GRANT AGREEMENT

Project 101288946 — NET-TBO 2

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’:

EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL), PIC 999483733, established in Rue de la Fusée 96, BRUXELLES 1130, Belgium,

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

2. **AIR FRANCE SA (AIR FRANCE)**, PIC 937590070, established in RUE DE PARIS 45, ROISSY CDG CEDEX 95747, France,

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

4. **RIZENI LETOVEHO PROVOZU CESKE REPUBLIKY STATNI PODNIK (ANS CR)**, PIC 954552363, established in JENEC NAVIGACNI 787, JENEC 252 61, Czechia,

5. **AIRBUS OPERATIONS SAS (AI OPS SAS)**, PIC 991247948, established in ROUTE DE BAYONNE 316, TOULOUSE 31060, France,

6. **AIRBUS (AIRBUS)**, PIC 999963010, established in 2 ROND POINT EMILE DEWOITINE, BLAGNAC 31700, France,

7. **AUSTRO CONTROL OSTERREICHISCHE GESELLSCHAFT FUR ZIVILLUFTFAHRT MBH (AUSTRO CONTROL)**, PIC 998956635, established in SCHNIRCHGASSE 17, WIEN 1030, Austria,

8. **AVTECH SWEDEN AB (AVTECH)**, PIC 997849574, established in FAROGATAN 33 24 TR, KISTA 164 51, Sweden,

9. **BOEING AEROSPACE SPAIN (BAS)**, PIC 999648730, established in AVENIDA SUR DEL AEROPUERTO DE BARAJAS 38 EDIF 4 PL 4 A, MADRID 28042, Spain,

10. **CAE FLIGHT SERVICES AUSTRIA GMBH (CAE AUSTRIA)**, PIC 884813728, established in EURO PLAZA GEBAUDE H LEHRBACHGASSE 11, WIEN 1120, Austria,

11. **CAE FLIGHT SERVICES POLAND SP ZOO (CAE Poland)**, PIC 879878465, established in UL WADOWICKA 3B, KRAKOW 30-347, Poland,

12. **COLLINS AEROSPACE IRELAND, LIMITED (COLLINS)**, PIC 971136162, established in PENROSE QUAY PENROSE WHARF PENROSE BUSINESS CENTRE FOURTH FLOOR, CORK T23 XN53, Ireland,

13. **DEUTSCHE LUFTHANSA AKTIENGESELLSCHAFT (LUFTHANSA)**, PIC 999965532, established in VENLOER STRASSE 151-153, KOLN 50672, Germany,

14. **DEUTSCHES ZENTRUM FUR LUFT - UND RAUMFAHRT EV (DLR)**, PIC 999981731, established in LINDER HOHE, KOLN 51147, Germany,

15. **DFS DEUTSCHE FLUGSICHERUNG GMBH (DFS)**, PIC 999936820, established in AM DFS CAMPUS 10, LANGEN 63225, Germany,

16. **DIRECTION DES SERVICES DE LA NAVIGATION AERIENNE (DSNA)**, PIC 928673636, established in 50 RUE HENRY FARMAN, PARIS 75720, France,

17. **ENAV SPA (ENAV)**, PIC 998197513, established in VIA SALARIA 716, ROMA 00138, Italy,

18. **FREQUENTIS ORTHOGON GMBH (FOR)**, PIC 957912443, established in HASTEDTER OSTERDEICH 222, BREMEN 28207, Germany,

19. **HONEYWELL INTERNATIONAL SRO (HON CZ)**, PIC 997834830, established in V PARKU 2325/16 CHODOV, PRAHA 148 00, Czechia,

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

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

22. **ISAVIA ANS EHF (ISAVIA ANS EHF)**, PIC 896093664, established in REYKJAVIKURFLUGVELLI 102, REYKJAVIK 102, Iceland,

23. **LEONARDO - SOCIETA PER AZIONI (LEONARDO)**, PIC 998627417, established in PIAZZA MONTE GRAPPA 4, ROMA 00195, Italy,

24. **NATS (EN ROUTE) PUBLIC LIMITED COMPANY (NATS)**, PIC 997542763, established in 4000 PARKWAY WHITELEY, FAREHAM PO15 7FL, United Kingdom,

25. **NAV CANADA (NAV CANADA)**, PIC 924404957, established in 151 SLATER STREET SUITE 120, OTTAWA ONTARIO K1P 5H3, Canada,

26. **PACE AEROSPACE ENGINEERING AND INFORMATION TECHNOLOGY GMBH (PACE GmbH)**, PIC 992602068, established in VALESKA-GERT-STRASSE 1, BERLIN 10243, Germany,

27. **POLSKA AGENCJA ZEGLUGI POWIETRZNEJ (PANSA)**, PIC 995562023, established in UL. WIEZOWA 8, WARSZAWA 02 147, Poland,

28. **SKYGUIDE, SA SUISSE POUR LES SERVICES DE LA NAVIGATION AERIENNE CIVILS ET MILITAIRES (SKYGUIDE)**, PIC 958184334, established in ROUTE DE PRE BOIS 15-17, GENEVA 1215, Switzerland,

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

30. **SWISS INTERNATIONAL AIR LINES AG (SWISS)**, PIC 927320680, established in OBSTGARTENSTRASSE 25, KLOTEN 8302, Switzerland,

31. **THALES LAS FRANCE SAS (THALES LAS)**, PIC 999961555, established in AVENUE GAY LUSSAC 2, ELANCOURT 78990, France,

32. **TXT E-TECH SRL (TXT E-TECH)**, PIC 884000383, established in VIA MILANO 150, COLOGNO MONZESE 20093, Italy,

33. **THALES AVS FRANCE SAS (THALES AVS)**, PIC 999984447, established in 75-77 AVENUE MARCEL DASSAULT, MERIGNAC 33700, France,

34. **INNOVACION Y GESTION EN NAVEGACION AEREA SL (INGENAV)**, PIC 937877190, established in AVDA DEL PARTENON 10, 3A PLANTA, OFICINA 10, MADRID 28042, Spain,

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[1]
Annex 2	Estimated budget for the action
Annex 3	Accession forms (if applicable)[2]
Annex 3a	Declaration on joint and several liability of affiliated entities (if applicable)[3]
Annex 4	Model for the financial statements
Annex 5	Specific rules (if applicable)

[1] Template published on Portal Reference Documents.
[2] Template published on Portal Reference Documents.
[3] Template published on Portal Reference Documents.

TERMS AND CONDITIONS

TABLE OF CONTENTS

DATA SHEET

1. General data

Project summary:

Project summary
The NETWORK TBO-2 project will validate SESAR Trajectory-Based Operations (TBO) Solutions covering all aspects of trajectory management processes, from planning to execution, with a strong focus on network actors. A transversal activity will develop a SESAR global TBO document, serving as a cornerstone for integrating TBO activities and ensuring global interoperability. The project will validate four operational solutions, targeting TRL6 by project end: UDT (Unconstrained Desired Trajectory): addresses the UDT concept from the perspectives of Airspace Users, the Network Manager, and ANSPs, across all flight phases. The UDT represents the "desired optimum" provided by the AU as a reference against which to assess trajectories. STR (Strategic Trajectory Revision): manages trajectory revisions during the execution phase, contributing to ICAO's FF-ICE 2 TBO concept. LOA (Digitalised/Dynamic Letters of Agreement): digitalises and standardises LoAs, enabling interoperable exchange between stakeholders. TSE (Trajectory Synchronisation in Execution): improves ATC and network processes through synchronisation of local and network trajectories, enhancing exchanges between the Network Manager and ANSPs to enable a reference 4D trajectory supporting coordination. The NETWORK TBO-2 consortium, coordinated by EUROCONTROL with oversight from the Project Management Board and SJU, gathers 10 ANSPs, 3 airspace users, 13 industry partners (airborne and ground), and 2 research organisations. The project will deliver TRL6 data packs by mid-2029, with major validation exercises in 2028. Execution will be closely coordinated with European initiatives and ICAO's ATMRPP working group to ensure complementarity, maximise R&D outcomes, and support future implementation and standardisation.

Keywords: not defined

Project number: 101288946

Project name: Network Trajectory Based Operations 2

Project acronym: NET-TBO 2

Call: HORIZON-SESAR-2025-DES-IR-02

Topic: HORIZON-SESAR-2025-DES-IR-02-WA1-1

Type of action: HORIZON JU Research and Innovation Actions

Granting authority: SESAR3 Joint Undertaking

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

Project starting date: fixed date: 1 September 2026

Project end date: 31 August 2029

Project duration: 36 months

Consortium agreement: Yes

2. Participants

List of participants:

N°	Role	Short name	Legal name	Ctry	PIC	Max grant amount
1	COO (IO)	EUROCONTROL	EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION	BE	999483733	0.00
2	BEN	AIR FRANCE	AIR FRANCE SA	FR	937590070	611 679.29
3	BEN	TERN	TERN SYSTEMS EHF	IS	887286355	1 032 269.71
3.1	AE	TERN HU	Tern Systems kft	HU	870091747	84 087.50
4	BEN	ANS CR	RIZENI LETOVEHO PROVOZU CESKE REPUBLIKY STATNI PODNIK	CZ	954552363	191 362.50
5	BEN	AI OPS SAS	AIRBUS OPERATIONS SAS	FR	991247948	490 136.52

N°	Role	Short name	Legal name	Ctry	PIC	Max grant amount
6	BEN	AIRBUS	AIRBUS	FR	999963010	551 590.38
7	BEN	AUSTRO CONTROL	AUSTRO CONTROL OSTERREICHISCHE GESELLSCHAFT FUR ZIVILLUFTFAHRT MBH	AT	998956635	51 668.06
8	BEN	AVTECH	AVTECH SWEDEN AB	SE	997849574	38 937.50
9	BEN	BAS	BOEING AEROSPACE SPAIN	ES	999648730	172 424.00
10	BEN	CAE AUSTRIA	CAE FLIGHT SERVICES AUSTRIA GMBH	AT	884813728	160 392.40
11	BEN	CAE Poland	CAE FLIGHT SERVICES POLAND SP ZOO	PL	879878465	327 373.90
12	BEN	COLLINS	COLLINS AEROSPACE IRELAND, LIMITED	IE	971136162	118 034.00
13	BEN	LUFTHANSA	DEUTSCHE LUFTHANSA AKTIENGESELLSCHAFT	DE	999965532	317 152.54
14	BEN	DLR	DEUTSCHES ZENTRUM FUR LUFT - UND RAUMFAHRT EV	DE	999981731	55 244.78
15	BEN	DFS	DFS DEUTSCHE FLUGSICHERUNG GMBH	DE	999936820	591 307.70
16	BEN	DSNA	DIRECTION DES SERVICES DE LA NAVIGATION AERIENNE	FR	928673636	325 234.42
17	BEN	ENAV	ENAV SPA	IT	998197513	272 589.40
18	BEN	FOR	FREQUENTIS ORTHOGON GMBH	DE	957912443	90 000.00
19	BEN	HON CZ	HONEYWELL INTERNATIONAL SRO	CZ	997834830	400 000.00
19.1	AE	HON FR	HONEYWELL AEROSPACE	FR	923041331	52 000.00
20	BEN	HUNGAROCONTROL	HUNGAROCONTROL MAGYAR LEGIFORGALMISZOLGALAT ZARTKORUEN MUKODO RESZVENYTARSASAG	HU	941767472	59 313.64
21	BEN	INDRA	INDRA SISTEMAS SA	ES	999959130	766 089.11
22	BEN	ISAVIA ANS EHF	ISAVIA ANS EHF	IS	896093664	109 922.58
23	BEN	LEONARDO	LEONARDO - SOCIETA PER AZIONI	IT	998627417	83 857.40
24	BEN	NATS	NATS (EN ROUTE) PUBLIC LIMITED COMPANY	UK	997542763	705 185.44
25	BEN	NAV CANADA	NAV CANADA	CA	924404957	449 927.64
26	BEN	PACE GmbH	PACE AEROSPACE ENGINEERING AND INFORMATION TECHNOLOGY GMBH	DE	992602068	361 550.00
27	BEN	PANSA	POLSKA AGENCJA ZEGLUGI POWIETRZNEJ	PL	995562023	290 892.00
28	BEN	SKYGUIDE	SKYGUIDE, SA SUISSE POUR LES SERVICES DE LA NAVIGATION AERIENNE CIVILS ET MILITAIRES	CH	958184334	100 173.67
29	BEN	NLR	STICHTING KONINKLIJK NEDERLANDS LUCHT - EN RUIMTEVAARTCENTRUM	NL	999987066	85 554.92
30	BEN	SWISS	SWISS INTERNATIONAL AIR LINES AG	CH	927320680	389 645.36
31	BEN	THALES LAS	THALES LAS FRANCE SAS	FR	999961555	164 203.18
32	BEN	TXT E-TECH	TXT E-TECH SRL	IT	884000383	186 025.00
33	BEN	THALES AVS	THALES AVS FRANCE SAS	FR	999984447	91 544.69
34	BEN	INGENAV	INNOVACION Y GESTION EN NAVEGACION AEREA SL	ES	937877190	124 670.00
Total						9 902 039.23

Coordinator:

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

3. Grant

Maximum grant amount, total estimated eligible costs and contributions and funding rate:

Maximum grant amount (Annex 2)	Maximum grant amount (award decision)
9 902 039.23	9 902 039.23

Grant form: Lump Sum

Grant mode: Action grant

Budget categories/activity types: Lump sum contributions

Cost eligibility options: n/a

Budget flexibility: No

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
1	1	18	Periodic report	60 days after end of reporting period	Interim payment	90 days from receiving periodic report
2	19	36	Periodic report	60 days after end of reporting period	Final payment	90 days from receiving periodic report

Prefinancing payments and guarantees:

Prefinancing payment	
Type	Amount
Prefinancing 1 (initial)	5 941 223.54

Reporting and payment modalities (art 21, 22):

Mutual Insurance Mechanism (MIM): Yes

MIM contribution: 5% of the maximum grant amount (495 101.96), 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 condititions (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

No-profit rule: n/a

Late payment interest: ECB + 3.5%

Bank account for payments:

BE36310109735681 BBRUBEBBXXX

Conversion into euros: n/a

Reporting language: Language of the Agreement

4.3 Certificates (art 24): n/a

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 affiliated entities — n/a

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 190 of EU Financial Regulation 2024/2509[4] 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(38) of EU Financial Regulation 2024/2509, i.e. non-financial resources made available free of charge by third parties.

[4] For the definition, see Article 190 Regulation (EU, Euratom) 2024/2509 of the European Parliament and of the Council of 23 September 2024 on the financial rules applicable to the general budget of the Union (recast) ('EU Financial Regulation') (OJ L, 2024/2509, 26.9.2024): "**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 138(1) and 143(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".

Fraud — Fraud within the meaning of Article 3 of EU Directive 2017/1371[5] 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[6], 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[7].

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 138(1)(c) of EU Financial Regulation 2024/2509[8].

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 **101288946 — NET-TBO 2** ('action'), as described in Annex 1.

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

[5] 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).
[6] OJ C 316, 27.11.1995, p. 48.
[7] 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).
[8] 'Professional misconduct' includes, in particular, the following: violation of ethical standards of the profession; wrongful conduct with impact on professional credibility; breach of generally accepted professional ethical standards; false declarations/misrepresentation of information; participation in a cartel or other agreement distorting competition; violation of IPR; attempting to influence decision-making processes by taking advantage, through misrepresentation, of a conflict of interests, or to obtain confidential information from public authorities to gain an advantage; incitement to discrimination, hatred or violence or similar activities contrary to the EU values where negatively affecting or risking to affect the performance of a legal commitment.

The grant is an action grant[9] which takes the form of a lump sum grant for the completion of work packages.

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

Not applicable

5.4 Estimated budget, budget categories and forms of funding

The estimated budget for the action (lump sum breakdown) is set out in Annex 2.

It contains the estimated eligible contributions for the action (lump sum contributions), broken down by participant and work package.

Annex 2 also shows the types of contributions (forms of funding)[10] to be used for each work package.

5.5 Budget flexibility

Budget flexibility does not apply; changes to the estimated budget (lump sum breakdown) always require an amendment (see Article 39).

Amendments for transfers between *work packages* are moreover possible only if:

- the work packages concerned are not already completed (and declared in a financial statement) and
- the transfers are justified by the technical implementation of the action.

ARTICLE 6 — ELIGIBLE AND INELIGIBLE CONTRIBUTIONS

6.1 and 6.2 General and specific eligibility conditions

Lump sum contributions are eligible ('eligible contributions'), if:

(a) they are set out in Annex 2 and

(b) the work packages are completed and the work is properly implemented by the beneficiaries and/or the results are achieved, in accordance with Annex 1 and during in the period set out in Article 4 (with the exception of work/results relating to the submission of the final periodic report, which may be achieved afterwards; see Article 21)

They will be calculated on the basis of the amounts set out in Annex 2.

[9] For the definition, see Article 183(2)(a) EU Financial Regulation 2024/2509: '**action grant**' means an EU grant to finance "an action intended to help achieve a Union policy objective".
[10] See Article 125 EU Financial Regulation 2024/2509.

6.3 Ineligible contributions

'Ineligible contributions' are:

(a) lump sum contributions that do not comply with the conditions set out above (see Article 6.1 and 6.2)

(b) lump sum contributions for activities already funded 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 case:

(i) Synergy actions: not applicable

(c) other:

(i) country restrictions for eligible costs: not applicable.

6.4 Consequences of non-compliance

If a beneficiary declares lump sum 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. Lump sum 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): not applicable
- 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'[11] (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.

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.

ARTICLE 8 — AFFILIATED ENTITIES

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

- **Tern Systems kft (TERN HU)**, PIC 870091747, linked to TERN SYSTEMS EHF (TERN)
- **HONEYWELL AEROSPACE (HON FR)**, PIC 923041331, linked to HONEYWELL INTERNATIONAL SRO (HON CZ)

Affiliated entities can charge lump sum 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 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.

[11] For the definition, see Article 190(2) EU Financial Regulation 2024/2509: "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 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

Not applicable

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 contributions to the action (no lump sum contributions) and their costs are considered entirely covered by the lump sum contributions paid to the beneficiaries.

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

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 beneficiaries' costs for subcontracting are considered entirely covered by the lump sum contributions for implementing the work packages (irrespective of the actual subcontracting costs incurred, if any).

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: use qualified external auditors which are independent and comply with comparable standards as those set out in EU Directive 2006/43/EC[12]
- for the controls under Article 25: 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[13]
- 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).

[12] 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 (OJ L 157, 9.6.2006, p. 87).

[13] 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 (OJ L 157, 9.6.2006, p. 87).

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 system, external audits, financing of third parties, rules on recovery and exclusion, information on recipients and protection of personal data; see Article 157 EU Financial Regulation 2024/2509).

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 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 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 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[14] 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.

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] 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).

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[15].

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[16]).

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

[15] 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).

[16] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural 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).

- 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.

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 and

(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 the 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 lump sum 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) linked action information: not applicable

(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 (proper implementation of the work and/or achievement of the results as described in Annex 1) in line with the accepted standards in the respective field (if any); beneficiaries do not need to keep specific records on the actual costs incurred.

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, lump sum 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 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 statement (consolidated statement for the consortium)
- the explanation on the use of resources (or detailed cost reporting table): not applicable
- the certificates on the financial statements (CFS): not applicable.

The **financial statement** must contain the lump sum contributions indicated in Annex 2, for the work packages that were completed during the reporting period.

For the last reporting period, the beneficiaries may exceptionally also declare partial lump sum contributions for work packages that were not completed (e.g. due to force majeure or technical impossibility).

Lump sum contributions which are not declared in a financial statement will not be taken into account by the granting authority.

By signing the financial statement (directly in the Portal Periodic Reporting tool), the coordinator confirms (on behalf of the consortium) that:

- the information provided is complete, reliable and true
- the lump sum contributions declared are eligible (in particular, the work packages have been completed, that the work has been properly implemented and/or the results were achieved in accordance with Annex 1; see Article 6)
- the proper implementation and/or achievement 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).

In case of recoveries (see Article 22), beneficiaries will be held responsible also for the lump sum contributions declared for their affiliated entities (if any).

21.3 Currency for financial statements and conversion into euros

The financial statements must be drafted in euro.

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.

This will be done on the basis of work packages already completed in previous interim payments. Payments for ongoing/not yet completed work packages which the beneficiary was working on before termination (if any) will therefore be made only later on, with the next interim or final payments when those work packages have been completed.

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, on the basis of the beneficiary's lump sum contributions for the work packages which were approved in previous interim payments.

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:

{total accepted EU contribution for the beneficiary

minus

{prefinancing and interim payments received (if any)}}.

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.

22.3.3 Interim payments

Interim payments reimburse the eligible lump sum contributions claimed for work packages implemented 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 and the work packages declared. Their approval does not imply recognition of compliance, authenticity, completeness or correctness of their content.

Incomplete work packages and work packages that have not been delivered or cannot be approved will be rejected (see Article 27).

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 first calculate the 'accepted EU contribution' for the action for the reporting period, by calculating the lump sum contributions for the approved work packages.

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 eligible lump sum contributions claimed for the implemented work packages (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 and the work packages declared. Their approval does not imply recognition of compliance, authenticity, completeness or correctness of their content.

Work packages (or parts of them) that have not been delivered or cannot be approved will be rejected (see Article 27).

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 lump sum contributions for the approved work packages.

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

Not applicable

Step 3 — Reduction due to the no-profit rule

Not applicable

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:

{final grant amount

minus

{prefinancing and interim payments made (if any)}}.

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:

{{{total accepted EU contribution for the beneficiary

divided by

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 lump sum 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

<u>Step 1 — Calculation of the revised total accepted EU contribution</u>

The granting authority will first calculate the 'revised accepted EU contribution' for the beneficiary, by calculating the '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:

{{total accepted EU contribution for the beneficiary

divided by

total accepted EU contribution for the action}

multiplied by

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 2024/2509.

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 23.5, 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[17] 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 reference rate applied by the European

[17] 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).

Central Bank (ECB) for its main refinancing operations in euros, plus the percentage specified in the Data Sheet (Point 4.2). The ECB reference rate to be used 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

Not applicable

ARTICLE 24 — CERTIFICATES

Not applicable

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 lump sum 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. 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, unless otherwise agreed with the granting authority (see Data Sheet, Point 4.2).

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, unless otherwise agreed with the granting authority (see Data Sheet, Point 4.2).

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[18] and No 2185/96[19]
- 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 263 of EU Financial Regulation 2024/2509.

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 findings

[18] 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).

[19] 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).

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).

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

Findings 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 lump sum 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, lump sum 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 CONTRIBUTIONS

27.1 Conditions

The granting authority will — at interim payment, final payment or afterwards — reject any lump sum 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 lump sum 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 lump sum contributions, it will deduct them from the lump sum 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), failure to cooperate with checks, reviews, audits and investigations, 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 (extension of findings; see Article 25.5).

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 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), failure to cooperate with checks, reviews, audits and investigations, 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 (extension of findings; see Article 25.5).

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. Moreover, no work may be done. Ongoing work packages must be interrupted and no new work packages may be started.

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), failure to cooperate with checks, reviews, audits and investigations, 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 (extension of findings; see Article 25.5)

(c) other:

(i) linked action issues: not applicable

(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. Moreover, no work may be done. Ongoing work packages must be interrupted and no new work packages may be started.

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 lump sum contributions for activities implemented before the end of work date (see Article 22). Partial lump sum contributions for work packages that were not completed (e.g. due to technical reasons) may exceptionally be taken into account.

If the granting authority does not receive the report within the deadline, only lump sum contributions which are included in an approved periodic report will be taken into account (no 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

(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 reports submitted in previous interim payments (i.e. beneficiary's lump sum contributions for completed and approved work packages).

Lump sum contributions for ongoing/not yet completed work packages will have to be included in the periodic report for the next reporting periods when those work packages have been completed.

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), failure to cooperate with checks, reviews, audits and investigations, 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; see Article 25.5)

(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) linked action issues: not applicable

(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 lump sum contributions for activities implemented before termination takes effect (see Article 22). Partial lump sum contributions for work packages that were not completed (e.g. due to technical reasons) may exceptionally be taken into account.

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 lump sum contributions which are included in an approved periodic report will be taken into account (no 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

(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 reports submitted in previous interim payments (i.e. beneficiary's lump sum contributions for completed and approved work packages).

Lump sum contributions for ongoing/not yet completed work packages will have to be included in the periodic report for the next reporting periods when those work packages have been completed.

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 137 to 148 EU Financial Regulation 2024/2509 and Articles 4 and 7 of Regulation 2988/95[20]).

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
- was unforeseeable, exceptional situation and beyond the parties' control

[20] 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 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[21], 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).

The request for amendment must include:

[21] 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 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

Raul MEDINA CABALLERO with ECAS id n00c44xp signed in the Participant Portal on 12/05/2026 at 11:55:01 (transaction id SigId-8443-pzdi3ax3tARVgBquRShZRAZCWzUUbA7YhKzY2BEvpGNpJzX0GR0VpdlabM5gM0oBLAipzxhFLDoY26gqzVaAilt0-R2zIpfT8xjMVQv7ei6TcSG-zaLcchp6rMUlW6suzx53XS8W7RLwtzPB6hLfWt4cNVRKHG7Jdk1hYheYIx2Vc6mFtkzbcbfPzSl3RBvJPy097Ki). Timestamp by third party at 2026.05.12 11:55:12 CEST

For the granting authority

Signed by Andreas BOSCHEN with ECAS id iboscand as an authorised representative on 12-05-2026 12:07:34 (transaction id SigId-8559-KVdoEZ8zJta1TIGFxh1zGuZjAj4ZPQLHhrNj7IGqn16KzM11DshoM77PeUXIRR46Rcs8YmEloZ9ODMGwfnzc0Li-R2zIpfT8xjMVQv7ei6TcSG-BB5VQcaZtcmWMNGoeLai4v6P5Za4rTyadTkcDUAbL7wgVQ49pkb7uYQSsTlni9XzV9bGgEdDvI25zKgtmZB2Dq) 2026.05.12 12:07:49 CEST

European Commission

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.

PROJECT *Grant Preparation (General Information screen) — Enter the info.*	
Project number:	101288946
Project name:	Network Trajectory Based Operations 2
Project acronym:	NET-TBO 2
Call:	HORIZON-SESAR-2025-DES-IR-02
Topic:	HORIZON-SESAR-2025-DES-IR-02-WA1-1
Type of action:	HORIZON-JU-RIA
Service:	SESAR
Project starting date:	fixed date: 1 September 2026
Project duration:	36 months

TABLE OF CONTENTS

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.*
The NETWORK TBO-2 project will validate SESAR Trajectory-Based Operations (TBO) Solutions covering all aspects of trajectory management processes, from planning to execution, with a strong focus on network actors. A transversal activity will develop a SESAR global TBO document, serving as a cornerstone for integrating TBO activities and ensuring global interoperability. The project will validate four operational solutions, targeting TRL6 by project end: UDT (Unconstrained Desired Trajectory): addresses the UDT concept from the perspectives of Airspace Users, the Network Manager, and ANSPs, across all flight phases. The UDT represents the "desired optimum" provided by the AU as a reference against which to assess trajectories. STR (Strategic Trajectory Revision): manages trajectory revisions during the execution phase, contributing to ICAO's FF-ICE 2 TBO concept. LOA (Digitalised/Dynamic Letters of Agreement): digitalises and standardises LoAs, enabling interoperable exchange between stakeholders. TSE (Trajectory Synchronisation in Execution): improves ATC and network processes through synchronisation of local and network trajectories, enhancing exchanges between the Network Manager and ANSPs to enable a reference 4D trajectory supporting coordination. The NETWORK TBO-2 consortium, coordinated by EUROCONTROL with oversight from the Project Management Board and SJU, gathers 10 ANSPs, 3 airspace users, 13 industry partners (airborne and ground), and 2 research organisations. The project will deliver TRL6 data packs by mid-2029, with major validation exercises in 2028. Execution will be closely coordinated with European initiatives and ICAO's ATMRPP working group to ensure complementarity, maximise R&D outcomes, and support future implementation and standardisation.

LIST OF PARTICIPANTS

PARTICIPANTS

Grant Preparation (Beneficiaries screen) — Enter the info.

