



GRANT AGREEMENT

NUMBER — 783261 — USIS

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

on the one part,

the **Single European Sky ATM Research Joint Undertaking** ('the JU'), represented for the purposes of signature of this Agreement by the JU Executive Director or his/her representative, Florian GUILLERMET,

and

on the other part,

1. 'the coordinator'³ :

THALES LAS FRANCE SAS (THALES LAS), established in AVENUE GAY LUSSAC 2, ELANCOURT 78990, France, VAT number: FR15319159877, represented for the purposes of signing the Agreement by PMO SESAR Director, Luc LALLOUETTE

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

2. **UNIFLY (UNIFLY)**, established in LUCHTHAVENL 7A UNIT 6 AIRPORT BUSINESS CENTER, ANTWERPEN DEURNE 2100, Belgium, VAT number: BE0635520937,

3. **DIRECTION DES SERVICES DE LA NAVIGATION AERIENNE (DSNA)**, established in 50 RUE HENRY FARMAN, PARIS 75720, France, VAT number: FR29120064019,

4. **ALTAMETRIS (ALTAMETRIS)**, established in 21 AVENUE DU STADE DE FRANCE, SAINT-DENIS LA PLAINE 93210, France, VAT number: FR09828154377,

5. **HUNGAROCONTROL MAGYAR LEGIFORGALMISZOLGALAT ZARTKORUEN MUKODO RESZVENYTARSASAG (HC)**, established in IGLO UTCA 33 35, BUDAPEST 1185, Hungary, VAT number: HU13851325,

6. **DFS DEUTSCHE FLUGSICHERUNG GMBH (DFS)**, established in AM DFS CAMPUS 10, LANGEN 63225, Germany, VAT number: DE114110232,

7. **ECOLE NATIONALE DE L AVIATION CIVILE (ENAC)**, established in AVENUE EDOUARD BELIN 7, TOULOUSE 31400, France, VAT number: FR57193112562,

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

³ The coordinator shall be the ITD/IADP/TA technical coordinator.

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

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

The Agreement is composed of:

Terms and Conditions

- | | |
|---------|---|
| Annex 1 | Description of the action |
| Annex 2 | Estimated budget for the action |
| | 2a Additional information on the estimated budget |
| Annex 3 | Accession Forms |
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TERMS AND CONDITIONS

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CHAPTER 1 GENERAL

ARTICLE 1 — SUBJECT OF THE AGREEMENT

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

CHAPTER 2 ACTION

ARTICLE 2 — ACTION TO BE IMPLEMENTED

The grant is awarded for the action entitled ‘**U-Space Initial Services — USIS**’ (**‘action’**), as described in Annex 1.

ARTICLE 3 — DURATION AND STARTING DATE OF THE ACTION

The duration of the action will be **23 months** as of 1 January 2018 (**‘starting date of the action’**).

ARTICLE 4 — ESTIMATED BUDGET AND BUDGET TRANSFERS

4.1 Estimated budget

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

It contains the estimated eligible costs and the forms of costs, broken down by beneficiary and budget category (see Articles 5, 6).

4.2 Budget transfers

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

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

CHAPTER 3 GRANT

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

5.1 Maximum grant amount

The **‘maximum grant amount’** is **EUR 1,308,671.13** (one million three hundred and eight thousand six hundred and seventy one EURO and thirteen eurocents).

5.2 Form of grant, reimbursement rates and forms of costs

The grant reimburses **100% of the eligible costs of the beneficiaries that are non-profit legal entities and 70% of the eligible costs of the beneficiaries that are profit legal entities** (see Article 6) (**‘reimbursement of eligible costs grant’**) (see Annex 2).

The estimated eligible costs of the action are EUR **1,799,323.75** (one million seven hundred and ninety nine thousand three hundred and twenty three EURO and seventy five eurocents).

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

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

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

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

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

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

(d) for **other direct costs**: as actually incurred costs (**actual costs**);

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

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

5.3 Final grant amount — Calculation

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

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

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

Step 2 – Limit to the maximum grant amount

Step 3 – Reduction due to the no-profit rule

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

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

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

5.3.2 Step 2 — Limit to the maximum grant amount

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

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

The grant must not produce a profit.

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

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

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

The following are considered **receipts**:

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

The following are however not considered receipts:

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

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

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

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

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

- the amount obtained following Steps 1 to 3 or

- the reduced grant amount following Step 4.

5.4 Revised final grant amount — Calculation

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

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

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

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

ARTICLE 6 — ELIGIBLE AND INELIGIBLE COSTS

6.1 General conditions for costs to be eligible

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

(a) for **actual costs**:

- (i) they must be actually incurred by the beneficiary;
- (ii) they must be incurred in the period set out in Article 3, with the exception of costs relating to the submission of the periodic report for the last reporting period and the final report (see Article 20);
- (iii) they must be indicated in the estimated budget set out in Annex 2;
- (iv) they must be incurred in connection with the action as described in Annex 1 and necessary for its implementation;
- (v) they must be identifiable and verifiable, in particular recorded in the beneficiary’s accounts in accordance with the accounting standards applicable in the country where the beneficiary is established and with the beneficiary’s usual cost accounting practices;
- (vi) they must comply with the applicable national law on taxes, labour and social security, and
- (vii) they must be reasonable, justified and must comply with the principle of sound financial management, in particular regarding economy and efficiency;

(b) for **unit costs**:

- (i) they must be calculated as follows:

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

multiplied by

the number of actual units};

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

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

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

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

6.2 Specific conditions for costs to be eligible

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

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

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

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

A. Direct personnel costs

Types of eligible personnel costs

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

Beneficiaries that are non-profit legal entities¹ may also declare as personnel costs **additional**

remuneration for personnel assigned to the action (including payments on the basis of supplementary contracts regardless of their nature), if:

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

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

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

$$\left\{ \frac{\text{EUR 8 000}}{\text{the number of annual productive hours (see below)}} \times \text{the number of hours that the person has worked on the action during the year} \right\}.$$

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

- (a) the person works under the beneficiary's instructions and, unless otherwise agreed with the beneficiary, on the beneficiary's premises;
- (b) the result of the work carried out belongs to the beneficiary, and
- (c) the costs are not significantly different from those for personnel performing similar tasks under an employment contract with the beneficiary.

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

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

A.5 Costs of 'beneficiaries that are natural persons' not receiving a salary are eligible personnel

¹ For the definition, see Article 2.1(14) of the Rules for Participation Regulation No 1290/2013: '**non-profit legal entity**' means a legal entity which by its legal form is non-profit-making or which has a legal or statutory obligation not to distribute profits to its shareholders or individual members.

costs, if they correspond to the amount per unit set out in Annex 2a multiplied by the number of actual hours worked on the action.

Calculation

Personnel costs must be calculated by the beneficiaries as follows:

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

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

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

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

The ‘**hourly rate**’ is one of the following:

- (a) for personnel costs declared as **actual costs**: the hourly rate is calculated *per full financial year*, as follows:

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

using the personnel costs and the number of productive hours for each full financial year covered by the reporting period concerned. If a financial year is not closed at the end of the reporting period, the beneficiaries must use the hourly rate of the last closed financial year available.

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

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

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

plus
overtime worked
minus
absences (such as sick leave and special leave)}.

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

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

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

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

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

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

{actual monthly personnel cost (excluding additional remuneration) for the person
divided by
{number of annual productive hours / 12}}

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

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

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

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

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

- (b) for personnel costs declared on the basis of **unit costs**: the hourly rate is one of the following:

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

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

and

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

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

C. Direct costs of providing financial support to third parties

Not applicable

D. Other direct costs

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

D.2 The depreciation costs of equipment, infrastructure or other assets (new or second-hand) as recorded in the beneficiary's accounts are eligible, if they were purchased in accordance with Article 10.1.1 and written off in accordance with international accounting standards and the beneficiary's usual accounting practices.

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

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

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

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

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

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

D.4 Capitalised and operating costs of ‘large research infrastructure’² directly used for the action are eligible, if:

- (a) the value of the large research infrastructure represents at least 75% of the total fixed assets (at historical value in its last closed balance sheet before the date of the signature of the Agreement or as determined on the basis of the rental and leasing costs of the research infrastructure³);
- (b) the beneficiary’s methodology for declaring the costs for large research infrastructure has been positively assessed by the Commission (‘**ex-ante assessment**’);
- (c) the beneficiary declares as direct eligible costs only the portion which corresponds to the duration of the action and the rate of actual use for the purposes of the action, and
- (d) they comply with the conditions as further detailed in the annotations to the H2020 grant agreements.

E. Indirect costs

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

- (a) costs of subcontracting and

² ‘**Large research infrastructure**’ means research infrastructure of a total value of at least EUR 20 million, for a beneficiary, calculated as the sum of historical asset values of each individual research infrastructure of that beneficiary, as they appear in its last closed balance sheet before the date of the signature of the Agreement or as determined on the basis of the rental and leasing costs of the research infrastructure.

³ For the definition, see Article 2(6) of the H2020 Framework Programme Regulation No 1291/2013: ‘**Research infrastructure**’ are facilities, resources and services that are used by the research communities to conduct research and foster innovation in their fields. Where relevant, they may be used beyond research, e.g. for education or public services. They include: major scientific equipment (or sets of instruments); knowledge-based resources such as collections, archives or scientific data; e-infrastructures such as data and computing systems and communication networks; and any other infrastructure of a unique nature essential to achieve excellence in research and innovation. Such infrastructures may be ‘single-sited’, ‘virtual’ or ‘distributed’.

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

Beneficiaries receiving an operating grant⁴ financed by the EU or Euratom budget cannot declare indirect costs for the period covered by the operating grant.

F. Specific cost category(ies)

Not applicable

6.3 Conditions for costs of linked third parties to be eligible

Not applicable

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

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

6.5 Ineligible costs

'Ineligible costs' are:

- (a) costs that do not comply with the conditions set out above (Article 6.1 to 6.4), in particular:
 - (i) costs related to return on capital;
 - (ii) debt and debt service charges;
 - (iii) provisions for future losses or debts;
 - (iv) interest owed;
 - (v) doubtful debts;
 - (vi) currency exchange losses;
 - (vii) bank costs charged by the beneficiary's bank for transfers from the JU;
 - (viii) excessive or reckless expenditure;
 - (ix) deductible VAT;

⁴ For the definition, see Article 121(1)(b) of Regulation (EU, Euratom) No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union and repealing Council Regulation (EC, Euratom) No 1605/2002 ('**Financial Regulation No 966/2012**') (OJ L 218, 26.10.2012, p.1): '**operating grant**' means direct financial contribution, by way of donation, from the budget in order to finance the functioning of a body which pursues an aim of general EU interest or has an objective forming part of and supporting an EU policy.

- (x) costs incurred during suspension of the implementation of the action (see Article 49);
- (b) costs declared under another JU, EU or Euratom grant (including other grants awarded by the JU, grants awarded by a Member State and financed by the EU or Euratom budget and grants awarded by bodies other than the JU for the purpose of implementing the EU or Euratom budget); in particular, indirect costs if the beneficiary is already receiving an operating grant financed by the EU or Euratom budget in the same period.

6.6 Consequences of declaration of ineligible costs

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

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

CHAPTER 4 RIGHTS AND OBLIGATIONS OF THE PARTIES

SECTION 1 RIGHTS AND OBLIGATIONS RELATED TO IMPLEMENTING THE ACTION

ARTICLE 7 — GENERAL OBLIGATION TO PROPERLY IMPLEMENT THE ACTION

7.1 General obligation to properly implement the action

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

7.2 Consequences of non-compliance

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

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

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

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

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

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

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

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

Not applicable

ARTICLE 10 — PURCHASE OF GOODS, WORKS OR SERVICES

10.1 Rules for purchasing goods, works or services

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

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

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

10.1.2 Beneficiaries that are ‘contracting authorities’ within the meaning of Directive 2004/18/EC⁵ (or 2014/24/EU⁶) or ‘contracting entities’ within the meaning of Directive 2004/17/EC⁷ (or 2014/25/EU⁸) must comply with the applicable national law on public procurement.

10.2 Consequences of non-compliance

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

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

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

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

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

⁵ Directive 2004/18/EC of the European Parliament and of the Council of 31 March 2004 on the coordination of procedures for the award of public work contracts, public supply contracts and public service contracts (OJ L 134, 30.04.2004, p. 114).

⁶ Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC. (OJ L 94, 28.03.2014, p. 65).

⁷ Directive 2004/17/EC of the European Parliament and of the Council of 31 March 2004 coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors (OJ L 134, 30.04.2004, p. 1)

⁸ Directive 2014/25/EU of the European Parliament and of the Council of 26 February 2014 on procurement by entities operating in the water, energy, transport and postal services sectors and repealing Directive 2004/17/EC (OJ L 94, 28.03.2014, p. 243).

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

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

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

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

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

11.2 Consequences of non-compliance

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

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

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

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

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

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

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

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

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

12.2 Consequences of non-compliance

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

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

ARTICLE 13 — IMPLEMENTATION OF ACTION TASKS BY SUBCONTRACTORS

13.1 Rules for subcontracting action tasks

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

Subcontracting may cover only a limited part of the action.

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

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

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

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

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

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

13.2 Consequences of non-compliance

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

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

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

ARTICLE 14 — IMPLEMENTATION OF ACTION TASKS BY LINKED THIRD PARTIES

Not applicable

ARTICLE 15 — FINANCIAL SUPPORT TO THIRD PARTIES

15.1 Rules for providing financial support to third parties

Not applicable

15.2 Financial support in the form of prizes

Not applicable

15.3 Consequences of non-compliance

Not applicable

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

16.1 Rules for providing trans-national access to research infrastructure

Not applicable

16.2 Rules for providing virtual access to research infrastructure

Not applicable

16.3 Consequences of non-compliance

Not applicable

SECTION 2 RIGHTS AND OBLIGATIONS RELATED TO THE GRANT ADMINISTRATION

ARTICLE 17 — GENERAL OBLIGATION TO INFORM

17.1 General obligation to provide information upon request

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

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

Each beneficiary must keep information stored in the Participant Portal Beneficiary Register (via the electronic exchange system; see Article 52) up to date, in particular, its name, address, legal representatives, legal form and organisation type.

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

- (a) **events** which are likely to affect significantly or delay the implementation of the action or the EU's or JU's financial interests, in particular:

- (i) changes in its legal, financial, technical, organisational or ownership situation
- (b) **circumstances** affecting:
 - (i) the decision to award the grant or
 - (ii) compliance with requirements under the Agreement.

17.3 Consequences of non-compliance

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

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

ARTICLE 18 — KEEPING RECORDS — SUPPORTING DOCUMENTATION

18.1 Obligation to keep records and other supporting documentation

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

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

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

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

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

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

18.1.2 Records and other documentation to support the costs declared

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

- (a) for **actual costs**: adequate records and other supporting documentation to prove the costs declared, such as contracts, subcontracts, invoices and accounting records. In addition, the beneficiaries' usual cost accounting practices and internal control procedures must enable direct reconciliation between the amounts declared, the amounts recorded in their accounts and the amounts stated in the supporting documentation;

- (b) for **unit costs**: adequate records and other supporting documentation to prove the number of units declared. Beneficiaries do not need to identify the actual eligible costs covered or to keep or provide supporting documentation (such as accounting statements) to prove the amount per unit.

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

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

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

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

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

18.2 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, costs insufficiently substantiated will be ineligible (see Article 6) and will be rejected (see Article 42), and the grant may be reduced (see Article 43).

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

ARTICLE 19 — SUBMISSION OF DELIVERABLES

19.1 Obligation to submit deliverables

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

19.2 Consequences of non-compliance

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

ARTICLE 20 — REPORTING — PAYMENT REQUESTS

20.1 Obligation to submit reports

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

20.2 Reporting periods

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

- RP1: from month 1 to month 13
- RP2: from month 14 to month 23

20.3 Periodic reports — Requests for interim payments

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

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

(a) a ‘**periodic technical report**’ containing:

- (i) an **explanation of the work carried out** by the beneficiaries;
- (ii) an **overview of the progress** towards the objectives of the action, including milestones and deliverables identified in Annex 1.

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

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

The report must indicate the communication activities;

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

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

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

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

The beneficiaries must declare all eligible costs, even if — for actual costs, unit costs and flat-rate costs — they exceed the amounts indicated in the estimated budget (see Annex

2). Amounts which are not declared in the individual financial statement will not be taken into account by the JU.

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

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

Each beneficiary must **certify** that:

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

20.4 Final report — Request for payment of the balance

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

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

- (a) a ‘**final technical report**’ with a **summary** for publication containing:
- (i) an overview of the results and their exploitation and dissemination;
 - (ii) the conclusions on the action, and
 - (iii) the socio-economic impact of the action;
- (b) a ‘**final financial report**’ containing:
- (i) a ‘**final summary financial statement**’, created automatically by the electronic exchange system, consolidating the individual financial statements for all reporting periods and including the **request for payment of the balance** and

- (ii) a ‘**certificate on the financial statements**’ (drawn up in accordance with Annex 5) for each beneficiary, if it requests a total contribution of EUR 325 000 or more, as reimbursement of actual costs and unit costs calculated on the basis of its usual cost accounting practices (see Article 5.2 and Article 6.2, Point A).

20.5 Information on cumulative expenditure incurred

Not applicable

20.6 Currency for financial statements and conversion into euro

Financial statements must be drafted in euro.

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

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

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

20.7 Language of reports

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

20.8 Consequences of non-compliance

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

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

ARTICLE 21 — PAYMENTS AND PAYMENT ARRANGEMENTS

21.1 Payments to be made

The following payments will be made to the coordinator:

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

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

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

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

The amount of the pre-financing payment will be EUR **261,734.23** (two hundred and sixty one thousand seven hundred and thirty four EURO and twenty three eurocents).

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

An amount of EUR **65,433.56** (sixty five thousand four hundred and thirty three EURO and fifty six eurocents), corresponding to 5% of the maximum grant amount (see Article 5.1), is retained by the JU from the pre-financing payment and transferred into the ‘**Guarantee Fund**’.

21.3 Interim payments — Amount — Calculation

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

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

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

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

Step 1 – Application of the reimbursement rates

Step 2 – Limit to 90% of the maximum grant amount

21.3.1 Step 1 — Application of the reimbursement rates

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

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

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

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

minus

{pre-financing and previous interim payments} }.

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

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

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

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

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

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

$$\begin{aligned} & \{ \text{final grant amount (see Article 5.3)} \\ & \text{minus} \\ & \{ \text{pre-financing and interim payments (if any) made} \} \}. \end{aligned}$$

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

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

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

21.5 Notification of amounts due

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

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

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

21.6 Currency for payments

The JU will make all payments in euro.

21.7 Payments to the coordinator — Distribution to the beneficiaries

Payments will be made to the coordinator.

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

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

Pre-financing may however be distributed only:

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

21.8 Bank account for payments

All payments will be made to the following bank account:

Name of bank: BNP PARIBAS
Full name of the account holder: THALES AIR SYSTEMS SA
Full account number (including bank codes): ()
IBAN code: FR7630004008130001066651851

21.9 Costs of payment transfers

The cost of the payment transfers is borne as follows:

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

21.10 Date of payment

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

21.11 Consequences of non-compliance

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

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

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

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

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

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

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

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

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

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

22.1.1 Right to carry out checks

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

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

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

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

22.1.2 Right to carry out reviews

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

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

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

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

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

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

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

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

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

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

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

22.1.3 Right to carry out audits

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

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

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

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

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

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

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

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

The JU or the Commission will formally notify the draft audit report to the coordinator or beneficiary

concerned, which has 30 days to formally notify observations (**‘contradictory audit procedure’**). This period may be extended by the JU or the Commission in justified cases.

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

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

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

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

Under Regulations No 883/2013¹⁴ and No 2185/96¹⁵ (and in accordance with their provisions and procedures), and Article 110 of the JU Financial Rules¹⁶, the European Anti-Fraud Office (OLAF) may — at any moment during implementation of the action or afterwards — carry out investigations, including on-the-spot checks and inspections, to establish whether there has been fraud, corruption or any other illegal activity affecting the financial interests of the EU.

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

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

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

22.4 Checks, reviews, audits and investigations for international organisations

Not applicable

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

22.5.1 Findings in this grant

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

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

¹⁴ 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).

¹⁵ Council Regulation (Euratom, EC) No 2185/1996 of 11 November 1996 concerning on-the-spot checks and inspections carried out by the Commission in order to protect the European Communities' financial interests against fraud and other irregularities (OJ L 292, 15.11.1996, p. 2).

¹⁶ The SESAR JU Financial Rules are made publicly available on the SESAR JU official website.

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

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

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

22.5.2 Findings in other grants

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

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

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

22.5.3 Procedure

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

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

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

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

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

- the revised financial statements, if approved;
- the proposed alternative correction method, if accepted

or

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

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

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

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

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

- the proposed alternative flat-rate, if accepted

or

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

22.6 Consequences of non-compliance

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

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

ARTICLE 23 — EVALUATION OF THE IMPACT OF THE ACTION

23.1 Right to evaluate the impact of the action

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

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

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

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

23.2 Consequences of non-compliance

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

SECTION 3 RIGHTS AND OBLIGATIONS RELATED TO BACKGROUND AND RESULTS

SUBSECTION 1 GENERAL

ARTICLE 23a — MANAGEMENT OF INTELLECTUAL PROPERTY

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

Beneficiaries that are universities or other public research organisations must take measures to implement the principles set out in Points 1 and 2 of the Code of Practice annexed to the Commission Recommendation on the management of intellectual property in knowledge transfer activities¹⁷.

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

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

23a.2 Consequences of non-compliance

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

SUBSECTION 2 RIGHTS AND OBLIGATIONS RELATED TO BACKGROUND

ARTICLE 24 — AGREEMENT ON BACKGROUND

24.1 Agreement on background

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

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

- (a) is held by the beneficiaries before they acceded to the Agreement, and

¹⁷ Commission Recommendation C(2008) 1329 of 10.4.2008 on the management of intellectual property in knowledge transfer activities and the Code of Practice for universities and other public research institutions attached to this recommendation.

(b) is needed to implement the action or exploit the results.

24.2 Consequences of non-compliance

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

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

ARTICLE 25 — ACCESS RIGHTS TO BACKGROUND

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

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

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

Waivers of access rights are not valid unless in writing.

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

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

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

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

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

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

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

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

25.4 Access rights for affiliated entities

Unless otherwise agreed in the consortium agreement, access to background must also be given

— under fair and reasonable conditions (see above; Article 25.3) and unless it is subject to legal restrictions or limits, including those imposed by the rights of third parties (including personnel) — to affiliated entities¹⁸ established in an EU Member State or ‘**associated country**’¹⁹, if this is needed to exploit the results generated by the beneficiaries to which they are affiliated.

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

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

25.5 Access rights for third parties

Not applicable

25.6 Consequences of non-compliance

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

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

SUBSECTION 3 RIGHTS AND OBLIGATIONS RELATED TO RESULTS

ARTICLE 26 — OWNERSHIP OF RESULTS

26.1 Ownership by the beneficiary that generates the results

Results are owned by the beneficiary that generates them.

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

¹⁸ For the definition see Article 2.1(2) Rules for Participation Regulation No 1290/2013: ‘**affiliated entity**’ means any legal entity that is:

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

‘Control’ may take any of the following forms:

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

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

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

¹⁹ For the definition, see Article 2.1(3) of the Rules for Participation Regulation No 1290/2013: ‘**associated country**’ means a third country which is party to an international agreement with the Union, as identified in Article 7 of Horizon 2020 Framework Programme Regulation No 1291/2013. Article 7 sets out the conditions for association of non-EU countries to Horizon 2020.

26.2 Joint ownership by several beneficiaries

Two or more beneficiaries own results jointly if:

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

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

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

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

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

26.3 Rights of third parties (including personnel)

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

If a third party generates results, the beneficiary concerned must obtain all necessary rights (transfer, licences or other) from the third party, in order to be able to respect its obligations as if those results were generated by the beneficiary itself.

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

26.4 JU ownership, to protect results

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

- (a) the lack of protection is because protecting the results is not possible, reasonable or justified (given the circumstances);
- (b) the lack of protection is because there is a lack of potential for commercial or industrial exploitation, or

- (c) the beneficiary intends to transfer the results to another beneficiary or third party established in an EU Member State or associated country, which will protect them.

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

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

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

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

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

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

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

26.5 Consequences of non-compliance

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

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

ARTICLE 27 — PROTECTION OF RESULTS — VISIBILITY OF FUNDING

27.1 Obligation to protect the results

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

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

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

27.2 JU ownership, to protect the results

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

27.3 Information on JU funding

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

“The project leading to this application has received funding from the SESAR Joint Undertaking (JU) under the European Union’s Horizon 2020 research and innovation programme under grant agreement No 783261”.

27.4 Consequences of non-compliance

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

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

ARTICLE 28 — EXPLOITATION OF RESULTS

28.1 Obligation to exploit the results

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

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

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

28.2 Results that could contribute to European or international standards — Information on JU funding

If results could reasonably be expected to contribute to European or international standards, the beneficiary concerned must — up to four years after the period set out in Article 3 — inform the JU.

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

“Results incorporated in this standard received funding from the SESAR Joint Undertaking (JU) under the European Union’s Horizon 2020 research and innovation programme under grant agreement No 783261”.

28.3 Consequences of non-compliance

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

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

ARTICLE 29 — DISSEMINATION OF RESULTS — OPEN ACCESS — VISIBILITY OF FUNDING

29.1 Obligation to disseminate results

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

Moreover, the beneficiaries must — up to four years after the period set out in Article 3 — disseminate any technical specifications of the results that are needed for interoperability.

Moreover, the beneficiaries must — up to four years after the period set out in Article 3 — disseminate the deliverables relating to cross-border interoperability (see Annex 1) and any results needed for cross-border interoperability (in particular common technical specifications and software components).

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

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

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

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

29.2 Open access to scientific publications

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

In particular, it must:

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

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

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

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

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

29.3 Open access to research data

Regarding the digital research data generated in the action (**‘data’**), the beneficiaries must:

- (a) deposit in a research data repository and take measures to make it possible for third parties to access, mine, exploit, reproduce and disseminate — free of charge for any user — the following:
 - (i) the data, including associated metadata, needed to validate the results presented in scientific publications as soon as possible;
 - (ii) other data, including associated metadata, as specified and within the deadlines laid down in the 'data management plan' (see Annex 1);
- (b) provide information — via the repository — about tools and instruments at the disposal of the beneficiaries and necessary for validating the results (and — where possible — provide the tools and instruments themselves).

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

As an exception, the beneficiaries do not have to ensure open access to specific parts of their research data if the achievement of the action's main objective, as described in Annex 1, would be jeopardised by making those specific parts of the research data openly accessible. In this case, the data management plan must contain the reasons for not giving access.

29.4 Information on JU funding — Obligation and right to use the JU logo and the EU emblem

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

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

“This project has received funding from the SESAR Joint Undertaking under the European Union’s Horizon 2020 research and innovation programme under grant agreement No 783261”.

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

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

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

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

29.5 Disclaimer excluding JU responsibility

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

29.6 Consequences of non-compliance

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

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

ARTICLE 30 — TRANSFER AND LICENSING OF RESULTS

30.1 Transfer of ownership

Each beneficiary may transfer ownership of its results.

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

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

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

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

30.2 Granting licenses

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

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

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

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

30.3 JU right to object to transfers or exclusive licensing

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

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

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

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

The JU may request additional information.

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

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

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

30.4 Consequences of non-compliance

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

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

ARTICLE 31 — ACCESS RIGHTS TO RESULTS

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

The conditions set out in Article 25.1 apply.

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

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

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

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

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

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

31.4 Access rights of affiliated entities

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

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

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

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

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

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

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

31.6 Access rights for third parties

Not applicable

31.7 Consequences of non-compliance

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

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

SECTION 4 OTHER RIGHTS AND OBLIGATIONS**ARTICLE 32 — RECRUITMENT AND WORKING CONDITIONS FOR RESEARCHERS****32.1 Obligation to take measures to implement the European Charter for Researchers and Code of Conduct for the Recruitment of Researchers**

The beneficiaries must take all measures to implement the principles set out in the Commission Recommendation on the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers²¹, in particular regarding:

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

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

32.2 Consequences of non-compliance

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

ARTICLE 33 — GENDER EQUALITY**33.1 Obligation to aim for gender equality**

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

33.2 Consequences of non-compliance

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

²¹ Commission Recommendation 2005/251/EC of 11 March 2005 on the European Charter for Researchers and on a Code of Conduct for the Recruitment of Researchers (OJ L 75, 22.3.2005, p. 67).

ARTICLE 34 — ETHICS AND RESEARCH INTEGRITY**34.1 Obligation to comply with ethical and research integrity principles**

The beneficiaries must carry out the action in compliance with:

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

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

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

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

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

The beneficiaries must respect the highest standards of research integrity — as set out, for instance, in the European Code of Conduct for Research Integrity²².

This implies notably compliance with the following essential principles:

- honesty;
- reliability;
- objectivity;
- impartiality;
- open communication;
- duty of care;
- fairness and
- responsibility for future science generations.

²² The European Code of Conduct for Research Integrity of ALLEA (All European Academies) and ESF (European Science Foundation) of March 2011.

http://www.esf.org/fileadmin/Public_documents/Publications/Code_Conduct_ResearchIntegrity.pdf

This means that beneficiaries must ensure that persons carrying out research tasks:

- present their research goals and intentions in an honest and transparent manner;
- design their research carefully and conduct it in a reliable fashion, taking its impact on society into account;
- use techniques and methodologies (including for data collection and management) that are appropriate for the field(s) concerned;
- exercise due care for the subjects of research — be they human beings, animals, the environment or cultural objects;
- ensure objectivity, accuracy and impartiality when disseminating the results;
- allow — in addition to the open access obligations under Article 29.3 as much as possible and taking into account the legitimate interest of the beneficiaries — access to research data, in order to enable research to be reproduced;
- make the necessary references to their work and that of other researchers;
- refrain from practicing any form of plagiarism, data falsification or fabrication;
- avoid double funding, conflicts of interest and misrepresentation of credentials or other research misconduct.

34.2 Activities raising ethical issues

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

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

- (a) any ethics committee opinion required under national law and
- (b) any notification or authorisation for activities raising ethical issues required under national and/or European law

needed for implementing the action tasks in question.

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

34.3 Activities involving human embryos or human embryonic stem cells

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

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

34.4 Consequences of non-compliance

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

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

ARTICLE 35 — CONFLICT OF INTERESTS

35.1 Obligation to avoid a conflict of interests

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

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

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

35.2 Consequences of non-compliance

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

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

ARTICLE 36 — CONFIDENTIALITY

36.1 General obligation to maintain confidentiality

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

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

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

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

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

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

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

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

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

The confidentiality obligations no longer apply if:

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

36.2 Consequences of non-compliance

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

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

ARTICLE 37 — SECURITY-RELATED OBLIGATIONS

37.1 Results with a security recommendation

Not applicable

37.2 Classified information

Not applicable

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

Not applicable

37.4 Consequences of non-compliance

Not applicable

ARTICLE 38 — PROMOTING THE ACTION — VISIBILITY OF FUNDING

38.1 Communication activities by beneficiaries

38.1.1 Obligation to promote the action and its results

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

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

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

38.1.2 Information on funding — Obligation and right to use the JU logo and the EU emblem

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

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

For communication activities:

“This project has received funding from the SESAR Joint Undertaking under the European Union’s Horizon 2020 research and innovation programme under grant agreement No 783261”.

For infrastructure, equipment and major results:

“This [infrastructure][equipment][insert type of result] is part of a project that has received funding from the SESAR Joint Undertaking under the European Union’s Horizon 2020 research and innovation programme under grant agreement No 783261”.

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

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

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

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

38.1.3 Disclaimer excluding JU responsibility

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

38.2 Communication activities by the JU

38.2.1 Right to use beneficiaries’ materials, documents or information

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

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

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

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

- (a) **use for its own purposes** (in particular, making them available to persons working for the JU or any other EU institution, body, office or agency or body or institutions in EU Member States; and copying or reproducing them in whole or in part, in unlimited numbers);
- (b) **distribution to the public** (in particular, publication as hard copies and in electronic or digital format, publication on the internet, as a downloadable or non-downloadable file, broadcasting by any channel, public display or presentation, communicating through press information services, or inclusion in widely accessible databases or indexes);
- (c) **editing or redrafting** for communication and publicising activities (including shortening, summarising, inserting other elements (such as meta-data, legends, other graphic, visual, audio or text elements), extracting parts (e.g. audio or video files), dividing into parts, use in a compilation);
- (d) **translation**;
- (e) giving **access in response to individual requests** under Regulation No 1049/2001²⁵, without the right to reproduce or exploit;
- (f) **storage** in paper, electronic or other form;
- (g) **archiving**, in line with applicable document-management rules, and
- (h) the right to authorise **third parties** to act on its behalf or sub-license the modes of use set out in Points (b), (c), (d) and (f) to third parties if needed for the communication and publicising activities of the JU.

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

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

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

38.3 Consequences of non-compliance

²⁵ Regulation (EC) No 1049/2001 of the European Parliament and of the Council of 30 May 2001 regarding public access to European Parliament, Council and Commission documents, OJ L 145, 31.5.2001, p. 43.

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

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

ARTICLE 39 — PROCESSING OF PERSONAL DATA

39.1 Processing of personal data by the JU and the Commission

Any personal data under the Agreement will be processed by the JU or the Commission under Regulation No 45/2001²⁶ and according to the ‘notifications of the processing operations’ to the Data Protection Officer (DPO) of the JU or the Commission (publicly accessible in the DPO register).

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

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

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

39.2 Processing of personal data by the beneficiaries

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

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

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

39.3 Consequences of non-compliance

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

ARTICLE 40 — ASSIGNMENTS OF CLAIMS FOR PAYMENT AGAINST THE JU

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

²⁶ Regulation (EC) No 45/2001 of the European Parliament and of the Council of 18 December 2000 on the protection of individuals with regard to the processing of personal data by the Community institutions and bodies and on the free movement of such data (OJ L 8, 12.01.2001, p. 1).

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

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

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

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

41.1 Roles and responsibility towards the JU

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

The beneficiaries are jointly and severally liable for the **technical implementation** of the action as described in Annex 1. If a beneficiary fails to implement its part of the action, the other beneficiaries become responsible for implementing this part (without being entitled to any additional JU funding for doing so), unless the JU expressly relieves them of this obligation.

The **financial responsibility** of each beneficiary is governed by Articles 44, 45 and 46.

41.2 Internal division of roles and responsibilities

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

(a) Each **beneficiary** must:

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

(b) The **coordinator** must:

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

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

41.3 Internal arrangements between beneficiaries — Consortium agreement

The beneficiaries must have internal arrangements regarding their operation and co-ordination to ensure that the action is implemented properly. These internal arrangements must be set out in a written ‘**consortium agreement**’ between the beneficiaries, which may cover:

- internal organisation of the consortium;
- management of access to the electronic exchange system;
- distribution of JU funding;
- additional rules on rights and obligations related to background and results (including whether access rights remain or not, if a beneficiary is in breach of its obligations) (see Section 3 of Chapter 4);
- settlement of internal disputes;
- liability, indemnification and confidentiality arrangements between the beneficiaries.

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

41.4 Relationship with complementary beneficiaries — Collaboration agreement

Not applicable

41.5 Relationship with partners of a joint action — Coordination agreement

Not applicable

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

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

ARTICLE 42 — REJECTION OF INELIGIBLE COSTS

42.1 Conditions

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

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

42.2 Ineligible costs to be rejected — Calculation — Procedure

Ineligible costs will be rejected in full.

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

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

42.3 Effects

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

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

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

If the JU rejects costs **after the payment of the balance**, it will deduct the amount rejected from the

total eligible costs declared, by the beneficiary, in the final summary financial statement. It will then calculate the revised final grant amount as set out in Article 5.4.

ARTICLE 43 — REDUCTION OF THE GRANT

43.1 Conditions

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

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

43.2 Amount to be reduced — Calculation — Procedure

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

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

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

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

43.3 Effects

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

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

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

ARTICLE 44 — RECOVERY OF UNDUE AMOUNTS

44.1 Amount to be recovered — Calculation — Procedure

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

Each beneficiary's financial responsibility in case of recovery is limited to its own debt, except for the amount retained for the Guarantee Fund (see Article 21.4).

44.1.1 Recovery after termination of a beneficiary's participation

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

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

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

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

- (b) not applicable;

- (c) by **taking legal action** (see Article 57).

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

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

Bank charges incurred in the recovery process will be borne by the beneficiary, unless Directive 2007/64/EC²⁷ applies.

44.1.2 Recovery at payment of the balance

²⁷ Directive 2007/64/EC of the European Parliament and of the Council of 13 November 2007 on payment services in the internal market amending Directives 97/7/EC, 2002/65/EC, 2005/60/EC and 2006/48/EC and repealing Directive 97/5/EC (OJ L 319, 05.12.2007, p. 1).

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

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

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

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

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

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

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

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

divided by

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

multiplied by

the final grant amount (see Article 5.3) },

minus

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

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

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

divided by

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

multiplied by

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

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

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

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

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

- (i) not applicable;

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

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

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

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

44.1.3 Recovery of amounts after payment of the balance

If, for a beneficiary, the revised final grant amount (see Article 5.4) is lower than its share of the final grant amount, it must repay the difference to the JU.

The beneficiary’s share of the final grant amount is calculated as follows:

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

divided by

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

multiplied by

the final grant amount (see Article 5.3)}.

If the coordinator has not distributed amounts received (see Article 21.7), the JU will also recover these amounts.

The JU will formally notify a **pre-information letter** to the beneficiary concerned:

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

If no observations are submitted or the JU decides to pursue recovery despite the observations it has received, it will **confirm** the amount to be recovered and formally notify to the beneficiary concerned a **debit note**. This note will also specify the terms and the date for payment.

