## MANAGEMENT REQUIREMENTS FOR FEASIBILITY STUDIES - CALL FOR PROPOSALS FOR DOWNSTREAM APPLICATIONS IN ARTES

**4.0 (UNDER BASS, 4S OR 5G PROGRAMME LINES)**

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# INTRODUCTION

ARTES 4.0 Downstream Applications Feasibility Studies provide the preparatory framework to define and evaluate new, potentially commercially viable applications and services within the ARTES 4.0 Programme.

They cover the preparation of customer/user-driven applications and services that employ one or more space assets and are conceived to become viable in the short to medium term.

The objectives of a feasibility study are:

* to prepare the implementation of a sustainable service(s) on the targeted market, and to support the business development for such service(s),
* to evaluate and determine the technical feasibility and commercial viability of an integrated service(s)[*1*](#_bookmark1)and the associated system(s)*1* able to meet the needs and conditions of relevant user community(ies) and other stakeholders,
* to reduce the technical and commercial risks related to the implementation of such sustainable service(s),
* validate the critical assumptions regarding customer desirability, commercial viability, and technical feasibility in a Proof of Concept (PoC),
* to secure the buy-in and involvement of important customers/users and other stakeholders for the further implementation and market roll-out,
* to define the roadmap for implementation and market roll-out of commercial operations of the application/service, which may include a subsequent Demonstration Project,
* to prepare a potential follow-on demonstration project,
* to generate the relevant answers to the most critical questions which allow taking informed decisions by all involved parties (industries, customers/users/customers, stakeholders, ESA / National Delegations) on the necessary further investments.

The Contractor is invited to take note that terminology used in this document are defined in the [“Terminology used in ESA Business Applications”](https://business.esa.int/sites/default/files/TERMINOLOGY%20used%20in%20ESA%20Business%20Applications.docx) document.

*1* In the remainder of the Management Requirements, the singular form of services and systems will be used, where this may still indicate more than one service or system.

# SCOPE OF WORK AND STUDY LOGIC

## Scope of Work

The Contractor shall be responsible for the fulfilment of all the activities required to set up and execute the feasibility study, in accordance with the requirements for tasks and deliverables detailed in this document.

Due to the customer/user-driven nature of the study and with respect to a potential follow-on demonstration project, the Contractor shall pursue strong partnerships with the targeted customer/user communities and, whenever relevant for the successful achievement of the study’s objectives, with other relevant stakeholders. Such partnerships shall be actively maintained and reinforced by the Contractor during the whole study.

## Study Logic

To achieve the objectives of the study, the work logic presented in Figure 1 shall be taken as baseline. Within this structure, the Contractor is free to implement a detailed study logic that serves the objectives of the Feasibility Study and supports the generation of the required deliverables. If already all information related to a specific task exists, this task does not have to be repeated, but this information must be provided to the Agency as part of the Full Proposal.

The Contractor can follow an alternative approach, providing it is properly described in the Full Proposal and agreed by ESA.

The duration of the study shall not exceed 12 months. The work is organised in the following logic:

* **Task 1: Desirability and Economic Viability Assessment**
* **Task 2: Technical Feasibility Assessment**
* **Task 3: Assessment Proof of Concept**



**Figure 1: Study Logic**

Tasks 1 to 3 are closely interlinked and require an iterative work approach (see also [Figure 2](#_bookmark5)). Key deliverables include:

* **Business Case**: Deliverable D1 (Business Case), **capturing the Tasks 1 and 2 results,** shall present all aspects of a desirable, technically feasible, and commercially viable operational business. All critical assumptions that must be true for the business model to work shall be identified and recorded. The document shall be updated iteratively as new insights emerge, e.g. during the proof of concept and other work, and remain coherent and consistent.
* **Proof of Concept**: Deliverable D2 (Proof of Concept) **capturing the Task 3 result,** shall explain how the critical assumptions about the customer desirability, technical feasibility, and commercial viability of the operational business were tested, and present the results and gained insights. These learnings shall be iteratively incorporated into the Business Case deliverable D1.

**Identify Test**

**Critical**

**A ns**

**ssumptio**

**Test**

**Assumptions**

**Critical**

**A ns**

**ssumptio**

iterative

**Business Case**

**Update**

**Bu se**

**siness Ca**

**Proof of Concept**

**Figure 2. Iterative testing of critical assumptions and refinement of busin****esses case**

The continuation with the activity after the Progress Meeting is subject to ESA decision, which will be based on the presented Business Case including evidenced desirability by potential customers, commercial viability, and technical feasibility, for example, during the **Proof of Concept**.

# MILESTONE REVIEW MEETINGS

The following paragraphs describe the sequence of Milestone Review Meetings through which ESA will monitor the progress of the contractual activities, assess the quality and completeness of the deliverables and, when relevant, will authorise the relevant milestone payments.

For each of the review meetings indicated below, the Management Requirements do also provide guidelines on:

* Their main purpose
* The applicable deliverables

Each of these meetings will be attended by ESA’s Technical Officer and representatives of the project team (i.e. prime and sub-contractors). Participation of representatives of customers/users is encouraged.