Number	Role	Short name	Legal name	Country	PIC
1	COO	EUROCONTROL	EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION	BE	999483733
2	BEN	AIR FRANCE	AIR FRANCE SA	FR	937590070
3	BEN	TERN	TERN SYSTEMS EHF	IS	887286355
3.1	AE	TERN HU	Tern Systems kft	HU	870091747
4	BEN	ANS CR	RIZENI LETOVEHO PROVOZU CESKE REPUBLIKY STATNI PODNIK	CZ	954552363
5	BEN	AI OPS SAS	AIRBUS OPERATIONS SAS	FR	991247948
6	BEN	AIRBUS	AIRBUS	FR	999963010

PARTICIPANTS *Grant Preparation (Beneficiaries screen) — Enter the info.*					
Number	**Role**	**Short name**	**Legal name**	**Country**	**PIC**
7	BEN	AUSTRO CONTROL	AUSTRO CONTROL OSTERREICHISCHE GESELLSCHAFT FUR ZIVILLUFTFAHRT MBH	AT	998956635
8	BEN	AVTECH	AVTECH SWEDEN AB	SE	997849574
9	BEN	BAS	BOEING AEROSPACE SPAIN	ES	999648730
10	BEN	CAE AUSTRIA	CAE FLIGHT SERVICES AUSTRIA GMBH	AT	884813728
11	BEN	CAE Poland	CAE FLIGHT SERVICES POLAND SP ZOO	PL	879878465
12	BEN	COLLINS	COLLINS AEROSPACE IRELAND, LIMITED	IE	971136162
13	BEN	LUFTHANSA	DEUTSCHE LUFTHANSA AKTIENGESELLSCHAFT	DE	999965532
14	BEN	DLR	DEUTSCHES ZENTRUM FUR LUFT - UND RAUMFAHRT EV	DE	999981731
15	BEN	DFS	DFS DEUTSCHE FLUGSICHERUNG GMBH	DE	999936820
16	BEN	DSNA	DIRECTION DES SERVICES DE LA NAVIGATION AERIENNE	FR	928673636
17	BEN	ENAV	ENAV SPA	IT	998197513
18	BEN	FOR	FREQUENTIS ORTHOGON GMBH	DE	957912443
19	BEN	HON CZ	HONEYWELL INTERNATIONAL SRO	CZ	997834830
19.1	AE	HON FR	HONEYWELL AEROSPACE	FR	923041331
20	BEN	HUNGAROCONTR	HUNGAROCONTROL MAGYAR LEGIFORGALMISZOLGALAT ZARTKORUEN MUKODO RESZVENYTARSASAG	HU	941767472
21	BEN	INDRA	INDRA SISTEMAS SA	ES	999959130
22	BEN	ISAVIA ANS EHF	ISAVIA ANS EHF	IS	896093664
23	BEN	LEONARDO	LEONARDO - SOCIETA PER AZIONI	IT	998627417
24	BEN	NATS	NATS (EN ROUTE) PUBLIC LIMITED COMPANY	UK	997542763
25	BEN	NAV CANADA	NAV CANADA	CA	924404957
26	BEN	PACE GmbH	PACE AEROSPACE ENGINEERING AND INFORMATION TECHNOLOGY GMBH	DE	992602068
27	BEN	PANSA	POLSKA AGENCJA ZEGLUGI POWIETRZNEJ	PL	995562023
28	BEN	SKYGUIDE	SKYGUIDE, SA SUISSE POUR LES SERVICES DE LA NAVIGATION AERIENNE CIVILS ET MILITAIRES	CH	958184334
29	BEN	NLR	STICHTING KONINKLIJK NEDERLANDS LUCHT - EN RUIMTEVAARTCENTRUM	NL	999987066
30	BEN	SWISS	SWISS INTERNATIONAL AIR LINES AG	CH	927320680
31	BEN	THALES LAS	THALES LAS FRANCE SAS	FR	999961555
32	BEN	TXT E-TECH	TXT E-TECH SRL	IT	884000383

PARTICIPANTS *Grant Preparation (Beneficiaries screen) — Enter the info.*					
Number	**Role**	**Short name**	**Legal name**	**Country**	**PIC**
33	BEN	THALES AVS	THALES AVS FRANCE SAS	FR	999984447
34	BEN	INGENAV	INNOVACION Y GESTION EN NAVEGACION AEREA SL	ES	937877190

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 - EUROCONTROL	79.00	1	36	D1.1 – PMP D1.2 – CDEP-Initial D1.3 – DMP-Initial D1.4 – CDEP-Intermediate-1 D1.5 – CDEP-Intermediate-2 D1.6 – CDEP-Final D1.7 – DMP-Intermediate D1.8 – DMP-Final
WP2	TBO Concept Development – Phase 1	1 - EUROCONTROL	50.15	1	18	D2.1 – Initial SESAR Global TBO Document
WP3	TBO Concept Development – Phase 2	1 - EUROCONTROL	48.41	19	36	D3.1 – Final SESAR Global TBO Document
WP4	UDT – Phase 1	2 - AIR FRANCE	79.39	1	18	D4.1 – UDT – Initial SPR-INTEROP/OSED D4.2 – UDT – Initial TS/IRS D4.3 – UDT – Initial STD D4.4 – UDT – Initial REG D4.5 – UDT – ValP D4.6 – UDT – Initial Contextual Note D4.7 – UDT – Intermediate-1 STD D4.8 – UDT – Intermediate-2 STD D4.9 – UDT – Intermediate-1 REG D4.10 – UDT – Intermediate-2 REG
WP5	UDT – Phase 2	2 - AIR FRANCE	82.25	19	36	D5.1 – UDT – Final SPR-INTEROP/OSED D5.2 – UDT – Final TS/IRS D5.3 – UDT – Final STD

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
						D5.4 – UDT – Final REG D5.5 – UDT – ValR D5.6 – UDT – CBA D5.7 – UDT – Final Contextual Note
WP6	STR – Phase 1	6 - AIRBUS	513.18	1	18	D6.1 – STR – Initial SPR-INTEROP/OSED D6.2 – STR – Initial TS/IRS D6.3 – STR – Initial STD D6.4 – STR – Initial REG D6.5 – STR – ValP D6.6 – STR – Initial Contextual Note D6.7 – STR – Intermediate-1 STD D6.8 – STR – Intermediate-2 STD D6.9 – STR – Intermediate-1 REG D6.10 – STR – Intermediate-2 REG
WP7	STR – Phase 2	6 - AIRBUS	457.34	19	36	D7.1 – STR – Final SPR-INTEROP/OSED D7.2 – STR – Final TS/IRS D7.3 – STR – Final STD D7.4 – STR – Final REG D7.5 – STR – ValR D7.6 – STR – CBA D7.7 – STR – Final Contextual Note
WP8	LOA – Phase 1	3 - TERN	124.72	1	18	D8.1 – LOA – Initial SPR-INTEROP/OSED D8.2 – LOA – Initial TS/IRS D8.3 – LOA – Initial STD D8.4 – LOA – Initial REG D8.5 – LOA – ValP D8.6 – LOA – Initial Contextual Note D8.7 – LOA – Intermediate-1 STD

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**
						D8.8 – LOA – Intermediate-2 STD D8.9 – LOA – Intermediate-1 REG D8.10 – LOA – Intermediate-2 REG
WP9	LOA – Phase 2	3 - TERN	126.88	19	36	D9.1 – LOA – Final SPR-INTEROP/OSED D9.2 – LOA – Final TS/IRS D9.3 – LOA – Final STD D9.4 – LOA – Final REG D9.5 – LOA – ValR D9.6 – LOA – CBA D9.7 – LOA – Final Contextual Note
WP10	TSE – Phase 1	1 - EUROCONTROL	78.60	1	18	D10.1 – TSE – Initial SPR-INTEROP/ OSED D10.2 – TSE – Initial TS/IRS D10.3 – TSE – Initial STD D10.4 – TSE – Initial REG D10.5 – TSE – ValP D10.6 – TSE – Initial Contextual Note D10.7 – TSE – Intermediate-1 STD D10.8 – TSE – Intermediate-2 STD D10.9 – TSE – Intermediate-1 REG D10.10 – TSE – Intermediate-2 REG
WP11	TSE – Phase 2	1 - EUROCONTROL	81.00	19	36	D11.1 – TSE – Final SPR-INTEROP/OSED D11.2 – TSE – Final TS/IRS D11.3 – TSE – Final STD D11.4 – TSE – Final REG D11.5 – TSE –ValR D11.6 – TSE – CBA D11.7 – TSE – Final Contextual Note

Work package WP1 – Project Management

Work Package Number	WP1	**Lead Beneficiary**	1 - EUROCONTROL
Work Package Name	Project Management		
Start Month	1	**End Month**	36

Objectives
The objective of this work package is to ensure the effective coordination, management, and quality assurance of the NETWORK TBO-2 project, in line with SESAR guidelines and the Grant Agreement conditions. This WP also aims to facilitate efficient interaction with the SESAR 3 Joint Undertaking and ensure the visibility and dissemination of project results.

Description
This work package covers the transversal and continuous activities required for the successful execution of the project, including technical, administrative, and strategic coordination. It includes the following key tasks: •Task 1.1 PMP – Project Management Plan: This task will define the overall project management structure, decision-making processes, roles and responsibilities, project planning, and monitoring procedures. The PMP will also address quality assurance mechanisms, change management, and risk mitigation strategies. • Task 1.2 CDEP – Communication and Dissemination Exploitation Plan: This task will outline the strategy and concrete actions for communication, dissemination, stakeholder engagement, and outreach. It will include branding, use of digital channels, participation in events, and alignment with SESAR 3 JU communication requirements. • Task 1.3 DMP – Data Management Plan: This task will define how project data will be handled, including data collection, storage, access rights, sharing policies, protection of sensitive information, and compliance with open science principles where applicable. It ensures that the project's data lifecycle aligns with FAIR (Findable, Accessible, Interoperable, Reusable) data management standards. All these tasks will be implemented under the supervision of the project coordinator and in close collaboration with all consortium partners. To steer and guide the project, the project coordinator will convene a Project Management Board two times per year with attendance from the partners and the SJU. As is already the case for Wave 1, the EUROCONTROL-led ATC TBO-2 and NET TBO-2 projects will collaborate closely thanks to: the use of common EUROCONTROL resources for project coordination and grant management tasks; joint communication and dissemination activities (e.g., as was the case for the Global TBO Symposium in 2024); convening a Joint Advisory Board; promoting synergy in our dealings with the S3JU Programme Office.

Work package WP2 – TBO Concept Development – Phase 1

Work Package Number	WP2	**Lead Beneficiary**	1 - EUROCONTROL
Work Package Name	TBO Concept Development – Phase 1		
Start Month	1	**End Month**	18

Objectives
The objective of his work package is to define and consolidate a harmonised and operationally meaningful concept for Trajectory-Based Operations (TBO) at network level. It aims to provide a common vision and foundational reference to guide the development, alignment, and validation of the solutions within the NETWORK TBO-2 project. In complement to NETWORK TBO-2 effort some contribution is expected from ATC TBO-2 consortium.

Description
WP2: TBO Concept Development – Phase 1

Task 2.1 Initial SESAR Global TBO Document covers the elaboration of the Initial SESAR Global TBO Document and its two Annexes Task Leader: EUROCONTROL Task Contributors: AIRBUS, AIR FRANCE, BAS, COLLINS, DFS, DLR, DSNA, ENAV, FOR, LUFTHANSA, NATS, NAV CANADA, NLR, SKYGUIDE, SWISS, TERN DLR will lead the development of the annex on human-machine teaming. AIRBUS will lead the development of the Connected Aircraft concept instantiation annex.

Work package WP3 – TBO Concept Development – Phase 2

Work Package Number	WP3	**Lead Beneficiary**	1 - EUROCONTROL
Work Package Name	TBO Concept Development – Phase 2		
Start Month	19	**End Month**	36

Objectives
The objective of his work package is to define and consolidate a harmonised and operationally meaningful concept for Trajectory-Based Operations (TBO) at network level. It aims to provide a common vision and foundational reference to guide the development, alignment, and validation of the solutions within the NETWORK TBO-2 project. In complement to NETWORK TBO-2 effort some contribution is expected from ATC TBO-2 consortium.

Description
WP3: TBO Concept Development – Phase 2 •Task 3.1 Final SESAR Global TBO Document includes the refinement and delivery of the Final SESAR Global TBO Document, integrating feedback from initial validation and stakeholder consultation. Task Leader: EUROCONTROL Task Contributors: AIRBUS, AIR FRANCE, BOEING, COLLINS, DFS, DLR, DSNA, ENAV, FREQUENTIS, LUFTHANSA, NATS, NAV CANADA, NLR, SKYGUIDE, SWISS, TERN SYSTEMS. DLR will lead the development of the annex on human-machine teaming. AIRBUS will lead the development of the Connected Aircraft concept instantiation annex.

Work package WP4 – UDT – Phase 1

Work Package Number	WP4	**Lead Beneficiary**	2 - AIR FRANCE
Work Package Name	UDT – Phase 1		
Start Month	1	**End Month**	18

Objectives
The objective of this package is, to explore and validate the integration of the Unconstrained Desired Trajectory (UDT) concept to enhance the dynamicity and operational flexibility of ATM constraints, contributing to a more efficient and user-responsive airspace management framework. WP4 focuses on the initial development of Solution UDT, targeting the integration of Unconstrained Desired Trajectory (UDT) in support of constraints management. It aims to establish the conceptual and technical foundations required for validation in WP5.

Description
WP4: UDT – Phase 1 Task 4.1 – Initial STD Preparation of input material for standardization bodies, based on the conceptual outcomes and system architecture emerging from the initial technical design.

Task Leader: EUROCONTROL Task Contributors: EUROCONTROL, AIR FRANCE, SWISS, LUFTHANSA, ANS CR, NAV CANADA, DSNA, CAE group, PACE, THALES Task 4.2 – Initial REG Identification of potential regulatory implications and preparation of early regulatory input, including gap analysis and recommendations for future alignment. Task Leader: EUROCONTROL Task Contributors: EUROCONTROL, AIR FRANCE, SWISS, LUFTHANSA, ANS CR, NAV CANADA, DSNA, CAE group, THALES Task 4.3 – Intermediate-1 STD Preparation of input material for standardization bodies, based on the conceptual outcomes and system architecture emerging from the initial technical design. Task Leader: EUROCONTROL Task Contributors: EUROCONTROL, AIR FRANCE, SWISS, LUFTHANSA, ANS CR, NAV CANADA, DSNA, CAE group, PACE, THALES Task 4.4 – Intermediate-1 REG Identification of potential regulatory implications and preparation of early regulatory input, including gap analysis and recommendations for future alignment. Task Leader: EUROCONTROL Task Contributors: EUROCONTROL, AIR FRANCE, SWISS, LUFTHANSA, ANS CR, NAV CANADA, DSNA, CAE group, THALES Task 4.5 – Initial SPR-INTEROP/OSED Development of the initial SPR-INTEROP/OSED to address the UDT concept in all flight and ATM phases. Task Leader: AIR FRANCE Task Contributors: EUROCONTROL, AIR FRANCE, SWISS, LUFTHANSA, ANS CR, NAV CANADA, DSNA, ENAV, CAE group, PACE, THALES Task 4.6 – Initial TS/IRS Development of the initial Technical Specifications and Interface Requirements Specifications to support implementation of UDT in all flight and ATM phases. Task Leader: AIR FRANCE Task Contributors: EUROCONTROL, AIR FRANCE, SWISS, LUFTHANSA, ANS CR, NAV CANADA, DSNA, CAE group, PACE, THALES Task 4.7 – ValP Definition of the validation approach, including objectives, methods, scenarios, and performance indicators, to be applied in Phase 2. Task Leader: AIR FRANCE Task Contributors: EUROCONTROL, AIR FRANCE, SWISS, LUFTHANSA, ANS CR, NAV CANADA, DSNA, CAE group, THALES Task 4.8 – Initial Contextual Note A summarized narrative capturing the purpose, operational context, value proposition, and recommended next steps for deployment. Task Leader: AIR FRANCE Task Contributors: NA Transversal Assessment Activities (included in tasks 4.5, 4.7) EUROCONTROL will lead Safety and Human Performance Assessment activities.

Work package WP5 – UDT – Phase 2

Work Package Number	WP5	**Lead Beneficiary**	2 - AIR FRANCE
Work Package Name	UDT – Phase 2		

Start Month	19	**End Month**	36

Objectives
The objective of this work package is to explore and validate the integration of the Unconstrained Desired Trajectory (UDT) concept to enhance the dynamicity and operational flexibility of ATM constraints, contributing to a more efficient and user-responsive airspace management framework. Building on the outputs of WP4, WP5 aims to consolidate the solution through validation activities, economic assessment, and final documentation. The objective is to demonstrate the maturity and added value of Solution UDT for the network-wide application of UDT.

Description

WP5: UDT – Phase 2

Task 5.1 – Intermediate-2 STD
Preparation of input material for standardization bodies, based on the conceptual outcomes and system architecture emerging from the initial technical design.
Task Leader: EUROCONTROL
Task Contributors: EUROCONTROL, AIR FRANCE, SWISS, LUFTHANSA, ANS CR, NAV CANADA, DSNA, CAE group, PACE, THALES

Task 5.2 – Intermediate-2 REG
Identification of potential regulatory implications and preparation of early regulatory input, including gap analysis and recommendations for future alignment.
Task Leader: EUROCONTROL
Task Contributors: EUROCONTROL, AIR FRANCE, SWISS, LUFTHANSA, ANS CR, NAV CANADA, DSNA, CAE group, THALES

Task 5.3 – ValR
Documentation of validation results and analysis of solution performance obtained during the validation exercises against the objectives defined in the Validation Plan.
Task Leader: SWISS
Task Contributors: EUROCONTROL, AIR FRANCE, SWISS, LUFTHANSA, ANS CR, NAV CANADA, DSNA, CAE group, AVTECH, TXT group

Task 5.4 – Final SPR-INTEROP/OSED
Development of the Final SPR-INTEROP/OSED to address the UDT concept in all flight and ATM phases.
Task Leader: AIR FRANCE
Task Contributors: EUROCONTROL, AIR FRANCE, SWISS, LUFTHANSA, ANS CR, NAV CANADA, DSNA, ENAV, CAE group, PACE GmbH, THALES LAS

Task 5.5 – Final TS/IRS
Development of the Final Technical Specifications and Interface Requirements Specifications to support implementation of UDT in all flight and ATM phases.
Task Leader: AIR FRANCE
Task Contributors: EUROCONTROL, AIR FRANCE, SWISS, LUFTHANSA, ANS CR, NAV CANADA, DSNA, CAE group, PACE GmbH, THALES LAS

Task 5.6 – Final STD
Preparation of input material for standardization bodies, based on the conceptual outcomes and system architecture emerging from the initial technical design.
Task Leader: EUROCONTROL
Task Contributors: EUROCONTROL, AIR FRANCE, SWISS, LUFTHANSA, ANS CR, NAV CANADA, DSNA, CAE group, PACE GmbH, THALES LAS

Task 5.7 – Final REG
Identification of potential regulatory implications and preparation of early regulatory input, including gap analysis and recommendations for future alignment.
Task Leader: EUROCONTROL

Task Contributors: EUROCONTROL, AIR FRANCE, SWISS, LUFTHANSA, ANS CR, NAV CANADA, DSNA, CAE group, THALES LAS Task 5.8 – CBA Task Leader: SWISS Task Contributors: EUROCONTROL, AIR FRANCE, LUFTHANSA, ANS CR, NAV CANADA, DSNA, CAE group, AVTECH, TXT group Task 5.9 – Final Contextual Note A summarized narrative capturing the purpose, operational context, value proposition, and recommended next steps for deployment. Task Leader: AIR FRANCE Task Contributors: NA Transversal assessment activities (included in tasks 5.3, 5.4) EUROCONTROL will lead Safety and Human Performance Assessment activities.

Work package WP6 – STR – Phase 1

Work Package Number	WP6	**Lead Beneficiary**	6 - AIRBUS
Work Package Name	STR – Phase 1		
Start Month	1	**End Month**	18

Objectives
The objective of this is to define the operational processes, services, and systems to support strategic trajectory revisions in execution that can be initiated by either the flight operations centre (FOC), flight, cockpit crew, the Network Manager (NM), or local air traffic flow management (ATFM) units. The scope of these work packages covers the interaction between the FOC and the NM and the intra-European coordination between NM and the concerned ANSPs. It includes the collaborative process from the moment the revision is requested by the FOC, NM or ANSPs to the moment the trajectory is agreed, and the revised flight plan is sent to all concerned actors. The research needs to establish how the new trajectory will be sent to the flight deck. Note that currently FF-ICE/R2 has not yet been defined by the ICAO Air Traffic Management Requirements and Performance Panel (ATMRPP) but this element is considered an FF-ICE/R2 precursor. The output of the R&I will contribute to building the global concept. The solution will also look for quick wins for the North Atlantic flow.

Description
WP6: STR – Phase 1 Task 6.1 – Initial STD Task Leader: EUROCONTROL Task Contributors: AIRBUS, AIR FRANCE, BAS, COLLINS, DSNA, DFS, HONEYWELL, LEONARDO, LUFTHANSA, NATS, NAV CANADA, NLR, TERN Task 6.2 – Initial REG. Task Leader: EUROCONTROL Task Contributors: AIRBUS, AIR FRANCE, BAS, COLLINS, DSNA, DFS, HONEYWELL, LEONARDO, LUFTHANSA, NATS, NAV CANADA, NLR, TERN Task 6.3 – Intermediate-1 STD Task Leader: EUROCONTROL Task Contributors: AIRBUS, AIR FRANCE, BAS, COLLINS, DSNA, DFS, HONEYWELL, LEONARDO, LUFTHANSA, NATS, NAV CANADA, NLR, TERN Task 6.4 – Intermediate-1 REG Task Leader: EUROCONTROL

Task Contributors: AIRBUS, AIR FRANCE, BAS, COLLINS, DSNA, DFS, HONEYWELL, LEONARDO, LUFTHANSA, NATS, NAV CANADA, NLR, TERN Task 6.5 – Initial SPR-INTEROP/OSED Drafting the initial SPR-INTEROP/OSED that will define the operational scope and technical enablers of the solution. Task Leader: AIRBUS Task Contributors: AIR FRANCE, ANS CR, BAS, COLLINS, DFS, DSNA, ENAV, FOR, ISAVIA ANS EHF, LEONARDO, LUFTHANSA, NATS, NAV CANADA, NLR, PANSA, SWISS. Task 6.6 – Initial TS/IRS Development of the initial Technical Specifications and Interface Requirements Specifications to support implementation of the strategic revision of the trajectory. Task Leader: EUROCONTROL Task Contributors: AIRBUS, AIR FRANCE, AVTECH, BOEING, CAE group, COLLINS, FOR, INDRA, HONEYWELL, LEONARDO, TERN, THALES LAS, TXT, PACE GmbH Task 6.7 – ValP Task Leader: DSNA Task Contributors: AIRBUS, AIR FRANCE, ANS CR, AVTECH, BOEING, CAE group, COLLINS, DFS, DLR, DSNA, FOR, HONEYWELL, INDRA, ISAVIA ANS, LEONARDO, LUFTHANSA, NATS, NAV CANADA, NLR, SWISS, TERN, THALES LAS, TXT, PACE GmbH Task 6.8 – Initial Contextual Note Task Leader: AIRBUS Task Contributors: EUROCONTROL

Work package WP7 – STR – Phase 2

Work Package Number	WP7	**Lead Beneficiary**	6 - AIRBUS
Work Package Name	STR – Phase 2		
Start Month	19	**End Month**	36

Objectives
The objective of this work package is to define the operational processes, services, and systems to support strategic trajectory revisions in execution that can be initiated by either the flight operations centre (FOC), flight, cockpit crew, the Network Manager (NM), or local air traffic flow management (ATFM) units. The scope of these work packages covers the interaction between the FOC and the NM and the intra-European coordination between NM and the concerned ANSPs. It includes the collaborative process from the moment the revision is requested by the FOC, NM or ANSPs to the moment the trajectory is agreed, and the revised flight plan is sent to all concerned actors. The research needs to establish how the new trajectory will be sent to the flight deck. Note that currently FF-ICE/R2 has not yet been defined by the ICAO Air Traffic Management Requirements and Performance Panel (ATMRPP) but this element is considered an FF-ICE/R2 precursor. The output of the R&I will contribute to building the global concept. The solution will also look for quick wins for the North Atlantic flow.

Description
Task 7.1 – Intermediate-2 STD Preparation of input material for standardization bodies, based on the conceptual outcomes and system architecture emerging from the initial technical design. Task Leader: EUROCONTROL Task Contributors: AIRBUS, AIR FRANCE, BAS, COLLINS, DSNA, DFS, HONEYWELL, LEONARDO, LUFTHANSA, NATS, NAV CANADA, NLR, TERN Task 7.2 – Intermediate-2 REG Identification of potential regulatory implications and preparation of early regulatory input, including gap analysis and recommendations for future alignment.

Task Leader: EUROCONTROL
Task Contributors: AIRBUS, AIR FRANCE, BAS, COLLINS, DSNA, DFS, HONEYWELL, LEONARDO, LUFTHANSA, NATS, NAV CANADA, NLR, TERN

Task 7.3 – ValR
Documentation of validation results and analysis of solution performance obtained during the validation exercises against the objectives defined in the Validation Plan.
Task Leader: DFS
Task Contributors: AIRBUS, AIR FRANCE, ANS CR, AVTECH, BAS, CAE group, COLLINS, DLR, DSNA, FOR, HONEYWELL, INDRA, ISAVIA ANS EHF, LEONARDO, LUFTHANSA, NATS, NAV CANADA, NLR, SWISS, TERN, THALES LAS, TXT group

Task 7.4 – Final SPR-INTEROP/OSED
Developing the final SPR-INTEROP/OSED that will define the operational scope and technical enablers of the solution.
Task Leader: AIRBUS
Task Contributors: AIR FRANCE, ANS CR, BAS, COLLINS, DFS, DSNA, ENAV, FOR, ISAVIA ANS, LEONARDO, LUFTHANSA, NATS, NAV CANADA, NLR, PANSA, SWISS

Task 7.5 – Final TS/IRS
Development of the final Technical Specifications and Interface Requirements Specifications to support implementation of the strategic revision of the trajectory.
Task Leader: EUROCONTROL
Task Contributors: AIRBUS, AIR FRANCE, AVTECH, BAS, CAE group, COLLINS, FOR, INDRA, HONEYWELL, LEONARDO, TERN, THALES LAS, TXT, PACE GmbH

Task 7.6 – Final STD
Preparation of input material for standardization bodies, based on the conceptual outcomes and system architecture emerging from the initial technical design.
Task Leader: EUROCONTROL
Task Contributors: AIRBUS, AIR FRANCE, BAS, COLLINS, DSNA, DFS, HONEYWELL, LEONARDO, LUFTHANSA, NATS, NAV CANADA, NLR, TERN

Task 7.7 – Final REG
Identification of potential regulatory implications and preparation of early regulatory input, including gap analysis and recommendations for future alignment.
Task Leader: EUROCONTROL
Task Contributors: AIRBUS, AIR FRANCE, BAS, COLLINS, DSNA, DFS, HONEYWELL, LEONARDO, LUFTHANSA, NATS, NAV CANADA, NLR, TERN

Task 7.8 – CBA
Assessment of the economic viability and potential benefits of implementing the strategic revision of the trajectory during the execution.
Task Leader: EUROCONTROL
Task Contributors: AIRBUS, AIR FRANCE, AVTECH, BAS, COLLINS, DFS, DLR, DSNA, FOR, HONEYWELL, ISAVIA ANS, LEONARDO, LUFTHANSA, NATS, NAV CANADA, NLR, SWISS, THALES LAS, TXT, PACE GmbH

Task 7.9 – Final Contextual Note
A summarized narrative capturing the purpose, operational context, value proposition, and recommended next steps for deployment.
Task Leader: AIRBUS
Task Contributors: EUROCONTROL

Work package WP8 – LOA – Phase 1

Work Package Number	WP8	**Lead Beneficiary**	3 - TERN
Work Package Name	LOA – Phase 1		
Start Month	1	**End Month**	18

Objectives
The objective of this workpackage is to define, develop, assess, and document a digital standard for the digitalisation of Letters of Agreement (LOA), a key enabler for advancing interoperability and automation within the European ATM network. In parallel, a high-TRL prototype of a Central Repository will be developed for the Network Manager (NM) to facilitate the secure storage, management, and exchange of Digital LOAs. A secondary objective is to address the dynamic nature of LOA conditions by designing the technical mechanisms for negotiation and publication of agreements into the NM Central Repository. WP8 will focus on defining Digital LOA requirements, drawing on operational feedback from both consortium members and external stakeholders. This will be followed by the development of an initial set of prototypes to support the first validation exercises.

Description
WP8: LOA – Phase 1 Task 8.1 – Initial STD Preparation of input material for standardization bodies, based on the conceptual outcomes and system architecture emerging from the initial technical design. Task Leader: EUROCONTROL Task Contributors: PANSA, TERN Task 8.2 – Initial REG Identification of potential regulatory implications and preparation of early regulatory input, including gap analysis and recommendations for future alignment. Task Leader: EUROCONTROL Task Contributors: PANSA, TERN Task 8.3 – Intermediate-1 STD Preparation of input material for standardization bodies, based on the conceptual outcomes and system architecture emerging from the initial technical design. Task Leader: EUROCONTROL Task Contributors: PANSA, TERN Task 8.4 – Intermediate-1 REG Identification of potential regulatory implications and preparation of early regulatory input, including gap analysis and recommendations for future alignment. Task Leader: EUROCONTROL Task Contributors: PANSA, TERN Task 8.5 – Initial SPR-INTEROP/OSED Drafting the initial OSED/SPR-INTEROP specifications. This task will define the operational scope and technical enablers of the solution. Task Leader: EUROCONTROL Task Contributors: TERN, ANS CR, AUSTROCONTROL, ENAV, PANSA, HUNGAROCONTROL, THALES AVS, INGENAV Task 8.6 – Initial TS/IRS Development of the initial Technical Specifications and Interface Requirements Specifications to support implementation of digital standard for the digitalisation of Letters of Agreement (LOA) which is a key enabler for advancing interoperability and automation within the European ATM network. Task Leader: TERN SYSTEMS Task Contributors: EUROCONTROL Task 8.7 – ValP Definition of the validation approach, including objectives, methods, scenarios, and performance indicators, to be applied in the validation activities planned in Phase 2. Task Leader: PANSA Task Contributors: EUROCONTROL, TERN, ANS CR, AUSTROCONTROL, HUNGAROCONTROL, THALES AVS, INGENAV

Task 8.8 – Initial Contextual Note A summarized narrative capturing the purpose, operational context, value proposition, and recommended next steps for deployment. Task Leader: TERN

Work package WP9 – LOA – Phase 2

Work Package Number	WP9	**Lead Beneficiary**	3 - TERN
Work Package Name	LOA – Phase 2		
Start Month	19	**End Month**	36

Objectives
The objective of this work package is to define, develop, assess, and document a digital standard for the digitalisation of Letters of Agreement (LOA), a key enabler for advancing interoperability and automation within the European ATM network. In parallel, a high-TRL prototype of a Central Repository will be developed for the Network Manager (NM) to facilitate the secure storage, management, and exchange of Digital LOAs. A secondary objective is to address the dynamic nature of LOA conditions by designing the technical mechanisms for negotiation and publication of agreements into the NM Central Repository.

Description
WP9: LOA – Phase 2 Task 9.1 – Intermediate-2 STD Preparation of input material for standardization bodies, based on the conceptual outcomes and system architecture emerging from the initial technical design. Task Leader: EUROCONTROL Task Contributors: PANSA, TERN Task 9.2 – Intermediate-2 REG Identification of potential regulatory implications and preparation of early regulatory input, including gap analysis and recommendations for future alignment. Task Leader: EUROCONTROL Task Contributors: PANSA, TERN Task 9.3 – Final SPR-INTEROP/OSED Developing the final OSED/SPR-INTEROP specifications. This task will define the operational scope and technical enablers of the solution. Task Leader: EUROCONTROL Task Contributors: TERN, ANS CR, AUSTROCONTROL, ENAV, PANSA, HUNGAROCONTROL, THALES AVS, INGENAV Task 9.4 – Final TS/IRS Development of the final Technical Specifications and Interface Requirements Specifications to support implementation of digital standard for the digitalisation of Letters of Agreement (LOA) which is a key enabler for advancing interoperability and automation within the European ATM network. Task Leader: TERN SYSTEMS Task Contributors: EUROCONTROL Task 9.5 – Final STD Preparation of input material for standardization bodies, based on the conceptual outcomes and system architecture emerging from the initial technical design. Task Leader: EUROCONTROL Task Contributors: PANSA, TERN Task 9.6 – Final REG

Identification of potential regulatory implications and preparation of early regulatory input, including gap analysis and recommendations for future alignment. Task Leader: EUROCONTROL Task Contributors: PANSA, TERN Task 9.7 – ValR Documentation of validation results and analysis of solution performance against the objectives defined in the Validation Plan. Task Leader: TERN Task Contributors: EUROCONTROL, TERN, ANS CR, AUSTROCONTROL, HUNGAROCONTROL, PANSA, THALES AVS, INGENAV Task 9.8 – CBA Assessment of the economic viability and potential benefits of implementing EFB-FMS ATC interactions enablers, including qualitative and quantitative indicators. Task Leader: EUROCONTROL Task Contributors: PANSA, TERN Task 9.9 – Final Contextual Note A summarized narrative capturing the purpose, operational context, value proposition, and recommended next steps for deployment. Task Leader: TERN

Work package WP10 – TSE – Phase 1

Work Package Number	WP10	**Lead Beneficiary**	1 - EUROCONTROL
Work Package Name	TSE – Phase 1		
Start Month	1	**End Month**	18

Objectives
The objective of this work package is to enhance the accuracy, consistency, and operational value of the Network Manager (NM) trajectory by integrating trajectory data from ANSPs through a newly designed SWIM Yellow Profile (YP) B2B service. This improved trajectory will be made available to operational stakeholders (Airspace users, Flow Management Positions (FMPs), and ATC planning functions).

