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Outline Proposal Template for "Commercial Applications enabled by Space Environments" (CASE) Feasibility Studies

# INTRODUCTION

ARTES 4.0 *Commercial Applications enabled by Space Environments (CASE)* is dedicated to develop pre-operational downstream applications and services using existing space-based infrastructure in Low Earth Orbit or beyond, integrated, when needed, with terrestrial solutions.

An Outline Proposal is a means for the Tenderer to provide an initial iteration on the content and justification of the planned CASE activity.

The Tenderer is reminded that every CASE activity must explicitly receive the financial authorisation by the National Delegation(s) of the relevant countries of the consortium. The Tenderer and its Subcontractor(s) shall therefore contact their National Delegation(s) before submitting their Outline Proposal[[1]](#footnote-2). Should the National Delegation(s) request access to the Outline Proposal, this shall be handled directly by the Tenderer and its Subcontractors and the National Delegation(s).

The Tenderer is required to submit an Outline Proposal containing the information described in this document before submitting a Full Proposal. Based on the information provided in the Outline Proposal, the eligibility of the proposed idea for CASE will be assessed by relevant ESA experts and early feedback will be provided. Only once the Outline Proposal is found acceptable by ESA, the Full Proposal may be submitted.

Concerning the use of this template, please note the following:

1. Parts in red font in this template should be modified as appropriate for your proposed activity.
2. Text in blue and in a smaller font size *(example)* is for guidance and can be removed from the completed outline proposal document.
3. In case the Tenderer has produced a [CASE Activity Pitch Questionnaire (APQ)](https://business.esa.int/case), the specific section AP.X.Y of the APQ can be directly copied where identified as: [from AP.X.Y]. Whenever needed and/or relevant, the contributions coming from the APQ shall be updated in this Outline Proposal.

The [Terminology used in ARTES 4.0 Business Applications](https://business.esa.int/sites/default/files/TERMINOLOGY%20used%20in%20ESA%20Business%20Applications.docx) document provides an explanation of the relevant terminology and shall be used as a reference in preparation of the Outline Proposal.

**This outline proposal shall be sent to:** [**business@esa.int**](mailto:business@esa.int)

Please use this page as the cover page of the Outline Proposal and remove the previous two pages   
(Template Title page and Introduction)

This outline proposal shall be no longer that 30 pages. Use 11 point font and do not increase page margins.

Study Name

Outline Proposal for an ARTES 4.0 CASE Feasibility Study

Programme Line: BASS

Date: ……

Reference: ……

Outline Proposal Validity: 8 (eight) months. A Full Proposal shall be submitted within 8 months from acceptable Outline proposal.

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# STUDY SUMMARY AND RATIONALE

## Background information

Feasibility Study Name: [from AP.1.1]  
*(Provide a short catchy name or acronym as well as the full study name. Please avoid to pick a name of an activity that is already present in the ARTES 4.0 Business Applications family. This can be checked under: https://business.esa.int/projects . The project name should be the same used for the commercial branding of your product / service.)*

Company Proposing : [from AP.1.2]  
*(Provide details, i.e. address, country, website, contact point name, telephone and e-mail)*

Company background: [from AP.1.3]  
*(Provide a short description of the company background including year of creation, size, turnover, number of employees)*

Are you familiar with ARTES 4.0 Business Applications? [from AP.1.4]  
*(Indicate if you have worked with ESA before and how you discovered ESA Business Applications. Please also highlight if you have already experience working with ESA Human and Robotic Exploration (HRE))*

Are you applying as a consortium? *(Yes/No)*  
Who are the other entities? *(name, country, website)*  
[from Ap.1.5]

Does your team (company / consortium) have the right skills and experience to deliver what you are proposing? [from AP.1.6]  
*(Yes/No/Partial + comments*  
*Please indicate which skills/expertise you possess/miss with respect to*

* *the involved space environments/assets like conditions of microgravity, harsh environments (extreme temperature, cosmic radiation, vacuum), space resources, SatCom, SatNav, SatEO, Human Spaceflight,*
* *the specific applications domain and*
* *in business development)*