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

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

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

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

- (i) not applicable;
- (ii) by **taking legal action** (see Article 57).

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

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

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

ARTICLE 45 — ADMINISTRATIVE SANCTIONS

In addition to contractual measures, the JU may also adopt administrative sanctions under Articles 84 and 89 of the JU Financial Rules read in conjunction with Articles 106 and 131(4) of the Financial Regulation No 966/2012 (i.e. exclusion from future procurement contracts, grants and expert contracts and/or financial penalties).

SECTION 2 LIABILITY FOR DAMAGES

ARTICLE 46 — LIABILITY FOR DAMAGES

46.1 Liability of the JU

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

The JU cannot be held liable for any damage caused by any of the beneficiaries or third parties involved in the action, as a consequence of implementing the Agreement.

46.2 Liability of the beneficiaries

Except in case of force majeure (see Article 51), the beneficiaries must compensate the JU for any damage it sustains as a result of the implementation of the action or because the action was not implemented in full compliance with the Agreement.

SECTION 3 SUSPENSION AND TERMINATION

ARTICLE 47 — SUSPENSION OF PAYMENT DEADLINE

47.1 Conditions

The JU may — at any moment — suspend the payment deadline (see Article 21.2 to 21.4) if a request for payment (see Article 20) cannot be approved because:

- (a) it does not comply with the provisions of the Agreement (see Article 20);
- (b) the technical or financial reports have not been submitted or are not complete or additional information is needed, or
- (c) there is doubt about the eligibility of the costs declared in the financial statements and additional checks, reviews, audits or investigations are necessary.

47.2 Procedure

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

The suspension will **take effect** the day notification is sent by the JU (see Article 52).

If the conditions for suspending the payment deadline are no longer met, the suspension will be **lifted** — and the remaining period will resume.

If the suspension exceeds two months, the coordinator may request the JU if the suspension will continue.

If the payment deadline has been suspended due to the non-compliance of the technical or financial reports (see Article 20) and the revised report or statement is not submitted or was submitted but is also rejected, the JU may also terminate the Agreement or the participation of the beneficiary (see Article 50.3.1(l)).

ARTICLE 48 — SUSPENSION OF PAYMENTS

48.1 Conditions

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

- (a) a beneficiary (or a natural person who has the power to represent or take decision on its behalf) has committed or is suspected of having committed:
 - (i) substantial errors, irregularities or fraud or

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

If payments are suspended for one or more beneficiaries, the JU will make partial payment(s) for the part(s) not suspended. If suspension concerns the payment of the balance, — once suspension is lifted — the payment or the recovery of the amount(s) concerned will be considered the payment of the balance that closes the action.

48.2 Procedure

Before suspending payments, the JU will formally notify the coordinator or beneficiary concerned:

- informing it of its intention to suspend payments and the reasons why and
- inviting it to submit observations within 30 days of receiving notification.

If the JU does not receive observations or decides to pursue the procedure despite the observations it has received, it will formally notify **confirmation** of the suspension. Otherwise, it will formally notify that the suspension procedure is not continued.

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

If the conditions for resuming payments are met, the suspension will be **lifted**. The JU will formally notify the coordinator or beneficiary concerned.

During the suspension, the periodic report(s) for all reporting periods except the last one (see Article 20.3), must not contain any individual financial statements from the beneficiary concerned. The coordinator must include them in the next periodic report after the suspension is lifted or — if suspension is not lifted before the end of the action — in the last periodic report.

The beneficiaries may suspend implementation of the action (see Article 49.1) or terminate the Agreement or the participation of the beneficiary concerned (see Article 50.1 and 50.2).

ARTICLE 49 — SUSPENSION OF THE ACTION IMPLEMENTATION

49.1 Suspension of the action implementation, by the beneficiaries

49.1.1 Conditions

The beneficiaries may suspend implementation of the action or any part of it, if exceptional circumstances — in particular *force majeure* (see Article 51) — make implementation impossible or excessively difficult.

49.1.2 Procedure

The coordinator must immediately formally notify to the JU the suspension (see Article 52), stating:

- the reasons why and
- the expected date of resumption.

The suspension will **take effect** the day this notification is received by the JU.

Once circumstances allow for implementation to resume, the coordinator must immediately formally notify the JU and request an **amendment** of the Agreement to set the date on which the action will be resumed, extend the duration of the action and make other changes necessary to adapt the action to the new situation (see Article 55) — unless the Agreement or the participation of a beneficiary has been terminated (see Article 50).

The suspension will be **lifted** with effect from the resumption date set out in the amendment. This date may be before the date on which the amendment enters into force.

Costs incurred during suspension of the action implementation are not eligible (see Article 6).

49.2 Suspension of the action implementation, by the JU

49.2.1 Conditions

The JU may suspend implementation of the action or any part of it, if:

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

49.2.2 Procedure

Before suspending implementation of the action, the JU will formally notify the coordinator or beneficiary concerned:

- informing it of its intention to suspend the implementation and the reasons why and
- inviting it to submit observations within 30 days of receiving notification.

If the JU does not receive observations or decides to pursue the procedure despite the observations

it has received, it will formally notify **confirmation** of the suspension. Otherwise, it will formally notify that the procedure is not continued.

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

It will be **lifted** if the conditions for resuming implementation of the action are met.

The coordinator or beneficiary concerned will be formally notified of the lifting and the Agreement will be **amended** to set the date on which the action will be resumed, extend the duration of the action and make other changes necessary to adapt the action to the new situation (see Article 55) — unless the Agreement has already been terminated (see Article 50).

The suspension will be lifted with effect from the resumption date set out in the amendment. This date may be before the date on which the amendment enters into force.

Costs incurred during suspension are not eligible (see Article 6).

The beneficiaries may not claim damages due to suspension by the JU (see Article 46).

Suspension of the action implementation does not affect the JU's right to terminate the Agreement or participation of a beneficiary (see Article 50), reduce the grant or recover amounts unduly paid (see Articles 43 and 44).

ARTICLE 50 — TERMINATION OF THE AGREEMENT OR OF THE PARTICIPATION OF ONE OR MORE BENEFICIARIES

50.1 Termination of the Agreement, by the beneficiaries

50.1.1 Conditions and procedure

The beneficiaries may terminate the Agreement.

The coordinator must formally notify termination to the JU (see Article 52), stating:

- the reasons why and
- the date the termination will take effect. This date must be after the notification.

If no reasons are given or if the JU considers the reasons do not justify termination, the Agreement will be considered to have been '**terminated improperly**'.

The termination will **take effect** on the day specified in the notification.

50.1.2 Effects

The coordinator must — within 60 days from when termination takes effect — submit:

- (i) a periodic report (for the open reporting period until termination; see Article 20.3) and
- (ii) the final report (see Article 20.4).

If the JU does not receive the reports within the deadline (see above), only costs which are included in an approved periodic report will be taken into account.

The JU will **calculate** the final grant amount (see Article 5.3) and the balance (see Article 21.4) on the basis of the reports submitted. Only costs incurred until termination are eligible (see Article 6). Costs relating to contracts due for execution only after termination are not eligible.

Improper termination may lead to a reduction of the grant (see Article 43).

After termination, the beneficiaries' obligations (in particular Articles 20, 22, 23, Section 3 of Chapter 4, 36, 37, 38, 40, 42, 43 and 44) continue to apply.

50.2 Termination of the participation of one or more beneficiaries, by the beneficiaries

50.2.1 Conditions and procedure

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

The coordinator must formally notify termination to the JU (see Article 52) and inform the beneficiary concerned.

If the coordinator's participation is terminated without its agreement, the formal notification must be done by another beneficiary (acting on behalf of the other beneficiaries).

The notification must include:

- the reasons why;
- the opinion of the beneficiary concerned (or proof that this opinion has been requested in writing);
- the date the termination takes effect. This date must be after the notification, and
- a request for amendment (see Article 55), with a proposal for reallocation of the tasks and the estimated budget of the beneficiary concerned (see Annexes 1 and 2) and, if necessary, the addition of one or more new beneficiaries (see Article 56). If termination takes effect after the period set out in Article 3, no request for amendment must be included unless the beneficiary concerned is the coordinator. In this case, the request for amendment must propose a new coordinator.

If this information is not given or if the JU considers that the reasons do not justify termination, the participation will be considered to have been **terminated improperly**.

The termination will **take effect** on the day specified in the notification.

50.2.2 Effects

The coordinator must — within 30 days from when termination takes effect — submit:

- (i) a report on the distribution of payments to the beneficiary concerned and
- (ii) if termination takes effect during the period set out in Article 3, a '**termination report**'

from the beneficiary concerned, for the open reporting period until termination, containing an overview of the progress of the work, an overview of the use of resources, the individual financial statement and, if applicable, the certificate on the financial statement (see Articles 20.3 and 20.4).

The information in the termination report must also be included in the periodic report for the next reporting period (see Article 20.3).

If the request for amendment is rejected by the JU, (because it calls into question the decision awarding the grant or breaches the principle of equal treatment of applicants), the Agreement may be terminated according to Article 50.3.1(c).

If the request for amendment is accepted by the JU, the Agreement is **amended** to introduce the necessary changes (see Article 55).

The JU will calculate — on the basis of the periodic reports, the termination report and the report on the distribution of payments — **calculate** the amount which is due to the beneficiary and if the (pre-financing and interim) payments received by the beneficiary exceed this amount.

The **amount which is due** is calculated in the following steps:

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

The grant amount for the beneficiary is calculated by applying the reimbursement rate(s) to the total eligible costs declared by the beneficiary in the termination report and approved by the JU.

Only costs incurred by the beneficiary concerned until termination takes effect are eligible (see Article 6). Costs relating to contracts due for execution only after termination are not eligible.

Step 2 — Reduction due to substantial errors, irregularities or fraud or serious breach of obligations

In case of a reduction (see Article 43), the JU will calculate the reduced grant amount for the beneficiary by deducting the amount of the reduction (calculated in proportion to the seriousness of the errors, irregularities or fraud or breach of obligations, in accordance with Article 43.2) from the grant amount for the beneficiary.

If the payments received **exceed the amounts due**:

- if termination takes effect during the period set out in Article 3 and the request for amendment is accepted, the beneficiary concerned must repay to the coordinator the amount unduly received. The JU will formally notify the amount unduly received and request the beneficiary concerned to repay it to the coordinator within 30 days of receiving notification. If it does not repay the coordinator, the JU will draw upon the Guarantee Fund to pay the coordinator and then notify a **debit note** on behalf of the Guarantee Fund to the beneficiary concerned (see Article 44);
- in all other cases, in particular if termination takes effect after the period set out in Article 3, the JU will formally notify a **debit note** to the beneficiary concerned. If payment is not

made by the date in the debit note, the Guarantee Fund will pay to the JU the amount due and the JU will notify a debit note on behalf of the Guarantee Fund to the beneficiary concerned (see Article 44);

- if the beneficiary concerned is the former coordinator, it must repay the new coordinator according to the procedure above, unless:
 - termination takes effect after an interim payment and
 - the former coordinator has not distributed amounts received as pre-financing or interim payments (see Article 21.7).

In this case, the JU will formally notify a **debit note** to the former coordinator. If payment is not made by the date in the debit note, the Guarantee Fund will pay to the JU the amount due. The JU will then pay the new coordinator and notify a debit note on behalf of the Guarantee Fund to the former coordinator (see Article 44).

If the payments received **do not exceed the amounts due**: amounts owed to the beneficiary concerned will be included in the next interim or final payment.

If the JU does not receive the termination report within the deadline (see above), only costs included in an approved periodic report will be taken into account.

If the JU does not receive the report on the distribution of payments within the deadline (see above), it will consider that:

- the coordinator did not distribute any payment to the beneficiary concerned and that
- the beneficiary concerned must not repay any amount to the coordinator.

Improper termination may lead to a reduction of the grant (see Article 43) or termination of the Agreement (see Article 50).

After termination, the concerned beneficiary's obligations (in particular Articles 20, 22, 23, Section 3 of Chapter 4, 36, 37, 38, 40, 42, 43 and 44) continue to apply.

50.3 Termination of the Agreement or the participation of one or more beneficiaries, by the JU

50.3.1 Conditions

The JU may terminate the Agreement or the participation of one or more beneficiaries, if:

- (a) one or more beneficiaries do not accede to the Agreement (see Article 56);
- (b) a change to their legal, financial, technical, organisational or ownership situation is likely to substantially affect or delay the implementation of the action or calls into question the decision to award the grant;
- (c) following termination of participation for one or more beneficiaries (see above), the necessary changes to the Agreement would call into question the decision awarding the grant or breach the principle of equal treatment of applicants (see Article 55);

- (d) implementation of the action is prevented by force majeure (see Article 51) or suspended by the coordinator (see Article 49.1) and either:
 - (i) resumption is impossible, or
 - (ii) the necessary changes to the Agreement would call into question the decision awarding the grant or breach the principle of equal treatment of applicants;
- (e) a beneficiary is declared bankrupt, being wound up, having its affairs administered by the courts, has entered into an arrangement with creditors, has suspended business activities, or is subject to any other similar proceedings or procedures under national law;
- (f) a beneficiary (or a natural person who has the power to represent or take decisions on its behalf) has been found guilty of professional misconduct, proven by any means;
- (g) a beneficiary does not comply with the applicable national law on taxes and social security;
- (h) the action has lost scientific or technological relevance;
- (i) not applicable;
- (j) not applicable;
- (k) a beneficiary (or a natural person who has the power to represent or take decisions on its behalf) has committed fraud, corruption, or is involved in a criminal organisation, money laundering or any other illegal activity;
- (l) a beneficiary (or a natural person who has the power to represent or take decisions on its behalf) has committed:
 - (i) substantial errors, irregularities or fraud or
 - (ii) serious breach of obligations under the Agreement or during the award procedure (including improper implementation of the action, submission of false information, failure to provide required information, breach of ethical principles);
- (m) a beneficiary (or a natural person who has the power to represent or take decisions on its behalf) has committed — in other JU, EU or Euratom grants awarded to it under similar conditions — systemic or recurrent errors, irregularities, fraud or serious breach of obligations that have a material impact on this grant (**extension of findings from other grants to this grant**; see Article 22.5.2).
- (n) despite a specific request by the JU, a beneficiary does not request — through the coordinator — an amendment to the Agreement to end the participation of one of its linked third parties that is in one of the situations under points (e), (f), (g), (k), (l) or (m) and to reallocate its tasks.

50.3.2 Procedure

Before terminating the Agreement or participation of one or more beneficiaries, the JU will formally notify the coordinator or beneficiary concerned:

- informing it of its intention to terminate and the reasons why and

- inviting it, within 30 days of receiving notification, to submit observations and — in case of Point (l.ii) above — to inform the JU of the measures to ensure compliance with the obligations under the Agreement.

If the JU does not receive observations or decides to pursue the procedure despite the observations it has received, it will formally notify to the coordinator or beneficiary concerned **confirmation** of the termination and the date it will take effect. Otherwise, it will formally notify that the procedure is not continued.

The termination will **take effect**:

- for terminations under Points (b), (c), (e), (g), (h), (j), (l.ii) and (n) above: on the day specified in the notification of the confirmation (see above);
- for terminations under Points (a), (d), (f), (i), (k), (l.i) and (m) above: on the day after the notification of the confirmation is received.

50.3.3 Effects

(a) for **termination of the Agreement**:

The coordinator must — within 60 days from when termination takes effect — submit:

- (i) a periodic report (for the last open reporting period until termination; see Article 20.3) and
- (ii) a final report (see Article 20.4).

If the Agreement is terminated for breach of the obligation to submit reports (see Articles 20.8 and 50.3.1(l)), the coordinator may not submit any reports after termination.

If the JU does not receive the reports within the deadline (see above), only costs which are included in an approved periodic report will be taken into account.

The JU will **calculate** the final grant amount (see Article 5.3) and the balance (see Article 21.4) on the basis of the reports submitted. Only costs incurred until termination takes effect are eligible (see Article 6). Costs relating to contracts due for execution only after termination are not eligible.

This does not affect the JU's right to reduce the grant (see Article 43) or to impose administrative sanctions (Article 45).

The beneficiaries may not claim damages due to termination by the JU (see Article 46).

After termination, the beneficiaries' obligations (in particular Articles 20, 22, 23, Section 3 of Chapter 4, 36, 37, 38, 40, 42, 43 and 44) continue to apply.

(b) for **termination of the participation of one or more beneficiaries**:

The coordinator must — within 60 days from when termination takes effect — submit:

- (i) a report on the distribution of payments to the beneficiary concerned;

- (ii) a request for amendment (see Article 55), with a proposal for reallocation of the tasks and estimated budget of the beneficiary concerned (see Annexes 1 and 2) and, if necessary, the addition of one or more new beneficiaries (see Article 56). If termination is notified after the period set out in Article 3, no request for amendment must be submitted unless the beneficiary concerned is the coordinator. In this case the request for amendment must propose a new coordinator, and
- (iii) if termination takes effect during the period set out in Article 3, a **termination report** from the beneficiary concerned, for the open reporting period until termination, containing an overview of the progress of the work, an overview of the use of resources, the individual financial statement and, if applicable, the certificate on the financial statement (see Article 20).

The information in the termination report must also be included in the periodic report for the next reporting period (see Article 20.3).

If the request for amendment is rejected by the JU, (because it calls into question the decision awarding the grant or breaches the principle of equal treatment of applicants), the Agreement may be terminated according to Article 50.3.1(c).

If the request for amendment is accepted by the JU, the Agreement is **amended** to introduce the necessary changes (see Article 55).

The JU will calculate — on the basis of the periodic reports, the termination report and the report on the distribution of payments — **calculate** the amount which is due to the beneficiary and if the (pre-financing and interim) payments received by the beneficiary exceed this amount.

The **amount which is due** is calculated in the following steps:

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

The grant amount for the beneficiary is calculated by applying the reimbursement rate(s) to the total eligible costs declared by the beneficiary in the termination report and approved by the JU.

Only costs incurred by the beneficiary concerned until termination takes effect are eligible (see Article 6). Costs relating to contracts due for execution only after termination are not eligible.

Step 2 — Reduction due to substantial errors, irregularities or fraud or serious breach of obligations

In case of a reduction (see Article 43), the JU will calculate the reduced grant amount for the beneficiary by deducting the amount of the reduction (calculated in proportion to the seriousness of the errors, irregularities or fraud or breach of obligations, in accordance with Article 43.2) from the grant amount for the beneficiary.

If the payments received **exceed the amounts due**:

- if termination takes effect during the period set out in Article 3 and the request for

amendment is accepted, the beneficiary concerned must repay to the coordinator the amount unduly received. The JU will formally notify the amount unduly received and request the beneficiary concerned to repay it to the coordinator within 30 days of receiving notification. If it does not repay the coordinator, the JU will draw upon the Guarantee Fund to pay the coordinator and then notify a **debit note** on behalf of the Guarantee Fund to the beneficiary concerned (see Article 44);

- in all other cases, in particular if termination takes effect after the period set out in Article 3, the JU will formally notify a **debit note** to the beneficiary concerned. If payment is not made by the date in the debit note, the Guarantee Fund will pay to the JU the amount due and the JU will notify a debit note on behalf of the Guarantee Fund to the beneficiary concerned (see Article 44);
- if the beneficiary concerned is the former coordinator, it must repay the new coordinator according to the procedure above, unless:
 - termination takes effect after an interim payment and
 - the former coordinator has not distributed amounts received as pre-financing or interim payments (see Article 21.7).

In this case, the JU will formally notify a **debit note** to the former coordinator. If payment is not made by the date in the debit note, the Guarantee Fund will pay to the JU the amount due. The JU will then pay the new coordinator and notify a debit note on behalf of the Guarantee Fund to the former coordinator (see Article 44).

If the payments received **do not exceed the amounts due**: amounts owed to the beneficiary concerned will be included in the next interim or final payment.

If the JU does not receive the termination report within the deadline (see above), only costs included in an approved periodic report will be taken into account.

If the JU does not receive the report on the distribution of payments within the deadline (see above), it will consider that:

- the coordinator did not distribute any payment to the beneficiary concerned and that
- the beneficiary concerned must not repay any amount to the coordinator.

After termination, the concerned beneficiary's obligations (in particular Articles 20, 22, 23, Section 3 of Chapter 4, 36, 37, 38, 40, 42, 43 and 44) continue to apply.

SECTION 4 FORCE MAJEURE

ARTICLE 51 — FORCE MAJEURE

'Force majeure' means any situation or event that:

- prevents either party from fulfilling their obligations under the Agreement,
- was unforeseeable, exceptional situation and beyond the parties' control,

- was not due to error or negligence on their part (or on the part of third parties involved in the action), and
- proves to be inevitable in spite of exercising all due diligence.

The following cannot be invoked as force majeure:

- any default of a service, defect in equipment or material or delays in making them available, unless they stem directly from a relevant case of force majeure,
- labour disputes or strikes, or
- financial difficulties.

Any situation constituting force majeure must be formally notified to the other party without delay, stating the nature, likely duration and foreseeable effects.

The parties must immediately take all the necessary steps to limit any damage due to force majeure and do their best to resume implementation of the action as soon as possible.

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

CHAPTER 7 FINAL PROVISIONS

ARTICLE 52 — COMMUNICATION BETWEEN THE PARTIES

52.1 Form and means of communication

Communication under the Agreement (information, requests, submissions, ‘formal notifications’, etc.) must:

- be made in writing and
- bear the number of the Agreement.

Until the payment of the balance: all communication must be made through the electronic exchange system and using the forms and templates provided there.

After the payment of the balance: formal notifications must be made by registered post with proof of delivery (‘formal notification on paper’).

Communications in the electronic exchange system must be made by persons authorised according to the Participant Portal Terms & Conditions. For naming the authorised persons, each beneficiary must have designated — before the signature of this Agreement — a ‘legal entity appointed representative (LEAR)’. The role and tasks of the LEAR are stipulated in his/her appointment letter (see Participant Portal Terms & Conditions).

If the electronic exchange system is temporarily unavailable, instructions will be given on the JU and Commission websites.

52.2 Date of communication

Communications are considered to have been made when they are sent by the sending party (i.e. on the date and time they are sent through the electronic exchange system).

Formal notifications through the **electronic** exchange system are considered to have been made when they are received by the receiving party (i.e. on the date and time of acceptance by the receiving party, as indicated by the time stamp). A formal notification that has not been accepted within 10 days after sending is considered to have been accepted.

Formal notifications **on paper** sent by **registered post** with proof of delivery (only after the payment of the balance) are considered to have been made on either:

- the delivery date registered by the postal service or
- the deadline for collection at the post office.

If the electronic exchange system is temporarily unavailable, the sending party cannot be considered in breach of its obligation to send a communication within a specified deadline.

52.3 Addresses for communication

The **electronic** exchange system must be accessed via the following URL:

<https://ec.europa.eu/research/participants/portal/desktop/en/projects/>

The JU will formally notify the coordinator and beneficiaries in advance any changes to this URL.

Formal notifications on paper (only after the payment of the balance) addressed **to the JU** must be sent to the following address:

SESAR Joint Undertaking
B-1049 Brussels Belgium

Formal notifications on paper (only after the payment of the balance) addressed **to the beneficiaries** must be sent to their legal address as specified in the Participant Portal Beneficiary Register.

ARTICLE 53 — INTERPRETATION OF THE AGREEMENT

53.1 Precedence of the Terms and Conditions over the Annexes

The provisions in the Terms and Conditions of the Agreement take precedence over its Annexes.

Annex 2 takes precedence over Annex 1.

53.2 Privileges and immunities

Not applicable

ARTICLE 54 — CALCULATION OF PERIODS, DATES AND DEADLINES

In accordance with Regulation No 1182/71²⁸, periods expressed in days, months or years are calculated from the moment the triggering event occurs.

The day during which that event occurs is not considered as falling within the period.

ARTICLE 55 — AMENDMENTS TO THE AGREEMENT

55.1 Conditions

The Agreement may be amended, unless the amendment entails changes to the Agreement which would call into question the decision awarding the grant or breach the principle of equal treatment of applicants.

Amendments may be requested by any of the parties.

55.2 Procedure

The party requesting an amendment must submit a request for amendment signed in the electronic exchange system (see Article 52).

The coordinator submits and receives requests for amendment on behalf of the beneficiaries (see Annex 3).

If a change of coordinator is requested without its agreement, the submission must be done by another beneficiary (acting on behalf of the other beneficiaries).

The request for amendment must include:

- the reasons why;
- the appropriate supporting documents;
- for a change of coordinator without its agreement: the opinion of the coordinator (or proof that this opinion has been requested in writing).

The JU may request additional information.

If the party receiving the request agrees, it must sign the amendment in the electronic exchange system within 45 days of receiving notification (or any additional information the JU has requested). If it does not agree, it must formally notify its disagreement within the same deadline. The deadline may be extended, if necessary for the assessment of the request. If no notification is received within the deadline, the request is considered to have been rejected.

An amendment **enters into force** on the day of the signature of the receiving party.

An amendment **takes effect** on the date agreed by the parties or, in the absence of such an agreement, on the date on which the amendment enters into force.

ARTICLE 56 — ACCESSION TO THE AGREEMENT

²⁸ 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).

56.1 Accession of the beneficiaries mentioned in the Preamble

The other beneficiaries must accede to the Agreement by signing the Accession Form (see Annex 3) in the electronic exchange system (see Article 52) within 30 days after its entry into force (see Article 58).

They will assume the rights and obligations under the Agreement with effect from the date of its entry into force (see Article 58).

If a beneficiary does not accede to the Agreement within the above deadline, the coordinator must — within 30 days — request an amendment to make any changes necessary to ensure proper implementation of the action. This does not affect the JU's right to terminate the Agreement (see Article 50).

56.2 Addition of new beneficiaries

In justified cases, the beneficiaries may request the addition of a new beneficiary.

For this purpose, the coordinator must submit a request for amendment in accordance with Article 55. It must include an Accession Form (see Annex 3) signed by the new beneficiary in the electronic exchange system (see Article 52).

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

ARTICLE 57 — APPLICABLE LAW AND SETTLEMENT OF DISPUTES

57.1 Applicable law

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

57.2 Dispute settlement

If a dispute concerning the interpretation, application or validity of the Agreement cannot be settled amicably, the General Court — or, on appeal, the Court of Justice of the European Union — has sole jurisdiction. Such actions must be brought under Article 272 of the Treaty on the Functioning of the EU (TFEU).

If a dispute concerns administrative sanctions or offsetting the beneficiaries must bring action before the General Court — or, on appeal, the Court of Justice of the European Union — under Article 263 TFEU.

ARTICLE 58 — ENTRY INTO FORCE OF THE AGREEMENT

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

SIGNATURES

For the coordinator

For the JU



ANNEX 1 (part A)

Innovation action

NUMBER — 783261 — USIS

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1.1. The project summary

Project Number ¹	783261	Project Acronym ²	USIS
One form per project			
General information			
Project title ³	U-Space Initial Services		
Starting date ⁴	01/01/2018		
Duration in months ⁵	23		
Call (part) identifier ⁶	H2020-SESAR-2016-2		
Topic	SESAR-VLD1-10-2016 Safe integration of drones		
Fixed EC Keywords	AMG Airspace Management		
Free keywords	UTM UAV Drone Mission Authorization Notification Airspace Management		
Abstract ⁷			
<p>U-Space Initial Services project aims to demonstrate the technical and operational feasibility of providing in a very short time frame U-Space services to UAV/RPAS operators and to authorities focusing on:</p> <ul style="list-style-type: none"> * UAV/RPAS/Pilot/Operator Registration Service * Flight Wish/Mission Notification & Authorization Service * U-Space NOTAM Service (including dynamic NOTAM for VLL) * UAV/RPAS Traffic Monitoring (including non-conformance vs regulation/authorized mission) <p>The project combines the expertise of key stakeholders of the future U-Space (Civilian Aviation Authorities/Air National Service Provider, UAV/RPAS Operators, Industries and Law enforcement authorities) in order to insure that the services demonstrated fit for purpose to their requirements, constraints and needs. By bringing 4 Nations together, the consortium puts a particular focus on demonstrating services that can be deployed at a EU level.</p> <p>The consortium will consider any type of operations (from visual line of sight to very long range beyond visual line of sight) in all environments (from rural to urban).</p> <p>The demonstration will prove that U-Space services can be deployed in short time frame enabling safe, secure and efficient UAV/RPAS flight while contributing to their societal acceptance.</p>			

1.2. List of Beneficiaries

 Associated with document Ref. Ares(2018)6041320 - 26/11/2018

Project Number ¹	783261	Project Acronym ²	USIS
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List of Beneficiaries

No	Name	Short name	Country	Project entry month ⁸	Project exit month
1	THALES LAS FRANCE SAS	THALES LAS	France	1	23
2	UNIFLY	UNIFLY	Belgium	1	23
3	DIRECTION DES SERVICES DE LA NAVIGATION AERIENNE	DSNA	France	1	23
4	ALTAMETRIS	ALTAMETRIS	France	1	23
5	HUNGAROCONTROL MAGYAR LEGIFORGALMISZOLGALAT ZARTKORUEN MUKODO RESZVENYTARSASAG	HC	Hungary	1	23
6	DFS DEUTSCHE FLUGSICHERUNG GMBH	DFS	Germany	1	23
7	ECOLE NATIONALE DE L AVIATION CIVILE	ENAC	France	1	23

1.3. Workplan Tables - Detailed Implementation

 Associated with document Ref. Ares(2018)6041320 - 26/11/2018

1.3.1. WT1 List of work packages

WP Number ⁹	WP Title	Lead beneficiary ¹⁰	Person-months ¹¹	Start month ¹²	End month ¹³
WP1	Project Management	1 - THALES LAS	16.25	1	23
WP2	Use Cases, Test Plan, Results	5 - HC	33.75	1	23
WP3	Services provision	1 - THALES LAS	32.00	1	23
WP4	France Test Bed	1 - THALES LAS	16.25	1	23
WP5	Hungary Test Bed	5 - HC	23.00	1	23
WP6	Communication and Dissemination	1 - THALES LAS	8.00	1	23
Total			129.25		

1.3.2. WT2 list of deliverables

Deliverable Number ¹⁴	Deliverable Title	WP number ⁹	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D1.1	Project Management Plan	WP1	1 - THALES LAS	Report	Confidential, only for members of the consortium (including the Commission Services)	12
D1.2	Data Management Plan	WP1	1 - THALES LAS	ORDP: Open Research Data Pilot	Confidential, only for members of the consortium (including the Commission Services)	12
D1.3	Final Project Results Report	WP1	1 - THALES LAS	Report	Public	22
D2.1	Demonstration Plan	WP2	5 - HC	Report	Confidential, only for members of the consortium (including the Commission Services)	13
D2.2	Demonstration Report	WP2	5 - HC	Report	Public	21
D3.1	Validation report (internal)	WP3	1 - THALES LAS	Report	Confidential, only for members of the consortium (including the Commission Services)	19
D4.1	Final Report - France (Internal)	WP4	1 - THALES LAS	Report	Confidential, only for members of the consortium (including the Commission Services)	20
D5.1	Final Report - Hungary (Internal)	WP5	5 - HC	Report	Confidential, only for members of the consortium (including the Commission Services)	19
D6.1	Communication Plan	WP6	1 - THALES LAS	Report	Confidential, only for members of the consortium (including the Commission Services)	12
D6.2	Dissemination Plan	WP6	1 - THALES LAS	Report	Confidential, only for members	12

Deliverable Number¹⁴	Deliverable Title	WP number⁹	Lead beneficiary	Type¹⁵	Dissemination level¹⁶	Due Date (in months)¹⁷
					of the consortium (including the Commission Services)	

1.3.3. WT3 Work package descriptions

Work package number ⁹	WP1	Lead beneficiary ¹⁰	1 - THALES LAS
Work package title	Project Management		
Start month	1	End month	23

Objectives

In charge of the USIS project management with the objective to manage the implementation of the project with respect to the commitments toward the SESAR JU. This WP is also responsible for insuring the methodologies and processes application as defined into the Project Management Plan (PMP) as well as the coordination with third parties (eg not member of the consortium and excluding subcontractor under the responsibility of each member).

Description of work and role of partners

WP1 - Project Management [Months: 1-23]

THALES LAS, UNIFLY, ALTAMETRIS, HC

Project Management Plan

The WP will develop the Project Management Plan applicable to the project. The document will in particular focus its attention to define proper mechanisms within the consortium to cope with the commitment toward the SESAR JU and the challenges of the USIS ambition.

The PMP will include the Demonstration Plan that will be used to design the Test Plan (refer to Appendix 2 for the draft version).

Project Monitoring

The WP will insure the project performance monitoring against three main conformance criteria (planning, quality, costs). It will be based on a common internal reporting model (defined in the PMP) and consolidate in order to provide to the SESAR JU a quarterly (or any other time period reporting) consolidated reporting.

This activity also includes the management of WPs interdependencies, risk management and contractual deliverables management to the SESAR JU.

Administrative Management

The WP is in charge of the administrative management of the consortium (co-funding, contractual relations, etc.).

Coordination with third parties

The WP is in charge of the global coordination with any third party required for the execution of the project. It does include the coordination and secretary of the Expert Advisory Board.

The Project Management activities will be conducted in line with Thales internal processes (ISO9001 v2015 and AQAP 2110).

Participation per Partner

Partner number and short name	WP1 effort
1 - THALES LAS	10.00
2 - UNIFLY	1.00
4 - ALTAMETRIS	0.25
5 - HC	5.00
Total	16.25

List of deliverables

Deliverable Number¹⁴	Deliverable Title	Lead beneficiary	Type¹⁵	Dissemination level¹⁶	Due Date (in months)¹⁷
D1.1	Project Management Plan	1 - THALES LAS	Report	Confidential, only for members of the consortium (including the Commission Services)	12
D1.2	Data Management Plan	1 - THALES LAS	ORDP: Open Research Data Pilot	Confidential, only for members of the consortium (including the Commission Services)	12
D1.3	Final Project Results Report	1 - THALES LAS	Report	Public	22

Description of deliverables

The deliverables are focused on from one side documents related to process and management (Project Management Plan, Data Management Plan) and project overall results (Progress Report, Final Results Report).

The first will be developed according to H2020 guidelines and SESAR JU templates while the last will include and consolidate reports from other work packages to sustain the assessment (namely Demonstration Reports) under a format decided by the consortium.

D1.1 : Project Management Plan [12]

Delivery of the Project Management Plan document

D1.2 : Data Management Plan [12]

Establishment of the DMP according to Article 29.3

D1.3 : Final Project Results Report [22]

Delivery of the report about the achievements of the Virtual UTMs for each test bed

Schedule of relevant Milestones

Milestone number¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
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Work package number ⁹	WP2	Lead beneficiary ¹⁰	5 - HC
Work package title	Use Cases, Test Plan, Results		
Start month	1	End month	23

Objectives

- Produce the use cases to be demonstrated by relying on existing use cases (coming from various inputs), build new use cases and insure their sustainability by coordinating the feedback from the Expert Advisory Board.
- Create the test plan to be applied by each test bed
- Consolidate the results of the demonstrations, assess them and write the final report

Description of work and role of partners

WP2 - Use Cases, Test Plan, Results [Months: 1-23]

HC, THALES LAS, UNIFLY, DSNA, ALTAMETRIS, DFS

Use Cases Definition

The activity will consist in defining generic use cases from an operation perspective. The UTM services will have to insure that the defined use cases can be supported.

Assuming that some use cases will be done easily (as almost existing in the different CONOPS) while some others might be more difficult to define (dependencies, etc.), the approach is to rely on a lean and iterative approach.

Once a use case defined by WP2 and comment received from the Expert Advisory Board and the Test Plan updated according, the use case will be transmitted to the Thales/Unifly team in order to adapt the existing services (or enhance them) to cope with the requirements of the said use case. Thales and Unifly using AGILE method for their UTM services development; both companies are used to work in this very dynamic environment (even applying the XP – eXtreme Programming method if needed).

Appendix 3 presents a draft view of potential use cases.

Test Plan Elaboration

As for the use cases, the Test Plan has to be rapidly updatable. The initial document will detail the generic requirements, the methodology and the demonstrations organisation while it will be regularly updated with the use cases. The Test Plan is focused on operational tests and not on technical tests (the pre-validation activity of WP3 will handle this activity). The Test Plan will be submitted to Expert Advisory Board for review and comments.

Results Assessment

Each WP4, 5 and 6 once the demonstrations have been conducted will issue an assessment versus the Test Plan objectives while the WP2 will consolidate their inputs into a single document. This document will be also shared with the Expert Advisory Board. The document will have an interim version corresponding to Demonstration 1 results and a final version corresponding to Demonstration 2 + Demonstration 1 (with potential results update for Demonstration 1).

Participation per Partner

Partner number and short name	WP2 effort
1 - THALES LAS	4.00
2 - UNIFLY	5.00
3 - DSNA	0.25
4 - ALTAMETRIS	1.00
5 - HC	21.50
6 - DFS	2.00
Total	33.75

List of deliverables

Deliverable Number ¹⁴	Deliverable Title	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D2.1	Demonstration Plan	5 - HC	Report	Confidential, only for members of the consortium (including the Commission Services)	13
D2.2	Demonstration Report	5 - HC	Report	Public	21

Description of deliverables

The deliverables will be the Demonstration Plan and the Demonstration Report. Demonstration Plan will be used as an input for WP3, WP4 and WP5 while the Demonstration Report will consolidate the internal reports from WP 3, WP4 and WP5.

D2.1 : Demonstration Plan [13]

Demonstration plan

D2.2 : Demonstration Report [21]

Demonstration report based on WP 4 and 5 internal reports

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS1	Use Case Book	5 - HC	14	The use case book consist of defining the use cases to be verified during the flight operations. It is updated as necessary. The data is indicative.
MS2	Interim Test Plan	5 - HC	14	The interim test plan is the initial version of the operational test plan, it will be updated into final version during the second cycle of flight operations.
MS3	Final Test Plan	5 - HC	16	The final test plan is the updated version of the Interim Test Plan taking into account the operational test cases for the second cycle of flight operations.

