



Call for Ideas on Commercially-driven Research in Space

Coordinated Feasibility Study, European Exploration Envelope Programme and
Demonstration Project

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1 INTRODUCTION

The European Space Agency (ESA) is inviting public and commercial organisations from all ESA Member States to propose ideas and suggestions for commercial and application-driven utilisation of the International Space Station, ISS, and the other space environment facilities, e.g. sounding rockets, parabolic flights, bedrest studies, etc. The aim is to generate ideas leading to new products and/or services that will create businesses and generate commercial opportunities.

The Call for Ideas on the “Commercially-Driven Research in Space” is being organised under ESA’s Business Applications together with the European Exploration Envelope Programme (E3P) of the Agency.

2 PROPOSAL REQUIREMENTS

The European Space Exploration Envelope (E3P) Programme and ESA’s Business Applications are providing a single and integrated offer to European industry to engage with ESA in industrial application driven research, covering the whole chain of innovation, from pre-competitive to competitive research. This joint initiative calls for commercially-driven proposals for utilising ISS, and (if required) to exploit research results stemming from ISS and ground-based space analogues in preparation (e.g. sounding rocket, parabolic flights, drop towers, bed-rest studies). Selected projects would be advanced through three existing mechanisms as shown in - Figure 1- below:

- Assessment of the business plan and market potential, via a Business Applications Feasibility Study;
- Implementation of the research and development project via E3P Programme;
- Pre-commercial demonstration of derived products / services via a Business Applications Demonstration Project.

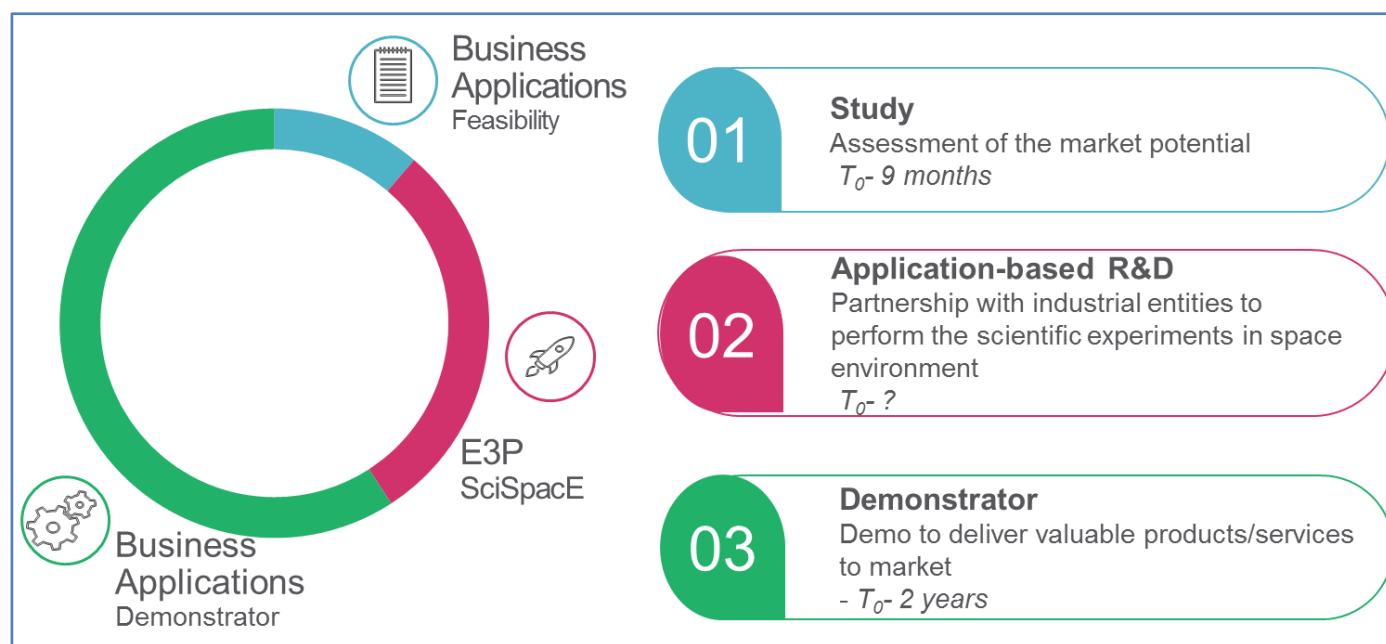


Figure 1: ESA Funding Schemes supporting the call for ideas

The submitted ideas (see how in par. 6) will provide the option to trigger proposals applicable for the full or, depending on the maturity of the proposal, for a partial (e.g. only Phase 2 and 3) implementation cycle. Proposed ideas would be selected on their potentials to successfully pass the final phase.

