

# **AO for the provision of scientific payload including SGS elements for the M3 mission candidates**

## **BRIEFING MEETING**

ESTEC  
10/10/2012

10:00 - 11:00	General presentations
11:00 - 11:30	General Q&As
11:30 - 12:15	Q&A specific to EChO
12:15 - 13:15	Lunch Break
13:15 - 14:00	Q&A specific to LOFT
14:00 - 14:45	Q&A specific to MarcoPolo-R
14:45 - 15:30	Q&A specific to STE-QUEST
15:30 - 16:00	AOB

# Planning: evaluation and selection of proposals

Date	Event
September 24, 2012	Release of AO for scientific payload, including science ground segment elements, for the M3 mission candidates
October 5, 2012	Deadline for submission of (mandatory) Letters of Intent
<b>October 10, 2012</b>	<b>Briefing meeting</b>
November 30, 2012	Proposals due
December 14, 2012	Letters of Endorsement from Funding Agencies due
November 2012 - January 2013	Proposals evaluation
January-February 2013	Recommendations from ESA Advisory Structure
February 2013	Science Program Committee selection
February 2013	Preliminary technical KO of payload studies (in parallel with industrial studies extension phase)
September-October 2013	M3 candidate missions Preliminary Requirements Review (PRR)
End 2013	M3 mission selection process completed
May 2014	Kick-off definition phase (Phase B1) of the selected mission Request to Consortium(a) of the selected mission for an updated set of documents
July 2014	Updated set of documents by Consortium(a) due
June-July 2015	M3 selected mission System Requirements Review (SRR)
November 2015	Mission adoption and MLA signature
October 2016	Kick-off selected M3 mission implementation phase (B2/C/D)

In June 2012 the Science Program Committee (SPC) endorsed the approach for the selection of the M3 mission, along the following guidelines:

- i. Science-driven Calls for Missions followed by competitive process for mission selection: for M3 and for future science missions;
- ii. Mission selection => before starting Phase B1 for minimising nugatory spending on non-selected missions;
- iii. Early phase activities => strengthened for enabling the selection at the end of Phase A.

Scientific evaluation and clear understanding of the programmatic implications of the mission implementation to both ESA and the Member States (definition of responsibilities, implementation approach and schedule, development costs and associated risks)

1. To select, for each candidate mission, Consortium(a) that would be in charge – should the mission be selected – of the provision of the Member State-funded payload elements of the space segment and for the associated contribution to the science ground segment.
2. To produce a preliminary design of the payload elements provided by MS and related interface requirements to the spacecraft, for enabling reliable technical convergence for the overall spacecraft design and for the payload interfaces in due time for M3 selection.
3. To provide a development risk analysis for the proposed payload elements, then identify and analyse descoping/simplification options where possible, for ensuring readiness for launch in 2022 and compatibility with overall programmatic conditions. Impacts of descoping options on the S/C and on the science return should be assessed.

Iterations on payload accommodation and interfaces, in parallel with the running industrial studies

- The spacecraft Prime contractor is not selected at this stage and parallel contracts are running with industrial teams for the spacecraft definition. The interface between the Consortium and the industrial study teams will be ensured by ESA
- Interface documents EID-A and EID-B are draft documents at this stage and are expected to be consolidated by the end of Phase A
- The overall spacecraft definition, consolidation of interface requirements and development plan is expected to reach Phase A level

Phase A documentation produced by industry and the consortia will be the basis for the technical and programmatic evaluation for M3 selection process

# Top-level responsibilities of the Payload Consortia



The selected Payload Consortium(a) will be responsible (should the mission be selected for implementation) for the:

- Design, development, implementation, provision, integration, verification, test, calibration and delivery to ESA of the complete integrated and tested payload, including the Ground Support Equipment (optical, mechanical, electrical), according to the agreed model philosophy;
  - Provision of support to ESA for payload system integration on S/C;
  - Provision of the elements of the SGS required for a) the processing of the mission data and the generation of data products, b) the monitoring of the payload operations, and c) the on-ground and in-flight payload calibration.
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- A single Consortium Lead or Principal Investigator (PI) heads the Consortium.
  - The Consortium Lead or PI is backed by a “Lead Funding Agency” (LFA) for the payload.
  - Co-investigator (Co-I) teams: seek agreement via their national funding agencies with the LFAs
  - LFAs retain full responsibility for the payload development and timely delivery and will be the sole contact with ESA with respect to the selected investigation.

