

Announcement of Opportunity

Call for Bilateral Space Science and Exploration Proposals for Bilateral Missions 2023

1 INTRODUCTION

Proposals are invited for participation in bilateral space science and exploration (SS&E) missions, which are already in advanced state of discussion, but requiring funding during the current Comprehensive Spending Review (CSR) period to end March 2025. For collaborations where the UK is a junior partner the mission status should be either selected, going through the selection process, or being prepared for an imminent call, and could include instrument development and/or software engineering. For a UK-led mission the concept need only be well defined, and costs could include mission design and development as well as instrumentation and software. Applicants need to be aware, that for the successful candidates, funding can only be guaranteed to 31st March 2025, and continuation of the project will be subject to the outcome of the CSR and subject to the normal approval process.

The total budget available for the Call will not exceed £1M in 2024/25. Funds awarded in FY24/25 need to be spent before the end of 31st March 2025.

The guiding principle for the evaluation of the proposals will be science excellence but will consider feasibility and affordability, as well as potential economic and societal benefits.

We welcome enquiries from potential bidders for clarification of any aspect of the Call, please send these to sciencebilaterals@ukspaceagency.gov.uk but to maintain a level playing field any answers provided by the Agency will be published on the CEOI website (ceoi.ac.uk). We will ensure commercial confidentiality by removing any specific details and publish details on call process only.

Proposals will be subjected to peer review by UKSA and UKRI, using established methods for assessment of funding of UK involvement in missions. The UKSA will invite successful bidders to submit normal Je-S forms (or TFS (The Funding Service), the successor to the Je-S process, whichever is being used at the time of being placed on grant) to the UKRI Research Grants system for processing under the UKSA/UKRI service level agreement (SLA), analogously to the process used for grants in support of ESA missions. The UKRI grant regulations specify that for any award made, the UKSA contribution will be 80% FEC, and the academic institution must cover the remaining 20%. We will not seek match funding in addition to this. Overheads are calculated according to UKRI's standard grant regulations.

Please note that only UK national organisations eligible for UKRI grants can receive funding from this call. We expect international partners to provide their own funding for these joint mission programmes. Bids cannot be led by industry, but industry may be included as a subcontractor. Grant funds will be paid to the academic lead only. You should also bear in mind the impact of current political issues, potential difficulties with export licenses and travel when selecting partners for missions.

The UKSA and UKRI will only award grants to proposals judged to be of sufficient quality. The UKSA reserves the right to re-issue the Call in a revised form if all allocated funds are not utilised.

Due to time constraints, this competition will be managed by the Centre for Earth Observation Instrumentation. The UK Space Agency funds the CEOI, which is a partnership of Airbus Defence and Space Ltd, QinetiQ Ltd, University of Leicester and the Rutherford Appleton Laboratory. See ceoi.ac.uk. It is anticipated that the transition of successful proposals to grant award and the administration of future calls will be managed in due course by a new team in the UKSA TSE Directorate.

1.1 Reference Documents

The following documents contain information that is relevant to this Call:

- [RD1] National Space Strategy:
<https://www.gov.uk/government/publications/national-space-strategy>
- [RD2] UK Space Agency Corporate Plan 2022-2025
<https://www.gov.uk/government/publications/uk-space-agency-corporate-plan-2022-25>
- [RD3] UKRI T&Cs and Guidance for Full Economic Costs (FEC) for academic Partners –
<https://www.ukri.org/wp-content/uploads/2020/10/UKRI-291020-guidance-to-fec-grant-terms-and-conditions.pdf>

2 SS&SE Proposal Description

The bidders should complete and submit Part 1 of the proposal as shown in the template in the Annex below. Part 2 should not be completed at this stage. The UKSA will conduct a pre-sift of submitted Part 1 proposals. Those projects which are successful in the pre-sift will be asked to complete their proposal by adding the more detailed Part 2 material as shown in the Annex. Please keep to the specified page limits. Material outside of the page limits may not be considered. The deadline for Part 1 proposal submission is noon on 31st January 2024. You will be advised of the submission deadline for the full Part 1 + Part 2 proposals.

