www.sesarju.eu)) and the eATM portal ([www.atmmasterplan.eu](http://www.atmmasterplan.eu)). News and updates related to SESAR3 projects are shared by the SJU on their website, while the eATM Portal provides an integrated view of the European ATM System outlining the essential operational and technology changes foreseen to deliver the SESAR contributions to the Single European Sky performance objective. The pages represent trusted repositories used by the Solution projects.

### 1.2.6 Data management and management of other research outputs

Management of data and research output. The organisation, storage, preservation and sharing of data collected and used during lifetime of the project and plays a key role in knowledge transfer and contribution to the community. It encompasses collecting, processing, governing, sharing and analysing data in an efficient, effective and reliable manner. The figure below shows the key elements considered by the project for data and project outputs management, in line with the FAIR principles (Findable, Accessible, Interoperable, and Reusable).

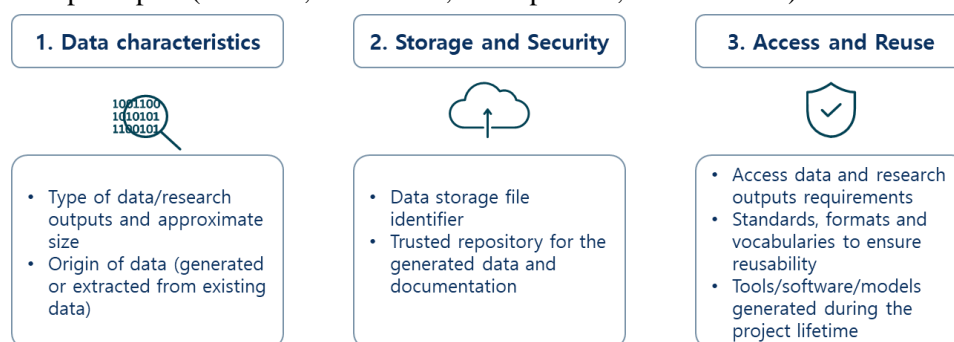


Figure 5. Data management elements

1. Data characteristics – types of data and research outputs that the project will use and generate
  - a. Information coming from SESAR2020 from the solutions related to the objectives of this project will be considered as input, mainly PJ34 AURA.
  - b. The existing data to be used by the project include:
    - i. Simulated and real flight plans,
    - ii. Airport capacity information,
    - iii. Manned and unmanned aircraft data base (BADA),
    - iv. Manned and unmanned aircraft flight performances,
    - v. Airspace existing volumes, including restrictions.

This information will be provided directly by the project partners. Network data will also be used, but this is usually available on EUROCONTROL website and dashboard.
  - c. The solutions under the scope of the project imply systems development and prototyping, representing key outputs of the project with restricted access to it.
  - d. Validation results will be extracted throughout the duration of the project at each Sprint review. This will include excel files with specific data collected during the Sprint, performance indicators measurements and maturity criteria evaluation.
  - e. A set of deliverables are mandatory in the framework of SESAR3 programme, including the PMP, DMP, DEC, solution data-pack document and annual project review supporting material. These represent the main output of the project as they collect and present the development performed throughout the project lifetime. The list of deliverables is presented in Part A of the grant.
2. Storage and security – repositories that will be used and access the Solution development content.
  - a. The reference platform in the context of SESAR programme is SESAR Joint Undertaking website in charge of sharing data and documents generated in the context of SESAR programme. This website also includes a restricted area (Stellar) for the project teams developing research projects and contributing to the European ATM vision.
  - b. Each project has an assigned directory under SJU website restricted area/portal. Dedicated folders are built

for each project reflecting work packages and project structure. All generated files will follow a specific naming procedure: project name, solution code, deliverable ID or document name, version and date. The files are stored in the specific folder corresponding to the work package and activity it belongs to.

- c. Systems development and prototypes produced by the Solutions will remain under the developing partner and SJU IPR. Project data might be made public, other will remain confidential. This will be decided by the SJU.
3. Access and reuse – access to the project data and availability of tools and data for further use.
  - a. Access to the restricted SJU portal (stellar) will be granted to the contributing partners to the Solution it contributes to. The permission to viewing, editing and uploading content of the Solutions directory is decided by each project. Material to be shared within SESAR community, general access to STELLAR portal, will also be identified by the Project manager in collaboration with SJU.
  - b. Performance and costing exercises generated for each of the Solutions under the scope of the project will be shared within SESAR3 programme when required, such as with transversal working areas for the development of consolidated performance assessments report or in support to Master Plan campaigns.
  - c. Solutions' development will follow SESAR programme reference documentation and defined templates to ensure alignment of standards, formats and vocabularies for data and metadata.
  - d. The quality of the material and documentation generated throughout the project lifetime will be ensured by the Data Manager. The content of each publication defined under the DEC plan, inside or outside SESAR3 community will be firstly approved by the project members and only afterwards will be shared by the Project Manager.

Project outputs and data will be preserved and analysed exclusively for the purpose of the project and according to policies set up by those partners and the SJU. The elements presented under this section will be further detailed in the Data Management Plan (DMP). This document defines the obligations, conditions and technical measures to be undertaken by the partners in order to guarantee confidentiality, security and proprietary rights on exchanged data. The DMP will be formulated at the beginning of the project and updated as necessary during the project lifetime.

### 1.3 State of the art

Regarding the state-of-the-art, the main objective is to mature and complete the work performed in previous projects with relation to the ATM – U-space interface, in concrete, the SESAR PJ34 project. This is supported by a revision of the current regulations and standards to ensure alignment with current industry efforts.

PJ34 AURA consisted of two solutions: Solution 1, which considered collaborative ATM-U-space environment, being conducted to V2 phase; Solution 2, which considered highly-automated collaborative ATM-U-space environment, being conducted to V1 phase.

The main difference between these two was the time horizons. Solution 1 was defined for a short time horizon while Solution 2 was expected for a longer one. However, both of them assumed a medium-term time horizon, in which U-space services have been fully implemented (U4 services) and the optimistic outlook for European UAS market growth is reached, culminating in a ratio of 10 UAS flights for every crewed aircraft flight (Reference from "European Drones Outlook study", 2016).

Solution 1 addresses the information exchange required between U-space and ATM to ensure a safe integration of UASs and avoid airspace fragmentation. It has the aim of determining which services and which specific information were relevant to ATM systems. In this way, validations were focused on the exchange of information handled by these services.

Solution 1 was focused on the information exchange between U-space and ATM systems, regardless of specific U-space architectures or deployments limited to the relevant information. To guarantee the interoperability between systems, the solution used as much as possible current developments, such as SWIM interface to avoid large changes or adaptations in ATM systems. This was considered an efficient manner of achieving V2 while validating the necessary and more important services without implying a relevant change in current technologies.

This project also used a “cluster” structure in which each one focused on specific use cases and services in their validation exercises, involving real-time simulations, culminating with Live-Virtual Constructive experiments combining actual UAS flights with simulated traffic and controllers in the loop.

Each cluster was centred on a different geographical area and focused on different validation exercises, allowing the project to cover the full scope of the problem using a “divide and conquer” approach: Cluster 1, led by INDRA and based in Spain; Cluster 2, led by FRQ (FSP) and based in Austria and Hungary; Cluster 3, led by DSN and based in France; Cluster 4, led by LEONARDO and based in Italy.

These clusters successfully evaluated scenarios like:

- UAS performing Navaid calibration, under nominal and non-nominal situation.

- UAS performing scheduled aerial works, addressing architectures of a single country and crossing two countries.
- Airspace constraints management and information sharing.
- Strategic de-confliction involving approval from ATC.
- Tactical contingency addressing emergency management.

Regarding Solution 2, it was focused on the development and validation of a medium- to long-term concept for a collaborative ATM-U-space environment, which facilitated seamless operations of UASs and manned aviation in a highly dynamic segregation concept. This segregated mode is restricted according to several conditions which depend primarily on the operational risk level defined.

The main objective was then to define a novel operational concept for UASs in a fully collaborative environment with ATM that went beyond the existing concepts developed for a non-collaborative U-space. This solution was able to provide a baseline for a future traffic management environment which relies much more on autonomy and automated systems in support of a highly dynamic DAR process.

Validations associated to Solution 2 were divided into 6 different exercises. Some of the environments and scenarios which have been performed were: New shared airspace concept configuration; Nominal use of DAR to support U-space operations within the CTR of controlled airports during the tactical phase; Dynamic operation plans with commercial aerial airport inspections; Adaptive traffic information exchange in urban environment; Management of the airspace in the vicinity of the airport runway by ATC when U-space contingencies occur; Manned aircraft in urgency situation entering UTM Airspace.

As a primary result regarding both solutions, a first approach to consolidate ATM-U-space interface was finished with promising results. This interface allows a new collaborative environment between U-space and ATM systems increasing airspace interoperability and improving the security of operations by enabling a better sharing of airspace between UASs and manned aircraft.

Indeed, the project is able to contribute to the creation of new standards and promote the development and reach the expected economic potential of the UAS market, through the development and validation of the integration between U-space services and current ATM systems.

All this led to the possibility of refining the operational concept as well as improving and proposing new services as main output of the feedback received during the validations.

## 2 Impact

ENSURE project is expected to have a significant impact on the integration of new actors into the airspace. The results of the project will be key to enable a new market with multiple applications that will bring many benefits to aviation stakeholders and society in general.

### 2.1 Project's pathways towards impact

Solution 1 under ENSURE project focuses on the refinement, generation and validation, from the operational point of view, of the set of services for the consolidation of the ATM-U-space Interface. These existing services will go through a process of confirmation of the Information Exchanges performed between both systems in the different services included, so that there is no missing information considered as relevant or needed. As a result of this initial process, Solution 1 will also propose new services to be deployed on the ATM U-space interface.

Solution 2 is dedicated to DAR service as it involves development on multiple fields, namely maturing the operational concepts, defining the system supporting the service and the related standards for this interface.

Both solutions will contribute to the finalisation of the SESAR Phase C by maturing the current interface services developed in SESAR 2020 PJ34 project. In this phase, a large number of diverse drone operations in all environments, will be feasible, supported by ATM- U-space interface services even if the operations are not yet fully integrated into ATM. This development will contribute to the evolution of “U-space services” and “Multimodal mobility and integration of all airspace users” Essential Operational Changes (EOCs) as defined in European ATM Master Plan 2020. New ATM-U-space interface services will also be developed by ENSURE project to support the seamless integration of drones operations into ATM, paving the way to the Digital European Sky. The new services proposed together with the DAR contribute to the delivery of a fully scalable system for manned and unmanned aviation supported by a digital ecosystem and high levels of automation and connectivity.

The project outcomes will accelerate the digital transformation of the European ATM systems and their impact is expected in the areas presented in the table below.



KPA	Expected impact
Environment	<p>No increase on the environmental footprint of the air transport system. There is an expected increase of air traffic operations due to traffic forecast expected for 2027, and this may lead to an increase in terms of environmental affection, but ENSURE's solution will not suppose an increase on it. This is due to the fact that UAS will imply no fuel consumption and, indeed, ATM-U-space interface services will be validated in high risk environments (UAS operation to be conducted in CTR, more specifically in airport and its surroundings airspace) so that very few number of operations will be considered. In addition, during the validation exercises the noise and disturbance will be measure to reduce any possible impact on the environment.</p> <p>These achievements of the project will increment the use of UAS in operations within airports in substitution of other vehicles (e.g. ILS calibration, RWY inspection...) that produce higher pollution and therefore the footprint will be reduced.</p> <p>Main target groups: UAS operators, UAS manufacturers, ANSPs, airports, citizens, CIS and USS providers.</p>
Passenger experience	<p>Contribution to the drone economy and the project will ease the deployment of the U-space services that will allow a safe use of the drones in the airspace (deliveries, emergencies, runway inspections, night photography missions, etc.). U-space will foster the development of a new high-tech economic sector in Europe and increasing the UAS operation in critical environment (maintaining the safety of the operations) will facilitate the social acceptance.</p> <p>Main target groups: UAS operators, airports and citizens.</p>
Capacity	<p>No negative affect is expected on ATM capacity. ENSURE project aims to support the UAS operations integration with ATM via an adequate and feasible interface. This will allow maintaining ATM capacity and adding simultaneously the correspondent UAS operations in low to high risk environments.</p> <p>Via Capacity Management service, the UAS-ATM interface will be able to handle the different portions/grids of airspace and strategically allocate them according to whether they are occupied or not by manned aviation. Thus, the drone operations will be maximized while maintaining the segregation with controlled manned aviation.</p> <p>DAR service to be delivered by Solution 2 will provide additional system capacity by enabling large volumes of unmanned aircraft to access the airspace. This ensures the ATM capacity is not negatively affected and at the same time the maximum number of drones are accommodated in the airspace. In addition, the ATS resources to maintain segregation will be reduced thus minimizing the impact in their workload.</p> <p>Main target groups: UAS operators, UAS manufacturers, ANSPs, airports, CIS and USS providers.</p>
Cost efficiency	<p>The cost of providing ATM services is not expected to be negatively affected by the services to be developed under the scope of ENSURE project. However, there will be a cost associated to adapt current systems to the ATM-U-space interface and also additional training will be needed for ATCOs in those cases in which DAR service will be integrated. These costs are captured under the technology cost per flight indicator. The impact on the cost efficiency through the evaluation of this indicator is expected to be neutral. The additional cost represents a need to allow the increase of traffic and the integration with U-space. Special emphasis will be put on this aspect during the validation exercises to quantify the impact and conclude on this performance area.</p> <p>Additionally, there is a cost associated to the delivery of U-space services. The implementation of new UAS operations in the nearby of airports will imply a cost that will be considered and evaluated by the project. Costs related to network identification, geo-awareness, traffic information, and flight authorization will be included within the evaluation of the costs related to the proposed U-space services under ENSURE. The latest development on U-space performance framework (<a href="#">D4.7 - SESAR Performance Framework - U-Space Companion document</a>) establishes the focus of cost-efficiency on the Airspace User cost rather than on the USSP cost.</p> <p>Main targets: ANSPs, UAS operators, CIS and USS providers.</p>
Operational efficiency	<p>The development of ATM-U-space integration services by ENSURE project will allow new types of operations (runway inspections, bird control, night photography, deliveries, emergencies, etc.) and will support the increase of drones' business expected at European level. The availability of these additional services will lead to the reduction of costs of operating unmanned aircraft due to the additional operations and the feasibility of operations in high risk environment.</p>