Work package number ⁹	WP3	Lead beneficiary ¹⁰	1 - THALES LAS
Work package title	Services provision		
Start month	1	End month	23

Objectives

The objective is to provide the required UTM services to the test beds in order to enable the tests of the agreed use cases (from WP2). The services will be pre-validated by using a UAV traffic simulator. It does include the modification of the existing services in order to cope with the use cases definition and the test plan.

Description of work and role of partners

WP3 - Services provision [Months: 1-23]

THALES LAS, UNIFLY, ENAC

Foreword

Both Thales and Unifly are currently developing UTM services hosted and provided from a cloud infrastructure. Our roadmaps are already aligned with the scope of the work programme of the VLD and with the draft content of the U-Space Blueprint.

As such the scope of this WP is to focus on adapting/enhancing the services according to the WP2 outcomes and implement the local dataset for each test beds (maps, airspace structure, applicable regulations, applicable processes, etc.). The demonstration of cross boarder operations between France and Switzerland will require further work in particular to insure a seamless handover between both Virtual UTM.

Deployment of Virtual UTM for the test beds

Unifly UTM services are hosted and provided by Microsoft Azur solution largely deployed over the world. Thales UTM services are hosted and provided by its private cloud ("OMC"), shared and secured, relying on OpenStack architecture. In the coming month Thales will offer a multi-cloud (several infrastructure providers) and hybrid (private/public) infrastructure to support, amongst other services, its UTM services.

We would draw your attention on the fact that Unifly Mobile Application already embeds interfaces to several UAV coming from various manufacturers enabling to retrieve information from the UAV without any particular actions from the operators.

One Virtual UTM will be deployed for each test bed; it does include the services provision based on local dataset, the provision of Unifly Mobile Application and the provision of WebHMI to access easily to the services for authorities.

The local datasets that will be implemented include, at least:

- Applicable regulations
- Applicable processes (flight request notification and authorization, airspace management, etc.)
- Maps (terrain, obstacles)
- Weather data (eg connection to a relevant weather office in the said area) – note that Thales has a worldwide agreement with some major meteo offices (ex: MeteoFrance).
- Airspace structures (AIXM)

Thanks to our strategy of segregating the processing from the data, a local dataset does not require to modify the service(s).

Adaptation/Enhancement of the services

The use cases will enable Unifly and Thales to update the UTM services according to the outcomes from the stakeholders while the Test Plan will provide the test environments and the scenarios of the demonstrations.

The objective is to keep the service as generic as possible and to avoid dealing with the particular constraints of a specific stakeholder (except if we foresee that the said specificity might become a generic one in the future).

Thales and Unifly services will be interfaced (and even integrated for some of them) before the start of the project (this is an on-going activity). At the T0 common development platform and tools will already be in use by both teams.

Pre-validation

One of the key issue when validating UTM services is that the community lack of representative environment as it is almost impossible to predict the drone traffic characteristics in the future (density, type of UAVs, etc.). Also and contrary to ATC, we cannot rely on the shadow mode process to validate a solution. However the operations are well defined (VLOS, BVLOS, etc.).

ENAC and Thales are developing a UAV traffic simulator/stimulator enabling the UTM services to be tested in various environments. It will be re-used by the project to pre-validate the services in particular versus the UAV density and de-risk the service provision.

At the T0 of the project, the UAV simulator will be capable to:

- Simulate simultaneously up to 10 000 UAVs
- The trajectory pattern will have 6 degrees of liberty (so enough representative)
- It will enable flight within a volume, following a trajectory or a mix of
- The UAVs will be self-separated by the simulator
- The simulator will offer a pseudo-pilot mode in order to inject unexpected behaviour (collision, infringement of prohibited areas, etc.) enabling to test the reactivity of the UTM services (detect and alert, flight conformance, etc.)
- The UTM services will be interface to the simulator Support to demonstrations

This activity will consist in insuring the availability of the services to support the demonstrations, to debrief the demonstrations and to correct technical issues.

Fact findings and recommendations

This activity will consist in computing all the relevant facts that could be interesting for the community (road blockers, etc.).

Focus on surveillance infrastructure for UAV

The UTM services that will be demonstrated will be agnostic from the localization and datalink technologies used by the UAVs. As a matter of fact, Thales is a recognised expert in providing cooperative surveillance software and in creating air situation from various sensors and technologies.

We observe in the community a lot of either existing solutions or forthcoming and promising solutions for the surveillance of UAV (Galileo+4G LTE, ADS-B, IoT, etc.). As we trust that most probably several technologies will be used according to the requirements of the UAV operators and of the regulation, it is critical for a UTM services provider to be able to handle this heterogeneity.

Focus on cyber-security concerns

Due to the project scope, it is not intended to demonstrate the cyber-resilience of the services; as such the UTM services will not be connected to Thales Security Operation Center (due to the fact that the 3 SOC of Thales are dedicated to operational activities). However Unifly and Thales commit to provide a sufficient level of cyber-security for the demonstrations and to share with the SESAR JU the outcomes of on-going internal studies on cyber-security resilience of UTM services (the studies will be finished Q3 of 2017).

Focus on safety concerns

The UTM services provided by Thales and Unifly will have a particular focus on supporting the required safety level and as such will carefully take into consideration the regulations, rules and processes applicable. At this stage, the level of safety to apply to the software of the services is not yet finalized (the Product Functional Hazard Analysis is on-going).

Participation per Partner

Partner number and short name	WP3 effort
1 - THALES LAS	17.00
2 - UNIFLY	8.00
7 - ENAC	7.00
Total	32.00

List of deliverables

Deliverable Number ¹⁴	Deliverable Title	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D3.1	Validation report (internal)	1 - THALES LAS	Report	Confidential, only for members of the consortium (including the Commission Services)	19

Description of deliverables

n/a

D3.1 : Validation report (internal) [19]

Delivery of the report describing the results of the validation of the available UTM services which will be included in the Final Report (WP2)

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS4	Virtual UTM Deployment	1 - THALES LAS	16	It consists in deploying in operation the first set of UTM services, by "in operation" means accessible by the stakeholders and their registered users from web interfaces
MS5	Final - validation report	1 - THALES LAS	19	Report of the unit test related to the final version of UTM services deployed
MS6	Fact finding and recommendations	1 - THALES LAS	22	Technical fact finding and recommendations to be included in the final report of WP2

Work package number ⁹	WP4	Lead beneficiary ¹⁰	1 - THALES LAS
Work package title	France Test Bed		
Start month	1	End month	23

Objectives

The french test bed will enable to test any type of operation (VLOS to BVLOS) in all environment (rural to urban including airport proximity) and the added value of digitalized and automated UTM services. The french regulation is already upon running and cover various cases as well as involved various stakeholders in term of flight authorization and airspace management (CAA, ANSP, Airport Tower, Local forces and communities, etc.). The UAS operations will be standard operations (meaning that it will rely on live traffic rather than specific flight for demonstration), which will help to establish added value of UTM services by allowing comparison with actual processes.

Description of work and role of partners

WP4 - France Test Bed [Months: 1-23]

THALES LAS, UNIFLY, DSNA, ALTAMETRIS

The initial area covered by UTM Services is Département du Nord (5700 km²) and might be extended to other area during the project execution.

Test plan refinement

The generic test plan will be adjusted to the local test bed environment. The main point is to follow the guidelines set by WP2 in order to have comparable data for all test beds. At the same time, the specific characteristics of the France test bed and specific requirements from end users contributing the France test bed are important to be represented in the assessment methodology.

Stakeholder involvement and coordination

A significant benefit of the work package is the link that it creates between end users and the UTM platform developer. In order to represent all relevant stakeholder opinion, ANSP (DSNA), UAS Operators (+70 expected), CAA (DSAC) and local authorities ("Préfecture") will be the active contributor the work package next to the UTM platform provider. Opinion and requirements from the National Supervisory Authority, military and UAV associations are also planned to be represented in the assessment, hence the work package will coordinate the activities with these parties.

Preparations

After pre-validation activities in WP3, UTM platform capabilities will be tested at France test bed. No particular other activities are required as the test area rely on commercial operations already taking place today.

Demonstration

Because it is relying on existing operations, the UTM services will be continuously tested from T0+4 to the end of the project.

Evaluation and assessment

Demonstration scenarios will be assessed in line with the common evaluation guidelines for all two test beds. From the ANSP side AFISOs, ATSEPs, UAV experts and safety experts will be involved in the process, together with the UAV pilots from the operator side. The real live service experience of all these stakeholders will feed back into the Demonstration report document.

Participation per Partner

Partner number and short name	WP4 effort
1 - THALES LAS	4.00
2 - UNIFLY	4.00
3 - DSNA	5.00
4 - ALTAMETRIS	3.25
Total	16.25

List of deliverables

Deliverable Number¹⁴	Deliverable Title	Lead beneficiary	Type¹⁵	Dissemination level¹⁶	Due Date (in months)¹⁷
D4.1	Final Report - France (Internal)	1 - THALES LAS	Report	Confidential, only for members of the consortium (including the Commission Services)	20

Description of deliverables

The deliverables are internal and will be inserted into WP2 reports. The contribution will consist of post-analysis of the flights focused on KPIs (number of operations conducted, added value of using UTM services, performance of the services, etc.).

D4.1 : Final Report - France (Internal) [20]

Delivery of the report describing the results of the demonstrations which will be included in the Final Report (WP2.2)

Schedule of relevant Milestones

Milestone number¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS7	Final Report - France	1 - THALES LAS	20	Final report for French operations as a contribution to WP2 final report

Work package number ⁹	WP5	Lead beneficiary ¹⁰	5 - HC
Work package title	Hungary Test Bed		
Start month	1	End month	23

Objectives

The objective is to organize and conduct demonstration activities in Hungary Test Bed, thereafter to contribute to the demonstration report with the evaluation of the demonstrations that will take place in Hungary.

Description of work and role of partners

WP5 - Hungary Test Bed [Months: 1-23]

HC, THALES LAS, UNIFLY

This work package will enable the validation of the UTM services in a dedicated Hungarian test bed.

Test plan refinement

The generic test plan will be adjusted to the local test bed environment. The main point is to follow the guidelines set by WP2 in order to have comparable data for all test beds. At the same time, the specific characteristics of the Hungary test bed and specific requirements from end users contributing the Hungary test bed are important to be represented in the assessment methodology.

Stakeholder involvement and coordination

A significant benefit of the work package is the link that it creates between end users and the UTM platform developer. In order to represent all relevant stakeholder opinion, an Air Navigation Service Provider and a drone operator will be the active participants of the work package next to the UTM platform provider. Opinion and requirements from the National Supervisory Authority, military and UAV associations are also planned to be represented in the assessment, hence the work package will coordinate the demonstration activities with these parties.

Preparations

After pre-validation activities in WP3, UTM platform capabilities will be tested at Hungary test bed involving AFISOs and ATSEPs. HungaroControl experts will work on the necessary safety assessment to get the approval for the live demonstration.

Demonstration

During the demonstration periods real live UAV flights will be performed. The scenarios to be assessed are realistic UAV missions based on actual commercial and military needs.

Scenarios:

- Boarder Surveillance (VFR, BVLOS)
- Point-to-point delivery (VLL, VFR, BVLOS, VLOS)
- Agricultural surveying (VLL, VFR, VLOS, BVLOS)
- Parcel Delivery (VFR, BVLOS)
- Search and Rescue (VFR, VLL, BVLOS)
- Cross-border operations (VFR, VLL, BVLOS)
- Privacy and security surveillance (VFR, VLL, BVLOS, VLOS)

Evaluation and assessment

Demonstration scenarios will be assessed in line with the common evaluation guidelines for all three test beds. From the ANSP side AFISOs, ATSEPs, UAV experts and safety experts will be involved in the process, together with the UAV pilots from the operator side. The real live service experience of all these stakeholders will feed back into the Demonstration report document.

Dissemination

Hungary Test Bed will host an open day as part of the dissemination activities when a broader audience could familiarize with project findings. This event is planned to take part after the second demonstration period. The targeted audience is UAV operators and international organizations

Participation per Partner

Partner number and short name	WP5 effort
1 - THALES LAS	4.00
2 - UNIFLY	4.00
5 - HC	15.00
Total	23.00

List of deliverables

Deliverable Number ¹⁴	Deliverable Title	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D5.1	Final Report - Hungary (Internal)	5 - HC	Report	Confidential, only for members of the consortium (including the Commission Services)	19

Description of deliverables

The deliverables are internal and will be inserted into WP2 reports. The contribution will consist of post-analysis of the flights focused on KPIs (number of operations conducted, added value of using UTM services, performance of the services, etc.).

D5.1 : Final Report - Hungary (Internal) [19]

Delivery of the report describing the results of the demonstrations which will be included in the Final Report (WP2.2)

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS8	Final Report - Hungary	5 - HC	19	Final report of Hungarian operations as a contribution to WP2 final report

Work package number ⁹	WP6	Lead beneficiary ¹⁰	1 - THALES LAS
Work package title	Communication and Dissemination		
Start month	1	End month	23

Objectives

Define and manage the dissemination and communication actions based on the communication plan to be finalised at the beginning of the project. It also includes the support to other WPs for intellectual property subject (patent opportunity, publications, etc.).

Description of work and role of partners

WP6 - Communication and Dissemination [Months: 1-23]

THALES LAS, UNIFLY, ALTAMETRIS, ENAC

Communication

Create the communication plan (refer to Appendix 2 for the draft version) and insure its execution, as well as manage new communication opportunity and the feedback from the community to the consortium members and the Expert Advisory Board.

A quarterly reporting will be provided to the WP1.

Dissemination

Develop the dissemination process in accordance with H2020 rules and insure its application.

All members of the consortium will contribute to various communication activities as well as some members of the Expert Advisory Board.

Participation per Partner

Partner number and short name	WP6 effort
1 - THALES LAS	5.00
2 - UNIFLY	2.00
4 - ALTAMETRIS	0.50
7 - ENAC	0.50
Total	8.00

List of deliverables

Deliverable Number ¹⁴	Deliverable Title	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D6.1	Communication Plan	1 - THALES LAS	Report	Confidential, only for members of the consortium (including the Commission Services)	12
D6.2	Dissemination Plan	1 - THALES LAS	Report	Confidential, only for members of the consortium (including the Commission Services)	12

Description of deliverables

The work package will deliver communication plans, the results of the actions will be included into WP2

D6.1 : Communication Plan [12]

Delivery of the communication plan

D6.2 : Dissemination Plan [12]

Delivery of the dissemination plan

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
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1.3.4. WT4 List of milestones

Milestone number ¹⁸	Milestone title	WP number ⁹	Lead beneficiary	Due Date (in months) ¹⁷	Means of verification
MS1	Use Case Book	WP2	5 - HC	14	The use case book consist of defining the use cases to be verified during the flight operations. It is updated as necessary. The data is indicative.
MS2	Interim Test Plan	WP2	5 - HC	14	The interim test plan is the initial version of the operational test plan, it will be updated into final version during the second cycle of flight operations.
MS3	Final Test Plan	WP2	5 - HC	16	The final test plan is the updated version of the Interim Test Plan taking into account the operational test cases for the second cycle of flight operations.
MS4	Virtual UTM Deployment	WP3	1 - THALES LAS	16	It consists in deploying in operation the first set of UTM services, by "in operation" means accessible by the stakeholders and their registered users from web interfaces
MS5	Final - validation report	WP3	1 - THALES LAS	19	Report of the unit test related to the final version of UTM services deployed
MS6	Fact finding and recommendations	WP3	1 - THALES LAS	22	Technical fact finding and recommendations to be included in the final report of WP2
MS7	Final Report - France	WP4	1 - THALES LAS	20	Final report for French operations as a contribution to WP2 final report
MS8	Final Report - Hungary	WP5	5 - HC	19	Final report of Hungarian operations as a contribution to WP2 final report

1.3.5. WT5 Critical Implementation risks and mitigation actions

Risk number	Description of risk	WP Number	Proposed risk-mitigation measures
1	Unavailability of a test bed for a specific demonstration (LOW)	WP4, WP5	the way the project is built (same test plan for all test beds) enable the consortium to re-allocate the tests from a test bed to another test bed. It might reduce the number of flights but not jeopardize the global demonstrations objectives
2	Agreement not reached between Consortium Members on a use case or major issue from EAB feedback (medium)	WP2	a disagreement means that the use case is not shared by the community. In that case, either the members will reduce the scope of the use case or disregard the use case. However the issues faced will be reported to the SESAR JU (as it might means that further work is required by the community).
3	Interim demonstration scope not fully covered during live flight trains (low)	WP3, WP4, WP5	the two phases of demonstration (interim and final) enable the consortium to shift some test from interim to final demonstration
4	standards for UAV identification and localization (data sent directly from the UAV to UTM platform) not enough mature (medium)	WP3	the back-up plan is to rely on the mobile application provided by Unifly to operators/pilots to retrieve the ID and localization data from the telemetry of the drones (not applicable to all type of drones).
5	flight not approved/delayed by military authorities (low)	WP4, WP5	the duration of live trials enable to select another time slot for the tests. Alternate locations are available

1.3.6. WT6 Summary of project effort in person-months

	WP1	WP2	WP3	WP4	WP5	WP6	Total Person/Months per Participant
1 - THALES LAS	10	4	17	4	4	5	44
2 - UNIFLY	1	5	8	4	4	2	24
3 - DSNÁ	0	0.25	0	5	0	0	5.25
4 - ALTAMETRIS	0.25	1	0	3.25	0	0.50	5
5 - HC	5	21.50	0	0	15	0	41.50
6 - DFS	0	2	0	0	0	0	2
7 - ENAC	0	0	7	0	0	0.50	7.50
Total Person/Months	16.25	33.75	32	16.25	23	8	129.25

1.3.7. WT7 Tentative schedule of project reviews

Review number ¹⁹	Tentative timing	Planned venue of review	Comments, if any
RV1	13	Brussels (SJU)	
RV2	19	Brussels (SJU)	

1. Project number

The project number has been assigned by the Commission as the unique identifier for your project. It cannot be changed. The project number **should appear on each page of the grant agreement preparation documents (part A and part B)** to prevent errors during its handling.

2. Project acronym

Use the project acronym as given in the submitted proposal. It can generally not be changed. The same acronym **should appear on each page of the grant agreement preparation documents (part A and part B)** to prevent errors during its handling.

3. Project title

Use the title (preferably no longer than 200 characters) as indicated in the submitted proposal. Minor corrections are possible if agreed during the preparation of the grant agreement.

4. Starting date

Unless a specific (fixed) starting date is duly justified and agreed upon during the preparation of the Grant Agreement, the project will start on the first day of the month following the entry into force of the Grant Agreement (NB : entry into force = signature by the JU). Please note that if a fixed starting date is used, you will be required to provide a written justification.

5. Duration

Insert the duration of the project in full months.

6. Call (part) identifier

The Call (part) identifier is the reference number given in the call or part of the call you were addressing, as indicated in the publication of the call in the Official Journal of the European Union. You have to use the identifier given by the Commission in the letter inviting to prepare the grant agreement.

7. Abstract

8. Project Entry Month

The month at which the participant joined the consortium, month 1 marking the start date of the project, and all other start dates being relative to this start date.

9. Work Package number

Work package number: WP1, WP2, WP3, ..., WPn

10. Lead beneficiary

This must be one of the beneficiaries in the grant (not a third party) - Number of the beneficiary leading the work in this work package

11. Person-months per work package

The total number of person-months allocated to each work package.

12. Start month

Relative start date for the work in the specific work packages, month 1 marking the start date of the project, and all other start dates being relative to this start date.

13. End month

Relative end date, month 1 marking the start date of the project, and all end dates being relative to this start date.

14. Deliverable number

Deliverable numbers: D1 - Dn

15. Type

Please indicate the type of the deliverable using one of the following codes:

- R Document, report
- DEM Demonstrator, pilot, prototype
- DEC Websites, patent filings, videos, etc.
- OTHER
- ETHICS Ethics requirement
- ORDP Open Research Data Pilot

16. Dissemination level

Please indicate the dissemination level using one of the following codes:

- PU Public
- CO Confidential, only for members of the consortium (including the Commission Services)
- EU-RES Classified Information: RESTREINT UE (Commission Decision 2005/444/EC)
- EU-CON Classified Information: CONFIDENTIEL UE (Commission Decision 2005/444/EC)
- EU-SEC Classified Information: SECRET UE (Commission Decision 2005/444/EC)

17. Delivery date for Deliverable

Month in which the deliverables will be available, month 1 marking the start date of the project, and all delivery dates being relative to this start date.

18. Milestone number

Milestone number: MS1, MS2, ..., MSn

19. Review number

Review number: RV1, RV2, ..., RVn

20. Installation Number

Number progressively the installations of a same infrastructure. An installation is a part of an infrastructure that could be used independently from the rest.

21. Installation country

Code of the country where the installation is located or IO if the access provider (the beneficiary or linked third party) is an international organization, an ERIC or a similar legal entity.

22. Type of access

- VA if virtual access,
- TA-uc if trans-national access with access costs declared on the basis of unit cost,
- TA-ac if trans-national access with access costs declared as actual costs, and
- TA-cb if trans-national access with access costs declared as a combination of actual costs and costs on the basis of unit cost.

23. Access costs

Cost of the access provided under the project. For virtual access fill only the second column. For trans-national access fill one of the two columns or both according to the way access costs are declared. Trans-national access costs on the basis of unit cost will result from the unit cost by the quantity of access to be provided.

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1. Excellence

1.1 Objectives

The USIS project aim to validate the initial core services that will be provided by the UAV Traffic Management (“UTM”) in the U-Space (as defined by the SESAR JU) to UAVs, UAV operators/pilots and to relevant third parties (eg authorities in charge of the airspace, etc.).

The list of services to be demonstrated is:

- E-identification and registration
- Surveillance and tracking (including air situation monitoring)
- Scheduling (flight permissions, flight plan validation, flight notifications)
- Dynamic Airspace Management (including generation and management of no-fly/restricted zones)

It is intended by the project to demonstrate that the services are capable to support

- All operations with a primary focus on Beyond Visual Line of Sight and Extended-Visual Line of Sight operations which include (but not limited to):
 - Long-range surveying
 - Flight-load movement
 - Long-endurance surveying
- All type of categories of UAV (according to EASA Prototype Rules and EASA NPAs category definition)
- All density of population environment

The services will be demonstrated in two countries (France, Hungary) with live operations in order to highlight the provision of the services in any European country. Also in order to demonstrate that the services can be provided independently from geographical/physical constraints, they will be provided by a secured and resilient cloud based platform capable to handle constrained data (requiring a high level of cyber security and/or subject to specific regulations eg personal information data). In-flight services will be accessible either through a mobile application or directly into the remote control of the UAV by the provision of public interfaces (APIs).

The initial scope of the services are described in **Appendix 8**.

1.2 Relation to the work programme

The project addresses the topic SESAR-VLD1-10-2016.

By demonstrating the services under the conditions of operations (BVLOS, E-VLOS and VLOS) and environment (rural, sub-urban and urban) required by the work programme while insuring that the said services will be capable to be provided at an European scale, the USIS project cope with the specific challenge and scope of the work programme.

It has to be highlighted that the USIS project will confirm that the key enablers (the services) to support the UAV growth can be ready to market within the next 24 months from the issuing of this proposal.

1.3 Concept and methodology

(a) Concept

Concept underpinning the project

The concept of the project is to demonstrate the readiness of the services (as described in section 1.1) at a European scale (eg not applicable only to one country in a specific environment) through live flights support. Most of the flights will be flights from business operations and not necessarily set up for the specific purpose of the project. This approach enables to leverage on existing operations, reduce the costs and assess the benefits of the services against today operations management (manual procedures).

The project aims to cover the case of cross boarder operations which will be relevant for infrastructure inspections (railways, etc.) but also in the case of demonstrating the feasibility of UTM to UTM interoperability in order to avoid the creation of national/regional segregations.

To support this approach, the consortium involves a large portfolio of Industries, ANSPs and UAV operators in order to insure the coverage of the needs, requirements and constraints. However, due to the need to keep the consortium manageable and due to the fact that some stakeholders might not be in a position to cope with the consortium requirements, an Experts Advisory Board is proposed (refer to section (b) Methodology).

By essence, the project relies on the complementary expertise of the consortium members and requires a large inter-disciplinary approach:

- Industries: Software development/maintenance/upgrade, services provision through cyber-secured cloud based infrastructure, translation of operational needs into technical requirements
- ANSPs: Airspace operations and management, flight authorization, air situation monitoring, regulations expertise, safety expertise
- UAV operators: UAV management (hardware and software), UAV operation scheduling, UAV flights
- The Experts Advisory Board: Amongst other capabilities, the security knowledge will be provided through the Board

Technology Readiness Levels

From the specific objectives of the project, the consortium will provide and use services that can be characterised as TRL8. However the flights/operations that will use the services are TRL9.

The services are mainly end of TRL6 / beginning of TRL7 at the beginning of the project and will reach the required TRL8 through an iterative maturation process (as described in section (b) methodology). The services are already under development (and some already ready for market) and the USIS project will be used only for adaptations and interfaces development.

Third party projects/Initiatives linked to USIS

The project will liaise with significant international R&D projects and similar projects in order to retrieve valuable inputs but also to enable information sharing with third parties. The following key projects have been identified:

- SESAR 2020 2016 Exploratory Research – WA2 - Topic 02 – Drone Information Management
- SESAR 2020 2016 Exploratory Research – WA2 - Topic 05 – Ground based technologies
- NASA TCL T03 – Central New York Test Bed
- FAA Low Altitude Authorisation and Notification

It has to be noted that some members of the consortium are setting up proposals with a similar scope to the USIS project for other initiatives. These projects being under Call For Tenders and commercial sensitive for the bidders, the details cannot be included in this proposal but are available to the auditors upon request. These projects would take place in Europe, Asia and America. In case of success, the involved members will insure the coordination with these projects.

The regulations are still under definition (or not yet into force), as such insuring the alignment of the project with the regulations under development is key to enable the recognition of the results by the authorities. Amongst the said projects/key inputs, the consortium already identified

- EASA Prototypes Rules/NPAs
- EASA NPAs
- National Regulations (ex: French regulation on electronic identification and localization for UAVs)
- ICAO RPAS
- JARUS

The USIS consortium has identified some initiatives that will bring strong added value in term of Concept of operations and functional roadmap:

- SESAR Joint Undertaking Master Plan and in particular the U-Space Blueprint
- Eurocontrol RPAS Concept of Operations
- SESAR2020 2016 Exploratory Research – WA1 - Topic 01 – SESAR UTM Concept Definition – CORUS Consortium
- NASA UTM Concept of Operations
- FAA advisory and rule making committee on drone Identification/Localization
- FAA Drone Advisory Council

The USIS consortium started the identification of the working groups in charge of standardisation to topics related to UTM services:

- Eurocae WG 105 – Focus Area UTM (Identification, Localization, Geo-fencing) and future EUSCG
- RTCA 228

The project will also rely on outcomes coming from various associations of UAVs stakeholders (ex: Global UTM Association) having activities into standardization.

The consortium members are directly involved in these projects and initiatives or have access to the documentation (in particular for regulations).

(b) Methodology

The project duration will be 19 month from the entry into force of the contract. Pending to external dependencies, the consortium will try to accelerate the execution of the project.

The project is divided in two main set of demonstrations:

- Demonstration 1 - T0+10:
 - E-identification (from the UAV operator mobile application) and registration
 - Scheduling (flight permissions, flight plan validation, flight notifications)
 - Static Airspace Management (regulation implementations)
- Demonstration 2 - T0+16:
 - E-identification (from the UAV)
 - Dynamic Airspace Management (including generation and management of no-fly/restricted zones)
 - Surveillance and tracking (including air situation monitoring)

As described before the consortium aim to demonstrate ready to market services. However the surveillance and tracking service are, today, not enough mature as the standardisation is on-going. In order to not create artificial dependencies, this split in two steps has been decided. The T0+10 demonstrations do not require the UAV to embed any equipment while the T0+16 requires a sufficient level of maturity of the standardisation and potentially the deployment of equipment on-board of UAVs (localisation, datalink).

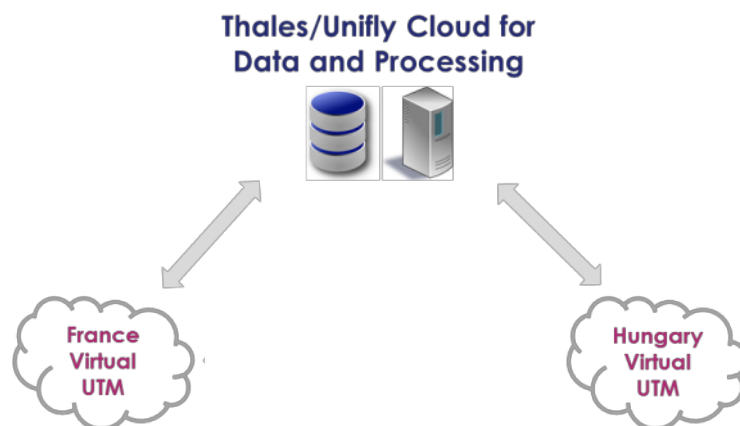
The demonstrations will be conducted on the three test beds and each service will be assessed by the test beds in order to enable the comparison of results.

The services will be provided from a secured cloud based infrastructure and “Virtual UTM” per test bed will be deployed.

A Virtual UTM is the provision of the services taking into consideration the local requirements; the local requirements are the dataset. A dataset is made of (at least):

- Airspace structures
- Applicable procedures (including decision workflows eg for flight authorisation) and regulations
- UAVs/Operators registry
- Map, terrain and obstacle data

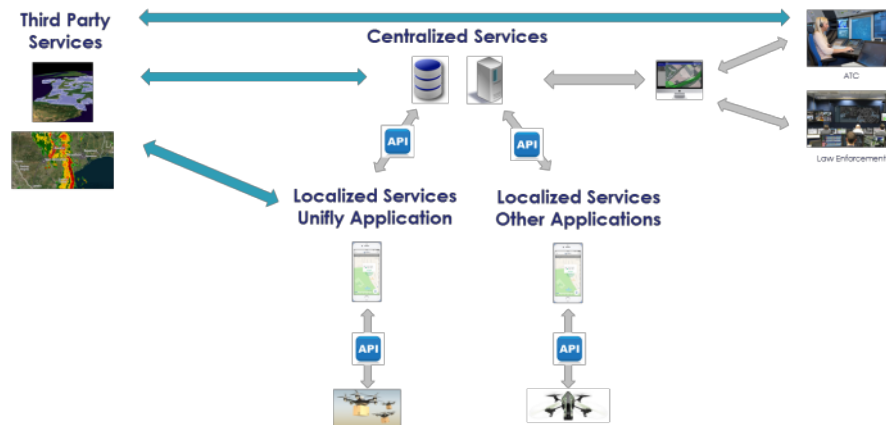
The logical view of the services provision and the test beds is described below:



The blue arrow describes the exchanges between the two Virtual UTMs to handle cross boarder operations. UTM to UTM communications will demonstrated in Hungary by setting up one UTM to a part of the airspace and a second UTM to another part of the airspace. The two UTMs will operate under different regulations to demonstrate the interoperability.

The description of each test bed and the cloud infrastructure for services provision is provided into the Work Package descriptions and Appendix 5, 6 and 7.

Within each Virtual UTM, the relations diagram is the following:



- Ground to ground connectivity: Network (SWIM, Internet)
- Ground to Air and Air to Ground connectivity: The connectivity between the UTM Core Services (cloud platform) and the UTM Local Services (mobile applications) will be handled through Mobile Network (3G,4G) and/or any other type of communications protocols suitable (ADS-B). The key point is the capability to retrieve the Identification and Localisation data from the UAV. Actually there are several discussions within the community to select the suitable technology. The consortium does consider that most probably several technologies will be used according to the requirements of the area, the on-board equipment and the missions. As such the consortium is ready to rely on several connectivity technologies either coming from electronic consumer market (mobile network, Internet of Things) and aviation (ADS-B, etc.). The current equipment of UAV is provided in the test beds Work packages. This equipment might change as the UAV might be renewed by the time of the effective date of the demonstrations.

A Test Plan common to all the test beds will be established in order to insure the coherency of the demonstrations and the right coverage of the functions. This approach of a unique test plan will enable the comparisons of the results but will also allow managing the load balancing between each test beds and mitigate execution risks due to un-availability for a resource (UAV, etc.).

The demonstration flights will mainly rely on existing and planned operations. The services will be mainly executed into shadow mode in order to allow the comparison with existing procedures and the expected benefits. For some particular cases or to conduct deeper analysis, some specific demonstrations might be set up (on a case by case basis). It is intended to conduct, at least, between 110 and 160 flights with a potential up to 200+ flights.

As a generic principal, the services will not be turned on/off during the demonstration phases but will remain available to stakeholders until the end of the project (eg authorization service will be available from T0+10 until T0+19). We also intend to propose to any UAV operators to use the services to conduct their missions during the time of the project. It is an efficient way for USIS project to increase the number of flights and as such the relevancy of the results without increasing the risks.

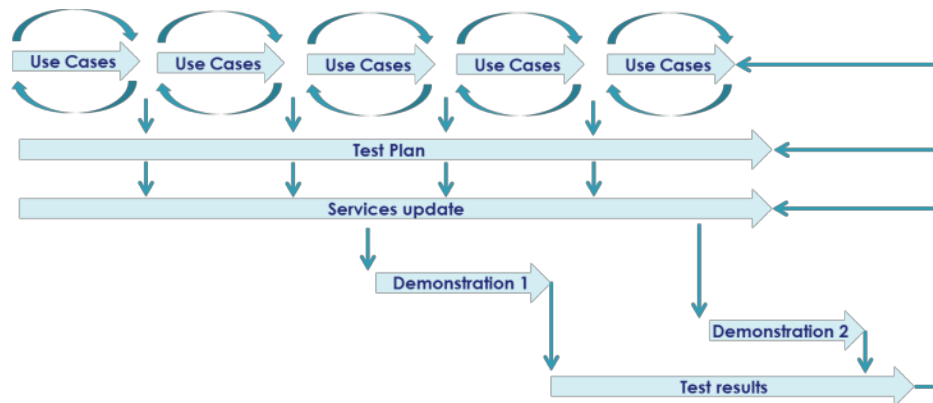
In parallel of the demonstrations and from T0, the consortium will build the use cases to be demonstrated during the live flights.

At the time of the T0 most of the services will be already prototyped and for some of them already demonstrated through other pilot projects. The project will help to review and mature the services in order to insure their consistency against the requirements and constraints of the stakeholders.

The process will be:

- Proposal of the use cases to the consortium members. The use cases are either already existing or will be created according to last development of concept of operations (SESAR, etc.).
- Review and modification of the use cases
- The use cases are shared to the Experts Advisory Board for their comments and feedback
- The use cases will fill into the test plan
- Once stabilised and in case of impact on the services, the services will be updated (both Thales and Unifly work under the AGILE method and are capable to modify very quickly the services).
- If relevant, the use cases will be further detailed thanks to the outcomes of the tests/demonstrations.

This method does not require having all the use cases stabilized at the same time, but allowing working on use case by use case, in order to make progress continuously.



The deliverables and milestones are described in each work package. The Interim Report and the Final Report will enable the SESAR JU to have a complete view on

- The use cases
- The test plan
- The demonstrations process
- The demonstrations results
- The conclusion and recommendation of the consortium

The consortium will also have a UAV simulator/stimulator enabling:

- Test of use cases (eg airspace structure, etc.)
- Pre-validation of the services before the demonstrations (The UAV simulator will be interfaced to the services in order to create realistic environment)

The project will take into considerations the EU methods of sex/gender analysis and the related issues to comply with the EU policies for gender equality, and promote it through the whole life-cycle of it.

1.4 Ambition

Ambition

The proposal will enable the demonstration of the maturity of the services required by the call for tenders. The consortium, in line with the SESAR JU U-Space Blueprint, recognizes these services as key enablers for safe, secure and efficient UAV professional missions but also for supporting recreational users to comply with regulations without being expert.

The proposal will demonstrate the applicability of the services at a EU scale as the processing will be common to each test beds while only the dataset will be specific. The objective is to insure that the services can be provided to any UAV in any country to support the growth of a Single Market for UAV in Europe.

As far as the consortium knows, there are today not similar project enabling common demonstrations in three different nations including some demonstrations related to cross border operations. As such it will demonstrate the potential of UTM to UTM interoperability.

The project will demonstrate that the services fit for purpose to support any mission in any environment.

The project will also demonstrate that the services can be provided to operators and UAVs while being agnostic from the connectivity used by the UAV to issue its Identification and Localization data. This demonstration will prove that the UTM services do not constraint the UAV equipment and keep the door open to actual (4G LTE, ADS-B, etc.) and future (5G) technologies.

Innovation potential

The innovation potential is focused on new services provision for UAVs through state of the art cloud infrastructure in order to keep the cost of the said services very low. This approach in the “airspace world” is new as today the ATC services mainly rely on local system with little interoperability between them. The SWIM and the IOP concepts tried to act afterward to relieve these issues while the approach of the consortium is to work on interoperability and service based approach from the beginning.

Another key aspect of the approach is that the services are multi-stakeholders by nature. It is not intended to deploy one system for UAV operators, one system for authorities and one system for law enforcement. The disruptive approach of the consortium is to provide the same services to all stakeholders and to adapt the functions and the HMIs according to the user profile. As such even if interacting with the same authorisation service, an UAV operator will have different rights and functions than the authorities. This is possible by the creation of user profiles (when a user register or is registered, a profile is associates to it).