The submissions will be reviewed by ESA to identify the most promising candidates. ESA may then enter into direct negotiation with the successful candidates.

Proposing consortia may consider the use of ESA owned ISS utilization facilities or those operated by ESA commercial Partners, listed below.

Space environment facility	Info-reference
Concordia Research Station	https://www.esa.int/Our_Activities/Human_Spaceflight/Concordia/The_remote_base_on_Earth
Radiation facilities	Accessible via ESA within IBER programme, see APPENDIX from https://esamultimedia.esa.int/docs/hsf_research/cora/CORA-IBER-information-package.pdf
ISS	https://www.esa.int/Our_Activities/Human_Spaceflight/Research/International_Space_Station
Biolab	https://www.esa.int/Our_Activities/Human_Spaceflight/Columbus/Biolab
KUBIK	http://wsn.spaceflight.esa.int/docs/Factsheets/25%20Kubik%20HR_WEB.pdf
European Drawer Rack	https://www.esa.int/Our_Activities/Human_Spaceflight/Columbus/European_Drawer_Rack
European Physiology Module	https://www.esa.int/Our_Activities/Human_Spaceflight/Columbus/European_Physiology_Modules
European Transport Carrier	https://www.esa.int/Our_Activities/Human_Spaceflight/Columbus/European_Transport_Carrier
Microgravity Science Glovebox	https://www.esa.int/Our_Activities/Human_Spaceflight/Columbus/Microgravity_Science_Glovebox

Sounding rocket	https://www.esa.int/Our_Activities/Human_Spaceflight/Research/Sounding_rocks
Parabolic flight	https://www.esa.int/Our_Activities/Human_Spaceflight/Research/Parabolic_flights
Drop-tower	https://www.esa.int/Our_Activities/Human_Spaceflight/Research/Drop_towers
Bedrest and ground studies	https://www.esa.int/Our_Activities/Human_Spaceflight/Research/Bedrest_and_ground_studies
Hypergravity	https://www.esa.int/Our_Activities/Human_Spaceflight/Research/Hypergravity
ICE-Cubes (Space Applications Services)	http://www.icecubesservice.com/resources/
Bartolomeo (Airbus)	http://www.airbus.com/content/dam/corporate-topics/publications/brochures/201804_Bartolomeo_datasheet_2pages_small.pdf

Table 1: List of space environment facilities and reference information retrievable from the web

2.1 ESA's Business Applications

The ESA Business Applications (BA) aims to develop new downstream applications by using and integrating different space assets (Earth Observation, Navigation, Telecommunications and Human Spaceflight technologies). The activities shall result in sustainable services favoured by the user-driven nature of the ESA's BA programme.

2.2 The E3P programme

The European Exploration Envelope Programme (E3P) encompasses all ESA exploration activities aimed at exploiting Low Earth Orbit Platforms for research and applications and exploration of Moon and Mars with robots and humans. It supports application-oriented research, and development enabled by space exploration infrastructures, located both in space and on ground in support of preparatory activities.

3 TARGET COMMUNITY OF THE CALL FOR IDEAS

Projects shall be proposed and coordinated by consortiums, led by industrial players partnering with academic and research entities.

New concepts, capabilities, and a new culture are required in order to respond to a multitude of public and private needs from those actors who are not familiar with space systems, and this Call for Ideas is targeted especially at such actors.

Organisations from the following Member States can participate to this call for ideas :

<ul style="list-style-type: none"> • Austria • Belgium • Czech Republic • Denmark 	<ul style="list-style-type: none"> • Luxembourg¹ • The Netherlands • Norway • Poland • Portugal • Romania
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<ul style="list-style-type: none"> • Finland¹ • France • Germany • Greece • Ireland • Italy 	<ul style="list-style-type: none"> • Spain² • Sweden • Switzerland • United Kingdom
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Table 2: List of eligible Member States for the call for ideas

4 TARGET TOPIC OF THE CALL FOR IDEAS

Core themes covered in this Call for Ideas include (but are not restricted to) the following areas:

- Health
- Pharmaceuticals
- Security
- Consumer Applications
- Emergency
- eLearning
- Energy
- Manufacturing
- Any other promising topic.