The documentation supporting each milestone review meeting shall be delivered to ESA no later than five (5) working days before the meeting takes place. The templates to be used for the deliverable documents of the different review meetings, as well as the related draft agendas can be found at <https://business.esa.int/documents>

The following reviews and meetings represent the sequence of events to be taken into account in establishing the logical organisation of the work:

* 1. **Negotiation Meeting (NM) / Kick-off (KO)**

The purpose of the Negotiation Meeting (NM) is to confirm that all points of clarification and negotiation raised by ESA have been successfully addressed, to discuss and agree on the project planning via the Project Bar Chart (PBC), to finalise the contract and to review the activities to be carried out until the Progress Meeting (PM).

The NM is also the opportunity for the team to meet the ESA Technical Officer and create the basis for an effective working cooperation during the rest of the project.

During the Negotiation Meeting the envisaged Kick-off (KO) date, that is the date to start the study, will be agreed. In case a Kick-off meeting is considered needed and agreed during the negotiation meeting (e.g. to close possible open actions defined at the negotiation meeting), such a meeting can be held via teleconference.

* 1. **Progress Meeting (PM)**

The purpose of the Progress Meeting (PM) is for the Contractor to deliver and present the **Intermediate Results** of the tasks carried out up to this meeting, i.e.

* **Task 1:** the engagement with the potential customers/users and the value proposition of the targeted application/service, and the first results of the viability analysis with respect to market analysis, business model, and critical commercial and non-economic aspects
* **Task 2:** the first results on service definition, system specification, and identification of critical technical and operational elements
* **Task 3:** the outline of the proof of concept together with the identification of the critical aspects to be validated.

The format to deliver and present the Intermediate Results will be a **PowerPoint Presentation**. The content of this presentation (chapter/headlines) shall be aligned with the content of the document deliverables as presented below under section 4. The focus of the interaction between the ESA

Technical Officer and the study team will be on achievements reached so far, resolution and handling of critical aspects and risks. The Progress Meeting will be concluded with a review and discussion of the activities to be carried out until the Final Review.

As part of the PM data package, the Contractor shall deliver to ESA the first version of the **Project Web Page (PWP)**.

In preparation of the Progress Meeting (PM), the Contractor may organise a **Customer/User Workshop** inviting the involved customers and users with the objective to consolidate and validate the Value Proposition and the Key Performance Indicators of the targeted application/service.

The Progress Meeting (PM) is foreseen to be held at the premises of the consortium or involved customer(s). In budgetary limited Feasibility Studies (ESA contribution up to 100 kEUR), the Progress Meeting can be held via teleconference or videoconference (e.g. Microsoft Teams).

## Final Review (FR)

The purpose of the Final Review (FR) is for the Contractor to deliver and present the results of **Task 1, 2 and 3**.

Key deliverables for the Final Review are:

* **D1 Business Case**
* **D2 Proof of Concept**
* the **Final Report (FREP)**,
* the final **Project Web Page (PWP)**,
* the collection of **Digital Media (DM)** (if applicable),
* the **Final Data Package (FDP)**, and
* the **Financial Statements** as stipulated by Clause 27 of the Contract (if applicable).

The Final Review (FR) is foreseen to be held at ESA premises (ECSAT/UK or ESTEC/NL).

* 1. **Final Presentation**

In coordination with the related National Delegation(s), a **Final Presentation** can be foreseen in collocation with the Final Review. The purpose of the Final Presentation is to inform the related National Delegation(s) about the results of the Feasibility Study and to facilitate communication between the consortium and the related National Delegation(s) for a potentially planned Demonstration Project. The participants to the Final Presentation include members of the Contractor / Consortium, ESA, and related National Delegation(s).

* 1. **Meeting Overview**

The following table provides a summary of the meetings described in the previous sections:

|  |  |  |
| --- | --- | --- |
| **Meeting** | **Date** | **Location** |
| Negotiation Meeting (NM) |  | by teleconference |
| Kick Off (KO) – when needed | After successful NM | by teleconference |
| Progress Meeting (PM) | Halfway between KO and FR | by teleconference |

|  |  |  |
| --- | --- | --- |
| Final Review (FR) | Conclusion of tasks 1- 3 | ECSAT(UK)/ESTEC(NL) or byteleconference |
| Final Presentation (subject to success of study) | After FR | ECSAT(UK)/ESTEC(NL) or byteleconference |

1. Additional meetings may be requested either by the Agency or the Contractor.
2. The Contractor shall give to the Agency prior notice of any meetings with Third Parties to be held in connection with the Contract. The Agency reserves the right of participation in such meetings.
3. For all meetings with the Agency, the Contractor shall ensure that proper notice is given at least four (4) weeks in advance. For all other meetings, the Contractor shall inform the Agency, which reserves the right to participate. The Contractor is responsible for ensuring the participation of his personnel and those of the Subcontractor(s), as needed.
4. With due notice to and in agreement with the Contractor the Agency reserves the right to invite Third Parties to meetings to facilitate information exchange.
5. Draft versions of deliverables which are subject for review and discussion at the Review Meetings shall be submitted to the Agency at least five (5) working days before the meeting. The Agency reserves the right to cancel such a meeting in case that the documentation is not available in time or if it is of insufficient quality.
6. For each meeting the Contractor shall propose an agenda in electronic form. Handouts of any presentation given at the meeting shall be prepared in electronic form and uploaded to the project collaboration tool (see Section 5.4 of this document). The Contractor shall also take the Minutes of Meeting (MoM).