	<p>The initial proposal on the U-space performance framework sees the operational efficiency as the mission efficiency directly related to the business model followed by each drone operator, as it depends on the followed objective. The main aspects of mission efficiency defined in D4.7 are related to adherence to provided and approved flight request, the efficiency of use of airspace (e.g., time, volume), and the efficiency of the trajectory (e.g., shortest flight duration path). The performance indicators on flight time adherence and horizontal and vertical drone operational efficiency will be measured by the project to evaluate the expected impact.</p> <p>From the ATM perspective, the provision of ATM-U-space integration services is expected to have no negative effect on the operating cost of manned aircraft, as they will be seamless integrated with the unmanned ones.</p> <p><u>Main target groups: ANSPs, airports, UAS operators, CIS and USS providers.</u></p>
Safety	<p>The seamless integration of ATM and U-space has as objective no negative effect on ATM safety. UAS operations will be integrated with ATM ones considering all services needed for ensuring safe, secure, efficient and interoperable operations. ENSURE project contributes to the definition and availability of required services for this integration.</p> <p>The occurrence of accidents and incidents will be evaluated through the Accident Incident Models (Risk Models) that are still under development for U-space community. As main reference and basis to develop this model, MAC AUSA Conflicting trajectories (UAS-UAS only) will be used.</p> <p><u>Main target groups: ANSPs, airports, UAS operators, CIS and USS providers.</u></p>
Security	<p>Interface platforms considered under the development of ENSURE will follow the SESAR security standards shown in SecRAM SESAR guideline required considering both external connections with partners and avoiding sharing sensitive information. No negative effect on ATM security is foreseen due to the delivery of the services under ENSURE project.</p> <p><u>Main target groups: ANSPs, CIS and USS providers.</u></p>
Human Performance	<p>Additional reference is made on Human Performance, as the seamless integration of ATM and U-space relies on new services and especially on DAR, as it introduces changes on the current airspace structure and management.</p> <p>The main objective of the new services delivery is to maintain ATCO workload by avoiding managing irrelevant or unnecessary information also by ensuring that tasks related to U-space operations are addressed just when these operations take place in high risk environments. There will also be improved situational awareness due to ATM HMI improvements (new technological functions associated to the CWP (Controller Working Position), better display and visualization through HMI, etc.).</p> <p>Main target groups: ANSPs.</p>

Table 7: KPAs identified and their expected impact within ENSURE

Additional positive impacts of the project are presented in the following points:

- Contribute to the safe and fair integration of drones especially in controlled airspace around airports.
- Contribute to the development of U-space in Europe, accelerating the deployment roadmap and allowing an interoperable U-space through Europe.
- Development and validation of information exchange between U-space services and ATM systems contributing to the safe integration of drones into the airspace.
- Contribute to SESAR Key Performance aspects, Safety and Access to the airspace and equity. The project will enable the access of new actors to the airspace and at the same time, it will maintain the safety of current airspace users, avoiding negative impacts on current stakeholders.
- Obtain feedback from the relevant parties on the U-space-ATM integration ConOps and information exchange protocols to facilitate stakeholder acceptance of combined drone and manned aircraft operations.
- Contribute to avoid the defragmentation of the airspace and interoperability, enabling seamless operations and avoiding airspace fragmentation and interoperability between U-space and ATM systems.
- The results of the project will be provided as input to regulators and to standardisation bodies working actively in U-space (for example EUROCAE that is part of the Advisory Board). Indeed, EASA which is part of the project (as third party), will contribute since the beginning to define the most important regulatory objectives to be faced and will support and validate their final achievement. -
- Contribute to implementation of DAR in Europe as flexible service for management of safe and efficient operations in U-space.

To ensure the achievement of the expected impacts detailed in this section, ENSURE project will establish an **Advisory Board**, with different members, including international organizations: Royal Navy, ICAO, EUROCAE,

JARUS, NASA, FAA and different stakeholders from drone industry, as UAS operators, UAS supervisors, USSPs, etc. Specific workshops will be organized during the development of the project to guarantee the involvement of the Advisory Board.

### ***Scientific Impact***

U-space is a reality that has brought significant changes to the ATM community as it was known since decades. Low-altitude operations have become a need and their integration with the current operations of manned aircraft is part of the current R&I needs identified under SRIA. This need is driven by European Master Plan that envisages the full, highly automated operation of fleets of drones performing a wide range of aerial tasks.

ENSURE project aims to contribute to this view by maturing and proposing new services for ATM – U-space integration, with a dedicated solution to DAR service as it involves development from different perspectives. The development these services and specially, the dynamic architecture, will provide valuable scientific knowledge to the drone community as it will allow new operations to be feasible and will ensure integration with manned aircraft.

The dynamic reconfiguration of the U-space airspace will be based on the use of static and dynamic geofences to ensure that manned and unmanned aircraft remain safely segregated. This service implies a temporary modification of the U-space airspace to accommodate short-term changes in manned traffic demand. The adjustment of the geographical limits of the U-space airspace will require new volume definition and modification rules. This will be complemented by new functionalities and services to answer to the reconfiguration needs in a dynamic way.

These concepts will enrich the scientific advances that are part of the U-space and drone field through research and investigation projects. Universities have contributed to the U-space definition so far, such as the example of CORUS Horizon 2020 exploratory research project where experts from aviation (manned and drone) have contributed to the development of the concept of operations for the European system for management of drones. Therefore, research and academia are interconnected, advances from one side contributing to the other and vice versa with the same goal in mind, encouraging innovation to contribute to the evolution of drones market and its seamless integration into ATM existing infrastructure.

### ***Economic Impact***

In order to reach the promising economic impact, it is essential to deploy the necessary tools for the safe integration of new comers into the airspace in the Very Low Level.

According to the European Drone Outlook Study 2016, the value of the drone market will exceed EUR 10 billion annually, reaching a cumulative benefit of EUR 140 billion by 2035.

In order to reach this economic impact, it is essential to deploy the necessary tools for the safe integration of drones into the airspace. Today, drone operations in VLL are highly restricted and the authorization processes for some type of operations, for example, in controlled airspace are usually long and with very demanding requirements. The new European regulations are easing this process in order to unify the differences between the countries and to enable the opening of the airspace.

ENSURE will contribute to reach the expected economic potential of the drone market, through the development and validation of the integration between U-space services and current ATM systems. The further development of DAR service and applications will also contribute to the rapid deployment of U-space roadmap in Europe, making the use of U-space volumes flexible and safe. This automatically translates into an improvement of the economic level, allowing a larger number of users to operate, enabling more efficient drone activities within companies and generating a higher number of licence applications.

### ***Social Impact***

The new drone applications will have a direct impact on society that will obtain direct benefit from the new services provided by drones. Today these benefits are a reality, for example with the use of drones for search and rescue missions or transport of medicines or blood preservation. This direct impact will grow in the future with the use of drones for applications as delivery or urban air mobility.

U-space services play an important role in the feasibility of new drones applications and their integration into the existing ATM infrastructure. ENSURE project will contribute by maturing and developing new services strengthening the ATM-U-space integration and enabling the development of the drone sector. New operations will be feasible such as runway inspections, bird control, night photography, deliveries, emergencies, etc. in a seamless integration within the existing manned operations. In this way, activities that today require human intervention, demanding more time, investment and effort, can be carried out more effectively and easily with drones.

The deployment of the U-space services under ENSURE will allow a safe use of the drones in the airspace and will allow integration of all airspace users. This will support the development of new businesses and facilitate the overall growth of the European drone services market at EU level, while creating no negative environmental footprint.

## 2.2 Project's content towards impact

At European level, EASA contributes to the production of EU legislation and implementation material related to civil aviation safety and environmental compatibility. Drones operation is a reality that has evolved very fast and the tendency is for their presence to increase even more. The European Master Plan envisages the highly automated operation of fleets of drones performing a wide range of aerial tasks fully integrated into today ATM infrastructure and in coordination with the manned aircraft.

In this context, many of Europe's Member States have been progressively establishing legislation that extends beyond exemption based protocols to provide drone operators the opportunity to create local operations. Across these local initiatives, EASA has elaborated the framework for the safe operation of drones, under EU Regulations 2019/947 and 2019/945, and also the necessary requirements for manned and unmanned aircraft to operate safely in the U-space airspace, under U-space Regulation EU IR 2021/664, 665 & 666.

The U-space Regulation has been adopted on April 2021 and will become applicable as of 26 January 2023. It aims to prevent collisions between aircraft and to mitigate air and ground risks. It also provides for safe aircraft operations in all areas and for all types of unmanned aircraft operations. The dynamic airspace reconfiguration has been introduced by this regulation, where it is defined as “the temporary modification of the U-space airspace in order to accommodate short-term changes in manned traffic demand, by adjusting the geographical limits of that U-space airspace”. This definition has been adopted by ENSURE project and will follow the details from the regulation.

SESAR programme plays a key role in the identification of regulatory and standardization means in line with the Solutions development and the European Master Plan vision. There are still multiple needs on this end for technology development and support the large array of increasing private investments.

ENSURE project aims to contribute to U-space U3 and U4 services by maturing a set of services currently under development under PJ34 AURA and will propose additional ones, with special focus on DAR. The development of standards is part of the scope of the project, such as the standardization of U-space volume definition (sectors), volume modification through DAR and standardisation of data models and information exchange mechanisms to support DAR. These developments will contribute to the already identified needs. In addition, the project will evaluate new needs in the context of the services proposed, paving the way towards U4 U-space full services. A dedicated thread of action has been included within the proposed methodology, the incremental delivery of solutions allowing the early identification of needs and contact with the relevant authorities.

The rolling development plan (RDP) maintained by the European UAS Standards Coordination Group (EUSCG) indicates the progress made on either updating existing standards or the development of new standards for UAS. The latest updated of the current situation on regulatory and standard activity on UAS has been published on April 2022<sup>2</sup>.

The presence of the Advisory Board, where international organisations will be invited (EASA, DGAC, EUROCAE, etc.), ensures the proper involvement of the key actors in U-space regulatory and standardisation field. In addition, ad-hoc contact with EASA will be established if so required by the identified needs of the project.

## 2.3 Measures to maximise impact - Dissemination, exploitation and communication

Coordinated dissemination activities, exploitation strategies of the project results and adequate communication means are key instruments to achieve the expected project impact. To ensure an effective approach, the details will be defined in the Dissemination Exploitation and Communication plan (DEC). Project communication & dissemination document, built on the measures presented under this section and in collaboration of all consortium members.

### 2.3.1 Dissemination and exploitations activities

This section presents a first draft of the expected dissemination and exploitation activities. The plans will be updated during the development of the project to consider the results and to grant the correct communication with the target audiences.

Each partner will contribute at specific levels according to their expertise and business activities. Specific distribution of tasks between the partners will be established at the beginning of the project together with the development and delivery of the DEC. Project communication & dissemination.

The first step for dissemination activities is to identify the target audiences. ENSURE project involves a very wide audience, since the project does not involve only ATM or airspace stakeholders, it has also direct impact on drone market stakeholders, final users and general public. Taking into account the different target audiences, several strategies for dissemination will be used. The following groups have been identified as target audience for ENSURE and the following dissemination goals and messages have been identified:

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<sup>2</sup> [https://euscg.eu/media/1264/euscg-157\\_version-70-rdp\\_april-2022.pdf](https://euscg.eu/media/1264/euscg-157_version-70-rdp_april-2022.pdf)



1. **U-space Service Providers (USSP).** These stakeholders are responsible for the safety management of UAS operations in the VLL and are directly influenced by the project development and results. They will be responsible of the exploitation of one part of the project, implementing the U-space side of the U-space ATM interface.
2. **UAS operators.** These are the main users of the U-space airspace. The dissemination message for this audience will be centred in the advantages of this integration. The message will focus on the increase of capacity in non-segregated airspaces, the higher incomes due to new areas of operation (e.g. high populated areas in controlled airspace), and the safer and efficient operations.
3. **UAS equipment manufacturers.** As they will need to identify the added value features they can include in their products to bring their customers the benefits of a safe collaborative ATM U-space environment.
4. **Air Navigation Service Providers.** They have one of the most important roles in the development of the collaborative ATM-U-space environment. The message to this audience will focus on how they can use this integration to improve the safety of manned aviation and which changes in its work procedures will be required. It will be important to remark that the benefits in safety will be much more valuable than the changes that will be required, as well as the low impact in its workload.
5. **European and National Aviation Authorities.** They are in charge of regulating UAS operations. The authorities will be able to use the results of the project as input for the development of new regulations and some current regulation aspects (still not approved, such as Opinion 01/2020) will be tested during the project, providing a valuable feedback for the authorities.
6. **Standardisation bodies.** They will be the main users of requirements designed by ENSURE to proceed for further standardisation. National and international standardisation organizations will be reached with specific strategies, such as EUSCG, EUROCAE and JARUS. This dissemination will be eased by the relations that some ENSURE partners have with those organizations.
7. **Researchers and professionals of the sector.** The principal idea is to increase the knowledge and awareness of this innovative integration concept.
8. **General population.** One of the biggest barriers in drone market is the social acceptance. The public concerns about the use of UAS in very low level airspace (VLL), specially the urban one, is still present. The dissemination strategy will target the perception of safety among citizens and highlighting the direct benefits that the general public can obtain from drone activities.

The dissemination means will include the creation of the project specific website on SJU website, publications in specialised press releases, articles in magazines, journals, mass media and participation in national and international conferences. The dissemination plan will be adapted to each project phase. At the beginning of the project, the specific plan with milestones and partners responsibilities will be defined. During the development of the project, the different target groups will be addressed with specific communications informing about the evolution of the two solutions including workshops opened to external reviewers. Finally, the results of the project will be shared with the corresponding groups, ensuring that the materials produced during the project are used as input by the identified targets, such as the regulation and standardisation authorities.

The key exploitable results to be developed by the project consist in the ATM-U-space services themselves. Their feasibility and characteristics will be valuable for the drones market, while contributing to the standardisation and regulatory frameworks currently under development. Therefore, the progress on standardisation activities under the scope of the project will be of special interest for the standardisation bodies, such as EUROCAE and JARUS. Relevant information on drone standards will be a potential candidate to be included under the Drone Standard open repository (<https://standards.aw-drones.eu/>), contributing to the consolidation of information on drones market for the standardisation topic.

Project progress results and details on the services designed for ATM-U-space interface and integration are of special interest for USSP and traditional ANSPs as they will work in close collaboration specially around airports, UAS operators due to the fact the new types of operations will be feasible due to the introduction of new services. The communications material to be produced will be aligned with the identified possible of exploitation of results.

Additional exploitation opportunities for the different stakeholders involved will be identified throughout the duration of the project. As previously mentioned, the results can be exploited by the regulatory and standardization entities, considering the validations and documentation produced as an input for the development of new standards and drone regulations, specially focused on the interface U-space-ATM. This exploitation will be guaranteed with the early involvement of these organizations in the project through the Advisory Board.

Secondly, the industrial exploitation of the results will be guaranteed by the industry stakeholders that are partners of the consortium (INDRA, INIFLY, COLLINS, AIRBUS, D-FLIGHT and TERN). The platform developments and enhancements performed during the project will be used as a basis by the partners to start the industrialization of the ATM-U-space interface.

The consortium embraces the open science practices in line with the Horizon Europe view, so no patents are going to be pursued under the scope of the project. Among the project outputs there will be a set of deliverables with details on the operational and technical aspects, requirements, validation results to demonstrate the expected outcome and benefits, representing the data-pack of each Solution that are under the intellectual property of the SJU and that will be open for public consultation of their website at the level agreed with the Consortium. Software development, algorithms and prototypes developed under the scope of the project will have restricted access and will be under the property of the developing member of the consortium. Technical characteristics will be shared as part of the Solution data-pack, but the developed tools will remain under the property of the developing company. The list of outputs and the corresponding ownership will be agreed among project members and included in the final periodic report.

As a consequence of the project, a safe integration of the new actors into the airspace will be enabled, favouring the appearance of new drone applications and enabling a new market, which will benefit the general public and the commercial activities across Europe.

### 2.3.2 Communication activities

Alongside the project dissemination activities described in section 2.3.1 above, and to their support, communication activities will be planned and implemented throughout the project. The success and impact of this project remains in good communication actions intended for the identified target audiences. During the communication phase, there will be clear acknowledgement of SESAR funding in all dissemination and communication activities, creating awareness and outreach about SESAR 3 and the research outcomes and benefits that these solutions can bring to real day-to-day U-space and ATM operations.