# Top-level responsibilities of the Lead Funding Agencies



- Expected to provide significant support to the proposed activities for the respective payload
- Have prime science and industrial responsibility for the provision of the payload and SGS elements.
- For each mission, the LFAs include the Agency backing the Consortium Lead or PI.

Letters of Endorsement (LOE) from all the LFAs:

- must commit financial support necessary up to the end of Phase A (should the proposal be selected)
- must contain indication of the intention of the funding agencies to seek funding for the following implementation and operation phases (should the proposal be selected through the present AO and the mission be selected as M3)

The availability of the funding for the following phases will have to be formally confirmed by the time of the M3 mission selection for all following implementation and operation phases, for the selected mission.



For each candidate mission:

- Science Requirements Document (Sci-RD)
- Mission Requirements Document (MRD)
- Experiment Interface Document-Part A (EID-A)
- Experiment Interface Document-Part B (EID-B) template
- Payload cost spreadsheet template

Additional documents for each Mission: see PIP

EID-A's: preliminary collection of requirements, which reflect the current maturity of each mission design. For the mission selected at the end of 2013 for the M3 flight opportunity, the EID-A will be updated, to reflect the mission design evolution, up to the Preliminary Requirements Review (end of Phase A).

The Payload Definition Document (PDD/PRRD) is a Reference Document defining the model payload.

Executive summary

Part I: Scientific Objectives

Part II: Payload Design and Development

Part III: Science Ground Segment contribution

Part IV: Management Plan

Part V: Financial Plan

Experiment Interface Document – Part B (EID-B)

Letters of Endorsement from the Lead Funding Agency (to be submitted separately).

- Parts I, II and III must clearly identify major open issues and uncertainties (if any) that could affect the mission selection, and detail the work plan for closing them by the end of Phase A.
- A preliminary risk analysis is required in the proposal
- Proposers are invited to identify back-up or descoping options as risk mitigation measures (technology readiness, compatibility with readiness for launch in 2022, and/or cost issues)
- The impact of descoping options should be assessed.

- For each mission ESA will appoint a **Payload Review Committee (PRC)** consisting of external experts, with competences covering the main scientific areas of the mission  
Main role: review the payload's scientific capability  
=> evaluate the merits of each instrument proposal
- For each mission an **Instrument Review Panel (IRP)**, consisting of selected personnel of the Agency, as well as invited specialists if needed.  
Main role: technical, operational, managerial and financial review of each payload proposal  
=> integrity and compliance with the mission requirements and risk.

Based on the technical and scientific assessments, each PRC will evaluate and recommend to D/SRE the configuration of the payload complement that satisfies the mission scientific objectives and meets as closely as possible the objectives of the mission model payload.

Review all instrument proposals to:

- Ensure that all science objectives are satisfied within the overall AO response;
- Evaluate whether each payload proposal satisfies the science requirements in terms of sensitivity and performance, as specified in the relevant documents, to achieve the specific science objectives;
- Evaluate compatibility of each payload against the objectives of the model payload as defined in the PDD/PRRD;
- Recommend which proposal should be selected, in the case that competing payload proposals are submitted;
- Recommend alternative solutions in the case of too high development risk and/or incompatibility with available spacecraft resources or interfaces.

Recommendation about the composition of the overall payload:

- Evaluation of individual payload proposals (see above);
- Potential scientific achievement within the global mission objectives;
- Compatibility with the model payload;
- Compatibility with system resources, mission and programme constraints, and financial envelope imposed by national agencies.