Have you (or your partners) contacted your National Delegation or ESA Business Applications Ambassadors (where available)? [from AP.1.7]  
*(Yes/No/Partial + comments  
Indicate if you have been in touch with your National Delegation. Also indicate if you have discussed this application with your ESA Business Applications Ambassadors, if applicable. If yes, please, present the status of discussion with them)*

## Service Description and Rationale

Description of the service that you intend to offer: [from AP.2.1]

Innovation / unique selling point with respect to what is available on the market: [from AP.2.4]

The proposed product/service fits within our current business activities and our mid-/long-term strategy as follows: [from AP.3.3]

## Space Asset(s) / Space Technology and Rationale

1. Rationale for integration of the space-based facility: [from AP.2.5]

[Explain why a space-based facility is considered necessary for integration and what the expected added value for the proposed services/products is; explain why this cannot be done on Earth]

1. Space environment and associated facility envisaged for integration: [from AP.2.5]

[Provide information on the concrete space-based facility foreseen for integration and the required key characteristics (e.g. volume, energy supply, control of environment (temperature, humidity), exposure to radiation).]

Present the service provider supplying the space facility and your current level of engagement with them (e.g. ICE Cubes Service, Bioreactor Express Service, Bartolomeo or other services on board the International Space Station, Space Rider, Space Forge, etc.).]

1. Use of other space assets (if applicable) : [from AP.2.5]

[Provide either information on the concrete space asset(s) / satellites / sensors / technologies foreseen for integration and their basic features (e.g. Satellite Communications: narrowband/broadband, data rate, SatCom network operator. Earth Observation: optical/radar, spatial & temporal resolution, specific EO instruments, data provider. Satellite Navigation: accuracy. Human Space Flight: technology/service), or present as minimum a shortlist of space assets / satellites / sensors/ technologies subject for investigation in the Feasibility Study.]

# CUSTOMERS/USERS AND THEIR NEEDS

## Business Model Overview

A first draft of the targeted Business Model and explanations thereof are presented below.

[Present a first draft version of the targeted business model utilising the ‘Business Model Canvas’ template available under: <http://www.businessmodelgeneration.com/canvas/bmc> (Note: in case of different targeted customer segments at the same point of time, please use either colour coding or separate forms per customer segment).]

## Customer Segments

The key customers/user segments of the final product/service: [from AP.2.2].

(Please note: users and customers can be different: users use the final product/ service but they do not necessarily pay for it; customers pay for the service, but they do not necessarily use it)

The potential customer/user organisations that will be involved in the Feasibility Study are: [from AP.3.2]

(indicate who they are and what your level of engagement with them is)

‘Letter(s) of Interest’ are available from the following organisations and are attached to this Outline Proposal: …

(Letter(s) of interest from the customer(s)/user(s) to be involved in the Feasibility Study (Annex 1):

The letter(s) shall indicate in their own words of these customer(s)/user(s) why they are interested, how they intend to contribute to the study and to which tasks, and what their interest beyond the feasibility study is in case that the study shows satisfactory results. If such letters cannot be provided upfront, then the process and timescale for confirming their interest must be indicated. Such letters have to be provided at the latest at Full Proposal submission.)

## Customer Profiles

The following table provides a summary overview of the involved customers/users and associated high level characterisation of their needs (in terms of their jobs-to-be-done, pains and gains) in relation to the target service(s)/product(s). [from AP.2.3]

(A short description shall be provided of how the involved customer(s)/user(s) currently handle the issues that the proposed application/service would address. An overview of the shortcomings and challenges vis-à-vis the present situation shall be provided, as well as opportunities for improvements. This can be related to improvement of service, performance, quality, economic, commercial, legal or other factors.)

| **Key Customer / Customer Segment** | **Customer’s relevant Tasks/Jobs** | **Customer’s Pains (e.g. problems)** | **Customer’s Gains (e.g. benefits)** | **Rationale for Involvement** |
| --- | --- | --- | --- | --- |
| e.g. Farmer XXX (potato production) | Forecast yields | Manual survey expensive (XX EUR per ha) | Reduce manual labour by YY% | Key player in the market of ZZZ |
| ……… | ……… | ……… | ……… | ……… |
| ……… | ……… | ……… | ……… | ……… |
| ……… | ……… | ……… | ……… | ……… |

(If the product/service is targeting a few important customers, each customer should be clearly identified. Add any supplementary text you feel is necessary to clarify the nature of your intended customers and to explain their main needs. Please note that the problems must be specific and show a clear understanding of the customer pain to be addressed).