With the objective of guaranteeing the accomplishment of those communication actions and facilitate an efficient and transparent project management, as well as results, a Communication Plan will be developed giving more visibility to the project achievements worldwide. The Communication Plan will contain both the objectives and strategy of the project and will keep a close contact with SJU communications area to ensure that the communications are consistent with SESAR and Horizon Europe brand. In addition, it will contain a calendar of the key Project milestones associated with communications activities and their target audience. Finally, the communication plan will take advantage of the expertise in communication matters of large organizations that are members of the consortium. The communication material will be developed taking into account both the message to communicate and the characteristics and needs of the targeted audiences as explained before. The communication materials will consist of:

- Visual and Corporate identity. It will guarantee the project gets a professional and consistent look.
- Project Website. The website will include information of the project as well as the possibility to get contact with project partners for interested stakeholders. The website will contain, as a minimum, information about the project scope and goals, work plan, involved partners, public deliverables and SESAR funding.
- During the development of the project, specific workshops will be organized with the different target groups. These workshops will have a double scope, first to disseminate the project evolution and second to get the inputs of the required stakeholders for the correct development of the project.
- Open Days will be organized after the main validation exercises of both solutions, to communicate the results and activities to other SJU members, authorities and drone community.
- Presentations in public congress or seminars, in coordination with SESAR JU Communication area. These congresses will include oriented ATM events, as World ATM Congress but also drone related events, as Amsterdam Drone Week or ICAO Drone Enable.
- Mass media presence, with press releases in the different countries of the partners.
- Technical papers and articles to be published for presentation on related conferences or newspapers and specialised magazines.
- Social networks. A social media strategy will be designed to best use social media according to the project objectives, taking advantage of the partners social media accounts.
- Posters will be developed for presenting the project at conferences, workshops and exhibitions, describing the work in progress to the target audience and enabling to obtain any feedback.

## 2.4 Summary

### KEY ELEMENT OF THE IMPACT SECTION

SPECIFIC NEEDS	EXPECTED RESULTS	D & E & C MEASURES
<p><i>What are the specific needs that triggered this project?</i></p> <p>The European Union has promoted the development of the U-space vision to facilitate the phased introduction of procedures and define a set of services designed to support safe, efficient and secure access to airspace for large numbers of UA, and to encourage the growth of the UAS industry in Europe. In this way, there is a need of enabling and facilitating the potential growth of the UAS industry. One of those [key] elements is the interface between ATM and U-space; how the two systems will interact, what information exchange is required, what roles and responsibilities the relevant actors will have.</p>	<p><i>What do you expect to generate by the end of the project?</i></p> <p>ENSURE aims helping to lay the foundations for the integration of new entrants by developing the required concept of operations for the ATM–U-space interface as well as a consolidated DAR service to allow a feasible and efficient shared airspace.</p>	<p><i>What dissemination, exploitation and communication measures will you apply to the results?</i></p> <p><b>Exploitation:</b> Promote awareness of the full integration of ATM and U-space systems and the integration of drones in airspace to the industry specialists and the general public, encouraging interaction and active participation of stakeholders.</p> <p><b>Dissemination towards the scientific community and airports:</b> Distribute project results in a public and accessible way coordinating the messages between all communication channels to maximize the visibility and reach of the results through quality content. Ways to be considered: SESAR 3 JU website, press releases or articles in scientific magazines.</p> <p><b>Communication towards citizens:</b> Share publications about validation exercises in the Social Media and websites. Celebrate events like project open-days and validation attendance of those who are interested. Collaboration in World ATM Congress with the aim sharing project outputs highlighting the milestones, the social, economic and technological benefits of this ENSURE.</p>

## TARGET GROUPS

*Who will use or further up-take the results of the project? Who will benefit from the results of the project?*

### Direct Beneficiaries:

14 member states of the European Union composed of 20 companies. 9 of them correspond to ANSPs, 10 to Airborne Industry companies and the other one is EUROCONTROL.

### Indirect Beneficiaries:

Air passengers  
ATM industry  
U-space community  
General public  
Standardization bodies and authorities

## OUTCOMES

*What change do you expect to see after successful dissemination and exploitation of project results to the target group(s)?*

Airports will be willing to integrate U-space because of the reliability and stability conveyed by the solution. It is expected that this will be done progressively, from a lower number of UAS operations combined with integration in small/medium airports with a low number of a/c operations, to a higher number of UAS operations together with final integration in large/very large airports implying a higher number of a/c operations.

## IMPACTS

*What are the expected wider scientific, economic and societal effects of the project contributing to the expected impacts outlined in the respective destination in the work programme?*

**Economic/Technological:** Enable complex drone operations with a high degree of automation to take place in all types of operational environments, including urban areas. Encourage innovation, support the development of new businesses and facilitate the overall growth of the European drone services market.

**Societal:** Address safety and security issues, respecting the privacy of citizens, and minimising the environmental impact.



### 3 Quality and efficiency of the implementation

#### 3.1 Work plan and resources

A lean and efficient management structure is necessary to ensure the pursued objectives are met and that fast decision-making is feasible for the project. This section specifies management rules that govern the project's workflow as well as all responsibilities and duties of the partners during the course of the project. This approach will allow an effective and efficient assignment of partner contributions, while facilitating separation of research and technology tasks from the administrative work necessary to carry out the project.

ENSURE has been divided into 4 different work packages which respond to the following structure:

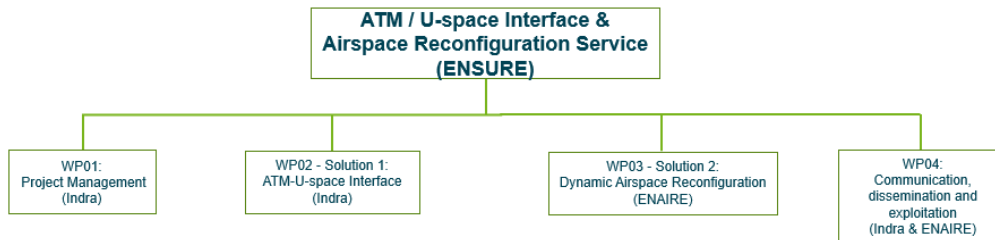


Figure 6: ENSURE's structure

In the following figure, ENSURE's Gantt associated to WP02 is shown so to present further details on the project timeline. Timeline followed for WP03 is similar, so that this will serve as a main example extrapolated to both strategies. Please, consider that exercises associated to both WP02 and WP03 will be involved in one or other sprint depending on if the Service being validated and tested in that sprint is under their coverage or not.

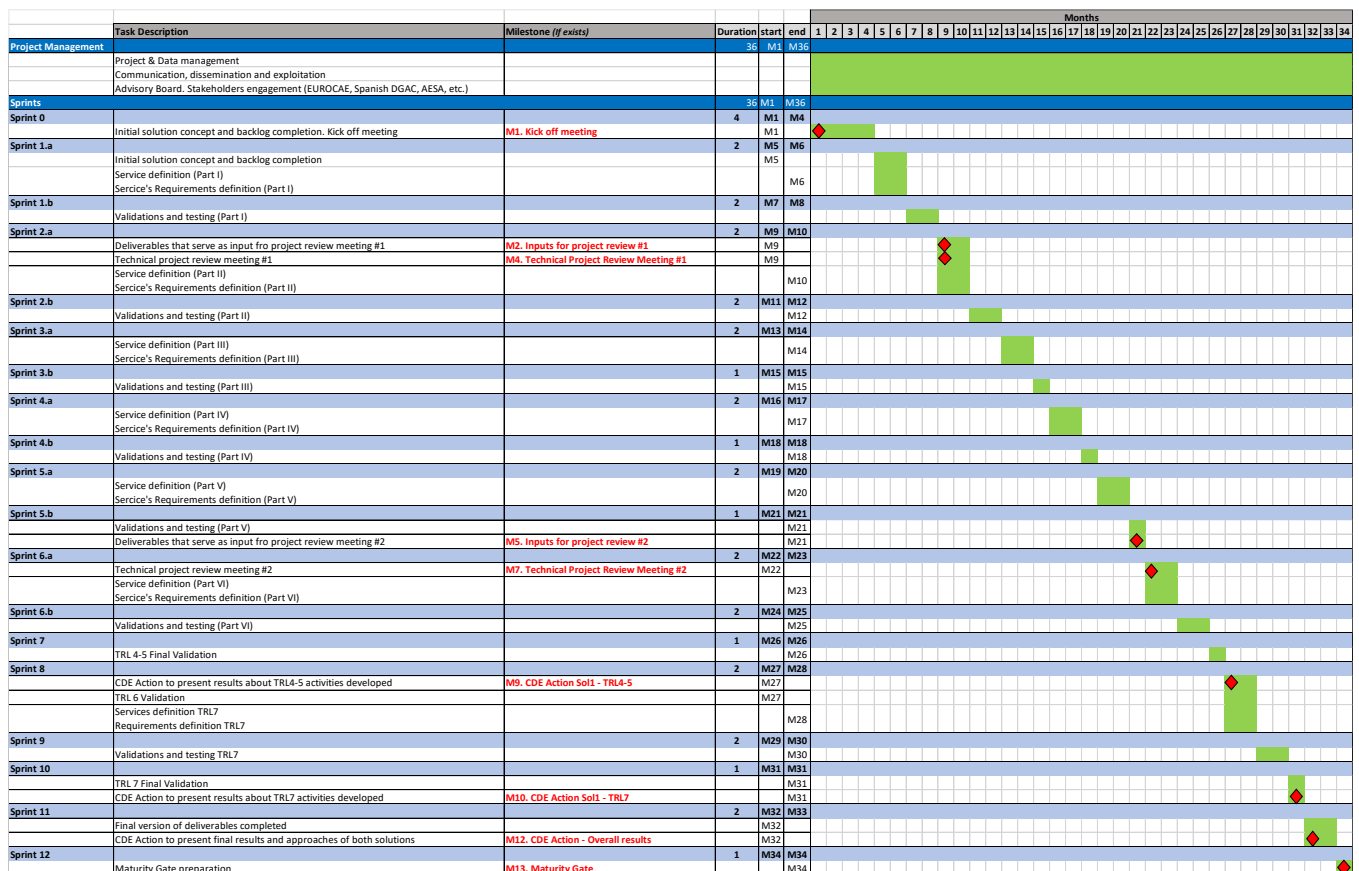


Figure 7: ENSURE's Gantt

**Table 3.1g: ‘Subcontracting costs’ items**

<b>11/ ENAIRE</b>		
	<b>Cost (€)</b>	<b>Description of tasks and justification</b>
<b>Subcontracting</b>	3 840	<p>ENAIRE plans to perform a validation exercise that requires the involvement of both, Air Traffic Controller Operators and pseudo-pilots. ENAIRE ATCos’ with proven experience will contribute on the exercise execution by providing their impressions and also improvement areas. In addition, ENAIRE plans to subcontract pseudo-pilot services from SENASA, company with a long tradition in aeronautics in the areas of training, in order to complete the validation exercises involved with the best guarantees.</p> <p>Specifically, ENAIRE will perform a RTS in Solution 2 Dynamic Airspace Reconfiguration. To do so, ENAIRE will subcontract to SENASA the following tasks:</p> <ul style="list-style-type: none"> <li>• Flight and control operations during the expected simulation activities.</li> <li>• Set-up of the aircraft operational procedures related to the simulation activities.</li> </ul> <p>SENASA contribution will be limited to the RTS performance, therefore SENASA will contribute to WP3.3 (Deliverable D31). Particularly, it has been estimated the performance of two Dry Runs requiring one pseudo-pilot during 3 days each (with an estimated cost of 720€/Dry Run) and a 5-days exercise execution requiring two pseudo-pilots with an estimation of 2 400€.</p> <p>The total cost of subcontracting this task is estimated at 3 840€.</p>

**Table 3.1h: ‘Purchase costs’ items (travel and subsistence, equipment and other goods, works and services)**

<b>1/ INDRA</b>		
	<b>Cost (€)</b>	<b>Justification</b>
		-
<b>Other goods, works and services</b>	158 000	<p>This correspond to:</p> <ul style="list-style-type: none"> <li>- For facilities for running the TRL7 exercises as small aircraft and aerodrome (Rozas) renting (23 000 €)</li> <li>- INDRA will contract the services of EASA to support the project tasks related to operational requirements, standardisation and regulatory aspects with the final objective to assist the production of the OSED, STAND and REG deliverables. (135 000 €)</li> </ul>
<b>Remaining purchase costs (&lt;15% of pers. Costs)</b>	71 263	<ul style="list-style-type: none"> <li>- Travel and subsistence: 32 763 €</li> <li>- Equipment: 38 500 €</li> </ul>
<b>Total</b>	229 263	

<b>3/ HC</b>		
	<b>Cost (€)</b>	<b>Justification</b>
<b>Travel and subsistence</b>	31 607	<ul style="list-style-type: none"> <li>- Face-to-Face meetings with exercise partners at their premises in Belgium and Iceland yearly</li> <li>- Project meetings in person yearly,</li> <li>- Coordination meetings at WP level in person yearly,</li> <li>- Workshops, participation in working groups during the project</li> </ul> <p>This corresponds to:</p> <ul style="list-style-type: none"> <li>- 2023: 1 travel with 3 person for 2 nights (Iceland)</li> <li>- 2024: 2 travels with 3 person for 2 nights (Belgium, Iceland)</li> </ul>

		<ul style="list-style-type: none"> <li>- 2025: 2 travels with 2 person for 2 nights (Belgium, Iceland)</li> <li>- 2026: 2 travels with 2 person for 2 nights (Belgium, Iceland)</li> </ul>
<b>Other goods, works and services</b>	22 938	Audit service – 12 938 EUR Representation – 10.000 EUR (catering for meetings, execution of validation exercise and open day at HC premises with external partners). This will be split along the project duration: 1 000 EUR for 2023, 3 000 EUR for 2024, 3 000 EUR for 2025, 3 000 EUR for 2026.
<b>Total</b>	54 545	

<b>10 /LEONARDO</b>		
	<b>Cost (€)</b>	<b>Justification</b>
<b>Travel and subsistence</b>	50 000	Travel expenses to participate to workshops, integration activities on platforms, validation exercises. Travel expenses were estimated considering: <ul style="list-style-type: none"> <li>5 senior engineers, 16 travels to destinations in Italy (Grottaglie...)( €1.500)</li> <li>4 senior engineers, 13 travels to other European destinations (€2.000)</li> </ul> Travels will mainly be necessary for Programme purposes and for performing validation activities jointly with other partners, and other activities of technical and management coordination.
<b>Equipment</b>	10 000	Costs for system architecture upgrades n1. Server Computer (es Dell Vx Rail) (€8.000) n4. Portable devices/Tablet (for run drone operator Application) (€500)
<b>Other goods, works and services</b>	141 206	Costs for staff provided by a temporary work agency for: <ul style="list-style-type: none"> <li>- One (1) people for System Integration support (System Integration environment installation &amp; configuration, SW generation &amp; integration in Test Bed, system test support) both in factory and on site (Grottaglie) for 2 years (€100.000),</li> <li>- One (1) people for Technical Validation support (System Test planning, execution, and reporting) in factory for one year (€31.206)</li> <li>- Video Production for dissemination (€10.000)</li> </ul>
<b>Total</b>	201 206	

