DE-RISK

PRE-PROPOSAL TEMPLATE

The aim of a General Support Technology Programme De-Risk Framework activity is to allow for assessments that will help prepare and de-risk potential development activities. The assessment will help evaluate the potential added value and to address critical issues. The results are intended to be used to help orient and adapt the follow-on development activity with respect to various aspects (i.e. technical, implementation, cost…)

Activities will include at least one of the following tasks:

* Identification and analysis of specifications for one or more space applications and the technical assessment of the development actions and associated schedule and cost
* Assessment of the potential benefits (performance, cost, lead time, risks…) and disadvantages of the potential solution with respect to the state-of-the-art
* Assessment of potential critical issues related to using a given technology for a specific application, using analysis/simulation and/or breadboarding and testing
* Preparation of the Development Plan for the potential follow-on technology development steps

The total cost for a given activity shall not exceed 200.000 Euro. The total cost for a given activity that does not include experimental work (i.e. breadboarding/testing) shall not exceed 80.000 Euro. The maximum duration for an activity shall be 9 months.

[PROPOSAL TITLE]

[PROPOSAL REFERENCE NUMBER]

[COMPANY (country) AND ENTITY CODE (if any)]

[POINT OF CONTACT (email and phone number)]

[DE-RISK BUDGET (k€)]

# PART 1 TECHNICAL AND APPLICATION PART

## Application(s) of the full activity development (i.e. de-risk and follow-on phases)

Please describe the targeted product(s), capabilities and applications that are linked to the technical objectives. Please 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), strategic relevance of the development for the bidder 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.

## Technical objectives and requirements of the full activity (i.e. de-risk and follow-on phases)

Outline the main technical objectives of the proposed full activity (de-risk and follow-on) and the proposed approach to reach them. 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. The verification approach for each requirement shall be identified.

Please discuss how these objectives will help to meet the longer-term objectives for the targeted application area where the technical objectives will have an impact.

## Technology Readiness Level and model philosophy of the full activity (i.e. de-risk and follow-on phases)

Identify with justification the starting Technology Readiness Level (TRL) and the TRL to be reached at the end of the full proposed activity. Discuss the next steps in terms of objectives and future targeted TRL, assuming the objectives are achieved at the end of this activity.

The final deliverable of the complete development (activity and next steps) should be a product, describe the model philosophy (e.g. EM, EQM, PFM, etc.).

(Please note that TRLs are defined as per ECSS-E-HB-11A “Technology Readiness Level Guidelines”; <http://www.ecss.nl>).

## Technical steps and implementation of the engineering approach for the full activity (i.e. de-risk and follow-on phases)

Present and discuss the technical steps to achieve activity 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).

Present a first iteration of the proposed concept and the baseline design/engineering 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 objectives will be proven/demonstrated.

## Technical feasibility, development risks and scope of de-risk phase

Provide evidence as to the feasibility of meeting the objectives and requirements identified in sections 1.2. Identify and assess technical problem areas and key development risks that may be expected during the execution of the activity in order to reach the proposed TRL. Identification of the full activity risk and risks analysis, including an impact/likelihood chart. 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.

Identification of the risk to be addressed during the de-risk phase, highlighting how the de-risk phase could reduce the total risk level of the activity.

1.5.1 Tasks to be addressed during the De-risk phase and Success Criteria

Based on the risk identified in section 1.5, describe in detail the scope of the De-risk phase.

Please specify quantitative figures such as requirements and specifications, identifying specific and measurable goals and verification means in order to verify de-risk successful completion (e.g. requirement matrix with verification).

1.6 Technical Implementation / Programme of Work

1.6.1 Proposed Work Logic of the de-risk activity

Insert a flow chart showing the work logic flow step by step, with reviews, dependencies, and critical path clearly shown. This shall be consistent with sections 1.3 and 1.4, the WBS and the schedule.

Work Breakdown Structure (WBS)

Present a Work Breakdown Structure clearly showing each major 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 per work package identified in the WBS,describing the following:

* Description of the activities in the work package, sufficient to understand clearly the scope and depth of the work being performed,

*For the Work Package Description it is recommended to use the template in the form PSS-A20*.

(Note that the PSS form templates can be downloaded from EMITS at <http://emits.sso.esa.int/>under Reference Documentation / Administrative Documents / PSS Forms / Issue 5.)

# PART 2 MANAGEMENT PART

### 2.1 Background of the company (ies) and facilities

Present an overview of the companies which will constitute the consortium including sub-contractors if any. Briefly describe the relevant experience for the Sub-contractor(s), if any, for the performance of their work.

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 has been secured for this activity (e.g. own facilities, to be bought, to be constructed, sub-contracted, rented…).

2.2 Planning for the De-risk phase

Present a planning for the proposed activity, covering from the start of the de-risk activity until the end of the Contract, and including the major reviews and meetings.

2.3 Long lead time impacts

Please clarify whether the 9 months activity duration could be affected by long lead times (e.g. long lead item procurement, manufacturing, test, etc.). Indicate the reason for long leading times, the possible impact, the likelihood and possible countermeasure or mitigation actions.

# PART 3 FINANCIAL PART

### Total cost of the de-risk phase

Present the total cost of the de-risk activity and its breakdown by major cost elements (i.e. manpower, procurements, external services).

3.2 Estimated cost of the follow-on phase

Estimate the cost foreseen after the completion of the de-risk phase, in order to achieve the objectives indicated in section 1.2. Please recall the objectives and the target final TRL of the de-risk follow-on phase. Please provide an explanation for the estimated costs.

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

3.3 Further steps (after the follow-on phase)

Identify each of the main development steps/activities that would be needed AFTER COMPLETION OF THE FOLLOW-ON to progress the work to TRL 7 (or TRL 8 if an in-orbit demonstration is foreseen). Include a brief description of each step (e.g. key objective, aspects to be addressed). A cost to completion is required for these activities. This information is not binding in any way for either party (ESA or Tenderer).

3.4 Estimated cost per step of the follow-on phase and further steps

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

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