Description
WP10: TSE – Phase 1 Task 10.1 – Initial STD Preparation of input material for standardization bodies, based on the conceptual outcomes and system architecture emerging from the initial technical design Task Leader: EUROCONTROL Task Contributors: AIR FRANCE, DFS, FOR, LEONARDO Task 10.2 – Initial REG Identification of potential regulatory implications and preparation of early regulatory input, including gap analysis and recommendations for future alignment. Task Leader: EUROCONTROL Task Contributors: AIR FRANCE, DFS, FOR, LEONARDO Task 10.3 – Intermediate-1 STD Preparation of input material for standardization bodies, based on the conceptual outcomes and system architecture emerging from the initial technical design Task Leader: EUROCONTROL Task Contributors: AIR FRANCE, DFS, FOR, LEONARDO

Task 10.4 – Intermediate-1 REG Identification of potential regulatory implications and preparation of early regulatory input, including gap analysis and recommendations for future alignment. Task Leader: EUROCONTROL Task Contributors: AIR FRANCE, DFS, FOR, LEONARDO Task 10.5 – Initial SPR-INTEROP/OSED Drafting the initial Operational Services and Environment Description (OSED), Safety and Performance Requirements (SPR), and Interoperability (INTEROP) specifications. Task Leader: EUROCONTROL Task Contributors: AIR FRANCE, DFS, FOR, LEONARDO Task 10.6 – Initial TS/IRS Development of the initial Technical Specifications and Interface Requirements Specifications to support improvement the accuracy, consistency, and operational value of the Network Manager (NM) trajectory by integrating trajectory data from ANSPs through a newly designed SWIM Yellow Profile (YP) B2B service. Task Leader: EUROCONTROL Task Contributors: AIR FRANCE, DFS, FOR, LEONARDO Task 10.7 – ValP Definition of the validation approach, including objectives, methods, scenarios, and performance indicators, to be applied in Phase 2. Task Leader: DFS Task Contributors: AIR FRANCE, EUROCONTROL, FOR, LEONARDO Task 10.8 – Initial Contextual Note A summarized narrative capturing the purpose, operational context, value proposition, and recommended next steps for deployment. Task Leader: EUROCONTROL

Work package WP11 – TSE – Phase 2

Work Package Number	WP11	**Lead Beneficiary**	1 - EUROCONTROL
Work Package Name	TSE – Phase 2		
Start Month	19	**End Month**	36

Objectives
The objective of these two work packages, structured in two sequential phases, is to enhance the accuracy, consistency, and operational value of the Network Manager (NM) trajectory by integrating trajectory data from ANSPs through a newly designed SWIM Yellow Profile (YP) B2B service. This improved trajectory will be made available to operational stakeholders (Airspace users, Flow Management Positions (FMPs), and ATC planning functions). Building on the outputs of WP10, WP11 aims to consolidate the solution through validation activities, economic assessment, and final documentation.

Description
WP11: TSE – Phase 2 Task 11.1 – Intermediate-2 STD Preparation of input material for standardization bodies, based on the conceptual outcomes and system architecture emerging from the initial technical design Task Leader: EUROCONTROL Task Contributors: AIR FRANCE, DFS, FOR, LEONARDO Task 11.2 – Intermediate-2 REG Identification of potential regulatory implications and preparation of early regulatory input, including gap analysis and recommendations for future alignment.

Task Leader: EUROCONTROL Task Contributors: AIR FRANCE, DFS, FOR, LEONARDO Task 11.3 – Final SPR-INTEROP/OSED Developing the final Operational Services and Environment Description (OSED), Safety and Performance Requirements (SPR), and Interoperability (INTEROP) specifications. Task Leader: EUROCONTROL Task Contributors: AIR FRANCE, DFS, FOR, LEONARDO Task 11.4 – Final TS/IRS Development of the final Technical Specifications and Interface Requirements Specifications to support improvement the accuracy, consistency, and operational value of the Network Manager (NM) trajectory by integrating trajectory data from ANSPs through a newly designed SWIM Yellow Profile (YP) B2B service. Task Leader: EUROCONTROL Task Contributors: AIR FRANCE, DFS, FOR, LEONARDO Task 11.5 – Final STD Preparation of input material for standardization bodies, based on the conceptual outcomes and system architecture emerging from the initial technical design Task Leader: EUROCONTROL Task Contributors: AIR FRANCE, DFS, FOR, LEONARDO Task 11.6 – Final REG Identification of potential regulatory implications and preparation of early regulatory input, including gap analysis and recommendations for future alignment. Task Leader: EUROCONTROL Task Contributors: AIR FRANCE, DFS, FOR, LEONARDO Task 11.7 – ValR Documentation of validation results and analysis of solution performance against the objectives defined in the Validation Plan. Task Leader: EUROCONTROL Task Contributors: AIR FRANCE, DFS, FOR, LEONARDO Task 11.8 – CBA Assessment of the economic viability and potential benefits of implementing EFB-FMS ATC interactions enablers, including qualitative and quantitative indicators. Task Leader: EUROCONTROL Task Contributors: AIR FRANCE, DFS, FOR, LEONARDO Task 11.9 – Final Contextual Note A summarized narrative capturing the purpose, operational context, value proposition, and recommended next steps for deployment. Task Leader: EUROCONTROL

STAFF EFFORT

Staff effort per participant

Grant Preparation (Work packages - Effort screen) — Enter the info.

Participant	WP1	WP2	WP3	WP4	WP5	WP6	WP7	WP8	WP9	WP10	Total Person-Months
1 - EUROCONTROL	75.00	14.00	14.00	40.50	40.50	103.50	103.50	22.00	22.00	68.00	571.00
2 - AIR FRANCE		4.85	3.51	10.18	10.40	7.60	7.80	1.52	1.58	0.70	48.74
3 - TERN		1.35	1.35	1.35	1.30			52.70	54.40		112.45
3.1 - TERN HU								11.00	11.00		22.00
4 - ANS CR				2.50	3.50	2.00	3.50	5.30	5.20		22.00
5 - AI OPS SAS		1.00	1.00			19.00	31.00				52.00
6 - AIRBUS		2.50	2.50			18.00	26.00				49.00
7 - AUSTRO CONTROL								1.90	1.90		3.80
8 - AVTECH						0.50	2.50				3.00
9 - BAS		2.00	2.00			7.00	7.00				18.00
10 - CAE AUSTRIA				1.80	1.80	17.40	1.80				22.80
11 - CAE Poland					1.10	91.90	1.10				94.10
12 - COLLINS		2.00	4.00			4.00	4.00				14.00
13 - LUFTHANSA		0.80	0.80	1.50	1.50	10.00	10.00	0.80	0.80	0.80	27.80
14 - DLR		3.00	3.00								6.00
15 - DFS		2.13	1.43			16.10	16.20			4.90	45.66
16 - DSNA		1.75	0.25	2.60	3.40	3.70	3.70				15.40
17 - ENAV	4.00	3.00	3.00	6.75	6.50	3.70	4.00	5.00	5.00		40.95
18 - FOR		0.50	0.50			3.00	3.00			2.00	10.20

Staff effort per participant

Grant Preparation (Work packages - Effort screen) — Enter the info.

Participant	WP1	WP2	WP3	WP4	WP5	WP6	WP7	WP8	WP9	WP10	Total Person-Months
19 - HON CZ						35.50	27.40				62.90
19.1 - HON FR						2.80	2.80				5.60
20 - HUNGAROCONTROL		1.00	1.00					1.50	1.50		5.00
21 - INDRA						55.30	85.30				140.60
22 - ISAVIA ANS EHF						3.15	3.15				6.30
23 - LEONARDO						2.20	5.50			2.20	15.40
24 - NATS		3.00	3.00			28.60	29.40				64.00
25 - NAV CANADA		3.50	3.50			14.00	14.50				35.50
26 - PACE GmbH				3.00	3.00	29.00	29.00				64.00
27 - PANSA								10.50	10.50		21.00
28 - SKYGUIDE		2.60	2.40								5.00
29 - NLR		1.17	1.17			2.73	2.69				7.76
30 - SWISS				6.25	6.25	8.00	8.00				28.50
31 - THALES LAS				2.96	3.00	4.50	4.50				14.96
32 - TXT E-TECH						20.00	20.00				40.00
33 - THALES AVS								4.50	5.00		9.50
34 - INGENAV								8.00	8.00		16.00
Total Person-Months	79.00	50.15	48.41	79.39	82.25	513.18	457.34	124.72	126.88	78.60	1720.92

Staff effort per participant *Grant Preparation (Work packages - Effort screen) — Enter the info.*		
Participant	**WP11**	**Total Person-Months**
1 - EUROCONTROL	68.00	571.00
2 - AIR FRANCE	0.60	48.74
3 - TERN		112.45
3.1 - TERN HU		22.00
4 - ANS CR		22.00
5 - AI OPS SAS		52.00
6 - AIRBUS		49.00
7 - AUSTRO CONTROL		3.80
8 - AVTECH		3.00
9 - BAS		18.00
10 - CAE AUSTRIA		22.80
11 - CAE Poland		94.10
12 - COLLINS		14.00
13 - LUFTHANSA	0.80	27.80
14 - DLR		6.00
15 - DFS	4.90	45.66
16 - DSNA		15.40
17 - ENAV		40.95
18 - FOR	1.20	10.20
19 - HON CZ		62.90
19.1 - HON FR		5.60

Staff effort per participant *Grant Preparation (Work packages - Effort screen) — Enter the info.*		
Participant	**WP11**	**Total Person-Months**
20 - HUNGAROCONTROL		5.00
21 - INDRA		140.60
22 - ISAVIA ANS EHF		6.30
23 - LEONARDO	5.50	15.40
24 - NATS		64.00
25 - NAV CANADA		35.50
26 - PACE GmbH		64.00
27 - PANSA		21.00
28 - SKYGUIDE		5.00
29 - NLR		7.76
30 - SWISS		28.50
31 - THALES LAS		14.96
32 - TXT E-TECH		40.00
33 - THALES AVS		9.50
34 - INGENAV		16.00
Total Person-Months	81.00	1720.92

LIST OF DELIVERABLES

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](2015/444)

Deliverable No	Deliverable Name	Work Package No	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
D1.1	PMP	WP1	1 - EUROCONTROL	R — Document, report	PU - Public	3
D1.2	CDEP-Initial	WP1	1 - EUROCONTROL	R — Document, report	PU - Public	3
D1.3	DMP-Initial	WP1	1 - EUROCONTROL	DMP — Data Management Plan	PU - Public	3
D1.4	CDEP-Intermediate-1	WP1	1 - EUROCONTROL	R — Document, report	PU - Public	8
D1.5	CDEP-Intermediate-2	WP1	1 - EUROCONTROL	R — Document, report	PU - Public	20
D1.6	CDEP-Final	WP1	1 - EUROCONTROL	R — Document, report	PU - Public	34
D1.7	DMP-Intermediate	WP1	1 - EUROCONTROL	DMP — Data Management Plan	PU - Public	6
D1.8	DMP-Final	WP1	1 - EUROCONTROL	DMP — Data Management Plan	PU - Public	34
D2.1	Initial SESAR Global TBO Document	WP2	1 - EUROCONTROL	R — Document, report	PU - Public	10
D3.1	Final SESAR Global TBO Document	WP3	1 - EUROCONTROL	R — Document, report	PU - Public	32
D4.1	UDT – Initial SPR-INTEROP/OSED	WP4	2 - AIR FRANCE	R — Document, report	PU - Public	10
D4.2	UDT – Initial TS/IRS	WP4	2 - AIR FRANCE	R — Document, report	PU - Public	16
D4.3	UDT – Initial STD	WP4	1 - EUROCONTROL	R — Document, report	PU - Public	3

Deliverables

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Deliverable No	Deliverable Name	Work Package No	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
D4.4	UDT – Initial REG	WP4	1 - EUROCONTROL	R — Document, report	PU - Public	3
D4.5	UDT – ValP	WP4	2 - AIR FRANCE	R — Document, report	PU - Public	16
D4.6	UDT – Initial Contextual Note	WP4	2 - AIR FRANCE	R — Document, report	PU - Public	16
D4.7	UDT – Intermediate-1 STD	WP4	1 - EUROCONTROL	R — Document, report	PU - Public	8
D4.8	UDT – Intermediate-2 STD	WP4	1 - EUROCONTROL	R — Document, report	PU - Public	18
D4.9	UDT – Intermediate-1 REG	WP4	1 - EUROCONTROL	R — Document, report	PU - Public	8
D4.10	UDT – Intermediate-2 REG	WP4	1 - EUROCONTROL	R — Document, report	PU - Public	18
D5.1	UDT – Final SPR-INTEROP/OSED	WP5	2 - AIR FRANCE	R — Document, report	PU - Public	32
D5.2	UDT – Final TS/IRS	WP5	2 - AIR FRANCE	R — Document, report	PU - Public	32
D5.3	UDT – Final STD	WP5	1 - EUROCONTROL	R — Document, report	PU - Public	32
D5.4	UDT – Final REG	WP5	1 - EUROCONTROL	R — Document, report	PU - Public	32
D5.5	UDT – ValR	WP5	30 - SWISS	R — Document, report	PU - Public	30
D5.6	UDT – CBA	WP5	30 - SWISS	R — Document, report	PU - Public	32
D5.7	UDT – Final Contextual Note	WP5	2 - AIR FRANCE	R — Document, report	PU - Public	32
D6.1	STR – Initial SPR-INTEROP/OSED	WP6	2 - AIR FRANCE	R — Document, report	PU - Public	10
D6.2	STR – Initial TS/IRS	WP6	1 - EUROCONTROL	R — Document, report	PU - Public	16
D6.3	STR – Initial STD	WP6	1 - EUROCONTROL	R — Document, report	PU - Public	3

Deliverables

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Deliverable No	Deliverable Name	Work Package No	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
D6.4	STR – Initial REG	WP6	1 - EUROCONTROL	R — Document, report	PU - Public	3
D6.5	STR – ValP	WP6	16 - DSNA	R — Document, report	PU - Public	16
D6.6	STR – Initial Contextual Note	WP6	6 - AIRBUS	R — Document, report	PU - Public	16
D6.7	STR – Intermediate-1 STD	WP6	1 - EUROCONTROL	R — Document, report	PU - Public	8
D6.8	STR – Intermediate-2 STD	WP6	1 - EUROCONTROL	R — Document, report	PU - Public	18
D6.9	STR – Intermediate-1 REG	WP6	1 - EUROCONTROL	R — Document, report	PU - Public	8
D6.10	STR – Intermediate-2 REG	WP6	1 - EUROCONTROL	R — Document, report	PU - Public	18
D7.1	STR – Final SPR-INTEROP/OSED	WP7	6 - AIRBUS	R — Document, report	PU - Public	32
D7.2	STR – Final TS/IRS	WP7	1 - EUROCONTROL	R — Document, report	PU - Public	32
D7.3	STR – Final STD	WP7	1 - EUROCONTROL	R — Document, report	PU - Public	32
D7.4	STR – Final REG	WP7	1 - EUROCONTROL	R — Document, report	PU - Public	32
D7.5	STR – ValR	WP7	15 - DFS	R — Document, report	PU - Public	30
D7.6	STR – CBA	WP7	1 - EUROCONTROL	R — Document, report	PU - Public	32
D7.7	STR – Final Contextual Note	WP7	6 - AIRBUS	R — Document, report	PU - Public	32
D8.1	LOA – Initial SPR-INTEROP/OSED	WP8	1 - EUROCONTROL	R — Document, report	PU - Public	10
D8.2	LOA – Initial TS/IRS	WP8	3 - TERN	R — Document, report	PU - Public	16
D8.3	LOA – Initial STD	WP8	1 - EUROCONTROL	R — Document, report	PU - Public	3

Deliverables

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Deliverable No	Deliverable Name	Work Package No	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
D8.4	LOA – Initial REG	WP8	1 - EUROCONTROL	R — Document, report	PU - Public	3
D8.5	LOA – ValP	WP8	27 - PANSA	R — Document, report	PU - Public	16
D8.6	LOA – Initial Contextual Note	WP8	3 - TERN	R — Document, report	PU - Public	16
D8.7	LOA – Intermediate-1 STD	WP8	1 - EUROCONTROL	R — Document, report	PU - Public	8
D8.8	LOA – Intermediate-2 STD	WP8	1 - EUROCONTROL	R — Document, report	PU - Public	18
D8.9	LOA – Intermediate-1 REG	WP8	1 - EUROCONTROL	R — Document, report	PU - Public	8
D8.10	LOA – Intermediate-2 REG	WP8	1 - EUROCONTROL	R — Document, report	PU - Public	18
D9.1	LOA – Final SPR-INTEROP/OSED	WP9	1 - EUROCONTROL	R — Document, report	PU - Public	32
D9.2	LOA – Final TS/IRS	WP9	3 - TERN	R — Document, report	PU - Public	32
D9.3	LOA – Final STD	WP9	1 - EUROCONTROL	R — Document, report	PU - Public	32
D9.4	LOA – Final REG	WP9	1 - EUROCONTROL	R — Document, report	PU - Public	32
D9.5	LOA – ValR	WP9	28 - SKYGUIDE	R — Document, report	PU - Public	30
D9.6	LOA – CBA	WP9	1 - EUROCONTROL	R — Document, report	PU - Public	32
D9.7	LOA – Final Contextual Note	WP9	3 - TERN	R — Document, report	PU - Public	32
D10.1	TSE – Initial SPR-INTEROP/OSED	WP10	1 - EUROCONTROL	R — Document, report	PU - Public	10
D10.2	TSE – Initial TS/IRS	WP10	1 - EUROCONTROL	R — Document, report	PU - Public	16
D10.3	TSE – Initial STD	WP10	1 - EUROCONTROL	R — Document, report	PU - Public	3

Deliverables

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Deliverable No	Deliverable Name	Work Package No	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
D10.4	TSE – Initial REG	WP10	1 - EUROCONTROL	R — Document, report	PU - Public	3
D10.5	TSE – ValP	WP10	15 - DFS	R — Document, report	PU - Public	16
D10.6	TSE – Initial Contextual Note	WP10	1 - EUROCONTROL	R — Document, report	PU - Public	16
D10.7	TSE – Intermediate-1 STD	WP10	1 - EUROCONTROL	R — Document, report	PU - Public	8
D10.8	TSE – Intermediate-2 STD	WP10	1 - EUROCONTROL	R — Document, report	PU - Public	18
D10.9	TSE – Intermediate-1 REG	WP10	1 - EUROCONTROL	R — Document, report	PU - Public	8
D10.10	TSE – Intermediate-2 REG	WP10	1 - EUROCONTROL	R — Document, report	PU - Public	18
D11.1	TSE – Final SPR-INTEROP/OSED	WP11	1 - EUROCONTROL	R — Document, report	PU - Public	32
D11.2	TSE – Final TS/IRS	WP11	1 - EUROCONTROL	R — Document, report	PU - Public	32
D11.3	TSE – Final STD	WP11	1 - EUROCONTROL	R — Document, report	PU - Public	32
D11.4	TSE – Final REG	WP11	1 - EUROCONTROL	R — Document, report	PU - Public	32
D11.5	TSE –ValR	WP11	1 - EUROCONTROL	R — Document, report	PU - Public	30
D11.6	TSE – CBA	WP11	1 - EUROCONTROL	R — Document, report	PU - Public	32
D11.7	TSE – Final Contextual Note	WP11	1 - EUROCONTROL	R — Document, report	PU - Public	32

Deliverable D1.1 – PMP

Deliverable Number	D1.1	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	PMP		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	3	**Work Package No**	WP1

Description
Project Management Plan

Deliverable D1.2 – CDEP-Initial

Deliverable Number	D1.2	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	CDEP-Initial		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	3	**Work Package No**	WP1

Description
Communication Dissemination and Exploitation Plan

Deliverable D1.3 – DMP-Initial

Deliverable Number	D1.3	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	DMP-Initial		
Type	DMP — Data Management Plan	**Dissemination Level**	PU - Public
Due Date (month)	3	**Work Package No**	WP1

Description
Data Management Plan

Deliverable D1.4 – CDEP-Intermediate-1

Deliverable Number	D1.4	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	CDEP-Intermediate-1		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	8	**Work Package No**	WP1

Description
Communication Dissemination and Exploitation Plan

Deliverable D1.5 – CDEP-Intermediate-2

Deliverable Number	D1.5	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	CDEP-Intermediate-2		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	20	**Work Package No**	WP1

Description
Communication Dissemination and Exploitation Plan

Deliverable D1.6 – CDEP-Final

Deliverable Number	D1.6	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	CDEP-Final		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	34	**Work Package No**	WP1

Description
Communication Dissemination and Exploitation Plan

Deliverable D1.7 – DMP-Intermediate

Deliverable Number	D1.7	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	DMP-Intermediate		
Type	DMP — Data Management Plan	**Dissemination Level**	PU - Public
Due Date (month)	6	**Work Package No**	WP1

Description
Data Management Plan

Deliverable D1.8 – DMP-Final

Deliverable Number	D1.8	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	DMP-Final		
Type	DMP — Data Management Plan	**Dissemination Level**	PU - Public
Due Date (month)	34	**Work Package No**	WP1

Description
Data Management Plan

Deliverable D2.1 – Initial SESAR Global TBO Document

Deliverable Number	D2.1	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	Initial SESAR Global TBO Document		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	10	**Work Package No**	WP2

Description
Initial SESAR Global TBO document

Deliverable D3.1 – Final SESAR Global TBO Document

Deliverable Number	D3.1	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	Final SESAR Global TBO Document		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP3

Description
Final SESAR Global TBO Document

Deliverable D4.1 – UDT – Initial SPR-INTEROP/OSED

Deliverable Number	D4.1	**Lead Beneficiary**	2 - AIR FRANCE
Deliverable Name	UDT – Initial SPR-INTEROP/OSED		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	10	**Work Package No**	WP4

Description
UDT – Initial SPR-INTEROP/OSED

Deliverable D4.2 – UDT – Initial TS/IRS

Deliverable Number	D4.2	**Lead Beneficiary**	2 - AIR FRANCE
Deliverable Name	UDT – Initial TS/IRS		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	16	**Work Package No**	WP4

Description
UDT – Initial TS/IRS

Deliverable D4.3 – UDT – Initial STD

Deliverable Number	D4.3	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	UDT – Initial STD		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	3	**Work Package No**	WP4

Description
UDT – Initial STD

Deliverable D4.4 – UDT – Initial REG

Deliverable Number	D4.4	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	UDT – Initial REG		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	3	**Work Package No**	WP4

Description
UDT – Initial REG

Deliverable D4.5 – UDT – ValP

Deliverable Number	D4.5	**Lead Beneficiary**	2 - AIR FRANCE
Deliverable Name	UDT – ValP		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	16	**Work Package No**	WP4

Description
UDT – ValP

Deliverable D4.6 – UDT – Initial Contextual Note

Deliverable Number	D4.6	**Lead Beneficiary**	2 - AIR FRANCE
Deliverable Name	UDT – Initial Contextual Note		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	16	**Work Package No**	WP4

Description
UDT – Initial Contextual Note

Deliverable D4.7 – UDT – Intermediate-1 STD

Deliverable Number	D4.7	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	UDT – Intermediate-1 STD		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	8	**Work Package No**	WP4

Description
Solution UDT – Intermediate-1 STD

Deliverable D4.8 – UDT – Intermediate-2 STD

Deliverable Number	D4.8	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	UDT – Intermediate-2 STD		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	18	**Work Package No**	WP4

Description
Solution UDT – Intermediate-1 STD

Deliverable D4.9 – UDT – Intermediate-1 REG

Deliverable Number	D4.9	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	UDT – Intermediate-1 REG		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	8	**Work Package No**	WP4

Description
Solution UDT – Intermediate-1 REG

Deliverable D4.10 – UDT – Intermediate-2 REG

Deliverable Number	D4.10	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	UDT – Intermediate-2 REG		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	18	**Work Package No**	WP4

Description
Solution UDT – Intermediate-2 REG

Deliverable D5.1 – UDT – Final SPR-INTEROP/OSED

Deliverable Number	D5.1	**Lead Beneficiary**	2 - AIR FRANCE
Deliverable Name	UDT – Final SPR-INTEROP/OSED		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP5

Description
UDT – Final SPR-INTEROP/OSED

Deliverable D5.2 – UDT – Final TS/IRS

Deliverable Number	D5.2	**Lead Beneficiary**	2 - AIR FRANCE
Deliverable Name	UDT – Final TS/IRS		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP5

Description
UDT – Final TS/IRS

Deliverable D5.3 – UDT – Final STD

Deliverable Number	D5.3	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	UDT – Final STD		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP5

Description
UDT – Final STD

Deliverable D5.4 – UDT – Final REG

Deliverable Number	D5.4	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	UDT – Final REG		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP5

Description
UDT – Final REG

Deliverable D5.5 – UDT – ValR

Deliverable Number	D5.5	**Lead Beneficiary**	30 - SWISS
Deliverable Name	UDT – ValR		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	30	**Work Package No**	WP5

Description
UDT – ValR

Deliverable D5.6 – UDT – CBA

Deliverable Number	D5.6	**Lead Beneficiary**	30 - SWISS
Deliverable Name	UDT – CBA		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP5

Description
UDT – CBA

Deliverable D5.7 – UDT – Final Contextual Note

Deliverable Number	D5.7	**Lead Beneficiary**	2 - AIR FRANCE
Deliverable Name	UDT – Final Contextual Note		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP5

Description
UDT – Final Contextual Note

Deliverable D6.1 – STR – Initial SPR-INTEROP/OSED

Deliverable Number	D6.1	**Lead Beneficiary**	2 - AIR FRANCE
Deliverable Name	STR – Initial SPR-INTEROP/OSED		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	10	**Work Package No**	WP6

Description
STR – Initial SPR-INTEROP/OSED

Deliverable D6.2 – STR – Initial TS/IRS

Deliverable Number	D6.2	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	STR – Initial TS/IRS		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	16	**Work Package No**	WP6

Description
STR – Initial TS/IRS

Deliverable D6.3 – STR – Initial STD

Deliverable Number	D6.3	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	STR – Initial STD		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	3	**Work Package No**	WP6

Description
STR – Initial STD

Deliverable D6.4 – STR – Initial REG

Deliverable Number	D6.4	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	STR – Initial REG		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	3	**Work Package No**	WP6

Description
STR – Initial REG

Deliverable D6.5 – STR – ValP

Deliverable Number	D6.5	**Lead Beneficiary**	16 - DSNA
Deliverable Name	STR – ValP		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	16	**Work Package No**	WP6

Description
STR – ValP

Deliverable D6.6 – STR – Initial Contextual Note

Deliverable Number	D6.6	**Lead Beneficiary**	6 - AIRBUS
Deliverable Name	STR – Initial Contextual Note		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	16	**Work Package No**	WP6

Description
STR – Initial Contextual Note

Deliverable D6.7 – STR – Intermediate-1 STD

Deliverable Number	D6.7	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	STR – Intermediate-1 STD		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	8	**Work Package No**	WP6

Description
Solution STR – Intermediate-1 STD

Deliverable D6.8 – STR – Intermediate-2 STD

Deliverable Number	D6.8	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	STR – Intermediate-2 STD		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	18	**Work Package No**	WP6

Description
Solution STR – Intermediate-2 STD

Deliverable D6.9 – STR – Intermediate-1 REG

Deliverable Number	D6.9	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	STR – Intermediate-1 REG		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	8	**Work Package No**	WP6

Description
Solution STR – Intermediate-1 REG

Deliverable D6.10 – STR – Intermediate-2 REG

Deliverable Number	D6.10	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	STR – Intermediate-2 REG		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	18	**Work Package No**	WP6

Description
Solution STR – Intermediate-2 REG

Deliverable D7.1 – STR – Final SPR-INTEROP/OSED

Deliverable Number	D7.1	**Lead Beneficiary**	6 - AIRBUS
Deliverable Name	STR – Final SPR-INTEROP/OSED		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP7

Description
STR – Final SPR-INTEROP/OSED

Deliverable D7.2 – STR – Final TS/IRS

Deliverable Number	D7.2	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	STR – Final TS/IRS		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP7

Description
STR – Final TS/IRS

Deliverable D7.3 – STR – Final STD

Deliverable Number	D7.3	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	STR – Final STD		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP7

Description
STR – Final STD

Deliverable D7.4 – STR – Final REG

Deliverable Number	D7.4	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	STR – Final REG		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP7

Description
STR – Final REG

Deliverable D7.5 – STR – ValR

Deliverable Number	D7.5	**Lead Beneficiary**	15 - DFS
Deliverable Name	STR – ValR		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	30	**Work Package No**	WP7

Description
STR – ValR

Deliverable D7.6 – STR – CBA

Deliverable Number	D7.6	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	STR – CBA		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP7

Description
STR – CBA

Deliverable D7.7 – STR – Final Contextual Note

Deliverable Number	D7.7	**Lead Beneficiary**	6 - AIRBUS
Deliverable Name	STR – Final Contextual Note		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP7

Description
STR – Final Contextual Note

Deliverable D8.1 – LOA – Initial SPR-INTEROP/OSED

Deliverable Number	D8.1	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	LOA – Initial SPR-INTEROP/OSED		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	10	**Work Package No**	WP8

Description
LOA – Initial SPR-INTEROP/OSED

Deliverable D8.2 – LOA – Initial TS/IRS

Deliverable Number	D8.2	**Lead Beneficiary**	3 - TERN
Deliverable Name	LOA – Initial TS/IRS		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	16	**Work Package No**	WP8

Description
LOA – Initial TS/IRS

Deliverable D8.3 – LOA – Initial STD

Deliverable Number	D8.3	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	LOA – Initial STD		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	3	**Work Package No**	WP8

Description
LOA – Initial STD

Deliverable D8.4 – LOA – Initial REG

Deliverable Number	D8.4	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	LOA – Initial REG		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	3	**Work Package No**	WP8

Description
LOA – Initial REG

Deliverable D8.5 – LOA – ValP

Deliverable Number	D8.5	**Lead Beneficiary**	27 - PANSA
Deliverable Name	LOA – ValP		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	16	**Work Package No**	WP8

Description
LOA – ValP

Deliverable D8.6 – LOA – Initial Contextual Note

Deliverable Number	D8.6	**Lead Beneficiary**	3 - TERN
Deliverable Name	LOA – Initial Contextual Note		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	16	**Work Package No**	WP8

Description
LOA – Initial Contextual Note

Deliverable D8.7 – LOA – Intermediate-1 STD

Deliverable Number	D8.7	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	LOA – Intermediate-1 STD		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	8	**Work Package No**	WP8

Description
Solution LOA – Intermediate-1 STD

Deliverable D8.8 – LOA – Intermediate-2 STD

Deliverable Number	D8.8	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	LOA – Intermediate-2 STD		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	18	**Work Package No**	WP8

Description
Solution LOA – Intermediate-2 STD

Deliverable D8.9 – LOA – Intermediate-1 REG

Deliverable Number	D8.9	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	LOA – Intermediate-1 REG		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	8	**Work Package No**	WP8