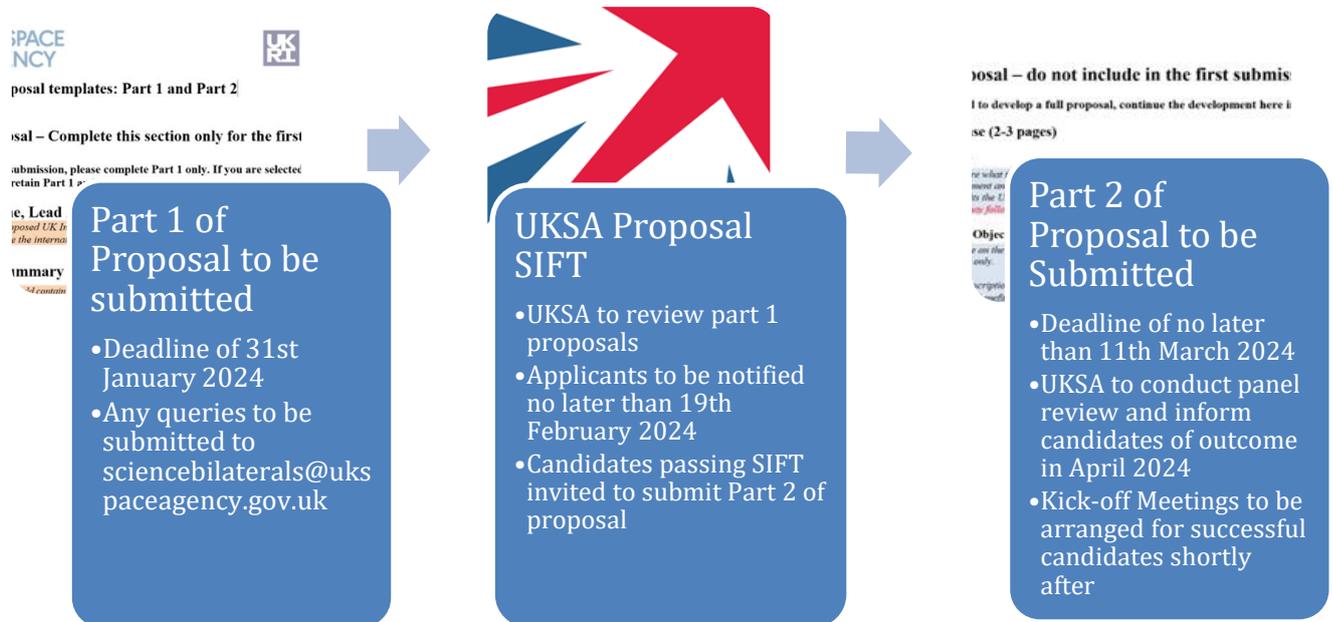
The proposed space mission development activity shall start on 1st April 2024. The duration will be for 12 months to 31st March 2025. The scope of the activity will be determined by the bilateral programme requirements and the funding available. (~£300k-£500k per project). This will be a long-term programme with projects rolling on and off, and once we have committed to a project spanning several years, we would of course prioritise funding to completion. However, that as for all of the Agency's commitments, and so the funding beyond the end of the current Spending Review period will depend on the outcomes of future CSRs.

The schedule shall feature a kick-off meeting, nominally quarterly progress meetings (and/or participation in partner mission/project reviews as appropriate), and lastly a final review. On award of a grant, the project management material and high-level project plan presented in the proposal should be updated to a concise project management plan to be presented alongside the technical description in support of the kick-off meeting.

Bidders must provide a statement of acceptance of the standard UKSA/UKRI Terms and Conditions (T&Cs), defined in the RD3. Bidders should note that these T&Cs will not be open to

negotiation and that in submitting this statement, you are accepting the T&Cs on behalf of your organisation.

Flow Chart for Proposal Submission Process



3 Assessment Criteria

The following questions and criteria will be used by the peer review board to assess the proposals under this Call. Proposers are advised to consider these issues carefully when writing their proposal.