This approach is also an advantage for authorities as they will be able to access to the services through simple web interfaces without the requirement to integrate the services into their legacy systems. It will enable them to interact with the services as soon as market ready while taking the required time and activities to work on their integration into their legacy systems (if they wish to do so).

Added value to SESAR Programme

At the time of the USIS proposal preparation, the SESAR programme does not include UTM project into the SESAR2020 scope of work. However, one set of Exploratory Research projects have been awarded and through the update of the Master Plan the SESAR JU is writing the U-Space Blueprint defining the vision of the services for UAVs in 2019.

The USIS project will demonstrate the market readiness of the Exploratory Research Topic 02 (Drone Information Management) and 05 (CNS for drones), as well as the feasibility of the content of the U-Space Blueprint in the required timeframe.

2. Impact

2.1 Expected impacts

Impacts

The work programme related to the topic 10 will be fully covered in its main expectations:

- E-identification and registration;
- Surveillance and tracking;
- Automatic flight permissions; and
- Flight plan validation.

Including the requirements related to the Dynamic Airspace Management:

- Drone location surveillance and tracking;
- Monitoring of compliance of the drone operation with relevant rules and regulations;
- Generation and management of no-fly zones based on aeronautical information (including NOTAMs) and aviation regulations;
- Generation and management of no-fly zones for non-aeronautical reasons by appropriate agencies;
- Generation and management of no-fly zones that become active while the drone is in flight;
- Prevention of the drone from flying inside the defined no-fly zones, including those that change during flight.

The services will be demonstrated through all type of UAV operations in very various environments with a particular focus on BVLOS as expected by the work programme.

At the time of the USIS proposal preparation, the ATM Master Plan is not updated yet (October 2017), however the U-Space Blueprint has been shared in draft version by the SESAR JU to stakeholders.

The USIS project will demonstrate that the services identified by the U-Space Blueprint (Flight Request Authorisation and Notification, Airspace Management, Cooperative Surveillance for UAVs) can be provided at a very low cost to users (UAV operators and authorities) at a European scale.

It will demonstrate to the potential future users how it benefits to their operations by enabling them to access more easily to the airspace, supporting the efficiency of their operations while insuring the safety and the security of their operations into the VLL airspace.

The scope of demonstration of the USIS proposal will contribute to create a favourable environment to support the growth of UAV operations and as such enabling the related economic growth. The consortium has the conviction that it will demonstrate to the authorities that they will be able to conciliate their concerns (safety and security) with the push of the market to conduct more and more UAV operations.

We observed in various groups (JARUS, etc.) that there is a discrepancy between the authorities and the UAV operators. The UAV operators request for simple and easy to understand regulations while the authorities point out the fact that the airspace is not a simple and lean environment. As such our approach aim to demonstrate that the UTM services will hide the complexity of the airspace and of the regulations by relying on a very high level of automation. As such it will enable authorities to set

up complex regulations or at least very detailed regulations while the UAV operators will focus on their operations, the UTM services will manage the “burden”.

Barriers/obstacles

The principle barriers that may impact the expected benefits are:

- **Standards:** Standards need to be defined for UAV identification, registration, localization and geo-fencing. However the consortium is confident that the community will set up the required standards as, for example, the Eurocae Working Group 105 – Focus Area UTM is already working to deliver the said standards in 2018. The UTM to UTM interoperability requirements are unclear at the time of the proposal writing. However, the USIS project will demonstrate the level of required interoperability which should contribute positively to the related standards.
- **Public acceptance:** The public acceptance might negatively impact the growth of the UAV operations. However the USIS project will demonstrate some tools that could help to solve this road-blocker (air situation for citizens service – similar to the information provided by services like FlightRadar24 for manned aviation).

Regulations and further funding are not seen as barriers. For the regulation, the services proposed by the USIS project will demonstrate to authorities that their regulations (into force or planned) can be implemented. For funding the next steps, this project, in line with VLD expectations, aim to demonstrate services ready to market. As such, for the said services, no further funding will be required.

Standardisation activities

The USIS project aims to work in close loop with standardisation groups, and, in particular with the European UAS Standards Coordination Group (“EUSCG”) under the secretary of Eurocae and involving major entities and association (EASA, SESAR JU, JARUS, ISO, etc.).

Our approach is to provide the results of our tests to these groups (in particular to assess the technical feasibility of a standard) but also to implement the on-going standards.

2.2 Measures to maximise impact

Dissemination, exploitation of results and communication proposals are based on the guidelines and Frequently Asked Questions from European Commission Research and Innovation Agency which can be illustrated as below (from the presentation “Dissemination and Exploitation in Horizon 2020” – H2020 Coordinator’s Day by Kirsti Ala-Mukta) as well as the Project Execution Guidelines For SES2020 VLD Activities Section 3:



Daniel Sarrazin, Head of Communication for Thales Air Systems will be the responsible for communication and dissemination activities. He will rely on the work forces from the other Consortium Members and the capabilities of Thales to address with traditional and digital medias.

a) Dissemination and exploitation of results

Objectives

As described in the previous section, the project aims to demonstrate that UTM Services can be deployed within 24 month and will serve mission efficiency and airspace safety/security.

As such it is critical for the consortium to share with the aviation community (including UAV community) from the end-users to the regulators the results in order to maximize their adoption in a short time frame in Europe (but not limited to). A fast adoption also includes the standardization activities and the interoperability activities as key enable for large scale deployment.

Our key objectives toward the aviation community are:

- The UTM Services demonstrated are trusted
- The results are re-used as references in innovation projects, deployment projects and standardization activities
- The results are recognized outside of Europe
- The results are planned to be functionally enhanced through further demonstrations by third parties

Audience

The dissemination plan is focused on addressing the aviation community while the communication plan will enable enlarge communication outside of the aviation community.

The audience will be:

- Rule Makers and Civil Authorities (EASA, Civil Aviation Authorities) and stakeholders influencing the Rule Makers (law enforcement)
- UAV Operators
- UAV Manufacturers (and their contractors)
- The UTM industries
- Mobile Network/Telecommunication operators/equipment manufacturers
- Professional VLL airspace users (rotorcrafts, etc.)
- Air Navigation Service Providers
- R&D organisations and networks

Messages

The messages will further developed during the project however our key messages are:

- UTM Services enable efficient, safe and secured operations in all environments
- UTM Services are market ready in accordance with the SESAR JU Blueprint
- UTM Services support the regulations application

Methods

Several dissemination methods will be used, however we will focus on:

- Participation in conferences, congress, debates and forums
- Articles (journal and websites)
- Share of the results with standardization groups and CONOPS working groups
- Leverage on the Expert Advisory Board to share the results and maximise adhesion

As described in Appendix 4, the consortium members have the opportunity to attend and have booth in all the key events related to aviation and access to standardisation and rule making groups which will facilitate the dissemination.

By adding the consortium members to the Expert Advisory Board members, the project results will be easily shared with ANSPs, CAAs, Law Enforcement representatives, Eurocontrol and Mobile Network Operator.

Timing

The effective dissemination activities (participation to events, etc.) will start end of 2018 with the first results available.

Dissemination results assessment

The indicators have to be further discussed within the consortium and with the SESAR JU, however we plan to use at least basic indicators:

- Number of presentations/conferences (as speakers) done
- Number of citations
- Number of requests to access to further information about the results

Business Plan

Some members have already business plans for the UTM Services provision. This subject being, at the stage of the proposal, commercial sensitive, the information that can be shared in the document is limited. However the key characteristics of the business plans are

- Services provision model
- Monthly/Yearly subscription model to the services
- Different level of subscription (from free of charge for leisure pilots to premium offer for high demanding operators)
- Services will also be provided to other VLL airspace users (manned light aviation, glydders, etc.) as sharing the same information and situation clearly contribute to safety and security of the airspace
- No capital expenditure required from third parties tcapex costs being handle by the UTM Services provider(s))

Data Management

The project will mainly collect measures that will be shared into the interim and final reports (without IP restrictions), the methods of measurement will be provided in order to give the required

level of transparency for understanding the results but also enable comparisons with other projects and initiatives and re-use the results.

Personal Information collected during the demonstrations (UAV registration, pilot registration) will be deleted at the end of the project. Commercial information from the UAV operators will also be deleted at the end of the project. In the results reports, the Personal Information and the commercial information data will be obfuscated.

The amount of data collected will be low (in term of volume and storage), the consortium will apply their standard process for data curation and preservation (not limited in time).

Knowledge management and protection

The results of the project will be delivered to the SESAR JU, as soon as accepted by the SESAR JU, the intellectual property rights will be transferred to the SESAR JU. The consortium commits to support the SESAR JU in managing the life cycle of the deliverables.

The internal documents and internal deliverables remain the property of their respective creator (including co-ownership between members). The knowledge management and protection for these deliverables will be managed by rules set up in the future Consortium Agreement at project award. Those rules will be in line with the H2020 rules applicable to SESAR 2020 core programme.

Each member of the consortium has its own knowledge management processes and protection rules.

b) Communication activities

Objectives

The communication activities have a broader scope than the dissemination activities; the focus is on informing the community of the project in general and not only about the results.

The objectives of the dissemination still apply but the communication activity will also focus on raising the awareness to a broader audience to maximize the societal acceptance of UAVs and the information/data sharing with non-aviation markets.

Audience

On top of the audience detailed in Dissemination Plan (section 2.2.a)):

- Public and in particular EU citizens for societal acceptance
- Leisure UAVs as even if not properly considered by regulations, they are part of the airspace users and as such should be considered
- Autonomous/connected cars industries, as their needs and the road-blockers they face have communalities with UAV/UTM (including the communication infrastructure)

Messages

The messages will be further developed during the project however our key messages are:

- UTM Services enable efficient, safe and secured operations in all environments
- The UTM Services can also support leisure UAV pilots by helping them to fly according to regulations
- The UTM Services will enable the support of the societal acceptance by providing some information (who is that drone flying close to my house? Etc.)
- The UTM Services are market ready in accordance with the SESAR JU Blueprint
- There are some commonalities between the UAV/UTM market and the autonomous/connected cars that should enable cost/technologies sharing (mobile network infrastructure, etc.).

Methods

Several communication methods will be used, they will be common with Dissemination activities, but we will add:

- Articles in non-aviation journal/web sites
- Use of social media/network to promote the project

Flyers and video teasers will be created.

Timing

The communication activities will start at T0 as the project can be teased before the effective demonstrations.

Communication results assessment

The indicators have to be further discussed within the consortium and with the SESAR JU; however we plan to use at least basic indicators:

- The one use by the Dissemination Plan
- Number of citation and sharing from social media

A preliminary list of events, working groups, organisations and standardization bodies that we will target is provided in **Appendix 4**.

3. Implementation

3.1 Work plan — Work packages, deliverables

The project will be executed over a period of 19 months and is structured in 7 work packages. Please note, that the consortium might accelerate the project execution pending to various external constraints (standards ready, regulation demands, etc.).

WP 1 – Project Management

In charge of the USIS project management with the objective to manage the implementation of the project with respect to the commitments toward the SESAR JU. This WP is also responsible for insuring the methodologies and processes application as defined into the Project Management Plan (PMP).

WP 2 – Use cases definition, test plan elaboration, results assessment

The objectives are

- To produce the use cases to be demonstrated by relying on existing use cases (coming from various inputs), build new use cases and insure their sustainability by coordinating the feedback from the Expert Advisory Board.
- To create of the test plan to be applied by each test bed
- To consolidate the results of the demonstrations, assess them and write the final report

For each of these activities, the WP 2 will coordinate with the Expert Advisory Board.

WP 3 – Services provision

The objective is to provide the required UTM services to the test beds in order to enable the tests of the agreed use cases (from WP2). The services will be pre-validated by using a UAV traffic simulator. It does include the modification of the existing services in order to cope with the use cases definition and the test plan.

WP 4 – France Test Bed

The objective is to organize, conduct and build the demonstration report of the demonstrations that will take place in France.

WP 5 – Hungary Test Bed

The objective is to organize, conduct and build the demonstration report of the demonstrations that will take place in Hungary.

WP 6 – Communication and Dissemination

Define and manage the dissemination and communication actions based on the communication plan to be finalised at the beginning of the project. It also includes the support to other WPs for intellectual property subject (patent opportunity, publications, etc.).

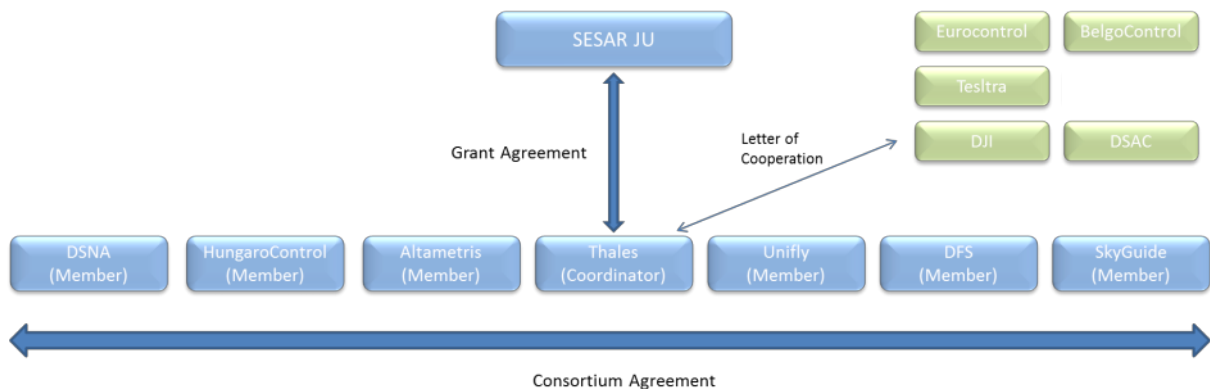
Work plan integration with the overall Programme lifecycle

The proposed work plan is aligned to the overall Programme lifecycle:

- The scope of the work programme is largely covered
- The approach (Use case->Test plan-> Demonstration -> Results assessment) fit with the SESAR2020 Programme Executive Guidance by having a structured, transparent and efficient approach aiming to deliver results which can be re-used by the aviation community and in particular by the community involved in SESAR (both future VLD and Exploratory Research projects)
- The structure of the project is aligned with the SESAR JU requirements (reporting, etc.)

3.2 Management structure, milestones and procedures

The legal and administrative management will be organised as below:



Thales will be in charge of coordinating the contractual relation between the SESAR JU and the Consortium Members which includes

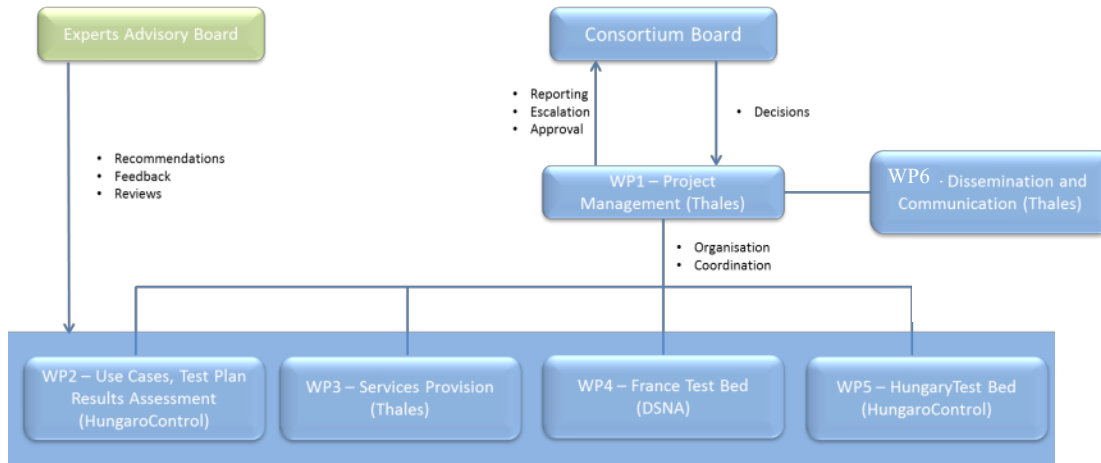
- The collection of any information and/or documents from the members to the SESAR JU (including cost declarations)
- The flow down of reimbursement of accepted eligible costs from the SESAR JU to the members
- To act as an unique focal point for any formal request from the SESAR JU to the members
- The organisation of any formal review and/or meeting with the SESAR JU (which does not prevent the members to participate to the said review/meeting)
- The responsibility toward the SESAR JU for the project management (progress, reporting, deliverables, etc.)

The Consortium Agreement will be organised as follow

- The Grant Agreement and its annexes will be fully applicable to each member and will have the highest order of precedence
- The Consortium Agreement will complement the Grant Agreement (detailed financial, administrative and legal arrangement between the members; role and responsibilities during project execution)

The Expert Advisory Board Members (in green on the figures) have no contractual relationships with the Consortium. This cooperation is settled by bilateral Letter of Cooperation between the Coordinator and each EAB Member (refer to **Appendix 8** for the copy of the letters). The Consortium will authorize and promote the inclusion of new EAB members during the project life-cycle.

The **decision making-process** is:



The **Consortium Board (CB)** comprises representatives of each member of the Consortium. The Consortium Board will meet at project Kick-off and at the close-up of each Work Packages and will receive quarterly reporting from the Project Manager. The CB will insure that the project is performing according to the Consortium commitment toward the SESAR JU and will decide on the implementation of any mitigation action if the said action has a cost and/or planning and/or quality impact on the project deliverables. The CB is also in charge of managing escalation process.

The **Experts Advisory Boards (EAB)** comprises recognised experts from fields linked to the project, such experts being not contractually contributor to any Work Package. The role of the EAB is to provide advices, feedback and recommendations to WP2.

The EAB is, at the time of the proposal, composed of

- One representative from Eurocontrol
- One representative from BelgoControl
- One representative from DJI
- One representative from DGAC/DSAC
- One representative from Teslra Mobile (Teslra has deployed in Australia with Ericsson an upgraded 4G LTE network enabling information prioritization – a localization data coming from a UAV will have a higher priority than someone streaming a video. As such they have gained a unique expertise in using mobile network for UAV operations)
- One representative from DSAE
- One representative from Hungarian Ministry of Transport

The WP1 Leader, the **Project Manager (PM)**, is responsible for an efficient and continuous project coordination insuring the commitments from the Consortium to the SESAR JU. The PM:

- Is responsible for the overall project objectives achievement,
- Act as unique focal point for any formal communication and exchanges with the SESAR JU (including documents/deliverables submission)
- Is responsible of submitting the cost declaration to the SESAR JU and to flow down the eligible cost reimbursement (according to the process set up in the Grant Agreement)
- Is responsible for the project reporting in accordance to Project Execution Guidelines for SESAR 2020
- Is responsible for the project overall performance (quality, planning, costs)
- Solves any technical, financial, administrative or contractual issues or conflicts between members, when needed,
- Report to the CB
- Coordinate activities related to others projects/initiatives
- Coordinates with the Work Packages leaders all technical progress aspects with respect to the project milestones to ensure that the overall project schedule and objectives are maintained and kept under control

The PM position is staffed by Thales and will rely on Thales support teams (legal, finance, etc.) already deployed for the SESAR2020 core programme as needed by the project.

The WP2, 3, 4, 5, 6 and 7 Leaders, The **Work Package Leaders (WPL)**, are responsible for:

- Coordinating the work performed in the Task in accordance with their planning, quality and cost objectives
- Validating and reporting to the PM the technical status of the work performed
- Ensuring the technical consistency of approaches taken in the course of the project

Organisational structure and decision-making mechanisms vs complexity and scale of the project.

The agreed organisational structure sets up clear and transparent roles and responsibilities both toward the SESAR JU and between members of the Consortium to insure the proper execution of the project.

The decision-making mechanisms are clearly allocated and allow quick decision (lean structure) based on factual elements (periodic reporting, risk management, etc.). For critical phases, the EAB will support the decision-making procedure by providing external and expert advices to the Consortium.

Several members of the consortium have certified process (ISO 9001, etc.), are used to handle projects (either research or industrial) and already tooled for financial and project management. We will rely on “fielded” processes and tools to insure the success of the project.

Regarding similar projects managed by members of the consortium, the scale is low. As a consequence, some process will be tailored in order to reduce the cost impact and to maximize productive hours.

The complexity is high due to the schedule and the synchronisation of three test beds. However, the rigorous project management process, the composition of the team and the combination of the expertise of the members will strongly strengthen our success opportunities.

The Consortium has already the tools, equipment and the required expertise available to support the project.

The Consortium will have a particular focus on quality management, deliverables production and schedule management:

1) Quality Management

The Consortium will apply a tailored quality system to the project taking into consideration the exploratory research aspect of the project. Thales being accredited ISO 9001 v2015 and AQAP 2110 for its projects management; the tailored quality assurance plan will be developed according to standards applicable within the company. The Quality Assurance Plan will be part of the Project Management Plan.

A majority of Consortium members are ISO 9001 accredited which will facilitate the implementation of the quality assurance plan in the Work Packages.

2) Production, review and approval of deliverables

Deliverables will be produced according to common models/templates and will be detailed in the Programme Management Plan.

External deliverables (contractual deliverables for the SESAR JU) are produced at the Work Package level, reviewed by the WP1-Management and approved by the Consortium Board.

Internal deliverables (deliverables used internally by the members) are produced at the Work Package level and reviewed by the WP1-Project Management. There will not be approval at the Consortium Board.

For the particular case of external deliverables produced by WP 1–Project Management, the deliverables will be reviewed by Work Package Leaders and approved by the Consortium Board.

Deliverables will be assessed against the following quality control requirements:

- Consistency: terminology, definition and results inside work packages and related to other work packages
- Presentation: structure, clarity and standardized form
- Conformance: compliance with general project procedures and with scope and general requirements of the Work Package
- Completeness: completeness of the results

Any non-conformance will result in a corrective action leading to a revision of the deliverable. Corrective actions will include investigation of the cause of non-conformance and determination of any corrective measures needed to rectify the non-conformance and prevent the recurrence of such non-conformance in the future.

There might be differences between the results and the expected results (from simulation). In that case, deviations will be investigated at the project level and by the EAB. The conclusion of these investigations will be formalized and communicated to the SESAR JU.

3) Schedule management

The Work Package planning will be monitor at the Work Package level and then aggregate by the Project Manager in order to monitor the overall project performance.

Any potential deviation impacting the contractual milestones will be handled by the Risk Management process.

A Microsoft Project tool or similar tool will be used for planning and scheduling.

The below Milestones table does not include the milestones related to the Deliverables, as a Deliverable is a milestone by itself.

Management structure and procedures efficiency

All the members are either part of the SESAR2020 core programme and/or the SESAR2020 Exploratory Research projects, as such the members are used to the processes and tools into force for SESAR2020 (including the use of the SESAR JU Extranet).

The Consortium Members are used to conduct from small to large projects including demonstration and validation activities for their business/operation activities.

The proposed structure and procedures are appropriate by well balancing the project management and the size of the project. The processes will be tailored in order to cope with the required efficiency of this type of project while maintaining a transparent insight from the SESAR JU on the project.

Innovation management

Innovation Management from the Consortium perspective encompass a large number of activities: IP Management, Dissemination and Exploitation and Business models.

The WP3, 4, and 5 will identify the innovation opportunities, which will be validated by WP2 (representing the operational perspective), WP1 will provide the required support for administrative related tasks (IP protection) while WP6 will insure the appropriate communication and dissemination actions to the support the innovation.

The Consortium Members are used to patent and publications procedures and are supported by patents offices for this activity. We draw your attention that none of the Consortium Members are known for being patent “trolls” and mainly use patents for defensive purpose (keep its freedom to operate) and not for offensive activities (block third party innovations).

Risks

The way the project is built enables the Consortium to limit and mitigate the risks:

- Two test beds enabling the re-allocation of tests from a test bed to another test bed
- Several UAV operators (which reduce the risk of unavailability of one operator)
- The UTM Services are already in development
- The cloud infrastructure is existing
- We rely on existing mission and structures rather than on structures and missions set up only for the project
- The members are very active in related projects (Exploratory Research on UTM CONOPS, Standardisation, etc.) insuring the required synchronization level
- The use of the simulator enable the members to de-risk the services before the demonstrations

3.3 Consortium as a whole

Consortium description

The Consortium Members share a strong willingness to set up and run this project as their business and operation activities are linked to the success of this project:

- DSNA/HungaroControl/ DFS: As UAV operations are already conducted in their respective countries and that the number of operations will increase drastically in the coming years
- Altametriz and the UAV operators partnering with HungaroControl: As they conduct on a day to day basis UAV operations (in BVLOS and VLOS) and wish to enable more operations
- Thales/Unifly: As they provides UTM Services and wish to validate them in order to have their offers recognized as “fit for purpose” by the community
- ENAC: As already deeply involved in UAV R&D and working with Thales to develop a representative UAV Simulator that can support the UTM Services validation as well as R&D activities (optimised airspace for UAVs)

As described previously the Consortium brings a complete set of expertise allowing the coverage of all the requirements of the project:

- Airspace management operational expertise
- UAV operations (BVLOS and VLOS)
- Provisions of large scale services through cloud infrastructure
- R&D

Added value of the consortium members

DSNA, HungaroControl, and DFS are recognized airspace managers and already support UAV operations into either their airspace or in VLL. They are on a day to day basis in relation with their respective Civil Aviation Authorities and Law Enforcement Authorities about UAV mission management as well as their insertion into the airspace. They are involved in numerous international initiatives about UAV (JARUS, ICAO, etc.). They do not operate under the same constraints (geographical, etc.) or with the same procedures (due to national constraints), as such the opportunity to have 3 test beds will enable the consortium to demonstrate the services in various environment increasing the applicability of the said services at a EU scale.

Altametriz and UAV operators partnering with HungaroControl conduct UAV operations on a regular basis from small UAV to large UAVs both in BVLOS and VLOS mode in various environments. The project will benefit from their planned operations and their expertise in order to insure that the services support UAV operators in various conditions wherever they operate.

Unifly already provides services to UAVs and is a recognized player in this field. Thales has announced that its UTM Services will be available end of this year (Authorization and Notification, Airspace Management) while Thales support Airspace Management and Control since 30+ years. It brings to the Consortium a proven capability to deliver the UTM Services while perfectly knowing the safety and security requirement applicable to the airspace.

ENAC is a recognised organisation in aviation R&D and is already deeply involved in UAV R&D. Its expertise in developing simulator will help the consortium to pre-validate the services and as such de-risk the demonstration activities.

The resources are adequate with the project ambitions. Some resources might appear low (ex: Altametriz) however it is because we will rely on planned operations and existing resources in order to limit the extra-costs and demonstrate the services under real conditions.

The Thales Project Manager will be a senior project manager that will rely on an internal organisation involved in SESAR activities since the beginning (including some SESAR previous VLD). Thales is recognized in managing very various project and to deliver the expected results/performance. Thales has already successfully deliver two VLD projects (TopMet, TopLink).

Commercial involvement

As described in previous section, the industrial/commercial objectives of the project are to demonstrate that the UTM Services fits for purpose. As such and on top of the CFT requirements, the members needs for their own operations to disseminate and exploit the results. Otherwise the demonstration results will not be recognized and the UTM Services will be delayed which will be in contradiction with each Consortium Members interests.

All the Consortium Members are belonging to Member States of the EU or have established cooperation agreements (Switzerland).

3.4 Resources to be committed

2 Unify	Cost (€)	Justification
Travel	40000	<p>Travels for WP3 and support to test beds. Unify will have to support various missions in France and Hungary on a regular basis.</p> <p>Hungary:</p> <ul style="list-style-type: none"> Flight return ticket is between 500€ to 660€ (Brussels to Budapest) in economic flexible cabin per traveller Accommodation (including daily expenses) per day and per traveller is around 200€ Taxi is around 100€ (airport<->hotel, in city) The global cost for 3 days mission per traveller is estimated at 1300€ Per mission, it is anticipated that 2 employees will need to be deployed (USIS project PM and Technical Leader) 5 missions are expected, so 13 000€ <p>France:</p> <ul style="list-style-type: none"> Train return tickets (Anvers to Paris) is about 250€ per traveller Accommodation (including daily expenses) per day and per traveller is around 250€ Taxi is around 200€ (airport<->hotel, in city) Per mission, it is anticipated that 2 employees will need to be deployed (USIS project PM and Technical Leader) The global cost for 3 days mission is estimated at 1200€ per traveller 5 missions are expected, so 12 000€ For France, peer programming and integration session have been anticipated that might lead to three sessions of one week each with 4 attendees (technical leader and developpers) each time are expected, so a provision of 20 400€ has been planned <p>Based on potential optimisation the total computation has been decreased from 45 400€ to 40 000€.</p>
Equipment	0	
Other goods and services	5000	Server set-up. It consists in the Cloud provider subscription and running cost for supporting the demonstrations of WP4 and WP5.

Total	45000	
6 DFS	Cost (€)	Justification
Travel	10000	<p>Travels for WP2 and management meeting participation. The travel costs are slightly higher than for other consortium members due to the fact that all the activities are taking place outside of Germany.</p> <p>The cost base computation is similar to Unifly figures It is expected that one employee will attend per mission 5 missions to France 3 missions to Hungary The total costs is 9 900€</p>
Equipment	0	
Other goods and services	0	
Total	10000	

4 Members of the consortium

4.1 Participant

4.2 Third parties involved in the project (including use of third party resources)

The third parties involved (excluding the expert board) are:

- “Département du Nord – Préfecture”, in charge of managing the non ATC controlled airspace related to WP4. “Préfecture” is a French administrative organization.
- “Rotors & Cams Plc”, the UAS operator that will support the UAS operations in WP5
- Due to organizational decisions (not related to the Project), Thales might decide to subcontract certain part of the WP3 to a Link Third Party (totally or partially owned by Thales SA). If such situation occurs, Thales will propose an amendment to the Grant Agreement.

4.3 Financial support to third parties

“Préfecture” efforts are provided free of charge to the consortium.

“Rotors & Cams Plc” is a subcontractor of HungaroControl. The provisional cost breakdown are:

	Cost breakdown for subcontracting
Scenario 1 – Border surveillance	34 000.00 EUR
Scenario 2 – Point-to-point delivery	14 500.00 EUR
Scenario 3 – Agricultural surveillance	4 210.00 EUR
Scenario 4 – Parcel delivery/ Flight load movement	14 500.00 EUR
Scenario 5 – Search & Rescue	7 800.00 EUR
Scenario 6 – Virtual cross-border operations	8 410.00 EUR
Scenario 7 – Privacy & security	6 610.00 EUR

surveillance	
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Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	Y
<p>“Rotors & Cams Plc” is an Hungarian company ISO 9001:2015 and ISO 14001:2015 certified. It operates drones for various type of missions from surveillance to moving special loads via drones. Further information and references can be found on www.rotorsandcams.com. The company will be in charge of performing the drone flights for WP5. In case of default, this activity can be easily reallocated to another organization, as such it is not considered as “core tasks” by the consortium.</p>	
Does the participant envisage that part of its work is performed by linked third parties	N
NA	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
NA	

5 Ethics and Security

Ethics Summary Report is “ethics ready”, no clarification requested by the auditor.

APPENDIX 1 – Project Management Plan – Table of Content

The consortium will apply its own internal project management principle in line with ISO 9001 v2015 and AQAP2110. It will insure that there is no discrepancy with the applicable project management plan for SESAR2020 core programme. The consortium will use the PMP template used by SESAR JU for RIA activities.

For the reporting to the SESAR JU, the consortium may either apply its own reporting models and templates or apply the templates into force for SESAR2020 core programme. Several members of the consortium are already members of the SESAR2020 core programme and are comfortable with the use of the SESAR Joint Undertaking extranet and its tools.

- **Executive summary of the project**
 - Inform all stakeholders of the project on its context and its key characteristics
 - Define the main organisational principles to conduct the project
- **Applicable and reference documents**
 - Define the applicable documents
 - Define the reference documents
- **Project presentation**
 - Sum-up of the project context
 - Objectives of the project
 - Detailed organisation (customer, consortium member's role, subcontractors, third parties, etc.)
 - Contractual commitments
- **Project structure and organisation**
 - Work Breakdown Structure
 - Work packages detailed description
- **Schedule**
 - Internal milestones and deliverables
 - Contractual milestones and deliverables
 - Highlight of dependencies between Work Packages
- **Deliverables**
 - Identification of the deliverables (internal, external)
 - Description of the deliverables
 - Identification of the dependencies between the deliverables
- **Management and reporting**
 - Planning: planning format, internal milestones, external milestones, meetings
 - Actions management: Actions list format, type of actions, escalation process
 - Dashboard applicable to the project
- **Risks Management**
 - Identification of the risks and mitigation actions
 - Dashboard for Risk Management
 - Monitoring process of the risks
- **Project Management**
 - Definition and set up of all tools required by the project management (planning tool, quality tool, cost tool, etc.)
 - Link between milestones and funds allocation
 - Reporting: Methodology, indicators, reporting format
 - Actions management
 - Non-technical requirements
 - Monitoring of critical dependencies
 - Applicable process for document creation (tool, identification, verification, validation)
 - Subcontractors' management
- **Quality**

- Organisation
 - Conformance management
 - Customer expectations
 - Reporting
- **Data Management**
 - Definition and set up of the tools
 - Storage

APPENDIX 2 – Demonstration Plan

The objective of this appendix is to provide to the auditor an overview of the intended demonstrations. This document will be refined and updated in particular according to the outcomes of WP2 and will enable the creation of Test Plan and Test Descriptions.

Approach

The demonstrations activities will be conducted in two phases (Demonstration 1 and Demonstration 2). Within each demonstration step, several flights across the three test beds will occur. The number of flight and/or the number of services to be tested per flight will be adjusted as well as the tests for the “offline” services (E-Identification and Registry, etc.).

Demonstration 1 is planned to occur between October and December 2018 (T0+10/T0+12) with most of the flight in October/beginning of November in order to avoid too impacting weather events. This phase will focus on testing the UTM Services not requiring the UAV to have specific equipment on-board (Identification, Localization, “accessible” Datalink by a third party), however through the mobile application, it will be possible to retrieve a set of live data (position while the identification will be done through the mobile application user). The reason for this choice is that at this time the standards for these technologies will not be necessary implemented while a lot of services does not require any particular on-board equipment (Flight request, etc.).

Demonstration 2 is planned to occur between April and June 2019. This phase will focus on services requiring equipment on-board of the UAVs (Identification and Localization) preferably based on standards (or close to) in order to maximize the recognition in other operating environments and in different countries.

The following services will be tested:

- E-identification and registration (Demonstration 1)
- Surveillance and tracking (Demonstration 2)
- Automatic flight permissions (Demonstration 1)
- Flight plan validation (Demonstration 1)
- Static and Dynamic Airspace Management (Demonstration 1 and Demonstration 2)
- UTM/ATC coordination (Demonstration 1 and Demonstration 2)

The type of mission/flight pattern tested will be:

- BVLOS: Long-range surveying, long-endurance surveying and light-load movement
- VLOS: light-load movement

The airspace where the mission will take place is VLL (0-500ft).

The population densities where the missions will take place are:

- Rural: low density
- Sub-urban: medium density
- Urban: high density

At least, between 110 and 160 flights will be conducted with a potential growth to 250+ flights.

Scope/perimeter of the demonstration

The project will demonstrate pre-operational services but also market ready services using the combination of:

- On-going product development of Thales and Unifly of UTM services based on cloud platform
- Existing UAV operations for commercial purpose
- Dedicated UAV operations for the specific purpose of the project

The pre-validation and the exploration of more complex flight scenarios will be done thanks to the ENAC UAV Traffic Simulator which will be interfaced to Thales UTM System. On top of demonstration de-risking benefit, it will also pave the way for future demonstrations.

Objectives

Each test bed will conduct the demonstration based on the same use cases, the same services and with the same methodology. It will enable to compare and assess the results on the UTM services support the access to the airspace while maintaining the safety and the security in different environment (airspace structures, processes, weather, terrain, etc.).

The results will be categorised in two main domains:

- Comparison of what is done today (eg manual flight authorisation, non-digitalized process) and what can be done with UTM services (eg automatic flight authorisation, digitalized and automated process with manual mode for specific case)
- The services not provided today, in any manner, but from which benefits are expected (eg Surveillance and tracking)

The expected benefits are:

- UAV operator: easier access to the airspace, relieve of administrative burden, higher cost efficiency of the mission, mitigation of safety and security risks (which can positively impact indirect costs like insurance)
- Civil authorities: relieve of administrative burden, automation of processes to minimize the impact on the work forces, keep the sky safe (by maximizing the compliance of flights against regulations and processes) and facilitate the cohabitation with other airspace users
- Law enforcement authorities: Provide them the required services to contribute to the security of the airspace (in particular registration and cooperative surveillance)
- Air Navigation Services Providers: Insure an efficient and safe coordination with UTM to manage flight in cross areas but also handle safety issues (UAV doing a fly away in direction of an ATC controlled sector), enable usage of UAV in airport areas
- Regulators: Demonstrate how the UTM Services can support the regulations even the complex one as hidden by the high level of automation of the UTM Services.

Demonstration Scenarios

- Refers to Appendix 5 and 6 of the document

APPENDIX 3 – Potential Use Cases

This Appendix aims to illustrate potential Use Cases. As an example, it focused on two cases: Register User Profile (Related to Registration Service) and Create Area (Related to Dynamic Management Service).