# KEY DOCUMENTS AND ITEMS TO BE DELIVERED

During the execution of the study, the Contractor shall produce the deliverable documents / items as described below. The documents shall be produced / updated at the meetings as detailed in Section 3 and the table in Section 5.11.

In principle, it is expected that all the tasks of the feasibility study are performed in close coordination with the involved customers/users (leveraging on their connections to other customers/users and important stakeholders, assisting in the definition of the customer/user needs and requirements as well as in the service and system definition, supporting the proof of concept (e.g. facilities, in situ support, participation), providing feedback on the usefulness of the targeted application/service, contributing to the viability analysis (e.g. price acceptability), assisting in the preparation of the roadmap and of a potential demonstration project, promoting the service in their respective communities, etc.). As such, it is expected that the content of the documents D1 to D2 mirrors adequately their involvement and contributions.

The content of the deliverables D1 to D2 shall be focused on the essential findings and conclusions. the size of each deliverable shall be limited to the necessary minimum but shall not exceed 75 pages for deliverable D1 and 30 pages for each other deliverable. Any additional information supporting the findings and conclusions may be annexed to the single deliverables.

## Business Case (D1)

### Desirability and Economic Viability Assessment (Part of D1)

The deliverable D1 (Business Case) shall integrate the results of the task 1 activities and also include the following sub-elements:

#### D 1.1 Customer/User/Stakeholder Engagement:

* + - * Overview of the engagement activities with the customers/users/stakeholders.
			* Depending on the subject and when considered necessary or helpful, the organisation of a customer/user workshop might be considered. If such a workshop is carried out, the related workshop report compiling all information, i.e. participants, programme, hand-outs, presentations, results, conclusions, shall be included.

#### D 1.2 Customer/User/Stakeholder Analysis:

* + - * Presentation of customers interested in and willing to pay for the planned application/ service.
			* Presentation of paying customers, users and other stakeholders relevant to successfully develop, implement and operate the intended service concepts.
			* Identification, quantification and validation of relevant needs and Key Performance Indicators (KPIs) which paying customers, users and other relevant stakeholders will use to evaluate the impact of the proposed application/service in their operational environment.

#### D 1.3 Value Proposition & Product/Service Offers Definition:

* + - * Definition and validation of the value proposition(s) that the planned application/service will bring to the customers/users/stakeholders addressing their needs and KPIs.
			* Definition of the product/service offers towards paying customers, users and other relevant stakeholders aligned with the needs and KPI identified through Task 1, and taking into

account any performance, quality and mode of delivery, integration with and interfaces to operational processes and procedures.

#### D 1.4 Business Model(s):

* + - * Definition of business model(s) based on the value proposition(s) and service offer(s) addressing as a minimum the customer relationships, distribution channels/paths to market, key resources, key activities, key partnerships, revenue streams and cost structure. Note: The Business Model Canvas (<https://strategyzer.com/canvas>) can be used and the individual elements described in detail.
			* Definition of the end-to-end service value chain, including key resources, key activities and key partners involved, their roles, and the interactions amongst them, and taking into account existing tools and services of paying customers, users and other relevant stakeholders to interface with.
			* Presentation of the validation activities of the business assumptions with the engaged customers, users and other relevant stakeholders.

#### D 1.5 Business Plan:

* + - * Market analysis for the envisaged services including the size (Total Addressable Market (TAM), Serviceable Available Market (SAM), Serviceable Obtainable Market (SOM)) and attractiveness of the market/customer segment(s) represented by the engaged paying customers.
			* Assessment of the competitive environment and of the main competitors including information on their services and value propositions.
			* Presentation of the financial plan and financial forecast for development and sales, including profit and loss statement as well as cash flow statement for the next 5 years, making use of the ‘Cashflow Forecast Workbook’ available on the website <https://business.esa.int/documents>.
			* Presentation of the team, competences and capabilities required to implement and deliver the service. In case of missing competences and capabilities, presentation of the intended strategy to acquire them.
			* Justification of the final business plan and its elements.
			* Presentation of the validation activities with the engaged customers, users and other relevant stakeholders.

#### D 1.6 Viability Analysis:

* + - * Identification of critical elements and aspects related to the business model(s) and business plan and their robustness, by addressing aspects such as market barriers, cost/benefit ratios, competitive positioning, key differentiators, growth potential, etc., and presentation of mitigation strategies and measures.
			* Identification of critical elements and aspects related to non-economic aspects (e.g. liability, regulation, public acceptability, etc.) and presentation of mitigation strategies and measures.
			* Assessment of the overall commercial viability of the proposed service and system concept.

#### D 1.7 Socio Economic Impact Analysis:

* + - * Assessment of the potential socio-economic impact of resulting operational services regarding expected revenues, job creation across the value chain (i.e. for all partners

involved in the service provision), export opportunities, establishment of new markets, investment leverage, and societal benefits.