3.1 Science quality of the mission

- The inherent quality of the science, irrespective of the UK involvement.
- Credible partnership with overseas space agency(s).

3.2 Science value to the UK

- UK involvement in a mission – the cost versus benefit of having a UK-based PI versus the UK taking a more limited role in a mission.
- The specific scientific benefit of the UK involvement e.g., is there access to data during a proprietary period, or will involvement in the instrument /data centre allow enhanced understanding of the data, so enabling more, or better quality, publications?
- Missions should allow the UK to build on existing strengths while developing capability in new areas that will enable the UK to position itself for the current and future scientific return.
- Fit to UKRI’s science strategy.

3.3 Project Management

- a) Having a mature project plan. Including schedules, Gantt Chart etc.
- b) A full consideration of risks and mitigations. To be presented in a risk register.
- c) A full UK consortium and wider bilateral mission organograms.
- d) Clearly understood lines of reporting and responsibilities. Any interfaces and dependencies the UK contribution has with its international partners.
- e) Fit to UKRI's science strategy.

3.4 Economic Impact and Industrial partnerships/roles

- a) Is there a clear downstream academic or industrial benefit by e.g., bringing a new technology to market or providing a first flight of a new UK technology which might go on to attract significant export income from future missions?
- b) Does the project have the capacity to develop spin-off opportunities as evidenced from past projects or the presence of a specific business unit to manage this?
- c) Are there strategic partnerships involved within the mission which could aid the UK in this and future missions?
- d) Will the project lead to future programmes which develop strategic capability for the UK, including developing novel designs or developing new expertise? Does it provide upskilling to develop a group or science area? Please include the number of posts created, represented as FTE.
- e) Is there Knowledge Exchange potential for spinning out new knowledge in all its variants into other areas of UK space development such as earth observation, space weather or communications, i.e., cross-disciplinary?

3.5 Societal impact

- a) Skills and education development – will this mission help attract talent into the space sector?
- b) Societal engagement, outreach, and involvement – inspiration, publicity. Linking to the scientific development and the potential impacts of said development.
- c) Utility –The impact to everyday life (i.e. does the outcomes of the mission lead to day-to-day impacts for the general population)
- d) Other benefits to the UK public.

3.6 Timeliness

- a) Mission status – viability of future commitment to funding, from the start of the project through to operations.
- b) Mission likelihood – position in selection procedures, there may be a lot of scientific interest in a project, but the project is not technically ready to proceed e.g., there is no evidence that the project can be turned into a practical and achievable mission.
- c) Project development is tied to a particular event/scientific timing such as the solar cycle, comet appearance etc.; the project timing is driven by cosmic events.

- d) Competition with other international agencies – if the UK is not included in ground-breaking and innovative missions the science and economic benefits of a launching similar subsequent missions could be of lesser value to the UK.

3.7 Value for Money

- a) Assessment of whether the anticipated total cost of the project represents value for money.
b) Focuses UK effort and investment in ways that best play to our strengths when it comes to science payload (detectors etc.).
c) Projects which either allow the UK to build on existing strengths or develop capability in new areas to enable the UK to position itself for current and future economic return.

3.8 Risk

- a) Risk can be programmatic, reputational, scientific, or technical.
b) Different types of risk must be weighed against each other i.e., scientific risk may be more or less significant than financial risk; the risk of not doing something versus the risk of undertaking something brand new.
c) Financial risk is implicitly included in consideration of the programmatic and technical risks. Scientific risk assessment should include consideration of whether the scientific return is of an ‘all or nothing’ type or infinitely malleable and whether it could be severely damaged by descoping.
d) Reputational risks can include assessment of whether the project loading on the PI and their team is manageable. The proposing team should be assessed in view of their track record and capability.

