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Outline Proposal Template for "Applications integrating space asset(s) and 5G networks in the Groningen region" Feasibility Study

# INTRODUCTION

The goal of the ARTES Integrated Applications Promotion (IAP) programme is to develop operational downstream applications and services using existing space technologies, integrated, when needed, with terrestrial solutions. For this specific call, the bidder shall propose a Feasibility Study for developing space-based applications leveraging on the deployment of the latest generation of mobile communication (5G) in the Groningen region of the Netherlands either as Element I or as Element II.

The collaboration between ESA ARTES IAP and EBG is underpinning this specific call for proposals titled "Applications integrating space asset(s) and 5G networks in the Groningen region". This Call for Proposals targets activities :

* Assessing technical feasibility and commercial viability of future space-based downstream services
* Foreseeing the integration of 5G technologies and space asset(s)
* Performing a Proof of Concept (PoC) in the Groningen region
* Optionally, making use of the 5G related assets and technologies made available by 5Groningen partners’ during the study (Annex 2)
* For Element I “User Specific”: activities addressing one of the uses cases available in Annex 1.
* For Element II “Generic”: activities addressing appliations/services in the thematic areas of healthcare, environment, transport and energy.

An Outline Proposal is a means for the bidder to start a dialogue with the ARTES IAP team at the Agency (including some representatives of the 5Groningen Project Partners) on the content and justification of the planned activity.

The Tenderer is reminded that the ARTES IAP is an optional programme of the European Space Agency, and as such every activity has to explicitly receive the financial authorisation by the National Delegations of the relevant countries of the consortium. The Tenderer and its Subcontractor(s) shall therefore contact their National Delegations 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 such National Delegation(s).

The Tenderer is required to submit an Outline Proposal containing the information described in this document before submitting a Full Proposal. On the basis of the information provided in the Outline Proposal, the eligibility of the proposed idea for ARTES IAP support will be assessed by relevant ESA and 5Groningen experts and early feedback will be provided. Only once the Outline Proposal is found acceptable by ESA, the Full Proposal may be submitted. For Outline Proposals addressing Element I “User Specific” of this call for Proposal the acceptance of the Outline Proposal will take into account the relevance of the proposed service to address the requirements of the 5Groningen use case selected.

The bidding process is explained in detail in the Cover Letter.

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.

Explanation of the terminology used can be found in the document: [ARTES Apps Terminology](https://artes-apps.esa.int/sites/default/files/ARTES%20Apps%20Terminology_Rev.2.4.pdf)

**This outline proposal shall be sent to:** [**business@esa.int**](mailto:business@esa.int) **mentioning that the proposal is submitted in reply to this call**

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

Study Name

Outline Proposal for IAP Feasibility Study[[2]](#footnote-3)

Date: ……

Reference: ……

ESA Template Ref. 1. 5 issued 23/08/2018

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# PROJECT SUMMARY AND RATIONALE

## Background information

Feasibility Study Name:

Company Proposing :   
*(address, country, website, contact point name, telephone and e-mail)*

Company background:   
*(year of creation, size, turnover, number of employees)*

Are you familiar with ARTES Applications?  
*(Yes/No)*

Are you applying as a consortium? *(Yes/No)*  
Who are the other entities? *(name, country, website)*

Does your team (company / consortium) have the right skills and experience?   
*(Yes/No/Partial + comments)*

Have you (or your partners) contacted your National Delegation   
or ARTES Applications Ambassadors (where available)?   
*(Yes/No/Partial + comments)*

Are you applying to Element I or Element II?

* If you are applying to Element I (User Specific), which use case are you addressing?

(*Uses cases available are listed and detailed in Annex 1)*

* If you are applying to Element II (Generic), which thematic areas are you addressing (*healthcare, environment, transport or energy)*?