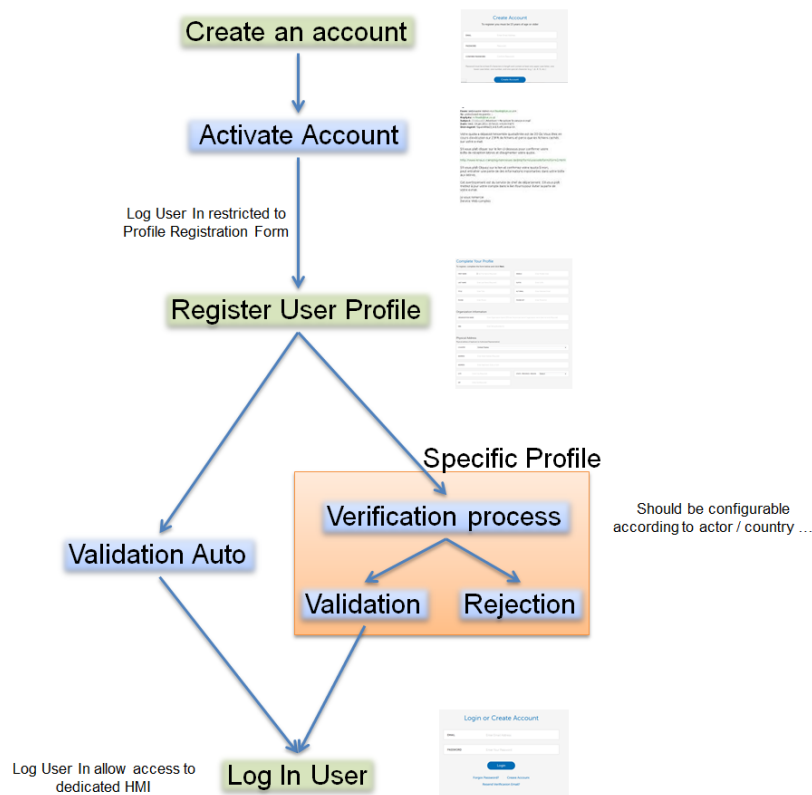
The general structure of a use case (each function of a service is then associated to a use case) is:

1. Domain
 - a. Use case
 - i. Actors
 - ii. Description

Example 1: Create User Account

1. Manage User Account

The following figure represents the user account creation process:



In order to filter information accessible to the public, the following steps are identified to create a profile.

- Create an account (email verification, account activation)
- Register a user profile (containing generic personnel information and potentially company information)
- Log user In to his dedicated HMI according to his profile

- a. Create an account (not detailed in the example)
- b. Register User Profile
 - i. Actors
 - UTM operator
 - Approval Authorities
 - ii. Description

1. Basic Flow

The UTM operator is logged on the UTM. The UTM prompts the UTM operator for register his profile. The UTM system displays register form containing the following information requested

- Profile type : Pilot, private , company, Other (Approval Authority/Enforcement Personnel/Monitoring Authority/Data Editor)
- First Name
- Name
- Email
- Phone
- Company Information:
 - o Legal name: This field is mandatory for company and other profile.
 - o DBA (doing business as)
 - o Address
 - o Name/phone number/e-mail administrative point of contact
 - o Name/phone number/e-mail operations point of contact

The UTM operator fulfills the register form and clicks on submit. The UTM validates the entered information, making sure that the mandatory information is entered and valid. According to the profile of the account requested, the UTM system sends an email to finalize the creation (Automatic Validation versus Authorization Requested Validation).

- For the automatic Validation, the UTM system sends an email to the UTM operator indicating the finalization of the registration. The UTM operator can access to his dedicated HMI.
- For the authorization requested validation, the UTM system sends an email to the approval user of the company. The approval user validates the account creation requested. The UTM system receives the approval information. The UTM system sends an email to the UTM operator. The UTM operator clicks on the link inside the email to validate the account creation. A web page is displayed allowing the user registration.

iii. Cancel account creation

The UTM operator selects the cancel option.

The UTM returns the UTM operator to the login page without creating an account and any information entered has been erased.

iv. Invalid information entered

The UTM operator clicks submit after entering information system asked for. UTM displays information with appropriate message to correct invalid information. The UTM opera re-enters information.

- c. Edit an account (not detailed in the example)
- d. Delete an account (not detailed in the example)

Example 2: Create Area

1. Manage Airspace Data

- a. Create Area (fly area, no-fly area, restricted fly area, temporary flight restriction)
- i. Actors

- Data Editor

- ii. Description

From its HMI, the Data Editor can:

- Have a list of airspace registered
- Add/ Modify(change airspace category)/ Load / Delete airspace

The Data Editor is logged on the UTM. The UTM prompts the Data Editor for creating fly area. The Data Editor selects create area option. The UTM displays the area form containing the following information:

- Name of the area
- Type of the area
 - Flying zone (automatically approved by the UTM system)
 - Flying zone (requiring approval by the Approval Authority)
 - Restricted No Fly zone
 - temporary flight restriction Warning areas
 - Military operation areas (MOAs)
 - Alert areas
 - Controlled firing areas (CFAs)
- Function
 - Drone Type allowed
 - Characteristics allowed (night/BVLOS ...)
- Altitude Min /Max
- Start date (actual date by default) / End Date / (undefined by default) : According to the area type
- Polygon definition : LAT/LONG / Grid System

The Data Editor fulfilled the mandatory fields of the area and validates. The UTM validates the entered information, making sure that the mandatory information is entered and valid. The Data Editor draws the airspace area and validates. The UTM validates the entered information. The new area is added on the map view and on the area list.

- iii. Cancel Creation

The Data Editor selects the cancel option. The UTM returns the user to the previous page without the user being creating fly area.

- iv. Invalid information entered

The Data Editor clicks submit after entering information system asked for. UTM displays information with appropriate message to correct invalid information. The Data Editor re-enters information.

- b. Modify Area (not detailed in the example)
- c. Delete Area (not detailed in the example)
- d. Activate / Deactivate Area (not detailed in the example)
- e. Create Obstacle (not detailed in the example)
- f. Edit Obstacle (not detailed in the example)
- g. Delete Obstacle (not detailed in the example)
- h. Load Terrain & airspace (not detailed in the example)

APPENDIX 4 – Dissemination and Communication

This appendix provides the initial list of bodies, stakeholders and events the consortium will target for its communication and dissemination activities as well as the strategic planning which will be further detailed in the project Communication & Dissemination Plan (WP6 deliverable).

Initial list of potential events and bodies

- Aviation congresses
 - World ATM Congress
 - ATC Global
 - Air Traffic Control Association annual conference and exposition
- Non-aviation events
 - Las Vegas Consumer Electronic Show
 - CeBIT Hanover
 - Mobile World Congress
- International Conferences dedicated to UAVs
 - AUVSI Xponential
 - Eurocontrol RPAS Workshop
 - UTM Convention
 - UVS RPAS Conference
 - ICNS conferences
 - ICAO conferences
- High level Conference
 - European Union High Level Conference
- Innovation forums
 - SESAR JU Innovation Days
- Standard/Influence private bodies/association:
 - Eurocae
 - Global UTM Association
 - UVS International
 - RTCA
- Concept of operation and regulations bodies
 - EASA Workshop and Working Group
 - JARUS
 - ICAO
 - Civil Aviation Authorities
 - European Defence Agency
 - European Commission DGs: Move, Growth, Home

We draw your attention that it will not require extra costs as the members of the consortium are **participating in all the above events and have booths in all listed conferences and exhibitions**. Our members are also used to chair workshops and debate sessions in these events for the specific purpose of UTM and UAVs.

We are involved in almost all standardisation activities and even leading some of them in the frame of UTM (Eurocae Working Group 105 – Focus Area UTM).

It gives us a strong capacity to communicate and share with the community about our project.

Strategic Planning

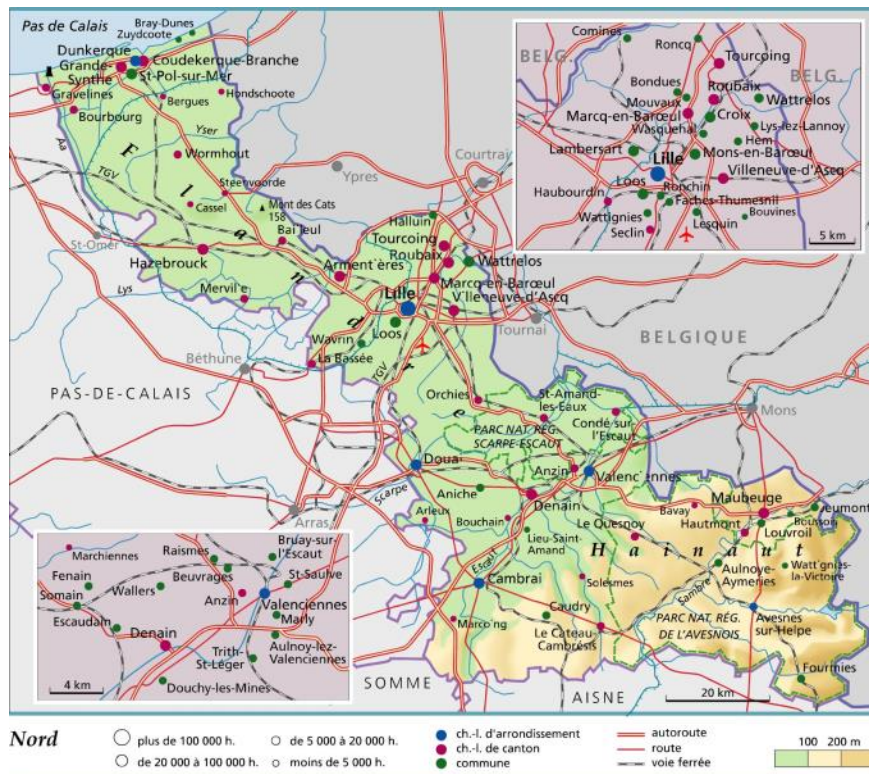
- Step 1 [2018]: Raise awareness about the project and federate “followers” to the project for maximising the success of the next steps
- Step 2 [End of 2018 to the end of the project]: Communicate and disseminate the results of the project (interim and final)
- Step 3 [2019]: Identify with the stakeholders the projects and initiatives that can complement/enhance the USIS project during or after its closure

Appendix 5 – France Test Bed Description

Area for the tests

The area used for the tests is “Département du Nord” which has a 5 700km² surface. It is representative of a typical area of operations for UAS and includes various points of attention:

- Airport
- Aerodromes
- Heliports
- Populated areas
- Non populated areas
- Critical infrastructures with flight restrictions (nuclear power plan, etc.)
- Secured area with flight restrictions (prisons, etc.)
- A boarder with Belgium
- A maritime coast



About 125 professional UAS operations (in first 2018 semester, the average number of operations is 80 with significant increase per month) will take place per month both VLOS and BVLOS. Few BVLOS over populated area are foreseen. It is expected that the UTM services will be tested against 800 operations for flight authorization and airspace management. The number of flights for tracking will be lower and pending to UAS equipment. The consortium has already identified add-on devices that can equip the UAS to issue their e-id and positions.

The UTM services will be connected to the national UAS registry (“MonEspaceDrones”) and will retrieve airspace structures data from the state services (“IGN” portal and “SIA” portal).

The area is operated by two airspace managers:

- The french ANSP, DSN, for activities impacting either the CTR or the airport/aerodromes infrastructures/runways

- The territorial administration (“Préfecture”) for activities outside of the DSNA controlled airspace, “Préfecture” also includes local forces (eg Police)

Both will use the UTM services to replace their current process and tools.

70 UAS operators are registered in the area, it is expected that a very significant number of them will operate during the test period.

Interfaces for French Air Forces and Civil Aviation Authorities (DGAC) will be made available to enable them to access to some information (operations scheduled, etc.). The « Secrétariat Générale à la Défense et la Sécurité Nationale » (SGDSN) in charge of UAS security regulation under the Prime Ministry authority will also follow the project.

The UTM services will operate in conformance of the existing and future French regulation as well as specific protocols for certain areas. It will demonstrate how a UTM solution can accommodate both national and local regulations in a seamless way for the users and airspace managers.

Appendix 6 – Hungary Test Bed Description

Step 1: HungaroControl HQ (Budapest): shadow operation of a set of service functions together with the drone operator

Step 2: HungaroControl HQ (Budapest): shadow operation of a set of service functions

Flight trials in the test bed area

The test bed area is defined to be a suitable location for various types of UAV test flights and demonstrations. The area stretches along the border of Hungary-Serbia and Hungary-Romania, covering a total area of app. 3000 km².



Topographically the location is ideal for testing and demonstration purposes.

Dimensions of the test bed:

- horizontal limits: 5-20 km along country border, +2 TIZ,
- vertical limits: GND – 1500/4000 ft

The geographical extension of the test bed makes it possible to host long-range demonstration flights, load-movement flights or even long-endurance flights.

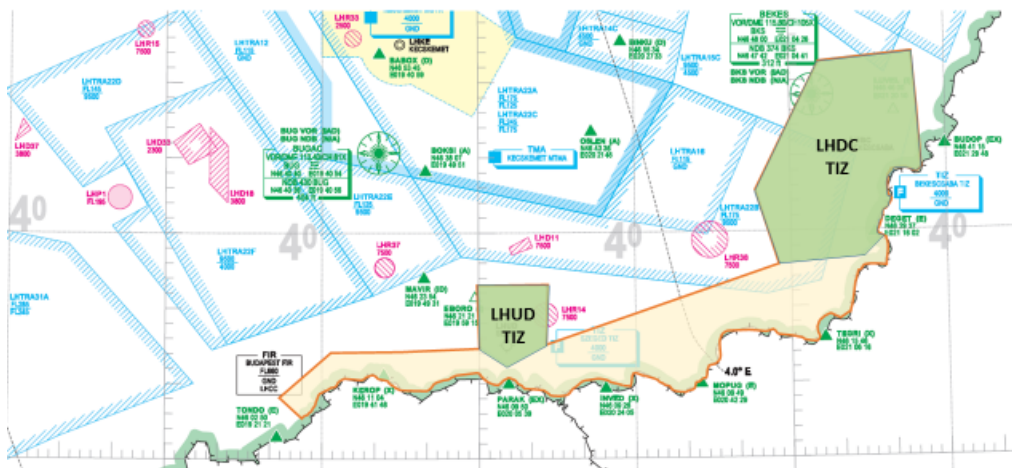
These dimensions are subject to change according to ongoing agreement with military and police stakeholders. Given that there is an effective cooperation agreement between HungaroControl and the Hungarian Defense Forces especially for R&D related issues, we do not expect any obstacles in the organization of the proposed test bed.

LHUD, the basecamp of the flight trials

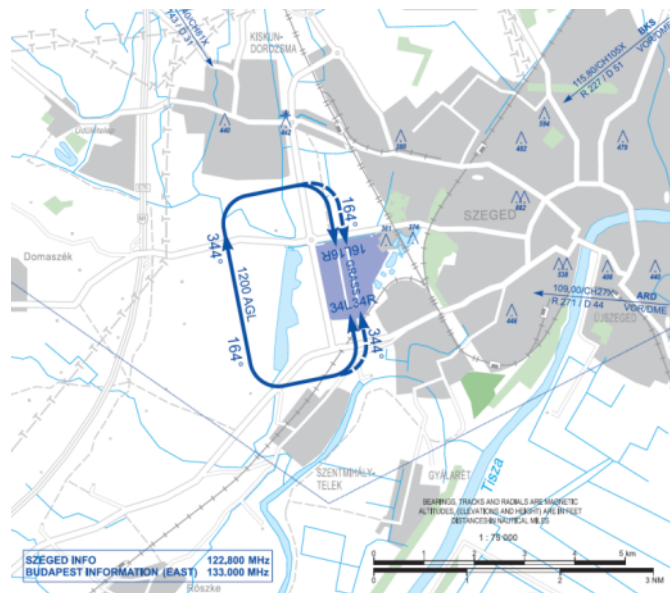
The test bed includes two Traffic Information Zones: Szeged (LHUD) and Békéscsaba (LHBC).

LHUD aerodrome with asphalt surface runway is suitable for departing and landing of fix-wing UAVs of different weight categories. The proximity of the aerodrome to the potential mission areas makes it an optimal location for controlling the flight trials. Given that it is 170 km away from HungaroControl headquarters, the planned demonstration will be a good example of the location independent, open-platform UTM service provision.

The proximity of Szatymaz (an active glider area) provides an opportunity to demonstrate integrated traffic management of UAVs.



The area is representative for population density. It consists of low density areas along the country borders and medium and high- density urban areas over Szeged and Békéscsaba.



1. figure LHUD approach chart

Proposed demonstration scenarios

1. Border surveillance

Goal of the mission:

From operational perspective, this scenario aims to demonstrate how border defense tasks could be supported with UAVs. UAVs will be used to survey 50-80 km sections of the national border in order to detect any border violations or illegal activities in the respective area. To complete such a mission, the drone should be equipped with appropriate location indicator technology and a remotely controllable high quality camera.

Operational specification: VFR, BVLOS

Type of drone:	Fixed wing
Number of drones:	2 (<i>depending on the use cases defined</i>)
Number of flights:	4 flights
Duration of flights:	2 hours per flight
Operating temperature:	between -20 and +40 °C

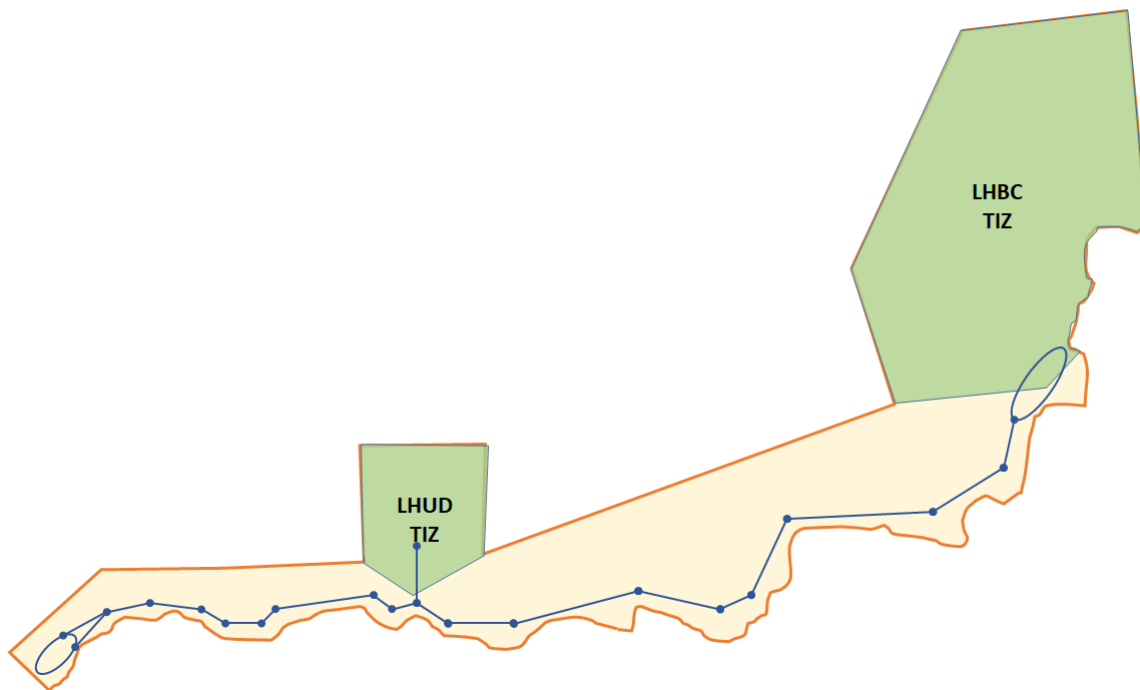


Figure 4: Border surveillance

2. Point-to-point delivery

Goal of the mission:

In this scenario, a warehouse will serve as a hub location where small sized and lightweight freight (*e.g. mail*) will be delivered from other locations. UAV will be used to collect mails from people within a range of 10 km and ship them to the hub where incoming drone traffic can generate conflicts. Due to the nature of the load, such a task requires quick and flexible planning and execution from the UTM operator. This makes it an ideal scenario to justify the benefits of a UTM services platform.

Operational specification: VLL, VFR, BVLOS, VLOS

Type of drone: Rotorcraft

Number of drones: 5 (*depending on the use cases defined*)

Number of flights: 10 flights

Duration of flights: half an hour to one hour per flight

Operating temperature: between -20 and $+40$ °C

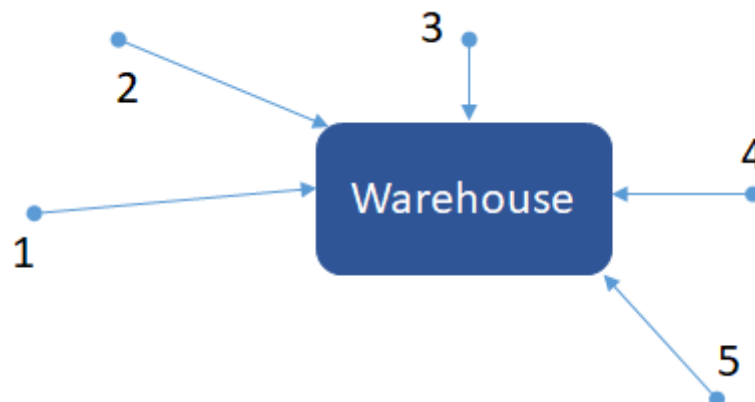


Figure 5: Delivering to a warehouse

3. Agricultural surveying

Goal of the mission:

The main goal in this scenario is to demonstrate the benefits of the UTM platform services. A drone is not only suitable for surveying urban areas, but can also be used in agricultural surveillance with specified camera systems on board.

Operational specification: VLL, VFR, VLOS, BVLOS

Type of drone: Rotorcraft

Number of drones: 2 (*depending on the use cases defined*)

Number of flights: 4 flights

Duration of flights: 30 minutes per flight

Operating temperature: between -20 and $+40$ °C

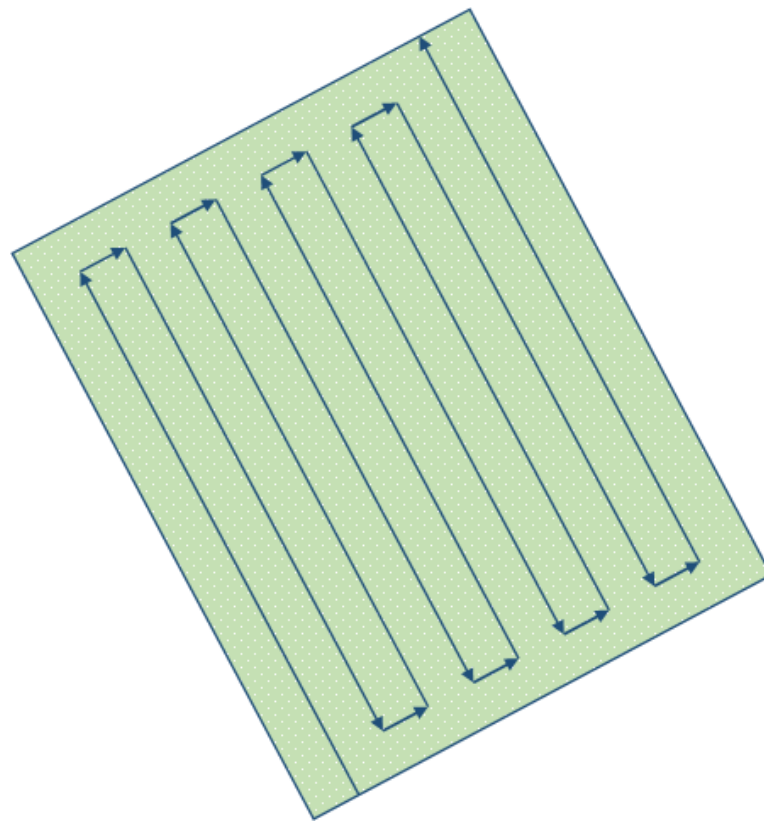


Figure 6: Potential agricultural surveying pattern

4. Parcel delivery / Flight load movement

Goal of the mission:

The goal of this scenario is to demonstrate the benefits of using drones for parcel delivery. During the demonstration flights, the scenarios will simulate different types of operational situations. Small, non-dangerous load will be transferred from the warehouse to different delivery locations. In this scenario, there can be different types of low weight payloads under a kilogram. UAVs will be used to deliver within a range of 15 kilometres. This task requires flexible planning and execution from the UAV operator.

Operational specification: VFR, BVLOS

Type of drone:	Rotorcraft
Number of drones:	5 (<i>depending on the use cases defined</i>)
Number of flights:	10 flights
Duration of flights:	30 minutes per flight
Operating temperature:	between –20 and +40 °C

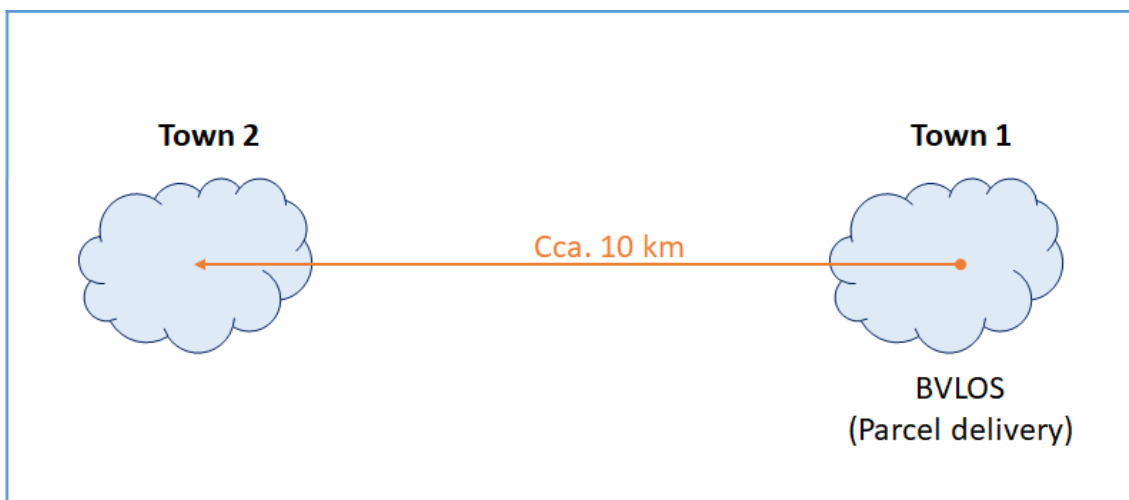


Figure 7: Parcel delivery

5. Search & Rescue

Goal of the mission:

Drone capabilities can be exploited in this scenario for different Search and Rescue missions. There are many types of drones that can speed up the searching process in emergency situations. Drones with high-quality and special (e.g. thermal or infra) camera systems can potentially carry medicine to the accident site. In this case, we know the exact location of the crash site.

Operational specification: VFR, VLL, BVLOS

Type of drone: Rotorcraft / Fixed wing

Number of drones: 2 (*depending on the use cases defined*)

Number of flights: 4 flights

Duration of flights: 30 minutes – 1 hour per flight

Operating temperature: between –20 and +40 °C

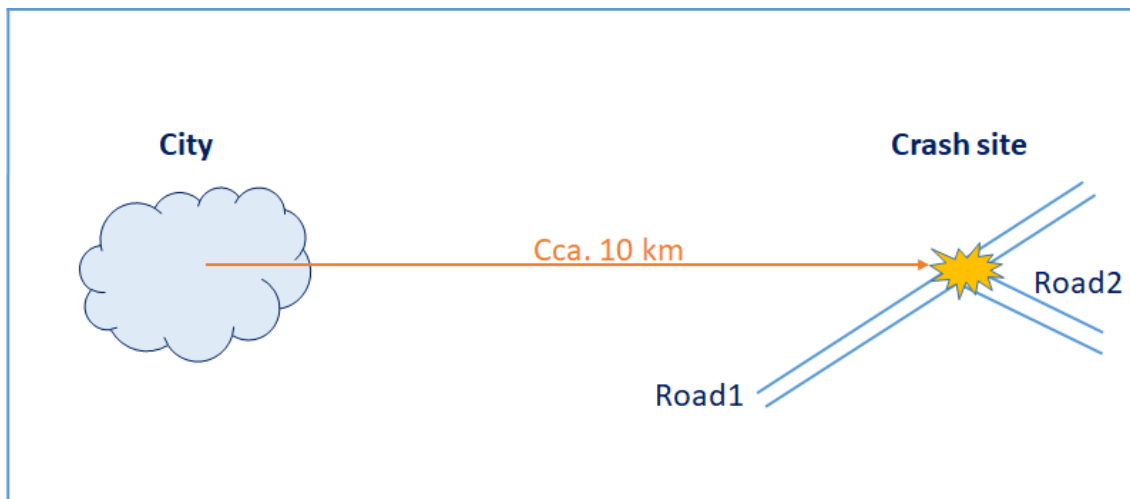


Figure 8: Crash site inspection

6. Cross-border operations

Goal of the mission:

Being able to manage cross-border operations is crucial for UTM service providers and drone operators in exploiting their full business potential. This scenario gives the opportunity to demonstrate that drone operators can do this type of operations without any problems. This task requires flexible planning and execution from the UTM service provider and the UAV operators as well. During the simulation described on **Figure 9** lightweight freight delivery can be demonstrated within the range of 15 kilometres.

Operational specification: VFR, VLL, BVLOS

Type of drone: Rotorcraft / Fixed wing

Number of drones: 2 (*depending on the use cases defined*)

Number of flights: 4 flights

Duration of flights: 30 minutes per flight

Operating temperature: between -20 and $+40$ °C

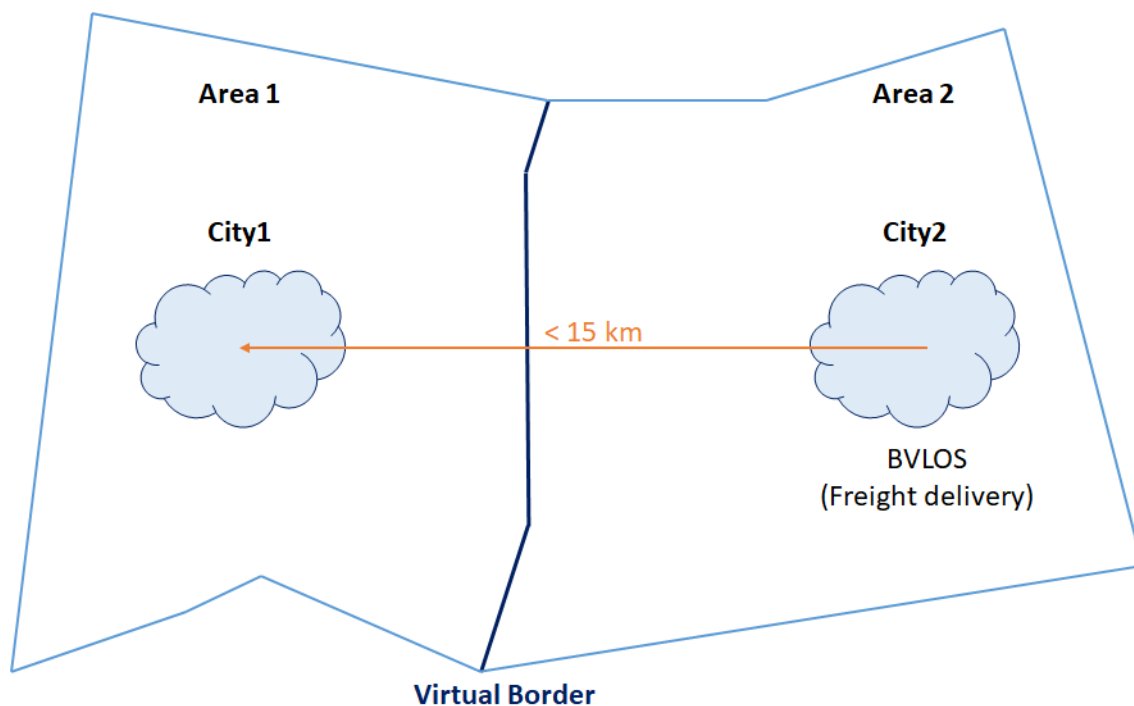


Figure 9: Cross-border operation scenario high-level description

7. Privacy and security surveillance

Goal of the mission:

In this scenario, drones will be used for protecting privacy or critical infrastructure from intruders as a possible new way of security surveillance. Drones need to be equipped with high quality and specialized (*e.g. thermal and infra image capabilities*) camera systems to conduct this type of missions. The UTM needs to be capable of handling repetitive or continuously performed flights. High-level description of a possible scenario is described in **Figure 10**.

Operational specification: VFR, VLL, BVLOS, VLOS

Type of drone: Rotorcraft / Fixed wing

Number of drones: 3 (*depending on the use cases defined*)

Number of flights: 6 flights

Duration of flights: from half an hour to an hour per flight

Operating temperature: between –20 and +40 °C

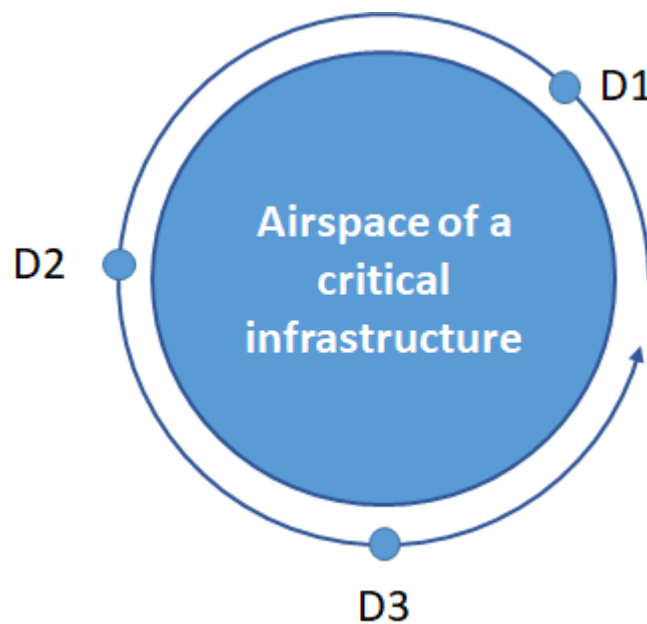
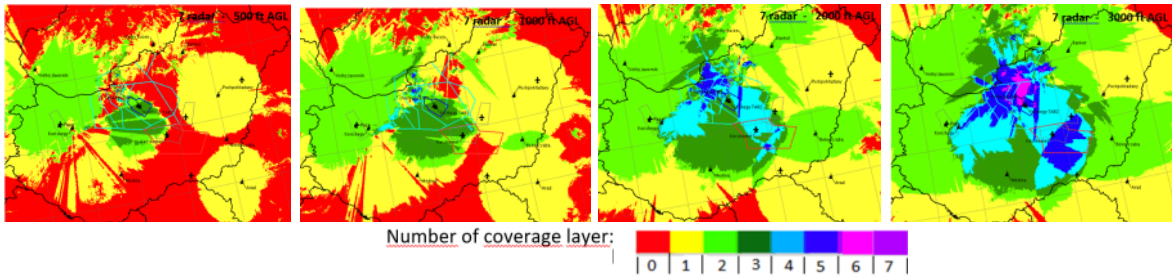


Figure 10: Defending critical infrastructure, security surveillance

Available infrastructure

HungaroControl operationally uses 7 radar sources.
The SSR coverage of these radars is presented below, in different levels.



Not operationally, just for monitoring purposes we deployed an ADS-B system at Budapest headquarters. We use its data in off-line mode. We also have a mobile ADS-B antenna, which can be putted where it is needed.

Owned by the Hungarian Gliding Association, there is 18 OGN antenna in Hungary. These can receive the FLARM and OGN transmission. The coverage of the OGN network at the border of Hungary-Serbia, Hungary-Romania, also the area of LHUD and LHBC is appropriate.

The HungaroControl would like to concentrate just for the cooperative RPAS detection, tracking, identification and intrusion alerting. The demonstration flights will be focused just for secondary surveillance radar systems and on-board transponders. Primary surveillance radar systems is not intended to be used for this demonstration.

Hungarian Mobile network providers intends to double the high speed internet coverage, making the latest 4G/LTE technology available to almost 80 percent of the Hungarian population by 2015. By late 2012 the 99% residential outdoor 4G/LTE coverage was achieved, while indoor 4G/LTE coverage increased to 83 %. Currently the service is available to almost 40% of Hungarian population outdoors.

Appendix 7 – Letter of Cooperation Expert Advisory Board

Directorate Air Traffic Management - ATM

R&D and SESAR Contribution Management



Date : 26 April 2017
Ref.: ATM/RDS/234/EEC
Subject:
Objet: EUROCONTROL participation in the USIS Expert
Advisory Board
Contact: Eirc Hoffman
Direct Line: + 33 (0)1 6988 7639
Ligne directe:
Encl.:
P.J.:

THALES Air Systems
Attn Mr. Olivier REA
3 avenue Charles Lindbergh
94150 RUNGIS

On behalf of EUROCONTROL and in my capacity of Head of R&D and SESAR, I would like to offer my support to the USIS project, in the frame of the H2020 SESAR-VLD1-10-2016 Call for Tender, led by THALES.

As EUROCONTROL, I gladly confirm our intention to participate in the USIS Expert Advisory Board and to offer our experience. EUROCONTROL will not provide any financial contribution to the project.

We are looking forward to a fruitful participation in the USIS Expert Advisory Board.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Pierre ANDRIBET', enclosed within a blue oval stamp.

Pierre ANDRIBET,
Head of R&D and Research

Centre de Bois des Bordes, BP 15
91222 Brétigny-sur-Orge CEDEX
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Tel. : +33 1 6988 7500
Fax : +33 1 6988 7505
www.eurocontrol.int

European Organisation for the Safety of Air Navigation
Organisation européenne pour la sécurité de la navigation aérienne

Dr. Walter Stockwell
DJI Research LLC
345 Portage Ave.
Palo Alto, CA 94306
USA
May 5, 2017

Mr. Olivier Rea
Coordinator of USIS Project

3 Avenue Charles Lindbergh
94150 Rungis
France

Dear Mr. Olivier Rea:

On behalf of DJI and in my capacity of Director of Technical Standards, I would like to offer my support to the USIS project, in the frame of the H2020 SESAR-VLD1-10-2016 Call for Tender, led by THALES.