## Value Propositions

The table below identifies the specific characteristics of the product/service that will address the previously-identified customer problems/needs *(e.g. performance, cost, new features)*, and it defines its value proposition towards its customers

| **Customer Segment** | **Envisaged Product/Service Offer incl. Key Characteristics** | **Value Proposition** |
| --- | --- | --- |
| Potato producers | Yield estimation service – prediction of XX months in the future | More reliable planning for harvesting and transportation (AA % cost reduction) |
| ……… | ……… | ……… |
| ……… | ……… | ……… |
| ……… | ……… | ……… |

[Add any supplementary text that you feel is necessary to fully explain your value proposition.]

# APPLICATION / SERVICE VIABILITY

## Market Analysis

The related market size and its geographical reach are: [from AP.3.1].

(e.g. key quantitative financial figures of the market size, regional / national / international geographical reach. market position after 5 years. Note: do not confuse the potential financial market size of the targeted information service with the general market segment, e.g. when providing an information service to railway operators it is required to present the financial market size for this specific information service, but not for the total of the railway business.)

The targeted position of the product/service in the market is summarised in the matrix below.

Table 3.1 Market positioning

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| MARKET | New | …… | …… | …… |
| Adjacent | …… | …… | …… |
| Existing | …… | …… | …… |
|  | | Existing | Incremental | New |
| PRODUCT / SERVICE | | |

*(For example, if the application/service tries to resolve a potential need not yet expressed by users, the market positioning will be New, and shall be indicated accordingly in the above table. If the intended project tries to improve (e.g. by increasing features, reducing costs) a, application/service, the product positioning will be existing. Possible combinations of Markets / Product / services shall be marked in the table (either with a “X”, or with the name of the product / service) as appropriate.)*

## Competitive Landscape

Our key competitors and the nature of the competition are identified in the table below.

Table 3.2 Summary of the Competition

| **Competitor** | **Nature of Competition / Characteristics** | **References** |
| --- | --- | --- |
| ……… | ……… | ……… |
| ……… | ……… | ……… |
| ……… | ……… | ……… |

(Indicate the nature of the competition for each of the identified competitors. For example, an existing or potential supplier of the same type of product, an established supplier of similar products, a new entrant to the market, an entity known or suspected to have plans to develop the same type of product, a market incumbent. Quantify the nature of the competition as far as possible (e.g. provide estimates of their market share, competitiveness in terms of pricing, etc.). Provide references to substantiate your assessment of the competition (e.g. web links, references to market analyses, data sheets, etc.).

Please note that statements such as “There is no such product on the market, ergo there is no competition” are not considered acceptable, because the number one competition stems always from the existing way the problem is solved currently by the users/customers. The number two competition typically disregarded is from other solutions the customers might be able to take up (substitutes which do not require space assets).)

## Viability Success Factors

The most important issues influencing the viability of the service(s) / the critical success factors towards implementing of a sustainable service are:

Table 3.4 Summary of issues / critical success factors

|  |  |
| --- | --- |
| **Issue / success factor** | **Description** |
| ……… | ……… |
| ……… | ……… |
| ……… | ……… |

The issues and success factors can cover a variety of aspects, i.e. consortium internal / external such as partnerships, IP, investments, commercial, technological, regulatory, etc.

