**EUROPEAN SPACE AGENCY**

**GSTP PRE-PROPOSAL TEMPLATE**

The aim of the assessment is to perform the necessary technical work in order to prepare – in terms of technical, risk, cost and other considerations – follow-on fully fledged technology activities.

The fully fledged or regular GSTP development represents the technology development towards the final product to be developed or model to be reached (Flight Model, EM, EQM…).

As part of this intended development, a critical technical risk has been identified, which can lead to significant impacts on cost and schedule or, if not overcome, call into question the viability of the overall technology development.

The proposed De-risk activity is to tackle this risk through a dedicated technical work. The total cost for a given activity shall not exceed 200 K€. The total cost for a given activity that does not include experimental work (i.e. breadboarding/testing) shall not exceed 80 K€. The maximum duration shall be 9 months.

**PART 1 TECHNICAL AND APPLICATION**

1.1 APPLICATION OF TECHNOLOGY DEVELOPMENTS RESULTING FROM THE PROPOSED ACTIVITY – Fully-fledged Development

*Please describe the targeted products and applications that are linked to the technical objectives. Provide indications with respect to the targeted mission(s) and/or market (e.g. the size of the addressable market), customers, potential interest of customers, competitors (European and non-European) and the potential differentiating advantage of the product to be developed with respect to the state-of-the art. Also, discuss the expected benefits of the proposed activity to your company/institution. If the application is pertinent to an ESA Programme(s), please identify which programme/project would be relevant to your proposal and indicate how this activity may contribute towards this opportunity.*

1.2 TECHNICAL OBJECTIVES AND REQUIREMENTS:

1. *For a Fully-Fledged Development*

*Outline the main technical and programmatic objective(s) and end goal(s) of the envisaged development. Indicate how the achievement of those objectives will be demonstrated.*

1. *For the Proposed De-Risk Activity*

*Identify and discuss the technical requirements to be able to achieve the specific Technical Objectives. When appropriate the requirements shall be associated to a quantitative value. These quantitative values shall be labelled as committing ones or should be considered as goals.*

1.3 TECHNOLOGY READINESS LEVEL:

*Identify with justification the current technology maturity level (TRL) and the TRL to be reached at the end of the De-risk activity.*

*Briefly discuss the next steps in terms of objectives and future targeted TRL, assuming the objectives are achieved at the end of the De-risk activity.*

1.4 ENGINEERING APPROACH – De-Risk

1.4.1 Technical Steps

*Present and discuss in detail the scientific/technical steps to achieve the De-risk objectives and the committing requirements outlined in section 1.2. [Note: the steps shall be consistent with those reflected in the Work Logic Diagram in section 1.6.1]*

1.4.2 Implementation aspects

*Present a first iteration of the concept and the baseline design/approach. The baseline design covers for instance the system architecture and a functional decomposition presented in block diagrams, providing also internal and external interfaces. Discuss the current state of the art and the trade-offs that need to be taken into account and show the overall logic of the work being proposed including any key review and decision points. Discuss how the work performed will be validated and how achievement of the De-risk objectives will be proven/ demonstrated.*

1.5 TECHNICAL FEASIBILITY, PROBLEM AREAS AND DEVELOPMENT RISK:

*Provide evidence as to the feasibility of meeting the objectives and requirements identified in sections 1.1 and 1.2. Identify, present and discuss the main technical problem areas and key development risks that may be expected during the execution of the activity in order to reach the proposed TRL level. Propose mitigation and preventative actions to reduce the likelihood and potential impact of such risks/problems and discuss credible alternative design or implementation solutions to avoid identified potential technical problems becoming showstoppers.*

* 1. TECHNICAL IMPLEMENTATION / PROGRAMME OF WORK

1.6.1 Proposed Work Logic

*Insert a flow chart showing the work logic flow from step to step, with reviews, dependencies, and critical path clearly shown. This shall be consistent with section 1.4, the WBS and the schedule.*

1.6.2 Work Breakdown Structure (WBS) and Work Package Description (WPD)

Work Breakdown Structure (WBS)

*Outline the total scope of the activity, clearly showing each foreseen Work Package (WP), with its title and the name of the responsible company/institute. Ensure work packages are split adequately such that sub-contracted work has its own work packages. Main contractor and subcontractor project management activities shall be identified in the WBS.*

Work Package Description (WPD)

*Individual WPD shall be established in each work package identified in the WBS, describing the following:*

* *responsible company,*
* *beginning and end date of each work package,*
* *person responsible for the work package,*
* *description of the activities in the work package, sufficient to understand clearly the scope and depth of the work being performed,*
* *inputs to the work package, outputs of the work package*
* *the outputs to the work packages (e.g. TN1 etc.) and include in the List of Deliverables.*

*Please include a dedicated work package for Management and Reporting. All management tasks, such as meetings, progress reports and final documentation shall be carried out under this work package.*

**PART 2 MANAGEMENT**

* 1. BACKGROUND OF THE COMPANY(IES)

*Present an overview of the company addressing the number of personnel; the year in which the company was established; location of sites. Briefly describe the directly relevant experience for the Contractor and Sub-contractor(s), if any, for the performance of such a work (the tenderer may submit additional information on the general background of the entities in an Annex)*

* 1. FACILITIES

*Identify the facilities (including s/w tools) required to perform the proposed work. Submit a brief description of the intended facilities to be used, making it clear how the rights to use those facilities have been secured for this activity (e.g. own facilities, to be bought, to be constructed, sub-contracted, rented…). (The tenderer may submit additional information on facilities in an Annex).*