<b>4/ ON</b>		
	<b>Cost (€)</b>	<b>Justification</b>
<b>Travel and subsistence</b>	20 000	Travel expenses for travel cost for the project team to cluster and consortium meetings. It was estimated 3 experts x 2 trips/year (€1.000 - €1.100)
<b>Total</b>	20 000	

<b>9.2/ DTA</b>		
	<b>Cost (€)</b>	<b>Justification</b>
<b>Travel and subsistence</b>	2 000	Travel to workshops and project meetings. Were estimated considering: <ul style="list-style-type: none"> <li>- 1 person for 2 travels to other national/European destinations (€2.000)</li> </ul>
<b>Other goods, works and services</b>	8 000	Costs for demonstration organization, including Open Day organization (€2.000) and <ul style="list-style-type: none"> <li>• Involving general aviation aircraft(s) during test sessions (€5.000),</li> <li>• Realization of multimedia documents (brochures, videos, ...) (€1.000)</li> </ul>
<b>Total</b>	10 000	

<b>9.2/ TECHNO SKY</b>		
	<b>Cost (€)</b>	<b>Justification</b>
<b>Travel and subsistence</b>	2 500	Travel expenses to participate to workshops, integration activities on platforms, validation exercises. 1 senior engineer, 3 travels to destinations in Italy (mainly in Grottaglie)( €800) 1 senior engineer, 2 travels to other European destinations (€1.700)
<b>Equipment</b>	5 000	Procurement of HW/SW components for their integration on the UAS fleet used for

		the specific operations envisaged for the pursuit of the project objectives. These also include the HW/SW components and spare parts necessary for the predictive and corrective maintenance of the UAS fleet in order to ensure continuous airworthiness. Accessories and purpose designed mechanical supports, cables and connectors are included for the integration of any payload used within the project.
<b>Total</b>	7 500	

14/ SABCA		
	Cost (€)	Justification
<b>Travel and subsistence</b>	13 140	2 travels for 3 persons (expected to fulfil validation exercise in Spain) including hotel during 2 weeks and rental car during travel: <ul style="list-style-type: none"> <li>- Flight Ticket ( 2 times x 3 persons): Rate 500, units:6, total 3000€</li> <li>- Hotel ( 3 persons during 2 weeks) : Rate 150, units:36, total 5400€</li> <li>- Daily Allowance ( 3 persons during 2 weeks) : Rate 90, units:36, total 3240€</li> <li>- Rental Car ( 2 times during 1 week) : Rate 150, units:10, total 1500€</li> </ul>
<b>Total</b>	13 140	

17/ AEROCAMARAS		
	Cost (€)	Justification
<b>Travel and subsistence</b>	6 160	3 pilots, 3 observers and 1 Technician: 10 days (travel + subsistence)
<b>Other goods, works and services</b>	6 500	Equipment: Batteries and other spare parts and consumables. The battery kit costs 500€ and 3 kits are needed. Each drone needs a kit: 1 500€ Maintenance works, insurance, authorizations, flight licenses and others. Complete overhaul of equipment: 1 200€ Liability and damage insurance for 3 drones: 1 152€ Aeronautical permit management and tax management: 1 350€ Logistics, security elements, etc.: 1 298€
<b>Total</b>	12 660	

Table 3.1i: ‘Other costs categories’ items (e.g., internally invoiced goods and services)

2/ NLR		
	Cost (€)	Justification
<b>Internally invoiced goods and services</b>	20 842	Comprise NLR internally invoiced use of facilities: use of the NARSIM platform of NLR (high fidelity ATC validation platform) and use of a drone platform (both drone simulation with the NLR MUST and use of a drone from the NLR Drone Centre). The costs for use of all NLR facilities were based on a maximum of 5 days of simulations to validate the HMI and a maximum of two days to carry out the demonstration flight above the North Sea. The cost estimates are all based on current NLR tariffs for the facilities.

Table 3.1j: ‘In-kind contributions’ provided by third parties

18/IAA			
Third party name	Category	Cost (€)	Justification
IAA	Seconded Personnel	20 000	Direct personnel to support Ireland cluster and their validations

### 3.2 Capacity of participants and consortium as a whole

This consortium was carefully selected according to the skills and experiences required to accomplish the proposed work between the different proposals received. The operational expertise, which is crucial for the conceptualisation and implementation phase of the project, is found in the strong representation of end-user 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.

The consortium is composed by a well balanced mix of airborne industry, drone operators, ANSPs, EASA and EUROCONTROL. Most of the members are active in UAS activities and in the different working groups of the international organizations. Multiple partners have been involved in previous SESAR U-space projects, ensuring the relation with them. At the same time, the consortium has partners with wide experience in ATM, both industry and operational experience, to ensure a proper integration of UASs in current ATM system, one of the main objectives of the project.

**INDRA SISTEMAS (INDRA) & Indra Factoría Tecnológica (IFT)** is a major European ground industry supplying ATM and UTM/U-space systems to Europe and the rest of the world, having supplied over 40 installations worldwide and has grown to be leader Air Traffic Management system supplier in Europe. INDRA has been selected by the most advanced ANSPs to develop the future Air Traffic Management systems following the Single Sky Concept. Regarding U-space INDRA has participated in several ER & IR SESAR project to work in the U-space framework development like PJ34-AURA where the expertise of INDRA in ATM/U-space integration has been remarked due to its high experience in both sectors. INDRA is also a leading partner in all SESAR programs from the definition phase, being a key player for SESAR1 and SESAR 2020.

**UPM** is the largest Spanish technological university and one of the largest in Europe. It heads the Spanish Universities' participation in the Horizon 2020 Programme. UPM has generated about 150 start-ups in the last ten years. The Information Processing and Telecommunications Centre brings together the expertise and resources of around 180 researchers working in the fields of Electronics, Communications, Networks, Computing and Software. UPM-IPTC has a sustained record of involvement in numerous competitive and an extensive experience of collaboration through contracted research and technology transfer (around 60 active research contracts per year).

**NLR** is the main knowledge enterprise for aerospace technology in the Netherlands and operates a drone centre with ample experience in carrying out and accommodating such flights. NLR is also participating in several SESAR H2020 projects like PJ34, this will help to further refine the automation and information provision necessary to support ATCO in the DAR task, leaving sufficient cognitive capability to focus on the coordination of controlled manned traffic. NLR will further use its ties to the Royal Netherlands Navy to carry out a demonstration flights.

**HungaroControl (HC)** will continue to investigate the different operational and technical challenges about ATM–U-space integration, building on the wide range of experience gained in previous SESAR activities, such as USIS demonstration project and PJ34-W3 AURA. HC as main ANSP of Hungary will support the identification of operational and functional requirements in the framework of ENSURE and will host a validation exercise in Budapest together with UNIFLY and TERN. HC practitioners will conduct thorough analysis on safety and human performance with active controllers in the loop.

**NATS** will build on the experience obtained within past, related projects, most notably the SESAR Wave 3 project PJ.34 AURA in which it played a leading role in concept development and requirements capture activities for the proposed AUSA concept, providing both task and thought leadership in a number of key areas. NATS will provide key technical direction to the continued refinement of the Dynamic Airspace Reconfiguration service and associated HMI requirements for the future Controller Working Position (CWP).

**ON** cope a different areas knowledge and experience gained in SESAR2020 wave 1, wave 2, and wave 3 projects such as PJ19 Content Integration, PJ20 ATM Master Plan maintenance, PJ13 ERICA and PJ34 AURA contributing to Performance Reviews, CBAs, OSEDs (particularly its SAR part) and other activities. All this will be used to ensure appropriate execution of ON tasks in ENSURE project. In addition, ON coordinates the implementation of U-space within Lithuania and will become the Common Information Service and first U-space service provider in the country.

**Tern Systems (TERN)** has been developing ATM software for over 20 years and will provide its expertise in leading the work in HMI activities, which will focus on defining and developing the HMI representation of the ATM-U-



SPACE interface together with the other contributors. The HMI activities are a significant part of the development for Tern Systems, and we will therefore contribute with UX and technical experts.

**Collins Aerospace (COLLINS)** (and the wider Raytheon Technologies organization) has a long history of participation and successful delivery of collaborative research and development projects in partnership with a wide variety of organizations within the ATM, UTM, AAM, and airspace management domains. Collins Aerospace has led industry in the development of the UTM and FIMS concepts and built an understanding of how to create a system that enables safe, reliable UAS operations, equitable distribution of airspace, assured C2 connectivity, and comprehensive, operator-friendly operations management capability. For ENSURE, COLLINS will contribute in the design of the ATM-U-Space interoperable ecosystem as Collins Aerospace Ireland Ltd. and Rockwell Collins UK Ltd.

**Irish Aviation Authority (IAA)** will support ENSURE with the ANSP department (AIR NAV IRELAND). IAA is expanding the U-Space deployments in Ireland supporting recent activities with Future Mobility Campus Ireland and Collins Aerospace in a Digital Sky Demonstrator project. IAA will support the validation in the Ireland sandbox.

**AIRBUS** has a large experience in SESAR projects. One of these projects is PJ34 AURA where AIRBUS participated in Solution 1 and 2, leading State of the Art and the participation in two validation clusters 1 in Solution 1, where interfaces and services were tested; and leading the development of the FRD and a fast-time simulation for the study of the long-term ConOps through a collaborative management of ATM and U-space.

**UNIFLY** is a company leading the implementation of U-space in Europe having participated in several SESAR projects since its foundation. It also provided its USSP to different countries (Canada, Germany, Belgium...). UNIFLY's primary mission is to enable the safe and efficient integration of drone traffic around the world

**ENAV** and **D-FLIGHT** expertise covers different aspects and areas of knowledge acquired through their activities of ANSP management and ownership of USSP platform. ENAV will contribute with ATM facilities, Common Information Service (CIS) provision for exchanges of services and information with USSP, Air Traffic Controllers and validation experts that will be involved in validation activities of ENSURE. D-FLIGHT will contribute with USSP infrastructure, U-space platform+ u-space service. The participation of **TECHNO-SKY** and **DTA** will guarantee the provision of UAS systems/vehicles and remote pilots, a general aviation aircraft and an airport test bed for validation activities. All these partners participated actively to SESAR PJ34 AURA and CORUS XUAM project and will bring the acquired experience also in ENSURE Project.

**LEONARDO's** expertise covers a wide variety of areas of knowledge shared and improved through its participation under the SESAR Programme. LEONARDO's experience obtained during SESAR 2020 wave 3 in the project PJ.34 AURA, where it had a large contribution in the design of the ATM-U-space interoperability, in the validation, as Cluster 4 Leader, and in the definition of requirements as TS/IRS Leader. Furthermore, had strong expertise in SWIM TI and the deployment of services for the systems interoperability.

**ENAIRES, CRIDA & INECO** has a large experience in research projects in ATM and U-space and, in particular, in projects within the SESAR framework. ENAIRES has been involved in several projects analysing U-space interaction with ATM, like DOMUS or AMU-LED and, in the context of the ATM-U-space interface, ENAIRES led the SPR/INTEROP requirement identification in PJ34 AURA solution 1, leading also the definition of the new operating method, generating the precursor block diagrams to the NSV4 views and collaborating on the safety assessment; ENAIRES also managed PJ34 Solution 2, previously exposed in section 1.3. Finally, ENAIRES coordinates the deployment of U-space within Spain and assumes the role of the Common Information Service within the country.

**NAIS** provides its high knowledge in validation activities by assessing the Key Performance Areas and providing the required expertise to analyse the results. NAIS will contribute on the whole process which comprises validation plan set-up, validation report elaboration providing outcomes and all the activities related to KPA assessment in accordance with SESAR methodologies supporting Safety, Human Performance and Security assessment processes.

**SABCA** is a leading Belgian industrial company active in the aviation industry capable of designing, manufacturing, and certifying large metallic and composite structures as well as actuation systems for aircrafts and space launchers. SABCA delivers a wide range of tailored manufacturing solutions to the global aviation industry. According to a continuously growing UAS industry, SABCA has the suitable size, experience, and palette of skills to provide aerospace-grade end-to-end UAS solutions to non-aerospace industrial and governmental customers. SABCA is able to offer a complete range of UAS services for commercial and governmental applications. Thanks to its aviation DNA, SABCA can offer these UAS solutions with the focus on BVLOS long-range and safety-critical missions.

**AEROCAMARAS** is one of the leading drone operators in Spain performing commercial operations in more than 15 countries leading also the training sector of drone pilots in Spain. All this knowledge will provide the enough support in the definition of how the communications from ATM should reach the final user of U-space.

**EUROCONTROL** will support the development of the business processes of the separation services, building on previous experience elaborating the U-space concept of operations in the CORUS and CORUS-XUAM projects. EUROCONTROL will help elaborate safety and performance aspects of the OSED, validation plans and validation reports. EUROCONTROL will lead the standardisation and investigation of regulatory impacts of the ENSURE work. EUROCONTROL will take part in fast time simulation with the aim of investigating and optimisation of UAS response to dynamically changing airspace.

**LFV** (Luftfartsverket) the leading Air Navigation Service Provider in Sweden runs two EnRoute Centres and 14 TWR/Approach units. LFV has a Research Innovation and Digitalisation Section.

LFV has vast experience from research of unmanned aviation and the integration of unmanned and manned aviation, and has participated in several research initiatives, e.g., UTM City, PBN for UTM, LMDS, Dubai UTM.

LFV is the legal lead for the AiRMOUR project (Emergency Medical Services using drones). LFV participates in CORUS/XUAM project, performing safety analysis and validations. In SESAR2020 PJ34 AURA solution 2, LFV leads the OSED part I, delivering the operational concept for highly automated coordination and integration of Unmanned aircraft with manned aviation.

## 4 Ethic self-assessment

### 4.1 Abstract

This document aims to describe the ethical dimension of the proposal “ATM/U-space interface & airspace reconfiguration service – ENSURE” and the compliance with the ethics principles in the context of Horizon Europe programme.

According to the Ethics issues checklist in Part A of the submitted proposal, the following aspects apply to ENSURE proposal.

Ethics issue category	Ethics requirements
<b>Activities carried out in a non-EU country</b>	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.

Table 8: Ethics issues and requirements

### 4.2 Non-EU Countries

The activities planned under the scope of ENSURE will comply with the ethics provisions to be set out in the Grant Agreement, and notably:

- Highest ethical standards.
- Applicable international, EU and national law.



The key sources of EU and international law are the Charter of Fundamental Rights of the European Union and the European Convention on Human Rights (ECHR) and its Protocols (for other texts). Another important source is the UN Convention on the Rights of Persons with Disabilities (UN CRPD).

A particular situation arises when research is conducted in or in collaboration with non-EU countries. Among the ENSURE partners, the following beneficiaries are based on Non-EU countries:

- ROCKWELL COLLINS UK LIMITED (affiliated): from the United Kingdom.
- NATS (beneficiary): from the United Kingdom.
- Tern Systems (beneficiary): from Iceland.

The main ethical principles taken on board by ENSURE Consortium as a whole are:

1. Respecting human dignity and integrity.
2. Ensuring honesty and transparency towards research subjects and notably getting free and informed consent (as well as assent whenever relevant).
3. Protecting vulnerable persons.
4. Ensuring privacy and confidentiality.
5. Promoting justice and inclusiveness.
6. Minimising harm and maximising benefit.
7. Sharing the benefits with disadvantaged populations, especially if the research is being carried out in developing countries.
8. Maximising animal welfare, in particular by ensuring replacement, reduction and refinement ('3Rs') in animal research.
9. Respecting and protecting the environment and future generations.