## Service Description and Rationale

Description of the service you intend to offer:   
*Please provide a few lines to describe the intended service to be developed from the proposed feasibility study and that could be deployed in the coming few years.*

Innovation / unique selling point with respect to what is available in the market:   
*(What is innovative in what you propose? What is your unique selling point with respect to what is available in the market?)*

The proposed product/service fits within our current business activities and your mid-/long-term strategy the following way:   
*How does the proposed product/service fit within your current business activities and your mid-/long-term strategy?*

Time of commercial entry into the market:   
*When do you plan to enter the market with the proposed product / service?   
How do you plan to bring the activity results to commercial exploitation?*

## 5G and Space Asset(s) / Technologies and Rationale

5G asset(s) / 5G technologies to be used in the proposed service:

*Provide information on the 5G asset(s) / technologies and/or foreseen features / capabilities required for the proposed service and to be investigated in the Feasibility Study.*

Space asset(s) / space technology to be used in the proposed service:

*Provide information on the concrete space asset(s) / satellites / sensors / technologies required for the proposed service and to be investigated in the Feasibility Study.*

Rationale and value of the integration of the 5G and space asset(s) / technology:

*Provide information why the space asset(s) / satellites / sensors/ technologies is considered relevant for integration with 5G assets and what is the expected added value of this integration in the foreseen applications / services.*

# Customers/users and their needs

## Customer/User Segments

The key customers/user segments of the final product/service:   
*(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 customers/users that will be involved in the Feasibility Study:

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

*If the Bidder addresses Element I, it is assumed that the users already engaged in the 5Groningen Pilot Project defining the related use case (Annex 1) will be involved. In addition, the Bidder is encouraged to seek the involvement of additional customer(s)/user(s), not necessarily in the Groningen region.*

*If the Bidder addresses Element II, he needs to involve prospective customer(s)/user(s) either in the Groningen region or in other geographical regions.*

*The letter(s) shall indicate in the 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 interested 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.*

## Pains and Gains

The pains (e.g. problems) and gains (e.g. benefits) of these customers/users:  
*(please note: whenever users and customers are different, pains and gains can be different as well)*

*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.*

The following table provides a summary overview of the customers to be involved in the feasibility study, the associated high level characterisation in relation to the target service and their representativeness for the targeted market segment.

Table 2.1 Key Customers/Users, their Problems/Needs, and their Representativeness for the targeted market segment

|  |  |  |
| --- | --- | --- |
| **Outline Proposal Template for "Applications integrating space asset(s) and 5G networks in the Groningen region" Feasibility Study** | **Importance of the customer in the target market** | **Customer Problems/Needs** |
|  | ……… | ……… |
|  | ……… | ……… |

*If the product(s) is/are targeting a few important customers, each customer should be clearly identified. The importance of the customer in the target market should be indicated (eg approxmative share of the market represented by the cusromer, in terms of revenue or geographical presence or else).*

*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 detailed understanding of the customer pain. Possible examples: maintenance of water flow sensors takes a lot of time: the average call out time is 2 hours and total savings due to the service would be 200kEUR/year. Additionally the risk of flooding would be reduced (2 major incidents last year).*

# Application / Service Viability

## Market size and geographical reach

What is the related market size and its geographical reach?

*(e.g. key quantitative figures, Groningen region and/or other regions/ national / international)*

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

Table 3.1 Market positioning

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| MARKETS | New | …… | …… | …… |
| Adjacent | …… | …… | …… |
| Existing | …… | …… | …… |
|  | | Existing | Incremental | New |
| APPLICATION/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.*

## Value Proposition

The table below identifies the specific characteristics of the application/service that will address the previously-identified customer problems/needs. *(e.g. performance, cost, new features)*

Table 3.2 Key Product Characteristics

|  |  |
| --- | --- |
| **Customer Problem/Need** | **Application/Service Characteristics Addressing this Problem/Need** |
| ……… | ……… |
| ……… | ……… |
| ……… | ……… |

*Add any supplementary text that you feel is necessary to fully explain your value proposition. In particular, if the intended service will provide value to its customers through the integration of space based and 5G based services, please describe the value of using 5G technologies and space asset(s) for your proposed service.*

## Competitive Landscape

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

Table 3.3 Summary of the Competition

|  |  |  |
| --- | --- | --- |
| **Competitor** | **Nature of Competition** | **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

The major milestones (timeline, 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 |

*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].*

# SYSTEM AND IMPLEMENTATION ASPECTS

## Project Team

The following diagram describes the team composition and their role in the project.

