ARTES 4.0 Technologies and Products

Agile + Outline and Full Proposal

Guidance Notes

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# General guidance on use and completion of the templates

## Application process

There is a two stage process for applying for ARTES AGILE + support:

1. Prepare and submit an Outline Proposal using the templates available at https://artes.esa.int/documents. This proposal will be evaluated and feedback will be provided typically within 10 working days. Upon successful evaluation of the Outline Proposal, an invitation to submit a Full Proposal may be issued by ESA to the tenderer.

2. Prepare and submit a Full Proposal using the templates available at https://artes.esa.int/documents. This proposal is evaluated and feedback will be provided to the tenderer typically within 5 weeks. The Tenderer is reminded that ARTES 4.0 is an optional programme of the European Space Agency, and as such every activity has to 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) to obtain a letter of authorisation for funding for the proposed activity before submitting their Full Proposal.

Further details of this process are presented in Section 4 of these guidance notes.

## Use of the templates

Use of these Outline and Full Proposal Templates is **mandatory**. The Tenderer shall not change the structure of these Proposal Templates (i.e. the table of contents must remain unchanged) and adhere to its guidelines and requirements. However, the format and lay-out can be modified, e.g. to be in-line with the Tenderer’s corporate identity.

Depending on whether the proposal is an outline or full proposal, and whether it includes an element of in-orbit experimentation or demonstration, different proposal parts and templates will be needed to be submitted. The below table provides a summary of the relevant proposal parts needed.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Part 1 | Part 2 | Part 3 | Part 4 | Part 5\* | Part 6\* | Part 7 |
| Without in-orbit experimentation/ demonstration | OP Template | X | X | X |  | X |  |  |
| FP Template | X | X | X | X | X | X |  |
| With in-orbit experimentation/ demonstration | OP Template | X | X | X |  | X |  | X |
| FP Template | X | X | X | X | X | X | X |

*\* In the case that the activity covers multiple phases, separate proposal parts per phase are required for parts 5 and 6*

It is important to note that the outline proposal has different templates to the full proposal. The outline proposal templates are reduced versions of the full proposal templates, with the intention that information provided at the outline proposal stage can be copied directly across to the full proposal.

## Completing the proposal templates

Material presented in this plain style must not be removed nor modified, unless stated otherwise by an explanatory note.

Parts highlighted in yellow may or may not need to be filled in, depending on the scope of the proposal (please refer to the related explanatory notes to determine if they apply or not).

Text in red font must be modified and/or completed by the Tenderer for the proposed activity (this supplementary information should be presented in plain typeface, i.e. not red, in the final version of the Full Proposal).

*Text in blue italics is used for guidance to help you to develop the Full Proposal content. They should be removed from the final document before submission.*

Text in grey does not need to be filled in for the Outline Proposal, but may need to be filled in for the Full Proposal

The proposal templates contain further guidance and explanatory notes in blue, as hidden text. This can be made (in)visible by clicking the inverted “P” symbol on the toolbar. The text will not show on the print.

# Specific guidance on completion of the proposal templates

## Part 1 - Cover Letter

A single Cover Letter shall be included covering all Development Phases for which support is being requested under the ARTES 4.0 Technologies and Products Call for Proposals.

## Part 2 - Business Plan

A single Part 2 (Business Plan) shall be included covering all Development Phases for which support is being requested under the ARTES 4.0 Technologies and Products Call for Proposals.

The Business Plan should be based on that provided in your Outline Proposal, updated as appropriate to include the most recent information. The Financial Forecast Workbook is applicable only to Product Phase and forms an integral part of the corresponding Business Plan (Part 2 of the Full Proposal); it shall be attached as Annex 1 to this document. It is available at: <https://artes.esa.int/documents>

## Part 3 - Technical Proposal

A single Technical Proposal shall be included covering all Development Phases for which support is being requested under the ARTES 4.0 Technology & Product Developments Call for Proposals.