#### 4.2.1 Contribution to ENSURE project

In terms of contributions to the project, the roles of each of the partners located in non-EU countries are presented below.

Partner	Contribution to the project
<b>NATS</b>	<p>NATS is contributing in both Solutions 1 and 2 of ENSURE.</p> <p>In Solution 1, WP02, NATS contributes to relevant sub-tasks associated with production of OSED Part X (Operational), including concept development, service architecture, requirements capture and development, and benefits mechanism(s).</p> <p>In Solution 2, WP03, NATS will carry out relevant tasks. They will work in the first steps of the project, leading the literature review and having a significant leading role with its contribution to the development of the SPR/INTEROP-OSED.</p> <p>NATS will focus on activities concerning the development of ATCO HMI in relation to Dynamic Airspace Reconfiguration (DAR) and play an active role in the work to develop operational and functional requirements to which subsequent HMI requirements shall be derived.</p>
<b>RCUK</b>	<p>Collins is contributing in both Solutions 1 and 2 of ENSURE.</p> <p>In Solution 1, WP02, Collins will contribute to SPR-INTEROP/OSED definition as well as support to consider activities such as the ASTM UTM and remote ID standards. They will also</p>

	<p>contribute to VALP and VALR considering the execution of one of the exercises addressing 8 different use cases. Consequently, they will contribute to analyse outputs regarding Human Performance and Safety. Regarding HMI activities, Collins will capture the interactions with real ATC stakeholders and controllers, considering human-centric approach and proper HMI developed.</p> <p>In Solution 2, WP03, Collins will mainly contribute in the Spanish Cluster execution together with Indra and ENAIRE.</p> <p>Collins will also provide support on the Communication and Dissemination activities concerning WP04 of ENSURE by providing support on the global communication and opportunities for synergies across US and EU and UK.</p>
<b>TERN</b>	<p>Tern Systems is contributing in both Solutions 1 and 2 of ENSURE.</p> <p>In Solution 1, Tern will contribute to the generation of the Literature Review and State-of-the-Art. They will also give support on the refinement of the set of Information Exchange Services and on the SPR/INTEROP-OSED. Tern will also contribute to the TS/IRS generation based on the agreed set of services (SDD). They will carry out a validation exercise together with Hungarocontrol and Unifly, so that will contribute to the generation of VALP (Part I), VALR and Safety, Human and Security assessment reports. Their main role will be focused on defining and developing the HMI representation of the ATM-U-space interface.</p> <p>In Solution 2, they will contribute to SPR/INTEROP-OSED, TS/IRS and STAND as overlap is presumed from Solution 1.</p> <p>Tern Systems will also provide support on the Communication and Dissemination activities concerning WP04 of ENSURE and will hold an Open day in Budapest with Hungarocontrol and Unifly.</p>

Table 9: Non-EU partners contributions to ENSURE

Being outside the reach of European laws and standards, such activities can raise specific ethical issues (particularly in developing countries), such as:

Risk	Likelihood (1 – 5)	Mitigation actions
<b>exploitation of participants</b>	1	The role and contribution of each Consortium partner is defined under the proposal, including the estimated effort and budget.
<b>exploitation of local resource</b>	1	No local resources are foreseen to be used under the scope of the project
<b>risks to project teams and staff</b>	1	The project risks have been defined from a management point of view, but no additional risks are identified for the specific contribution of partners from non-EU countries, as their role and contribution to the project has been defined and agreed throughout the proposal preparation and submission process.
<b>activities (especially research) that are prohibited in the EU</b>	1	The activities under the scope of ENSURE are in line with the existing EU legislation and do not cross any recommendation within the research community.

Table 10: Risks and mitigation actions

#### 4.2.2 Eligibility for funding under Horizon Europe

In the context of Horizon Europe, international cooperation is about cooperation with legal entities established in non-EU countries (third countries). A non-EU country is any country or territory that is neither an EU Member State nor an overseas country or territory linked to an EU Member State. Non-EU countries are either associated or not associated to the Horizon Europe programme.

Horizon Europe envisages international cooperation by establishing agreements with a defined list of eligible Associated Countries and third countries automatically eligible for funding under the Framework Programme for Research and Innovation.

According to List of Participating Countries in Horizon Europe<sup>3</sup>, association negotiations are being processed with United Kingdom, which will be associated by means of a Protocol to the Trade and Cooperation Agreement.

## 5 Associated partners' budget

Partners in the table below will not receive funding from the EU, they will be partially funded by their government:

Associated Partner	Country	Financial contribution (€)	Own resources (€)
NATS	United Kingdom	200 446.75 €	85 905.75 €
RCUK	United Kingdom	417 512.38 €	178 933,87 €

*Table 11: Associated partners budget*

<sup>3</sup> [list-3rd-country-participation\\_horizon-euratom\\_en.pdf \(europa.eu\)](https://euratom.europa.eu/press-communications/infographic/infographic-horizon-europe-participating-countries)

ANNEX 2

ESTIMATED BUDGET FOR THE ACTION

	Estimated eligible <sup>1</sup> costs (per budget category)									Estimated EU contribution <sup>2</sup>				
	Direct costs								Indirect costs	Total costs	EU contribution to eligible costs			Maximum grant amount <sup>6</sup>
	A. Personnel costs		B. Subcontracting costs	C. Purchase costs			D. Other cost categories	E. Indirect costs <sup>3</sup>	Funding rate % <sup>4</sup>		Maximum EU contribution <sup>5</sup>	Requested EU contribution		
	A.1 Employees (or equivalent)	A.4 SME owners and natural person beneficiaries	B. Subcontracting	C.1 Travel and subsistence	C.2 Equipment	C.3 Other goods, works and services	D.2 Internally invoiced goods and services	E. Indirect costs						
	A.2 Natural persons under direct contract													
A.3 Seconded persons														
Forms of funding	Actual costs	Unit costs (usual accounting practices)	Unit costs <sup>7</sup>	Actual costs	Actual costs	Actual costs	Actual costs	Unit costs (usual accounting practices)	Flat-rate costs <sup>8</sup>					
	a1	a2	a3	b	c1	c2	c3	d2	e = 0,25 * (a1 + a2 + a3 + c1 + c2 + c3)	f = a + b + c + d + e	U	g = f * U%	h	m
1 - INDRA	1 536 000.00	0.00	0.00	0.00	32 763.00	38 500.00	158 000.00	0.00	441 315.75	2 206 578.75	70	1 544 605.13	1 544 605.13	1 544 605.13
1.1 - UPM	210 540.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52 635.00	263 175.00	70	184 222.50	184 222.50	184 222.50
1.2 - IFT	240 352.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60 088.00	300 440.00	70	210 308.00	210 308.00	210 308.00
2 - NLR	267 638.00	0.00	0.00	0.00	14 000.00	0.00	13 118.00	20 842.00	73 689.00	389 287.00	70	272 500.90	272 500.90	272 500.90
3 - HC	166 090.00	0.00	0.00	0.00	31 607.00	0.00	22 938.00	0.00	55 158.75	275 793.75	70	193 055.63	193 055.63	193 055.63
4 - ON	120 000.00	0.00	0.00	0.00	20 000.00	0.00	0.00	0.00	35 000.00	175 000.00	70	122 500.00	122 500.00	122 500.00
5 - TERN	394 121.00	0.00	0.00	0.00	16 400.00	0.00	0.00	0.00	102 630.25	513 151.25	70	359 205.88	359 205.88	359 205.88
6 - COLLINS	264 737.00	0.00	0.00	0.00	14 000.00	0.00	3 000.00	0.00	70 434.25	352 171.25	70	246 519.88	246 519.00	246 519.00
7 - AIRBUS	214 000.00	0.00	0.00	0.00	10 000.00	0.00	0.00	0.00	56 000.00	280 000.00	70	196 000.00	196 000.00	196 000.00
8 - UNIFLY	476 000.00	0.00	0.00	0.00	15 750.00	0.00	10 000.00	0.00	125 437.50	627 187.50	70	439 031.25	439 031.25	439 031.25
9 - ENAV	106 645.00	0.00	0.00	0.00	9 000.00	0.00	1 000.00	0.00	29 161.25	145 806.25	70	102 064.38	102 064.38	102 064.38
9.1 - TECHNO SKY	30 000.00	0.00	0.00	0.00	2 500.00	5 000.00	0.00	0.00	9 375.00	46 875.00	70	32 812.50	32 812.50	32 812.50
9.2 - DTA	65 000.00	0.00	0.00	0.00	2 000.00	0.00	8 000.00	0.00	18 750.00	93 750.00	70	65 625.00	65 625.00	65 625.00
10 - LEONARDO	632 794.00	0.00	0.00	0.00	50 000.00	10 000.00	141 206.00	0.00	208 500.00	1 042 500.00	70	729 750.00	729 750.00	729 750.00
11 - ENAIRE	211 494.00	0.00	0.00	3 840.00	11 500.00	0.00	0.00	0.00	55 748.50	282 582.50	70	197 807.75	197 807.75	197 807.75
11.1 - CRIDA	364 640.00	0.00	0.00	0.00	27 000.00	0.00	0.00	0.00	97 910.00	489 550.00	70	342 685.00	342 685.00	342 685.00
11.2 - INECO	185 440.00	0.00	0.00	0.00	13 500.00	0.00	0.00	0.00	49 735.00	248 675.00	70	174 072.50	174 072.50	174 072.50
12 - D-FLIGHT	198 000.00	0.00	0.00	0.00	15 000.00	0.00	0.00	0.00	53 250.00	266 250.00	70	186 375.00	186 375.00	186 375.00
13 - NAIS	435 200.00	0.00	0.00	0.00	9 200.00	0.00	0.00	0.00	111 100.00	555 500.00	70	388 850.00	388 850.00	388 850.00
14 - SABCA	47 600.00	0.00	0.00	0.00	13 140.00	0.00	0.00	0.00	15 185.00	75 925.00	70	53 147.50	53 147.00	53 147.00
15 - EUROCONTROL	616 187.00	0.00	0.00	0.00	20 000.00	0.00	0.00	0.00	159 046.75	795 233.75	70	556 663.63	0.00	0.00
16 - LFV	254 000.00	0.00	0.00	0.00	38 100.00	0.00	0.00	0.00	73 025.00	365 125.00	70	255 587.50	255 587.50	255 587.50
17 - AEROCAMARAS	52 320.00	0.00	0.00	0.00	6 160.00	0.00	6 500.00	0.00	16 245.00	81 225.00	70	56 857.50	56 857.50	56 857.50
18 - IAA	20 000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5 000.00	25 000.00	70	17 500.00	0.00	0.00
19 - NATS														
20 - RCUK														
Σ consortium	7 108 798.00	0.00	0.00	3 840.00	371 620.00	53 500.00	363 762.00	20 842.00	1 974 420.00	9 896 782.00		6 927 747.43	6 353 582.42	6 353 582.42

<sup>1</sup> See Article 6 for the eligibility conditions. All amounts must be expressed in EUR (see Article 21 for the conversion rules).

<sup>2</sup> The consortium remains free to decide on a different internal distribution of the EU funding (via the consortium agreement; see Article 7).

<sup>3</sup> Indirect costs already covered by an operating grant (received under any EU funding programme) are ineligible (see Article 6.3). Therefore, a beneficiary/affiliated entity that receives an operating grant during the action duration cannot declare indirect costs for the year(s)/reporting period(s) covered by the operating grant, unless they can demonstrate that the operating grant does not cover any costs of the action. This requires specific accounting tools. Please immediately contact us via the EU Funding & Tenders Portal for details.

<sup>4</sup> See Data Sheet for the funding rate(s).

<sup>5</sup> This is the theoretical amount of the EU contribution to costs, if the reimbursement rate is applied to all the budgeted costs. This theoretical amount is then capped by the 'maximum grant amount'.

<sup>6</sup> The 'maximum grant amount' is the maximum grant amount decided by the EU. It normally corresponds to the requested grant, but may be lower.

<sup>7</sup> See Annex 2a 'Additional information on the estimated budget' for the details (units, cost per unit).

<sup>8</sup> See Data Sheet for the flat-rate.

**ANNEX 2a**

**ADDITIONAL INFORMATION ON UNIT COSTS AND CONTRIBUTIONS**

**SME owners/natural person beneficiaries without salary**

See [\*Additional information on unit costs and contributions \(Annex 2a and 2b\)\*](#)

**HE and Euratom Research Infrastructure actions**

See [\*Additional information on unit costs and contributions \(Annex 2a and 2b\)\*](#)

**Euratom staff mobility costs**

See [\*Additional information on unit costs and contributions \(Annex 2a and 2b\)\*](#)

**ANNEX 3**

**ACCESSION FORM FOR BENEFICIARIES**

**STICHTING KONINKLIJK NEDERLANDS LUCHT - EN RUIMTEVAARTCENTRUM (NLR)**, PIC 999987066, established in ANTHONY FOKKERWEG 2, AMSTERDAM 1059 CM, Netherlands,

**hereby agrees**

**to become beneficiary**

**in Agreement No 101114732 — ENSURE** ('the Agreement')

**between INDRA SISTEMAS SA (INDRA) and SESAR3 Joint Undertaking** ('granting authority'), under the powers delegated by the European Commission ('European Commission'),

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

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 terms and conditions it sets out.

SIGNATURE

For the beneficiary



**ANNEX 3**

**ACCESSION FORM FOR BENEFICIARIES**

**HUNGAROCONTROL MAGYAR LEGIFORGALMISZOLGALAT ZARTKORUEN MUKODO RESZVENYTARSASAG (HC)**, PIC 941767472, established in IGLO UTCA 33 35, BUDAPEST 1185, Hungary,

**hereby agrees**

**to become beneficiary**

**in Agreement No 101114732 — ENSURE** ('the Agreement')

**between INDRA SISTEMAS SA (INDRA) and SESAR3 Joint Undertaking** ('granting authority'), under the powers delegated by the European Commission ('European Commission'),

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

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 terms and conditions it sets out.

SIGNATURE

For the beneficiary

**ANNEX 3**

**ACCESSION FORM FOR BENEFICIARIES**

**AKCINE BENDROVE ORO NAVIGACIJA (ON)**, PIC 919915991, established in BALIO KARVELIO G. 25, VILNIUS LT-02184, Lithuania,

**hereby agrees**

**to become beneficiary**

**in Agreement No 101114732 — ENSURE** ('the Agreement')

**between INDRA SISTEMAS SA (INDRA) and SESAR3 Joint Undertaking** ('granting authority'), under the powers delegated by the European Commission ('European Commission'),

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

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 terms and conditions it sets out.

SIGNATURE

For the beneficiary

**ANNEX 3**

**ACCESSION FORM FOR BENEFICIARIES**

**TERN SYSTEMS EHF (TERN)**, PIC 887286355, established in HLIOASMARA 15, KOPAVOGUR 201, Iceland,

**hereby agrees**

**to become beneficiary**

**in Agreement No 101114732 — ENSURE** ('the Agreement')

**between INDRA SISTEMAS SA (INDRA) and SESAR3 Joint Undertaking** ('granting authority'), under the powers delegated by the European Commission ('European Commission'),

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

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 terms and conditions it sets out.