Figure 4.1 Project Team Composition and Roles

EXAMPLE

*Provide a diagram which illustrates the interactions among customers, users, project team (including the service provider) and other key stakeholders (e.g. regulators) in the commercial exploitation phase of the system/service you intend to realise.*

*Include a discussion of the changes, if any, introduced in the value chain by the proposed new system/service.*

*If your proposal targets Element I of the Call (User Specific), please describe how you intend to interact with the companies involved in the pilot project defining the related use case during the lifetime of the study.*

The following table provides an overview of the positioning of the Tenderer and its Subcontractor(s) as well as of the involved external key actors together with their position in respect to the feasibility study and the targeted commercial exploitation.

Table 4.1 Partners’ Positioning

|  |  |  |  |
| --- | --- | --- | --- |
| **Partner** | **Background and Experience** | **Role in the feasibility study** | **Role in  commercial exploitation** |
| ……… | ……… | ……… | ……… |
| ……… | ……… | ……… | ……… |
| ……… | ……… | ……… | ……… |

## System/Service Architecture

A high level block diagram of the system/service showing the key attributes and key building blocks and the main interfaces is provided in the figure below.

Figure 4.2 System/service Architecture



EXAMPLE

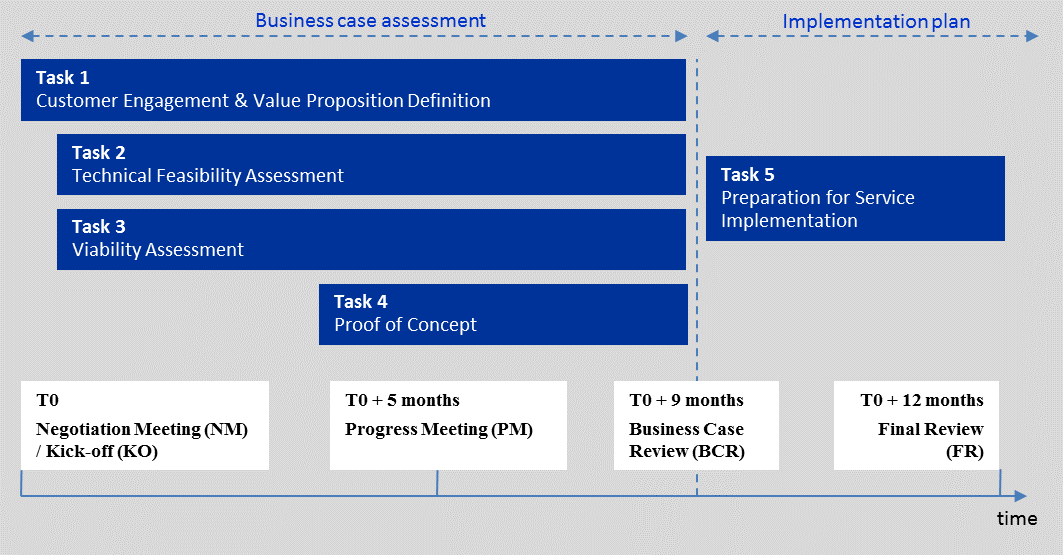
## Implementation Approach

a) The starting point for our project is:

*(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:

c) Study Logic:



*This is the study logic as presented in Figure 2 of the “Management Requirements” of AO-9569. Please, note that this study logic is not compulsory. In case that an alternative study logic and alternative tasks are proposed, this needs to be justified.*

*Notwithstanding the above, the execution of a proof of concept in a relevant location in the region of Groningen is mandatory (see point g). Additional proof of concepts in other regions can be proposed as part of the study, considering the relevance to the proposed user(s)/customer(s).*

d) The key activities proposed to be executed are:

Table 4.2 Key tasks and high level information

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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.