Description
Solution LOA – Intermediate-1 REG

Deliverable D8.10 – LOA – Intermediate-2 REG

Deliverable Number	D8.10	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	LOA – Intermediate-2 REG		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	18	**Work Package No**	WP8

Description
Solution LOA – Intermediate-2 REG

Deliverable D9.1 – LOA – Final SPR-INTEROP/OSED

Deliverable Number	D9.1	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	LOA – Final SPR-INTEROP/OSED		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP9

Description
LOA – Final SPR-INTEROP/OSED

Deliverable D9.2 – LOA – Final TS/IRS

Deliverable Number	D9.2	**Lead Beneficiary**	3 - TERN
Deliverable Name	LOA – Final TS/IRS		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP9

Description
LOA – Final TS/IRS

Deliverable D9.3 – LOA – Final STD

Deliverable Number	D9.3	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	LOA – Final STD		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP9

Description
LOA – Final STD

Deliverable D9.4 – LOA – Final REG

Deliverable Number	D9.4	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	LOA – Final REG		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP9

Description
LOA – Final REG

Deliverable D9.5 – LOA – ValR

Deliverable Number	D9.5	**Lead Beneficiary**	28 - SKYGUIDE
Deliverable Name	LOA – ValR		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	30	**Work Package No**	WP9

Description
LOA – ValR

Deliverable D9.6 – LOA – CBA

Deliverable Number	D9.6	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	LOA – CBA		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP9

Description
LOA – CBA

Deliverable D9.7 – LOA – Final Contextual Note

Deliverable Number	D9.7	**Lead Beneficiary**	3 - TERN
Deliverable Name	LOA – Final Contextual Note		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP9

Description
LOA – Final Contextual Note

Deliverable D10.1 – TSE – Initial SPR-INTEROP/OSED

Deliverable Number	D10.1	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	TSE – Initial SPR-INTEROP/OSED		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	10	**Work Package No**	WP10

Description
TSE – Initial SPR-INTEROP/OSED

Deliverable D10.2 – TSE – Initial TS/IRS

Deliverable Number	D10.2	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	TSE – Initial TS/IRS		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	16	**Work Package No**	WP10

Description
TSE – Initial TS/IRS

Deliverable D10.3 – TSE – Initial STD

Deliverable Number	D10.3	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	TSE – Initial STD		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	3	**Work Package No**	WP10

Description
TSE – Initial STD

Deliverable D10.4 – TSE – Initial REG

Deliverable Number	D10.4	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	TSE – Initial REG		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	3	**Work Package No**	WP10

Description
TSE – Initial REG

Deliverable D10.5 – TSE – ValP

Deliverable Number	D10.5	**Lead Beneficiary**	15 - DFS
Deliverable Name	TSE – ValP		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	16	**Work Package No**	WP10

Description
TSE – ValP

Deliverable D10.6 – TSE – Initial Contextual Note

Deliverable Number	D10.6	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	TSE – Initial Contextual Note		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	16	**Work Package No**	WP10

Description
TSE – Initial Contextual Note

Deliverable D10.7 – TSE – Intermediate-1 STD

Deliverable Number	D10.7	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	TSE – Intermediate-1 STD		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	8	**Work Package No**	WP10

Description
TSE – Intermediate-1 STD

Deliverable D10.8 – TSE – Intermediate-2 STD

Deliverable Number	D10.8	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	TSE – Intermediate-2 STD		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	18	**Work Package No**	WP10

Description
TSE – Intermediate-2 STD

Deliverable D10.9 – TSE – Intermediate-1 REG

Deliverable Number	D10.9	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	TSE – Intermediate-1 REG		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	8	**Work Package No**	WP10

Description
TSE – Intermediate-1 REG

Deliverable D10.10 – TSE – Intermediate-2 REG

Deliverable Number	D10.10	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	TSE – Intermediate-2 REG		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	18	**Work Package No**	WP10

Description
TSE – Intermediate-2 REG

Deliverable D11.1 – TSE – Final SPR-INTEROP/OSED

Deliverable Number	D11.1	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	TSE – Final SPR-INTEROP/OSED		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP11

Description
TSE – Final SPR-INTEROP/OSED

Deliverable D11.2 – TSE – Final TS/IRS

Deliverable Number	D11.2	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	TSE – Final TS/IRS		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP11

Description
TSE – Final TS/IRS

Deliverable D11.3 – TSE – Final STD

Deliverable Number	D11.3	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	TSE – Final STD		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP11

Description
TSE – Final STD

Deliverable D11.4 – TSE – Final REG

Deliverable Number	D11.4	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	TSE – Final REG		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP11

Description
TSE – Final REG

Deliverable D11.5 – TSE –ValR

Deliverable Number	D11.5	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	TSE –ValR		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	30	**Work Package No**	WP11

Description
TSE – ValR

Deliverable D11.6 – TSE – CBA

Deliverable Number	D11.6	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	TSE – CBA		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP11

Description
TSE – CBA

Deliverable D11.7 – TSE – Final Contextual Note

Deliverable Number	D11.7	**Lead Beneficiary**	1 - EUROCONTROL
Deliverable Name	TSE – Final Contextual Note		
Type	R — Document, report	**Dissemination Level**	PU - Public
Due Date (month)	32	**Work Package No**	WP11

Description
TSE – Final Contextual Note

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-off Meeting	WP1	1 - EUROCONTROL	Approval of meeting notes	1
2	Delivery of Initial SESAR Global TBO Document	WP2	1 - EUROCONTROL	Approval of Initial SESAR Global TBO Document	10
3	Delivery of Final SESAR Global TBO Document	WP3	1 - EUROCONTROL	Approval of Final SESAR Global TBO Document	32
4	Technical Project Review Meeting #1	WP10, WP4, WP2, WP8, WP6	1 - EUROCONTROL	Technical documents, self maturity assessment in addition to the validation approach, updated CDE and initial STD and REG deliverables will be provided one month prior the meeting	10
5	Technical Project Review Meeting #2	WP11, WP10, WP3, WP4, WP2, WP8, WP7, WP9, WP5, WP6	1 - EUROCONTROL	Technical documents, self maturity assessment in addition to the validation approach, updated CDE and initial STD and REG deliverables will be provided one month prior the meeting	20
6	Exit Maturity Gate for Solution UDT	WP4, WP5	2 - AIR FRANCE	Successful execution of the Maturity Gate	34
7	Exit Maturity Gate for Solution STR	WP7, WP6	6 - AIRBUS	Successful execution of the Maturity Gate	34
8	Exit Maturity Gate for Solution LOA	WP8, WP9	3 - TERN	Successful execution of the Maturity Gate	34
9	Exit Maturity Gate for Solution TSE	WP11, WP10	1 - EUROCONTROL	Successful execution of the Maturity Gate	34

LIST OF CRITICAL RISKS

Critical risks & risk management strategy *Grant Preparation (Critical Risks screen) — Enter the info.*			
Risk number	**Description**	**Work Package No(s)**	**Proposed Mitigation Measures**
1	Integrated Validations: W3.1 proposals not awarded (M/H)	WP11, WP10	The exercise in Solution TSE is designed to allow one validation iteration per potential W3.1 partner. Major impact in case no partner proposal is awarded.
2	Integrated Validations: W3.1 proposals not awarded (M/L)	WP4, WP5	The UDT validation exercises will set up their own "surrogate" tools, to partially reproduce the functions that were expected from the technological solution in WA3.1.
3	Integrated Validations: W3.1 proposals not awarded for the STR solution thread #5 (M/M)	WP7, WP6	The STR solution will seek for the possibility to set up an exercise only in WA1.1 but with a reduced scope.
4	Integrated Validations: W3.1 proposals not awarded for the STR solution thread #5 (M/M)	WP7, WP6	The STR solution will seek for the possibility to set up an exercise only in WA1.1 but with a reduced scope.
5	WP3.1 proposals addressing the STR solution thread#2 – impact of FF-ICE/R2 on ATC – is not awarded (M/M)	WP7, WP6	Investigate two options: •Integrate validation objectives in one of the exercises planned in the ATC TBO-2 project •Address the thread as part of wave 3 project
6	Validation exercises from other projects using NMVP may impose constraints on NETWORK TBO exercises (Medium)	WP11, WP10, WP4, WP7, WP5, WP6	Early consolidation of validation roadmaps and regular review of NMVP needs with EUROCONTROL platform managers

PROJECT REVIEWS

Project Reviews *Grant Preparation (Reviews screen) — Enter the info.*			
Review No	**Timing** (month)	**Location**	**Comments**
RV1	21	Brussels	

JU CONTRIBUTIONS

PIC	Legal Name	Membership	IKOP	Financial Contribution	IKAA
870091747	Tern Systems kft	No	€ 0.00	€ 0.00	€ 0.00
879878465	CAE FLIGHT SERVICES POLAND SP ZOO	No	€ 0.00	€ 0.00	€ 0.00
884000383	TXT E-TECH SRL	No	€ 0.00	€ 0.00	€ 0.00
884813728	CAE FLIGHT SERVICES AUSTRIA GMBH	No	€ 0.00	€ 0.00	€ 0.00
887286355	TERN SYSTEMS EHF	No	€ 0.00	€ 0.00	€ 0.00
896093664	ISAVIA ANS EHF	No	€ 0.00	€ 0.00	€ 0.00
923041331	HONEYWELL AEROSPACE	Yes (Founding Member Affiliate)	€ 22 285.71	€ 0.00	€ 0.00
924404957	NAV CANADA	No	€ 0.00	€ 0.00	€ 0.00
927320680	SWISS INTERNATIONAL AIR LINES AG	No	€ 0.00	€ 0.00	€ 0.00
928673636	DIRECTION DES SERVICES DE LA NAVIGATION AERIENNE	Yes (Founding Member)	€ 139 386.18	€ 0.00	€ 0.00
937590070	AIR FRANCE SA	Yes (Founding Member)	€ 262 148.27	€ 0.00	€ 0.00
937877190	INNOVACION Y GESTION EN NAVEGACION AEREA SL	No	€ 0.00	€ 0.00	€ 0.00

PIC	Legal Name	Membership	IKOP	Financial Contribution	IKAA
941767472	HUNGAROCONTROL MAGYAR LEGIFORGALMISZOLGALAT ZARTKORUEN MUKODO RESZVENYTARSASAG	Yes (Founding Member)	€ 25 420.13	€ 0.00	€ 0.00
954552363	RIZENI LETOVEHO PROVOZU CESKE REPUBLIKY STATNI PODNIK	Yes (Founding Member)	€ 82 012.50	€ 0.00	€ 0.00
957912443	FREQUENTIS ORTHOGON GMBH	Yes (Founding Member Affiliate)	€ 38 571.43	€ 0.00	€ 0.00
958184334	SKYGUIDE, SA SUISSE POUR LES SERVICES DE LA NAVIGATION AERIENNE CIVILS ET MILITAIRES	No	€ 0.00	€ 0.00	€ 0.00
971136162	COLLINS AEROSPACE IRELAND, LIMITED	Yes (Founding Member)	€ 50 586.00	€ 0.00	€ 0.00
991247948	AIRBUS OPERATIONS SAS	Yes (Founding Member Affiliate)	€ 210 058.51	€ 0.00	€ 0.00
992602068	PACE AEROSPACE ENGINEERING AND INFORMATION TECHNOLOGY GMBH	No	€ 0.00	€ 0.00	€ 0.00
995562023	POLSKA AGENCJA ZEGLUGI POWIETRZNEJ	Yes (Founding Member)	€ 124 668.00	€ 0.00	€ 0.00
997542763	NATS (EN ROUTE) PUBLIC LIMITED COMPANY	Yes (Associated Member)	€ 302 222.33	€ 0.00	€ 0.00
997834830	HONEYWELL INTERNATIONAL SRO	Yes (Founding Member)	€ 171 428.57	€ 0.00	€ 0.00
997849574	AVTECH SWEDEN AB	No	€ 0.00	€ 0.00	€ 0.00
998197513	ENAV SPA	Yes (Founding Member)	€ 116 824.03	€ 0.00	€ 0.00
998627417	LEONARDO - SOCIETA PER AZIONI	Yes (Founding Member)	€ 35 938.89	€ 0.00	€ 0.00
998956635	AUSTRO CONTROL OSTERREICHISCHE GESELLSCHAFT FUR ZIVILLUFTFAHRT MBH	Yes (Founding Member)	€ 22 143.45	€ 0.00	€ 0.00
999483733	EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION	Yes (Founding Member)	€ 12 166 666.00	€ 0.00	€ 0.00
999648730	BOEING AEROSPACE SPAIN	Yes (Founding Member)	€ 73 896.00	€ 0.00	€ 0.00
999936820	DFS DEUTSCHE FLUGSICHERUNG GMBH	Yes (Founding Member)	€ 253 417.59	€ 0.00	€ 138 033.00
999959130	INDRA SISTEMAS SA	Yes (Founding Member)	€ 328 323.90	€ 0.00	€ 0.00
999961555	THALES LAS FRANCE SAS	Yes (Founding Member)	€ 70 372.79	€ 0.00	€ 0.00

PIC	Legal Name	Membership	IKOP	Financial Contribution	IKAA
999963010	AIRBUS	Yes (Founding Member)	€ 236 395.88	€ 0.00	€ 0.00
999965532	DEUTSCHE LUFTHANSA AKTIENGESELLSCHAFT	Yes (Founding Member)	€ 135 922.52	€ 0.00	€ 0.00
999981731	DEUTSCHES ZENTRUM FUR LUFT - UND RAUMFAHRT EV	Yes (Founding Member)	€ 23 676.33	€ 0.00	€ 0.00
999984447	THALES AVS FRANCE SAS	Yes (Founding Member Affiliate)	€ 39 233.44	€ 0.00	€ 0.00
999987066	STICHTING KONINKLIJK NEDERLANDS LUCHT - EN RUIMTEVAARTCENTRUM	Yes (Founding Member)	€ 36 666.39	€ 0.00	€ 0.00

Procedure GAP: HISTORY OF CHANGES		
Part A	**Section**	**Description of change and Reason/justification for change (if applicable)**
	Beneficiaries	Short names of some Partners updated

	WPs	The task descriptions for WP2–WP11 have been revised and expanded to include more detailed information
		
		In order to maintain the scope of the solution LOA unchanged, the following adaptations are included in the Grant:
		
		• Introduction of new partners -THALES AVS and INGENAV - effort to cover the contribution of prototypes related to dynamic trajectory constraints management.
		• Increase of TERN effort to cover ValR task lead and exercise lead.
		• Increase of ANS CR effort to cover operational expertise on local traffic management.
		• Update of WP description in WP8 and WP9 (LOA Solution) as below
		  • THALES AVS and INGENAV added in tasks 8.1, 8.5, 9.1, 9.5 (Initial SPR-INTEROP/OSED, ValP, Final SPR-INTEROP/OSED, ValR)
		  • TERN added as 9.5 task leader (VAlR)

	Deliverables	• CDEP deliverables updated to include initial, two intermediate and final versions (T0+3, T0+8, T0+20 and T0+34 months). • PMP sensitivity status revised to public. • DMP updated to include one initial and one final version (T0+6 and T0+34) • Initial delivery date of STAND & REG deliverables updated as T0+3 for all Solutions. • Two intermediate versions for STAND & REG added at T0+8 and T0+20 for all Solutions. • Delivery date of Final Contextual Notes of all Solutions changed to T0+32
	Milestones	• M4 date changed as T0+10 • Means of Verifications of M4 changed as “Technical documents, self-maturity assessment in addition to the validation approach, updated CDE and initial STD and REG deliverables will be

		provided one month prior the meeting” • M5 date changed to T0+20 • Means of Verifications of M5 changed as “Technical documents, self-maturity assessment in addition to the validation approach, updated CDE and initial STD and REG deliverables will be provided one month prior the meeting” • M6, M7, M8, M9 dates changed as T0+34
	Risks	Risk #7 (FF-ICE 1 implementation risk) added
Part B	**Section**	**Description of change and Reason/justification for change (if applicable)**
	Section 1.2	For UDT, TSE and LOA, the initial maturity no longer stated. It will be addressed through self-maturity assessment at the beginning of the project
	Section 1.2	Update of the LOA Solution description following SKYGUIDE withdrawal. No change in scope
	Section 1.2	A statement about sharing the output data of the simulation for reproducibility purpose added
	Section 1.2	One exercise will be performed per Solution. The estimated date for these exercises is mid-2028. This information is added.
	Section 2.3	The following acknowledgment statement under “Dissemination” and “Exploitation” has been added. “The Consortium acknowledges the additional dissemination and exploitation obligations as set out under the call.”
	Section 3.2	SKYGUIDE budget for Subcontracting of the Software Prototype (300K) removed.
	Section 3.2	A clear justification provided for the subcontracting activity of DSNA
	Section 3.2	To facilitate the tracking of the contribution and the calculation of EUROCONTROL’s IKOP at the end of each Reporting Period, EUROCONTROL’s costs per Work Package added in the form of a simple table.
	Section 3.2	Adding 50K for INGENAV sub-contracting
	Section 4	Section 4 ‘ethics self-assessment’ created and into this section the ethics self-assessment included in the proposal Part A has been transferred
	Table 7	Validation lead for UDT Solution (AIR FRANCE) added
	Table 10	Validation leads for STR Solution (EUROCONTROL, AIRBUS, NAV CANADA, DFS) added
	Table 13	Validation lead for LOA Solution (TERN) added

	Table 15	Validation lead for TSE Solution (EUROCONTROL) added
	All Sections	Short names updated in Part A and those used in Part A reflected to Part B

Contents

1. Excellence #@REL-EVA-RE@#

1.1 Objectives and Ambition #@PRJ-OBJ-PO@#

- **Scope**

This proposal constitutes the SESAR 3 Consortium Members response to the call for tender Digital European Sky Industrial Research 02 (HORIZON-SESAR-2025-DES-IR-02) addressing the topic Transformation to trajectory-based operations (Id: HORIZON-SESAR-2025-DES-IR-02-WA1-1).

The proposed project called NETWORK TBO-2 addresses more specifically the following development actions as included in the call for tender for WA1.1:

- *IR-1-02 Development of FF-ICE, including FF-ICE pre-departure enhancement and FF-ICE/R2.*
- *IR-1-03 Advanced network trajectory synchronisation in the execution phase.*
- *IR-1-04: Connected and integrated flight management system (FMS), electronic flight bag (EFB) and flight operations centre (FOC) functionalities for trajectory optimisation.*
- *IR-1-05: Dynamic route availability document (RAD) towards a RAD by exception environment.*

It addresses the following R&I needs mentioned in the call:

- *Unconstrained Desired Trajectory (UDT)*
- *FF-ICE/R2 precursor for the revision of the agreed trajectory in strategic execution*
- *Integration of flight operations centre (FOC), electronic flight bag (EFB) and flight management system (FMS)*
- *Connected aircraft Network TBO (airline information services domain (AISD))*
- *Increased dynamicity in the application of RAD/LoA constraints*
- *Develop a digitalized letters of agreement (LoA) repository and their provision to NM*

The project covers all aspects of trajectory management processes in support to Trajectory Based Operations (TBO) involving – but not limited to - network actors. It covers both planning and execution phases.

Two specific elements are out of the scope of this project and addressed by other projects:

- All datalink/CPDLC exchanges in the context of tactical operations
- Military flight planning improvements

One transversal activity and four operational solutions are defined to cover this scope:

- **Transversal Activity**: TBO integration activities and global interoperability

  This transversal activity performed as part of dedicated work packages covers the TBO content integration activities across the programme, including development of the SESAR TBO concept of operations, integrating network, ATC and intra-European (regional) TBO processes. This transversal activity will produce a document called "SESAR TBO global document" which will include a core part and two annexes: 1) a human-machine teaming describing the ATC TBO automation concepts 2) A SESAR instantiation of the Connected Aircraft (CA) concept summarising all SESAR use-cases related to Electronic Flight Bags (EFBs).

- **Solution UDT (Target TRL = TRL6)**: Unconstrained Desired Trajectory

  This operational solution addresses the UDT concept ("Unconstrained Desired Trajectory") from all stakeholders' perspectives – AU, NM, and ANSP– covering the flight phases from pre-departure to execution. The UDT is a representation of "desired optimum" given by the AU as a reference against which to assess trajectories. This solution contributes to FF-ICE/R1 Planning service implementation in Europe.

- **Solution STR (Target TRL = TRL6)**: Trajectory Revision, Air/Ground Synchronisation and Network Impact Assessment in Strategic Execution[1]

  This operational solution includes trajectory revisions in strategic execution. This solution is strongly linked to FF-ICE/R2 developments and will address all perspectives including the Network Manager (NM), local flow management, ATC, Airspace Users (AU) – dispatch and cockpit. The solution will also look for quick wins for the North Atlantic flow. This solution will relate on validation activities in WA3.1 for ATC aspects and on WA5.1 – partially – for cockpit aspects.

  This solution will also address ANSP triggered Network Impact assessment processes in case of tactical change having a significant impact on strategic execution. The solution will look at defining a coherent operational framework and set of services to address all trajectory changes having an impact on the network whatever they are initiated by planning or tactical actors.

- **Solution LOA (Target TRL = TRL6)**: Digitalised LOAs/Dynamic LOAs

  This solution aims to digitalise and standardise Letters of Agreement (LoAs) and to enable their interoperable exchange between stakeholders. The primary objective is to move from static, PDF-based documents to a structured, machine-readable format, enabling LoAs to be shared and processed by ANSPs, the Network Manager, and, where applicable, Airspace Users. The solution will define and develop a centralised digital repository embedded in Network Manager systems and support bilateral electronic exchanges. In subsequent phases, as the secondary objective, the solution will also address the concept of a dynamic constraint negotiation process, enabling the bilateral revision of LoA conditions and the distribution of updated constraint information to relevant stakeholders.

- **Solution TSE (Target TRL = TRL6)**: Network Trajectory Synchronization in Execution

  This solution encompasses the design and validation of a SWIM Yellow Profile (YP) B2B service to enable real-time, standardized exchange of enriched trajectory data from ANSPs' Flight Data Processing Systems (FDPS) to the Network Manager (NM). It includes the integration of this data to improve the accuracy and consistency of the NM trajectory, the evolution or replacement of existing First System Activation (FSA) messages, and the dissemination of the resulting trajectory to operational stakeholders. These stakeholders include airspace users and ANSPs who will use the trajectory to enhance flight planning, demand-capacity balancing, and ATC planning and coordination.

  In these solutions, through verifiable exercises, the project will ensure that objectives are measurable across safety, capacity, operational efficiency, environment, cost-efficiency, security, and human performance.

Important Notes:

- *A TBO Focus Group was established at the beginning of 2025 by EUROCONTROL with a wide range of stakeholders with the ambition to facilitate a coordinated and coherent approach for the projects addressing TBO in SESAR3 Wave 2. The Focus Group identified the main topics to be addressed in WA1. The solutions UDT, STR, LOA and TSE were assigned to the NETWORK TBO-2 project.*
- *The name of two projects proposed in WA1 - ATC TBO-2 and NETWORK TBO-2 – is to draw some continuity with SESAR 3 Wave 1 TBO projects, however it must be stressed that **the scope of the new proposed projects is significantly different from Wave 1 projects.** In particular, regarding NETWORK TBO-2, the following increase in scope can be highlighted:*
  - *New important topics are included- such as Connected Aircraft, LOAs digitalisation and ANSP-triggered network impact assessment - not addressed in previous Wave.*

[11] The term "strategic execution" is from ICAO source. It refers to Trajectory management processes beyond the horizon of tactical ATC actors. In opposition, "tactical execution" refers to processes in the horizon and responsibility of tactical ATC actors.

- *Some of the new topics are across strategic and tactical execution, therefore tactical operations requirements need to be considered in the solutions addressing these topics.*
- *In terms of validation and prototypes, the scope is increased to cover, in a much deeper way, cockpit aspects (including FMS & EFB) in strategic execution.*
- *Together with the ATC TBO-2 project NETWORK TBO-2 has a role of integrator of TBO activities including activities from other Work Areas (WA3.1 & WA5.1). This integrator role is both at general concept level but also at more detailed level in some solutions to develop and validate a consistent set of TBO requirements*

- *More than 80% of the effort and budget of the project is dedicated to activities addressing the execution phase. Pre-departure is fully in the scope of the project; however, focus is put is the post-departure phase since many pre-departure trajectory management improvements – including FF-ICE/R1 – are already in phase of implementation.*
- *The four solutions target TRL6 maturity level. This implies that a strong effort will be put on the development of industrial prototypes in the various domains covered by the project.*
- *The Connected Aircraft is a key topic of WA1. The topic is addressed in several solutions in direct relation with the concerned ATM concepts and processes: UDT, STR in NETWORK TBO-2 project and EFA in ATC TBO-2 project. This approach is to ensure that developments will be operationally driven. Overall consolidation of the SESAR connected Aircraft concept will be done in the transversal activity (TBO integration activities and global interoperability).*

- **Objectives**

NETWORK TBO-2 will develop requirements and validate procedures and workflows for all actors involved in trajectory management at network level.

Requirements and procedures/workflows will cover:

- Pre-departure phase
- Strategic execution
- Tactical execution for some solutions.

Requirements and benefits will be addressed from various perspectives:

- NM Perspective (Flight Plan & Flow Management)
  - Better management of the Network impact of local changes
  - Definition of NM trajectory management services – including provision of opportunities - in planning and execution
- AU Perspective (Flight Operation Centre (FOC) and Cockpit)
  - Trajectory optimisation including environment + fuel cost reduction aspects,
  - Increased automation of trajectory planning processes,
  - Improved coordination between the Flight Operation Centre and the flight crew in the pre-departure and execution phases, and Flight Operations Centre with NM and local DCB
  - Involvement in ATM trajectory management decision processes.
- ANSP/Airport Perspectives (Local Flow Management and ATC)

- Reduced uncertainty of planned traffic,
- Increase automation and capacity,
- Improve coordination and synchronisation with the network for trajectory management.

- **Ambition**

Ambition related to performance benefits and KPAs addressed are developed in Section 2. Other aspects are summarised in the table hereafter.

Ambition	**Explanation**
Supporting IR-1-02 Development of FF-ICE, including FF-ICE pre-departure enhancement and FFICE/R2.	The FF-ICE/R1 implementation in the European context is in progress under the responsibility of the Network Manager. The FF-ICE/R1 planning service requires further industrial research before implementation. The NETWORK TBO-2 project, in the UDT solution, aims to support the European definition in particular by identifying planning service requirements related to the UDT concept and dynamic constraint management in pre-departure phase and validating them at TRL 6 maturity level. Related to FF-ICE/R2 the Solution STR aims at refining operational scenarios, use cases and CDM processes for trajectory revision in execution. In a second step this will allow refining information exchanges and services required to support the process. This will be an important European input on the definition of ICAO FF-ICE/R2 provisions.
Supporting IR-1-03 Advanced network trajectory synchronisation in the execution phase	The Solution TSE is supporting this development action. TRL 6 maturity is aimed to be achieved.
Supporting IR-1-04 Connected and integrated flight management system (FMS), electronic flight bag (EFB) and flight operations centre (FOC) functionalities for trajectory optimisation	Concerning this development action, the Solution STR is aimed at identifying and validating at TRL6 maturity level operational requirements for use-cases related to trajectory revisions in strategic execution. Operational requirements will cover the need for FOC/flight crew coordination in FF-ICE/R2 negotiation processes as well as the need for new functionalities to support flight crew in the activation of the new agreed trajectory in the FMS.
Supporting IR-1-05 Dynamic route availability document (RAD) towards a RAD by exception environment	The Solution UDT will partially contribute to this development action by designing processes allowing to better identify the most penalising RADs for airspace users.
Supporting iNM Trajectory Management Requirements Definition	Most of the solutions aim to contribute to the refinement of requirements related to the end-to-end Network 4D-trajectory management supporting the global TBO concept, addressing the construction, distribution, updates, revisions, and utilisation of Network 4D trajectory by different Stakeholders
Generalising Network Impact Assessment Processes in Execution	Today most of trajectory changes in execution are done without considering the impact on the network. NETWORK TBO-2 aims at improving collaborative processes including Network Impact Assessment for trajectory change requests both in strategic and tactical execution.

Ambition	Explanation
Standardising and Digitalizing LOAs	Current Letter of Agreements are not machine readable and accessible by all impacted stakeholders. NETWORK TBO-2 aims at developing a digital standard. It is another important enabler towards a fully digital and dynamic ATM environment. The solution will build a central NM repository as well as a concept for strategic and dynamic exchanges of Digital LOA revisions.

Table 1: Ambitions of the NETWORK TBO-2 Project

#§PRJ-OBJ-PO§#

1.2 Methodology #@CON-MET-CM@# #@COM-PLE-CP@#

- **Project Decomposition and Links**

As mentioned in Section 1.1, one transversal activity and four solutions are proposed to address the topics related to NETWORK TBO-2.

The scope of some solutions is quite wide, encompassing, in some cases, several flight phases or domains of TBO. Therefore, to better structure validation activities and identify the links and boundaries between solutions and with other projects (e.g. WA3.1), a list of "validation threads" per solution is defined to provide the basis for the scope of the validations. The table below summarises the list of threads for the four solutions of the project.

Solution	Thread	Use cases
UDT (Unconstrained Desired Trajectory)	1. UDT in pre-departure phase	Use of the UDT in the pre-departure phase in support to dynamic management of various constrains such as RAD and relationship to FF-ICE/R1 Preliminary Flight Plan.
	2. UDT in post-departure phase	Use of the UDT in post-departure covering both Network management, local traffic management, and tactical actors.
STR (Trajectory Revision, Air-Ground Synchronization and Network Impact Assessment in Strategic Execution)	1. Agreed trajectory negotiation	Strategic execution. The focus of this thread is the negotiation process of the agreed trajectory between the Network Manager, local traffic managers and the airspace users.
	2. Impact on ATC	This thread focuses on the impact of FF-ICE/R2 on tactical actors & systems. Among other aspects it includes the study of the possibility of ATC clearances to execute the new flight plan/agreed trajectory.
	3. Strategic air-ground synchronisation – cockpit aspects	Focus on Flight Crew processes/systems to activate revised agreed trajectory elements in the FMS.
	4. North-Atlantic trial	Change in outside ECAC area (e.g. oceanic area) impacting trajectories in ECAC.
	5. ANSP triggered Network impact assessment	Changes of trajectory (horizontal or vertical) on ATC or pilot initiative, having a potential impact downstream.
	1. Digitalised LOAs	Creation of Digital LOAs and their management through NM central repository.

LOA (Digitalised LOAs - Dynamic LOAs)	2. Dynamic LOAs management	Dynamic re-negotiation and sharing of updated, flow-based LOA related constraints in execution phase.
TSE (Network Trajectory Synchronisation in Execution)	1. ATC trajectory sharing with NM	Some ANSPs – adjacent if possible – sending the ATC system planned trajectory to NM using B2B services (FSA/AFP extension). ANSP systems in return using the enhanced network trajectory service.

Table 2: Scope of NETWORK TBO-2 Solutions and Validation Threads

ATC TBO-2 and NETWORK TBO-2 Project Synergy

TBO is seen by main stakeholders as a whole, therefore the two projects should be seen from an operational point of view as a unique project.