SIGNATURE

For the beneficiary

**ANNEX 3**

**ACCESSION FORM FOR BENEFICIARIES**

**COLLINS AEROSPACE IRELAND, LIMITED (COLLINS)**, PIC 971136162, established in PENROSE QUAY PENROSE WHARF PENROSE BUSINESS CENTRE FOURTH FLOOR, CORK T23XN53, Ireland,

**hereby agrees**

**to become beneficiary**

**in Agreement No 101114732 — ENSURE** ('the Agreement')

**between INDRA SISTEMAS SA (INDRA) and SESAR3 Joint Undertaking** ('granting authority'), under the powers delegated by the European Commission ('European Commission'),

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

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 terms and conditions it sets out.

SIGNATURE

For the beneficiary

**ANNEX 3**

**ACCESSION FORM FOR BENEFICIARIES**

**AIRBUS OPERATIONS SL (AIRBUS)**, PIC 999944095, established in AVENIDA JOHN LENNON S/N, GETAFE 28906, Spain,

**hereby agrees**

**to become beneficiary**

**in Agreement No 101114732 — ENSURE** ('the Agreement')

**between INDRA SISTEMAS SA (INDRA) and SESAR3 Joint Undertaking** ('granting authority'), under the powers delegated by the European Commission ('European Commission'),

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

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 terms and conditions it sets out.

SIGNATURE

For the beneficiary

**ANNEX 3**

**ACCESSION FORM FOR BENEFICIARIES**

**UNIFLY (UNIFLY)**, PIC 924870557, established in LUCHTHAVENL 7A UNIT 6 AIRPORT BUSINESS CENTER, ANTWERPEN DEURNE 2100, Belgium,

**hereby agrees**

**to become beneficiary**

**in Agreement No 101114732 — ENSURE** ('the Agreement')

**between INDRA SISTEMAS SA (INDRA) and SESAR3 Joint Undertaking** ('granting authority'), under the powers delegated by the European Commission ('European Commission'),

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

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 terms and conditions it sets out.

SIGNATURE

For the beneficiary

**ANNEX 3**

**ACCESSION FORM FOR BENEFICIARIES**

**ENAV SPA (ENAV)**, PIC 998197513, established in VIA SALARIA 716, ROMA 00138, Italy,

**hereby agrees**

**to become beneficiary**

**in Agreement No 101114732 — ENSURE** (‘the Agreement’)

**between INDRA SISTEMAS SA (INDRA) and SESAR3 Joint Undertaking** (‘granting authority’),  
under the powers delegated by the European Commission (‘European Commission’),

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement,  
in accordance with Article 39.

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 terms and conditions it sets out.

SIGNATURE

For the beneficiary



**ANNEX 3**

**ACCESSION FORM FOR BENEFICIARIES**

**LEONARDO - SOCIETA PER AZIONI (LEONARDO)**, PIC 998627417, established in PIAZZA MONTE GRAPPA 4, ROMA 00195, Italy,

**hereby agrees**

**to become beneficiary**

**in Agreement No 101114732 — ENSURE** ('the Agreement')

**between** INDRA SISTEMAS SA (INDRA) **and** **SESAR3 Joint Undertaking** ('granting authority'), under the powers delegated by the European Commission ('European Commission'),

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

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 terms and conditions it sets out.

SIGNATURE

For the beneficiary

**ANNEX 3**

**ACCESSION FORM FOR BENEFICIARIES**

**ENAIRE (ENAIRE)**, PIC 997701843, established in AVENIDA DE ARAGON S/N BLOQUE 330, PORTAL 2 PARQUE EMPRESARIAL LAS MERCEDES, MADRID 28022, Spain,

**hereby agrees**

**to become beneficiary**

**in Agreement No 101114732 — ENSURE** ('the Agreement')

**between INDRA SISTEMAS SA (INDRA) and SESAR3 Joint Undertaking** ('granting authority'), under the powers delegated by the European Commission ('European Commission'),

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

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 terms and conditions it sets out.

SIGNATURE

For the beneficiary

**ANNEX 3**

**ACCESSION FORM FOR BENEFICIARIES**

**D-FLIGHT SPA (D-FLIGHT)**, PIC 902701983, established in VIA SALARIA 716, ROMA 00138, Italy,

**hereby agrees**

**to become beneficiary**

**in Agreement No 101114732 — ENSURE** ('the Agreement')

**between INDRA SISTEMAS SA (INDRA) and SESAR3 Joint Undertaking** ('granting authority'), under the powers delegated by the European Commission ('European Commission'),

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

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 terms and conditions it sets out.

SIGNATURE

For the beneficiary

**ANNEX 3**

**ACCESSION FORM FOR BENEFICIARIES**

**NEXTANT APPLICATIONS & INNOVATIVE SOLUTION SRL (NAIS)**, PIC 973988350,  
established in VIA ANDREA NOALE 345A, ROMA 00155, Italy,

**hereby agrees**

**to become beneficiary**

**in Agreement No 101114732 — ENSURE** ('the Agreement')

**between INDRA SISTEMAS SA (INDRA) and SESAR3 Joint Undertaking** ('granting authority'),  
under the powers delegated by the European Commission ('European Commission'),

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement,  
in accordance with Article 39.

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 terms and conditions it sets out.

SIGNATURE

For the beneficiary

**ANNEX 3**

**ACCESSION FORM FOR BENEFICIARIES**

**SOCIETE ANONYME BELGE DE CONSTRUCTIONS AERONAUTIQUES-S.A.B.C.A. (SABCA)**, PIC 999954959, established in Chaussee de Haecht 1470, BRUXELLES 1130, Belgium,

**hereby agrees**

**to become beneficiary**

**in Agreement No 101114732 — ENSURE** ('the Agreement')

**between** INDRA SISTEMAS SA (INDRA) **and** **SESAR3 Joint Undertaking** ('granting authority'), under the powers delegated by the European Commission ('European Commission'),

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

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 terms and conditions it sets out.

SIGNATURE

For the beneficiary

**ANNEX 3**

**ACCESSION FORM FOR BENEFICIARIES**

**EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL)**, PIC 999483733, established in Rue de la Fusée 96, BRUXELLES 1130, Belgium,

**hereby agrees**

**to become beneficiary**

**in Agreement No 101114732 — ENSURE** ('the Agreement')

**between INDRA SISTEMAS SA (INDRA) and SESAR3 Joint Undertaking** ('granting authority'), under the powers delegated by the European Commission ('European Commission'),

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

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 terms and conditions it sets out.

SIGNATURE

For the beneficiary

**ANNEX 3**

**ACCESSION FORM FOR BENEFICIARIES**

**LUFTFARTSVERKET (LFV)**, PIC 942346077, established in HOSPITALSGATAN 30, NORRKOPING 602 27, Sweden,

**hereby agrees**

**to become beneficiary**

**in Agreement No 101114732 — ENSURE** ('the Agreement')

**between INDRA SISTEMAS SA (INDRA) and SESAR3 Joint Undertaking** ('granting authority'), under the powers delegated by the European Commission ('European Commission'),

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

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 terms and conditions it sets out.

SIGNATURE

For the beneficiary



**ANNEX 3**

**ACCESSION FORM FOR BENEFICIARIES**

**AEROCAMARAS SL (AEROCAMARAS)**, PIC 886469227, established in AVDA DE BUENOS AIRES 100, LALIN 36500, Spain,

**hereby agrees**

**to become beneficiary**

**in Agreement No 101114732 — ENSURE** ('the Agreement')

**between INDRA SISTEMAS SA (INDRA) and SESAR3 Joint Undertaking** ('granting authority'), under the powers delegated by the European Commission ('European Commission'),

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

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 terms and conditions it sets out.

SIGNATURE

For the beneficiary

**ANNEX 3**

**ACCESSION FORM FOR BENEFICIARIES**

**UDARAS EITLIOCHTA NA HEIREANN THE IRISH AVIATION AUTHORITY (IAA)**, PIC 927009019, established in D'OLIER STREET 11-12 THE TIMES BUILDING, DUBLIN D02 T449, Ireland,

**hereby agrees**

**to become beneficiary**

**in Agreement No 101114732 — ENSURE** ('the Agreement')

**between INDRA SISTEMAS SA (INDRA) and SESAR3 Joint Undertaking** ('granting authority'), under the powers delegated by the European Commission ('European Commission'),

**and mandates**

**the coordinator** to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 39.

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 terms and conditions it sets out.

SIGNATURE

For the beneficiary

**ANNEX 3a**

**DECLARATION ON JOINT AND SEVERAL LIABILITY OF  
AFFILIATED ENTITIES**

**CENTRO DE REFERENCIA INVESTIGACION DESARROLLO E INNOVACION ATM, A.I.E. (CRIDA)**, PIC 997605619, established in CALLE CAMPEZO, 1, 4º, EDIFICIO 7, PARQUE EMPRESARIAL LAS MERCEDES, MADRID 28022, Spain, ('the affiliated entity'),

linked to beneficiary **ENAIRE (ENAIRE)**, PIC 997701843, established in AVENIDA DE ARAGON S/N BLOQUE 330, PORTAL 2 PARQUE EMPRESARIAL LAS MERCEDES, MADRID 28022, Spain, ('the beneficiary'),

**hereby accepts joint and several liability with the beneficiary**

for any amount owed to the granting authority by the beneficiary under Grant Agreement 101114732 — ENSURE, up to the maximum grant amount indicated, for the affiliated entity, in the estimated budget (see Annex 2).

The affiliated entity irrevocably and unconditionally agrees to pay amounts requested under this declaration to the granting authority, immediately and at first demand.

The affiliated entity waives all rights of objection and defense based on arguments relating to the validity or effects of the Grant Agreement.

This guarantee is governed by the applicable EU law, supplemented if necessary by the law of Belgium. Disputes must be brought before the the EU General Court — or, on appeal, the EU Court of Justice — under Article 272 of the Treaty on the Functioning of the EU (TFEU) or, for non-EU entities, before the courts of Brussels, Belgium.

SIGNATURE

For the affiliated entity

\_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

ANNEX 4 HORIZON EUROPE MGA — MULTI + MONO

FINANCIAL STATEMENT FOR [PARTICIPANT NAME] FOR REPORTING PERIOD [NUMBER]

	Eligible <sup>1</sup> costs (per budget category)															EU contribution <sup>2</sup>				Revenues		
	Direct costs														Indirect costs	Total costs	EU contribution to eligible costs			Total requested EU contribution	Income generated by the action	
	A. Personnel costs		B. Subcontracting costs	C. Purchase costs			D. Other cost categories						E. Indirect costs <sup>2</sup>	Funding rate % <sup>3</sup>			Maximum EU contribution <sup>4</sup>	Requested EU contribution				
	A.1 Employees (or equivalent)		A.4 SME owners and natural person beneficiaries	B. Subcontracting	C.1 Travel and subsistence	C.2 Equipment	C.3 Other goods, works and services	D.1 Financial support to third parties	D.2 Internally invoiced goods and services	D.3 Transnational access to research infrastructure unit costs	D.4 Virtual access to research infrastructure unit costs	OPTION for HE PCP/PPH: D.5 PCP/PPH procurement costs	OPTION for Euratom Programme Cofund Actions: D.6 Euratom Cofund staff mobility costs	OPTION for HE ERC Grants: D.7 ERC additional funding	OPTION for HE ERC Grants: D.8 ERC additional funding (subcontracting, FSTP and internally invoiced goods and services)		E. Indirect costs					
A.2 Natural persons under direct contract																						
A.3 Seconded persons																						
Forms of funding	Actual costs	Unit costs (usual accounting practices)	Unit costs <sup>5</sup>	Actual costs	Actual costs	Actual costs	Actual costs	/ Actual costs	Unit costs (usual accounting practices)	/ Unit costs <sup>5</sup>	/ Unit costs <sup>5</sup>	/ Actual costs	/ Unit costs <sup>5</sup>	/ Actual costs	/ Actual costs	Flat-rate costs <sup>6</sup>						
	a1	a2	a3	b	c1	c2	c3	/ d1a	d2	/ d3	/ d4	/ d5	/ d6	/ d7	/ d8	$e = 0,25 * (a1 + a2 + a3 +b+ c1 +c2 + c3 +d1a+d2+d3 +d4 / + d5)+d6 / (1+d7) +d8)$	$f = a+b+c+d+e$	U	g = f*U%	h	m	n
XX – [short name beneficiary/affiliated entity]																						

The beneficiary/affiliated entity hereby confirms that:

The information provided is complete, reliable and true.

The costs and contributions declared are eligible (see Article 6).

The costs and contributions 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 19, 20 and 25).

For the last reporting period: that all the revenues have been declared (see Article 22).

① Please declare all eligible costs and contributions, 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 costs/contributions that are found to be ineligible.

<sup>1</sup> See Article 6 for the eligibility conditions. All amounts must be expressed in EUR (see Article 21 for the conversion rules).

<sup>2</sup> If you have also received an EU 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. This requires specific accounting tools. Please contact us immediately via the Funding & Tenders Portal for details.

<sup>3</sup> See Data Sheet for the reimbursement rate(s).

<sup>4</sup> This is the *theoretical* amount of EU contribution to costs that the system calculates automatically (by multiplying the reimbursement rates by the costs declared). The amount you request (in the column 'requested EU contribution') may be less.

<sup>5</sup> See Annex 2a 'Additional information on the estimated budget' for the details (units, cost per unit).

<sup>6</sup> See Data Sheet for the flat-rate.

## **ANNEX 5**

### **SPECIFIC RULES**

#### **CONFIDENTIALITY AND SECURITY (— ARTICLE 13)**

##### **Sensitive information with security recommendation**

Sensitive information with a security recommendation must comply with the additional requirements imposed by the granting authority.

Before starting the action tasks concerned, the beneficiaries must have obtained all approvals or other mandatory documents needed for implementing the task. The documents must be kept on file and be submitted upon request by the coordinator to the granting authority. If they are not in English, they must be submitted together with an English summary.

For requirements restricting disclosure or dissemination, the information must be handled in accordance with the recommendation and may be disclosed or disseminated only after written approval from the granting authority.

##### **EU classified information**

If EU classified information is used or generated by the action, it must be treated in accordance with the security classification guide (SCG) and security aspect letter (SAL) set out in Annex 1 and Decision 2015/444<sup>1</sup> and its implementing rules — until it is declassified.

Deliverables which contain EU classified information must be submitted according to special procedures agreed with the granting authority.

Action tasks involving EU classified information may be subcontracted only with prior explicit written approval from the granting authority and only to entities established in an EU Member State or in a non-EU country with a security of information agreement with the EU (or an administrative arrangement with the Commission).

EU classified information may not be disclosed to any third party (including participants involved in the action implementation) without prior explicit written approval from the granting authority.

#### **ETHICS (— ARTICLE 14)**

##### **Ethics and research integrity**

The beneficiaries must carry out the action in compliance with:

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<sup>1</sup> Commission Decision 2015/444/EC, Euratom of 13 March 2015 on the security rules for protecting EU classified information (OJ L 72, 17.3.2015, p. 53).

- ethical principles (including the highest standards of research integrity)

and

- applicable EU, international and national law, including the EU Charter of Fundamental Rights and the European Convention for the Protection of Human Rights and Fundamental Freedoms and its Supplementary Protocols.

No funding can be granted, within or outside the EU, for activities that are prohibited in all Member States. No funding can be granted in a Member State for an activity which is forbidden in that Member State.

The beneficiaries must pay particular attention to the principle of proportionality, the right to privacy, the right to the protection of personal data, the right to the physical and mental integrity of persons, the right to non-discrimination, the need to ensure protection of the environment and high levels of human health protection.