4 SUBMISSION AND CONTACT INFORMATION

Only the lead institution should submit a proposal. Proposals should be submitted to the University of Leicester administrator, who will act on behalf of the UKSA and CEOI, as follows:

- Electronically in PDF format. **The proposal should be contained in single PDF file**, which must include your statement of acceptance of UKSA/UKRI T&Cs (**RD3**). You will receive an email acknowledging receipt. Contact CEOIadmin@le.ac.uk if you do not receive an acknowledgement within 24 hours.
- Submitted proposals will be treated in strict confidence, and only shared between UKSA SS&E Team Leaders, the designated peer reviewers, and the CEOI Leadership team members involved in managing the reviews and preparation of recommendations to UKSA.

The electronic submission should be sent by email to the CEOI Technology Call Administrator, CEOIadmin@le.ac.uk Enquiries about proposal handling and administration should also be directed to this email address.

For further information and formal enquiries regarding the scientific and international aspects of the call, contact:

William Trafford
SS&E AO Coordinator

Email : william.trafford@ukspaceagency.gov.uk

Matthew Crosby
SS&E Lead

Email : matthew.crosby@ukspaceagency.gov.uk

Caroline Harper
UKSA Space Science Lead

Email: caroline.harper@ukspaceagency.gov.uk

Sue Horne
UKSA Space Exploration Lead

Email: sue.horne@ukspaceagency.gov.uk

Group mailbox for Science and
Exploration bilaterals

Email: Sciencebilaterals@ukspaceagency.gov.uk

All at: UK Space Agency, Polaris House, North Star Avenue, Swindon SN2 1FL

ANNEX: Proposal templates: Part 1 and Part 2

Part 1 proposal – Complete this section only for the first submission

For your initial submission, please complete Part 1 only. If you are selected to proceed to full submission, retain Part 1 and complete Part 2.

Project Name, Lead Agency, and International Partners

Please state the proposed UK Instrument/Contribution name/role and the lead agency for the mission. Please also indicate the international partner(s) involved.

Executive Summary (1 page)

Executive summary should contain an overarching summary of the proposal, including a high-level description of:

- International partner organisation(s) and current status of collaboration with UK on this mission (including whether the UK role was suggested by the partner organisation or by the UK, whether the proposed UK role is confirmed, status of the lead agency mission proposal and key points of contact in the partner organisation)
- proposed UK roles (either agreed or being targeted); state whether this builds on a previous relationship/heritage or is a new international partnership

1 Strategic section (2 pages max)

1.1 Mission Summary

Please summarise here what the mission is, its background, international/consortium landscape, what is the proposed UK involvement and high-level timelines. Projects which are conceived as part of a multi-stage development should outline the activities which may follow and a roadmap to flight with ROM costs given in section 2.3. Note that you will be asked to present a full science case in Part 2.

1.2 Mission Rationale

Please insert text here on:

- Why is participation in the mission valuable to the UK (i.e., data access and potential science return., new technology / systems etc., and how the activity will strengthen UK reputation and international partnerships.
- its science objectives (please demonstrate SMART science objectives, ensuring objectives are achievable within the funding period to 31st March 2025)
- Focuses UK effort and investment in ways that best play to our strengths.
- What are the targets for involvement/UK influence and why?
- What is likely to happen to the mission without support from the UK Space Agency?
- What is the synergy between yourselves, and the international partner(s) selected?
- Current TRL levels and development required – is it technically ready to proceed?
- Who are the UK user groups that will be involved in development of this mission?

1.3 Strategic alignment

Explain how your proposal links into the following strategic priorities

- UKRI's science strategy,

- *HM Government National Space Strategy.*
- *Is the project timing driven by cosmic events, eg the solar cycle?*
- *Is there competition with other international agencies on these roles?*

1.4 Proposal benefits

Please describe in more detail the associated benefits to the UK from this proposal. (e.g., is there access to data during a proprietary period, or will involvement in the instrument/data centre allow enhanced understanding of the data, so enabling more, or better quality, publications, TRL and SRL raising?).