This will be ensured through two main mechanisms:

- The development of the global SESAR TBO document transversal task
- The mutualisation of some management, communication and dissemination processes reducing costs and increasing visibility and international influence (see section 3.1)

WA1, WA.3.1, WA5.1 Projects Articulation for TBO Topics

TBO topics are mentioned in three work areas in the SESAR IR2 call, therefore it is key to define an approach agreed between all projects concerned in those areas, to ensure that:

- There is wide buy-in from all concerned stakeholders of TBO processes and services validated by SESAR.
- There are no gaps or overlaps in TBO activities.
- TBO requirements are developed in a consistent and harmonized way across work areas and projects.
- Criticality of risks are minimized in case one or several projects are not rewarded.

The approach is the following:

- WA1 projects develop the overall TBO concept in a dedicated NETWORK TBO-2 activity
- WA1 projects develop the deliverables (SPR-INTEROP/OSED, TS, ValP, ValR, STD, REG, CBA) for the operational solutions supporting the TBO concept.
- WA3.1/WA5.1 projects develop the deliverables (TS, TValP, TValR, STD, REG, CBAT…) for TBO technological solutions.
- WA3.1/WA5.1 projects will define and perform validation exercises contributing to TBO technological solutions verification and TBO solutions validation.
- WA1 projects will have their own exercises. The ValP and ValR deliverables of WA1 projects will integrate both WA1 and WA3.1/WA5.1 exercises plan and results (inputs from TValP/TValR)
- In case of a TBO exercise included in a WA3.1 or WA5.1 project and requiring Network Management expertise and support, this will be provided as part of WA 1 NETWORK TBO-2 project effort. In all NETWORK TBO-2 solutions linked to WA3.1 or WA5.1 a dedicated EUROCONTROL effort will be planned for that.
- To give a more precise view of the contributions of the different projects to the validation roadmap of a TBO operational solution, the notion of validation thread is introduced (see Table 3). In this proposal an initial list

of validation threads per solution is proposed. This list will be consolidated during the project execution when refining the validation roadmap of the solutions.

The links between WA1 and WA3.1/WA5.1 projects is expressed as “inputs” rather than as formal dependencies. This is justified based on the following examples:

- The OSEDs of WA1 solutions are important inputs to WA3.1/WA5.1 projects dealing with TBO. However, if a WA1 solution cannot provide a consolidated version on time, this will not block activities in WA3.1/WA5.1 projects. Those projects can identify alternative inputs – such as OSED of previous Wave projects- and make assumptions related to operational requirements to define the validation exercises and develop the platform requirements.
- In the opposite way, WA1 solutions will expect inputs from WA3.1/WA5.1 technological solutions (TValP/TValR) to feed the ValP/ValR. In case a specific WA3.1/WA5.1 project cannot deliver the expected deliverable, a TBO solution can in any case produce a ValP/ValR based on the validation planned in the other projects (WA1, W3.1, WA5.1) contributing to the solution validation.

The following diagram provides an overview of links between WA1 and WA3.1 /WA5.1 projects deliverables.

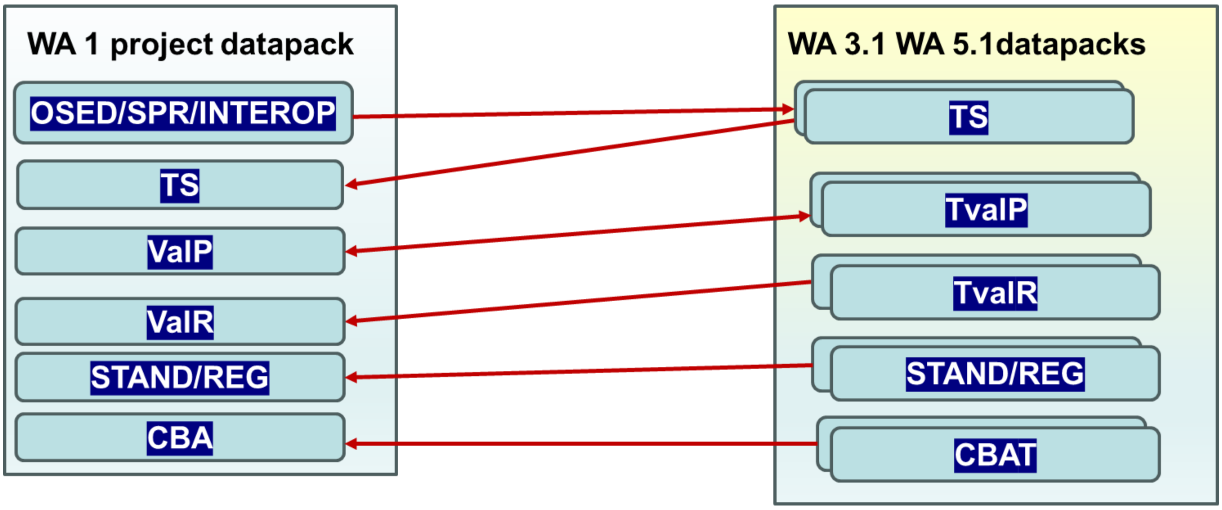


Figure 1: Links Between WA1 and WA3.1 Deliverables

The following table provides an overview of NETWORK TBO-2 solutions expected to be covered by validation in WA3.1/WA5.1 projects. It is based on inputs received from WA3.1 consortium leaders during the phase of propositions elaborations.

WA1 Solutions	Validation Threads Addressed by WA3.1	Validation Threads Addressed by WA5.1 Projects
UDT – Unconstrained Desired Trajectory	Thread #1, 1. UDT in pre-departure phase	
STR - Trajectory Revision, Air-Ground Synchronisation and Network Impact Assessment in Strategic Execution	Thread #2, impact on ATC Thread #5 ANSP triggered network impact assessment	Thread #3: strategic air-ground synchronisation, cockpit aspects
TSE - Network Trajectory Service Improvement	Thread #1	

Table 3: TBO Solutions Addressed by WA3.1 /WA5.1 Projects

Links with external projects/initiatives (within and outside SESAR)

The following diagram provides an overview of the links between solutions and with external projects/initiatives

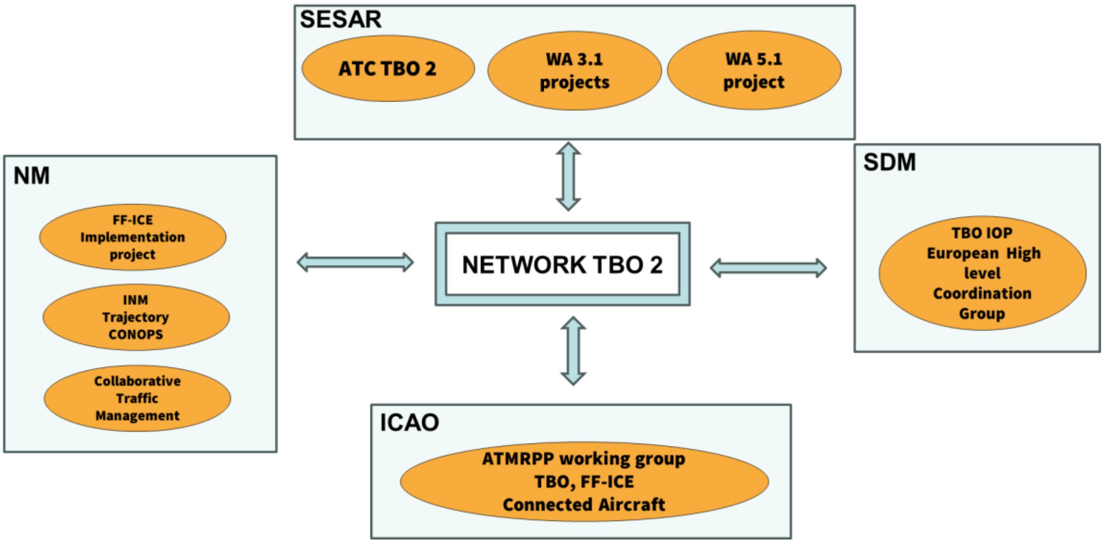


Figure 2: Links Between NETWORK TBO-2 Project and Other Projects/Initiatives

- **Generic Principles**

Principles and assumptions are common to all solutions. In addition, methods and validation approaches (as described in the following sections) are adapted to the specificities of each solution.

- The solutions will by default comply with the SESAR 3 Project Handbook Edition 02.00 as released in December 2024 by the SJU.
- The proposed validation approach for all solutions follows the recommendations of the E-OCVM methodology. The validation approach described hereafter only represents an initial view at the time of bid drafting). The validation roadmap will be further refined when executing the E-OCVM process.
- The Solutions will address the following transversal areas: Safety, Performance, Human Performance, Environment, (Cyber)-Security, CBA.
- A specific attention will be put on (Cyber)-Security aspects for solutions developing new services and information flows.
- Accessibility of data/research outputs:
  - Intellectual property rights are exclusively reserved to the members of the consortium. All members have full access to the content of project deliverables, during and after development.
  - Copyrights are licensed to the SJU under conditions, dissemination of project results and deliverables being subject to owners' specific agreement. SJU members entitled with project coordination rights have full and open access to project deliverables' content
- Reusability of data/research outputs:
  - Licenses for data sharing and re-use are granted exclusively based on the agreement of product owners.
- Open science practices:
  - All consortium members agree to adopt a collaborative working approach based on systematic sharing of knowledge and tools, limited to the scope of specific R&I activities. Sharing of knowledge is enabled by participation to team meetings, collaborative sharing, and review of deliverables, and sharing of intellectual products. Sharing of tools is subject to validation activities and is framed by the specific scope of validation.
  - The overarching principle applicable throughout the application of open science practices is 'as open

as possible, as closed as necessary', in line with each consortium member' relevant policies. In addition, 'Findability', 'Accessibility', 'Interoperability' and 'Reusability' (FAIR) principles are applied. In particular it will be investigated case by case to share the output data of the simulation for the reproducibility purpose.

- Gender dimension:

  The scope and content of the planned research and innovation activities do not address a specific gender category and has no gender-related impact.

- **Solutions/Activity Methodology**

Transversal Activity: TBO Concept Development

a) Concept

This transversal activity covers the TBO content integration across the programme, including development of the SESAR TBO concept of operations, integrating Network, ATC and intra-European (regional) TBO processes. This activity will produce a document called "SESAR TBO Concept Development Document" which includes a core part and two annexes), 1) a human-machine teaming annex describing the ATC TBO automation concepts 2) A SESAR instantiation of the Connected Aircraft concept summarising all SESAR use-cases related to EFBs.

b) Methodology

The transversal activity will be split into three tasks corresponding respectively to the core document and the two annexes. This team performing these tasks will include:

- Task leaders and core drafting team
- Punctual contributors
- OSED leaders of NETWORK TBO-2 and ATC TBO-2 projects.

The following table provides an overview of the scope and organisation of the three tasks.

Tasks	Scope and activity	Participants
1. TBO overarching development	Taking the ICAO TBO concept document as conceptual framework, the core document will include at least: • A conceptual description of the TBO research topics addressed by SESAR • A summary of the TBO use-cases addressed in the SESAR IR2 work program. This task will also include coordination activities (e.g. production of papers, documents review) with working groups outside SESAR dealing with TBO (e.g. ICAO ATMRPP). It may also propose amendments to the ICAO TBO concept document.	**EUROCONTROL**, AIRBUS, AIR FRANCE, BAS, COLLINS, DFS, DLR, DSNA, ENAV, FOR, LUFTHANSA, NAV CANADA, NATS, NLR, SKYGUIDE, SWISS, TERN
2. Human machine teaming Annex development	The content of this annex will be defined at the beginning of the project with the partners involved in the task	**DLR**, DFS, EUROCONTROL, SKYGUIDE
3. Connected aircraft annex development	Taking as input the Connected Aircraft concept document from the ICAO ATMRPP working group, the annex will include at least: • An overall SESAR strategy on Connected Aircraft concept development • A typology of EFB functionality relevant for TBO processes • A list and description of the use-cases addressed in	**AIRBUS**, AIR FRANCE, BAS, COLLINS, LUFTHANSA

	SESAR in which EFB functionality are used. This task will also include coordination activities (e.g. production of papers, documents review) with the ICAO ATMRPP working group dealing with the Connected Aircraft concept.	

Table 4: TBO Concept Development Tasks

c) Links with Other Projects/Initiatives

A number of important inputs are identified for this transversal activity as follows:

- The TBO concept document developed by the ICAO ATMRPP Working Group
- The TBO documentation produced as part of the SESAR Master Plan development
- The NM 4D trajectory CONOPS document.
- The Trajectory Management Document (TMD) delivered by the ATC TBO Project in Wave 1.

Solution UDT: Unconstrained Desired Trajectory

a) Concept

This solution addresses the definition of Unconstrained Desired Trajectory (UDT) and the processes and tools covering its provision and use throughout the different ATFCM (strategic, pre-tactical, and tactical) and flight phases (pre-departure and post-departure), by the ATM actors involved (AU, NM, ANSP).

The purpose of the UDT is for the Airspace Users to provide to all ATM actors a representation of "desired optimum" traffic demand and a reference against which to assess the optimality of trajectories. Particular focus will be given to exploring how knowledge of the UDTs can help the ATM actors to reduce constraints and their impact to the minimum necessary, in all phases (RAD, dynamic or not, LoAs, route structure, SID/STARs, reserved airspaces, etc.).

b) Methodology

With the target to make the UDT concept usable in practice, research work and prototypes will investigate the operational processes and system requirements surrounding UDT's relationship to other "trajectories"; tools for calculation; sharing mechanisms; lifecycle of the UDT; and its' use by the NM and the ANSPs in pre-departure and post-departure flight phases.

Solution	Maturity at beginning of the project	Target maturity at end of the project
UDT	-Maturity will be assessed at the beginning of the project through a self-assessment process	TRL6

Table 5: Maturity of Solution UDT

c) Validation Approach

The following table provides a general view of the validation threads defined to respond to the validation needs.

Threads	Validation Questions
1. UDT in pre-departure phase	• UDT definition in pre-departure phase. Relationship to FF-ICE/R1 Preliminary Flight Plan (PFP). • Tooling for automated calculation, provision, and sharing of UDT. • What is the UDT evolution timeline: quality and frequency of update? • Usage of the UDT by ANSP and NM in the Pre-tactical phase, to optimize available capacity while relaxing constraints (e.g. RAD) when possible.
2. UDT in post-departure phase	• UDT definition in post-departure phase. • How dynamic must it be? What information from the AU is needed? How can the ANSPs use it? • How is the UDT in post-departure related to FF-ICE/R2 Strategic Execution?

Table 6: Solution UDT Validation Needs

The precise sequence of exercises and their associated validation objectives will be defined at the beginning of the project execution during the development of the validation plan taking into consideration the conclusions of the "SESAR 3 Network TBO Solution 1 PFP topic". The following table provides a general view of proposed validation activities.

Thread #	Timeframe	Partners	Platforms Prototypes	Type of exercises	Projects
Thread 1	2027-2028	EUROCONTROL AIR FRANCE (Validation Lead), SWISS, LUFTHANSA, DSNA, ENAV, CAE group, THALES LAS	CAE group NMVP	Shadow mode HIL Sessions	NETWORK TBO-2 WA 3.1 Projects
Thread 2	2027-2028	EUROCONTROL, AIR FRANCE (Validation Lead), SWISS, LUFTHANSA, ANS CR, NAV CANADA, DSNA	EFB ATC simulator	RTS	NETWORK TBO -2

Table 7: Solution UDT Validation Activities per Thread

d) Links with Other Projects/Initiatives

At this stage no strict dependencies are identified between this solution and other solutions or projects. However, there are some links at least with the following activities:

- FF-ICE/R1 and FF-ICE/R2 via STR Solution

Solution STR: Trajectory revision, A/G synchronisation and Network impact assessment in strategic execution

a) Concept

This solution addresses the definition of operational processes, services, and systems to support trajectory revisions in execution that can be initiated by either the AU, NM, or local flow management. This solution supports the FF-ICE/R2 Trajectory Revision in strategic execution.
The solution also covers trajectory changes initiated by tactical actors – typically pilot requesting an RFL change to ATC - having a network impact. The request will trigger a network impact assessment involving local flow managers and NM.

Important notes:

- Regarding strategic trajectory revision, the scope of the solution is not limited to FF-ICE/R2 services and information exchanges. The solution will also address ANSPs-NM information exchanges (out of FF-ICE/R2 scope).
- FF-ICE/R2 trajectory negotiation and ANSP-triggered network impact assessment - though there are distinct processes - are addressed in the same solution for two reasons:
    - The two topics share key and complex research questions related to network impact assessment.
    - It is important to develop a consistent set of processes, procedures and rules for requests from AUs to change or deviate from the agreed trajectory in execution.
- Though it is expected that first implementation of FF-ICE/R2 will concern mainly long and medium hauls this solution has a much wider scope and will address the whole traffic.
- The solution will search for quick wins. This means concretely that the solution will look at intermediate implementation steps minimising the need for ATC systems evolutions so relying as much as possible on existing information flows and flight plan messages in execution.

Taking as the baseline the activity developed in SESAR 3 Wave 1 and the discussions taking place in the ICAO ATMRPP working group, the following diagram provides an illustration of the scope and elements addressed by the solution:

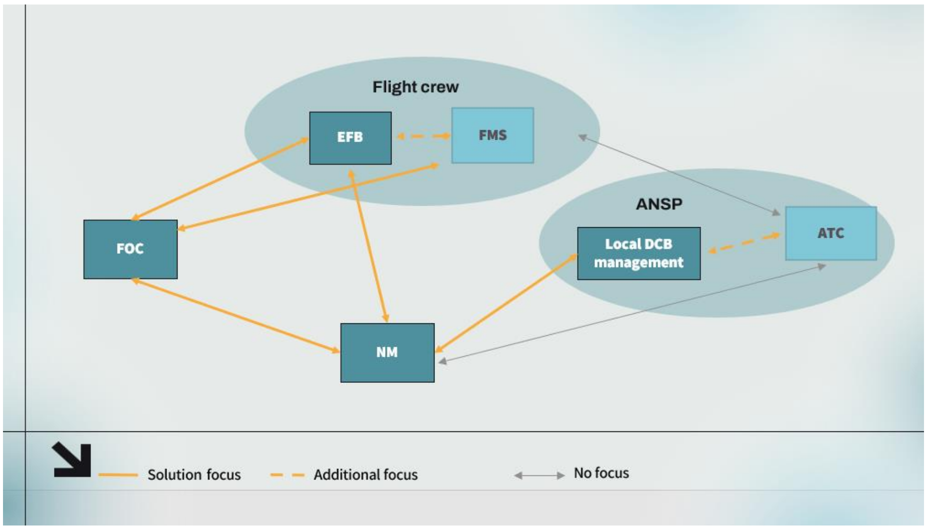


Figure 3: Scope of Solution STR

Note: in the diagram above, the link EFB/NM is to cover the case of the flight crew playing the FOC role related to the trajectory revision process.

The main expected benefits resulting from this solution development are:

- Better use of airspace capacity through the reduction of buffers
- Airspace Users flight efficiency improvement
- Environmental impact reduction
- Safety improvement

b) Methodology

For Solution STR the following high-level R&I needs are identified:

- Definition of FF-ICE/R2 services required for the trajectory negotiation
- Impact of FF-ICE/R2 on ATC processes and systems (if any)
- Network impact assessment: NM and LTM roles, feasibility of automation
- Feasibility of Network impact assessment processes in the context of trajectory changes initiated by tactical actors.
- Definition of clear procedures in the cockpit for activation of the new FF-ICE agreed trajectory
- Quantitative benefits assessment
- Search for quick wins

The following table provides an overview of the expected maturity for the solution at the end of SESAR 3 Wave 2 in line with the SESAR 3 call technical specification document.

Solution	Maturity at beginning of SESAR 3 Wave 2	Target maturity at end of the project
STR	TRL4 on-going	TRL6

Table 8: Maturity of STR Solution

Note: the initial maturity is TRL 4 on-going in particular due to the impact on ATC that is not addressed in SESAR 3 Wave 1.

c) Validation Approach

The following table provides a general view of the validation threads that has been defined to respond to the validation needs.

Threads	Validation Questions
1) Trajectory negotiation	Definition of FF-ICE/R2 services required for the trajectory negotiation Network impact assessment: NM and LTM roles, feasibility of automation Management of the negotiation horizon and Time Limit
2) Impact on ATC	Impact of FF-ICE/R2 on ATC processes and systems (if any) Management of non-nominal situations (e.g. radio failure, air-ground inconsistencies) “current” and downstream ATSUs role/responsibility and information needs to implement trajectory revisions
3) Strategic air-ground synchronization – cockpit aspects	Integration of strategic elements of the agreed trajectory in the FMS. Definition of clear procedures in the cockpit for activation of the new agreed trajectory Assess feasibility to increase level of automation in the cockpit

4) North-Atlantic trial	Search for quick wins Demonstrate feasibility of the FF-ICE/R2 negotiation process in real operations
5) ANSP triggered Network impact assessment	Definition of operational procedures (including timing) Network impact assessment: definition of NM services evolutions, feasibility of automation Definition of operational & system requirements (NM, local DCB, ATC)

Table 9: Solution STR – Validation Threads

The precise sequence of exercises and their associated validation objectives will be defined at the beginning of the project execution during the development of the validation plan taking into consideration the conclusions of the Solution 2 of SESAR 3 NETWORK TBO Wave1 project.

The following table provides a general view of proposed validation activities. By default, it is planned that one exercise per thread will be performed. If needed additional exercises will be added during the course of the project.

Thread #	Timeframe	Partners	Platforms Prototypes	Type of exercises	Projects
Thread 1	mid 2028	**EUROCONTROL** (Validation Lead)**,** AIR FRANCE, ANS CR, BAS, CAE group, COLLINS, DFS, DSNA, ENAV, INDRA, LUFTHANSA, NATS, NAV CANADA, SWISS, THALES LAS, TXT, PACE GmbH	NMVP Local DCB prototypes AU flight planning systems & EFB	Shadow mode	NETWORK TBO-2
Thread 2	mid 2028	WA 3.1 Partners	ATC systems and cockpit simulator	ATC RTS	WA3.1 projects
Thread 3	mid 2028	**AIRBUS** (Validation Lead), BAS, COLLINS, HONEYWELL, TXT, PACE GmbH	FMS and EFB prototypes	RTS	NETWORK TBO-2 WA5.1 project
Thread 4	mid 2028	**NAV CANADA** (Validation Lead), AIR FRANCE, AVTECH, BAS, DSNA, ISAVIA ANS EHF, LUFTHANSA, NATS, SWISS, TXT, PACE GmbH, INDRA	NMVP Local DCB prototypes AU flight planning systems & EFB	Live trial or shadow mode	NETWORK TBO-2
Thread 5	mid 2028	**DFS** (Validation Lead), FOR, LUFTHANSA, ANS CR, TXT, PACE GmbH	NMVP (including local DCB prototype and Network impact assessment services)	Shadow mode	NETWORK TBO-2 WA3.1 project

Table 10: STR Validation Activities per Thread

<u>Notes about the Threads:</u>

- Thread 1: this thread will focus on planning actors (FOC (or flight crew playing FOC role), NM, Local DCB can be seen as a continuation of SESAR 3 Wave 1 activities undertaken in the NETWORK TBO project. NETWORK TBO-2 will do further validate at TR6 maturity level. Uses cases covered will address revision processes initiated either by AUs or ATM.
- Thread 2:
  - W3.1 projects will perform real-time ATC simulations to assess the impact of FF-ICE/R2 on ATC processes and systems. Several options may be considered regarding the need for ATC clearance of the new trajectory.
  - It is not expected to use the Network management platform in the thread. In the WA3.1 exercises, FF-ICE/R2 negotiation process will not be simulated: only the outcomes of the negotiation i.e. agreed trajectory changes will feed the ATC simulation.
  - The role of the STR solution will be to develop operational requirements, derive validation objectives as input to WA3.1 exercises definition and integrate WA3.1 exercises results into the STR validation report.
  - In case no WA3.1 project addressing this thread is awarded, two options may be envisaged:
    - Integrate associated validation objectives in one of the exercises of the ATC-TBO-2 project
    - Address this thread in the context of a Wave3 project.
- Thread 3: there will be two exercises addressing this thread, one performed by the solution, and one performed in the context of the JARVIS-CONNECT project.
- Thread 4:
  - The thread will focus on North Atlantic flow and will involve NAV CANADA, NATS, INDRA, ISAVIA ANS EHF and possibly DSNA as ANSPs.
  - Concerning the search of quick wins, it will be investigated the possibly to do a live trial using FF-ICE/R2 services for the negotiation while relying on current messages for the distribution of revised flight plans to ATC units.
  - The validation will mainly focus on revision processes initiated by the AUs.
- Thread 5:
  - The thread will focus on Network Impact Assessment (NIA) initiated by ANSPs and will involve DFS, FOR, LUFTHANSA, ANS CR and TXT **E-TECH** group.
  - The solution will be based on a NM interface that delivers the result of the network impact assessment for the requested flight and that will be used by the ATS system.
  - The validation will be conducted as an integrated WA3.1 exercise.
  - In case no WA3.1 project addressing this thread is awarded it will be investigated the possibility to perform the exercise only in NETWORK-TBO-2 with a reduced scope.

All the five threads will address operational performance assessment focusing each on some of the KPAs impacted by the solution (see section 2). In addition, EUROCONTROL will perform a fast-time simulation using the R-NEST simulator to assess the overall impact on the performance on the network considering inputs form the results of the exercises of the threads.

(Cyber-)security may be an important aspect of this solution. Once the Security Assessment Plan is developed, the threads and exercises addressing (cyber-)security requirements will be more precisely defined.

d) Links with Other Projects/Initiatives

At this stage no strict dependencies are identified between this solution and other solutions or projects. However, there are some links at least with the following activities:

- WA3.1/WA5.1. projects dealing with this solution
- NM FF-ICE implementation program
- ICAO ATMRPP meetings / developments

Solution LOA: Digitalized LOAs/Dynamic LOAs

a) Concept

This solution addresses the definition of operational procedures, services, and systems to support the digitalisation of LoAs and the dynamic negotiation of LoA constraints between Air Traffic Control (ATC) centres. It aims to move from static, PDF-based documents to structured, machine-readable formats, allowing LoAs to be shared and processed by ANSPs, the Network Manager, and, where applicable, Airspace Users. It includes the development of a centralised digital repository embedded in Network Manager systems and the definition of mechanisms for bilateral electronic exchange.

The solution defines the concept of a dynamic constraint negotiation process, enabling real-time bilateral revision and/or relaxation, deactivation of LoA conditions as well as the distribution of updated constraint information to relevant stakeholders. This can also include the assessment of their operational impact on flow and network management.

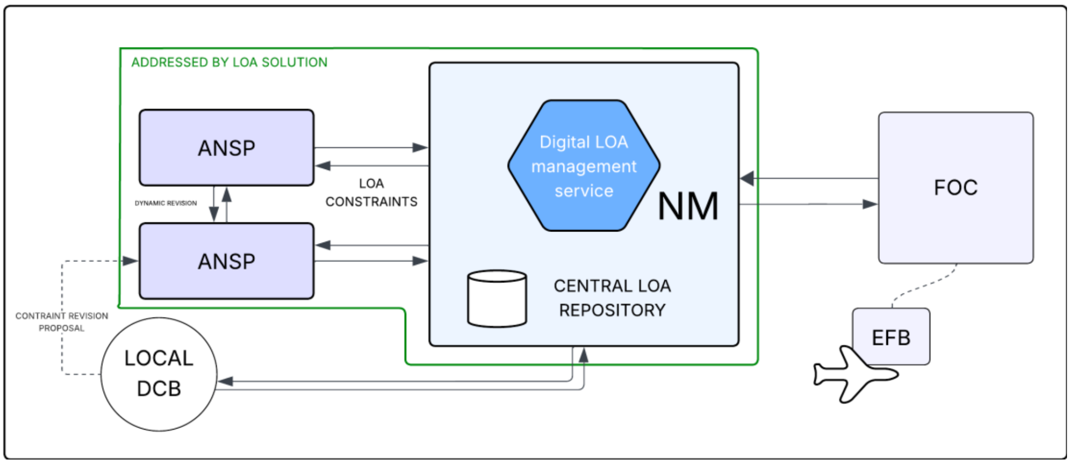


Figure 4: Scope of Solution LOA

The main expected benefits resulting from this solution include:

- Enhanced information sharing and interoperability across stakeholders. Increased predictability and transparency for all operational stakeholders
- Reduction of coordination workload between ATC units and potential human errors
- Enabling the deployment of the Network 4D Trajectory Concept through the availability of structured, digitalised LoA constraint data
- Digitalisation is an enabler for further increase of automation
- Reduction of workload on ATSEP, configuration management – one database instead of many

b) Methodology

The solution will define, develop, and validate the technical and operational enablers required to support the digitalisation of LoAs and dynamic constraint management. The work will include the definition of data formats, exchange mechanisms, system behaviours, and operational procedures. For ATC-to-ATC constraint negotiation and revision the solution will coordinate with OLDI modernisation working group.

The following R&I aspects will be included:

- Definition of a standardised digital LoA format
- Definition and development of a centralised LoA repository within Network Manager systems
- Definition of the operational concept for dynamic constraint negotiation
- Advance dynamic constraint negotiation between ATC units

- Definition of processes for the provision of LoAs and subsequent amendments or modifications to all relevant stakeholders
- Definition of SWIM-based services for LoA constraint dissemination
- Assessment of the operational integration of dynamic LoA constraints into flow and network management systems

The following table provides an overview of the expected maturity for the solution at the end of SESAR3 Wave 2 in line with the SESAR 3 call technical specification document.

Solution	Maturity at Beginning of SESAR3 Wave 2	Target Maturity at End of the Project
LOA	Maturity will be assessed at the beginning of the project through a self-assessment process	TRL6

Table 11: Maturity of Solution LOA

c) Validation Approach

The following tables provides a general view of the validation threads that has been defined to respond to the validation needs.

The validation of this solution will focus on assessing the feasibility, technical implementation, and operational integration of digitalised and dynamic LoA constraint management. The approach will include simulation-based exercises, system prototyping, and stakeholder-in-the-loop validations to ensure the applicability of the solution in realistic operational environments.

Threads	High Level Scope and Objectives
1) Digitalisation of LOA	• Definition of standardisation ready scope and digital format of LOAs and connected processes • Assess the management of LOAs through NM central repository • Analyse, test operational use cases and technical processes, and additional connected enablers within scope of digital LOAs • Assess the usability and suitability of technical solutions
2) Dynamicity of LOA	• Assess the operational benefits of tactical updates to LOA constraints • B2B processes in tactical, bilateral but transparent revisions of LOA constraints and their subsequent downstream/upstream effects • Demonstrate interoperability between multiple technical solutions

Table 12: Solution LOA Validation Needs

The precise sequence of exercises and their associated validation objectives will be defined at the beginning of the project execution during the development of the validation plan taking into consideration the conclusion of early LOA content scoping workshops.

The validation activities will be combined between the two threads to optimise resources and demonstrate maximum interoperability and technical readiness levels.
The following table provides a general view of proposed validation activities.