As DJI, I gladly confirm our intention to participate in the USIS Expert Advisory Board and to offer our experience. DJI will not provide any financial contribution to the project.

We are looking forward to a fruitful participation in the USIS Expert Advisory Board.

Sincerely,



5/5/2017

Dr. Walter Stockwell
Director of Technical Standards



MINISTÈRE DE LA DÉFENSE



DIRECTION DE LA SECURITE
AERONAUTIQUE D'ÉTAT

FRENCH STATE AVIATION
AUTHORITY

Villacoublay, the 10th of May, 2017

We, French State Aviation Authority (DSAÉ), confirm our interest and support for the USIS Project, led by Thales, in the frame of the H2020 SESAR-VLD1-10-2016 call for tender.

We understand that the scope of the USIS project is to demonstrate a proof-of-concept for drone traffic management operating within a representative service environment. This concept could combine different applications and functionalities, like E-identification and registration, surveillance and tracking, automatic flight permission and flight plan validation. This shall be achieved by live flying demonstrations of appropriate drones in an environment permitting the objectives of the project to be met.

DSAÉ is willing to participate to the Expert Advisory Board of the project. **Colonel Alban Galabert**, our RPAS project manager, will be our representative. Such support may also include attendance to workshops, conferences and events organized by the consortium. DSAÉ will not provide any financial contribution to the project.

We propose, with the other stakeholders and experts represented in the Advisory Board, to bring our support in the review of the project deliverables and formulation of the recommendations supporting the identification of R&D, regulations and standardization needs, based on our expertise on national and international RPAS domains.

Yours sincerely,

Le général de division aérienne Éric Labourdette
directeur de la sécurité aéronautique d'État

Destinataire :
Olivier Rea
USIS Proposal coordinator
3 avenue Charles Lindbergh
94150 Rungis
France

Base aérienne 107 – CS 40704 – 78941 Villacoublay Cedex – tel. : 00.33.1.45.07.34.97 – alban.galabert@intradef.gouv.fr



MINISTÈRE DE L'ENVIRONNEMENT, DE L'ÉNERGIE ET DE LA MER

Direction générale de l'Aviation civile

Paris, le 10 MAI 2017

Direction de la sécurité de l'aviation civile

To : M. Olivier REA
THALES AIR SYSTEMS
3, avenue Charles Lindbergh
94150 RUNGIS

Nos réf. : 17-090
Affaire suivie par : Muriel PREUX
Muriel.preux@aviation-civile.gouv.fr
Tél. : 01 58 09 47 88 - Fax : 01 58 09 43 38

Subject : USIS prospect Expert Advisory Board's membership

We, Direction de la Sécurité de l'Aviation Civile (French Civil Aviation Safety Authority), confirm our interest and support for the USIS project, led by Thales, in the frame of the Horizon 2020 Research Framework Programme (Call identifier: H2020-SESAR-2016-2, Topic SESAR-VLD1-10-2016 : Safe integration of drones).

We would like to offer our recognised expertise as French National Surveillance Authority and therefore express our interest as being a member of the Project Expert Advisory Board.

Mrs Muriel PREUX, drone project manager at DGAC, will be your point of contact for this project.

Notably DSAC will not provide any financial contribution to the project.

We are looking forward to a fruitful participation in the USIS Expert Advisory Board.

Yours sincerely,

Le Directeur Adjoint de la sécurité
de l'Aviation civile

Richard THUMMEL

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Directorate-general Operations
Our ref.: DGO/INNOV/17-001
Your ref.: e-mail dd 05/05/2017
Date : 03/05/2017

THALES GROUP

File treated by:
Hendrik-Jan Van Der Gucht
Tel.: 02/206.22.16
hva@belgocontrol.be

ATTN Olivier Rea
USIS Project Coordinator

Subject: participation Belgocontrol to Expert Advisory Board USIS

Dear Mr Rea,

I am happy to confirm Belgocontrol's willingness to participate to the Expert Advisory Board of the project USIS, led by Thales, in the frame of the H2020 SESAR-VLD1-10-2016 call for tender.

Our support will include attendance to workshops, conferences and events organized by the consortium. Belgocontrol will not provide any financial contribution to the project.
Contact person from Belgocontrol is Mr Hendrik-Jan Van Der Gucht.

Yours sincerely,

J. DECUYPER
Chief Executive Officer



Appendix 8 – High level view on the services that will be demonstrated

E-Identification and registration

The service will enable the registry of the Operator(s), the UAV(s) and the Pilot(s) with the required information in order to perform the other services (authorization, surveillance, etc.). The approach is that the other services will retrieve data from the registry repository in order to assess various criteria (authorization vs UAV equipment, etc.).

The Identification will be either defined by the UAV manufacturer (similar to VIN number for cars) or at the time of the registry (similar matriculation for cars), it will be discussed in the WP2. The Identification will be linked to the registry repository and will enable the provision of accurate data and tailored information. The Identification will be send at the same time that the localization data.

Surveillance and tracking

The service will retrieve the identification and the localization under pre-defined frequency, latency and accuracy (given the fact that it can vary from a technology to another) in order to, at least,:

- Create air situation for authorities and ANSPs
- Provide traffic to the UAV operator (other drones flying around)
- Detect infringement of no-fly/restricted areas and flight non-conformance (against the authorized/notified flight)
- Automatic alert to the UAV operator and switch to manual mode is the infringement is not corrected (human in the loop)
- Provide contextual and tailored information (weather hazard alert sent only the UAV flying or having plan to fly in the impacted area at the said time)
- Provide the information of a change in airspace structure (new temporarily no-fly area) to the impacted UAV
- Receive alert from UAV operator (swarm of birds in the area, loss of control of the UAV), assess the UAV flying in the same area and inform them

Scheduling

The service will provide, at least:

- Mission preparation (including pre-validation against static data eg regulations and static airspace structures)
- Notification Management (under certain condition a flight is not approved but only notified to authorities) including cancellation and revocation by the authorities (unexpected event)
- Authorization Management including cancellation and revocation by the authorities (unexpected event)
- Notification to the UAV operators of their status of their request or in case of change
- Criteria automatically applied by the service for the assessment: regulations, local processes, meteo, and airspace structure ... vs UAV equipments / Pilot qualification / Operator waivers (ex: Police would have special waiver to enter into no-fly area).

The assessment of the type of request (requiring authorization or notification or nothing) and the processes to apply and follow will be automatically handled by the service. The service embeds regulations and workflow engines enabling it to apply the right conditions (request compliant to regulations) and the right process (multi-approval for certain authorization, etc.). As such the UAV operator does not have to be an expert in regulations and the authorities to pay attention to the process to apply.

Static and Dynamic Airspace Management

The service will, at least, include:

- Airspace Editor: Generate and manage no-fly/restricted (applicable only to certain UAV or UAV operators) areas temporarily with planned, immediate or with recurrent applicability
- Processes will be defined to demonstrate how the service can be flexible and adapt to any national environment. Ex: Police will have the right to create an area with a maximum duration of 30 min and a maximum altitude of 75m in the other case, the ANSP or the CAA will have to validate the creation (this process will be handled by the service).
- Combined with the Scheduling service and the Surveillance service, it will automatically detect the impact UAVs and take the required actions (authorization revocation, alert to UAVs, etc.)
- The service will include all the static data about the airspace and will provide them to users as well as use them to assess a request (a request for flight in a no-fly area with no waiver will automatically rejected).

ESTIMATED BUDGET FOR THE ACTION (page 1 of 2)

	Estimated eligible ¹ costs (per budget category)								EU contribution			Additional information			
	A. Direct personnel costs				B. Direct costs of subcontracting	C. Direct costs of fin. support	D. Other direct costs	E. Indirect costs ²	Total costs	Reimbursement rate %	Maximum EU contribution ³	Maximum grant amount ⁴	Information for indirect costs	Information for auditors	Other information:
	A.1 Employees (or equivalent) A.2 Natural persons under direct contract A.3 Seconded persons [A.6 Personnel for providing access to research infrastructure]		A.4 SME owners without salary A.5 Beneficiaries that are natural persons without salary				D.1 Travel D.2 Equipment D.3 Other goods and services D.4 Costs of large research infrastructure					Estimated costs of in-kind contributions not used on premises		Declaration of costs under Point D.4	Estimated costs of beneficiaries/ linked third parties not receiving EU funding
Form of costs ⁶	Actual	Unit ⁷	Unit ⁸		Actual	Actual	Actual	Flat-rate ⁹							
								25%							
	(a)	Total (b)	No hours	Total (c)	(d)	(e)	(f)	(g)=0,25x ((a)+(b)+(c)+(f) +[(h1)+(h2)]-(m))	(i)= (a)+(b)+(c)+(d)+(e)+(f)+(g)+(h1)+(h2)+(h3)	(j)	(k)	(l)	(m)	Yes/No	
1. THALES LAS	586500.00	0.00	0	0.00	0.00	0.00	40000.00	156625.00	783125.00	70.00	548187.50	548187.50	0.00	No	
2. UNIFLY	252896.00	0.00	0	0.00	0.00	0.00	45000.00	74474.00	372370.00	70.00	260659.00	260659.00	0.00	No	
3. DSNA	57700.00	0.00	0	0.00	0.00	0.00	1000.00	14675.00	73375.00	100.00	73375.00	73375.00	0.00	No	
4. ALTAMETRIS	49075.00	0.00	0	0.00	0.00	0.00	6600.00	13918.75	69593.75	70.00	48715.63	48715.63	0.00	No	
5. HC	207500.00	0.00	0	0.00	90030.00	0.00	12800.00	55075.00	365405.00	70.00	255783.50	255783.50	0.00	No	
6. DFS	26012.00	0.00	0	0.00	0.00	0.00	10000.00	9003.00	45015.00	70.00	31510.50	31510.50	0.00	No	
7. ENAC	67352.00	0.00	0	0.00	0.00	0.00	5000.00	18088.00	90440.00	100.00	90440.00	90440.00	0.00	No	
Total consortium	1247035.00	0.00		0.00	90030.00	0.00	120400.00	341858.75	1799323.75		1308671.13	1308671.13	0.00		0.00

ESTIMATED BUDGET FOR THE ACTION (page 2 of 2)

- (1) See Article 6 for the eligibility conditions
- (2) The indirect costs covered by the operating grant (received under any EU or Euratom funding programme; see Article 6.5.(b)) are ineligible under the GA. Therefore, a beneficiary that receives an operating grant during the action's duration cannot declare indirect costs for the year(s)/reporting period(s) covered by the operating grant (see Article 6.2.E).
- (3) This is the theoretical amount of EU contribution that the system calculates automatically (by multiplying all the budgeted costs by the reimbursement rate). This theoretical amount is capped by the 'maximum grant amount' (that the Commission/Agency decided to grant for the action) (see Article 5.1).
- (4) The 'maximum grant amount' is the maximum grant amount decided by the Commission/Agency. It normally corresponds to the requested grant, but may be lower.
- (5) Depending on its type, this specific cost category will or will not cover indirect costs. Specific unit costs that include indirect costs are: costs for energy efficiency measures in buildings, access costs for providing trans-national access to research infrastructure and costs for clinical studies.
- (6) See Article 5 for the forms of costs
- (7) Unit : hours worked on the action; costs per unit (hourly rate) : calculated according to beneficiary's usual accounting practice
- (8) See Annex 2a 'Additional information on the estimated budget' for the details (costs per hour (hourly rate)).
- (9) Flat rate : 25% of eligible direct costs, from which are excluded: direct costs of subcontracting, costs of in-kind contributions not used on premises, direct costs of financial support, and unit costs declared under budget category F if they include indirect costs
- (10) See Annex 2a 'Additional information on the estimated budget' for the details (units, costs per unit).
- (11) See Annex 2a 'Additional information on the estimated budget' for the details (units, costs per unit, estimated number of units, etc)
- (12) Only specific unit costs that do not include indirect costs
- (13) See Article 9 for beneficiaries not receiving EU funding
- (14) Only for linked third parties that receive EU funding

ANNEX 2a**ADDITIONAL INFORMATION ON THE ESTIMATED BUDGET**

- Instructions and footnotes in blue will not appear in the text generated by the IT system (since they are internal instructions only).
- For options [in square brackets]: the applicable option will be chosen by the IT system. Options not chosen will automatically not appear.
- For fields in [grey in square brackets] (even if they are part of an option as specified in the previous item): IT system will enter the appropriate data.

⚠ Transitory period: Until SyGMA fully supports Annex 2a, you must prepare it manually (using this template by choosing and deleting the options/entering the appropriate data).
 For the 'unit cost tables': either fill them out manually or use currently existing tables from Annex 1 or the proposal.
 The document can then be uploaded in SyGMA and attached to the grant agreement.

Unit cost for SME owners/natural beneficiaries without salary**1. Costs for a [SME owner//beneficiary that is a natural person] not receiving a salary**

Units: hours worked on the action

Amount per unit ('hourly rate'): calculated according to the following formula:

{the monthly living allowance for researchers in MSCA-IF actions / 143 hours}
 multiplied by
 {country-specific correction coefficient of the country where the beneficiary is established}

The monthly living allowance and the country-specific correction coefficients are set out in the Work Programme (section 3 MSCA) in force at the time of the call:

- for calls *before* Work Programme 2018-2020:
 - for the monthly living allowance: **EUR 4 650**
 - for the country-specific correction coefficients: see Work Programme 2014-2015 and Work Programme 2016-2017 (available on the [Participant Portal Reference Documents](#) page)
- for calls *under* Work Programme 2018-2020:
 - for the monthly living allowance: **EUR 4 880**
 - for the country-specific correction coefficients: see Work Programme 2018-2020 (available on the [Participant Portal Reference Documents](#) page)

[additional OPTION for beneficiaries/linked third parties that have opted to use the unit cost (in the proposal/with an amendment): For the following beneficiaries/linked third parties, the amounts per unit (hourly rate) are fixed as follows:

- beneficiary/linked third party [short name]: EUR [insert amount]
 - beneficiary/linked third party [short name]: EUR [insert amount]
- [same for other beneficiaries/linked third parties, if necessary]]

Estimated number of units: see Annex 2

Energy efficiency measures unit cost

2. Costs for energy efficiency measures in buildings

Unit: m² of eligible ‘conditioned’ (i.e. built or refurbished) floor area

Amount per unit*: see (for each beneficiary/linked third party and BEST table) the ‘unit cost table’ attached

* Amount calculated as follows:
{EUR 0.1 x estimated total kWh saved per m² per year x 10}

Estimated number of units: see (for each beneficiary/linked third party and BEST table) the ‘unit cost table’ attached

Unit cost table (energy efficiency measures unit cost)¹

Short name beneficiary/linked third party	BEST No	Amount per unit	Estimated No of units	Total unit cost (cost per unit x estimated no of units)

¹ Data from the ‘building energy specification table (BEST)’ that is part of the proposal and Annex 1.

Research infrastructure unit cost

3. Access costs for providing trans-national access to research infrastructure

Units²: see (for each access provider and installation) the ‘unit cost table’ attached

Amount per unit^{*}: see (for each access provider and installation) the ‘unit cost table’ attached

* Amount calculated as follows:

$$\frac{\text{average annual total access cost to the installation (over past two years)}^3}{\text{average annual total quantity of access to the installation (over past two years)}^4}$$

Estimated number of units: see (for each access provider and installation) the ‘unit cost table’ attached

Unit cost table (access to research infrastructure unit cost)⁵

Short name access provider	Short name infrastru cture	Installation		Unit of access	Amount per unit	Estimated No of units	Total unit cost (cost per unit x estimated no of units)
		No	Short name				

Clinical studies unit cost

4. Costs for clinical studies

Units: patients/subjects that participate in the clinical study

Amount per unit^{*}: see (for each sequence (if any), clinical study and beneficiary/linked third party) the ‘unit cost table’ attached

* Amount calculated, for the cost components of each task, as follows:

For **personnel costs**:

For personnel costs of doctors: ‘average hourly cost for doctors’, i.e.:

{certified or auditable total personnel costs for doctors for year N-1

{ 1720 * number of full-time-equivalent for doctors for year N-1 }

multiplied by

estimated number of hours to be worked by doctors for the task (per participant)}

For personnel costs of other medical personnel: ‘average hourly cost for other medical personnel’, i.e.:

{certified or auditable total personnel costs for other medical personnel for year N-1

{ 1720 * number of full-time-equivalent for other medical personnel for year N-1 }

² Unit of access (e.g. beam hours, weeks of access, sample analysis) fixed by the access provider in proposal.

³ In exceptional and duly justified cases, the Commission/Agency may agree to a different reference period.

⁴ In exceptional and duly justified cases, the Commission/Agency may agree to a different reference period.

⁵ Data from the ‘table on estimated costs/quantity of access to be provided’ that is part of the proposal and Annex 1.

H2020 Templates: Annex 2a (Additional information on the estimated budget)

multiplied by
estimated number of hours to be worked by other medical personnel for the task (per participant)}

For personnel costs of technical personnel: 'average hourly cost for technical personnel', i.e.:

$$\frac{\{\text{certified or auditable total personnel costs for technical personnel for year N-1}\}}{\{1720 * \text{number of full-time-equivalent for technical personnel for year N-1}\}}$$

multiplied by
estimated number of hours to be worked by technical personnel for the task (per participant)}

'total personnel costs' means actual salaries + actual social security contributions + actual taxes and other costs included in the remuneration, provided they arise from national law or the employment contract/equivalent appointing act

For **consumables**:

For each cost item: 'average price of the consumable', i.e.:

$$\frac{\{\{\text{certified or auditable total costs of purchase of the consumable in year N-1}\}}{\text{total number of items purchased in year N-1}\}}$$

multiplied by
estimated number of items to be used for the task (per participant)}

'total costs of purchase of the consumable' means total value of the supply contracts (including related duties, taxes and charges such as non-deductible VAT) concluded by the beneficiary for the consumable delivered in year N-1, provided the contracts were awarded according to the principle of best value- for-money and without any conflict of interests

For **medical equipment**:

For each cost item: 'average cost of depreciation and directly related services per unit of use', i.e.:

$$\frac{\{\{\text{certified or auditable total depreciation costs in year N-1} + \text{certified or auditable total costs of purchase of services in year N-1 for the category of equipment concerned}\}}{\text{total capacity in year N-1}}$$

multiplied by
estimated number of units of use of the equipment for the task (per participant)}

'total depreciation costs' means total depreciation allowances as recorded in the beneficiary's accounts of year N-1 for the category of equipment concerned, provided the equipment was purchased according to the principle of best value for money and without any conflict of interests + total costs of renting or leasing contracts (including related duties, taxes and charges such as non-deductible VAT) in year N-1 for the category of equipment concerned, provided they do not exceed the depreciation costs of similar equipment and do not include finance fees

For **services**:

For each cost item: 'average cost of the service per study participant', i.e.:

$$\frac{\{\text{certified or auditable total costs of purchase of the service in year N-1}\}}{\text{total number of patients or subjects included in the clinical studies for which the service was delivered in year N-1}\}}$$

'total costs of purchase of the service' means total value of the contracts concluded by the beneficiary (including related duties, taxes and charges such as non-deductible VAT) for the specific service delivered in year N-1 for the conduct of clinical studies, provided the contracts were awarded according to the principle of best value for money and without any conflict of interests

For **indirect costs**:

$$\{\{\{\text{cost component 'personnel costs'} + \text{cost component 'consumables'} + \text{cost component 'medical equipment'}\}\}$$

minus

$$\{\text{costs of in-kind contributions provided by third parties which are not used on the beneficiary's premises} + \text{costs of providing financial support to third parties (if any)}\}$$

multiplied by

$$25\% \}$$

H2020 Templates: Annex 2a (Additional information on the estimated budget)

The estimation of the resources to be used must be done on the basis of the study protocol and must be the same for all beneficiaries/linked third parties/third parties involved.

The year N-1 to be used is the last closed financial year at the time of submission of the grant application.

Estimated number of units: see (for each clinical study and beneficiary/linked third party) the 'unit cost table' attached

Unit cost table: clinical studies unit cost⁶

Task, Direct cost categories	Resource per patient	Costs year N-1 Beneficiary 1 [short name]	Costs year N-1 Linked third party 1a [short name]	Costs year N-1 Beneficiary 2 [short name]	Costs year N-1 Linked third party 2a [short name]	Costs year N-1 Third party giving in-kind contributions 1 [short name]
Sequence No. 1						
Task No. 1 Blood sample						
(a) Personnel costs: - Doctors	n/a					
- Other Medical Personnel	Phlebotomy (nurse), 10 minutes	8,33 EUR	11,59 EUR	10,30 EUR	11,00 EUR	9,49 EUR
- Technical Personnel	Sample Processing (lab technician), 15 minutes	9,51 EUR	15,68 EUR	14,60 EUR	15,23 EUR	10,78 EUR
(b) Costs of consumables:	Syringe	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
	Cannula	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
	Blood container	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
(c) Costs of medical equipment:	Use of -80° deep freezer, 60 days	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
	Use of centrifuge, 15 minutes	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
(d) Costs of services	Cleaning of XXX	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
(e) Indirect costs (25% flat-rate)		XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
Task No. 2						
...						
Amount per unit (unit cost sequence 1):		XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
Sequence No. 2						
Task No. 1						

⁶ Same table as in proposal and Annex 1.

H2020 Templates: Annex 2a (Additional information on the estimated budget)

XXX						
(a) Personnel costs:						
- Doctors	XXX	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
- Other Medical Personnel	XXX	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
- Technical Personnel	XXX	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
(b) Costs of consumables:	XXX	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
	XXX	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
	XXX	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
(c) Costs of medical equipment:	XXX	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
	XXX	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
(d) Costs of services	XXX	XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
(e) Indirect costs (25% flat-rate)		XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
Task No. 2						
...						
Amount per unit (unit cost sequence 2):		XX EUR	XX EUR	XX EUR	XX EUR	XX EUR
...						
Amount per unit (unit cost entire study):		XX EUR	XX EUR	XX EUR	XX EUR	XX EUR

ACCESSION FORM FOR BENEFICIARIES

UNIFLY (UNIFLY), established in LUCHTHAVENL 7A UNIT 6 AIRPORT BUSINESS CENTER, ANTWERPEN DEURNE 2100, Belgium, VAT number: BE0635520937, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

hereby agrees

to become beneficiary No ('2')

in Grant Agreement No 783261 ('the Agreement')

between THALES LAS FRANCE SAS and the Single European Sky ATM Research Joint Undertaking ('the JU'),

for the action entitled 'U-Space Initial Services (USIS)'.

and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

DIRECTION DES SERVICES DE LA NAVIGATION AERIENNE (DSNA), established in 50 RUE HENRY FARMAN, PARIS 75720, France, VAT number: FR29120064019, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

hereby agrees

to become beneficiary No ('3')

in Grant Agreement No 783261 ('the Agreement')

between THALES LAS FRANCE SAS and the Single European Sky ATM Research Joint Undertaking ('the JU'),

for the action entitled 'U-Space Initial Services (USIS)'.

and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

ACCESSION FORM FOR BENEFICIARIES

ALTAMETRIS (ALTAMETRIS), established in 21 AVENUE DU STADE DE FRANCE, SAINT-DENIS LA PLAINE 93210, France, VAT number: FR09828154377, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

hereby agrees

to become beneficiary No ('4')

in Grant Agreement No 783261 ('the Agreement')

between THALES LAS FRANCE SAS and the Single European Sky ATM Research Joint Undertaking ('the JU'),

for the action entitled 'U-Space Initial Services (USIS)'.

and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

HUNGAROCONTROL MAGYAR LEGIFORGALMISZOLGALAT ZARTKORUEN MUKODO RESZVENYTARSASAG (HC), established in IGLO UTCA 33 35, BUDAPEST 1185, Hungary, VAT number: HU13851325, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

hereby agrees

to become beneficiary No ('5')

in Grant Agreement No 783261 ('the Agreement')

between THALES LAS FRANCE SAS and the Single European Sky ATM Research Joint Undertaking ('the JU'),

for the action entitled 'U-Space Initial Services (USIS)'.

and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

ANNEX 3

ACCESSION FORM FOR BENEFICIARIES

DFS DEUTSCHE FLUGSICHERUNG GMBH (DFS), established in AM DFS CAMPUS 10, LANGEN 63225, Germany, VAT number: DE114110232, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

hereby agrees

to become beneficiary No ('6')

in Grant Agreement No 783261 ('the Agreement')

between THALES LAS FRANCE SAS and the Single European Sky ATM Research Joint Undertaking ('the JU'),

for the action entitled 'U-Space Initial Services (USIS)'.

and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE

For the beneficiary

ACCESSION FORM FOR BENEFICIARIES

ECOLE NATIONALE DE L AVIATION CIVILE (ENAC), established in AVENUE EDOUARD BELIN 7, TOULOUSE 31400, France, VAT number: FR57193112562, ('the beneficiary'), represented for the purpose of signing this Accession Form by the undersigned,

hereby agrees

to become beneficiary No ('7')

in Grant Agreement No 783261 ('the Agreement')

between THALES LAS FRANCE SAS **and** the Single European Sky ATM Research Joint Undertaking ('the JU'),

for the action entitled 'U-Space Initial Services (USIS)'.


and mandates

the coordinator to submit and sign in its name and on its behalf any **amendments** to the Agreement, in accordance with Article 55.

By signing this Accession Form, the beneficiary accepts the grant and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out.

SIGNATURE


For the beneficiary

 print
format A4
landscape

MODEL ANNEX 4 FOR H2020 GENERAL MGA — MULTI

FINANCIAL STATEMENT FOR [BENEFICIARY [name]/ LINKED THIRD PARTY [name]] FOR REPORTING PERIOD [reporting period]																	
Eligible ¹ costs (per budget category)													Receipts	EU contribution		Additional information	
A. Direct personnel costs		B. Direct costs of subcontracting	[C. Direct costs of fin. support]	D. Other direct costs		E. Indirect costs ²	[F. Costs of ...]			Total costs	Receipts	Reimbursement rate %	Maximum EU contribution ³	Requested EU contribution			
A.1 Employees (or equivalent)		A.4 SME owners without salary		[C.1 Financial support]	D.1 Travel	[D.4 Costs of large research infrastructure]	[F.1 Costs of ...]		[F.1 Costs of ...]		Receipts of the action, to be reported in the last reporting period, according to Article 5.3.3						
A.2 Natural persons under direct contract		A.5 Beneficiaries that are natural persons without salary					[C.2 Prizes]	D.2 Equipment									
A.3 Seconded persons [A.6 Personnel for providing access]															D.3 Other goods and		
Form of costs ⁴	Actual	Unit		Actual	Actual	Actual	Actual	Flat-rate ⁵ 25% n=0,25 x (a+b+c+f+g) [Unit][Lump sum]	Unit								
	a	Total b		No hours	Total c	d	[e]	f	[g]		Total [i1]	Total [i2]	a+b+c+d+f+g+e1+f+g	k	l	m	n
[short name beneficiary /linked third party]																	

The beneficiary/linked third party hereby confirms that:
The information provided is complete, reliable and true.
The costs declared are eligible (see Article 6).
The costs can be substantiated by adequate records and supporting documentation that will be produced upon request or in the context of checks, reviews, audits and investigations (see Articles 17, 18 and 22).
For the last reporting period: that all the receipts have been declared (see Article 5.3.3).

 Please declare all eligible costs, even if they exceed the amounts indicated in the estimated budget (see Annex 2). Only amounts that were declared in your individual financial statements can be taken into account later on, in order to replace other costs that are found to be ineligible.

¹ See Article 6 for the eligibility conditions

² The indirect costs claimed must be free of any amounts covered by an operating grant (received under any EU or Euratom funding programme; see Article 6.2.E). If you have received an operating grant during this reporting period, you cannot claim any indirect costs.

³ This is the *theoretical* amount of EU contribution that the system calculates automatically (by multiplying the reimbursement rate by the total costs declared). The amount you request (in the column 'requested EU contribution') may be less

⁴ See Article 5 for the form of costs

⁵ Flat rate : 25% of eligible direct costs, from which are excluded: direct costs of subcontracting, costs of in-kind contributions not used on premises, direct costs of financial support, and unit costs declared under budget category F if they include indirect costs (see Article 6.2.E)

⁶ Only specific unit costs that do not include indirect costs

ANNEX 5

MODEL FOR THE CERTIFICATE ON THE FINANCIAL STATEMENTS

- For options [*in italics in square brackets*]: choose the applicable option. Options not chosen should be deleted.
- For fields in [grey in square brackets]: enter the appropriate data

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TERMS OF REFERENCE FOR AN INDEPENDENT REPORT OF FACTUAL FINDINGS ON COSTS DECLARED UNDER A GRANT AGREEMENT FINANCED UNDER THE HORIZON 2020 RESEARCH FRAMEWORK PROGRAMME

INDEPENDENT REPORT OF FACTUAL FINDINGS ON COSTS DECLARED UNDER A GRANT AGREEMENT FINANCED UNDER THE HORIZON 2020 RESEARCH FRAMEWORK PROGRAMME

Terms of Reference for an Independent Report of Factual Findings on costs declared under a Grant Agreement financed by [Clean Sky 2] [Bio Based Industries][ECSEL][Fuel Cells and Hydrogen 2][Innovative Medicines Initiative 2][Single European Sky Air Traffic Management Research (SESAR)][Shift2Rail] JU under the Horizon 2020 Research and Innovation Framework Programme

This document sets out the ‘**Terms of Reference (ToR)**’ under which

[OPTION 1: [insert name of the beneficiary] (*‘the Beneficiary’*)] [OPTION 2: [insert name of the linked third party] (*‘the Linked Third Party’*), third party linked to the Beneficiary [insert name of the beneficiary] (*‘the Beneficiary’*)]

agrees to engage

[insert legal name of the auditor] (*‘the Auditor’*)

to produce an independent report of factual findings (*‘the Report’*) concerning the Financial Statement(s)¹ drawn up by the [Beneficiary] [Linked Third Party] for the Horizon 2020 grant agreement [insert number of the grant agreement, title of the action, acronym and duration from/to] (*‘the Agreement’*), and

to issue a Certificate on the Financial Statements’ (*‘CFS’*) referred to in Article 20.4 of the Agreement based on the compulsory reporting template stipulated by the European Commission (*‘the Commission’*).

The Agreement has been concluded under the Horizon 2020 Research and Innovation Framework Programme (H2020) between the Beneficiary and the [Clean Sky 2][Bio Based Industries][ECSEL][Fuel Cells and Hydrogen 2][Innovative Medicines Initiative 2][Single European Sky Air Traffic Management Research (SESAR)][Shift2Rail] Joint Undertaking (*“the JU”*).

The JU is mentioned as a signatory of the Agreement with the Beneficiary only. The JU is not a party to this engagement.

1.1 Subject of the engagement

The coordinator must submit to the JU the final report within 60 days following the end of the last reporting period which should include, amongst other documents, a CFS for each beneficiary and for each linked third party that requests a total contribution of EUR 325 000 or more, as reimbursement of actual costs and unit costs calculated on the basis of its usual cost accounting practices (see Article 20.4 of the Agreement). The CFS must cover all reporting periods of the beneficiary or linked third party indicated above.

The Beneficiary must submit to the coordinator the CFS for itself and for its linked third party(ies), if the CFS must be included in the final report according to Article 20.4 of the Agreement.

The CFS is composed of two separate documents:

- The Terms of Reference (*‘the ToR’*) to be signed by the [Beneficiary] [Linked Third Party] and the Auditor;

¹ By which costs under the Agreement are declared (see template ‘Model Financial Statements’ in Annex 4 to the Grant Agreement).

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- The Auditor's Independent Report of Factual Findings ('the Report') to be issued on the Auditor's letterhead, dated, stamped and signed by the Auditor (or the competent public officer) which includes the agreed-upon procedures ('the Procedures') to be performed by the Auditor, and the standard factual findings ('the Findings') to be confirmed by the Auditor.

If the CFS must be included in the final report according to Article 20.4 of the Agreement, the request for payment of the balance relating to the Agreement cannot be made without the CFS. However, the payment for reimbursement of costs covered by the CFS does not preclude the JU, the Commission, the European Anti-Fraud Office and the European Court of Auditors from carrying out checks, reviews, audits and investigations in accordance with Article 22 of the Agreement.

1.2 Responsibilities

The *[Beneficiary]* *[Linked Third Party]*:

- must draw up the Financial Statement(s) for the action financed by the Agreement in compliance with the obligations under the Agreement. The Financial Statement(s) must be drawn up according to the *[Beneficiary's]* *[Linked Third Party's]* accounting and book-keeping system and the underlying accounts and records;
- must send the Financial Statement(s) to the Auditor;
- is responsible and liable for the accuracy of the Financial Statement(s);
- is responsible for the completeness and accuracy of the information provided to enable the Auditor to carry out the Procedures. It must provide the Auditor with a written representation letter supporting these statements. The written representation letter must state the period covered by the statements and must be dated;
- accepts that the Auditor cannot carry out the Procedures unless it is given full access to the *[Beneficiary's]* *[Linked Third Party's]* staff and accounting as well as any other relevant records and documentation.

The Auditor:

- *[Option 1 by default: is qualified to carry out statutory audits of accounting documents in accordance with Directive 2006/43/EC of the European Parliament and of the Council of 17 May 2006 on statutory audits of annual accounts and consolidated accounts, amending Council Directives 78/660/EEC and 83/349/EEC and repealing Council Directive 84/253/EEC or similar national regulations].*
- *[Option 2 if the Beneficiary or Linked Third Party has an independent Public Officer: is a competent and independent Public Officer for which the relevant national authorities have established the legal capacity to audit the Beneficiary].*
- *[Option 3 if the Beneficiary or Linked Third Party is an international organisation: is an [internal] [external] auditor in accordance with the internal financial regulations and procedures of the international organisation].*

The Auditor:

- must be independent from the Beneficiary *[and the Linked Third Party]*, in particular, it must not have been involved in preparing the *[Beneficiary's]* *[Linked Third Party's]* Financial Statement(s);
- must plan work so that the Procedures may be carried out and the Findings may be assessed;
- must adhere to the Procedures laid down and the compulsory report format;
- must carry out the engagement in accordance with this ToR;
- must document matters which are important to support the Report;
- must base its Report on the evidence gathered;
- must submit the Report to the *[Beneficiary]* *[Linked Third Party]*.

The Commission sets out the Procedures to be carried out by the Auditor. The Auditor is not responsible for their suitability or pertinence. As this engagement is not an assurance engagement, the Auditor does not provide an audit opinion or a statement of assurance.

1.3 Applicable Standards

The Auditor must comply with these Terms of Reference and with²:

- the International Standard on Related Services ('ISRS') 4400 *Engagements to perform Agreed-upon Procedures regarding Financial Information* as issued by the International Auditing and Assurance Standards Board (IAASB);
- the *Code of Ethics for Professional Accountants* issued by the International Ethics Standards Board for Accountants (IESBA). Although ISRS 4400 states that independence is not a requirement for engagements to carry out agreed-upon procedures, the JU requires that the Auditor also complies with the Code's independence requirements.

The Auditor's Report must state that there is no conflict of interests in establishing this Report between the Auditor and the Beneficiary *[and the Linked Third Party]*, and must specify - if the service is invoiced - the total fee paid to the Auditor for providing the Report.

1.4 Reporting

The Report must be written in the language of the Agreement (see Article 20.7).

Under Article 22 of the Agreement, the JU, the Commission, the European Anti-Fraud Office and the Court of Auditors have the right to audit any work that is carried out under the action and for which costs are declared from the European Union budget. This includes work related to this engagement. The Auditor must provide access to all working papers (e.g. recalculation of hourly rates, verification of the time declared for the action) related to this assignment if the JU, the Commission, the European Anti-Fraud Office or the European Court of Auditors requests them.

1.5 Timing

The Report must be provided by [dd Month yyyy].

1.6 Other terms

[The [Beneficiary] [Linked Third Party] and the Auditor can use this section to agree other specific terms, such as the Auditor's fees, liability, applicable law, etc. Those specific terms must not contradict the terms specified above.]

[legal name of the Auditor]	[legal name of the [Beneficiary][Linked Third Party]]
[name & function of authorised representative]	[name & function of authorised representative]
[dd Month yyyy]	[dd Month yyyy]
Signature of the Auditor	Signature of the [Beneficiary][Linked Third Party]

² Supreme Audit Institutions applying INTOSAI-standards may carry out the Procedures according to the corresponding International Standards of Supreme Audit Institutions and code of ethics issued by INTOSAI instead of the International Standard on Related Services ('ISRS') 4400 and the Code of Ethics for Professional Accountants issued by the IAASB and the IESBA.



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**Independent Report of Factual Findings on costs declared
under a grant agreement financed by the [Clean Sky 2] [Bio Based Industries][ECSEL][Fuel
Cells and Hydrogen 2][Innovative Medicines Initiative 2][Single European Sky Air Traffic
Management Research (SESAR)][Shift2Rail] JU under the Horizon 2020 Research and
Innovation Framework Programme**

(To be printed on the Auditor's letterhead)

To

[name of contact person(s)], [Position]
[[Beneficiary's] [Linked Third Party's] name]
[Address]
[dd Month yyyy]

Dear [Name of contact person(s)],

As agreed under the terms of reference dated [dd Month yyyy]

with [OPTION 1: [insert name of the beneficiary] ('the Beneficiary')] [OPTION 2: [insert name of
the linked third party] ('the Linked Third Party'), third party linked to the Beneficiary [insert name of
the beneficiary] ('the Beneficiary')],

we

[name of the auditor] ('the Auditor'),

established at

[full address/city/state/province/country],

represented by

[name and function of an authorised representative],

have carried out the procedures agreed with you regarding the costs declared in the Financial
Statement(s)³ of the [Beneficiary] [Linked Third Party] concerning the grant agreement
[insert grant agreement reference: number, title of the action and acronym] ('the Agreement'),

with a total cost declared of
[total amount] EUR,

and a total of actual costs and 'direct personnel costs declared as unit costs calculated in accordance
with the [Beneficiary's] [Linked Third Party's] usual cost accounting practices' declared of

[sum of total actual costs and total direct personnel costs declared as unit costs calculated in
accordance with the [Beneficiary's] [Linked Third Party's] usual cost accounting practices] EUR

and **hereby provide our Independent Report of Factual Findings ('the Report')** using the
compulsory report format agreed with you.

