Announcement of Opportunity: Call for Ideas
UK Microgravity Experiments

Closing date: 28 February 2018, 16:00.

1. Summary

The UK Space Agency announces an opportunity to propose ideas for experiments for flight on the International Space Station, to provide further flight opportunities to the growing UK microgravity science community.

Selected ideas will then be invited to provide full detailed experiment proposals. Subject to confirmation of future funding, a number of these experiments will be selected for development and nomination to ESA for flight.

The development of experimental hardware and the flight opportunities will be funded by the UK Space Agency but funding for scientific exploitation of the data would be expected to be found by the research teams from other sources, such as RCUK/UKRI.

Ideas are welcomed from all UK organisations, including University-led academic research proposals and Industry-led commercial research proposals.

2. Background

The UK subscribes to the European Space Agency's European Exploration Enveloped Programme (E3P). This allows UK scientists to apply for use of microgravity and space environment facilities made available through this programme, such as the International Space Station, parabolic flights, sounding rockets and drop towers.

The European Space Agency announced in December 2016 that they expect all of the astronauts that were selected in the 2009 class to be assigned a second mission. Based on current crew assignments and likely flight opportunities, Tim Peake may be assigned to a flight in the early 2020s.

The UK Space Agency would like to ensure that the UK microgravity and space environments community is properly placed to capitalise on the scientific opportunities that such a flight would offer by, subject to confirmation of budgets, funding the development of a number of experiments. These experiments would be proposed to ESA as UK National Experiments, an opportunity afforded to the UK through their participation in ESA's European Exploration Enveloped Programme (E3P).

3. Remit of the Call

This announcement of opportunity calls for ideas for new experiments that that could be flown to the International Space Station in the early 2020s. Experiments should be able to complete development and be ready for delivery to the European Space Agency by early 2021.

The call is open to all UK-based organisations, including Universities and Industry.

We welcome ideas from all research areas, and in particular projects within the highlighted research areas in the National Strategy for Space Environments and Human Spaceflight:

- Astrobiology/chemistry
- Fundamental Physics
- Life and biomedical sciences
- Materials research

The proposed work could be a continuation of an existing programme of research, preparatory activities for potential longer-duration experiments on ISS or other microgravity platforms, or a wholly new concept.

Proposals must be compatible with the operational constraints and capabilities of the International Space Station. Details on the facilities available and logistics of flying an experiment on the ISS are available from the UK Space Agency through the contact details below.

4. Funding Scope

Following the call for ideas, selected applications will be invited to submit full, detailed proposals. These will be thoroughly reviewed and a number of experiments selected for development and flight. The UK Space Agency will fund the development of the experimental hardware and negotiate the flight opportunities with the European Space Agency. Funding for scientific exploitation of the data will be expected to be found by the research team from other sources, such as RCUK/UKRI.

For experiments selected for flight, the project team would be expected to work with the European Space Agency to complete the Flight Safety review process, with assistance from the UK Space Agency.

5. Project Implementation

Any experiments selected for flight by the UK Space Agency at the end of the application process will be nominated to the European Space Agency as a national programme. Experiments will have to be designed, developed, built and qualified by the experiment team. The European Space Agency will provide assistance with integration to the ISS programme and the payload would be operated by a USOC (User Support Operations Centre), nominated by ESA, supported by the experiment team.

6. Application Process

6.1. Who can apply

Proposals are welcome for both Universities led academic research proposals and Industry led commercial research proposals, though in the latter cases state aid rules apply. All proposals must be from UK based institutions and companies. Teams may collaborate with overseas partners, but their work will not be eligible for UK Space Agency funds.

6.2. Application Process

Applications will be subject to a two stage process. Initial outline experiment ideas are requested in the first phase. All proposals will be reviewed, and then a sub-set of these invited to submit full proposals. The full details of the requirements for the second stage will be given to those invited to apply, but outline details are provided in section 6.2.2 below.

6.2.1. Call for Ideas Application content

Ideas submitted must cover:

- The key science question(s) to be addressed
- The potential outcomes and their impact
- A brief description of the proposed experimental set up and execution including details of any existing facilities on the ISS to be used.
- An explanation of the requirement for using the ISS for the research. – could the experiment be delivered on other platforms (e.g. parabolic flight; sounding rocket; orbital capsule)?
- Details of the alignment to current UK research priorities (e.g. Research Council roadmaps; UK Space Agency Space Environments strategy.)

Note that cost estimates are not required in the initial ideas submitted.

6.2.2. Full proposal application content

Note: The full proposal is not required now; this information is provided here for reference.

The details of the application content for the full proposals will be provided after the first phase is complete but will require the following, in addition to expanded details on the above points:

- A full, reasoned, detailed estimate of cost to completion and timelines
- Justification of resources
- A full project plan, including full identified project team and payload equipment builders.

All full proposals will be expected to identify the project team and describe how the experiment payload would be designed, developed, built and qualified should it be selected for flight. If lead organisations lack the ability to develop, build and qualify the payload themselves, the proposal should include details about agreed partnerships for these stages.

Should any experiment teams lack the capability and expertise to developed and build the payload, they should contact the UK Space Agency via the details below, for advice and assistance finding industrial partners.

6.3. How to Apply

Initial ideas proposals are to be submitted to the UK Space Agency, electronically via email to spaceexploration@ukspaceagency.bis.gsi.gov.uk, as a single .pdf file, clearly marked as AO: Microgravity Experiments.

Proposals must be no longer than 3 sides of A4. Anything longer than this will not be reviewed.

6.4. Timescales

- December 2018: Call for Ideas issued
- 28 February 2018: Closing date for Call for Ideas submissions
- March 2018: Call for ideas are reviewed, selected ideas will be invited to submit full proposals
- End May 2018: Closing date for Phase 2 submissions
- June to July 2018: Full peer review process takes place
- End July 2018: Experiments selected
- January 2019: Experiment development start
- End 2020: Experiment development expected to be complete

7. Items to note

Experiment proposals should take into consideration the practicalities and limitations of performing research on the ISS platform. Crew time, upload and download mass, volume, power and other resources are all limited. All payloads must pass ESA safety certifications. Applicants are encouraged to discuss initial ideas with the UK Space Agency prior to submission if uncertain of feasibilities.

All European Space Agency facilities and resources may be considered for use. A list of facilities and resources available on the ISS is available upon request from the UK Space Agency.

For life and biomedical experiments that utilise a human subject, experiments may propose the use of multiple subjects if appropriate to the research objectives.

8. Criteria and Review

All ideas will be reviewed by a panel from the UK Space Agency and other parties. The panel will select ideas to invite to submit full proposals based on the following criteria:

- Science excellence
- Feasibility and management
- Fit to UK strategic priorities
- Potential outreach opportunities

9. Further Information

For further information and for any questions about any aspect of this call please contact:

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