### Technical Feasibility Assessment (Part of D1)

The deliverable D1 (Business Case) shall integrate the results of the task 1 activities and also include the following sub-elements:

#### D 1.8 System Definition:

* + - * Definition of the system architectures providing the service offers identified in Task 1, taking into account any existing infrastructure of paying customers and other relevant stakeholders.
			* Visualisation of the system architecture in terms of main building blocks and interfaces to external systems and services identifying key technologies required and their maturity status (existing, commercial-off-the-shelf, to be developed, market readiness, etc.).
			* Presentation and justification of the role of the space asset(s) (Earth observation, satellite navigation, satellite communication, human spaceflight, etc.) which are subject for integration.

**D 1.9 Technical Feasibility Analysis:**

* + - * Justification of the final service concept and its underlying system and validation of the service concept with the engaged customers, users and other relevant stakeholders.
			* Identification of critical elements and risks related to development, implementation, and operation of the service and system from a developer perspective as well as from the from the perspective of paying customers, users and other relevant stakeholders, and presentation of mitigation strategies and measures.
			* Assessment of the overall technical feasibility of the proposed service and system concept.

## Proof of Concept (PoC) (D2)

The deliverable D2 (Proof of Concept) shall present the outputs of task 3 and also include the following sub-elements:

**D 2.1 Proof of Concept Definition:**

* Definition of the most critical technical, operational, commercial elements which shall be validated within the PoC, including hypotheses, validation methods, and quantifiable success criteria.
* Presentation of the PoC outline, including objectives for the PoC, scope, schedule, approach, necessary training and communication material, and involvement of the customers, users and other relevant stakeholders (where necessary).

Note: the PoC might consist of a mock-up, simulations, etc. which is compiled on a minimum effort base, i.e. major development efforts shall be avoided.

**D 2.2 Implementation and Validation:**

* Report on the implementation and execution of the PoC, including the involvement of the customers, users and other relevant stakeholders.
* Presentation of the results, including assessment of the outcome on the most critical elements and validation of the results with the involved customers, users and other relevant stakeholders (where necessary).
* A specific chapter presenting the customer/user feedback shall be incorporated.
* Identification of any changes to outputs of Tasks 1 and 2.
	1. **Project Web Page (PWP)**

The Contractor shall produce, as part of the PM package, a Project Web Page according to the template accessible under: <https://business.esa.int/documents>. The Contractor shall ensure that the public image of the project is properly portrayed and maintained through the above Web Page.

With every review meeting, starting from the publication of the Project Web page and ending with the conclusion of the contractual activities, the Contractor shall provide an updated version of the “Current Status” paragraph of the Project Web Page.

The “Current Status” paragraph of the Project Web Page will be the opportunity for the study to inform the general public about the status of the progress. A final version of the Project Web Page shall be provided together with the Final Report. This final version shall include a paragraph summarising the most significant achievements of the study.

All study information to be published including the "project web page" will duly respect any relevant confidentiality agreement established among the partners.

## Final Report (FREP)

The Contractor shall deliver, not later than five (5) working days before the Final Review, a Draft Final Report, on which ESA will provide comments within one week after said review.

The Final Report (FREP), which is intended for general publication, is to be written in a concise form and shall describe the major accomplishments of the study along the various tasks. It shall be self- standing, not requiring to be read in conjunction with reports issued within the study and shall be suitable for non-experts in the field. It shall consist of about 25 pages of content and shall not contain Proprietary Information.

The front cover of the report shall carry the following text within a delineated box of at least 10 cm x 4 cm, preferably located in the top or bottom left-hand corner of the cover:

“EUROPEAN SPACE AGENCY CONTRACT REPORT

The work described in this report was done under ESA contract. Responsibility for the contents resides in the author or organisation that prepared it.”

The Final Report shall not contain any confidentiality/copyright statement other than the following:

“The copyright in this document is vested in [Company]. This document may only be reproduced in whole or in part, or stored in a retrieval system, or transmitted in any form, or by any means electronic, mechanical, photocopying or otherwise, either with the prior permission of [Company] or in accordance with the terms of ESTEC Contract no [Contract no].“

Within four weeks after the Final Review the finalised version of the Final Report shall be delivered as follows:

* One (1) electronic searchable, indexed and not encrypted PDF and one (1) original WORD format file shall be sent to the ESA Information and Documentation Centre (email: esa.ids@esa.int)
* Upload the finalised version of the Final Report in electronic form into the distributed Project Collaboration Tool (see section [5.4](#_bookmark26))

## Final Data Package (FDP)

Together with the finalised version of the Final Report, the Contractor shall deliver to ESA the Final Data Package (FDP), uploading the final versions of all main deliverables (FREP, PWP, D1 – D5, Digital Media) in electronic form into the distributed Project Collaboration Tool (see section 5.4).

## Deliverable Hardware

Article 2 para. 2.1.3 of the Contract applies.

## Deliverable Software and Content

A list of the software and content to be produced or procured shall be presented.