## (1) Scientific

- Relevance of the scientific objectives and their compatibility with the global objectives of the mission;
- Adequacy of the proposed measurements to fulfil the stated objectives and capability of the proposed payload to perform the required measurements as indicated in the relevant Sci-RD

## (2) Technical and Operational

- Design maturity and justification of the proposed technical solutions;
- Technology readiness assessment: technology developments status and compatibility with M3 timeline;
- Identification of critical open issues and uncertainties. Quality and completeness of the proposed work plan in the Phase A for enabling the mission selection;
- Overall development status and compatibility with M3 timeline: payload definition and modelling, performance analyses, technology developments;
- Compliance with the interfaces specified through the EID-A;
- Realism of the payload development plan;
- Operational complexity and associated operational risks;
- Coherence and robustness of the SGS contribution for its implementation, operations and post-operations;
- Risk analysis and back-up options.

## **(3) Managerial**

- Competence and experience of the team in all relevant areas (science, technology, software, development, management and outreach/science communications);
- Consortium structure and management plan, during the Phase A and later phases: responsibilities, work distribution, definition of interfaces between the Consortium members, decision process, interface with ESA;
- Compliance with ESA applicable management, engineering, reporting and product assurance requirements and standards;
- Risk management scheme;
- Financial support from the Member States.

# Running studies and communication aspects during the tendering period



1. During the tendering period, the running study activities (ESA industrial studies, instrument parallel studies) are continued.
2. For the instrument running studies, ESA is ready to adapt the agreed schedule (deliveries, meetings) if requested by the instrument study teams because of the workload induced by AO preparation.
3. A strict communication policy shall be followed for preventing any competition bias
  - a. Any AO clarification request from potential bidders shall be made by writing to ESA, and will be made available by ESA to all potential bidders together with the answer
  - b. During the tendering phase, no communication potentially affecting the bid response shall be made by ESA other than by writing and addressed to all potential bidders.



Requests for further information and clarification should be addressed to the following e-mail addresses relevant for each mission

EChO	<a href="mailto:EChO@rssd.esa.int"><u>EChO@rssd.esa.int</u></a>
LOFT	<a href="mailto:LOFT@rssd.esa.int"><u>LOFT@rssd.esa.int</u></a>
MarcoPolo-R	<a href="mailto:MaPoR@rssd.esa.int"><u>MaPoR@rssd.esa.int</u></a>
STE-QUEST	<a href="mailto:STEQUEST@rssd.esa.int"><u>STEQUEST@rssd.esa.int</u></a>

(Anonymous) Questions and Answers will be posted on the AO site

<http://sci.esa.int/M3-payload-AO>

...unless the subject of the Question requires confidentiality

# Questions and Answers

## (Programmatic aspects)

## Question

In the AO the concept of a Leading Funding Agency (LFA) is defined but it says nothing about "standard" Funding Agencies. It is not clear how LFAs are different from funding agencies. Furthermore, it is assumed that Co-Is will seek agreement with the LFA through their agencies. As the time is rather short it is not clear if this can be handled. Can you please clarify?

## Answer

- Role of the LFAs => see AO document section 3.3 (see Slide n. 7)
- Role of Co-investigator (Co-I) teams => see Slide n. 6
- It is recommended to start discussions between the Consortium Leads/PIs/LFAs and the other contributing agencies/CoIs as felt appropriate within the Consortia to establish preliminary agreements
- LFAs retain full responsibility for the payload development and timely delivery and will be the sole contact with ESA with respect to the selected investigation
- There may be more than one LFA supporting a payload Consortium
- The scheme for Multi-lateral Agreement and the participation to the Steering Committee will be decided on a case-by-case basis depending on the role played by the key funding agencies

## **Question**

The Call says it is open to "scientific Consortia". Are there specific conditions on members of consortia? Can industry personnel be consortium members?

## **Answer**

There are no specific restrictions on the membership of the Consortia.

The only constraint is - of course - that ESA personnel cannot be members of the Consortia

The role of each involved institution/member must be clarified in the Management Plan