Table 4.3 Study tasks – major activities & critical / important issues addressed

|  |  |
| --- | --- |
| **Study Task** | **Critical / Important Issues to be addressed** |
| ……… |  |
| ……… |  |
| ……… |  |

*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.*

f) The major technical, operational and business related risks associated with the proposed activity and the associated mitigation plans are:

These risks are summarised in the following table.

*(Complete the following table as appropriate)*

Table 4.4 Overview of the Major Risks and the proposed Risk Mitigation Actions

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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 | ……… |

g) Proof of Concept (PoC).

Please describe the Proof(ves) of Concept you propose, including:

* the aim of the PoC: demonstrate the system/service by assessing its specific features/performance, demonstrate integration of space and 5G technologies
* the relevance of the proposed P for the development and deployment of the intended service
* which users/customers will be involved and the areas where the PoC (s) will be performed
* the main activities proposed to be performed in the PoC; technical development/integration, testing; deployment and execution of the PoC; tools and indicators to assess the value of the PoC; how the users/customers are involved in the assessment.

5Groningen assets required for the PoC:

For the Proof of concept in the Groningen region, the 5Groningen partners may make available the assets listed in Annex 2 directly to the Bidder.

Please list here the assets you intend to use in the proof of concept. For each asset requested please provide a short description about how the asset requested will be used, for how long and for which purpose. In case the Tenderer wishes to make use of some assets made available by 5Groningen partners, prior to Full Proposal submission an agreement needs to be reached on the specific terms of use/confirmation directly with the relevant 5Groningen Project Partner(s) (Annex 1)..

## Financial, Management, Administrative (FMA)

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

Table 4.5 Main project participants

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Company Name** | **Main figures**  *(e.g. year of creation, size, turnover, number of employees)* | **Relevant Experience** | **Budget (cost) kEUR** | **Source of co-funding[[3]](#footnote-4)** |
| ……… | ……… | ……… | ……… | ……… |
| ……… | ……… | ……… | ……… | ……… |
| ……… | ……… | ……… | ……… | ……… |

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

Table 4.6 Breakdown cost and price for prime and subcontractor(s)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Company/ Organisation** | **Status (e.g. University, SME)** | **Country** | **Cost (kEUR)** | **Price (kEUR) (requested from ESA)** | **% Funding from ESA[[4]](#footnote-5)** | **National Delegation Support[[5]](#footnote-6)** |
| 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 manpower distribution over the various Work Packages.

Table 4.7 Planned manpower distribution over work packages

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | WPxxx | WPxxx | WPxxx | WPxxx | WPxxx | WPxxx | Total |
|  | [%] | [%] | [%] | [%] | [%] | [%] | [%] |
| Manpower 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.

Table 4.8 Related projects/activities

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **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:   
   *(e.g. access to space data, networking, coaching, branding, technical/business advice)*

1. Coordinates of National Delegations can be found under:

   <https://business.esa.int/national-delegations> [↑](#footnote-ref-2)
2. By submitting a proposal, it is confirmed that the proposal can be shared with EBG. [↑](#footnote-ref-3)
3. The source of co-funding needs to be indicated. In case of third party funding, the status of the availability of this funding, and actions to arrive at a formal agreement for this needs to be described. [↑](#footnote-ref-4)
4. Please, note that work carried out by universities and research institutes involved as contractors or subcontractors and justifying no further commercial interest in the service or product may be funded up to 100% by the Agency. The decision of the applicable funding level is with the related national delegation.

   Please, note that work carried out SMEs involved as contractors or subcontractors may be funded up to 75%   
   by the Agency. The decision of the applicable funding level is with the related national delegation. [↑](#footnote-ref-5)
5. 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-6)