- *What outcomes and impacts are foreseen for Agency investment beyond the payload/data work for the mission? Are there any Knowledge Exchange, spin-offs and outreach opportunities expected?*
- *What international partnerships will be established/enhanced?*
- *What are the societal impacts? (i.e., are there skills and education development? outreach and engagement? Other benefits to the UK good? Please consider direct and indirect benefits e.g. could be the technologies developed or information gained from the mission (2 pages)*

1.5 Potential risks

Please outline the primary risks in a few sentences. In part 2 you will be asked to develop a full risk table.

2 Economics and Cost section (2 pages)

2.1 Overview

Please use this section to highlight the economic rationale for your proposal, with reference to the following considerations:

- *Will the project lead to future programmes which develop strategic capability for the UK, including developing novel designs or developing new expertise? Does it provide upskilling to develop a group or science area?*
- *Are there strategic partnerships involved within the mission which could aid the UK in this and future missions?*
- *Does the project have the capacity to develop spin-off opportunities for new technology and/or new knowledge into other areas of UK space development such as earth observation, space weather or communications, i.e., cross-disciplinary?*

2.2 Value for Money of the mission

Please outline why the preferred option is expected to provide value for money, providing detail on:

- *Consider the minimisation of cost involvement to the UK to ensure value for money. E.g. essential and timely activities only.*
- *Assessment of whether the anticipated total cost of the project represents value for money – with a focussed narrative on the anticipated benefits and impact of the mission and the likelihood to deliver these outweighing the costs to the UK.*
- *Projects which either allow the UK to build on existing strengths or develop capability in new areas in order to enable the UK to position itself for current and future economic return.*

2.3 Budget summary

Please outline the expected costs of the mission concept in a few sentences. You will be asked to present a full cost analysis and breakdown as a function of time in Part 2.

3 Management Summary (1 page)

Summarise the proposed management philosophy, including governance, consortium arrangements, and the key roles of the UK management team. You will be asked for a detailed presentation of the management planning in Part 2.

Part 2 Proposal – do not include in the first submission.

If you are invited to develop a full proposal, continue the development here in Part 2.

4 Science Case (2-3 pages)

4.1.1 Overview

*Please summarise here what the mission is, its background, international/consortium landscape, what is the proposed UK involvement and high-level timelines. Also include at a high level why this mission provides science excellence and benefits the UK. **Projects which are conceived as part of a multi-stage development should outline the activities which may follow and a roadmap to flight with ROM costs.***

4.1.2 Scientific Objectives

Please insert text here on the scientific objectives expected for this mission, including if there are any that are UK / international partner only.

- *Provide a description of each objective, and why they were chosen.*
- *including the benefits you expect from each objective and how they will be measured.*

4.1.3 Scientific Requirements

Please use this section to provide further detail on any proposed scientific instruments,

- *providing an overview of each instrument,*
- *how it/they works, what is required to make it work and,*
- *whether these resources are currently in place or still need to be sourced*

5 Science value – 2 pages

Please use this section to provide further detail on the scientific value of the proposed mission.

5.1.1 Outline scientific benefits to the UK

What are the specific scientific benefits from a UK perspective? To include a series of points in 5 short sentences of the primary science benefits.

5.1.2 Synergy with international partners

Explain why the proposed consortium is the best scientific fit for the mission and how the relationship will enhance the science. Focus on:

- *A brief overview of the division of responsibilities*
- *The heritage of each partner*
- *Their current scientific capabilities*
- *Is there a history of collaborative working?*
- *Do you envisage this leading to future opportunities?*
- *Are you aware of any political issues which could interfere with the success of this opportunity (such as export license issues, travel visa issues, armed conflict etc.)? Please also include full list of international consortium partners (including tertiary partners)*

5.1.3 Public relations and outreach

Please describe the potential of the mission for public outreach and engagement from the mission, and how this will be addressed in your work. NB: UKSA do not fund this activity (including science exploitation which is awarded through the research councils competitive selection processes)

6 Mission configuration and technical feasibility – 2 pages

Please use this section to provide details of the mission configuration and provide an assessment of the technical feasibility.

6.1.1 Mission concept of operations

Please outline the CONOPS for the mission, including impact on external resources such as ground segment and staffing impacts.

6.1.2 Partnerships and dependencies

Please describe dependencies and partnerships, particularly blocking or enabling issues.