The Report

³ By which the Beneficiary declares costs under the Agreement (see template 'Model Financial Statement' in
Annex 4 to the Agreement).

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Our engagement was carried out in accordance with the terms of reference ('the ToR') appended to this Report. The Report includes the agreed-upon procedures ('the Procedures') carried out and the standard factual findings ('the Findings') examined.

The Procedures were carried out solely to assist the JU in evaluating whether the [Beneficiary's] [Linked Third Party's] costs in the accompanying Financial Statement(s) were declared in accordance with the Agreement. The JU draws its own conclusions from the Report and any additional information it may require.

The scope of the Procedures was defined by the European Commission ('the Commission'). Therefore, the Auditor is not responsible for their suitability or pertinence. Since the Procedures carried out constitute neither an audit nor a review made in accordance with International Standards on Auditing or International Standards on Review Engagements, the Auditor does not give a statement of assurance on the Financial Statements.

Had the Auditor carried out additional procedures or an audit of the [Beneficiary's] [Linked Third Party's] Financial Statements in accordance with International Standards on Auditing or International Standards on Review Engagements, other matters might have come to its attention and would have been included in the Report.

Not applicable Findings

We examined the Financial Statement(s) stated above and considered the following Findings not applicable:

Explanation (to be removed from the Report):

If a Finding was not applicable, it must be marked as 'N.A.' ('Not applicable') in the corresponding row on the right-hand column of the table and means that the Finding did not have to be corroborated by the Auditor and the related Procedure(s) did not have to be carried out.

The reasons of the non-application of a certain Finding must be obvious i.e.

- i) if no cost was declared under a certain category then the related Finding(s) and Procedure(s) are not applicable;*
- ii) if the condition set to apply certain Procedure(s) are not met the related Finding(s) and those Procedure(s) are not applicable. For instance, for 'beneficiaries with accounts established in a currency other than euro' the Procedure and Finding related to 'beneficiaries with accounts established in euro' are not applicable. Similarly, if no additional remuneration is paid, the related Finding(s) and Procedure(s) for additional remuneration are not applicable.*

List here all Findings considered not applicable for the present engagement and explain the reasons of the non-applicability.

....

Exceptions

Apart from the exceptions listed below, the [Beneficiary] [Linked Third Party] provided the Auditor all the documentation and accounting information needed by the Auditor to carry out the requested Procedures and evaluate the Findings.

Explanation (to be removed from the Report):

- If the Auditor was not able to successfully complete a procedure requested, it must be marked as 'E' ('Exception') in the corresponding row on the right-hand column of the table. The reason such as the inability to reconcile key information or the unavailability of data that prevents the Auditor from carrying out the Procedure must be indicated below.*
- If the Auditor cannot corroborate a standard finding after having carried out the corresponding procedure, it must also be marked as 'E' ('Exception') and, where possible, the reasons why the Finding was not fulfilled and its possible impact must be explained here below.*

List here any exceptions and add any information on the cause and possible consequences of each exception, if known. If the exception is quantifiable, include the corresponding amount.

....

Example (to be removed from the Report):

1. *The Beneficiary was unable to substantiate the Finding number 1 on ... because ...*
2. *Finding number 30 was not fulfilled because the methodology used by the Beneficiary to calculate unit costs was different from the one approved by the Commission. The differences were as follows: ...*
3. *After carrying out the agreed procedures to confirm the Finding number 31, the Auditor found a difference of _____ EUR. The difference can be explained by ...*

Further Remarks

In addition to reporting on the results of the specific procedures carried out, the Auditor would like to make the following general remarks:

Example (to be removed from the Report):

1. *Regarding Finding number 8 the conditions for additional remuneration were considered as fulfilled because ...*
2. *In order to be able to confirm the Finding number 15 we carried out the following additional procedures:*

Use of this Report

This Report may be used only for the purpose described in the above objective. It was prepared solely for the confidential use of the [Beneficiary] [Linked Third Party], the JU and the Commission, and only to be submitted to the JU in connection with the requirements set out in Article 20.4 of the Agreement. The Report may not be used by the [Beneficiary] [Linked Third Party], by the JU or the Commission for any other purpose, nor may it be distributed to any other parties. The JU or the Commission may only disclose the Report to authorised parties, in particular to the European Anti-Fraud Office (OLAF) and the European Court of Auditors.

This Report relates only to the Financial Statement(s) submitted to the JU by the [Beneficiary] [Linked Third Party] for the Agreement. Therefore, it does not extend to any other of the [Beneficiary's] [Linked Third Party's] Financial Statement(s).

There was no conflict of interest⁴ between the Auditor and the Beneficiary [and Linked Third Party] in establishing this Report. The total fee paid to the Auditor for providing the Report was EUR _____ (including EUR _____ of deductible VAT).

We look forward to discussing our Report with you and would be pleased to provide any further information or assistance.

⁴ A conflict of interest arises when the Auditor's objectivity to establish the certificate is compromised in fact or in appearance when the Auditor for instance:

- was involved in the preparation of the Financial Statements;
- stands to benefit directly should the certificate be accepted;
- has a close relationship with any person representing the beneficiary;
- is a director, trustee or partner of the beneficiary; or
- is in any other situation that compromises his or her independence or ability to establish the certificate impartially.

Grant Agreement number: [insert number] [insert acronym] [insert call identifier]  Associated with document Ref. Ares(2018)6041320 - 26/11/2018

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[legal name of the Auditor]

[name and function of an authorised representative]

[dd Month yyyy]

Signature of the Auditor

Agreed-upon procedures to be performed and standard factual findings to be confirmed by the Auditor

The European Commission ('the Commission') reserves the right to i) provide the auditor with additional guidance regarding the procedures to be followed or the facts to be ascertained and the way in which to present them (this may include sample coverage and findings) or to ii) change the procedures, by notifying the Beneficiary in writing. The procedures carried out by the auditor to confirm the standard factual finding are listed in the table below.

If this certificate relates to a Linked Third Party, any reference here below to 'the Beneficiary' is to be considered as a reference to 'the Linked Third Party'.

The 'result' column has three different options: 'C', 'E' and 'N.A.':

- 'C' stands for 'confirmed' and means that the auditor can confirm the 'standard factual finding' and, therefore, there is no exception to be reported.
- 'E' stands for 'exception' and means that the Auditor carried out the procedures but cannot confirm the 'standard factual finding', or that the Auditor was not able to carry out a specific procedure (e.g. because it was impossible to reconcile key information or data were unavailable),
- 'N.A.' stands for 'not applicable' and means that the Finding did not have to be examined by the Auditor and the related Procedure(s) did not have to be carried out. The reasons of the non-application of a certain Finding must be obvious i.e. i) if no cost was declared under a certain category then the related Finding(s) and Procedure(s) are not applicable; ii) if the condition set to apply certain Procedure(s) are not met then the related Finding(s) and Procedure(s) are not applicable. For instance, for 'beneficiaries with accounts established in a currency other than the euro' the Procedure related to 'beneficiaries with accounts established in euro' is not applicable. Similarly, if no additional remuneration is paid, the related Finding(s) and Procedure(s) for additional remuneration are not applicable.

Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
A	ACTUAL PERSONNEL COSTS AND UNIT COSTS CALCULATED BY THE BENEFICIARY IN ACCORDANCE WITH ITS USUAL COST ACCOUNTING PRACTICE		
	<p>The Auditor draws a sample of persons whose costs were declared in the Financial Statement(s) to carry out the procedures indicated in the consecutive points of this section A.</p> <p><i>(The sample should be selected randomly so that it is representative. Full coverage is required if there are fewer than 10 people (including employees, natural persons working under a direct contract and personnel seconded by a third party), otherwise the sample should have a minimum of 10 people, or 10% of the total, whichever number is the highest)</i></p>		

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Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
	The Auditor sampled _____ people out of the total of _____ people.		
A.1	PERSONNEL COSTS <u>For the persons included in the sample and working under an employment contract or equivalent act (general procedures for individual actual personnel costs and personnel costs declared as unit costs)</u> To confirm standard factual findings 1-5 listed in the next column, the Auditor reviewed following information/documents provided by the Beneficiary: <ul style="list-style-type: none"> ○ a list of the persons included in the sample indicating the period(s) during which they worked for the action, their position (classification or category) and type of contract; ○ the payslips of the employees included in the sample; ○ reconciliation of the personnel costs declared in the Financial Statement(s) with the accounting system (project accounting and general ledger) and payroll system; ○ information concerning the employment status and employment conditions of personnel included in the sample, in particular their employment contracts or equivalent; ○ the Beneficiary's usual policy regarding payroll matters (e.g. salary policy, overtime policy, variable pay); ○ applicable national law on taxes, labour and social security and ○ any other document that supports the personnel costs declared. The Auditor also verified the eligibility of all components of the retribution (see Article 6 GA)	1) The employees were i) directly hired by the Beneficiary in accordance with its national legislation, ii) under the Beneficiary's sole technical supervision and responsibility and iii) remunerated in accordance with the Beneficiary's usual practices.	
		2) Personnel costs were recorded in the _____ Beneficiary's accounts/payroll system.	
		3) Costs were adequately supported and reconciled with the accounts and payroll records.	
		4) Personnel costs did not contain any ineligible elements.	

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Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
	and recalculated the personnel costs for employees included in the sample.	5) There were no discrepancies between the personnel costs charged to the action and the costs recalculated by the Auditor.	
	<p><i>Further procedures if ‘additional remuneration’ is paid</i></p> <p>To confirm standard factual findings 6-9 listed in the next column, the Auditor:</p> <ul style="list-style-type: none"> ○ reviewed relevant documents provided by the Beneficiary (legal form, legal/statutory obligations, the Beneficiary’s usual policy on additional remuneration, criteria used for its calculation...); ○ recalculated the amount of additional remuneration eligible for the action based on the supporting documents received (full-time or part-time work, exclusive or non-exclusive dedication to the action, etc.) to arrive at the applicable FTE/year and pro-rata rate (see data collected in the course of carrying out the procedures under A.2 ‘Productive hours’ and A.4 ‘Time recording system’). <p><i>IF ANY PART OF THE REMUNERATION PAID TO THE EMPLOYEE IS NOT MANDATORY ACCORDING TO THE NATIONAL LAW OR THE EMPLOYMENT CONTRACT ("ADDITIONAL REMUNERATION") AND IS ELIGIBLE UNDER THE PROVISIONS OF ARTICLE 6.2.A.1, THIS CAN BE CHARGED AS ELIGIBLE COST TO THE ACTION UP TO THE FOLLOWING AMOUNT:</i></p> <p>(A) <i>IF THE PERSON WORKS FULL TIME AND EXCLUSIVELY ON THE ACTION DURING THE FULL YEAR: UP TO EUR 8 000/YEAR;</i></p> <p>(B) <i>IF THE PERSON WORKS EXCLUSIVELY ON THE ACTION BUT NOT FULL-TIME OR NOT FOR THE FULL YEAR: UP TO THE CORRESPONDING PRO-RATA AMOUNT OF EUR 8 000, OR</i></p>	<p>6) The Beneficiary paying “additional remuneration” was a non-profit legal entity.</p> <p>7) The amount of additional remuneration paid corresponded to the Beneficiary’s usual remuneration practices and was consistently paid whenever the same kind of work or expertise was required.</p> <p>8) The criteria used to calculate the additional remuneration were objective and generally applied by the Beneficiary regardless of the source of funding used.</p> <p>9) The amount of additional remuneration included in the personnel costs charged to the action was capped at EUR 8,000</p>	

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Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
	(C) IF THE PERSON DOES NOT WORK EXCLUSIVELY ON THE ACTION: UP TO A PRO-RATA AMOUNT CALCULATED IN ACCORDANCE TO ARTICLE 6.2.A.1.	per FTE/year (up to the equivalent pro-rata amount if the person did not work on the action full-time during the year or did not work exclusively on the action).	
	<p><i>Additional procedures in case “unit costs calculated by the Beneficiary in accordance with its usual cost accounting practices” is applied:</i></p> <p>Apart from carrying out the procedures indicated above to confirm standard factual findings 1-5 and, if applicable, also 6-9, the Auditor carried out following procedures to confirm standard factual findings 10-13 listed in the next column:</p> <ul style="list-style-type: none"> obtained a description of the Beneficiary's usual cost accounting practice to calculate unit costs;. reviewed whether the Beneficiary's usual cost accounting practice was applied for the Financial Statements subject of the present CFS; verified the employees included in the sample were charged under the correct category (in accordance with the criteria used by the Beneficiary to establish personnel categories) by reviewing the contract/HR-record or analytical accounting records; verified that there is no difference between the total amount of personnel costs used in calculating the cost per unit and the total amount of personnel costs recorded in the statutory accounts; verified whether actual personnel costs were adjusted on the basis of budgeted or estimated elements and, if so, verified whether those elements used are actually relevant for the calculation, objective and supported by documents. 	<p>10) The personnel costs included in the Financial Statement were calculated in accordance with the Beneficiary's usual cost accounting practice. This methodology was consistently used in all H2020 actions.</p> <p>11) The employees were charged under the correct category.</p> <p>12) Total personnel costs used in calculating the unit costs were consistent with the expenses recorded in the statutory accounts.</p> <p>13) Any estimated or budgeted element used by the Beneficiary in its unit-cost calculation were relevant for calculating personnel costs and corresponded to objective and</p>	

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Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
		verifiable information.	
	<p><u>For natural persons included in the sample and working with the Beneficiary under a direct contract other than an employment contract, such as consultants (no subcontractors).</u></p> <p>To confirm standard factual findings 14-18 listed in the next column the Auditor reviewed following information/documents provided by the Beneficiary:</p> <ul style="list-style-type: none"> ○ the contracts, especially the cost, contract duration, work description, place of work, ownership of the results and reporting obligations to the Beneficiary; ○ the employment conditions of staff in the same category to compare costs and; ○ any other document that supports the costs declared and its registration (e.g. invoices, accounting records, etc.). 	<p>14) The natural persons reported to the Beneficiary (worked under the Beneficiary's instructions).</p>	
		15) They worked on the Beneficiary's premises (unless otherwise agreed with the Beneficiary).	
		16) The results of work carried out belong to the Beneficiary.	
		17) Their costs were not significantly different from those for staff who performed similar tasks under an employment contract with the Beneficiary.	
		18) The costs were supported by audit evidence and registered in the accounts.	
	<u>For personnel seconded by a third party and included in the sample (not subcontractors)</u>	19) Seconded personnel reported to the Beneficiary and worked on	

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Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
	<p>To confirm standard factual findings 19-22 listed in the next column, the Auditor reviewed following information/documents provided by the Beneficiary:</p> <ul style="list-style-type: none"> ○ their secondment contract(s) notably regarding costs, duration, work description, place of work and ownership of the results; ○ if there is reimbursement by the Beneficiary to the third party for the resource made available (in-kind contribution against payment): any documentation that supports the costs declared (e.g. contract, invoice, bank payment, and proof of registration in its accounting/payroll, etc.) and reconciliation of the Financial Statement(s) with the accounting system (project accounting and general ledger) as well as any proof that the amount invoiced by the third party did not include any profit; ○ if there is no reimbursement by the Beneficiary to the third party for the resource made available (in-kind contribution free of charge): a proof of the actual cost borne by the Third Party for the resource made available free of charge to the Beneficiary such as a statement of costs incurred by the Third Party and proof of the registration in the Third Party's accounting/payroll; ○ any other document that supports the costs declared (e.g. invoices, etc.). 	the Beneficiary's premises (unless otherwise agreed with the Beneficiary).	
		20) The results of work carried out belong to the Beneficiary.	
		<p><i>If personnel is seconded against payment:</i></p> <p>21) The costs declared were supported with documentation and recorded in the Beneficiary's accounts. The third party did not include any profit.</p>	
		<p><i>If personnel is seconded free of charge:</i></p> <p>22) The costs declared did not exceed the third party's cost as recorded in the accounts of the third party and were supported with documentation.</p>	
A.2	<p>PRODUCTIVE HOURS</p> <p>To confirm standard factual findings 23-28 listed in the next column, the Auditor reviewed relevant documents, especially national legislation, labour agreements and contracts and time records of the persons included in the sample, to verify that:</p>	<p>23) The Beneficiary applied method [choose one option and delete the others]</p> <p>[A: 1720 hours]</p> <p>[B: the 'total number of hours</p>	

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Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
	<ul style="list-style-type: none"> the annual productive hours applied were calculated in accordance with one of the methods described below, the full-time equivalent (FTEs) ratios for employees not working full-time were correctly calculated. <p>If the Beneficiary applied method B, the auditor verified that the correctness in which the total number of hours worked was calculated and that the contracts specified the annual workable hours.</p> <p>If the Beneficiary applied method C, the auditor verified that the ‘annual productive hours’ applied when calculating the hourly rate were equivalent to at least 90 % of the ‘standard annual workable hours’. The Auditor can only do this if the calculation of the standard annual workable hours can be supported by records, such as national legislation, labour agreements, and contracts.</p> <p><i>BENEFICIARY'S PRODUCTIVE HOURS' FOR PERSONS WORKING FULL TIME SHALL BE ONE OF THE FOLLOWING METHODS:</i></p> <p><i>A. 1720 ANNUAL PRODUCTIVE HOURS (PRO-RATA FOR PERSONS NOT WORKING FULL-TIME)</i></p> <p><i>B. THE TOTAL NUMBER OF HOURS WORKED BY THE PERSON FOR THE BENEFICIARY IN THE YEAR (THIS METHOD IS ALSO REFERRED TO AS ‘TOTAL NUMBER OF HOURS WORKED’ IN THE NEXT COLUMN). THE CALCULATION OF THE TOTAL NUMBER OF HOURS WORKED WAS DONE AS FOLLOWS: ANNUAL WORKABLE HOURS OF THE PERSON ACCORDING TO THE EMPLOYMENT CONTRACT, APPLICABLE LABOUR AGREEMENT OR NATIONAL LAW PLUS OVERTIME WORKED MINUS ABSENCES (SUCH AS SICK LEAVE OR SPECIAL LEAVE).</i></p> <p><i>C. THE STANDARD NUMBER OF ANNUAL HOURS GENERALLY APPLIED BY THE BENEFICIARY FOR ITS PERSONNEL IN ACCORDANCE WITH ITS USUAL COST ACCOUNTING PRACTICES (THIS METHOD IS ALSO REFERRED TO AS ‘STANDARD ANNUAL PRODUCTIVE HOURS’ IN THE NEXT COLUMN). THIS NUMBER MUST BE AT LEAST 90% OF THE STANDARD ANNUAL WORKABLE HOURS.</i></p>	worked’] [C: ‘standard annual productive hours’ used correspond to usual accounting practices]	
		24) Productive hours were calculated annually.	
		25) For employees not working full-time the full-time equivalent (FTE) ratio was correctly applied.	
		<p><i>If the Beneficiary applied method B.</i></p> <p>26) The calculation of the number of ‘annual workable hours’, overtime and absences was verifiable based on the documents provided by the Beneficiary.</p> <p>26.1) The Beneficiary calculates the hourly rates per full financial year following procedure A.3 (method B is not allowed for beneficiaries calculating hourly rates per month).</p>	

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Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
	<p><i>‘ANNUAL WORKABLE HOURS’ MEANS THE PERIOD DURING WHICH THE PERSONNEL MUST BE WORKING, AT THE EMPLOYER’S DISPOSAL AND CARRYING OUT HIS/HER ACTIVITY OR DUTIES UNDER THE EMPLOYMENT CONTRACT, APPLICABLE COLLECTIVE LABOUR AGREEMENT OR NATIONAL WORKING TIME LEGISLATION.</i></p>	<p><i>If the Beneficiary applied method C.</i></p> <p>27) The calculation of the number of ‘standard annual workable hours’ was verifiable based on the documents provided by the Beneficiary.</p>	
		<p>28) The ‘annual productive hours’ used for calculating the hourly rate were consistent with the usual cost accounting practices of the Beneficiary and were equivalent to at least 90 % of the ‘annual workable hours’.</p>	
A.3	<p>HOURLY PERSONNEL RATES</p> <p><u>D) For unit costs calculated in accordance to the Beneficiary's usual cost accounting practice (unit costs):</u></p> <p>If the Beneficiary has a "Certificate on Methodology to calculate unit costs " (CoMUC) approved by the Commission, the Beneficiary provides the Auditor with a description of the approved methodology and the Commission’s letter of acceptance. The Auditor verified that the Beneficiary has indeed used the methodology approved. If so, no further verification is necessary.</p> <p>If the Beneficiary does not have a "Certificate on Methodology" (CoMUC) approved by the Commission, or if the methodology approved was not applied, then the Auditor:</p>	<p>29) The Beneficiary applied [<i>choose one option and delete the other</i>]:</p> <p>[Option I: “Unit costs (hourly rates) were calculated in accordance with the Beneficiary’s usual cost accounting practices”]</p> <p>[Option II: Individual hourly rates were applied]</p>	

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Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
	<ul style="list-style-type: none"> ○ reviewed the documentation provided by the Beneficiary, including manuals and internal guidelines that explain how to calculate hourly rates; ○ recalculated the unit costs (hourly rates) of staff included in the sample following the results of the procedures carried out in A.1 and A.2. <p><u>II) For individual hourly rates:</u></p> <p>The Auditor:</p> <ul style="list-style-type: none"> ○ reviewed the documentation provided by the Beneficiary, including manuals and internal guidelines that explain how to calculate hourly rates; ○ recalculated the hourly rates of staff included in the sample (recalculation of all hourly rates if the Beneficiary uses annual rates, recalculation of three months selected randomly for every year and person if the Beneficiary uses monthly rates) following the results of the procedures carried out in A.1 and A.2; ○ (only in case of monthly rates) confirmed that the time spent on parental leave is not deducted, and that, if parts of the basic remuneration are generated over a period longer than a month, the Beneficiary has included only the share which is generated in the month. <p><u>“UNIT COSTS CALCULATED BY THE BENEFICIARY IN ACCORDANCE WITH ITS USUAL COST ACCOUNTING PRACTICES”:</u></p> <p><i>IT IS CALCULATED BY DIVIDING THE TOTAL AMOUNT OF PERSONNEL COSTS OF THE CATEGORY TO WHICH THE EMPLOYEE BELONGS VERIFIED IN LINE WITH PROCEDURE A.1 BY THE NUMBER OF FTE AND THE ANNUAL TOTAL PRODUCTIVE HOURS OF THE SAME CATEGORY CALCULATED BY THE BENEFICIARY IN ACCORDANCE WITH PROCEDURE A.2.</i></p> <p><u>HOURLY RATE FOR INDIVIDUAL ACTUAL PERSONAL COSTS:</u></p> <p><i>IT IS CALCULATED FOLLOWING ONE OF THE TWO OPTIONS BELOW:</i></p> <p><i>A) [OPTION BY DEFAULT] BY DIVIDING THE ACTUAL ANNUAL AMOUNT OF PERSONNEL COSTS OF AN</i></p>	<p><i>For option I concerning unit costs and if the Beneficiary applies the methodology approved by the Commission (CoMUC):</i></p> <p>30) The Beneficiary used the Commission-approved methodology to calculate hourly rates. It corresponded to the organisation's usual cost accounting practices and was applied consistently for all activities irrespective of the source of funding.</p> <p><i>For option I concerning unit costs and if the Beneficiary applies a methodology not approved by the Commission:</i></p> <p>31) The unit costs re-calculated by the Auditor were the same as the rates applied by the Beneficiary.</p> <p><i>For option II concerning individual hourly rates:</i></p> <p>32) The individual rates re-calculated by the Auditor were the same as the rates applied by</p>	

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Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
	<p><i>EMPLOYEE VERIFIED IN LINE WITH PROCEDURE A.1 BY THE NUMBER OF ANNUAL PRODUCTIVE HOURS VERIFIED IN LINE WITH PROCEDURE A.2 (FULL FINANCIAL YEAR HOURLY RATE);</i></p> <p><i>B) BY DIVIDING THE ACTUAL MONTHLY AMOUNT OF PERSONNEL COSTS OF AN EMPLOYEE VERIFIED IN LINE WITH PROCEDURE A.1 BY 1/12 OF THE NUMBER OF ANNUAL PRODUCTIVE HOURS VERIFIED IN LINE WITH PROCEDURE A.2.(MONTHLY HOURLY RATE).</i></p>	<p>the Beneficiary.</p> <p>32.1) The Beneficiary used only one option (per full financial year or per month) throughout each financial year examined.</p>	
A.4	<p>TIME RECORDING SYSTEM</p> <p>To verify that the time recording system ensures the fulfilment of all minimum requirements and that the hours declared for the action were correct, accurate and properly authorised and supported by documentation, the Auditor made the following checks for the persons included in the sample that declare time as worked for the action on the basis of time records:</p> <ul style="list-style-type: none"> ○ description of the time recording system provided by the Beneficiary (registration, authorisation, processing in the HR-system); ○ its actual implementation; ○ time records were signed at least monthly by the employees (on paper or electronically) and authorised by the project manager or another manager; ○ the hours declared were worked within the project period; ○ there were no hours declared as worked for the action if HR-records showed absence due to holidays or sickness (further cross-checks with travels are carried out in B.1 below) ; ○ the hours charged to the action matched those in the time recording system. <p><i>ONLY THE HOURS WORKED ON THE ACTION CAN BE CHARGED. ALL WORKING TIME TO BE CHARGED SHOULD BE RECORDED THROUGHOUT THE DURATION OF THE PROJECT, ADEQUATELY SUPPORTED BY EVIDENCE OF THEIR REALITY AND RELIABILITY (SEE SPECIFIC PROVISIONS BELOW FOR PERSONS WORKING EXCLUSIVELY FOR THE ACTION WITHOUT TIME RECORDS).</i></p>	<p>33) All persons recorded their time dedicated to the action on a daily/ weekly/ monthly basis using a paper/computer-based system. <i>(delete the answers that are not applicable)</i></p>	
		<p>34) Their time-records were authorised at least monthly by the project manager or other superior.</p>	
		<p>35) Hours declared were worked within the project period and were consistent with the presences/absences recorded in HR-records.</p>	
		<p>36) There were no discrepancies between the number of hours charged to the action and the number of hours recorded.</p>	

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Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
	<p><u>If the persons are working exclusively for the action and without time records</u></p> <p>For the persons selected that worked exclusively for the action without time records, the Auditor verified evidence available demonstrating that they were in reality exclusively dedicated to the action and that the Beneficiary signed a declaration confirming that they have worked exclusively for the action.</p>	37) The exclusive dedication is supported by a declaration signed by the Beneficiary's and by any other evidence gathered.	
B	COSTS OF SUBCONTRACTING		
B.1	<p>The Auditor obtained the detail/breakdown of subcontracting costs and sampled cost items selected randomly <i>(full coverage is required if there are fewer than 10 items, otherwise the sample should have a minimum of 10 item, or 10% of the total, whichever number is highest).</i></p> <p>To confirm standard factual findings 38-42 listed in the next column, the Auditor reviewed the following for the items included in the sample:</p> <ul style="list-style-type: none"> ○ the use of subcontractors was foreseen in Annex 1; ○ subcontracting costs were declared in the subcontracting category of the Financial Statement; ○ supporting documents on the selection and award procedure were followed; ○ the Beneficiary ensured best value for money (key elements to appreciate the respect of this principle are the award of the subcontract to the bid offering best price-quality ratio, under conditions of transparency and equal treatment. In case an existing framework contract was used the Beneficiary ensured it was established on the basis of the principle of best value for money under conditions of transparency and equal treatment). <p>In particular,</p> <ul style="list-style-type: none"> i. if the Beneficiary acted as a contracting authority within the meaning of Directive 	<p>38) The use of claimed subcontracting costs was foreseen in Annex 1 and costs were declared in the Financial Statements under the subcontracting category.</p> <p>39) There were documents of requests to different providers, different offers and assessment of the offers before selection of the provider in line with internal procedures and procurement rules. Subcontracts were awarded in accordance with the principle of best value for money.</p> <p><i>(When different offers were not collected the Auditor explains the reasons provided by the Beneficiary under the caption</i></p>	

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Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
	<p>2004/18/EC (or 2014/24/EU) or of Directive 2004/17/EC (or 2014/25/EU), the Auditor verified that the applicable national law on public procurement was followed and that the subcontracting complied with the Terms and Conditions of the Agreement.</p> <p>ii. if the Beneficiary did not fall under the above-mentioned category the Auditor verified that the Beneficiary followed their usual procurement rules and respected the Terms and Conditions of the Agreement..</p> <p>For the items included in the sample the Auditor also verified that:</p> <ul style="list-style-type: none"> the subcontracts were not awarded to other Beneficiaries in the consortium; there were signed agreements between the Beneficiary and the subcontractor; there was evidence that the services were provided by subcontractor; 	<i>“Exceptions” of the Report. The JU will analyse this information to evaluate whether these costs might be accepted as eligible)</i>	
		40) The subcontracts were not awarded to other Beneficiaries of the consortium.	
		41) All subcontracts were supported by signed agreements between the Beneficiary and the subcontractor.	
		42) There was evidence that the services were provided by the subcontractors.	
C	COSTS OF PROVIDING FINANCIAL SUPPORT TO THIRD PARTIES		
C.1	<p>The Auditor obtained the detail/breakdown of the costs of providing financial support to third parties and sampled [] cost items selected randomly (full coverage is required if there are fewer than 10 items, otherwise the sample should have a minimum of 10 item, or 10% of the total, whichever number is highest).</p> <p>The Auditor verified that the following minimum conditions were met:</p> <p>a) the maximum amount of financial support for each third party did not exceed EUR 60 000, unless explicitly mentioned in Annex 1;</p>	43) All minimum conditions were met	

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Ref	Procedures	Standard factual finding	Result (C / E / N.A.)
	b) the financial support to third parties was agreed in Annex 1 of the Agreement and the other provisions on financial support to third parties included in Annex 1 were respected.		

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D	OTHER ACTUAL DIRECT COSTS		
D.1	COSTS OF TRAVEL AND RELATED SUBSISTENCE ALLOWANCES The Auditor sampled [] cost items selected randomly (<i>full coverage is required if there are fewer than 10 items, otherwise the sample should have a minimum of 10 item, or 10% of the total, whichever number is the highest</i>). The Auditor inspected the sample and verified that: <ul style="list-style-type: none"> ○ travel and subsistence costs were consistent with the Beneficiary's usual policy for travel. In this context, the Beneficiary provided evidence of its normal policy for travel costs (e.g. use of first class tickets, reimbursement by the Beneficiary on the basis of actual costs, a lump sum or per diem) to enable the Auditor to compare the travel costs charged with this policy; ○ travel costs are correctly identified and allocated to the action (e.g. trips are directly linked to the action) by reviewing relevant supporting documents such as minutes of meetings, workshops or conferences, their registration in the correct project account, their consistency with time records or with the dates/duration of the workshop/conference; ○ no ineligible costs or excessive or reckless expenditure was declared. 	44) Costs were incurred, approved and reimbursed in line with the Beneficiary's usual policy for travels.	
		45) There was a link between the trip and the action.	
		46) The supporting documents were consistent with each other regarding subject of the trip, dates, duration and reconciled with time records and accounting.	
		47) No ineligible costs or excessive or reckless expenditure was declared.	
D.2	DEPRECIATION COSTS FOR EQUIPMENT, INFRASTRUCTURE OR OTHER ASSETS The Auditor sampled [] cost items selected randomly (<i>full coverage is required if there are fewer than 10 items, otherwise the sample should have a minimum of 10 item, or 10% of the total, whichever number is the highest</i>). For “equipment, infrastructure or other assets” [from now on called “asset(s)”] selected in the sample the Auditor verified that: <ul style="list-style-type: none"> ○ the assets were acquired in conformity with the Beneficiary's internal guidelines and procedures; ○ they were correctly allocated to the action (with supporting documents such as delivery 	48) Procurement rules, principles and guides were followed.	
		49) There was a link between the grant agreement and the asset charged to the action.	
		50) The asset charged to the action was traceable to the accounting records and the underlying documents.	

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	<p>note invoice or any other proof demonstrating the link to the action)</p> <ul style="list-style-type: none"> ○ they were entered in the accounting system; ○ the extent to which the assets were used for the action (as a percentage) was supported by reliable documentation (e.g. usage overview table); <p>The Auditor recalculated the depreciation costs and verified that they were in line with the applicable rules in the Beneficiary's country and with the Beneficiary's usual accounting policy (e.g. depreciation calculated on the acquisition value).</p> <p>The Auditor verified that no ineligible costs such as deductible VAT, exchange rate losses, excessive or reckless expenditure were declared (see Article 6.5 GA).</p>	<p>51) The depreciation method used to charge the asset to the action was in line with the applicable rules of the Beneficiary's country and the Beneficiary's usual accounting policy.</p>	
		<p>52) The amount charged corresponded to the actual usage for the action.</p>	
		<p>53) No ineligible costs or excessive or reckless expenditure were declared.</p>	
D.3	<p>COSTS OF OTHER GOODS AND SERVICES</p> <p>The Auditor sampled [] cost items selected randomly (<i>full coverage is required if there are fewer than 10 items, otherwise the sample should have a minimum of 10 item, or 10% of the total, whichever number is highest</i>).</p> <p>For the purchase of goods, works or services included in the sample the Auditor verified that:</p> <ul style="list-style-type: none"> ○ the contracts did not cover tasks described in Annex 1; ○ they were correctly identified, allocated to the proper action, entered in the accounting system (traceable to underlying documents such as purchase orders, invoices and accounting); ○ the goods were not placed in the inventory of durable equipment; ○ the costs charged to the action were accounted in line with the Beneficiary's usual accounting practices; ○ no ineligible costs or excessive or reckless expenditure were declared (see Article 6 GA). <p>In addition, the Auditor verified that these goods and services were acquired in conformity with</p>	<p>54) Contracts for works or services did not cover tasks described in Annex 1.</p>	
		<p>55) Costs were allocated to the correct action and the goods were not placed in the inventory of durable equipment.</p>	
		<p>56) The costs were charged in line with the Beneficiary's accounting policy and were adequately supported.</p>	
		<p>57) No ineligible costs or excessive or reckless expenditure were declared. For internal invoices/charges only the cost element was charged, without</p>	

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	<p>the Beneficiary's internal guidelines and procedures, in particular:</p> <ul style="list-style-type: none"> ○ if Beneficiary acted as a contracting authority within the meaning of Directive 2004/18/EC (or 2014/24/EU) or of Directive 2004/17/EC (or 2014/25/EU), the Auditor verified that the applicable national law on public procurement was followed and that the procurement contract complied with the Terms and Conditions of the Agreement. ○ if the Beneficiary did not fall into the category above, the Auditor verified that the Beneficiary followed their usual procurement rules and respected the Terms and Conditions of the Agreement. <p>For the items included in the sample the Auditor also verified that:</p> <ul style="list-style-type: none"> ○ the Beneficiary ensured best value for money (key elements to appreciate the respect of this principle are the award of the contract to the bid offering best price-quality ratio, under conditions of transparency and equal treatment. In case an existing framework contract was used the Auditor also verified that the Beneficiary ensured it was established on the basis of the principle of best value for money under conditions of transparency and equal treatment); <p><i>SUCH GOODS AND SERVICES INCLUDE, FOR INSTANCE, CONSUMABLES AND SUPPLIES, DISSEMINATION (INCLUDING OPEN ACCESS), PROTECTION OF RESULTS, SPECIFIC EVALUATION OF THE ACTION IF IT IS REQUIRED BY THE AGREEMENT, CERTIFICATES ON THE FINANCIAL STATEMENTS IF THEY ARE REQUIRED BY THE AGREEMENT AND CERTIFICATES ON THE METHODOLOGY, TRANSLATIONS, REPRODUCTION.</i></p>	any mark-ups.	
		<p>58) Procurement rules, principles and guides were followed. There were documents of requests to different providers, different offers and assessment of the offers before selection of the provider in line with internal procedures and procurement rules. The purchases were made in accordance with the principle of best value for money.</p> <p><i>(When different offers were not collected the Auditor explains the reasons provided by the Beneficiary under the caption "Exceptions" of the Report. The JU will analyse this information to evaluate whether these costs might be accepted as eligible)</i></p>	
D.4	<p>AGGREGATED CAPITALISED AND OPERATING COSTS OF RESEARCH INFRASTRUCTURE</p> <p>The Auditor ensured the existence of a positive ex-ante assessment (issued by the EC Services) of the cost accounting methodology of the Beneficiary allowing it to apply the guidelines on direct</p>	<p>59) The costs declared as direct costs for Large Research Infrastructures (in the appropriate line of the Financial Statement) comply</p>	

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	<p>costing for large research infrastructures in Horizon 2020.</p> <p><i>In the cases that a positive ex-ante assessment has been issued (see the standard factual findings 59-60 on the next column),</i> The Auditor ensured that the beneficiary has applied consistently the methodology that is explained and approved in the positive ex ante assessment;</p> <p><i>In the cases that a positive ex-ante assessment has NOT been issued (see the standard factual findings 61 on the next column),</i> The Auditor verified that no costs of Large Research Infrastructure have been charged as direct costs in any costs category;</p> <p><i>In the cases that a draft ex-ante assessment report has been issued with recommendation for further changes (see the standard factual findings 61 on the next column),</i></p> <ul style="list-style-type: none"> The Auditor followed the same procedure as above (when a positive ex-ante assessment has NOT yet been issued) and paid particular attention (testing reinforced) to the cost items for which the draft ex-ante assessment either rejected the inclusion as direct costs for Large Research Infrastructures or issued recommendations. 	<p>with the methodology described in the positive ex-ante assessment report.</p>	
		60) Any difference between the methodology applied and the one positively assessed was extensively described and adjusted accordingly.	
		61) The direct costs declared were free from any indirect costs items related to the Large Research Infrastructure.	
E	USE OF EXCHANGE RATES		
E.1	<p>a) For Beneficiaries with accounts established in a currency other than euros</p> <p>The Auditor sampled [] cost items selected randomly and verified that the exchange rates used for converting other currencies into euros were in accordance with the following rules established in the Agreement (full coverage is required if there are fewer than 10 items, otherwise the sample should have a minimum of 10 item, or 10% of the total, whichever number is highest):</p> <p><i>COSTS RECORDED IN THE ACCOUNTS IN A CURRENCY OTHER THAN EURO SHALL BE CONVERTED INTO EURO AT THE AVERAGE OF THE DAILY EXCHANGE RATES PUBLISHED IN THE C SERIES OF OFFICIAL JOURNAL OF THE EUROPEAN UNION</i> (https://www.ecb.int/stats/exchange/eurofxref/html/index.en.html), DETERMINED OVER THE</p>	62) The exchange rates used to convert other currencies into Euros were in accordance with the rules established of the Grant Agreement and there was no difference in the final figures.	