# REQUIREMENTS FOR MANAGEMENT, REPORTING, AND DELIVERABLES

## Contractor Project Manager

The nominated Project Manager shall be responsible for the management and execution of all work to be performed and for the coordination and control of the work within the project team. The Project Manager will be the official point of contact with the Agency during the execution of the work.

During the contract execution, the Project Manager shall notify the Agency of any critical risk that may arise, analysing the cause, assessing the potential impacts on the project in terms of time, objectives and scope and formulating in the shortest possible time a mitigation strategy.

## Document Confidentiality

All information (including deliverable documents) produced in the frame of the Activity shall correctly reflect the instructions in **Annex C** hereto “Instructions for the Protection of Unclassified Sensitive Information”.

The Contractor acknowledges that all information in the frame of this activity is treated by ESA as Protection Level 1 (For Official Use) unless marked differently by the Contractor (e.g. “Proprietary Information”). In such case the information will be treated accordingly to the marking applied (e.g. in confidence, please see Clause 52.2 of the ESA General Clauses and Conditions).

Project Web Page and the Final Report shall not contain any “Proprietary Information”, since they are intended for un-restricted distribution.

## Submission of Documentation

All documentation shall be delivered in electronic form, using preferably MS Word or Adobe Acrobat format with pictures and tables embedded in the document. The documentation shall not impose limitations on the ability to be commented and printed.

## Distributed Project Collaboration Tool

During the execution of the project the web-based project collaboration tool shall be used. This collaborative environment is intended to replace the usual electronic communication tools (e.g. E-Mail with attached document and/or FTP) within the project team and in the communication with ESA, as well as for recording and tracking Action Items.

Credential and guidelines for accessing the tool will be provided in due time, typically by the Negotiation Meeting.

## Reporting - Minutes of Meetings (MOM)

Written Minutes of Meetings from those meetings attended by ESA shall be prepared and made available by the Contractor, and have to be signed at the end of the meeting. The minutes shall clearly identify all agreements made and actions accepted together with, where relevant, an update of the Action Item List.

To establish a uniform and consistent procedure to identify the Action Items among the different ARTES projects, the Contractor shall keep track of the Action Items adopting the following action identification scheme:

Action X.Y

where *X* is the identifier of the meeting (0: Negotiation Meeting, 1: First Review Meeting, 2: Second Review Meeting, etc.), and *Y* is the Action number starting from 01 at each new meeting.

In case the Distributed Project Collaboration Tool is adopted, Actions items shall be recorded there as “Issues”, and the associated status shall be kept up to date by the Project Manager using the “Update Issue” feature.

In case of urgent or critical problems, new Actions can be originated by the Agency and/or by the Contractor even outside the normal scheduled meetings.

## Reporting - Monthly Progress Report (MPR)

The Contractor shall provide, within the first five working days of each month, a concise status report following the template provided under <https://business.esa.int/documents> summarising the main activities performed in the last month, a list of the activities planned to be performed in the coming month, any potential problems and the corrective actions planned or taken by the Contractor. To the extent possible, the progress report and annexed documentation shall be delivered in MS Word format by using the Distributed Project Collaboration Tool. Within the progress report, the updated Current Status paragraph to be inserted in the Project Web Page shall be provided after each review meeting.

## Bar Chart Schedule (BCS)

The Contractor shall be responsible for maintaining the bar-chart for work carried out under the Contract, as agreed at the negotiation meeting. The Contractor shall present an up-to-date chart for review at all consequent meetings, indicating the current status of the contract activity (WPs completed, documents delivered, etc.).

## Risk Register (RR)

The Contractor shall be responsible for maintaining a risk register, agreed at the negotiation meeting. The starting point for this risk register are the potential problem areas identified in the Full Proposal. It shall be updated throughout the feasibility study taking into account any newly identified risks. It shall present the potential risks, their likelihood and severity, and propose meaningful mitigation measures. The Contractor shall present an up-to-date risk register in the review meetings.

## Media Relations and Events

Should the Contractor plan to initiate contacts with media in the context of the study, coordination with the ESA Technical Officer is required by providing the draft content one (1) month before intended publication. Wherever possible, liaison with the Contractor will be established to agree on the text, Frequently Asked Questions, and material to be provided to media.

Should the Contractor plan to participate in trade fairs, exhibitions, or other events where the Project is displayed, coordination with the ESA Technical Officer is required by providing the draft content two (2) months before the event takes place, to ensure a correct representation of ESA and, where possible, ensure consistency with the ESA Corporate Visual Identity.

This obligation shall cease after 3 years of contract completion.