* 1. TEAM ORGANISATION - KEY PERSONNEL, TIME DEDICATION and CVs

*By means of an organogram describe the overall team composition, including participants from all sub-contractors, if any, and including all key and non-key personnel. The organogram shall clearly show the tasks, position, authority and name of the persons proposed for the work and in particular the project manager and the contracts officer. NOTE: A “key person” is a person, who substantially contributes, in terms of effort and knowledge, to the work carried out under a Contract and who is explicitly nominated to perform such duties.*

*For each key personnel, provide a summary of the hours dedicated to each WP.*

*Concise CVs including the directly relevant information for the proposed activity for all key personnel and showing that all major elements of expertise needed are present in the team.*

* 1. PLANNING

2.4.1. Gantt chart

*Insert a Gantt chart schedule for the activity, covering from the start until the end of the Contract and where all proposed Work Packages (WP), meetings, milestones, etc. can be traced, show dependencies and highlight the critical path. The schedule from the start of the activity until the end of the contract shall, in principle, not exceed nine (9) months unless fully justified.*

2.4.2 Proposed Schedule

*Provide a synthetic summary of the schedule including duration, planning assumptions (e.g. envisaged start date, etc.) and explaining key planning drivers and dependencies*

2.5 DELIVERABLE ITEMS

*A list of foreseen deliverables shall be included. The list of deliverable items shall be grouped in Documentation, Hardware and Software and shall include sufficient explanation to unambiguously represent the scope of the deliverable. For Documentation, the proposal shall indicate, a) list of technical notes b) list of the final deliverables as defined in the Table here-below.*

*For Software, the proposal shall indicate, if applicable, a) whether the software will be delivered in object and/or source code, b) the format of delivery, c) if any licenses/Third Party licences will be delivered to ESA; Note that the TDP, FR, FP and CCD are mandatory deliverables for all activities.*

2.5.1 Documentation

*For each of the deliverable documents proposed by the Tenderer, a description, in the form of a bullet list of the main contents shall be added. This shall be sufficient to understand the contents, scope and depth of the envisaged document or report*

|  |  |  |  |
| --- | --- | --- | --- |
| **Doc ID** | **Title** | **Milestone** | **Description of documents** |
| *D1* | *To be completed by the Tenderer* | *e.g. end of Task 1.* | *Please very briefly describe goal and content* |
| *D2* | *To be completed by the Tenderer* | *…end of Task 2* | *Please very briefly describe goal and content* |
| *D3* | *To be completed by the Tenderer* | *…end of Task 3* | *Please very briefly describe goal and content* |
| TDP | Technical Data Package | Final Review |  |
| ESR | Executive Summary Report | Final Review | see above |
| FR | Final Report | Final Review | see above |
| CCD | Contract Closure Documentation | Contract Closure | see above |
| FP | Final Presentation | Final Review |  |
| TAT | Technology Achievement Template | Final Review | Will be provided by ESA Technical Officer |

2.5.2 Other Deliverables (Hardware, Software, Models, Data, etc.)

*Example (for illustration purposes only):*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item Identifier** | **Title** | **Milestone** | **Quantity to be delivered** | **Format / Description** |
| SW1 | XYZ software | (e.g. End WP3/ TRB) |  | Object Code only / Deliver on DVD-ROM / Source code (matlab) |
| HW1 | ZYX B/B | Contract Closure |  | Incl. all cables /, partial breadboard using COTS components and implementing processing module only. |
| MOD1 | QQQ Model |  |  | Zeemax model |
| Data1 | AAA Raw test data |  |  | From tests TBD and TBD |
| SW2 | ABC software | Contract Closure |  | Source and Object Code / Deliver on DVD-ROM |

**PART 3 FINANCE**

* 1. PRICE QUOTATION FOR THE CONTEMPLATED DE-RISK CONTRACT:

*Enter here the total amount quoted as a Firm Fixed Price (FFP), in Euro, delivery duty paid, exclusive of import duties and value added taxes in ESA Member States, etc…*

* 1. COST TO COMPLETION – for potential follow-on Fully-Fledged Development

*This information is not binding in any way for either party (ESA or Tenderer).*

This Cost to Completion corresponds to the Fully-Fledged development described in sections 1.1 and 1.2.

Such development would be the direct continuation of work AFTER COMPLETION OF THE PROPOSED DE-RISK ACTIVITY.

* + 1. Further steps / Activities needed to complete the development until TRL 8 (if applicable)

*Additional information regarding development until TRL 8 is to be provided, if applicable (i.e. the final TRL of the envisaged Fully-Fledged development is not 8).*

*Identify each of the main development steps/ activities that would be needed, after completion of De-Risk and follow-on Fully-fledged activities, to progress the work to TRL 8. Include a brief description of each step (e.g. key objective, aspects to be addressed), e.g.:*

*Step 1: Functional Demonstration*

*Goal: Demonstration of all functionality via test on Engineering Model*

*Key aspects: Completion of design and analyses work, manufacture and test of EM*

*Start TRL: 4 and End TRL: 5*

*Step 2: Qualification…*

* + 1. Estimated Cost per step until TRL 8

*Provide a rough estimate of the expected cost of each further step or activity that would be needed in order to reach TRL 8.*

|  |  |  |  |
| --- | --- | --- | --- |
| *Further Step / Activity* | *Estimated cost (Euro)* | *Estimated Start date* | *Estimated end date* |
|  |  |  |  |
|  |  |  |  |

***Please note the following guidance when collating your proposal***

* Suggested proposal length: around 30 pages, including around 4-6 pages for Work Breakdown Structure, Work Packages Description, CVs (and excluding Cover page and/or Executive Summary companies would like to add),
* Titles and chapters numbering should be kept as in the template.