

2012 Call for a Small Mission opportunity in ESA's Science Programme for a launch in 2017

1 EXECUTIVE SUMMARY

The Director of Science and Robotic Exploration of the European Space Agency is soliciting the scientific community in ESA's Member States for proposals for a Small Mission to be launched in 2017. The programmatic context for the present call is described in Section 2 and the boundary conditions are described in Section 3. The due date for proposals (to be submitted in electronic form only) is June 15 at 12:00 CET. Interested parties planning to submit a proposal are requested, as indicated below, to send a letter of interest by March 23 at 12:00 CET and will be invited to attend a briefing on March 28 (TBC).

2 PROGRAMMATIC BACKGROUND

Following a consultation with the Science Programme Committee, the Director of Science and Robotic Exploration intends to explore the possibility of implementing "Small Missions" in the ESA Scientific Programme. For this reason, the scientific community is herewith invited to submit proposals for small missions to be implemented within the ESA Science Programme (possibly in cooperation with ESA Member States) within the boundary conditions described in Section 3.

Small missions represent a novel component within the ESA Science Programme which, to date, has been based on "Large missions" (called "cornerstones" in the past), typically implemented on an Ariane 5 launcher, and "Medium missions", typically implemented today on Soyuz launchers. The present Call therefore imposes as little restrictions as possible on the implementation scheme for the proposed missions, allowing the scientific community to bring forward novel ideas and explore approaches complementary to the current components of the ESA Science Programme. At the same time, the Call imposes strict limits on the cost of the missions that can be implemented under the advertised scheme.

The Director of Science and Robotic Exploration will subject all received proposal to a thorough technical and programmatic assessment, to establish their technical feasibility and an initial assessment of their cost. Proposals that are found to be technically feasible and fall within the cost limits of the present Call will then be subject to a scientific assessment and ranking by the Scientific Advisory Structure of the ESA Science Programme.

The Director of Science and Robotic Exploration may select scientifically top-ranked proposals for a study phase, eventually leading to the selection in due time of one mission

for implementation. However, given the exploratory nature of Small Missions within the Science Programme, the Director reserves the right not to select any of the proposed missions should none of them satisfy the boundary conditions set in the present Call.

3 PURPOSE OF THE PRESENT CALL FOR MISSIONS

Through the present Call for Missions, the Director of Science and Robotic Exploration solicits from the broad scientific community in ESA Member States proposals for the competitive selection of mission concepts to be candidates for the implementation of one Small Mission for launch in 2017.

3.1 Scientific goals of the proposed missions

Proposals submitted in response to the present call can address all areas of space science. Proposers are requested to describe in detail the proposed science goals of the mission, the science requirements, and the approach proposed to achieving the science. The scientific interest and excellence of the proposed mission goals will be assessed and ranked, for proposals judged to fulfil the cost and technical feasibility criteria, by the Advisory Structure of the ESA Science Programme.

3.2 Boundary conditions

Small Missions are defined for the purpose of the present Call as space missions with a development time not exceeding 3.5-4 years. Missions can be proposed either for complete implementation by the ESA Science Programme, or as cooperative enterprises between the Science Programme and one or more ESA Member States.

3.2.1 Cost

The total cost to be covered by the ESA Science Programme will be limited to 50 M€ at 2012 economic conditions, regardless of the proposed implementation scheme. For missions to be implemented entirely under the responsibility of the ESA Science Programme, this will be the ceiling of the total mission cost (excluding the payload, as mentioned in the previous section). Missions to be implemented as cooperative enterprises can propose a mix of ESA-provided elements (again capped to 50 M€ cost to ESA) and elements funded by the Member States. The total mission cost would be limited to approximately 150 M€ for a mission fully implemented by the Science Programme, resulting in an approximate limit of 100 M€ for the nationally-funded mission elements (again, excluding the payload). While the ESA cost cap is firm, the cap to the nationally funded component is only indicative, since the actual cost to Member States may differ (on occasion significantly) depending on procurement rules and management schemes.

3.2.2 Implementation schemes and ESA-provided elements

The present Call does not impose a priori limitations on the possible implementation scheme (under the financial caps described in Section 3.2.1) or on the nature of the elements proposed for ESA's provision. Nevertheless, proposed ESA contributions will obviously have to follow the Agency's procurement rules and to comply with the Science Directorate programmatic constraints where and as applicable.

All possible implementation schemes and proposals for ESA-provided elements will be considered. Proposers are requested to describe the proposed implementation scheme in detail. Guidance is provided in the Annex to the Call.

3.3 “Missions of Opportunity”

Proposals for “Missions of Opportunity” will not be considered under the present Call. Missions of Opportunity are defined as proposed small participations in missions led by potential partner agencies and already in an advanced state of definition. Examples typically include proposals for provision of an instrument or other mission components to a mission led by a partner.

3.4 Technological readiness

Regardless of the type of proposal, its implementation timescale and financial envelope, the proposed missions should rely on demonstrated technology and flight proven elements. The use of recurring flight qualified units is strongly recommended and should be the baseline approach. Should this approach not be possible, a Technology Readiness Level (TRL) of 5 or higher is required as a minimum at the component level for any element of the space segment, including the payload, at the time of the proposal submission (see the Annex to the Call for details). In case some spacecraft element is not at TRL 5, proposers should explain in detail the rationale for claiming that the spacecraft can reliably be launched in 2017.

4 PAYLOAD FUNDING

Most missions in the ESA Science Programme to date have been implemented with payload partly or fully provided and funded by ESA Member States under the responsibility of a Principal Investigator (although with some exceptions, e.g. the Gaia payload or the NIRSpec instrument for JWST, both procured by ESA with industrial contracts). National funding of payload is also expected to be the baseline for the proposals submitted in response to the present Call. However, alternative payload funding schemes can be proposed, and will be considered.