Thread #	Timeframe	Partners	Platforms Prototypes	Type of Exercises	Projects
Thread 1	mid 2028	TERN (Validation Lead), EUROCONTROL, PANSA	NM CENTRAL REPOSITORY	HIL Sessions, Analytical Methods	NETWORK TBO-2
Thread 2	mid 2028	TERN (Validation Lead), EUROCONTROL, ANS CR, PANSA, HUNGAROCONTROL, ACG, INGENAV, THALES AVS	ATC SYSTEMS INFO SYSTEMS NM CENTRAL REPOSITORY	RTS	NETWORK TBO-2

Table 13: LOA Validation Activities per Thread - LOA

d) Links with Other Projects/Initiatives

While no formal dependencies with other solutions or projects have been identified at this stage, there are clear thematic and functional links with the following activities:

- Solution UDT, thread 2 UDT in post-departure phase
- OLDI Modernisation Programme

Solution TSE: Network Trajectory Service Improvement

a) Concept

Network TBO-2 Solution TSE aims to enhance the accuracy, consistency, and usability of the Network Manager (NM) trajectory by integrating enriched trajectory data from ANSP's FDPS. Building on SESAR Solution 3 (SESAR ID 442), this solution introduces a more dynamic and data-driven approach to trajectory sharing from ANSPs to NM. The solution also seeks to improve coordination between operational stakeholders by making the resulting NM trajectory available to both airspace users and ANSPs, including Flow Management Positions (FMPs) and ATC planning functions.

b) **Methodology**

The solution will design and validate a new SWIM Yellow Profile (YP) Business-to-Business (B2B) service to enable standardized, secure, and real-time provision of trajectory information from ANSPs to NM. This service will support the continuous provision of updated 4D trajectory data from ANSPs Flight Data Processing Systems (FDPS), as well as transatlantic trajectory data from NAV CANADA. The resulting NM trajectory will be disseminated to operational stakeholders, including airspace users and ANSPs, to support improved planning, coordination, and situational awareness. The solution will also explore the enhancement, complementing, or replacement of current First System Activation (FSA) messages and the Coordination and Transfer data (as validated in Network TBO Sol 3).

Solution	Maturity at Beginning of SESAR3 Wave 2	Target Maturity at End of the Project
TSE	Maturity will be assessed at the beginning of the project through a self assessment process	TRL6

Table 14: Maturity of Solution TSE

c) Validation Approach

The solution will be validated through an integrated exercise: ANSP validation will be handled in WA3.1 while the NM aspects will be handled in this project. It is anticipated to have one validation iteration for each corresponding WA3.1 validation. Besides planning aspects, the main interfaces between the validations done in this project and the validations in WA3.1 will be the NM B2B services both for ANSPs to provide trajectory information to NM (designed in this solution) or to consume the updated NM trajectory (using existing services: B2B or EFD distribution). Emphasis will be placed on:

- Verifying the technical performance and interoperability of the SWIM YP B2B service.
- Assessing the operational value of enriched trajectory data for NM functions.
- Evaluating the usability and impact of the NM trajectory for FMPs, ATC planning functions, and airspace users.
- Comparing the effectiveness of the new data-sharing approach against the current FSA-based mechanisms.

Thread	Timeframe	Stakeholders	Partners	Platforms/Prototypes	Type of Exercises	Target Maturity
Network Trajectory Service Improvement (Use cases: Trajectory Sharing from ANSPs to NM Use of enhanced NM trajectory by ANSPs/Aus)	mid 2028	NM, ANSPs, AUs	EUROCONTROL W3.1 Consortiums (EUROCONTROL Validation Lead)	NMVP platform W3.1 Platforms	RTS, Shadow mode	TRL6

Table 15: TSE Solution Validation Approach

d) Links with Other Projects/Initiatives

At this stage no strict dependencies are identified between this solution and other solutions or projects. However, there are some links at least with the following activities:

- WA3.1 projects dealing with this solution

- **Some Platforms/Prototypes used by NETWORK TBO-2 Solutions**

Validation techniques and platforms are selected based on their ability to address the validation objectives in terms of operational and technical representation, and their capability to provide realistic measurements of key performance parameters**.** Due to the document size limitation only a limited sub-set of the platform/prototypes are listed hereafter.

NETWORK TBO-2 solutions will use the following validation platforms/prototypes:

The Network Manager Validation Platform (NMVP) & PLANTA- EUROCONTROL

The NMVP is derived from the operational NM system, enables network validation for operational feasibility, performance, and technical assessments. It includes, in particular, the prototypes of the following legacy NM systems components that are impacted by NETWORK TBO requirements:

- IFPS: flight plans management system

- ETFMS: NM flow management system in tactical phase
- NM HMIs (CHMIs, NOP Portal) and B2B services

The NMVP platform provides shadow and replay execution modes. It also includes a rich HMI layer called PLANTA.

SkyFleet - AIRBUS

The targeted platform for evaluation, called SkyFleet, is the toolset within the AIRBUS Flight Test Department used for flight watching of all AIRBUS test flights worldwide. This platform is natively connected to all ground-to-aircraft communications means and can support maintenance and flight operations as in airline operation control centre.

Internally mastered by flight test operation engineer, the platform is continuously improved thanks to aircraft evolution, but also research and technologies projects. It allows implementations of representative environments for operators to evaluate added value of new technologies.

Dassault Falcon system integration simulator – Honeywell

Honeywell will use a Dassault Falcon system integration simulator that is located in Brno (Czech Republic). This simulator integrates the whole Honeywell avionics suite for this platform. Among other systems, it features aircraft displays, the state-of-the-art Honeywell FMS (NG FMS) and provides an emulation of the flight control system. The simulator enables integration of prototypes such as the advanced Connected FMS software interface and a connectivity solution to link the FMS with TXT **E-TECH**/PACE flight optimization application running an electronic flight bag to validate cockpit aspects of strategic air ground synchronization, in the context of AUs who do not own a FOC.

Polaris ATM – TERN

Polaris ATM is a modular Air Traffic Management system developed by TERN. The system has been designed in close collaboration with operational users, with a focus on usability, scalability, and adaptability to evolving airspace requirements. Its modern and open architecture enables integration with external services from multiple providers and facilitates the gradual adoption of new functionalities. Polaris ATM is already in operational use and is also used in SESAR Wave 2 research projects, including AWARE and ENSURE.

Nexus Information System – TERN

Nexus is an information system designed to support the digitalisation of operational environments in air traffic management. It enables the distribution and control of operational data and documentation at controller working positions, eliminating the need for paper-based materials.

Orion RAD SIM – TERN

Orion SIM is a state-of-the-art ATC simulator developed by TERN. It is in use in Training Centres of various ANSPs in Europe and beyond. Interoperable by fully supporting standards for multiple types of data exchange within ATC. It will be used within this project to support validation activities within Thread2 of multiple ANSPs.

PANDORA EVA – PANSA

Pandora Eva is an informative and ATM support system, integrating meteorological, navigational, and operational data for visualization, analysis, and coordination of air traffic control services. Located in Poland.

DFS NG+ IBP - DFS

The DFS NG+ IBP is an evolution of the existing DFS iCAS IBP. Located at the same facilities in DFS Technical Center in Langen it will accommodate an Industry Based Platform (IBP) that is comprising a DFS Next Generation+ system prototype developed by NATICA (WA3-1) project and the Verification & Validation Infrastructure (V&VI).

1.3 State of the Art

a) TBO Concept Development

The current TBO concept document was produced by the ICAO ATMRPP Working Group in 2017.

In the European context at least two other initiatives were conducted in the last years:

- The NM 4D trajectory CONOPS. This document was developed under the Network Manager initiative in 2020. This document provides a high-level description of the current and future process and views of systems evolution to support advanced trajectory management, during all flight phases, as well as the major changes expected in the roles and responsibilities of the different stakeholders. The document was approved by a wide range of NM stakeholders in 2023.
- The development of the SESAR Trajectory management Document (TMD). This was initiated in SESAR 2020 and finalised in SESAR 3 Wave 1. This document provides an overall view of SESAR trajectory management processes and services. It is aligned with the NM 4D trajectory CONOPS on Network management aspects. Its scope is wider since it covers both ATC TBO and NETWORK TBO developments.

In addition, in the context of the last ATM master plan development, a TBO focus group was set and produced a document called "European Integrated TBO Roadmap" which provides an overview of TBO concept elements considered in the master plan.

b) Unconstrained Desired Trajectory

The following past or current SESAR activities can be mentioned in relation to the UDT topic:

- In SESAR 1, the Solution 7.6.2 addressed the concept of the Nominal Preferred Trajectory (NPR) which can be seen as a precursor of the UDT. An exercise (fast time simulation, VP715) was performed and V1 maturity was reached.
- In SESAR 2020, the ALBATROSS VLD used the "optimum trajectory" for CO2 assessment for a flight.
- In SESAR 3 Wave 1, there is an on-going activity on the Preliminary Flight Plan (PFP). The PFP is potentially a mean to support UDT collaborative information exchanges.
- In SESAR 3 IR1, there is an on-going Solution (0404) about maximizing CO2 emissions reduction by automatically detecting and operating the opportunities for ATFM constraints relaxation in En-Route.
- Additionally, the Aviation Environmental Reporting Working Group (AVENIR) led by EUROCONTROL in coordination with EASA can be mentioned. In this Working group there is a task force dedicated to the definition of an optimal trajectory to develop an environmental performance indicator. This Task Force should provide outcomes by beginning of 2026 and this could be an input to the UDT Solution.

c) FF-ICE/R2 & Trajectory Revisions

In the context of the TBO concept developed by ICAO, FF-ICE/R2 is aimed at supporting information exchanges and trajectory negotiations in execution. FF-ICE/R2 is focusing on what is called the "strategic execution" this means all post-departure negotiations related the agreed trajectory changes beyond the current ATCO's separation and coordination scope.

Concept documents are still under development (e.g. FF-ICE/R2 Concept).

In Europe, in SESAR 3 Wave 1 the NETWORK TBO project is addressing trajectory revision processes in strategic revision. Documentation as well as validations are in progress. The expected maturity is TRL 4 on-going. The FF-ICE/R2 negotiation process should achieve TRL 4 while some other elements like strategic air-ground synchronisation or the impact on ATC should remain at TRL 4 on going.

d) LOAs Digitalisation

Digitalisation of LOAs is one of the last steps to be taken towards a fully digital ATM ecosystem.

No activities were performed in SESAR on this topic. However, the Solution LOA will consider as a starting point a number of existing features or initiatives related to the topic. This includes:

- Partial LOA information shared by NM in the context flight planning and flow management processes and services. This refers in particular to RADs and PTRs.
- Local LOAs digitization initiatives. A number of ANSPs – e.g. MUAC– have partially digitalised LOAs in their systems for internal purpose.

e) ATC-NM Trajectory Information Exchanges

In SESAR 3 IR1 Solution 3 (SESAR ID 442), initial work was carried out to improve the quality and consistency of the Network Manager (NM) trajectory by sharing OLDI and Clearance in advance results. The sharing of OLDI coordination results was enabled by doing OLDI over SWIM.

f) Past of Current Activities Related to the Whole Project

The following documents will provide strong inputs on the solutions:

- The Implementation Strategy for FPFDE Network Flight Plan and data Management
- FPFDE Implementation Guidelines Volume 1 (FF-ICE/R1) and volume 2 (FF-ICE/R2 & SESAR procedures in the flight departure preparation & flight execution phases)
- The Network 4DT trajectory CONOPS initiated by the Network Manager in collaboration with all stakeholders.
- The Trajectory Management Document finalised by the ATC TBO project in SESAR 3 Wave 1
- The documentation is to be produced by the European High-Level coordination Group for TBO IOP implementation.

This documentation will provide the general framework in which the NETWORK TBO-2 solutions will develop use-cases and requirements.

#§CON-MET-CM§# #§COM-PLE-CP§# #§REL-EVA-RE§#

2. Impact #@IMP-ACT-IA@#

2.1 Project’s Pathways Towards Impact

The NETWORK TBO-2 project will have an impact on the following target groups:
ATM ground systems of NM, ANSPs and the existing AUs’ Flight Operations Centres as legacy systems will have to be upgraded to process properly the increased amount of data exchanged as part of trajectory management. Increased automation will be a key technological enabler. Most of the solutions will also have a strong impact on NM systems as well as ANSPs systems.

Solution UDT will have an impact on:

- NM advanced FF-ICE/R1 services evolutions, in particular the planning service
- AU FOC evolution to integrate advanced FF-ICE/R1 planning service, and provide UDT throughout the flight plan lifecycle
- ANSPs integration of the UDT in their capacity planning activities, as well as flight execution service provision, and further improving dynamic ATM constraints management

Solution STR will have an impact on:

- AU FOC, EFB and FMS systems evolutions to support FF-ICE/R2 processes
- NM systems and services evolutions to support FF-ICE/R2 processes

- ANSP systems (local flow management & ATC) to support FF-ICE/R2 process
- ATC systems and local flow management systems to trigger network impact assessment in case or trajectory changes requests
- NM Network impact assessment processes and services

Solution LOA will have an impact on:
- ATC systems to:
  - Enable the digital exchange and bilateral revision of LoAs conditions
  - To incorporate dynamic revision of LOA conditions
  - Support automatic electronic coordination connected to negotiation and revision of conditions
- Network Manager systems and services to support the centralised repository of LoA constraints
- Local flow management systems to incorporate dynamic LoA conditions into planning processes and to reflect real-time constraint updates where applicable

Solution TSE will have an impact on:
- Network Manager (NM) Systems and Services:
  Enhancement of NM systems to integrate and process trajectory data from ANSPs and NAV CANADA via the SWIM YP B2B service, and to distribute the resulting NM trajectory to stakeholders in real time.
- ATC Systems (FMPs and ATC Planning Functions):
  Evolution ATC systems to consume and operationally exploit the enriched NM trajectory data for improved demand-capacity balancing, sector configuration, and planning.
- Airspace User Systems:
  Adaptation of AU systems to receive and utilize the NM trajectory for improved flight planning, situational awareness, and alignment with network constraints.

(a1) Contribution of the project results to the expected performances benefits as documented in the masterplan and the IR2 call

Call Expected Outputs Topic WA1.1	NETWORK TBO-2 proposal results contribution to the Expected Outputs
Capacity (en-route & TMA) Overall European Airspace capacity increases due to improved predictability and increased automation	• Solution UDT, STR and TSE will allow to increase declared capacity. Current capacity buffers could be reduced through a better knowledge of traffic demand • STR solution will allow to avoid trajectory changes with strong negative impact on the Network and downstream sectors complexity. • Solution STR, TSE and LOAs will allow to increase capacity by enabling further automation of ATCO tasks through synchronisation of the Network Trajectory with ANSPs trajectories and actions.
Environment (fuel reduction) Optimised operations due to integrated 4D trajectory operations contribute to the related optimisation of fuel-burn and therefore of overall emissions per flight.	• Solution UDT will allow to reduce fuel burned and CO2 emissions through less constrained planned and flown trajectories. • Solution STR will allow to reduce fuel burned and CO2 emissions through the possibilities given to AUs and network actors to exploit opportunities to re-optimise the trajectories in-flight. • Solution LOA will allow to reduce fuel burned and CO2 emissions through the possibilities given to ATC and network actors to minimise impact of unnecessary restrictions within LOAs on flown trajectories. • In terms of quantitative values, the following elements can be mentioned: ○ The NM 4DT CONOPS mentions a potential reduction of

Call Expected Outputs Topic WA1.1	NETWORK TBO-2 proposal results contribution to the Expected Outputs
	2 million tons of fuel and 6.5 M tons of emissions per year. We can assume that NETWORK TBO-2 solutions will contribute significantly to that reduction. ○ Some studies using EFB in-flight vertical trajectory optimising functions evaluate the potential reduction of fuel consumption at around 1% in en-route phase from the re-optimisation of requested flight levels.
Cost-efficiency Increased air–ground integration as per FF-ICE TBO supports the introduction of higher levels of automation in ATM; the implementation of higher levels of automation, when adopted consistently, will contribute to operational harmonisation and eventually to the cost-efficiency of the ATM system.	• Solution UDT will allow the AUs to plan and fly less constrained trajectories and improve the AU cost efficiency. • Solution UDT and STR will allow to decrease AU operator's workload (AU Cost efficiency) through increased automation and digitalised information exchanges. • Solutions STR, LOAs and TSE will allow to anticipate and manage in a more automated way some trajectory changes in execution allowing to reduce ATCOs workload and improve cost efficiency of the ATM system.
Passenger time saving (departure punctuality) Increased punctuality thanks to a reduction of ATFCM delays and flight times	• The solutions UDT, STR and TSE - through the reduction of capacity buffers - will allow a decrease of ATFCM delays either directly or indirectly (STR and UDT Solutions). • The Solution STR through the management of network impact assessment of trajectory changes in execution will indirectly reduce ATFCM delays. An initial study performed by the network TBO project in SESAR Wave 1 provides a rough estimation of 4% reduction of ATFCM delays only by reducing the number of unused ATFCM slots.

Additional KPAs

Additional outcomes/ KPAs	NETWORK TBO-2 proposal results contribution to the Expected Outputs
Safety	• Solution STR will impact safety positively though increased automations related to the management of flight plans/trajectory revisions. • Solution TSE will impact safety positively though increased automation related to the management of trajectory changes. • Solutions STR, LOA and TSE will also allow to better prevent overloads through a better awareness of upstream trajectory changes impacting the sectors loads and complexity.

Interoperability	• The Solution STR will strongly improve interoperability both in the ECAC area and with other regions though the definition of procedures in FF-ICE/R2 to agree and share updated trajectory in case of trajectory revisions in execution. • The Solution TSE will address interoperability between ANSPs and the Network Manager through the provision of advanced means to share trajectory information and maintaining a Reference Gate to gate trajectory shared by all actors in the Network. • The Solution UDT will improve the interoperability in the ECAC area through inputs to the definition of FF-ICE/R1 Planning service in Europe. • The Solution LOA will improve the interoperability between systems reliant on LOA constraints resulting in reduced cost increased awareness.
Flexibility	• Solution UDT and Solution STR will give the AUs more flexibility to optimise the trajectory in execution. • The Solution STR will provide flexibility to propose deviations from agreed trajectory in case the deviation has no negative impact on the network • The Solution LOA will increase the flexibility in climb-out in descent phases and remove unnecessarily invoked conditions at certain times.
Access & Equity	• All NETWORK TBO-2 Solutions: access to trajectory management processes will be granted to all AUs through the development of technical specifications for processes and tools that reflect the needs of all AU business types. In addition, in all solutions, procedures will be defined to improve equity.

Through these KPAs the project addresses societal, technological and economic impact and outcomes.
The performance goals for NETWORK TBO-2 Project proposal are summarized hereafter:

SOLUTION	Call specific KPAs					Additional KPAs		
	Cost efficiency	Passenger time saving	Capacity	Environment	Safety	Flexibility	Access and Equity	Interoperability
UDT	H	L	M	H		M	L	H
STR	M	H	H	M	M	H	L	H
LOA	H			M	M		L	H
TSE		M	M	M	M		L	H

Table 16: KPAs Addressed by the NETWORK TBO-2 Solutions

(a2) Contribution of the project results to the wider impacts in the longer term

Appropriate principles listed under the wider impacts in the work programme	NETWORK TBO-2 proposal results contribution to the Expected Outputs
Significant contribution to the realization of the Digital European Sky vision (SESAR Phase D) in particular, in relation to achieving: Implementation of Digital European Sky target architecture and	By nature, this project aims at providing a key contribution to this principle addressing all phases of Trajectory Based Operations from planning to execution.

transformation to Trajectory based operations	
High and Full Automation (level 4)	This project - in particular solutions UDT and STR will allow to anticipate some trajectory changes and transfer related tasks performed by tactical control to traffic managers paving the way at longer term to full automation.
Demonstrating a significant contribution to the finalization of the SESAR Phase C as developed in SESAR 2020	All the solutions aim at validating enablers at TRL6 maturity level and contribute to the finalisation of SESAR Phase C.
Demonstrating the need for finding a common solution across the European Network (vs local) with a clear need for standardization	By nature, this project - focusing on network aspects - is seeking for solutions across the European Network. Clear links with standardisation activities are identified in the proposal linked to FF-ICE. LOA digitalisation will be also having strong standardisation impact.
Demonstrating a clear breakthrough potential (vs business as usual) in a medium (2030) and long (2045) terms.	The project aims to demonstrate breakthrough in the medium term in the domains of pre-departure TBO (UDT solution) and the management of a reference end-to-end trajectory (solution TSE) and LOAs shared by all actors. Regarding new processes in strategic execution (solution STR) the aim is to demonstrate breakthrough in the medium term for some specific use-cases (e.g. north-Atlantic flow). For other use-cases, the breakthrough will be in the longer term.

(b) Indication of the scale and significance of the project's contribution to the expected outcomes and impacts

As mentioned in previous sections the project addresses the whole network so potentially all the traffic in the ECAC area should be impacted positively.

(c) Requirements and potential barriers that may determine how the desired outcomes and impacts are achieved.

No specific barrier is identified. As highlighted in previous section it is key that outcomes of this project are consistent with some initiatives and developments in progress (ICAO FF-ICE/R2 definition, FF-ICE/R1 implementation, Network 4D trajectory CONOPS and TBO IOP High Level Coordination group).

2.2 Project's content towards impact

Section 1 – Ambition – clearly stated the ambition of the project to support standardization related to ICAO FF-ICE. The following table provides an overview of the expected outputs of the project related to standardisation.

NETWORK TBO-2 Solution	Standard /Regulation	State of the Art and Expected Project Outputs
UDT	FF-ICE/R1	FF-ICE/R1 services have been defined at ICAO/FIXM CCB levels. A sub-subset of these services has been instantiated and implemented at European level (e.g. filing service). The FF-ICE/R1 planning service could be used for UDT information exchanges in pre-departure phase. Therefore, this solution could contribute the definition and of the planning service and associated standardisation/regulation needs.

STR	FF-ICE/R2	Currently FF-ICE/R2 is in early phase of definition at ICAO level. This solution could contribute to definition and validation of network services required in the European context to support FF-ICE/R2 operational scenarios. It should contribute to define regulation needs.
STR	European yellow profile SWIM services	Defining/updating NM services in support to network impact assessment services for ANSPs
LOA	Common Digital Standard for LOA constraints	EUROCONTROL is the owner of the paper version of the Letter of Agreement template which is used by all member states. After successful validation, the defined scope and the technical lessons learned are planned to serve as a basis for system wide standardisation of digital LOA constraints within the industry.
TSE	European yellow profile SWIM services	Defining/updating NM services in support to trajectory information exchanges with ANSPs

Table 17: NETWORK TBO-2 Project Expected Outputs Towards Standardisation

The means to support the development of standardisation and regulatory needs will be as follows:

- Close coordination will be ensured with ICAO and standardisation group like FIXM CCB (see next section)
- As part of the EUROCONTROL contribution NM staff experienced in standardisation and regulation development will be involved.

It will be also investigated during the project different options to involve EASA (EASA is not part of the consortium).

2.3 Measures to maximise impact - Dissemination, exploitation and communication #@COM-DIS-VIS-CDV@#

<u>**Note:**</u> in the rest of this section the measures mentioned are related to the NETWORK TBO-2 project. However, it must be highlighted that most of these measures will be mutualised with the ATC TBO-2 project to increase visibility and to present SESAR TBO projects as whole.

a) Dissemination and exploitation of results

The Consortium acknowledges the additional dissemination and exploitation obligations as set out under the call.

Dissemination activities will be separated in two main groups according to their means of address:

- **Internal dissemination** between Project Partners. Dissemination of evaluation reports and final project reports are included. Project partners should be informed of every change (or update) taking place within the project.

- **External dissemination** with stakeholders and possible beneficiaries from the project outcome. Interested parties in the project should be informed of the project progress and possible changes or updates. Communication will work both ways.

For this purpose, the NETWORK TBO-2 project will produce a dissemination plan to ensure that the outputs obtained are correctly spread among the ATM community using all the means available.

Dissemination activity goals are presented in the following table:

Goal	Message	Internal Dissemination	External Dissemination
Project Updates	Essential to have every partner connected and up to date, but also to explain better expected results to stakeholders	• Stellar • Publications	• SESAR 3 JU public Website • Conferences • Workshops • Publications • LinkedIn Page
Archives & Reference Documents	Keep past records for future needs and documents that might support the activities of any area	• Stellar Publications	
Notices	News that can affect or help and develop the project	• Stellar	• SESAR 3 JU Website • Conferences • Publications
Schedule Updates	Updated calendar of events	• Stellar Publications	• SESAR 3 JU Website
Results	The need to verify projects outcome and effectiveness	• Stellar	• SESAR 3 JU Website • Conferences • Publications
Host Stakeholders' Gatherings	Keep track of stakeholders' interests and concerns	• Regular meetings • Workshops	• Conferences • Workshops
Project Summary	Easy to read summary to have a starting point for new interested parts		• SESAR 3 JU Website • Publications

Table 18: Dissemination Activity Goals

To guarantee the accomplishment of the expected measures in dissemination activities, and to facilitate an efficient and transparent project management in general, a NETWORK TBO-2 project Communications, Dissemination & Exploitation Plan (CDEP) shall be developed to plan and manage dissemination and communication activities.

b) Communication Activities

The success and impact of an R&D Project depend strongly on the dissemination and communication actions. To guarantee a strategic planning and efficient management of all the activities and communication tools, the CDEP will provide a roadmap for the dissemination of the features, objectives, impacts and expected results of the project, summarizing a process to help reach that goal.

The effective dissemination of key messages is a key element to achieve the best result in all the envisioned communication actions. Three objectives have been identified which shall underpin the project communications material:

- To create awareness and outreach about SESAR 3 and the NETWORK TBO-2 Project.
- To showcase the research outcomes and benefits that SESAR 3 NETWORK TBO-2 Solutions can bring to real day-to-today Air Traffic Management (ATM) operations.
- To accelerate the operational acceptance and subsequent deployment of SESAR 3 solutions.

The NETWORK TBO-2 communication plan will be maintained as part of project management activities, which will include:

- A calendar of the key Project milestones associated with communications activities (press and news material, open days, videos, media event, magazine interview).
- Target audience (Partners, institutional decision makers, associations, media).

Communication activities will be associated with:

- Key milestones of the Project (contract signature, validation exercises, Project conclusion).

- Major air transportation community events, such as ATC Global, World ATM Congress, major air shows, national events.

As it is essential to ensure that communications are consistent with the SESAR 3 brand, coordination will be organised with SJU communications to prepare and facilitate communication activities. This will help in

- Validating SESAR-related content.
- Developing possible joint activities through various communications channels.
- Benefiting from SJU messaging support.
- Securing SJU speakers if needed.
- Benefiting from SJU content support.
- Allowing the SJU to further cascade relevant content through its own existing channels.

c) Communication Activities Targeting Implementation and Standardisation Stakeholders

Since all solutions of the project aim to achieve TRL6 maturity, to ease the transition towards implementation phases it is key that the target audience of the communication plan includes actors in charge of the implementation. But also, for the STR solution, it is key to share the results of its developments moreover considering its associated harmonization impact (e.g., aligned developments with the FAA). One of the more efficient means to target such an audience is to present the NETWORK TBO-2 solutions results regularly to some key Stakeholder groups or tasks forces managed by the Network Manager.

This includes for example – but is not exhaustive- the following target groups:

- AOG: Aircraft Operators Group: operational stakeholder group managed by the Network Manager.
- FPFDE sub-group; a sub-group managed by the Network Managed in charge of FF-ICE services implementation in the European context.
- ASMSG: airspace management sub-group: operational stakeholder sub-group managed by the Network Manager.

In addition, due to the strong links with standardisation activities, it is key also that the Project conducts regular communication activities towards concerned working groups. This includes the following groups:

- The ICAO ATMRPP group in charge of defining FF-ICE increment 1 and increment 2 provisions.
- The FIXM CCB in charge of FIXM standard evolutions.

Communication towards this target audience will take the form of papers distribution, presentations, and participation to technical meetings as SESAR technical representative.

TBO Advisory Board

An advisory board will be established as a mechanism to consult stakeholders not involved as consortium member.
This advisory board will encompass both NETWORK TBO-2, ATC TBO-2 and WA3.1 and WA5.1 projects activities addressing TBO solutions.
The board will meet periodically to give inputs, suggestions, and feedback on project interim and final results. The members will provide expertise on project strategy and developments.
The advisory board list of participants will be established at the start of the project. It will include probably at least some AUs and CFSPs not in the consortiums (e.g. Flight Keys), some Air Traffic Controllers' and airlines Associations, and the Deployment Manager. NAVBLUE expressed its interest to be part of this board.
#§COM-DIS-VIS-CDV§#

2.4 Summary

KEY ELEMENT OF THE IMPACT SECTION

SPECIFIC NEEDS	EXPECTED RESULTS	D & E & C MEASURES
What are the specific needs that triggered this project? Improved CDM processes in execution related to trajectory revision. Better management of network impact of trajectory changes in execution. Need for a reference end-to-end 4D trajectory shared by all stakeholders both in the planning and execution phases. Optimised management of ATFM constraints Increased automation and reduction of operators' workload. Improved knowledge of AU preferred trajectory. Harmonization and sharing of ATC constraints.	*What do you expect to generate by the end of the project?* The Solution UDT will deliver a TRL6 data pack including operational and technical requirements related to the definition, share, and use of the UDT. The Solution STR will deliver a TRL6 data pack including operational and technical requirements related to trajectory revisions in execution and Network impact assessment services for ANSPs, as well as quantified benefits and standardisation needs to be included in FF-ICE/R2. It will also identity use-case candidates for early implementation. The Solution LOA will deliver TRL6 data pack with validated operational procedures, services, and systems to support the digitalisation of LoAs and the dynamic negotiation of LoA constraints between Air Traffic Control (ATC) units The Solution TSE will deliver a TRL6 data pack with validated requirements related to ATC trajectory information sharing with the Network Manager and its use by local actors.	*What dissemination, exploitation and communication measures will you apply to the results?* Hosting visitors and webinars for key events, e.g., validation exercise open days. Publishing articles via the SESAR e-news and as in-house articles in the partner publications. Planning joint workshop with relate projects to maximize stakeholder participation and exploit synergies. Establishment of a joint advisory board with all IR 2 projects dealing with TBO solutions. Reaching out to the ICAO ATM RPP panel and some NM stakeholders' groups through paper submissions and presentations.

TARGET GROUPS

Who will use or further up-take the results of the project? Who will benefit from the results of the project?

Airspace Users.

AU systems providers including FOC and cockpit systems.

The Network Manager including operational and system units. Specific NM working stakeholder groups like the FPFDE sub-group and AOG.

ANSPs and ATC industry.

ICAO and the ATMRPP working group.

The European TBO High Level Coordination group.

OUTCOMES

What change do you expect to see after successful dissemination and exploitation of project results to the target group(s)?

Solution UDT results will impact implementation roadmaps related to FF-ICE/R1 advanced steps.

Solution STR results will be used by the ATMRPP working group as input in FF-ICE/R2 provision definition and NM to develop a European implementation roadmap.

