ARTES AGILE

ARTES 4.0 Technology & Product Developments

Full Proposal

Part 3

Technical Proposal

Proposal title

Proposal Reference: reference number

Notes for the use of this template (to be removed from the Proposal)

**INTRODUCTION:**

ARTES AGILE supports development activities within the ARTES 4.0 Technologies and Products in the Strategic and Generic programme Lines: C&G, Scylight, 4S and 5G. It is intended to facilitate short duration technical de-risking activities critical to the definition and development of future products and services for the SatCom sector.

ARTES AGILE activities are intended for NewSpace developments (allowing for fast to fail, iterative or agile developments) that are limited in duration and limited to an ESA Firm Fixed Price of less than €250,000.

ARTES AGILE activities address high technology risk developments which are necessary to confirm the viability of a product development plan. Therefore ARTES AGILE activities are limited to an agreed derisking plan, with no provision for increasing the scope of work via a contract change note (CCN).

The procurement process is described in the cover letter for ARTES AGILE.

 (<https://artes.esa.int/documents>).

**NOTES:**

1. Material presented in this plain style must not be removed nor modified, unless stated otherwise by an explanatory note.
2. Parts highlighted in yellow in this template should be modified as appropriate for your proposed activity.
3. Text in blue and in a smaller font size (*example*) is for guidance and can be removed from the completed outline proposal document.
4. Text in grey (example) do not need to be filled in for the Outline Proposal, but may need to be filled in for the Full Proposal

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*The Technical Proposal shall provide the technical background and rationale for the proposed development activities with the key technical aspects, including the description of the problem to be solved, the derisking activities to carried out in the context of the activity, a description of the baseline solution and the consideration of all development constraints.*

# Introduction

This document describes the final product and its current development status. It presents an overall technical development plan for the proposed activity and its constituent parts, from the current status up to the point where the outcomes of the activity are achieved.

The Development Plan includes an overview of the work to be performed in this activity.

Include the following if appropriate

The following supporting documents related to this Development Plan are attached to the proposal.

**Supporting documentation**

|  |  |  |
| --- | --- | --- |
| **Document Title** | **Scope** | **Reference** |
| *e.g. Technical Specification* … | … | … |
| *e.g. Design, Development and Verification Plan* … | … | … |
| *e.g. Company Margin Philosophy* … | … | … |
| *e.g. Qualification Plan* … | … | … |
| *e.g. Risk Management Plan* … | … | … |

# Description and Context of the Activity

## Description of the problem to be solved

Provide a description of the problem to be solved.

Describe the success criteria that the solution must meet to adequately address the problem.

Describe the verification methodology to be implemented in the activity to demonstrate that the success criteria have been met.

## Business Objectives

Description of how the activity outcomes derisk/enable the future Technology/Product/System or strategic objective of the company.

## Top level description of the proposed development

Top level description of the proposed solution or the work to be carried out addressing the problem to be solved.

Describe the current readiness level of the proposed solution. Describe the starting point of the solution

Estimate the TRL of the proposed solution at the end of the activity.

## Describe any external interfaces.

## Product Tree

The following product tree is a hierarchical breakdown of the product into the hardware and software elements that are required to perform the product functions identified previously:

(insert a product tree block diagram)

For example, refer to ECSS-M-ST-10C-Rev.1, section 4.3.4

## Baseline Architecture

The main product or elements are described below.

Name of Module 1

Functions and features: …

Design Concept:…

Main requirements: …..

Critical Technologies:…

Current TRL: …

Name of Module 2

Functions and features: …

Design Concept:…

Main requirements: …..

Critical Technologies:…

Current TRL:…

# Overall Development Constraints

## Key Requirements

The requirements detailed in the following table are the main driving factors in the design and development of the product, its subsystems and modules.

Key requirements are those considered essential to the success of the proposed development, or those that are likely to significantly affect the course of the development (e.g. design drivers).

Detailed specifications should not be confused with key product requirements. Detailed specification should be stated in Annex 2. Key product requirements can be subset of the detailed specifications or derived from them. In summary, key product requirements influence the selection of enabling processes, new technologies, new product concepts, limited or extended testing, new products or product lines etc. These key requirements are often associated with technical risks in the proposed activity.

The Tenderer should consider which of these key requirements should be included in the risk register (section 6).

The complete product specification is further detailed in Annex 2:.

**Key requirements**

| **Requirement ID** | **Requirement** | **Description of criticality** |
| --- | --- | --- |
| … | … | … |
| … | … | … |
| … | … | … |

## Other Constraints

No other constraints than those listed in section 4.1 affect the development plan.

or

(delete the inapplicable paragraph)

The table below summarises other constraints that affect the development plan.