Regardless of the payload-funding scheme considered, proposers must clearly discuss the payload development and funding scheme they propose to adopt, together with the rationale for the approach.

5 SCHEDULE FOR THE PRESENT CALL FOR MISSIONS

The deadline for submission of proposals in response to the present Call for missions is June 15, 2012, at 12:00 (noon) Central European Time. Late submissions will not be considered. Submissions will be accepted exclusively in electronic form in PDF format, using the interface available at <http://sci.esa.int/2012-S-Call>.

Proposals will be limited in length to 30 A4 pages (including any title page, appendices, bibliography, etc.), with a minimum font size of 11 pt, and a maximum file size of 50 Mbytes. A description of the expected proposal content is available in the Annex. Any material in excess of the page limit will be removed and will not be submitted to the proposal reviewers. Proposals with file size in excess of the limit indicated above will be rejected by the submission system.

5.1 Letters of Intent

Prospective proposers are required to submit, by March 23, 2012, at 12:00 (noon) Central European Time, a Letter of Intent stating their intention to submit a proposal in response to the present Call. Submission of a Letter of Intent is mandatory; proposals not preceded by a corresponding Letter of Intent will not be considered. The Letter of Intent should have a maximum length of 1 A4 page, minimum font size 11 pt, and a copy should be sent to the national funding agencies expected to play a major role in the funding of any mission element (in particular of the proposed payload). The Letter of Intent should only contain the name of a contact point for the proposal, the proposal title and a brief description of the science goals to be addressed. No scientific justification will be needed at this stage. The purpose of the Letter of Intent will be to allow ESA to make the necessary preparation for the proposal evaluation process.

Letters of Intent may have as an attachment a list of questions the proposer would like to see addressed at the briefing meeting. This list is limited in length to 1 A4 page. No support or endorsement letters should be attached to the Letters of Intent.

5.2 Briefing meeting

Following the submission of a Letter of Intent, proposers will be invited to a briefing meeting, currently planned for March 28 from 14:00 to 17:30, to be held at ESTEC (The Netherlands). Confirmation of the date and of the logistical details for the briefing meeting will be communicated to the contact points indicated in the Letters of Intent.

5.3 International collaborations

Proposals for projects to be carried out in cooperation with international partners (e.g. space agencies of non-ESA countries) will be considered. However these must not fall in the category of “Missions of Opportunity” (Section 3.3), and therefore the proposed

international contribution must not be of such a nature as to change the European leadership of the proposed mission.

In all cases, letters of acknowledgement from the proposed partner agencies, stating their awareness of the proposed cooperation scheme, are highly encouraged. The letters in question should be appended to the proposal, and will not count against the page limit for the length of the proposals.

For all such proposals, ESA will contact the proposed international partner(s) during the proposal evaluation phase, to verify the programmatic status of the proposed cooperation and their willingness to support the Assessment Phase of the mission under the proposed scheme, should the proposal be selected. ESA reserves the right to remove proposals with international collaboration elements from the evaluation if the proposed partners are not in a position to confirm their commitment to the proposed contribution in writing prior to the end of the evaluation process.

6 PROJECT IMPLEMENTATION APPROACH

The implementation scheme of the selected proposals will be highly dependent on the nature of the proposal (e.g. whether the leadership is with ESA or a Member State agency). As for all ESA science missions, the final decision on the selection of the mission rests exclusively with the Science Programme Committee (SPC).

7 PROPOSAL EVALUATION

All proposals received in response to the present Call will first be subject to a technical and programmatic evaluation by ESA, covering issues such as technology readiness, development schedule, proposed management scheme and interfaces, risks and cost, etc. Given the nature of the present Call, that explicitly solicits proposals for Small Missions falling within a strict financial envelope, ESA will subject all proposals to an initial assessment of the mission cost, and reserves the right to remove from the successive evaluation steps proposals that are considered to have a high probability of falling outside of the cost limits for Small Missions.

For missions proposed as partnerships between ESA and national agencies, ESA will immediately discuss with the relevant national agencies the feasibility of the proposed cooperation, and reserves the right to remove from the successive evaluation steps proposals not considered either feasible or of interest to the relevant national agencies.

Proposals assessed as technically feasible, within the cost limit, and endorsed by the relevant national agencies, if applicable, will be ranked scientifically by the Advisory Structure of the ESA Science Programme, comprising discipline-specific Working Groups and the Space Science Advisory Committee (SSAC), who will consider the advice of the Working Groups and issue the final advice to the Director of Science and Robotic Exploration.

The SSAC will be asked to rank the missions scientifically, also taking into account the technical and programmatic evaluation performed by ESA, and explicitly addressing the science return to the European scientific community in relation to the cost to ESA. Based on the SSAC's recommendation, the Director of Science and Robotic Exploration intends to select one or more proposals to be subject to an initial rapid study phase and to be eventually proposed to SPC for implementation.

The Director of Science and Robotic Exploration reserves the right of not selecting any proposal, should no proposal satisfy all the criteria mentioned above.

A decision by the Director on the basis of the SSAC recommendation is expected to take place by November 2012. All proposers will be notified of the outcome of their proposals.

8 DEADLINES AND SCHEDULES

Activity	Date
Letter of Intent submission deadline	March 23, 2012 (12:00 CET)
Briefing meeting	March 28 (TBC), 2012 (14:00-17:30 CET)
Proposal submission deadline	June 15, 2012 (12:00 CET)
Proposal evaluation	July 2012-October 2012