Requirements developed by the solutions will provide inputs to the definition of iNM trajectory management services.

Requirements developed by Solution UDT and Solution STR will be integrated in future implementation plans of AU systems (flight planning and EFB).

Requirements developed by the solution will have impact on ANSP systems: ATC and/or local flow management systems.

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?

The project will have a significant economic impact in terms of improvement of AU and ATM cost efficiency, passenger time saving, as well as increased network capacity.

The project will have a significant positive societal impact on Environmental and safety aspects.

#§IMP-ACT-IA§#

3. Quality and Efficiency of the Implementation #@QUA-LIT-QL@# #@WRK-PLA-WP@#

3.1 Work Plan and Resources

Project Structure

The project will apply a set of programme management processes as described in the SESAR3 Project Handbook (edition 02.00, December 2024) to ensure delivering SESAR Solutions at the required quality/ maturity levels, respecting the ATM Master Plan and MAWP/BAWP objectives, and fulfilling SESAR 3 JU reporting obligation. The maturity level achieved by a SESAR Solution, is defined in accordance with the Technology Readiness Level scheme (TRL).

The NETWORK TBO-2 Project is divided into 11 different work packages (including Project Management); each split into a certain number of activities and to a certain extent, coordinated independently by its WP managers.
The figure below presents the Work Breakdown Structure (WBS) designed for the NETWORK TBO-2 project. This WBS reflects a structured and systematic decomposition of the project scope into manageable and traceable components, covering both horizontal and vertical dimensions of the work to be performed throughout the project lifecycle.
The structure is aligned with SESAR program expectations and includes both high-level management activities and the progressive development of concept and solution elements across multiple phases. Each component of the WBS is associated with concrete tasks to ensure clarity in planning, execution, monitoring, and reporting.

1. Project Management (WP1)
This work package includes essential project management and coordination tasks:
- PMP (Project Management Plan) ensures proper oversight and governance throughout the project.
- CDEP (Communication and Dissemination Exploitation Plan) outlines strategies for internal and external stakeholder engagement.
- DMP (Data Management Plan) defines how data will be collected, stored, protected, and shared in accordance with the project's open science policy.

2. TBO Concept Development (WP2–WP3)
The Trajectory-Based Operations (TBO) Concept Development is structured into two phases:
- Phase 1 covers the elaboration of the *Initial SESAR Global TBO Document* (Task 2.1), which lays the conceptual foundations for the solutions.
- Phase 2 includes the refinement and delivery of the *Final SESAR Global TBO Document* (Task 3.1), integrating feedback from initial validation and stakeholder consultation.

3. Solution Development (WP4–WP11)
The core of the NETWORK TBO-2 project is the development and validation of multiple SESAR solutions (Solutions UDT, STR, LOA, and TSE), each addressed in two distinct phases:
- Phase 1 focuses on the initial development and specification activities.
- Phase 2 consolidates the outputs through validation, economic analysis, and contextual documentation.

Each solution phase includes the following standardized tasks:
- SPR-INTEROP/OSED: Development or finalization of Operational Services and Environment Description, Safety & Performance Requirements, and Interoperability aspects. This task will produce two deliverables; the initial SPR-INTEROP/OSED in phase 1 and the final OSED//SPR/INTEROP in phase 2.
- TS/IRS: Development or finalization of Technical Specifications and Interface Requirements Specifications. This task will produce two deliverables; the initial TS/IRS in phase 1 and the final TS/IRS in phase 2.
- STD: Contributions to relevant standardization activities. This task will produce four deliverables; the Initial and Intermediate-1 STD in phase 1; and the Intermediate-2 and also Final STD in phase 2.
- REG: Preparation of material supporting regulatory uptake. This task will produce four deliverables; the Initial and Intermediate-1 REG in phase 1; and the Intermediate-2 and also Final REG in phase 2.
- ValP: Validation Plan in (in Phase 1). Definition of the validation approach, including objectives,

methods, scenarios, and performance indicators, to be applied in Phase 2. This task includes also prototype developments in phase 1.

- ValR: Validation Report (in Phase 2) evaluating the maturity of the solution. This task includes also prototype development in phase 2.
- CBA: Cost-Benefit Analysis in Phase 2 to assess the economic viability of the proposed solution.
- Contextual Note: A concise explanation of the solution's purpose, positioning, and expected operational contribution. This task will produce two deliverables; the initial contextual note in phase 1 and the final contextual in phase 2. The task includes also solution management effort.

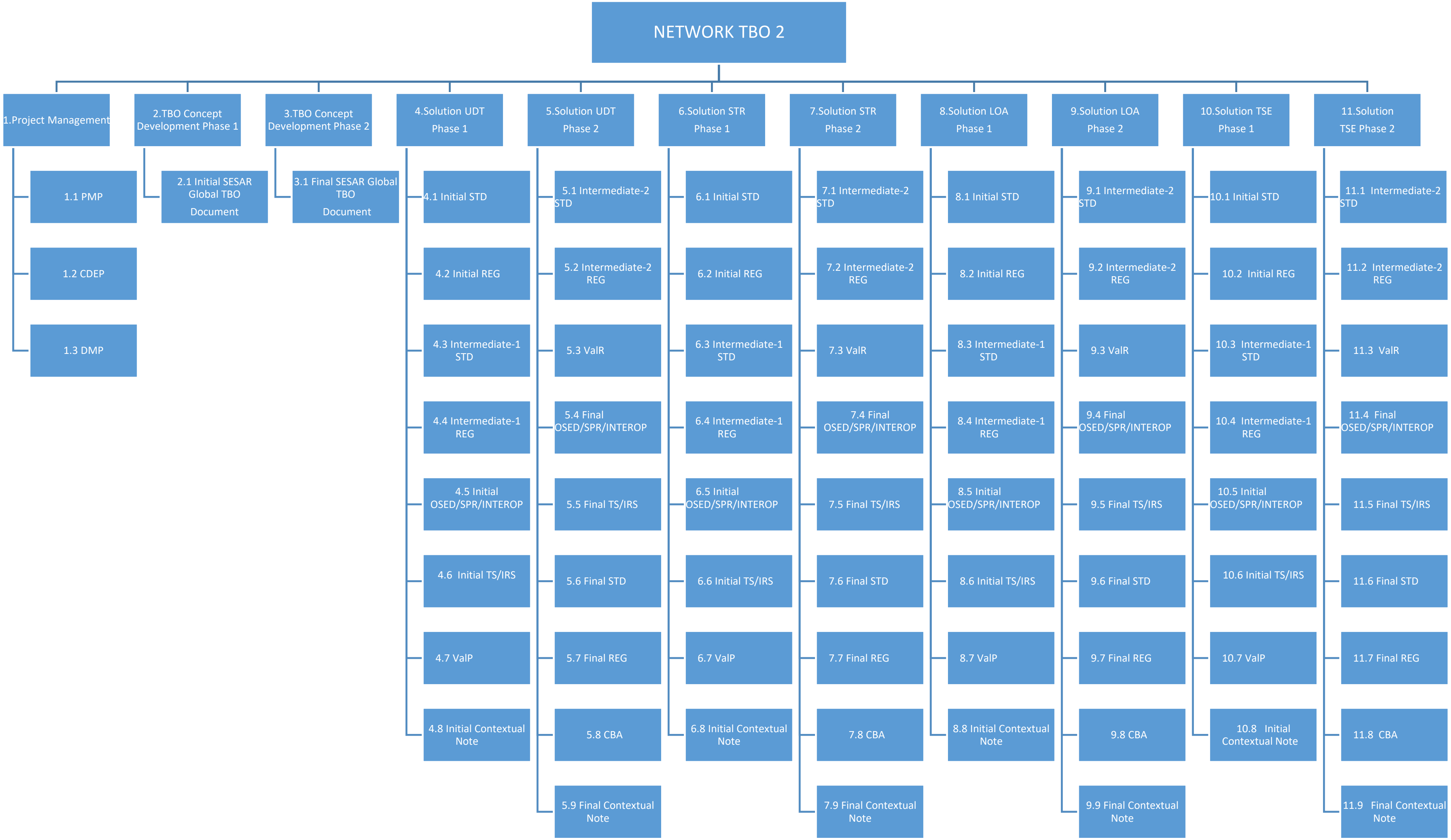
- Safety and Human Performance: The SAP and HPAP will be developed in the ValP, and the SAR and HPAR will be developed considering the validation results and form part of the final SPR-INTEROP/OSED.

- (Cyber-)Security: The Security Assessment Plan will be developed in the ValP. The solutions will define security requirements in the SPR-INTEROP/OSED and the TS/IRS; and will respond to the security criteria in the maturity assessment.
- ENV aspects will be also considered in the OSED, ValP and ValR.
- PAR: The SESAR Solution performance assessment will be documented in the PAR which forms part of the final SPR-INTEROP/OSED. This will include assessments for the environmental KPAs (fuel efficiency/CO2 emissions and noise/local air quality), subject to confirmation that the solution impacts one or both KPAs.

The payment of the NETWORK TBO-2 grant will be based on the "lump sum" approach. Concretely, the project has been broken down into project management and solution work packages aligned to two phases. The completion of each work package, and hence the payments, will be based on the approval of the set of deliverables per work package at the end of the Intermediate Reporting Period leading to the Technical Project Review #2 meeting, and the Final Reporting Period leading to the outcomes of the maturity gates and project closure.

For simplification purpose, no specific work package is defined for communication, dissemination and exploitation (CDE) activities. However, all project partners recognise the importance of CDE activities and effort are included in the solutions work packages.

The following diagram provides a task decomposition of the Project.


NETWORK TBO 2
1.Project Management
1.1 PMP
1.2 CDEP
1.3 DMP
2.TBO Concept Development Phase 1
2.1 Initial SESAR Global TBO Document
3.TBO Concept Development Phase 2
3.1 Final SESAR Global TBO Document
4.Solution UDT Phase 1
4.1 Initial STD
4.2 Initial REG
4.3 Intermediate-1 STD
4.4 Intermediate-1 REG
4.5 Initial OSED/SPR/INTEROP
4.6 Initial TS/IRS
4.7 ValP
4.8 Initial Contextual Note
5.Solution UDT Phase 2
5.1 Intermediate-2 STD
5.2 Intermediate-2 REG
5.3 ValR
5.4 Final OSED/SPR/INTEROP
5.5 Final TS/IRS
5.6 Final STD
5.7 Final REG
5.8 CBA
5.9 Final Contextual Note
6.Solution STR Phase 1
6.1 Initial STD
6.2 Initial REG
6.3 Intermediate-1 STD
6.4 Intermediate-1 REG
6.5 Initial OSED/SPR/INTEROP
6.6 Initial TS/IRS
6.7 ValP
6.8 Initial Contextual Note
7.Solution STR Phase 2
7.1 Intermediate-2 STD
7.2 Intermediate-2 REG
7.3 ValR
7.4 Final OSED/SPR/INTEROP
7.5 Final TS/IRS
7.6 Final STD
7.7 Final REG
7.8 CBA
7.9 Final Contextual Note
8.Solution LOA Phase 1
8.1 Initial STD
8.2 Initial REG
8.3 Intermediate-1 STD
8.4 Intermediate-1 REG
8.5 Initial OSED/SPR/INTEROP
8.6 Initial TS/IRS
8.7 ValP
8.8 Initial Contextual Note
9.Solution LOA Phase 2
9.1 Intermediate-2 STD
9.2 Intermediate-2 REG
9.3 ValR
9.4 Final OSED/SPR/INTEROP
9.5 Final TS/IRS
9.6 Final STD
9.7 Final REG
9.8 CBA
9.9 Final Contextual Note
10.Solution TSE Phase 1
10.1 Initial STD
10.2 Initial REG
10.3 Intermediate-1 STD
10.4 Intermediate-1 REG
10.5 Initial OSED/SPR/INTEROP
10.6 Initial TS/IRS
10.7 ValP
10.8 Initial Contextual Note
11.Solution TSE Phase 2
11.1 Intermediate-2 STD
11.2 Intermediate-2 REG
11.3 ValR
11.4 Final OSED/SPR/INTEROP
11.5 Final TS/IRS
11.6 Final STD
11.7 Final REG
11.8 CBA
11.9 Final Contextual Note

The summary Gantt chart indicates the timing and sequence of the phases, work packages and selected tasks and milestones for W1 to WP5. For WP6 to WP11 the schedule is the same as W4 and WP5. A global detailed Gantt is not provided here.

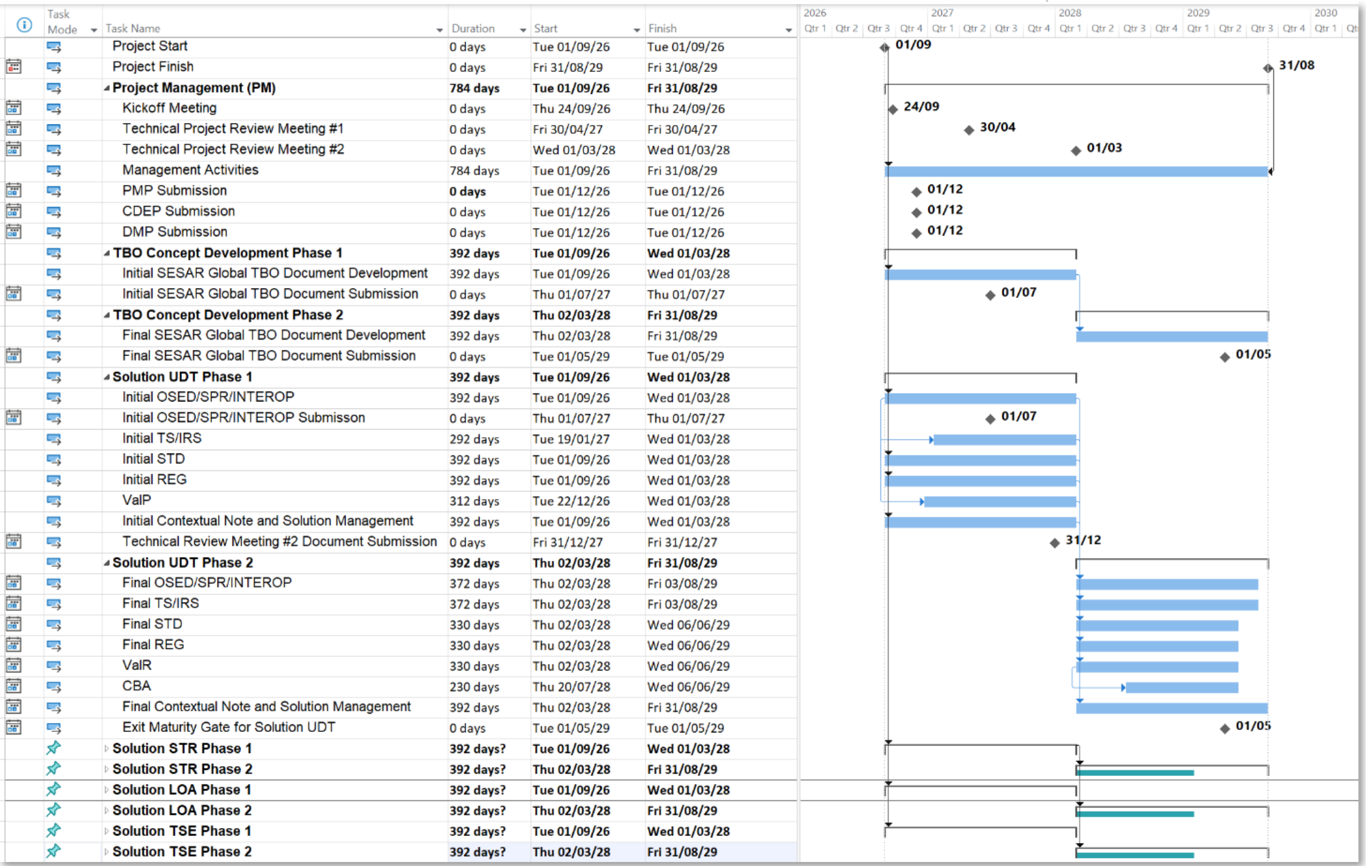


Figure 5: NETWORK TBO-2 Project Schedule

Note: The starting date is indicative and subject to change based on the Grant Agreement signature date. The schedule will be updated accordingly.

3.2 Capacity of Participants and Consortium as a Whole #@CON-SOR-CS@# #@PRJ-MGT-PM@#

The Consortium involves key stakeholders of the Airborne Systems, Ground ATM Systems, Computerised Flight Plans Service providers, Flight Deck Assistance Service Providers (EFBs), Service Provision and the Network Manager hence providing a wide range of expertise covering all aspects of EUROPEAN ATM.

At the time of submitting this proposal, this consortium comprises 34 active organisations from 13 member states of the European Union, and 6 organisations from 4 nations beyond the EU (Iceland, UK, Switzerland and Canada). The consortium was carefully selected according to the skills and experiences required to accomplish the proposed work. The operational expertise, which is crucial for the conceptualisation and implementation phase of the Project, is found in the 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 expertise between all participants.

The following table provides the range of expertise required by the project and the organisations providing the competences.

<table>
<tr><th>Expertise Needed</th><th>Organisations</th></tr>
<tr><td>Central Network Management</td><td>EUROCONTROL as Network Manager provides recognized expertise, validation tools and leadership in Airspace Design, Airspace Management, DCB, Performance Measurement and Monitoring, Post Flight Analysis, Traffic Demand Management, AIM, et alt.
EUROCONTROL Network Manager (NM) will contribute and actively participate to NETWORK TBO-2 project validations. Related to TBO, the NM is also in charge of implementing FF-ICE services in the European area (IFPS zone more precisely).
NM has also a sound experience in (Cyber-)security management related to network operations and services.</td></tr>
<tr><td>ANSPs Including ATC and Local Flow Management</td><td>ANS CR, DFS, DSNA, ENAV, HUNGAROCONTROL, ISAVIA ANS EHF, NATS, NAV CANADA, PANSA, SKYGUIDE and ACG are recognized Air Navigation Service Providers operating either in the core area of the European Airspace or in the north Atlantic area.
MUAC as part of the EUROCONTROL contribution will also provide ANSP expertise.
This large set of ANSPs included in the consortium ensures that:
• The project will consider the diversity of ANSPs needs and constraints
• The solutions will fully take benefit of the experience of the more advanced ANSPs in TBO implementation
• At the end of the project, the buy-in of the TRL6 validated solutions by stakeholders in implementation will be eased
• Thanks to the presence of NAV CANADA, NATS and ISAVIA ANS EHF, requirements and validation will address the North Atlantic flow and inter-regional information exchanges.
One ANSP- PANSA - will use in-house prototypes in the LOA solution validation.</td></tr>
<tr><td>ATM Industry</td><td>LEONARDO, THALES LAS, INDRA, FOR and TERN are recognized ATM industry proving operation systems to ANSPs in the European Airspace. Their expertise and prototypes cover both ATC and local flow management systems.
The following industry partners win develop ATM prototypes in the project:
• INDRA and THALES LAS develop prototypes for local network management actors. INDRA prototype will cover NAV CANADA and NATS requirements for the STR solution validation
• TERN will develop a prototype of the centralised LOA repository integrated within Network Manager systems.
Moreover, having main European ATM industry partners in the consortium ensures an efficient cooperation with WP3.1 projects selected.</td></tr>
<tr><td>Airspace Users</td><td>AIR FRANCE, LUFTHANSA, SWISS and AIRBUS (as flight operator) provide both FOC and flight crew expertise and will be deeply involved in UDT and STR solutions, leading or contributing to deliverables and participating to validation exercises. AIR FRANCE leads the UDT solution.
Some other airspace users may join the advisory board or may participate to validations as customer of some AU industry partners.</td></tr>
<tr><td>AU Systems Including FOC and Cockpit</td><td>AIRBUS (including NAVBLUE in the Advisory Board), BAS, Honeywell, COLLINS, CAE group, TXT E-TECH group/PACE GmbH and AVTECH are major industries supplying Aircraft, Flight planning and EFB systems in Europe and the rest of the world. Each of them is experienced in both, delivering operational systems and performing innovative research and development in ATM, for Civil and Military Users.
More precisely the following areas of expertise are covered in the context of the project:
• Expertise in AU flight planning/CFSP systems is covered by CAE group, AIRBUS, and BAS</td></tr>
</table>

	• Expertise in EFBs is covered by TXT **E-TECH** group/PACE GmbH, AVTECH, BAS, COLLINS and AIRBUS • Expertise in FMS is covered by HONEYWELL, AIRBUS, THALES AVS and COLLINS
Research Centres	DLR leads a solution in ATC TBO-2 project on ATC automation. In NETWORK TBO-2 DLR leads the development of the human-machine teaming annex of the global SESAR TBO Document and will ensure consistency with ATC TBO-2 project developments. NLR is part of the ICAO ATMRPP working group as Dutch representative. NLR will be involved in the global TBO concept task and the solution STR contributing to the coordination with ICAO and integrating LVNL requirements.

Table 19: Overview of the Consortium Expertise

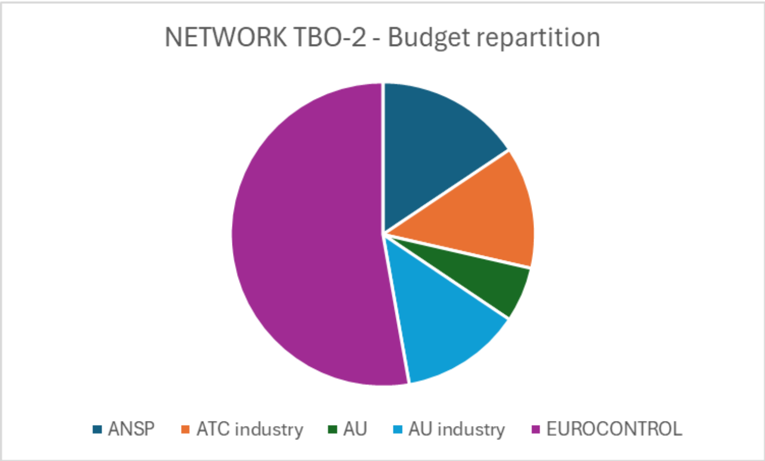
In addition to operational and technical expertise, many consortium partners have also a strong experience in security, safety and Human Factor assessment both in the context of SESAR industrial research and implementation.

This impressive consortium covers all the required expertise for the project. The effort and budget dedicated to the three main domains - ATC, AU operations and network management - are well fitted and balanced ensuring that requirements of all stakeholders will be properly addressed. It is mainly composed of operational actors and industry partners in line with the aim of the solutions to achieve TRL 6 maturity at the end of the project.

The detailed description of the contribution of the partners to the validations is developed in section 1.2 and the contribution to the deliverables in section 3.1.

The following diagram provides an overview of the budget repartition in terms of expertise. Research centres category is not represented since their effort and budget is very low.

Figure 6: Consortium Budget Repartition per Expertise



Additionally, EUROCONTROL's contribution per Work Package in the project is as follows:

WP1	WP2	WP3	WP4	WP5	WP6	WP7	WP8	WP9	WP10	WP11	Total
1.633.510,31	322.123,25	322.123,25	871.749,38	871.749,38	2.278.028,13	2.278.028,13	463.658,75	463.658,75	1.481.018,75	1.481.018,75	12.466.666,81

Table 20: EUROCONTROL's Contribution per Work Package

Tables for section 3.1

Table 3.1g: 'Subcontracting costs' items

1/EUROCONTROL	Cost (€)	Description of tasks and justification
Subcontracting Software prototype development	1.000.000	EUROCONTROL intends to subcontract software development tasks to external specialists, in particular software engineers with industry-specific expertise. This will concern the development of the Network Management Validation Platform (NMVP) and the R-NEST simulator. EUROCONTROL, as an international organisation, follows strict rules in terms of external assistance selection and procurement. These rules will be applied for the selection of the subcontracting parties in the framework of the project.
17/DSNA	**Cost (€)**	**Description of tasks and justification**
Advanced human factors **Advance ATM engineering**	169.800	DSNA has in house expert engineers for En Route, TMA and Airport traffic management, ATFCM and airspace management. They have the ability to develop new concepts and define specifications for new ATM tools. But, in order to fulfil its prospective studies, DSNA needs additional expertise, in particular advanced Human Factors expertise which we need to subcontract. In NET-TBO2, the subcontracted tasks will encompass: - Advanced HF expertise to support the preparation of validation exercises, to conduct the validation exercises, and the analysis of the results: 60 k€ for UDT and 60k€ for STR. - Support to DSNA participation in CONOPS tasks: 49,8 k€ for UDT
29/PANSA	**Cost (€)**	**Description of tasks and justification**
Subcontracting Software prototype development	90.000	PANDORA EVA prototype implementation and related engineering activities - partial subcontracting. PANSA intends to subcontract selected tasks to external specialists, in particular software engineers with industry-specific expertise. Engaging such experts will ensure access to specialised knowledge not available in-house and alignment of the project outcomes with sector requirements.
30/INGENAV	**Cost (€)**	**Description of tasks and justification**
Subcontracting Software prototype development	50.000	Ingenav intends to subcontract the software development to external specialists. In particular, Ingenav intends to subcontract the software development of the complexity predictor to software specialists from MONAD OY, a Finnish software development company which has expertise in AI based predictory algorithms, in flight trajectory prediction models as well as a basic understanding of ATM requirements from already working in SESAR ER projects.

4. Ethics Self-Assessment

4.1 Ethical dimension of the objectives, methodology and likely impact

The main ethical topic raised is related to the participation of non-EU countries to the project. The participation of non-EU entities in this project has been carefully assessed in line with Horizon Europe rules and ethical standards. Their involvement is justified by their unique expertise, access to specific data sets, and/or operational environments that are essential for achieving the project's objectives. No impact regarding ethical standards or risk is foreseen.

4.2 Compliance with ethical principles and relevant legislations

All non-EU participants will adhere to the same ethical standards, data protection obligations, and research integrity principles as EU partners. This includes compliance with the General Data Protection Regulation (GDPR) when personal data is processed, as well as strict adherence to the Horizon Europe Model Grant Agreement provisions on confidentiality, security, and intellectual property rights.

It is not planned to either import or export any material (other than data) from non-EU countries into the EU or from a non-EU country to another non-EU country.

The consortium as a whole shall be fully compliant with EU and international law, namely the Charter of Fundamental Rights of the European Union and the European Convention on Human rights and all affiliated protocols.

ANNEX 2

ESTIMATED BUDGET (LUMP SUM BREAKDOWN) FOR THE ACTION

	Estimated EU contribution										
	Estimated eligible lump sum contributions (per work package)										Maximum grant amount[1]
	WP1 Project Management	WP2 TBO Concept Development – Phase 1	WP3 TBO Concept Development – Phase 2	WP4 UDT – Phase 1	WP5 UDT – Phase 2	WP6 STR – Phase 1	WP7 STR – Phase 2	WP8 LOA – Phase 1	WP9 LOA – Phase 2	WP10 TSE – Phase 1	
Forms of funding	Lump sum contribution	Lump sum contribution	Lump sum contribution	Lump sum contribution	Lump sum contribution	Lump sum contribution	Lump sum contribution	Lump sum contribution	Lump sum contribution	Lump sum contribution	
	a	b	c	d	e	f	g	h	i	j	l = a + b + c + d + e + f + g + h + i + j + k
1 - EUROCONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 - AIR FRANCE	0.00	52 508.71	38 127.99	139 304.46	176 686.65	78 613.15	79 645.43	12 069.75	12 546.19	10 845.45	611 679.29
3 - TERN	0.00	11 063.59	11 063.59	11 063.59	11 063.59	0.00	0.00	495 150.86	492 864.49	0.00	1 032 269.71
3.1 - TERN HU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41 335.00	42 752.50	0.00	84 087.50
4 - ANS CR	0.00	0.00	0.00	19 075.00	31 762.50	12 950.00	36 575.00	46 025.00	44 975.00	0.00	191 362.50
5 - AI OPS SAS	0.00	10 327.63	10 327.63	0.00	0.00	182 224.88	287 256.38	0.00	0.00	0.00	490 136.52
6 - AIRBUS	0.00	28 220.94	28 220.94	0.00	0.00	203 610.75	291 537.75	0.00	0.00	0.00	551 590.38
7 - AUSTRO CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25 834.03	25 834.03	0.00	51 668.06
8 - AVTECH	0.00	0.00	0.00	0.00	0.00	7 437.50	31 500.00	0.00	0.00	0.00	38 937.50
9 - BAS	0.00	19 061.00	19 061.00	0.00	0.00	67 151.00	67 151.00	0.00	0.00	0.00	172 424.00
10 - CAE AUSTRIA	0.00	0.00	0.00	12 524.40	13 399.40	121 069.20	13 399.40	0.00	0.00	0.00	160 392.40
11 - CAE Poland	0.00	0.00	0.00	0.00	3 826.90	319 720.10	3 826.90	0.00	0.00	0.00	327 373.90
12 - COLLINS	0.00	19 362.00	35 224.00	0.00	0.00	31 724.00	31 724.00	0.00	0.00	0.00	118 034.00
13 - LUFTHANSA	0.00	10 451.88	10 451.88	19 726.88	19 726.88	108 106.25	108 106.25	10 145.63	10 145.63	10 145.63	317 152.54
14 - DLR	0.00	26 942.00	28 302.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55 244.78
15 - DFS	0.00	30 684.33	20 371.67	0.00	0.00	213 503.24	214 753.88	0.00	0.00	55 997.29	591 307.70
16 - DSNA	0.00	23 533.13	3 486.88	70 104.65	99 003.50	70 678.13	58 428.13	0.00	0.00	0.00	325 234.42
17 - ENAV	26 403.52	19 505.97	21 675.97	45 224.45	41 838.72	26 543.21	26 953.94	32 204.31	32 239.31	0.00	272 589.40
18 - FOR	0.00	5 497.77	6 241.52	0.00	0.00	23 965.36	27 176.61	0.00	0.00	15 481.07	90 000.00
19 - HON CZ	0.00	0.00	0.00	0.00	0.00	218 590.72	181 409.28	0.00	0.00	0.00	400 000.00
19.1 - HON FR	0.00	0.00	0.00	0.00	0.00	23 397.05	28 602.95	0.00	0.00	0.00	52 000.00
20 - HUNGAROCONTROL	0.00	3 416.88	3 416.88	0.00	0.00	0.00	0.00	26 239.94	26 239.94	0.00	59 313.64
21 - INDRA	0.00	0.00	0.00	0.00	0.00	312 932.73	453 156.38	0.00	0.00	0.00	766 089.11
22 - ISAVIA ANS EHF	0.00	0.00	0.00	0.00	0.00	54 961.29	54 961.29	0.00	0.00	0.00	109 922.58
23 - LEONARDO	0.00	0.00	0.00	0.00	0.00	12 048.79	29 311.16	0.00	0.00	13 186.29	83 857.40
24 - NATS	0.00	39 452.44	39 504.94	0.00	0.00	293 148.63	333 079.43	0.00	0.00	0.00	705 185.44
25 - NAV CANADA	0.00	39 542.13	39 542.13	0.00	0.00	177 584.75	193 258.63	0.00	0.00	0.00	449 927.64
26 - PACE GmbH	0.00	0.00	0.00	16 800.00	16 800.00	163 975.00	163 975.00	0.00	0.00	0.00	361 550.00
27 - PANSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	138 831.00	152 061.00	0.00	290 892.00
28 - SKYGUIDE	0.00	51 950.31	48 223.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100 173.67
29 - NLR	0.00	16 182.89	16 182.89	0.00	0.00	26 834.75	26 354.39	0.00	0.00	0.00	85 554.92
30 - SWISS	0.00	0.00	0.00	86 310.88	86 310.88	108 511.80	108 511.80	0.00	0.00	0.00	389 645.36
31 - THALES LAS	0.00	0.00	0.00	22 645.15	22 645.15	59 456.44	59 456.44	0.00	0.00	0.00	164 203.18
32 - TXT E-TECH	0.00	0.00	0.00	0.00	0.00	92 575.00	93 450.00	0.00	0.00	0.00	186 025.00
33 - THALES AVS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44 012.06	47 532.63	0.00	91 544.69
34 - INGENAV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	62 335.00	62 335.00	0.00	124 670.00
Σ consortium	26 403.52	407 703.60	379 426.05	442 779.46	523 064.17	3 011 313.72	3 003 561.42	934 182.58	949 525.72	105 655.73	9 902 039.23

	Estimated EU contribution	
	Estimated eligible lump sum contributions (per work package)	Maximum grant amount[1]
	WP11 TSE – Phase 2	
Forms of funding	Lump sum contribution	
	k	l = a + b + c + d + e + f + g + h + i + j + k
1 - EUROCONTROL	0.00	0.00
2 - AIR FRANCE	11 331.51	611 679.29
3 - TERN	0.00	1 032 269.71
3.1 - TERN HU	0.00	84 087.50
4 - ANS CR	0.00	191 362.50
5 - AI OPS SAS	0.00	490 136.52
6 - AIRBUS	0.00	551 590.38
7 - AUSTRO CONTROL	0.00	51 668.06
8 - AVTECH	0.00	38 937.50
9 - BAS	0.00	172 424.00
10 - CAE AUSTRIA	0.00	160 392.40
11 - CAE Poland	0.00	327 373.90
12 - COLLINS	0.00	118 034.00
13 - LUFTHANSA	10 145.63	317 152.54
14 - DLR	0.00	55 244.78
15 - DFS	55 997.29	591 307.70
16 - DSNA	0.00	325 234.42
17 - ENAV	0.00	272 589.40
18 - FOR	11 637.67	90 000.00
19 - HON CZ	0.00	400 000.00
19.1 - HON FR	0.00	52 000.00
20 - HUNGAROCONTROL	0.00	59 313.64
21 - INDRA	0.00	766 089.11
22 - ISAVIA ANS EHF	0.00	109 922.58
23 - LEONARDO	29 311.16	83 857.40
24 - NATS	0.00	705 185.44
25 - NAV CANADA	0.00	449 927.64
26 - PACE GmbH	0.00	361 550.00
27 - PANSA	0.00	290 892.00
28 - SKYGUIDE	0.00	100 173.67
29 - NLR	0.00	85 554.92
30 - SWISS	0.00	389 645.36
31 - THALES LAS	0.00	164 203.18
32 - TXT E-TECH	0.00	186 025.00
33 - THALES AVS	0.00	91 544.69
34 - INGENAV	0.00	124 670.00
Σ consortium	118 423.26	9 902 039.23

[1] The 'maximum grant amount' is the maximum grant amount fixed in the grant agreement (on the basis of the sum of the beneficiaries' lump sum shares for the work packages).