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	<p><i>CORRESPONDING REPORTING PERIOD.</i></p> <p><i>IF NO DAILY EURO EXCHANGE RATE IS PUBLISHED IN THE OFFICIAL JOURNAL OF THE EUROPEAN UNION FOR THE CURRENCY IN QUESTION, CONVERSION SHALL BE MADE AT THE AVERAGE OF THE MONTHLY ACCOUNTING RATES ESTABLISHED BY THE EUROPEAN COMMISSION AND PUBLISHED ON ITS WEBSITE (http://ec.europa.eu/budget/contracts_grants/info_contracts/inforeuro/inforeuro_en.cfm), DETERMINED OVER THE CORRESPONDING REPORTING PERIOD.</i></p>		
	<p>b) For Beneficiaries with accounts established in euros</p> <p>The Auditor sampled [] cost items selected randomly and verified that the exchange rates used for converting other currencies into euros were in accordance with the following rules established in the Agreement (full coverage is required if there are fewer than 10 items, otherwise the sample should have a minimum of 10 item, or 10% of the total, whichever number is highest):</p> <p><i>COSTS INCURRED IN ANOTHER CURRENCY SHALL BE CONVERTED INTO EURO BY APPLYING THE BENEFICIARY'S USUAL ACCOUNTING PRACTICES.</i></p>	<p>63) The Beneficiary applied its usual accounting practices.</p>	

[legal name of the audit firm]

[name and function of an authorised representative]

[dd Month yyyy]

<Signature of the Auditor>



ANNEX 6

MODEL FOR THE CERTIFICATE ON THE METHODOLOGY

- For options [*in italics in square brackets*]: choose the applicable option. Options not chosen should be deleted.
- For fields in [grey in square brackets]: enter the appropriate data.

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TERMS OF REFERENCE FOR AN AUDIT ENGAGEMENT FOR A METHODOLOGY CERTIFICATE IN CONNECTION WITH ONE OR MORE GRANT AGREEMENTS FINANCED UNDER THE HORIZON 2020 RESEARCH AND INNOVATION FRAMEWORK PROGRAMME

INDEPENDENT REPORT OF FACTUAL FINDINGS ON THE METHODOLOGY CONCERNING GRANT AGREEMENTS FINANCED UNDER THE HORIZON 2020 RESEARCH AND INNOVATION FRAMEWORK PROGRAMME

**Terms of reference for an audit engagement for a methodology certificate
in connection with one or more grant agreements financed
by [Clean Sky 2] [Bio Based Industries][ECSEL][Fuel Cells and Hydrogen 2][Innovative
Medicines Initiative 2][Single European Sky Air Traffic Management Research
(SESAR)][Shift2Rail] JU under the Horizon 2020 Research and Innovation Framework
Programme**

This document sets out the ‘**Terms of Reference (ToR)**’ under which

[OPTION 1: *[insert name of the beneficiary]* (*‘the Beneficiary’*)] [OPTION 2: *[insert name of the linked third party]* (*‘the Linked Third Party’*), third party linked to the Beneficiary *[insert name of the beneficiary]* (*‘the Beneficiary’*)]

agrees to engage

[insert legal name of the auditor] (*‘the Auditor’*)

to produce an independent report of factual findings (*‘the Report’*) concerning the *[Beneficiary’s]* *[Linked Third Party’s]* usual accounting practices for calculating and claiming direct personnel costs declared as unit costs (*‘the Methodology’*) in connection with grant agreements financed under the Horizon 2020 Research and Innovation Framework Programme.

The procedures to be carried out for the assessment of the methodology will be based on the grant agreement(s) detailed below:

[title and number of the grant agreement(s)] (*‘the Agreement(s)’*)

The Agreement(s) has(have) been concluded between the Beneficiary and the *[Clean Sky 2][Bio Based Industries][ECSEL][Fuel Cells and Hydrogen 2][Innovative Medicines Initiative 2][Single European Sky Air Traffic Management Research (SESAR)][Shift2Rail]* Joint Undertaking (*‘the JU’*).

The JU is mentioned as a signatory of the Agreement with the Beneficiary only. The JU is not a party to this engagement.

1.1 Subject of the engagement

According to Article 18.1.2 of the Agreement, beneficiaries *[and linked third parties]* that declare direct personnel costs as unit costs calculated in accordance with their usual cost accounting practices may submit to the JU, for approval by the European Commission (*‘the Commission’*), a certificate on the methodology (*‘CoMUC’*) stating that there are adequate records and documentation to prove that their cost accounting practices used comply with the conditions set out in Point A of Article 6.2.

The subject of this engagement is the CoMUC which is composed of two separate documents:

- the Terms of Reference (*‘the ToR’*) to be signed by the *[Beneficiary]* *[Linked Third Party]* and the Auditor;
- the Auditor’s Independent Report of Factual Findings (*‘the Report’*) issued on the Auditor’s letterhead, dated, stamped and signed by the Auditor which includes; the standard statements (*‘the Statements’*) evaluated and signed by the *[Beneficiary]* *[Linked Third Party]*, the agreed-upon procedures (*‘the Procedures’*) performed by the Auditor and the standard factual findings (*‘the Findings’*) assessed by the Auditor. The Statements, Procedures and Findings are summarised in the table that forms part of the Report.

The information provided through the Statements, the Procedures and the Findings will enable the Commission to draw conclusions regarding the existence of the *[Beneficiary's] [Linked Third Party's]* usual cost accounting practice and its suitability to ensure that direct personnel costs claimed on that basis comply with the provisions of the Agreement. The Commission draws its own conclusions from the Report and any additional information it may require.

1.2 Responsibilities

The parties to this agreement are the *[Beneficiary] [Linked Third Party]* and the Auditor.

The *[Beneficiary] [Linked Third Party]*:

- is responsible for preparing financial statements for the Agreement(s) ('the Financial Statements') in compliance with those Agreements;
- is responsible for providing the Financial Statement(s) to the Auditor and enabling the Auditor to reconcile them with the *[Beneficiary's] [Linked Third Party's]* accounting and bookkeeping system and the underlying accounts and records. The Financial Statement(s) will be used as a basis for the procedures which the Auditor will carry out under this ToR;
- is responsible for its Methodology and liable for the accuracy of the Financial Statement(s);
- is responsible for endorsing or refuting the Statements indicated under the heading 'Statements to be made by the Beneficiary/ Linked Third Party' in the first column of the table that forms part of the Report;
- must provide the Auditor with a signed and dated representation letter;
- accepts that the ability of the Auditor to carry out the Procedures effectively depends upon the *[Beneficiary] [Linked Third Party]* providing full and free access to the *[Beneficiary's] [Linked Third Party's]* staff and to its accounting and other relevant records.

The Auditor:

- *[Option 1 by default: is qualified to carry out statutory audits of accounting documents in accordance with Directive 2006/43/EC of the European Parliament and of the Council of 17 May 2006 on statutory audits of annual accounts and consolidated accounts, amending Council Directives 78/660/EEC and 83/349/EEC and repealing Council Directive 84/253/EEC or similar national regulations].*
- *[Option 2 if the Beneficiary or Linked Third Party has an independent Public Officer: is a competent and independent Public Officer for which the relevant national authorities have established the legal capacity to audit the Beneficiary].*
- *[Option 3 if the Beneficiary or Linked Third Party is an international organisation: is an [internal] [external] auditor in accordance with the internal financial regulations and procedures of the international organisation].*

The Auditor:

- must be independent from the Beneficiary *[and the Linked Third Party]*, in particular, it must not have been involved in preparing the Beneficiary's *[and Linked Third Party's]* Financial Statement(s);
- must plan work so that the Procedures may be carried out and the Findings may be assessed;
- must adhere to the Procedures laid down and the compulsory report format;
- must carry out the engagement in accordance with these ToR;
- must document matters which are important to support the Report;
- must base its Report on the evidence gathered;
- must submit the Report to the *[Beneficiary] [Linked Third Party]*.

The Commission sets out the Procedures to be carried out and the Findings to be endorsed by the Auditor. The Auditor is not responsible for their suitability or pertinence. As this engagement is not an assurance engagement the Auditor does not provide an audit opinion or a statement of assurance.

1.3 Applicable Standards

The Auditor must comply with these Terms of Reference and with¹:

- the International Standard on Related Services ('ISRS') 4400 *Engagements to perform Agreed-upon Procedures regarding Financial Information* as issued by the International Auditing and Assurance Standards Board (IAASB);
- the *Code of Ethics for Professional Accountants* issued by the International Ethics Standards Board for Accountants (IESBA). Although ISRS 4400 states that independence is not a requirement for engagements to carry out agreed-upon procedures, the Commission requires that the Auditor also complies with the Code's independence requirements.

The Auditor's Report must state that there was no conflict of interests in establishing this Report between the Auditor and the Beneficiary *[and the Linked Third Party]* that could have a bearing on the Report, and must specify – if the service is invoiced - the total fee paid to the Auditor for providing the Report.

1.4 Reporting

The Report must be written in the language of the Agreement (see Article 20.7 of the Agreement).

Under Article 22 of the Agreement, the JU, the Commission, the European Anti-Fraud Office and the Court of Auditors have the right to audit any work that is carried out under the action and for which costs are declared from the European Union budget. This includes work related to this engagement. The Auditor must provide access to all working papers related to this assignment if the JU, the Commission, the European Anti-Fraud Office or the European Court of Auditors requests them.

1.5 Timing

The Report must be provided by [dd Month yyyy].

1.6 Other Terms

[The [Beneficiary] [Linked Third Party] and the Auditor can use this section to agree other specific terms, such as the Auditor's fees, liability, applicable law, etc. Those specific terms must not contradict the terms specified above.]

[legal name of the Auditor]
[name & title of authorised representative]
[dd Month yyyy]
Signature of the Auditor

[legal name of the [Beneficiary] [Linked Third Party]]
[name & title of authorised representative]
[dd Month yyyy]
Signature of the [Beneficiary] [Linked Third Party]

¹ Supreme Audit Institutions applying INTOSAI-standards may carry out the Procedures according to the corresponding International Standards of Supreme Audit Institutions and code of ethics issued by INTOSAI instead of the International Standard on Related Services ('ISRS') 4400 and the Code of Ethics for Professional Accountants issued by the IAASB and the IESBA.

**Independent report of factual findings on the methodology concerning grant agreements
financed by [Clean Sky 2] [Bio Based Industries][ECSEL][Fuel Cells and Hydrogen
2][Innovative Medicines Initiative 2][Single European Sky Air Traffic Management Research
(SESAR)][Shift2Rail] JU under the Horizon 2020 Research and Innovation Framework
Programme**

(To be printed on letterhead paper of the auditor)

To

[name of contact person(s)], [Position]
[[Beneficiary's] [Linked Third Party's] name]
[Address]
[dd Month yyyy]

Dear [Name of contact person(s)],

As agreed under the terms of reference dated [dd Month yyyy]

with [OPTION 1: [insert name of the beneficiary] ('the Beneficiary')] [OPTION 2: [insert name of
the linked third party] ('the Linked Third Party'), third party linked to the Beneficiary [insert name of
the beneficiary] ('the Beneficiary')],

we

[name of the auditor] ('the Auditor'),

established at

[full address/city/state/province/country],

represented by

[name and function of an authorised representative],

have carried out the agreed-upon procedures ('the Procedures') and provide hereby our Independent Report of Factual Findings ('the Report'), concerning the [Beneficiary's] [Linked Third Party's] usual accounting practices for calculating and declaring direct personnel costs declared as unit costs ('the Methodology').

You requested certain procedures to be carried out in connection with the grant(s)

[title and number of the grant agreement(s)] ('the Agreement(s)').

The Report

Our engagement was carried out in accordance with the terms of reference ('the ToR') appended to this Report. The Report includes: the standard statements ('the Statements') made by the [Beneficiary] [Linked Third Party], the agreed-upon procedures ('the Procedures') carried out and the standard factual findings ('the Findings') confirmed by us.

The engagement involved carrying out the Procedures and assessing the Findings and the documentation requested appended to this Report, the results of which the European Commission ('the Commission') uses to draw conclusions regarding the acceptability of the Methodology applied by the [Beneficiary] [Linked Third Party].

The Report covers the methodology used from [dd Month yyyy]. In the event that the [Beneficiary] [Linked Third Party] changes this methodology, the Report will not be applicable to any Financial Statement¹ submitted thereafter.

The scope of the Procedures and the definition of the standard statements and findings were determined solely by the Commission. Therefore, the Auditor is not responsible for their suitability or pertinence.

Since the Procedures carried out constitute neither an audit nor a review made in accordance with International Standards on Auditing or International Standards on Review Engagements, we do not give a statement of assurance on the costs declared on the basis of the [Beneficiary's] [Linked Third Party's] Methodology. Had we carried out additional procedures or had we performed an audit or review in accordance with these standards, other matters might have come to its attention and would have been included in the Report.

Exceptions

Apart from the exceptions listed below, the [Beneficiary] [Linked Third Party] agreed with the standard Statements and provided the Auditor all the documentation and accounting information needed by the Auditor to carry out the requested Procedures and corroborate the standard Findings.

List here any exception and add any information on the cause and possible consequences of each exception, if known. If the exception is quantifiable, also indicate the corresponding amount.

.....

Explanation of possible exceptions in the form of examples (to be removed from the Report):

- i. the [Beneficiary] [Linked Third Party] did not agree with the standard Statement number ... because...;
- ii. the Auditor could not carry out the procedure ... established because (e.g. due to the inability to reconcile key information or the unavailability or inconsistency of data);
- iii. the Auditor could not confirm or corroborate the standard Finding number ... because

Remarks

We would like to add the following remarks relevant for the proper understanding of the Methodology applied by the [Beneficiary] [Linked Third Party] or the results reported:

Example (to be removed from the Report):

Regarding the methodology applied to calculate hourly rates ...

Regarding standard Finding 15 it has to be noted that ...

The [Beneficiary] [Linked Third Party] explained the deviation from the benchmark statement XXIV concerning time recording for personnel with no exclusive dedication to the action in the following manner:

...

Annexes

Please provide the following documents to the auditor and annex them to the report when submitting this CoMUC to the JU:

¹ Financial Statement in this context refers solely to Annex 4 of the Agreement by which the Beneficiary declares costs under the Agreement.

1. Brief description of the methodology for calculating personnel costs, productive hours and hourly rates;
2. Brief description of the time recording system in place;
3. An example of the time records used by the [Beneficiary] [Linked Third Party];
4. Description of any budgeted or estimated elements applied, together with an explanation as to why they are relevant for calculating the personnel costs and how they are based on objective and verifiable information;
5. A summary sheet with the hourly rate for direct personnel declared by the [Beneficiary] [Linked Third Party] and recalculated by the Auditor for each staff member included in the sample (the names do not need to be reported);
6. A comparative table summarising for each person selected in the sample a) the time claimed by the [Beneficiary] [Linked Third Party] in the Financial Statement(s) and b) the time according to the time record verified by the Auditor;
7. A copy of the letter of representation provided to the Auditor.

Use of this Report

This Report has been drawn up solely for the purpose given under Point 1.1 Reasons for the engagement.

The Report:

- is confidential and is intended to be submitted to the JU by the [Beneficiary] [Linked Third Party] in connection with Article 18.1.2 of the Agreement;
- may not be used by the [Beneficiary] [Linked Third Party], by the JU or by the Commission for any other purpose, nor distributed to any other parties;
- may be disclosed by the JU or by the Commission only to authorised parties, in particular the European Anti-Fraud Office (OLAF) and the European Court of Auditors.
- relates only to the usual cost accounting practices specified above and does not constitute a report on the Financial Statements of the [Beneficiary] [Linked Third Party].

No conflict of interest² exists between the Auditor and the Beneficiary [and the Linked Third Party] that could have a bearing on the Report. The total fee paid to the Auditor for producing the Report was EUR [] (including EUR [] of deductible VAT).

We look forward to discussing our Report with you and would be pleased to provide any further information or assistance which may be required.

Yours sincerely

[legal name of the Auditor]

[name and title of the authorised representative]

[dd Month yyyy]

Signature of the Auditor

² A conflict of interest arises when the Auditor's objectivity to establish the certificate is compromised in fact or in appearance when the Auditor for instance:

- was involved in the preparation of the Financial Statements;
- stands to benefit directly should the certificate be accepted;
- has a close relationship with any person representing the beneficiary;
- is a director, trustee or partner of the beneficiary; or
- is in any other situation that compromises his or her independence or ability to establish the certificate impartially.

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Statements to be made by the Beneficiary/Linked Third Party ('the Statements') and Procedures to be carried out by the Auditor ('the Procedures') and standard factual findings ('the Findings') to be confirmed by the Auditor

The European Commission ('the Commission') reserves the right to provide the auditor with guidance regarding the Statements to be made, the Procedures to be carried out or the Findings to be ascertained and the way in which to present them. The Commission reserves the right to vary the Statements, Procedures or Findings by written notification to the Beneficiary/Linked Third Party to adapt the procedures to changes in the grant agreement(s) or to any other circumstances.

If this methodology certificate relates to the Linked Third Party's usual accounting practices for calculating and claiming direct personnel costs declared as unit costs any reference here below to 'the Beneficiary' is to be considered as a reference to 'the Linked Third Party'.

<i>Please explain any discrepancies in the body of the Report.</i>	
Statements to be made by Beneficiary	Procedures to be carried out and Findings to be confirmed by the Auditor
A. Use of the Methodology I. The cost accounting practice described below has been in use since [dd Month yyyy]. II. The next planned alteration to the methodology used by the Beneficiary will be from [dd Month yyyy].	Procedure: ✓ The Auditor checked these dates against the documentation the Beneficiary has provided. Factual finding: 1. The dates provided by the Beneficiary were consistent with the documentation.
B. Description of the Methodology III. The methodology to calculate unit costs is being used in a consistent manner and is reflected in the relevant procedures. <i>[Please describe the methodology your entity uses to calculate <u>personnel</u> costs, productive hours and hourly rates, present your description to the Auditor and annex it to this certificate]</i> <i>[If the statement of section "B. Description of the methodology" cannot be endorsed by the Beneficiary or there is no written methodology to calculate unit costs it should be listed here below and reported as exception by the Auditor in the main Report of Factual Findings:</i> - ...]	Procedure: ✓ The Auditor reviewed the description, the relevant manuals and/or internal guidance documents describing the methodology. Factual finding: 2. The brief description was consistent with the relevant manuals, internal guidance and/or other documentary evidence the Auditor has reviewed. 3. The methodology was generally applied by the Beneficiary as part of its usual costs accounting practices.

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<i>Please explain any discrepancies in the body of the Report.</i>	
Statements to be made by Beneficiary	Procedures to be carried out and Findings to be confirmed by the Auditor
<p>C. Personnel costs</p> <p><u>General</u></p> <p>IV. The unit costs (hourly rates) are limited to salaries including during parental leave, social security contributions, taxes and other costs included in the remuneration required under national law and the employment contract or equivalent appointing act;</p> <p>V. Employees are hired directly by the Beneficiary in accordance with national law, and work under its sole supervision and responsibility;</p> <p>VI. The Beneficiary remunerates its employees in accordance with its usual practices. This means that personnel costs are charged in line with the Beneficiary's usual payroll policy (e.g. salary policy, overtime policy, variable pay) and no special conditions exist for employees assigned to tasks relating to the European Union or Euratom, unless explicitly provided for in the grant agreement(s);</p> <p>VII. The Beneficiary allocates its employees to the relevant group/category/cost centre for the purpose of the unit cost calculation in line with the usual cost accounting practice;</p> <p>VIII. Personnel costs are based on the payroll system and accounting system.</p> <p>IX. Any exceptional adjustments of actual personnel costs resulted from relevant budgeted or estimated elements and were based on objective and verifiable information. <i>[Please describe the 'budgeted or estimated elements' and their relevance to personnel costs, and explain how they were reasonable and based on objective and verifiable information, present your explanation to the Auditor and annex it to this certificate].</i></p> <p>X. Personnel costs claimed do not contain any of the following ineligible costs: costs related to return on capital; debt and debt service charges; provisions for future losses or debts; interest owed; doubtful debts; currency exchange losses; bank costs charged by the Beneficiary's bank for transfers from the JU; excessive or reckless expenditure; deductible VAT or costs incurred during suspension of the implementation of the action.</p> <p>XI. Personnel costs were not declared under another EU or Euratom grant (including grants awarded by a Member State and financed by the EU budget and grants awarded by bodies other than the JU for the purpose of</p>	<p>Procedure:</p> <p><i>The Auditor draws a sample of employees to carry out the procedures indicated in this section C and the following sections D to F.</i> <i>[The Auditor has drawn a random sample of 10 full-time equivalents made up of employees assigned to the action(s). If fewer than 10 full-time equivalents are assigned to the action(s), the Auditor has selected a sample of 10 full-time equivalents consisting of all employees assigned to the action(s), complemented by other employees irrespective of their assignments.].</i> For this sample:</p> <ul style="list-style-type: none"> ✓ the Auditor reviewed all documents relating to personnel costs such as employment contracts, payslips, payroll policy (e.g. salary policy, overtime policy, variable pay policy), accounting and payroll records, applicable national tax, labour and social security law and any other documents corroborating the personnel costs claimed; ✓ in particular, the Auditor reviewed the employment contracts of the employees in the sample to verify that: <ul style="list-style-type: none"> i. they were employed directly by the Beneficiary in accordance with applicable national legislation; ii. they were working under the sole technical supervision and responsibility of the latter; iii. they were remunerated in accordance with the Beneficiary's usual practices; iv. they were allocated to the correct group/category/cost centre for the purposes of calculating the unit cost in line with the Beneficiary's usual cost accounting practices; ✓ the Auditor verified that any ineligible items or any costs claimed under other costs categories or costs covered by other types of grant or by other grants financed from the European Union budget have not been taken into account when calculating the personnel costs; ✓ the Auditor numerically reconciled the total amount of personnel costs used to calculate the unit cost with the total amount of personnel costs recorded in the statutory accounts and the payroll system.

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<i>Please explain any discrepancies in the body of the Report.</i>	
Statements to be made by Beneficiary	Procedures to be carried out and Findings to be confirmed by the Auditor
<p>implementing the EU budget).</p> <p><u>If additional remuneration as referred to in the grant agreement(s) is paid</u></p> <p>XII. The Beneficiary is a non-profit legal entity;</p> <p>XIII. The additional remuneration is part of the beneficiary's usual remuneration practices and paid consistently whenever the relevant work or expertise is required;</p> <p>XIV. The criteria used to calculate the additional remuneration are objective and generally applied regardless of the source of funding;</p> <p>XV. The additional remuneration included in the personnel costs used to calculate the hourly rates for the grant agreement(s) is capped at EUR 8 000 per full-time equivalent (reduced proportionately if the employee is not assigned exclusively to the action).</p> <p><i>[If certain statement(s) of section "C. Personnel costs" cannot be endorsed by the Beneficiary they should be listed here below and reported as exception by the Auditor in the main Report of Factual Findings:</i></p> <p>- ...]</p>	<ul style="list-style-type: none"> ✓ to the extent that actual personnel costs were adjusted on the basis of budgeted or estimated elements, the Auditor carefully examined those elements and checked the information source to confirm that they correspond to objective and verifiable information; ✓ if additional remuneration has been claimed, the Auditor verified that the Beneficiary was a non-profit legal entity, that the amount was capped at EUR 8000 per full-time equivalent and that it was reduced proportionately for employees not assigned exclusively to the action(s). ✓ the Auditor recalculated the personnel costs for the employees in the sample. <p>Factual finding:</p> <ol style="list-style-type: none"> 4. All the components of the remuneration that have been claimed as personnel costs are supported by underlying documentation. 5. The employees in the sample were employed directly by the Beneficiary in accordance with applicable national law and were working under its sole supervision and responsibility. 6. Their employment contracts were in line with the Beneficiary's usual policy; 7. Personnel costs were duly documented and consisted solely of salaries, social security contributions (pension contributions, health insurance, unemployment fund contributions, etc.), taxes and other statutory costs included in the remuneration (holiday pay, thirteenth month's pay, etc.); 8. The totals used to calculate the personnel unit costs are consistent with those registered in the payroll and accounting records; 9. To the extent that actual personnel costs were adjusted on the basis of budgeted or estimated elements, those elements were relevant for calculating the personnel costs and correspond to objective and verifiable information. The budgeted or estimated elements used are: — (indicate the elements and their values). 10. Personnel costs contained no ineligible elements; 11. Specific conditions for eligibility were fulfilled when additional

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<i>Please explain any discrepancies in the body of the Report.</i>	
Statements to be made by Beneficiary	Procedures to be carried out and Findings to be confirmed by the Auditor
	remuneration was paid: a) the Beneficiary is registered in the grant agreements as a non-profit legal entity; b) it was paid according to objective criteria generally applied regardless of the source of funding used and c) remuneration was capped at EUR 8000 per full-time equivalent (or up to up to the equivalent pro-rata amount if the person did not work on the action full-time during the year or did not work exclusively on the action).
<p>D. Productive hours</p> <p>XVI. The number of productive hours per full-time employee applied is <i>[delete as appropriate]</i>:</p> <p>A. 1720 productive hours per year for a person working full-time (corresponding pro-rata for persons not working full time).</p> <p>B. the total number of hours worked in the year by a person for the Beneficiary</p> <p>C. the standard number of annual hours generally applied by the beneficiary for its personnel in accordance with its usual cost accounting practices. This number must be at least 90% of the standard annual workable hours.</p> <p><u>If method B is applied</u></p> <p>XVII. The calculation of the total number of hours worked was done as follows: annual workable hours of the person according to the employment contract, applicable labour agreement or national law plus overtime worked minus absences (such as sick leave and special leave).</p> <p>XVIII. ‘Annual workable hours’ are hours during which the personnel must be working, at the employer’s disposal and carrying out his/her activity or duties under the employment contract, applicable collective labour agreement or national working time legislation.</p> <p>XIX. The contract (applicable collective labour agreement or national working time legislation) do specify the working time enabling to calculate the annual workable hours.</p>	<p>Procedure (same sample basis as for Section C: Personnel costs):</p> <ul style="list-style-type: none"> ✓ The Auditor verified that the number of productive hours applied is in accordance with method A, B or C. ✓ The Auditor checked that the number of productive hours per full-time employee is correct. ✓ If method B is applied the Auditor verified i) the manner in which the total number of hours worked was done and ii) that the contract specified the annual workable hours by inspecting all the relevant documents, national legislation, labour agreements and contracts. ✓ If method C is applied the Auditor reviewed the manner in which the standard number of working hours per year has been calculated by inspecting all the relevant documents, national legislation, labour agreements and contracts and verified that the number of productive hours per year used for these calculations was at least 90 % of the standard number of working hours per year. <p>Factual finding:</p> <p><u>General</u></p> <p>12. The Beneficiary applied a number of productive hours consistent with method A, B or C detailed in the left-hand column.</p> <p>13. The number of productive hours per year per full-time employee was accurate.</p> <p><u>If method B is applied</u></p> <p>14. The number of ‘annual workable hours’, overtime and absences was</p>

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<i>Please explain any discrepancies in the body of the Report.</i>	
Statements to be made by Beneficiary	Procedures to be carried out and Findings to be confirmed by the Auditor
<p><u>If method C is applied</u></p> <p>XX. The standard number of productive hours per year is that of a full-time equivalent.</p> <p>XXI. The number of productive hours per year on which the hourly rate is based i) corresponds to the Beneficiary's usual accounting practices; ii) is at least 90 % of the standard number of workable (working) hours per year.</p> <p>XXII. Standard workable (working) hours are hours during which personnel are at the Beneficiary's disposal performing the duties described in the relevant employment contract, collective labour agreement or national labour legislation. The number of standard annual workable (working) hours that the Beneficiary claims is supported by labour contracts, national legislation and other documentary evidence.</p> <p><i>[If certain statement(s) of section "D. Productive hours" cannot be endorsed by the Beneficiary they should be listed here below and reported as exception by the Auditor: - ...]</i></p>	<p>verifiable based on the documents provided by the Beneficiary and the calculation of the total number of hours worked was accurate.</p> <p>15. The contract specified the working time enabling to calculate the annual workable hours.</p> <p><u>If method C is applied</u></p> <p>16. The calculation of the number of productive hours per year corresponded to the usual costs accounting practice of the Beneficiary.</p> <p>17. The calculation of the standard number of workable (working) hours per year was corroborated by the documents presented by the Beneficiary.</p> <p>18. The number of productive hours per year used for the calculation of the hourly rate was at least 90 % of the number of workable (working) hours per year.</p>
<p>E. Hourly rates</p> <p>The hourly rates are correct because:</p> <p>XXIII. Hourly rates are correctly calculated since they result from dividing annual personnel costs by the productive hours of a given year and group (e.g. staff category or department or cost centre depending on the methodology applied) and they are in line with the statements made in section C. and D. above.</p> <p><i>[If the statement of section 'E. Hourly rates' cannot be endorsed by the Beneficiary they should be listed here below and reported as exception by the Auditor: - ...]</i></p>	<p>Procedure</p> <ul style="list-style-type: none"> ✓ The Auditor has obtained a list of all personnel rates calculated by the Beneficiary in accordance with the methodology used. ✓ The Auditor has obtained a list of all the relevant employees, based on which the personnel rate(s) are calculated. <p>For 10 full-time equivalent employees selected at random (same sample basis as Section C: Personnel costs):</p> <ul style="list-style-type: none"> ✓ The Auditor recalculated the hourly rates. ✓ The Auditor verified that the methodology applied corresponds to the usual accounting practices of the organisation and is applied consistently for all activities of the organisation on the basis of objective criteria irrespective of the source of funding. <p>Factual finding:</p> <p>19. No differences arose from the recalculation of the hourly rate for the</p>

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<i>Please explain any discrepancies in the body of the Report.</i>	
Statements to be made by Beneficiary	Procedures to be carried out and Findings to be confirmed by the Auditor
	employees included in the sample.
<p>F. Time recording</p> <p>XXIV. Time recording is in place for all persons with no exclusive dedication to one Horizon 2020 action. At least all hours worked in connection with the grant agreement(s) are registered on a daily/weekly/monthly basis <i>[delete as appropriate]</i> using a paper/computer-based system <i>[delete as appropriate]</i>;</p> <p>XXV. For persons exclusively assigned to one Horizon 2020 activity the Beneficiary has either signed a declaration to that effect or has put arrangements in place to record their working time;</p> <p>XXVI. Records of time worked have been signed by the person concerned (on paper or electronically) and approved by the action manager or line manager at least monthly;</p> <p>XXVII. Measures are in place to prevent staff from:</p> <ol style="list-style-type: none"> recording the same hours twice, recording working hours during absence periods (e.g. holidays, sick leave), recording more than the number of productive hours per year used to calculate the hourly rates, and recording hours worked outside the action period. <p>XXVIII. No working time was recorded outside the action period;</p> <p>XXIX. No more hours were claimed than the productive hours used to calculate the hourly personnel rates.</p>	<p>Procedure</p> <ul style="list-style-type: none"> ✓ The Auditor reviewed the brief description, all relevant manuals and/or internal guidance describing the methodology used to record time. <p>The Auditor reviewed the time records of the random sample of 10 full-time equivalents referred to under Section C: Personnel costs, and verified in particular:</p> <ul style="list-style-type: none"> ✓ that time records were available for all persons with not exclusive assignment to the action; ✓ that time records were available for persons working exclusively for a Horizon 2020 action, or, alternatively, that a declaration signed by the Beneficiary was available for them certifying that they were working exclusively for a Horizon 2020 action; ✓ that time records were signed and approved in due time and that all minimum requirements were fulfilled; ✓ that the persons worked for the action in the periods claimed; ✓ that no more hours were claimed than the productive hours used to calculate the hourly personnel rates; ✓ that internal controls were in place to prevent that time is recorded twice, during absences for holidays or sick leave; that more hours are claimed per person per year for Horizon 2020 actions than the number of productive hours per year used to calculate the hourly rates; that working time is recorded outside the action period; ✓ the Auditor cross-checked the information with human-resources records

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Please explain any discrepancies in the body of the Report.	
Statements to be made by Beneficiary	Procedures to be carried out and Findings to be confirmed by the Auditor
<p><i>[Please provide a brief description of the <u>time recording system</u> in place together with the measures applied to ensure its reliability to the Auditor and annex it to the present certificate¹].</i></p> <p><i>[If certain statement(s) of section “F. Time recording” cannot be endorsed by the Beneficiary they should be listed here below and reported as exception by the Auditor: - ...]</i></p>	<p>to verify consistency and to ensure that the internal controls have been effective. In addition, the Auditor has verified that no more hours were charged to Horizon 2020 actions per person per year than the number of productive hours per year used to calculate the hourly rates, and verified that no time worked outside the action period was charged to the action.</p> <p>Factual finding:</p> <ol style="list-style-type: none"> 20. The brief description, manuals and/or internal guidance on time recording provided by the Beneficiary were consistent with management reports/records and other documents reviewed and were generally applied by the Beneficiary to produce the financial statements. 21. For the random sample time was recorded or, in the case of employees working exclusively for the action, either a signed declaration or time records were available; 22. For the random sample the time records were signed by the employee and the action manager/line manager, at least monthly. 23. Working time claimed for the action occurred in the periods claimed; 24. No more hours were claimed than the number productive hours used to calculate the hourly personnel rates; 25. There is proof that the Beneficiary has checked that working time has not been claimed twice, that it is consistent with absence records and the number of productive hours per year, and that no working time has been claimed outside the action period. 26. Working time claimed is consistent with that on record at the human-

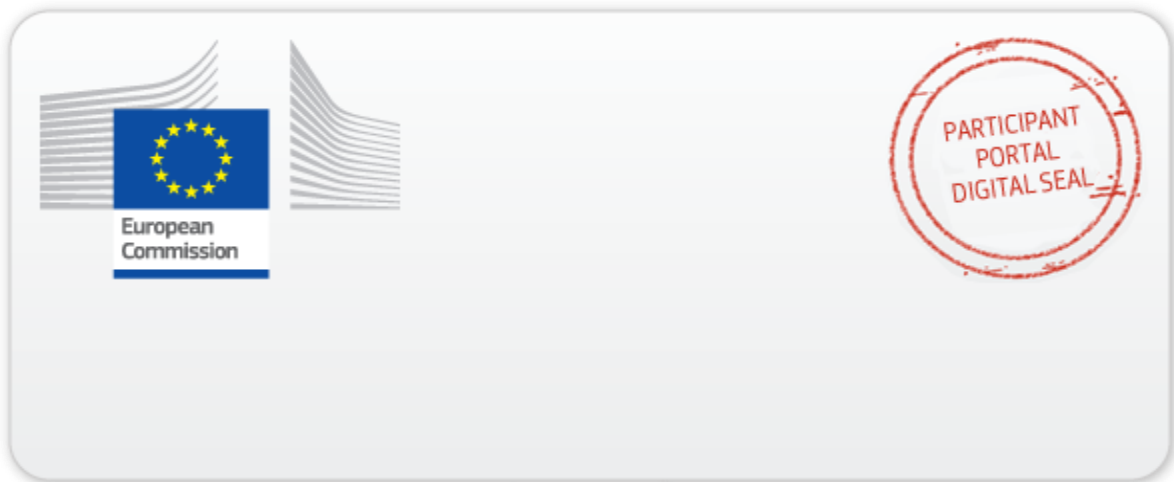
¹ The description of the time recording system must state among others information on the content of the time records, its coverage (full or action time-recording, for all personnel or only for personnel involved in H2020 actions), its degree of detail (whether there is a reference to the particular tasks accomplished), its form, periodicity of the time registration and authorisation (paper or a computer-based system; on a daily, weekly or monthly basis; signed and countersigned by whom), controls applied to prevent double-charging of time or ensure consistency with HR-records such as absences and travels as well as its information flow up to its use for the preparation of the Financial Statements.

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<i>Please explain any discrepancies in the body of the Report.</i>	
Statements to be made by Beneficiary	Procedures to be carried out and Findings to be confirmed by the Auditor
	resources department.

[official name of the [Beneficiary] [Linked Third Party]]
[name and title of authorised representative]
[dd Month yyyy]
 <Signature of the [Beneficiary] [Linked Third Party]>

[official name of the Auditor]
[name and title of authorised representative]
[dd Month yyyy]
 <Signature of the Auditor>



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