7 Economic case - 2-3 Pages

Please use this section to

- Does the project have the capacity to develop spin-off opportunities for new technology and/or new knowledge into other areas of UK space development such as earth observation, space weather or communications, i.e., cross-disciplinary?
- E.g. What is the proposed procurement scheme for the mission elements, indicating which elements are proposed to be UK-procured and / or by international partners, with the proposed collaboration scheme highlighted (if known).
- FTE – what jobs are funded by UKSA funding.

7.1.1 Overall estimate cost to the consortium

Please summarise the expected overall cost profile for the whole consortium.

7.1.2 Overall estimate cost to UK

The purpose of this section is to demonstrate the funding profile required for your mission. Please show the cost profile over time (using financial years), covering all projected expenditure being sought **per institution** Costs should be presented as £M (i.e., £0.5m for 500k) and at 80% Full Economic Cost (i.e., UKSA Contribution).

FY	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31
institution									
institution									
etc									
Total cost									
Final total									

- Please also provide your confidence in the costings provided (i.e., is it +/- 5%, 10%, 20%), and explain why.
- Are there any significant uncertainties in the proposed UK roles that could have a major impact on UK/international partner costs (either savings or increased costs) – such as different partnerships/delivery routes being considered, potential to offload UK roles to other partners, different technologies, uncertainties in mission/role scope/objectives?

- *No inflationary costs to be included.*
- *Equipment vs resource costs. Indicative figures of working allowance to also be described.*

8 Management scheme - 2 Pages

8.1.1 Overview of consortium and UK / international provided elements

8.2 Project governance

Summarise the mission consortium arrangements and how the structure is expected to be managed. lines of reporting, decision making, key roles and the management responsibilities of the UK team. It is often helpful to include a map showing the different entities and how they relate to each other.

Please also use this section to highlight why the proposing team is best positioned to undertake and deliver the proposed work, including track record and capability.

How the UK consortia fits within the wider international mission partnership (outside of the UK) to be presented in an organogram with text description on constraints, especially interfaces and dependencies to be provided.

8.3 Procurement

What is the proposed procurement scheme for the mission elements, indicating which elements are proposed to be UK-procured and / or by international partners, with the proposed collaboration scheme highlighted (if known).

Is there a plan on obtaining quotes for procurement activities. Is this planned within the project lifecycle? Are any of your procurement partners international organisations?

8.4 Key milestones: High level plan

Realistic and pragmatic milestone plan that will give an indication of progress to the programme management team, ideally aligned to the quarterly review meetings.

Summarise the mission consortium arrangements and how the structure is expected to be managed. lines of reporting, decision making, key roles and the management responsibilities of the UK team (not international partners). It is often helpful to include a map showing the different entities and how they relate to each other.

Please also use this section to highlight why the proposing team is best positioned to undertake and deliver the proposed work, including track record and capability.

8.4.1 Development schedule and timeline

Please provide detail on when you might expect the project to be ready to be launched and if there are any non-project specific constraints to this (i.e., not design, construction or funding – more launch window etc.). You may add a timeline if you wish.

Consideration of optimism bias.

8.4.2 Risk

Provide a brief summary of the main risks associated with the investment, with consideration of the capacity of the UK project teams involved. Describe their potential probability, potential impact, mitigations and who owns the risk. The risks can be programmatic (including international dependencies), reputational, scientific or technical. You may wish to use a similar table to below. Likelihood and impact scores are from 0 to 5 on a rising scale where '0' represents no likelihood / impacts to '5' will happen, will have large impact. Risks to cover normal project management categories. Mitigation should detail a realistic plan to reduce impact or close a risk.

1.

Risk name	Narrative description (Cause and Effect)	Likelihood (0-5)	impact (0-5)	Proposed mitigation	Risk owner

9 Appendices

- A. *LoE*
- B. *Organogram top level showing international and UK contributions*
- C. *Background of Lead proposers – 1 page per proposer*
- D. *Statement of Interest*
- E. *Benefits map / logframe*