**Other development constraints**

| **Type of Constraint** | **Nature of the Constraint** | **Impact/Criticality** |
| --- | --- | --- |
| Business opportunity (e.g. bid, first customer, etc.) | … | … |
| Business Plan (time to market) | … | … |
| Business Plan (cost) | … | … |
| Implementation | … | … |
| Qualification/Certification/ Type Approval | … | … |
| Verification (e.g. test limitations due to size of item or availability and complexity of test set-up) | … | … |
| Other | … | … |

# Risk Analysis and Mitigation Plan

The table below identifies the risks associated with the development based on a preliminary risk analysis. They have been analysed in terms of their severity (potential impact) and probability of occurrence.

**Development risks**

| **Description of Risk** | **Severity** | **Probability of Occurrence** | **Description of Impact** | **Mitigation Plan** |
| --- | --- | --- | --- | --- |
|  … | … | … | … | … |
| … | … | … | … | … |
| … | … | … | … | … |
| … | … | … | … | … |

# Dependencies on Other Activities

## Dependencies on other Activities

The proposed activity is/is not a follow-up of a previous activity/previous activities. There are/are no dependencies between the proposed activity and other activities falling outside of the scope of the proposed activity.

Include the text and complete the table below only if the proposed activity is a follow-up of a previous activity or activities or if there are dependencies between the proposed activity and other activities falling outside of the scope of the proposed activity

Further details are provided in the table below.

**Dependencies on previous, ongoing or future activities**

| **Programme** | **Activity Name** | **Brief Description** | **Start Date** | **End Date** | **Main outcomes/Nature of Dependency** |
| --- | --- | --- | --- | --- | --- |
| … | … | … | … | … | … |
| … | … | … | … | … | … |
| … | … | … | … | … | … |

## Overlap

We confirm that the work proposed does not overlap with any previous or currently running activity paid by public funds.

We confirm that the work contained in this proposal is not a continuation of a previous ESA contract.

NOTE: Subject to ESA approval this work may continue as a subsequent or parallel ESA contract when the work is complementary.

## Management of Interdependencies

Include this section if the proposed development is dependent on any on-going or future activities

Interdependencies between the proposed activity and the related activities identified in the previous section will be managed as follows. …

# Third Party Products/Rights

No products or rights of third parties are planned to be used in the development of this product.

or

(delete the inapplicable paragraph)

The following third party products/rights are planned to be used in this product development: ….

The technical reasons for adopting a solution based on these third party products/rights are ….

The impact of this approach on the technical activities and the resulting products and their usage is ….

Financial information relating to the use of third party products/rights is provided in section … of the Financial Proposal (Part 6).

# Overall Development Plan

## Development Objectives

The objectives of the activity are summarised in the table below.

**Objectives of the proposed activity**

|  | **Objective** |
| --- | --- |
| 1 | Generate a complete set of Product Requirements |
| 2 | Complete an initial design concept to allow development work to continue |
| 3 | Generate the appropriate supporting analyses demonstrating technical and economic feasibility of the product |
| … | … |

## Development logic

The following figure shows the overall development logic and, for the Development Phase(s) included in this Proposal, provides a visual description of the work packages interrelations as well as the logical flow of activities.

Provide a diagram showing the work logic and how it relates to the work packages.

The development logic shall be structured in such a way that it provides a clear traceability to all cost elements defined in both the Management and the Financial proposals.

If relevant, the system engineering methodology (e.g. Agile, V cycle, model-based, etc.) applied may be described.

Please indicate the mid term review in the presented work logic

## Verification Approach

The table below identifies the verification activities to be undertaken through dedicated tests or analyses during the development, indicating the work package in which they will be carried out and on which model they will be performed.

Column 1: Work Package during which the verification activity will be performed.

Column 2: The aspect(s) of the product to be confirmed by the verification activity (e.g. product functions, technical performance, market potential, certification, etc.).

Column 3: The verification method (test, analysis, simulation, inspection, etc.).

Column 4: The analytical, simulation, hardware or software model that will be used as a vehicle to perform the verification.

Column 5: The main standard(s) (e.g. ECSS, MIL, ESCC, ISO) applicable to the activity, if any.

**Summary of the verification approach**

| **Work Package** | **Functionalities/ Requirements Verified** | **Verification Method** | **Model** | **Standard(s)** |
| --- | --- | --- | --- | --- |
| … | … | … | … | … |
| … | … | … | … | … |
| … | … | … | … | … |
| … | … | … | … | … |

Provide below any additional details to complement the information given in the table.