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:

- aim at human cloning for reproductive purposes
- intend to modify the genetic heritage of human beings which could make such modifications heritable (with the exception of research relating to cancer treatment of the gonads, which may be financed)
- 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, or
- lead to the destruction of human embryos (for example, for obtaining stem cells).

Activities involving research on human embryos or human embryonic stem cells may be carried out only if:

- they are set out in Annex 1 or
- the coordinator has obtained explicit approval (in writing) from the granting authority.

In addition, the beneficiaries must respect the fundamental principle of research integrity — as set out in the European Code of Conduct for Research Integrity<sup>2</sup>.

This implies compliance with the following principles:

- reliability in ensuring the quality of research reflected in the design, the methodology, the analysis and the use of resources

---

<sup>2</sup> European Code of Conduct for Research Integrity of ALLEA (All European Academies).

- 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 including ensuring, where possible, openness, reproducibility and traceability and refrain from the research integrity violations described in the Code.

Activities raising ethical issues must comply with the additional requirements formulated by the ethics panels (including after checks, reviews or audits; see Article 25).

Before starting an action task raising ethical issues, the beneficiaries must have obtained all approvals or other mandatory documents needed for implementing the task, notably from any (national or local) ethics committee or other bodies such as data protection authorities.

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

## **VALUES (— ARTICLE 14)**

### **Gender mainstreaming**

The beneficiaries must take all measures to promote equal opportunities between men and women in the implementation of the action and, where applicable, in line with the gender equality plan. 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.

## **INTELLECTUAL PROPERTY RIGHTS (IPR) — BACKGROUND AND RESULTS — ACCESS RIGHTS AND RIGHTS OF USE (— ARTICLE 16)**

### **Definitions**

Access rights — Rights to use results or background.

Dissemination — The public disclosure of the results by appropriate means, other than resulting from protecting or exploiting the results, including by scientific publications in any medium.

Exploit(ation) — The use of results in further research and innovation activities other than those covered by the action concerned, including among other things, commercial exploitation such as developing, creating, manufacturing and marketing a product or process, creating and providing a service, or in standardisation activities.

Fair and reasonable conditions — 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.

FAIR principles — ‘findability’, ‘accessibility’, ‘interoperability’ and ‘reusability’.

Open access — Online access to research outputs provided free of charge to the end-user.

Open science — An approach to the scientific process based on open cooperative work, tools and diffusing knowledge.

Research data management — The process within the research lifecycle that includes the organisation, storage, preservation, security, quality assurance, allocation of persistent identifiers (PIDs) and rules and procedures for sharing of data including licensing.

Research outputs — Results to which access can be given in the form of scientific publications, data or other engineered results and processes such as software, algorithms, protocols, models, workflows and electronic notebooks.

### **Scope of the obligations**

For this section, references to ‘beneficiary’ or ‘beneficiaries’ do not include affiliated entities (if any).

### **Agreement on background — Background free from restrictions**

The beneficiaries must identify in a written agreement the background as needed for implementing the action or for exploiting its results.

Where the call conditions restrict control due to strategic interests reasons, background that is subject to control or other restrictions by a country (or entity from a country) which is not one of the eligible countries or target countries set out in the call conditions and that impact the exploitation of the results (i.e. would make the exploitation of the results subject to control or restrictions) must not be used and must be explicitly excluded in the agreement on background — unless otherwise agreed with the granting authority.

### **Results free from restrictions**

Where the call conditions restrict control due to strategic interests reasons, the beneficiaries must ensure that the results of the action are not subject to control or other restrictions by a country (or entity from a country) which is not one of the eligible countries or target countries set out in the call conditions — unless otherwise agreed with the granting authority.

### **Ownership of results**

Results are owned by the beneficiaries that generate them.

However, two or more beneficiaries own results jointly if:



- they have jointly generated them and
- it is not possible to:
  - establish the respective contribution of each beneficiary, or
  - separate them for the purpose of applying for, obtaining or maintaining their protection.

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

- at least 45 days advance notice and
- fair and reasonable compensation.

The joint owners may agree — in writing — to apply another regime than joint ownership.

If third parties (including employees and other personnel) may claim rights to the results, the beneficiary concerned must ensure that those rights can be exercised in a manner compatible with its obligations under the Agreement.

The beneficiaries must indicate the owner(s) of the results (results ownership list) in the final periodic report.

### **Protection of results**

Beneficiaries which have received funding under the grant must adequately protect their results — for an appropriate period and with appropriate territorial coverage — if protection is possible and justified, taking into account all relevant considerations, including the prospects for commercial exploitation, the legitimate interests of the other beneficiaries and any other legitimate interests.

### **Exploitation of results**

Beneficiaries which have received funding under the grant must — up to four years after the end of the action (see Data Sheet, Point 1) — use their best efforts to exploit their results directly or to have them exploited indirectly by another entity, in particular through transfer or licensing.

If, despite a beneficiary's best efforts, the results are not exploited within one year after the end of the action, the beneficiaries must (unless otherwise agreed in writing with the granting authority) use the Horizon Results Platform to find interested parties to exploit the results.

If results are incorporated in a standard, the beneficiaries must (unless otherwise agreed with the granting authority or unless it is impossible) ask the standardisation body to include the funding statement (see Article 17) in (information related to) the standard.

### Additional exploitation obligations

Where the call conditions impose additional exploitation obligations (including obligations linked to the restriction of participation or control due to strategic assets, interests, autonomy or security reasons), the beneficiaries must comply with them — up to four years after the end of the action (see Data Sheet, Point 1).

Where the call conditions impose additional exploitation obligations in case of a public emergency, the beneficiaries must (if requested by the granting authority) grant for a limited period of time specified in the request, non-exclusive licences — under fair and reasonable conditions — to their results to legal entities that need the results to address the public emergency and commit to rapidly and broadly exploit the resulting products and services at fair and reasonable conditions. This provision applies up to four years after the end of the action (see Data Sheet, Point 1).

### Additional information obligation relating to standards

Where the call conditions impose additional information obligations relating to possible standardisation, the beneficiaries must — up to four years after the end of the action (see Data Sheet, Point 1) — inform the granting authority, if the results could reasonably be expected to contribute to European or international standards.

## **Transfer and licensing of results**

### Transfer of ownership

The beneficiaries may transfer ownership of their results, provided this does not affect compliance with their obligations under the Agreement.

The beneficiaries must ensure that their obligations under the Agreement regarding their results are passed on to the new owner and that this new owner has the obligation to pass them on in any subsequent transfer.

Moreover, they must inform the other beneficiaries with access rights of the transfer at least 45 days in advance (or less if agreed in writing), unless agreed otherwise in writing for specifically identified third parties including affiliated entities or unless impossible under the applicable law. This notification must include sufficient information on the new owner to enable the beneficiaries concerned to assess the effects on their access rights. The beneficiaries may object within 30 days of receiving notification (or less if agreed in writing), if they can show that the transfer would adversely affect their access rights. In this case, the transfer may not take place until agreement has been reached between the beneficiaries concerned.

### Granting licences

The beneficiaries may grant licences to their results (or otherwise give the right to exploit them), including on an exclusive basis, provided this does not affect compliance with their obligations.

Exclusive licences for results may be granted only if all the other beneficiaries concerned have waived their access rights.

### Granting authority right to object to transfers or licensing — Horizon Europe actions

Where the call conditions in Horizon Europe actions provide for the right to object to transfers or licensing, the granting authority may — up to four years after the end of the action (see Data Sheet, Point 1) — object to a transfer of ownership or the exclusive licensing of results, if:

- the beneficiaries which generated the results have received funding under the grant
- it is to a legal entity established in a non-EU country not associated with Horizon Europe, and
- the granting authority considers that the transfer or licence is not in line with EU interests.

Beneficiaries that intend to transfer ownership or grant an exclusive licence must formally notify the granting authority 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 interests, in particular regarding competitiveness as well as consistency with ethical principles and security considerations.

The granting authority may request additional information.

If the granting authority 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 granting authority decision, within the period set out above
- if the granting authority objects
- until the conditions are complied with, if the granting authority objection comes with conditions.

A beneficiary may formally notify a request to waive the right to object regarding intended transfers or grants to a specifically identified third party, if measures safeguarding EU interests are in place. If the granting authority agrees, it will formally notify the beneficiary concerned within 60 days of receiving notification (or any additional information requested).

### Limitations to transfers and licensing due to strategic assets, interests, autonomy or security reasons of the EU and its Member States

Where the call conditions restrict participation or control due to strategic assets, interests, autonomy or security reasons, the beneficiaries may not transfer ownership of their results or grant licences to third parties which are established in countries which are not eligible

countries or target countries set out in the call conditions (or, if applicable, are controlled by such countries or entities from such countries) — unless they have requested and received prior approval by the granting authority.

The request must:

- identify the specific results concerned
- describe in detail the new owner and the planned or potential exploitation of the results, and
- include a reasoned assessment of the likely impact of the transfer or license on the strategic assets, interests, autonomy or security of the EU and its Member States.

The granting authority may request additional information.

### **Access rights to results and background**

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

Requests to exercise access rights and the waiver of access rights must be in writing.

Unless agreed otherwise in writing with the beneficiary granting access, access rights do not include the right to sub-license.

If a beneficiary is no longer involved in the action, this does not affect its obligations to grant access.

If a beneficiary defaults on its obligations, the beneficiaries may agree that that beneficiary no longer has access rights.

#### *Access rights for implementing the action*

The beneficiaries must grant 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 —:

- informed the other beneficiaries that access to its background is subject to restrictions, or
- agreed with the other beneficiaries that access would not be on a royalty-free basis.

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

#### *Access rights for exploiting the results*

The beneficiaries must grant each other access — under fair and reasonable conditions — to results needed for exploiting their results.

The beneficiaries must grant each other access — under fair and reasonable conditions — to background needed for exploiting their 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 restrictions.

Requests for access must be made — unless agreed otherwise in writing — up to one year after the end of the action (see Data Sheet, Point 1).

#### Access rights for entities under the same control

Unless agreed otherwise in writing by the beneficiaries, access to results and, subject to the restrictions referred to above (if any), background must also be granted — under fair and reasonable conditions — to entities that:

- are established in an EU Member State or Horizon Europe associated country
- are under the direct or indirect control of another beneficiary, or under the same direct or indirect control as that beneficiary, or directly or indirectly controlling that beneficiary and
- need the access to exploit the results of that beneficiary.

Unless agreed otherwise in writing, such requests for access must be made by the entity directly to the beneficiary concerned.

Requests for access must be made — unless agreed otherwise in writing — up to one year after the end of the action (see Data Sheet, Point 1).

#### Access rights for the granting authority, EU institutions, bodies, offices or agencies and national authorities to results for policy purposes — Horizon Europe actions

In Horizon Europe actions, the beneficiaries which have received funding under the grant must grant access to their results — on a royalty-free basis — to the granting authority, EU institutions, bodies, offices or agencies for developing, implementing and monitoring EU policies or programmes. Such access rights do not extend to beneficiaries' background.

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

For actions under the cluster 'Civil Security for Society', such access rights also extend to national authorities of EU Member States for developing, implementing and monitoring their policies or programmes in this area. In this case, access is subject to a bilateral agreement to define specific conditions ensuring that:

- the access rights will be used only for the intended purpose and
- appropriate confidentiality obligations are in place.

Moreover, the requesting national authority or EU institution, body, office or agency (including the granting authority) must inform all other national authorities of such a request.

#### Additional access rights

Where the call conditions impose additional access rights, the beneficiaries must comply with them.

## **COMMUNICATION, DISSEMINATION, OPEN SCIENCE AND VISIBILITY (— ARTICLE 17)**

### **Dissemination**

#### *Dissemination of results*

The beneficiaries must disseminate their results as soon as feasible, in a publicly available format, subject to any restrictions due to the protection of intellectual property, security rules or legitimate interests.

A beneficiary that intends to disseminate its results must give at least 15 days advance notice to the other beneficiaries (unless agreed otherwise), together with sufficient information on the results it will disseminate.

Any other beneficiary may object within (unless agreed otherwise) 15 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 results may not be disseminated unless appropriate steps are taken to safeguard those interests.

#### *Additional dissemination obligations*

Where the call conditions impose additional dissemination obligations, the beneficiaries must also comply with those.

### **Open Science**

#### *Open science: open access to scientific publications*

The beneficiaries must ensure open access to peer-reviewed scientific publications relating to their results. In particular, they must ensure that:

- at the latest at the time of publication, a machine-readable electronic copy of the published version or the final peer-reviewed manuscript accepted for publication, is deposited in a trusted repository for scientific publications
- immediate open access is provided to the deposited publication via the repository, under the latest available version of the Creative Commons Attribution International Public Licence (CC BY) or a licence with equivalent rights; for monographs and other long-text formats, the licence may exclude commercial uses and derivative works (e.g. CC BY-NC, CC BY-ND) and
- information is given via the repository about any research output or any other tools and instruments needed to validate the conclusions of the scientific publication.

Beneficiaries (or authors) must retain sufficient intellectual property rights to comply with the open access requirements.

Metadata of deposited publications must be open under a Creative Common Public Domain Dedication (CC 0) or equivalent, in line with the FAIR principles (in particular machine-actionable) and provide information at least about the following: publication (author(s), title, date of publication, publication venue); Horizon Europe or Euratom funding; grant project

name, acronym and number; licensing terms; persistent identifiers for the publication, the authors involved in the action and, if possible, for their organisations and the grant. Where applicable, the metadata must include persistent identifiers for any research output or any other tools and instruments needed to validate the conclusions of the publication.

Only publication fees in full open access venues for peer-reviewed scientific publications are eligible for reimbursement.

#### Open science: research data management

The beneficiaries must manage the digital research data generated in the action ('data') responsibly, in line with the FAIR principles and by taking all of the following actions:

- establish a data management plan ('DMP') (and regularly update it)
- as soon as possible and within the deadlines set out in the DMP, deposit the data in a trusted repository; if required in the call conditions, this repository must be federated in the EOSC in compliance with EOSC requirements
- as soon as possible and within the deadlines set out in the DMP, ensure open access — via the repository — to the deposited data, under the latest available version of the Creative Commons Attribution International Public License (CC BY) or Creative Commons Public Domain Dedication (CC 0) or a licence with equivalent rights, following the principle 'as open as possible as closed as necessary', unless providing open access would in particular:
  - be against the beneficiary's legitimate interests, including regarding commercial exploitation, or
  - be contrary to any other constraints, in particular the EU competitive interests or the beneficiary's obligations under this Agreement; if open access is not provided (to some or all data), this must be justified in the DMP
- provide information via the repository about any research output or any other tools and instruments needed to re-use or validate the data.

Metadata of deposited data must be open under a Creative Commons Public Domain Dedication (CC 0) or equivalent (to the extent legitimate interests or constraints are safeguarded), in line with the FAIR principles (in particular machine-actionable) and provide information at least about the following: datasets (description, date of deposit, author(s), venue and embargo); Horizon Europe or Euratom funding; grant project name, acronym and number; licensing terms; persistent identifiers for the dataset, the authors involved in the action, and, if possible, for their organisations and the grant. Where applicable, the metadata must include persistent identifiers for related publications and other research outputs.

#### Open science: additional practices

Where the call conditions impose additional obligations regarding open science practices, the beneficiaries must also comply with those.

Where the call conditions impose additional obligations regarding the validation of scientific publications, the beneficiaries must provide (digital or physical) access to data or other results



needed for validation of the conclusions of scientific publications, to the extent that their legitimate interests or constraints are safeguarded (and unless they already provided the (open) access at publication).