## Roadmap

Time of commercial entry into the market: [from AP.3.5]

The major milestones (technical, commercial, others) towards the successful implementation of an operational service (roll-out in the market) are the following:

Table 3.5 Roadmap Milestones

| **Timeline** | **Subject of Roadmap Milestone** |
| --- | --- |
| ……… | ……… |
| ……… | ……… |
| mm/yyyy | Entry into market xxx with sales of yyy |

Provide information on the subject of the milestone (e.g. completion of feasibility study, partnership agreements, first customer contract, entry into market) and an estimation of the related timeline [mm/yyyy].

## Project Team

The following diagram describes the value chain of the service, including the different stakeholders.



EXAMPLE

(Provide a diagram which illustrates the interactions among customers, users, project team (including the service provider) and other key stakeholders (e.g. regulators) relevant to evolve the application/service within this study and beyond.)

The following table provides an overview of the positioning of the different consortium partners (Tenderer and its Subcontractor(s)) and key external actors, their background and their role during the feasibility study, development and the commercial exploitation of the proposed business.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Customers/Users, Business Partners, Other Stakeholders** | **Background and Experience** | **Role in this Feasibility Study** | **Role in a potential Demonstration Project** | **Role in commercial exploitation** |
| [partner providing space-based facility] | …… | …… | …… | …… |
| …… | …… | …… | …… | …… |
| …… | …… | …… | …… | …… |

## Environmental, Social and Governance Sustainability Aspects

The proposed project and the resulting services will contribute to address the aspects in terms of Environmental, Social and Governance (ESG) Sustainability as indicated in the Table below.

Table 3. Environmental, Social, Governance (ESG) Metrics

|  |  |
| --- | --- |
| **Metric** | **Justification wrt project / proposed service** |
| **Environmental** | |
| Waste and pollution | … |
| Greenhouse gas emissions | … |
| … | … |
| **Social** | |
| Health and safety | ... |
| Gender diversity | … |
| … | … |
| **Governance** | |
| Ethics and anti-corruption | … |
| Data privacy | … |
| … | … |

[Note: The above entries are just examples. Please populate as relevant.]

# SYSTEM AND IMPLEMENTATION ASPECTS

## System & Service Architecture

A high-level block diagram of the system and service showing the key building blocks with key inputs/outputs and the main interfaces, including final service outputs towards the customers/users, is provided in the following figure:



EXAMPLE

The individual building blocks and their main features as well as the interfaces between the building blocks are the following:

(Provide information on the main features of each building block presented in the System/Service Architecture diagram and how they interface with each other.)

Building block “space-based facility”: …

Building block “aaa”: …

Building block “bbb”: …

## Implementation Approach

a) The starting point for our project is: [from AP.4.1]

(e.g., idea, prototype, existing product, existing service, results from other activities, discussions with potential users)

b) The expected goals / outputs at the end of the feasibility study and the way they will contribute to an informed decision for the next steps / further investments (e.g. in form of an ARTES 4.0 CASE Demonstration Project) are: [from AP.4.3]

c) Study Logic:



[In case that tasks or study logic must deviate from the Management Requirements for CASE Feasibility Studies, this needs to be duly justified.]

d) The key activities proposed to be executed are: [from AP.4.2]

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **WP Identifier**  *(e.g. WP0000, WP1000, WP2000, …)* | **WP Title** *(e.g. Management, Customer Engagement,**Technical Feasibility, …)* | **Key activities** | **Responsible Entity** | **Schedule** |
| ……… | ……… | ……… | Prime/Subco | KO-KO+xx m |
| ……… | ……… | ……… | Prime/Subco. | KO-KO+yy m |
| ……… | ……… | ……… | Prime/Subco | KO-KO+zz m |

(The table provides a high level description of the key activities (e.g. first level Work Packages) to be performed including the time planning information.)

e) For each of the tasks, the most critical and important issues to be addressed during the study shall be presented in the table below.

| **Study Task** | **Critical / Important Issues to be addressed** |
| --- | --- |
| Task 1: Customer Identification and Value Proposition Definition |  |
| Task 2: Technical Feasibility Assessment |  |
| Task 3: Viability Assessment |  |
| Task 4: Proof of Concept |  |
| Task 5: Preparation for Service Implementation |  |

(The issues and success factors can cover a variety of aspects, i.e. consortium internal / external such as partnerships, IP, investments, commercial, technological, regulatory, etc.)