The whole development and validation plan of the product, from the current development status up to the completion of the product ready for commercialisation, shall be included in this Technical Proposal.

The Technical Proposal shall be at a level of detail commensurate with the development status of the product.

## Part 4 - Management Proposal

A single Management Proposal shall be included covering all Development Phases for which support is being requested under the ARTES 4.0 Technologies and Products Call for Proposals.

Note: The Management Proposal is not required for the Outline Proposal.

## Part 5 - Implementation Proposal

A separate and self-contained Implementation Proposal shall be included **for each Development Phase** for which support is being requested under the ARTES 4.0 Technology & Product Developments Call for Proposals

## Part 6 - Finance Proposal

A separate and self-contained Financial Proposal shall be included for each Development Phase for which support is being requested under the ARTES 4.0 Technology & Product Developments Call for Proposals

Note: The Finance Proposal is not required for the Outline Proposal.

## Part 7 - In Orbit Experimentation/Demonstration Phase Proposal

## Part 7 - In Orbit Experimentation/Demonstration Phase Proposal shall only be completed if the proposed activity contains either/or both an In-Orbit Experiment (IOE) or In-Orbit Demonstration (IOD)

The Demonstration Phase of the product may include an **In-Orbit Demonstration (TRL ³ 8)** to:

* validate the product in its operational environment,
* support in-orbit flight hardware to be used in a system or service product,
* support in-orbit flight hardware to be used in demonstrators, to verify the functioning of the technology in a system context.

The Technology Phase may exceptionally include early **In-Orbit Experimentation (TRL 3 to 6)** to verify the functioning of the technology in a system context when it is not possible to test the technology in a ground-based environment. The size of the demonstrator shall be the minimum required to verify correct functioning.

Additionally, please note that there are three in-orbit demonstration cases considered in this proposal:

*“Embedded Case”* where the flight item is part of the main commercial mission (e.g. insertion of a new generation equipment into a redundancy ring of a conventional equipment, such as an LNA, TWTA or telecommand receiver).

*“Independent Case (hosted)”* where the flight item is on board alongside the main mission but does not form part of the operational mission (e.g. stand-alone platform elements, or mini payload as a hosted payload on a large satellite).

*“Independent Case (standalone)”* where the flight item constitutes the main purpose of the mission (e.g. a demonstration payload on a dedicated small satellite mission).