Where the call conditions impose additional open science obligations in case of a public emergency, the beneficiaries must (if requested by the granting authority) immediately deposit any research output in a repository and provide open access to it under a CC BY licence, a Public Domain Dedication (CC 0) or equivalent. As an exception, if the access would be against the beneficiaries' legitimate interests, the beneficiaries must grant non-exclusive licenses — under fair and reasonable conditions — to legal entities that need the research output to address the public emergency and commit to rapidly and broadly exploit the resulting products and services at fair and reasonable conditions. This provision applies up to four years after the end of the action (see Data Sheet, Point 1).

### **Plan for the exploitation and dissemination of results including communication activities**

Unless excluded by the call conditions, the beneficiaries must provide and regularly update a plan for the exploitation and dissemination of results including communication activities.

### **SPECIFIC RULES FOR CARRYING OUT THE ACTION (— ARTICLE 18)**

#### **Implementation in case of restrictions due to strategic assets, interests, autonomy or security of the EU and its Member States**

Where the call conditions restrict participation or control due to strategic assets, interests, autonomy or security, the beneficiaries must ensure that none of the entities that participate as affiliated entities, associated partners, third parties giving in-kind contributions, subcontractors or recipients of financial support to third parties are established in countries which are not eligible countries or target countries set out in the call conditions (or, if applicable, are controlled by such countries or entities from such countries) — unless otherwise agreed with the granting authority.

The beneficiaries must moreover ensure that any cooperation with entities established in countries which are not eligible countries or target countries set out in the call conditions (or, if applicable, are controlled by such countries or entities from such countries) does not affect the strategic assets, interests, autonomy or security of the EU and its Member States.

#### **Recruitment and working conditions for 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>3</sup>, in particular regarding:

- working conditions
- transparent recruitment processes based on merit, and

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<sup>3</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).



- career development.

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

## **Specific rules for access to research infrastructure activities**

### **Definitions**

**Research Infrastructures** — Facilities that provide resources and services for the research communities to conduct research and foster innovation in their fields. This definition includes the associated human resources, and it covers major equipment or sets of instruments; knowledge-related facilities such as collections, archives or scientific data infrastructures; computing systems, communication networks, and any other infrastructure, of a unique nature and open to external users, essential to achieve excellence in research and innovation. Where relevant, they may be used beyond research, for example for education or public services, and they may be ‘single-sited’, ‘virtual’ or ‘distributed’<sup>4</sup>:

When implementing access to research infrastructure activities, the beneficiaries must respect the following conditions:

- for transnational access:
  - access which must be provided:

The access must be free of charge, transnational access to research infrastructure or installations for selected user-groups.

The access must include the logistical, technological and scientific support and the specific training that is usually provided to external researchers using the infrastructure. Transnational access can be either in person (hands-on), provided to selected users that visit the installation to make use of it, or remote, through the provision to selected user-groups of remote scientific services (e.g. provision of reference materials or samples, remote access to a high-performance computing facility).

- categories of users that may have access:

Transnational access must be provided to selected user-groups, i.e. teams of one or more researchers (users).

The majority of the users must work in a country other than the country(ies) where the installation is located (unless access is provided by an international organisation, the Joint Research Centre (JRC), an ERIC or similar legal entity).

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<sup>4</sup> See Article 2(1) of the Horizon Europe Framework Programme Regulation 2021/695.

Only user groups that are allowed to disseminate the results they have generated under the action may benefit from the access (unless the users are working for SMEs).

Access for user groups with a majority of users not working in a EU Member State or Horizon Europe associated country is limited to 20% of the total amount of units of access provided under the grant (unless a higher percentage is foreseen in Annex 1).

- procedure and criteria for selecting user groups:

The user groups must request access by submitting (in writing) a description of the work that they wish to carry out and the names, nationalities and home institutions of the users.

The user groups must be selected by (one or more) selection panels set up by the consortium.

The selection panels must be composed of international experts in the field, at least half of them independent from the consortium (unless otherwise specified in Annex 1).

The selection panels must assess all proposals received and recommend a short-list of the user groups that should benefit from access.

The selection panels must base their selection on scientific merit, taking into account that priority should be given to user groups composed of users who:

- have not previously used the installation and
- are working in countries where no equivalent research infrastructure exist.

It will apply the principles of transparency, fairness and impartiality.

Where the call conditions impose additional rules for the selection of user groups, the beneficiaries must also comply with those.

- other conditions:

The beneficiaries must request written approval from the granting authority for the selection of user groups requiring visits to the installations exceeding 3 months (unless such visits are foreseen in Annex 1).

In addition, the beneficiaries must:

- advertise widely, including on a their websites, the access offered under the Agreement
- promote equal opportunities in advertising the access and take into account the gender dimension when defining the support provided to users
- ensure that users comply with the terms and conditions of the Agreement

- ensure that its obligations under Articles 12, 13, 17 and 33 also apply to the users
- keep records of the names, nationalities, and home institutions of users, as well as the nature and quantity of access provided to them
- for virtual access:
  - access which must be provided:

The access must be free of charge, virtual access to research infrastructure or installations.

‘Virtual access’ means open and free access through communication networks to digital resources and services needed for research, without selecting the users to whom access is provided.

The access must include the support that is usually provided to external users.

Where allowed by the call conditions, beneficiaries may in justified cases define objective eligibility criteria (e.g. affiliation to a research or academic institution) for specific users.

- other conditions:

The beneficiaries must have the virtual access services assessed periodically by a board composed of international experts in the field, at least half of whom must be independent from the consortium (unless otherwise specified in Annex 1). For this purpose, information and statistics on the users and the nature and quantity of the access provided, must be made available to the board.

The beneficiaries must advertise widely, including on a dedicated website, the access offered under the grant and the eligibility criteria, if any.

Where the call conditions impose additional traceability<sup>5</sup> obligations, information on the traceability of the users and the nature and quantity of access must be provided by the beneficiaries.

These obligations apply regardless of the form of funding or budget categories used to declare the costs (unit costs or actual costs or a combination of the two).

### **Specific rules for JU actions**

JU actions must contribute to the long-term implementation of the JU partnership, including the JU Strategic Research and Innovation Agenda, the JU objectives and the exploitation of research and innovation results.

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<sup>5</sup> According to the definition given in ISO 9000, i.e.: “Traceability is the ability to trace the history, application, use and location of an item or its characteristics through recorded identification data.” The users can be traced, for example, by authentication and/or by authorization or by other means that allows for analysis of the type of users and the nature and quantity of access provided.

Moreover, when implementing JU actions, the members and contributing partners of the Joint Undertaking must fulfil their obligations regarding contributions to the Joint Undertaking:

- the description of the action in Annex 1 must include, for beneficiaries, affiliated entities, associated partners or other participants or third parties which are members or contributing partners, the estimated contributions to the action, i.e.:
  - in-kind contributions to operational activities ('IKOP'; if applicable)
  - in-kind contributions to additional activities linked to the action ('IKAA'; if applicable)
  - financial contributions ('FC'; if applicable)
- the contributions must be reported during the implementation of the action in the Portal Continuous Reporting tool
- at the end of the action, the members and contributing partners that have not received funding under the grant must ensure that financial and in-kind contributions of EUR 430 000 or more (see Article 21) are supported by statements of contributions (CS) and certificates on the statements of contributions (CCS) which fulfil the following conditions:
  - be provided by a qualified approved external auditor which is independent and complies with Directive 2006/43/EC (or for public bodies: by a competent independent public officer)
  - the verification must be carried out according to the highest professional standards to ensure that the statements of contributions comply with the provisions under the Agreement and the applicable JU Regulation, that the contributions cover activities that are part of the action and that they have not been reimbursed by the grant
- contributions must comply with the following conditions:
  - costs covered by financial contributions cannot be claimed for reimbursement under the JU grant
  - for Clean Aviation JU, SNS JU, Europe's Rail JU, CBE JU grants: if provided in the call conditions, a certain percentage of the total costs of the action must be covered by contributions (IKOP, IKAA or FC)
  - for IHI JU grants: at least 45% (or another amount set out in the call conditions) of the total costs of the action and of the related IKAA must be covered by contributions (IKOP, IKAA or FC)
  - for IHI JU grants: non-EU costs must not exceed 20% (or other percentage set out in the call conditions) of IKOP provided by members and contributing partners.

The beneficiaries must comply with the additional IPR, dissemination and exploitation obligations set out in the call conditions (Article 16 and Annex 5), in particular:

- for all JU grants: the granting authority right to object to transfers or licensing also applies to results generated by beneficiaries not having received funding under the grant
- for SESAR 3 JU and Clean Aviation JU grants: in view of the long innovation cycles:
  - the granting authority right to object to transfers or licensing (if any) can be exercised for up to 10 years after the end of the action (see Data Sheet, Point 1)
  - the beneficiaries must comply with their best effort obligation to exploit the results and any additional exploitation obligations imposed by the call conditions for up to 10 years after the end of the action (see Data Sheet, Point 1)
- for IHI JU and Global Health EDCTP3 JU grants (if applicable): the beneficiaries must ensure that the products and services that they develop based or partially based on the results of clinical studies undertaken as part of the grant are affordable, available and accessible to the public at fair and reasonable conditions.

In addition to the obligations set out in Article 17, communication and dissemination activities as well as infrastructure, equipment or major results funded under JU actions must moreover display the Joint Undertaking's special logo:





and the following text:

“The project is supported by the [insert JU name] and its members *[OPTION for actions with national contribution top-ups: (including top-up funding by [name of the national funding authority])]*.”

For EuroHPC JU and KDT JU grants, the beneficiaries must respect the following conditions when implementing actions with national contribution top-ups from Participating States:

- the beneficiaries must ensure visibility of the national contributions (see below)
- the payment deadlines for prefinancing, interim or final payments are automatically suspended if a national funding authority is late with its payments to the Joint Undertaking for the national contribution top-up
- the European Anti-Fraud Office (OLAF), European Public Prosecutor's Office (EPPO), European Court of Auditors (ECA), the National Court of Auditors and other national authorities can exercise their control rights on the project implementation and costs declared, including for the national contribution top-up.

For SNS JU grants, where imposed by the call conditions for digital infrastructure projects the beneficiaries must ensure that the network technologies and equipment (including software and services) funded by the action comply with the security requirements and assessments as reflected in the applicable EU, international and national law on cybersecurity and on data protection.

Moreover, where the call conditions impose wholesale access obligations, the beneficiaries must provide wholesale access to the digital infrastructure funded by the action, under fair and reasonable conditions, in a non-discriminatory manner and in accordance with the call conditions.

For Global Health EDCTP3 JU fellowship grants, the beneficiaries must respect the following conditions when implementing them through financial support to third parties:

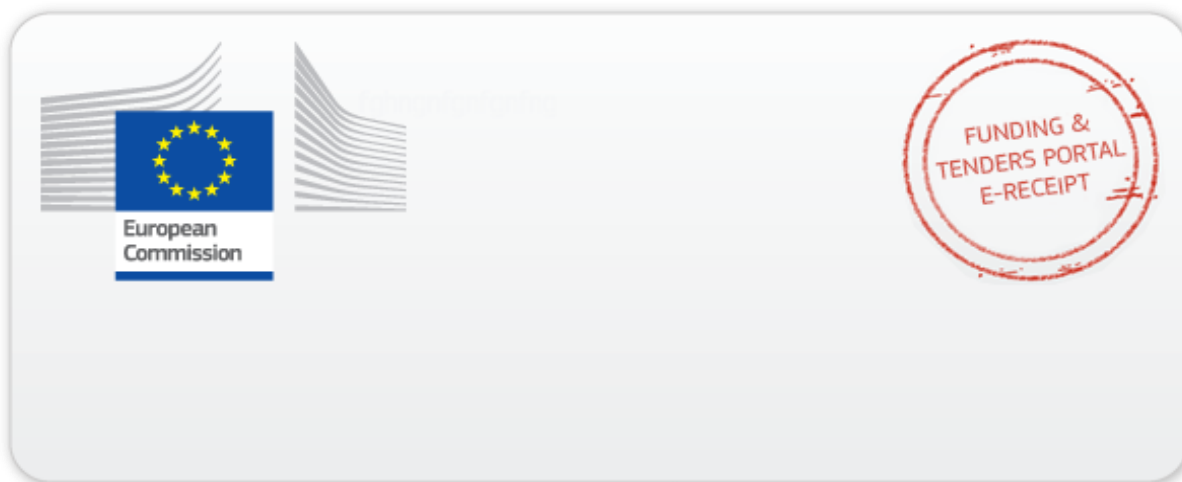
- avoid any conflict of interest and comply with the principles of transparency, non-discrimination and sound financial management
- take all measures to implement the principles set out in the Commission Recommendation on the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers<sup>6</sup> and ensure that the researchers and all participants involved in the action are aware of them
- ensure that the researchers enjoy at the place of the implementation at least the same standards and working conditions as those applicable to local researchers holding a similar position
- ensure that the other direct contract or fixed-amount-fellowship agreement specifies:
  - the name of the supervisor(s) and/or mentor(s) for the research and training activities
  - the starting date and duration of the research and training activities
  - the monthly support for the researcher under this Agreement (in euro and, if relevant, in the currency in which the remuneration is paid)
  - the obligation of the researcher to work exclusively for the action, unless part-time has been approved and not to receive, for activities carried out in the frame of the action, other incomes than those received from the beneficiary or other entities mentioned in Annex 1)
  - the working pattern of the researcher
  - the arrangements related to the intellectual property rights (during implementation of the action and afterwards), in particular full access — on a royalty-free basis — for the researcher to background and results needed for their activities under the action
  - the obligation of the researcher to inform as soon as possible about events or circumstances likely to affect the implementation of the action or the compliance with requirements under the Agreement (see Article 19)
  - the obligation of the researcher to maintain confidentiality (see Article 13)
  - the obligation of the researcher to ensure the visibility of the EDCTP Association and EU funding in communications or publications and in applications for the protection of results (see Articles 17)

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<sup>6</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).

- where set out in the call conditions, the obligation of the researcher to carry out a mandatory return period of 12 months
- assist the researchers in the administrative procedures related to the recruitment
- inform the researchers about:
  - the description, conditions, location and timetable for the implementation of the research and training activities
  - the rights and obligations toward the researchers under this Agreement
  - the obligation of the researchers to complete and submit — at the end of the research training activities — the evaluation questionnaire and — two years later — follow-up questionnaire provided by the granting authority
- ensure full access — on a royalty-free basis — for the researchers to background and results needed for their activities under the action
- ensure that the researchers do not have to bear any costs for the implementation of the action as described in Annex 1
- provide training, infrastructure and the necessary means for implementing the action (or ensure that such training and means are provided by other participants in the action)
- ensure that the researchers are adequately supervised and receive appropriate career guidance
- ensure that personalised career development plans are established, support their implementation and update in view of the needs of the researchers
- ensure an appropriate exposure to the non-academic sector (if applicable)
- respect the maximum limit for secondments set out in the call conditions (if applicable)
- respect the conditions for the outgoing and return phases set out in the call conditions (if any)
- ensure that the researchers are informed that they are ‘Global Health EDCTP3 JU fellows’
- ensure that the researchers do not receive, for activities carried out in the frame of the action, other incomes than those received from the beneficiaries (or other entities mentioned in Annex 1)
- host the researchers at their premises (or at the premises of other participants in the action).





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