## Overview of Deliverables

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Deliverable** | **Reference to Section** | **Initial Submission** | **Updating** | **Final Submission** |
| D1 | Business Case | [4.1](#_bookmark14)[4.2](#_bookmark15) | PM |  | FR |
| D2 | Proof of Concept | [4.3](#_bookmark16) | PM |  | FR |
| PWP | Project Web Page | [4.4](#_bookmark17) | PM |  | FR |
| FREP | Final Report | [4.5](#_bookmark18) | FR |  | FR |
| FDP | Final Data Package | [4.6](#_bookmark19) | FR |  | FR |
| H/W | Hardware (if applicable) | [4.7](#_bookmark20) | FR |  | FR |
| S/W | Software (if applicable) | [4.8](#_bookmark21) | FR |  | FR |
| MOM | Minutes of Meetings | [5.5](#_bookmark27) | NM | every meeting | FR |
| MPR | Monthly Progress Report | [5.6](#_bookmark28) | KO + 1 month | every month | FR |
| BCS | Bar Chart Schedule | [5.7](#_bookmark29) | within the proposal | as necessary and at reviews | FR |
| RR | Risk Register | [5.8](#_bookmark30) | within the proposal | as necessary and at reviews | FR |
| DM | Digital Media | [5.9](#_bookmark31) | as necessary | as necessary | as necessary |

NM: Negotiation Meeting KO: Kick-Off

PM: Progress Meeting FR: Final Review

2 Only required for feasibility studies with an ESA price above 250 kEUR.

# ANNEX A: FEASIBILITY STUDY CHECKLIST

|  |  |
| --- | --- |
| **FS-1** | **Value Proposition and Market Opportunity** |
| FS-1-1 | The **value proposition(s)** addressing the market can be summarised in one sentence and is included as part of an "elevator pitch" understandable by the market |
| FS-1-2 | A clear **market opportunity** [e.g. customer problem and size/EUR of the problem] has been identified and evidenced through a customer pipeline |
| FS-1-3 | The analysis of the market shows **no showstoppers** or they can be mitigated (e.g., regulation, certification, liberalisation, etc.) |
| FS-1-4 | A "**champion customer**" has been identified, who is representative enough and demonstrates tangible interest in being involved in a later step (Demonstration Project) |
|  |  |
| **FS-2** | **Market Size and Competitive Landscape** |
| FS-2-1 | The sizes of the top priority market segments are shown to be **large enough to justify developing a new service** (there is a pipeline of potential customers), and **segment leaders** are identified |
| FS-2-2 | Market external environment has clear **potential for growing** |
| FS-2-3 | The 2-3 **most relevant competitor solutions** have been recognised, if applicable |
| FS-2-4 | The **value propositions of competitor solutions** have been identified and analysed, if applicable |
| FS-2-5 | A **competitive advantage** w.r.t competitor solutions has been identified, if applicable |
| FS-2-6 | The **market size** to be captured has been determined and justified w.r.t. the competitors |
| FS-2-7 | A "**Survival Strategy**" has been drawn up (planned response to reactions coming from competitors) |
|  |  |
| **FS-3** | **Feasibility of the Technical Concept** |
| FS-3-1 | A concise and **complete service/system concept** has emerged that includes the relevant inputs, key activities and main outputs |
| FS-3-2 | **Core service components** exist (COTS or "market ready") and can be integrated and brought to market |
| FS-3-3 | Core technical service components can deliver to **satisfy the market opportunity:** there is a sound technical approach |

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| --- | --- |
| FS-3-4 | The **2-3 main technical risks** are identified and meaningfully addressed (incl. weaknesses and threats) |
| FS-3-5 | Service concept shows in a clear and meaningful way the **integration and utilisation of at least one space asset** |
|  |  |
| **FS-4** | **Business Model and Business Plan** |
| FS-4-1 | A clear and complete end-to-end **service value chain** has been identified |
| FS-4-2 | The business model shows understanding of the **implications of the chosen value proposition**:* Customer(s) **ability to pay**
* Overall **business costs**
* **Sufficient return** to sustain the service value chain
 |
| FS-4-3 | The business model clearly identifies:* **Distribution channels/path to market**
* **Key partnerships**
* **Key resources** (partly addressed in FS-2/3)
* **Key activities** (already identified as part of FS-2/3)
 |
| FS-4-4 | The preliminary business plan is **credible**:* Credible growth strategies
* Clear and credible cost/revenue projections
* NPV > 0 in 3 to 5 years
 |
| FS-4-5 | A meaningful **risk assessment** has been conducted, including the 2-3 most important risks for commercialisation (incl. weaknesses and threats) |
|  |  |
| **FS-5** | **Service provision team** |
| FS-5-1 | The **management structure** is clear and there is a clear allocation of responsibilities; in particular, there is a project management preferably with service development expertise |
| FS-5-2 | Team has (or will acquire) the **necessary capabilities**:* Business development expertise
* Service provision capacities (people, skills, infrastructure)
* Technical skills (experience, development, testing...)
* Understanding and experience of the target market
 |
| FS-5-3 | Team has a key differentiator that constitutes a **"Unique Selling Proposition"** |
| FS-5-4 | **Core team** is credible to support the long-run activities, including:* Managing and scaling-up businesses, incl. taking key decisions
* Attracting resources (e.g. private capital, personnel)
* People skills (e.g. communication, relationship, trust)
 |