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# Terminology

|  |  |
| --- | --- |
| Breadboard (BB): | An initial development model for a space product, electrically and functionally representative of the complete end item, or of one or more key elements of the end item. It is used to prototype the intended design and to mitigate technical risks. Verification is typically performed in a laboratory environment. |
| CAPEX: | Capital Expenditure or CAPEX is investment in the long-term, consisting of assets that are bought by the company and go on the balance sheet. The value of those assets is typically depreciated over the years. |
| Customer Segment: | A group of customers identified on the basis of their needs, behaviours, or other traits that they share. |
| Customer: | An individual or an organisation that meets three criteria: 1. they have a problem they want to solve; 2. they have money/budget to spend to solve the problem; 3. they are willing and authorised to execute the buying decision. |
| Definition Phase: | Consists of the set of activities to support the initial development and design of the product along with any systems engineering that may be required to define the product and identify the optimal solution for the target market |
| Demonstration Phase: | Consists of the activities needed to validate the operational effectiveness and capabilities of the final product in its final configuration and within the user utilisation environment, prior to commercialisation. |
| EGSE: | Electrical ground support equipment. |
| Engineering Model (EM): | Flight representative model in terms of form, fit and function used for functional and failure effect verification. The engineering model is usually not equipped with high reliability parts or full redundancy. The engineering model is also used for final validation of test facilities, ground support equipment and associated procedures. See ECSS‑S‑ST‑00‑01C. |
| Engineering Qualification Model (EQM): | Model which fully reflects the design of the flight model except for the parts standard, used for functional performance and EMC verification and possibly for qualification. Military grade or lower-level parts can be used instead of high reliability parts, provided they are procured from the same manufacturer with the same packaging. Functional performance qualification includes verification of procedures for failure detection, isolation and recovery and for redundancy management. The engineering qualification model may also be used for environmental testing if the customer accepts the risk, in which case the qualification model rules apply. See ECSS‑S‑ST‑00‑01C. |
| Flight Model (FM): | End product that is intended for flight. The flight model is subjected to formal functional and environmental acceptance testing. See ECSS-S-ST-00-01C. |
| Ground Segment: | Consists of all the ground-based elements of a satellite communication system. |
| Ground Support Equipment (GSE): | Non flight product (hardware/software) used on ground to assemble, integrate, test, transport, access, handle, maintain, measure, calibrate, verify, protect or service a flight product (hardware/software). See ECSS‑S‑ST‑00‑01C. |
| Market: | A broad landscape of buyers looking to solve different types of problems. A market can comprise many different types of customer segments. |
| MGSE: | Mechanical ground support equipment. |
| Model: | Physical or abstract representation used for calculations, predictions or further assessment. Model can also be used to identify particular instances of the product e.g. flight model. See ECSS‑S‑ST‑00‑01C. |
| OPEX: | Operational costs, or OPEX, are the costs associated with the day-to-day running of the company or the used up expenses. |
| Product: | A product is any hardware, software, system or sub-system, or service item that is ready for commercial exploitation. |
| Product Development Plan: | Is the development logic to develop a product ready for commercial exploitation using the Development Phases as required (Definition, Technology, Product, and Demonstration), but including as a minimum a Product Phase or a Demonstration phase. |
| Product Phase | Consists of non-recurring development activities to prepare for the commercial production of the product |
| Proto Flight Model (PFM): | Flight model on which a partial or complete proto flight qualification test campaign is performed before flight. See ECSS‑S‑ST‑00‑01C. |
| Qualification: (space products) | That part of verification which demonstrates that the product meets specified qualification margins. This can apply to personnel, products, manufacturing and assembly processes. See ECSS‑S‑ST‑00‑01C. |
| Qualification Model (QM): | Model which fully reflects all aspects of the flight model design, used for complete functional and environmental qualification testing. A qualification model is only necessary for newly-designed hardware or when a delta qualification is performed for adaptation to the project. The qualification model is not intended to be used for flight, since it is over-tested. See ECSS‑S‑ST‑00‑01C. |
| Scaled Engineering Model (Scaled EM): | Engineering model that is not fully representative of the end product, but is sufficiently representative to permit the verification of critical functions of the product in a relevant environment. Critical functions are those functions of the product that deserve control and special attention in order to mitigate technical risks. |
| Space Segment: | Part of a space system, placed in space, to fulfil the space mission objectives. Space segment activities relate to any product to be used on a spacecraft. |
| Technology Phase: | Consists of the activities performed to mitigate the technical risks of the product development up to and including the manufacturing and test of a representative model of the product (e.g. an Engineering Model), but excluding qualification or industrialisation.  The Technology Phase may exceptionally include early in-orbit experimentation to verify the functioning of the technology in an end-to-end system context when it is not possible to test the technology in a ground-based environment. |
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| Validation: | Process which demonstrates that the product is able to accomplish its intended use in the intended operational environment. The user shall have a key role in this process. Validation addresses whether a product will satisfy the needs of its users. Validation proves it is the right product. |
| Value Proposition: | This is a statement of the value that a company or solution offers to its customers and/or partners. It is expressed from the perspective of the value to the target customer and addresses the main benefit(s) derived by the use of the product. |
| Verification: | Process which demonstrates through the provision of objective evidence that the product is designed and produced according to its specifications and the agreed deviations and waivers, and is free of defects. Users are not involved in the verification. Verification addresses whether a product satisfies the requirements placed upon it. Verification proves the product is right. |

# ARTES AGILE + Process Flow

A diagram of a process

Description automatically generated