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

AIR FRANCE SA (AIR FRANCE), PIC 937590070, established in RUE DE PARIS 45, ROISSY CDG CEDEX 95747, France,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 (‘the Agreement’)

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 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

Raphael EYROLLE with ECAS id n002auxy signed in the Participant Portal on 19/05/2026 at 16:11:22 (transaction id SigId-9692-ePVtq3hHpjgbPYde5YpwUePiXTSycafXMIf1C3qgiFkSqMwZrQSEmc1v4NPr6rJFlHezzozzzV3P1xyWEMsUJbL-POMaLlcnzRygWFnJ0ibqHK-g4OdVOP2n57fpcbqCtWDZnaKo4giU517TMI6RkzeGGIOaMXc6MXLJGKJEH7MLH3Qj2UyfklKm3BVltX2jgXmbC). Timestamp by third party at 2026.05.19 16:11:26 CEST

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 101288946 — NET-TBO 2 ('the Agreement')

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 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.

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SIGNATURE

For the beneficiary

Holmfridur Elvarsdottir with ECAS id n0095ylk signed in the Participant Portal on 12/05/2026 at 13:08:29 (transaction id SigId-9008-lqyTavwH0Qdo01EnhtwJUINxqOqRtfo8ml3lgPOCeozq3OKlsta3HN154rHGf3VZxhlSdIjvmDzuQplQcFIQbQ-R2zIpfT8xjMVQv7ei6TcSG-wFY9eIH5KGCDgYlC7jJmzg17JuIdtKcNkDOrHzoBYIkJ9bl3GlpB0o4ahb2ztksCLdHDO0lxm3rqBMxSTEccwqG). Timestamp by third party at 2026.05.12 13:08:38 CEST

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

RIZENI LETOVEHO PROVOZU CESKE REPUBLIKY STATNI PODNIK (ANS CR), PIC 954552363, established in JENEC NAVIGACNI 787, JENEC 252 61, Czechia,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 ('the Agreement')

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 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.

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SIGNATURE

For the beneficiary

Lubos HLINOVSKY with ECAS id nhilinlu signed in the Participant Portal on 13/05/2026 at 14:04:08 (transaction id SigId-15201-4Ir36jw KLTRWblCTqbtX6pyHMzSuBWbkD8yaOpRkzazrcRO6qQnEzfrYgKNEF ckagDpzhdfEu7qilewbmHTWGlw-R2zIpfT8xjMVQv7ei6TcSG-KMhC5b Daxrc8wTEAKjcy6yt20uvbW1vNcuEzNhgNyQzfJr7NlzLQ49V63GWCw YOTNMN8GPfzW0MrcY8kX2HsrYu). Timestamp by third party at 2026.05.13 14:04:17 CEST

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ACCESSION FORM FOR BENEFICIARIES

AIRBUS OPERATIONS SAS (AI OPS SAS), PIC 991247948, established in ROUTE DE BAYONNE 316, TOULOUSE 31060, France,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 ('the Agreement')

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 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.

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SIGNATURE

For the beneficiary

Didier KATZENMAYER with ECAS id n00c6xfa signed in the Participant Portal on 19/05/2026 at 09:48:08 (transaction id SigId-5992-pPzg3RQSa37rabzHeIMadxLnUgPu8ZKOHXUUNSJcXbzaZazlqME3wNRxFcJHEinBhrhjhl5jbEenDDKPzvFAPAzW-POMaLlcnzRygWFnJ0ibqHK-cxSBzSKEgduSdoHsauJigcPeIAhieejk3gNQkdldOHQrZDuPWKixvtf7twSsvjUeQKzpCcVSmfvE3a1xvzcDLVG). Timestamp by third party at 2026.05.19 09:48:14 CEST

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ACCESSION FORM FOR BENEFICIARIES

AIRBUS (AIRBUS), PIC 999963010, established in 2 ROND POINT EMILE DEWOITINE, BLAGNAC 31700, France,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 ('the Agreement')

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 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.

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SIGNATURE

For the beneficiary

Klara WITTKOWSKI with ECAS id nwittkkl signed in the Participant Portal on 12/05/2026 at 16:55:56 (transaction id SigId-10903-j2eisYpUnqx9OTmMjXZnJmqfHypaKHwr5gETUXoBCnrYrS9JDy4UnrpaPhTq4vVNuwh1rZ590ddnEgTcH3zdYi-R2zIpfT8xjMVQv7ei6TcSG-tMySf2lnMzfYSPnXeQRtsUzm9DzgvBWaBBwtIQecAfiRzlbXP3qZzZBuesY06wOLOxSsoU9zSsPFzOUDGRMIErTG). Timestamp by third party at 2026.05.12 16:56:00 CEST

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

AUSTRO CONTROL OSTERREICHISCHE GESELLSCHAFT FUR ZIVILLUFTFAHRT MBH (AUSTRO CONTROL), PIC 998956635, established in SCHNIRCHGASSE 17, WIEN 1030, Austria,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 (‘the Agreement’)

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 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

Erich KLOCK with ECAS id nkloceri signed in the Participant Portal on 19/05/2026 at 08:11:50 (transaction id SigId-5425-GnofBkV4VuT DMHwZamzfJwK8rqk1A43KfjTkzHyA9wtgW0I9tAKBPOzPNwprMuv Kg7RR0bLtSJ9Veb4zmTRzdP9-POMaLlcnzRygWFnJ0ibqHK-VOb1Oh cYSg4FbcAikNWJOHRIvzxEnHxAlQgLpUbhAtoTCMmtNzlFIDzzbstR9 kmo06t0zL64jWkfbe09o2X41zWW). Timestamp by third party at 2026.05.19 08:11:59 CEST

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

AVTECH SWEDEN AB (AVTECH), PIC 997849574, established in FAROGATAN 33 24 TR, KISTA 164 51, Sweden,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 (‘the Agreement’)

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 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

Christina Zetterlund with ECAS id n00j97xu signed in the Participant Portal on 18/05/2026 at 11:06:41 (transaction id SigId-1684-rgesTTJz dMXyfjT1ptKoH0urzM0ZrNFwnDE0zbX18YW8hm5CvsP5fjujvYyOnzP Do0ozSQ8k3EoHP4m6DA8B1tN-POMaLlcnzRygWFnJ0ibqHK-rHzjfGs 4nYJzxxl8jRbLELBroIYzkvqzKFFycd2bK6PBzRoQ5W48mDxPDPGSwZ WUR4vLjivYlv3uzfn6Etv6xKQm). Timestamp by third party at 2026.05.18 11:06:45 CEST

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

BOEING AEROSPACE SPAIN (BAS), PIC 999648730, established in AVENIDA SUR DEL AEROPUERTO DE BARAJAS 38 EDIF 4 PL 4 A, MADRID 28042, Spain,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 ('the Agreement')

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 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

<u>ANNEX 3</u>

ACCESSION FORM FOR BENEFICIARIES

CAE FLIGHT SERVICES AUSTRIA GMBH (CAE AUSTRIA), PIC 884813728, established in EURO PLAZA GEBAUDE H LEHRBACHGASSE 11, WIEN 1120, Austria,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 (‘the Agreement’)

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 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

Jose Maria with ECAS id n00cgy86 signed in the Participant Portal on 12/05/2026 at 17:09:34 (transaction id SigId-11004-zMn3hGjsLbDGClTsrFerPMXBtLWW77WFnnSnzJysbMOGNfw4UFhP8uqFm572ZylyGm21X2hbmIKzN2ZNDTmRJkW-R2zIpfT8xjMVQv7ei6TcSG-9atAuJIvtZ5MOtJlkRNKaYBoE8zadkmVyWk53qw1A1ZsuPuMUlRPBe3t2gvIAYdti4MvLVenTY3BzHuPhERsrp). Timestamp by third party at 2026.05.12 17:09:38 CEST

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

CAE FLIGHT SERVICES POLAND SP ZOO (CAE Poland), PIC 879878465, established in UL WADOWICKA 3B, KRAKOW 30-347, Poland,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 (‘the Agreement’)

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 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

Jose Maria with ECAS id n00cgy86 signed in the Participant Portal on 12/05/2026 at 17:09:11 (transaction id SigId-11001-A7DEEOU9 H5kLufYxfzyw2zsSuDnwF1cORrGo6FeUpel0lW2LzViDQVGGKp2ow 4AFPlWrPsaRVj1UE3r12AcSCgm-R2zIpfT8xjMVQv7ei6TcSG-KZQkG 60pJ0Y2BAOuGOsazfAEFZeO6uCamPBPP5TEcguF6o2Efzrx0I8PcEy SGvpfLYxOxcXVf8T0DsO8d8znyam). Timestamp by third party at 2026.05.12 17:09:14 CEST

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 T23 XN53, Ireland,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 ('the Agreement')

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 Joint Undertaking** ('granting authority'), under the powers delegated by the European Commission ('European Commission'),

and mandates

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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

DEUTSCHE LUFTHANSA AKTIENGESELLSCHAFT (LUFTHANSA), PIC 999965532, established in VENLOER STRASSE 151-153, KOLN 50672, Germany,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 (‘the Agreement’)

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 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

Nils Häusler with ECAS id n003tjrm signed in the Participant Portal on 13/05/2026 at 13:54:06 (transaction id SigId-15105-lbiYXiOfek7pSspP2P0DaeJbP6ze4gx792uxbXlzLDs9m3aDzV3ynVddxDpGgeX9XbhShS9WGwS2i6ukhjazaWK-R2zIpfT8xjMVQv7ei6TcSG-Qd5JOuueDx3qYGiRLOVXxRG4Rl4XdLeqKbI5RI9OikSfO7nU4k7cZ02SPN2yzZCKlzg3vtEVznLoTbTSNRa9RXW). Timestamp by third party at 2026.05.13 13:54:14 CEST

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

DEUTSCHES ZENTRUM FUR LUFT - UND RAUMFAHRT EV (DLR), PIC 999981731, established in LINDER HOHE, KOLN 51147, Germany,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 (‘the Agreement’)

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 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

DFS DEUTSCHE FLUGSICHERUNG GMBH (DFS), PIC 999936820, established in AM DFS CAMPUS 10, LANGEN 63225, Germany,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 ('the Agreement')

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 Joint Undertaking** ('granting authority'), under the powers delegated by the European Commission ('European Commission'),

and mandates

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SIGNATURE

For the beneficiary

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

DIRECTION DES SERVICES DE LA NAVIGATION AERIENNE (DSNA), PIC 928673636, established in 50 RUE HENRY FARMAN, PARIS 75720, France,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 ('the Agreement')

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 Joint Undertaking** ('granting authority'), under the powers delegated by the European Commission ('European Commission'),

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SIGNATURE

For the beneficiary

Geoffroy Ville with ECAS id n00cb5c1 signed in the Participant Portal on 12/05/2026 at 19:42:17 (transaction id SigId-11749-2Ggei KLeFULhHudSsdckhcXnGxhEJCT1VDMN126GlFl5zUZB5yai6JTwSpT2 s86TbNkiTGjAXqCo9GWoQNIKLG-R2zIpfT8xjMVQv7ei6TcSG-lQVKtY S7dV2zlptSDC61VUTNzqdpj3N6DG4bzouWjp94OQ5oDJhZylNNYee q7KBriAcSPr6X7JHIWhzU1gGElSy). Timestamp by third party at 2026.05.12 19:42:21 CEST

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 101288946 — NET-TBO 2 (‘the Agreement’)

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 Joint Undertaking** (‘granting authority’), under the powers delegated by the European Commission (‘European Commission’),

and mandates

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SIGNATURE

For the beneficiary

Pasqualino Monti with ECAS id n00d4vyh signed in the Participant Portal on 12/05/2026 at 14:13:30 (transaction id SigId-9522-xoHKiY2ISqV7sbU97vZmLczjCrWoSGrVdGK5nznzYuzwoQnCf4lpNUUwpcFebsydSqlTUMAyZYoq49ZFMbDzzywm-R2zIpfT8xjMVQv7ei6TcSG-skmEg7qlzbGVdkyrbrvlczuOvGgzHmw9qBtVzMMdA57DPbWBVcrzYb4bJeFXa2yqJWS78fRLJ7HNAZfXfi4Gfdv). Timestamp by third party at 2026.05.12 14:13:36 CEST

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

FREQUENTIS ORTHOGON GMBH (FOR), PIC 957912443, established in HASTEDTER OSTERDEICH 222, BREMEN 28207, Germany,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 (‘the Agreement’)

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 Joint Undertaking** (‘granting authority’), under the powers delegated by the European Commission (‘European Commission’),

and mandates

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SIGNATURE

For the beneficiary

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

HONEYWELL INTERNATIONAL SRO (HON CZ), PIC 997834830, established in V PARKU 2325/16 CHODOV, PRAHA 148 00, Czechia,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 ('the Agreement')

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 Joint Undertaking** ('granting authority'), under the powers delegated by the European Commission ('European Commission'),

and mandates

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SIGNATURE

For the beneficiary

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

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

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 ('the Agreement')

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 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

Zoltan Vekey with ECAS id n006vlnx signed in the Participant Portal on 13/05/2026 at 15:38:33 (transaction id SigId-16234-vx3vZeNPzz sm27aAn1fUYau34alXZ24SSA036ynxzjzxGl0lWCHM30rvOro1LiWpz wP5stC0JXzNHMJzJ5yZ7ZOC-R2zIpfT8xjMVQv7ei6TcSG-y7VLGWHpi LUzs50axAZitcOTOxhya9RtQheOeCl2LW4cR8zhPbcRQyzx4HozZDe T5ETOMqFqYppoVutleN8eYvm). Timestamp by third party at 2026.05.13 15:38:42 CEST

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

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

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 ('the Agreement')

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 Joint Undertaking** ('granting authority'), under the powers delegated by the European Commission ('European Commission'),

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SIGNATURE

For the beneficiary

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

ISAVIA ANS EHF (ISAVIA ANS EHF), PIC 896093664, established in REYKJAVIKURFLUGVELLI 102, REYKJAVIK 102, Iceland,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 ('the Agreement')

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 Joint Undertaking** ('granting authority'), under the powers delegated by the European Commission ('European Commission'),

and mandates

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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

Gudny JÖKULSDOTTIR with ECAS id njoekugu signed in the Participant Portal on 21/05/2026 at 17:49:03 (transaction id SigId-20214-XIwBIGiKYp9a1udHQFtcQrQsN8IQ3zGoQ3xmmmNEoKQsJ1eflg96ZUKMyPikmMYBFp2TTfDc2DDhCIleqSZzzze-POMaLlcnzRygWFnJ0ibqHK-wztRedufnlrzwZnNFIYbOg4QXcrVc7CabngLb1vmCZL8wpZFlzaH9abe8Pn1Jczg2R4K2GQVs57nLBYP4JCNIxq). Timestamp by third party at 2026.05.21 17:49:11 CEST

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 101288946 — NET-TBO 2 ('the Agreement')

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 Joint Undertaking** ('granting authority'), under the powers delegated by the European Commission ('European Commission'),

and mandates

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SIGNATURE

For the beneficiary

Federico Ariemma with ECAS id n00ay8to signed in the Participant Portal on 25/05/2026 at 10:25:26 (transaction id SigId-1201-VdF5g usD2kNtcXLYaDcAjJkzOdEwhnsV3qvwcbmZG5H7zKdypU5ifPWloW AVpnkIBU0KfyrQKZWRSjj7N1cDPzW-R2zIpfT8xjM178RdBPYo0m-z oFTqrPdOFBxMfF6EfFsSVswVH4x4Yjba6cpN2voh4fQztzHiQJiIrR9J8 NSoZuPvQjjlRIQzVuorARyVzwyzQbG). Timestamp by third party at 2026.05.25 10:25:33 CEST

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

NATS (EN ROUTE) PUBLIC LIMITED COMPANY (NATS), PIC 997542763, established in 4000 PARKWAY WHITELEY, FAREHAM PO15 7FL, United Kingdom,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 (‘the Agreement’)

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 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.

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SIGNATURE

For the beneficiary

Christopher Norsworthy with ECAS id n00lnue5 signed in the Participant Portal on 14/05/2026 at 15:31:02 (transaction id SigId-19270-cvLOVWzftFafvICXoWv8LIC7zPjPORhYis5LP70UXPouzwDAQhLMka7iF3ABwQ8CFn0UsEqHT6CEI4Kfb9IlJU0-R2zIpfT8xjMVQv7ei6TcSG-EzYgJMdQePcJzhlQFMndIUXDKV3yGhsJm3RA88eQtze9whrn5zRD4p6xEzJx3QGJoFHlVYu3BDKkmAqYihwwtlM). Timestamp by third party at 2026.05.14 15:31:06 CEST

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

NAV CANADA (NAV CANADA), PIC 924404957, established in 151 SLATER STREET SUITE 120, OTTAWA ONTARIO K1P 5H3, Canada,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 (‘the Agreement’)

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 Joint Undertaking** (‘granting authority’), under the powers delegated by the European Commission (‘European Commission’),

and mandates

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SIGNATURE

For the beneficiary

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

PACE AEROSPACE ENGINEERING AND INFORMATION TECHNOLOGY GMBH (PACE GmbH), PIC 992602068, established in VALESKA-GERT-STRASSE 1, BERLIN 10243, Germany,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 (‘the Agreement’)

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 Joint Undertaking** (‘granting authority’), under the powers delegated by the European Commission (‘European Commission’),

and mandates

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SIGNATURE

For the beneficiary

Frank Ehlermann with ECAS id n0076ud7 signed in the Participant Portal on 12/05/2026 at 13:25:39 (transaction id SigId-9149-I6uUIZB6w6bySMcu2Sga88BLt7yS3m2DpCdihAgUa3Nx6GzOHDrzWhoOc0I8bEA4Qt4K4xwfe31444LdCYOxvZ-R2zIpfT8xjMVQv7ei6TcSG-ROt4V2gHX5MhmNduoqsjVMtpHlZvY3OwgP4m3ocQe00Nh1LO5H7grQswR5xRYsCqMZZzOcdd9cVZBq8LUCseTi). Timestamp by third party at 2026.05.12 13:25:46 CEST

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

POLSKA AGENCJA ZEGLUGI POWIETRZNEJ (PANSA), PIC 995562023, established in UL. WIEZOWA 8, WARSZAWA 02 147, Poland,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 (‘the Agreement’)

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 Joint Undertaking** (‘granting authority’), under the powers delegated by the European Commission (‘European Commission’),

and mandates

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SIGNATURE

For the beneficiary

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

SKYGUIDE, SA SUISSE POUR LES SERVICES DE LA NAVIGATION AERIENNE CIVILS ET MILITAIRES (SKYGUIDE), PIC 958184334, established in ROUTE DE PRE BOIS 15-17, GENEVA 1215, Switzerland,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 (‘the Agreement’)

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 Joint Undertaking** (‘granting authority’), under the powers delegated by the European Commission (‘European Commission’),

and mandates

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SIGNATURE

For the beneficiary

Marie-Laure GLASSEY with ECAS id nglasmri signed in the Participant Portal on 18/05/2026 at 14:00:43 (transaction id SigId-3083-uqosxZtI czHmjFcuRs0HkPZ0xuou0S3MMVH5cAEJvPlYZoHN6JdDYGzXGzt8jo7l sXKD8zuxzcGgzkkPjlMPBGJ0-POMaLlcnzRygWFnJ0ibqHK-dUbqVwGE Eeu4hZg9MbCzZh4TxTMQFcO8Wgzsd58zjZRY636j3BVua5HcoyaTQx T0ecpFgPLj7jOcZtS5J56hZzi). Timestamp by third party at 2026.05.18 14:00:47 CEST

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 101288946 — NET-TBO 2 (‘the Agreement’)

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 Joint Undertaking** (‘granting authority’), under the powers delegated by the European Commission (‘European Commission’),

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SIGNATURE

For the beneficiary

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

SWISS INTERNATIONAL AIR LINES AG (SWISS), PIC 927320680, established in OBSTGARTENSTRASSE 25, KLOTEN 8302, Switzerland,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 ('the Agreement')

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 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.

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SIGNATURE

For the beneficiary

Dominique Heilmann with ECAS id ndieckdo signed in the Participant Portal on 12/05/2026 at 14:36:55 (transaction id SigId-9699-zItaoxvfN1yzm3nnp7azbBk2RhSRDjXgZY2e0OOrwMXw6q4jCuafHMw37uHQSBt4QesBe7d9cGLctHpjzvyAilO-R2zIpfT8xjMVQv7ei6TcSG-vuGzWKQA2avZmgHzuGSwRyazoXwEvUBYzZStCoH5ASjm0vUUuvGYX7sxuKqjhZP72JzLO29E00Kxb6ZXG2s09Xr). Timestamp by third party at 2026.05.12 14:37:04 CEST

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

THALES LAS FRANCE SAS (THALES LAS), PIC 999961555, established in AVENUE GAY LUSSAC 2, ELANCOURT 78990, France,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 (‘the Agreement’)

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 Joint Undertaking** (‘granting authority’), under the powers delegated by the European Commission (‘European Commission’),

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SIGNATURE

For the beneficiary

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

TXT E-TECH SRL (TXT E-TECH), PIC 884000383, established in VIA MILANO 150, COLOGNO MONZESE 20093, Italy,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 (‘the Agreement’)

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 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

Daniele Misani with ECAS id n002s924 signed in the Participant Portal on 12/05/2026 at 13:39:35 (transaction id SigId-9269-hdsJ7w9f8i54YvqVFru1XznAxOlH9j1nk0ukaIkyJHA7m4TZStX3xdIPzJ9I5YgmnbU1Z1UnzbOSJPGuaaMN9KG-R2zIpfT8xjMVQv7ei6TcSG-9dsE1dRo6pbnrwLyMata1PAT06A1qGPbUOJgsrpfBLa0fzzQ4ClDVHVjugyRCCBlbdvzgAR3wl2S5KNL6cFRjJW). Timestamp by third party at 2026.05.12 13:39:45 CEST

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

THALES AVS FRANCE SAS (THALES AVS), PIC 999984447, established in 75-77 AVENUE MARCEL DASSAULT, MERIGNAC 33700, France,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 (‘the Agreement’)

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 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

Nicolas POMMIES with ECAS id n00dodoi signed in the Participant Portal on 18/05/2026 at 16:41:05 (transaction id SigId-4366-MSX0fnY27bZMUJnezMViwJYziAd3TYJI2BP6PyUJISnrtK2UluEvczafGOgzapA1SHMte4JM2bYJ2mT2DeBv8ci-POMaLlcnzRygWFnJ0ibqHK-hBweX7vzdGiQkYxq3HzRwX4SVnC7CzcNnawzG4HHs7pdrxiiCrA5ElDGxLYGokqhYwnfcjlNNApgztDiklR2shs). Timestamp by third party at 2026.05.18 16:41:11 CEST

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

INNOVACION Y GESTION EN NAVEGACION AEREA SL (INGENAV), PIC 937877190, established in AVDA DEL PARTENON 10, 3A PLANTA, OFICINA 10, MADRID 28042, Spain,

hereby agrees

to become beneficiary

in Agreement No 101288946 — NET-TBO 2 ('the Agreement')

between EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) **andSESAR3 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

Maximilian BEZZINA with ECAS id nbezmaxi signed in the Participant Portal on 14/05/2026 at 09:49:37 (transaction id SigId-18357-hK1PPP3jTSmECc1LzHbUew0TTM054ZRKzzT0EcMb7zJb0brlOvMdaLtmzk4GTgbEXX6HMdSbCaVixzsZFw3hEmhW-R2zIpfT8xjMVQv7ei6TcSG-F7DzWH1OuBCJfvHJMpeJgJOuaEu7sBydVKo2SnY23aDzq0rEBqnVLNRWqBO45dPAUb4q4PRpNeFOKgEPtazoJB0). Timestamp by third party at 2026.05.14 09:49:45 CEST

ANNEX 4 XXX LUMP SUM MGA — MULTI & MONO

FINANCIAL STATEMENT FOR THE ACTION FOR REPORTING PERIOD [NUMBER]

	EU contribution											
	Eligible lump sum contributions (per work package)											Requested EU contribution
	WP1 [name]	WP2 [name]	WP3 [name]	WP4 [name]	WP5 [name]	WP6 [name]	WP7 [name]	WP8 [name]	WP9 [name]	WP10 [name]	WP [XX]	
Forms of funding	[Lump sum contribution][Financing not linked to costs]	[Lump sum contribution][Financing not linked to costs]	[Lump sum contribution][Financing not linked to costs]	[Lump sum contribution][Financing not linked to costs]	[Lump sum contribution][Financing not linked to costs]	[Lump sum contribution][Financing not linked to costs]	[Lump sum contribution][Financing not linked to costs]	[Lump sum contribution][Financing not linked to costs]	[Lump sum contribution][Financing not linked to costs]	[Lump sum contribution][Financing not linked to costs]	[Lump sum contribution][Financing not linked to costs]	
Status of completion	COMPLETED	COMPLETED	COMPLETED	COMPLETED	COMPLETED	COMPLETED	COMPLETED	PARTIALLY COMPLETED	PARTIALLY COMPLETED	COMPLETED	NOT COMPLETED	
	a	b	c	d	e	f	g	h	i	j	k	l = a + b+ c + d+ e+ f+ g+ h+ i+ j+ k
1 – [short name beneficiary]												
1.1 – [short name affiliated entity]												
2 – [short name beneficiary]												
2.1 – [short name affiliated entity]												
X – [short name associated partner]												
Total consortium												

The consortium hereby confirms that:

The information provided is complete, reliable and true.

The lump sum contributions declared are eligible (in particular, the work packages have been completed and the work has been properly implemented and/or the results were achieved; see Article 6).

The proper implementation of the action/achievement of the results 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, 21 and 25).

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[1] 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:

- ethical principles (including the highest standards of research integrity)

[1] 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).

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[2].

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
- 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

[2] European Code of Conduct for Research Integrity of ALLEA (All European Academies).

- 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 or licensee 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 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/dedication 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 Common 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) 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 (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 trusted 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 Annex II to the Council Recommendation on a European framework to attract and retain research, innovation and entrepreneurial talents in Europe[3] ('the European Charter for Researchers'), in particular regarding:

- working conditions
- transparent recruitment processes based on merit, and
- 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'[4]:

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

[3] Council Recommendation C/2023/1640 of 18 December 2023 on a European framework to attract and retain research, innovation and entrepreneurial talents in Europe, Annex II (OJ C, C/2023/1640, 29.12.2023).

[4] See Article 2(1) of the Horizon Europe Framework Programme Regulation 2021/695.

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).

  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[5] 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.

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 in-kind contributions to operational activities and financial 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 to operational activities 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:

[5] 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.

- 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).

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:

Circular Bio-based Europe Joint Undertaking

Clean Hydrogen Partnership

innovative health initiative

Global Health EDCTP3

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 Clean Aviation and SNS JU grants, where imposed by the call conditions, the beneficiaries must — before grant signature (or another date specified in the call conditions or agreed with the granting authority) — adhere to a written agreement based on the model set up by the Joint Undertaking, in order to ensure best possible coordination and a programmatic approach amongst all the JU funded actions to achieve the Programme's objectives.

The agreement will set a framework and cover areas where close cooperation and coordination is needed (e.g. sharing of information, management of outputs, common approaches towards standardisation, common communication and dissemination activities, links with regulatory and policy activities, contribution to the impact monitoring, access to results and background, etc.) and define the rules for this cooperation (e.g. dispute settlement mechanisms, confidentiality arrangements, indemnification, etc).

The agreement should be signed by the coordinators in the name of their consortia (or by all the beneficiaries where imposed by the call conditions) of all JU funded actions and in line with the accession modalities set out in the agreement, and thus create a partnership between all participants of closed and ongoing JU funded actions, including actions funded under the same or different calls.

For EuroHPC and Chips 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 European Charter for Researchers 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)
  - 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).

European Commission

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