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| **FS-6** | **Roadmap and Way Forward** |
| FS-6-1 | The **starting point** and the **goal to achieve** (e.g. income in 5 years) are clearly identified |
| FS-6-2 | The **main assumptions/critical success factors** against which to design the roadmap are identified and are quantifiable (e.g. partnership agreements, capital needs, staffing, regulation approval, access to IPR, delivery mechanism in place, etc.) |
| FS-6-3 | **Clear decision points are set** to check assumptions/decision criteria and revise risks |
| FS-6-4 | The team has **contingency plans** (if required) to change action after a decision point |

**ANNEX B: LIST OF ACRONYMS**

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| --- | --- |
| ARTES | Advanced Research in Telecommunication Systems |
| BASS | Business Applications Space Solutions |
| CAPEX | Capital Expenditures |
| DM | Digital Media |
| FDP | Final Data Package |
| FR | Final Review |
| FREP | Final Report |
| KO | Kick-Off |
| KPIs | Key Performance Indicators |
| MOM | Minutes of Meetings |
| MPR | Monthly Progress Report |
| NM | Negotiation Meeting |
| OPEX | Operational Expenditures |
| PM | Progress Meeting |
| PoC | Proof of Concept |
| PWP | Project Web Page |
| RR | Risk Registry |
| WBD | Work Breakdown Description |
| WBS | Work Breakdown Structure |

**ANNEX C: THE INSTRUCTIONS REGARDING THE COMMON PROTECTION OF UNCLASSIFIED ACTIVITY INFORMATION (IN ITS LATEST VERSION)**

**INSTRUCTIONS REGARDING THE COMMON PROTECTION OF SENSITIVE UNCLASSIFIED INFORMATION IN ESA PROGRAMMES/PROJECTS**

**1. INTRODUCTION**

The purpose of this document is to establish a uniform approach for the protection of sensitive unclassified information or assets in the scope of the programme/project.

The objective is to ensure a commensurate and adequate protection of sensitive unclassified information or assets from a need-to-know or need-to-access perspective.

The sensitive information or assets in the scope of the programme/project are identified either:

* by means of a security risk analysis process;
* because they are part of an export control framework (e.g., ITAR/EAR, European Export Control or National Export Control scheme);
* because the information entails personal sensitive information (i.a.w. the related national legislation); or
* because the information entails proprietary or commercially sensitive information.

This document aims to provide a set of requirements, to be jointly agreed between ESA and the Contractor, on the protection applicable to sensitive unclassified programme/project information or assets.

Any standard requirements addressing the proper management of other unclassified programme/project information are addressed in the management requirements document of the contract. In this sense, it is important to recall that from a security perspective even unclassified information or assets which are not considered as sensitive, are to be subject to the need-to-know principle and distributed only within the Programme itself or within the organisation (ESA or Contractor).

Programme information is only to be publicly released in accordance with the communication strategy defined in the management requirements document.

For the avoidance of doubt, nothing in this document shall be interpreted as amending or superseding the contractual obligations and the rights of the Parties specified in the contract for the Programme/Project, in particular with respect to the ownership, use and licensing of Intellectual Property Rights and disclosure of deliverables. In case of conflict between the requirements of this document and the contract, the latter shall prevail.

**2. APPLICABILITY**

CPoUREQ\_010. This document shall apply to any economic operator involved by contractual or pre-contractual unclassified activity in any of the phases of the Programme/Project.

**3. RESPONSIBILITIES**

CPoUREQ\_020. Contractors and Subcontractors shall:

* Ensure the correct implementation of the jointly agreed protective measures (see Section [5](#bookmark2));
* Appoint a point of contact for matters related to the implementation of this document, who will be the interface for the ESA Information Security Officer; this role may be assigned to existing resources of the Contractor either in the project team or at Company level;
* Take appropriate action in the event of an actual or suspected compromise of Programme information, and to inform ESA about such incident.

**4. PROTECTION OF SENSITIVE UNCLASSIFIED PROJECT INFORMATION OR ASSETS**

**4.1. General Principles**

CPoUREQ\_030. Sensitive unclassified information or assets held, used or generated by the Contractor or Subcontractor in the scope of the programme/project shall be adequately marked and shall be handled and protected in conformity with the requirements of this document.

CPoUREQ\_040. Access to programme/project sensitive unclassified Information is given, based on an adequate sharing of information, and on the need-to-know principle, i.e. a positive determination is made by the issuer of the information, or the entity under whose responsibility the information is issued, that a prospective recipient is eligible for access to, knowledge of or possession of this information in order to perform tasks or services in the scope of the contract. The need-to-know principle shall respect the contractual obligations and the rights of the Parties specified in the contract for the programme/project, in particular with respect to the ownership, use and licensing of intellectual property rights and disclosure of deliverables

CPoUREQ\_050. Sensitive unclassified information or assets shall be determined by the outcome of a security risk assessment, with the identification of the potential damage the unwanted disclosure, loss of integrity or loss of availability or loss of confidentiality of this information could cause to the Programme Participants.

CPoUREQ\_060. Sensitive programme/project unclassified information shall, by preference,

be exchanged by electronic means, and such transmission shall be protected in accordance with the provisions of this document.

CPoUREQ\_070. Systems developed in the scope of the programme/project with Communication and Information System (CIS) or Information Security (INFOSEC) solutions and/or tools selected shall observe cyber best practices to security the system(s) and/or selected solutions/tools against intentional and unintentional threats.