## Technical and Non-Technical Risks

The major technical, operational and business related risks associated with the proposed activity and the associated mitigation plans are: [from AP.4.7]

These risks are summarised in the following table.

(Complete the following table as appropriate)

| **Risk Identifier** | **Description** | **Likelihood** | **Severity** | **Mitigation Actions** |
| --- | --- | --- | --- | --- |
| ……… | ……… | low/medium/high | low/medium/high | ……… |
| ……… | ……… | low/medium/high | low/medium/high | ……… |
| ……… | ……… | low/medium/high | low/medium/high | ……… |

## Financial, Management, Administrative

1. The table below provides a high level description of the proposed study team, including the internal source of co-funding.

| **Company Name** | **Main figures**  *(e.g. year of creation, size, turnover, number of employees)* | **Relevant Experience** | **Activity cost kEUR** | **Source of co-funding[[2]](#footnote-3)** |
| --- | --- | --- | --- | --- |
| ……… | ……… | ……… | ……… | ……… |
| ……… | ……… | ……… | ……… | ……… |
| ……… | ……… | ……… | ……… | ……… |

1. The table below provides the breakdown of costing and pricing per contractor.

| **Company/ Organisation** | **Status (e.g. University, SME)** | **Country** | **Cost (kEUR)** | **Price (kEUR) (requested from ESA)** | **% Funding from ESA[[3]](#footnote-4)** | **National Delegation Support[[4]](#footnote-5)** |
| --- | --- | --- | --- | --- | --- | --- |
| Prime | ……… | ……… | ……… | ……… | ……… | yes/no/under discussion |
| Subcontractor 1 |  | ……… | ……… | ……… | ……… | yes/no/under discussion |
| Subcontractor 2 |  | ……… | ……… | ……… | ……… | yes/no/under discussion |

1. The table below provides an initial overview of the planned workforce distribution over the various Work Packages.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | WPxxx | WPxxx | WPxxx | WPxxx | WPxxx | WPxxx | Total |
|  | [%] | [%] | [%] | [%] | [%] | [%] | [%] |
| Workforce distribution |  |  |  |  |  |  |  |

1. The table below provides information and reference of other projects/activities carried out as precursor activities to the proposed study or on related subjects.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Linked Activity Name** | **Activity description and relevant links with what is proposed in this Outline Proposal** | **Cost of the Linked Activity**  **kEUR** | **Funds received by public sources**  **kEUR** | **Timeframe** | **Related programme / funding agency**  *EU H2020, FP7, ESA XXX, national programmes* |
| ……… | ……… | ……… | ……… | ……… | ……… |
| ……… | ……… | ……… | ……… | ……… | ……… |
| ……… | ……… | ……… | ……… | ……… | ……… |

1. Other help/support expected from ESA: [from AP.4.6]

(e.g. networking, coaching, branding, technical/business advice)

1. Points of contact of the National Delegations: <https://business.esa.int/national-delegations>   
   For Italian companies, it is NOT required to contact the National Delegation (ASI), because ESA has been delegated by ASI to interface with the Tenderer in the whole stage of the bidding process. [↑](#footnote-ref-2)
2. The source of co-funding needs to be indicated. Co-funding can be provided by industry, institutions and users participating in the activity. In case of third party funding, the status of the availability of this funding, and actions to arrive at a formal agreement for this need to be presented. [↑](#footnote-ref-3)
3. Please, note that work carried out by SMEs involved as contractors or subcontractors may be funded up to 80%   
   by the Agency. The decision of the applicable funding level is with the related national delegation. [↑](#footnote-ref-4)
4. yes = The National Delegation has been contacted and is in favour of the proposed activity.  
    no = The National Delegation has not yet been contacted.  
    under discussion = The National Delegation has been contacted and discussions are ongoing. [↑](#footnote-ref-5)