***4.2.1. ESA Unclassified Protective Markings and Assigned Protection Levels***

The table below provides an overview of the Unclassified Protective Markings and assigned Protective Levels which are applicable for ESA. This table is to be used as benchmark to map the Contractor’s or Subcontractor’s company-internal markings against ESA’s, to establish the Equivalence Matrix.

|  |  |  |
| --- | --- | --- |
| **PROTECTION LEVEL** | **PROTECTIVE****MARKING** | **SENSITIVITY** |
| No Protection | ESA UNCLASSIFIED – Releasable to the Public | No sensitivity |
| PL1 | ESA UNCLASSIFIED –For ESA Official Use Only | Unauthorised disclosure, integrity or availability shortfall is undesirable |
| PL2 | ESA UNCLASSIFIED –Limited Distribution | Unauthorised disclosure, integrity or availability shortfall could have a **negative impact** on the interests of ESA and/or one or more of its Member StatesorUnauthorised disclosure, integrity or availability shortfall could have **legal consequences** for ESA. |
| PL2 | ESA UNCLASSIFIED –Sensitive Personal Data | Unauthorised disclosure, or integrity shortfall could have **legal consequences** for ESA |

Table 1 - ESA Protection Levels for UNCLASSIFIED Markings

***4.2.2. Minimum Protective Measures***

**Protection Level 2** is used for information that is considered to have a higher sensitivity level, and due to its nature, this information is subject to a basic protective measure. In addition to any agreed identified sensitive project/programme-specific information, this protection level is compulsory for information which contains in part(s) or as a whole, information which is subject to export control legislation or rules (e.g. ITAR, EAR, European Export Control, national export control), for information which contains Sensitive Personal Data (i.a.w. the ESA Personal Data Protection framework and the relevant national legislation on the protection of personal data, e.g. the relevant EU regulations like GDPR), for information identified as proprietary information, for commercially sensitive information and for certain information in the scope of the procurement process.

***4.2.2.1. Protective Measures***

CPoUREQ\_090. The contractor shall apply the minimum protective measures for sensitive unclassified information as defined below:

1. Establish and apply a dedicated need-to-know policy;
2. Identify the sensitive unclassified information by means of a security risk assessment;
3. Identify the information which is per definition sensitive unclassified information:
	1. Information subject to export control legislation or regulations
	2. Information containing sensitive personal data
4. Mark Information subject to export control legislation or regulations: if the Contractor’s company-internal marking does not explicitly indicate this, an additional, clearly visible annotation shall be foreseen on the front page of the document, indicating that the document contains information which is subject to export control legislation or regulations;
5. Downgrading to standard unclassified information level only when agreed with the Agency;
6. Mark Information clearly on every page;
7. It’s the sender’s responsibility to point out to the addressee/recipient(s) (e.g., addressees and meeting participants):
	1. the sensitivity level of the information;
	2. the relevant protective measures that apply;
	3. any further distribution limitations that apply;
	4. not to make this information publicly available.
8. The use of annotations or caveats to limit/control distribution is strongly recommended;
9. Files of this type of information can only be stored on laptops, portable devices or PCs when encrypted (at least file encryption);
10. Files of this type may be hosted in approved data bases, repositories or document management systems;
11. Preferred way to exchange: electronically, provided that the content is encrypted with a solution agreed between ESA and the Contractor;
12. Physical exchange (surface mail) requires the application of the double wrapping/envelope approach, the outer one having the detailed address of the named recipient, and the inner one bearing the protective marking;
13. Destruction:
14. Paper/CD/DVDs are to be shredded with a device approved for this level of information.
15. Electronic files must be removed with an approved deletion tool.
16. This type of information can be discussed during teleconferences and videoconferences, under the control/supervision of the meeting organiser or chairperson, provided due diligence is applied for eavesdropping and overlooking. The protection of conferencing content over VOIP shall be mutually agreed between ESA and the Contractor.

**5. INFORMATION SECURITY MANAGEMENT PLAN (ISMP)**

CPoUREQ\_100. The Contractor or Subcontractor shall establish an Information Security Management Plan in the scope of the Programme/Project, that, as a minimum:

1. establishes the Programme/Project need-to-know policy and the inherent implementation plan, demonstrating how Programme/Project information is controlled;
2. contains the equivalence Marking Matrix, mapping the Contractor’s or Subcontractor’s company-internal protective markings against the ESA Unclassified Protective Markings;
3. lists the applied and agreed protection measures and procedures, demonstrating how sensitive unclassified Programme/Project is adequately protected in a uniform way, in accordance with the agreed minimum protective measures;
4. identifies the Contractor’s or Subcontractor’s point of contact for security matters;
5. establishes the applicable procedure for the reporting of an actual or suspected compromise of Programme/Project information to ESA.

**5.1. List of Identified Sensitive Unclassified Information and Assets**

CPoUREQ\_110. The Contractor shall generate the jointly agreed list reflecting the deliverable information and assets which is identified as sensitive unclassified.

CPoUREQ\_120. The list shall be maintained and updated as required and agreed with the Agency.