The Call for Ideas on the “Commercially Driven Research in Space” is intended to be driven by commercial interest for the utilisation of space assets to provide sustainable services for public and or private use. The submitted ideas will be used to help defining and consolidating the project requirements in cooperation with Human Spaceflight and ESA Business Applications. The results of the industry cooperation will include clearly defined user needs, potential customers, and evidence for a sustainable service or product.

5 ESA SUPPORT

5.1 Phase 1

The Feasibility Study shall provide the preparatory framework to identify, analyse and define new sustainable applications and services utilising resources and/or results from the expected investigation on the International Space Station and ground-based space analogues. The study aims to identify a valuable business case. These applications shall be user driven, and the proposed activity shall be intended to be followed up by a commercialisation activity. Phase 1 shall mainly investigate the commercial potential and viability, the user requirements and needs, and provide the roadmap for a commercial roll-out of the service or product. ESA will bear up to 50% of the acceptable project cost (subject to authorization by the involved [National Delegation\(s\)](#)), and the remainder has to be financed by the tenderer and/or other partners direct or indirect co-financing.

¹ Participant in BA, but not in E3P.

² Participant in E3P but not in BA.



5.2 Phase 2

Research in Space Environment: ESA support will be provided for preparing and enabling the implementation of the commercially driven ISS utilisation project. Support may be requested for :

- Funding of scientists and ground-based experiment hardware as well as of space engineering support for developing the necessary payload/ experiment for ISS and/or other ground-based space analogues compliant with safety regulations;
- Provision of in-kind resources to access ISS and possibly ground-based space analogues as well as ESA furnished hardware for the implementation of the ISS utilisation project.

The total value of ESA funding support for each project shall not exceed 500 k€, not including in kind provided support. The combined value of ESA financial and in-kind support shall be commensurate with the value of the overall commitment of the proposing consortium.

5.3 Phase 3

Demonstration Projects are dedicated to the implementation of pre-operational demonstration services within ESA Business Applications, which therefore comply with the following requirements: they are user driven (including user involvement and contribution), with clear potential to become commercially viable in the post project phase. In this Phase, the service value chain, the market analysis and the financial indicators are further developed and the project shall include a pilot demonstration service, to be tested with pilot demonstration users.

ESA will bear up to 50% of the acceptable project cost (subject to authorization by the involved [National Delegation\(s\)](#)), and the remainder has to be financed by the tenderer and/or other partners in cash or in-kind co-financing.

6 HOW TO SUBMIT YOUR IDEAS

You are invited to submit your ideas and suggestions by completing and returning the Activity Pitch Questionnaire, annexed to this document, by email to biz-hsf@esa.int (please include “Commercially Driven Research in Space” in the subject heading).

Please be assured that all inputs will be treated confidentially. Your ideas are highly valued, and will help shape the ESA Business Application and MAP programme of ESA in order to meet your needs.

7 GUIDELINES FOR IDEA PROPOSALS

7.1 Content

Idea proposers are referred to the Activity Pitch Questionnaire annexed to this document -8 ACTIVITY PITCH QUESTIONNAIRE - for guidance on their content presentation.



7.2 Timescales

Ideas in response to this call should be submitted to ESA ***not later than 4 September 2018***. ESA will provide responses to all submitting consortia not later than end September 2018.

ESA will organise an “Innovation Exchange on Commercialise Space Research” on 4 June 2018 (<http://youbenefit.spaceflight.esa.int/esa-innovation-exchange-when-newspace-explores-earth/>) to provide further background information on this call and provide opportunities for networking and access to ESA science community.

8 ACTIVITY PITCH QUESTIONNAIRE

The present questionnaire intends to collect in a standardised way information on various aspects of your idea / proposition to understand:

- i. what is the level of expertise / know-how of the proposer;
- ii. what is the current level of maturity;
- iii. what is the business target and business potential.
- iv. What is the research to be conducted

By providing this questionnaire, you allow ESA to quickly take informed decisions on next steps, pointing you to the most appropriate activity stream (e.g. additional preparatory work, training, teaming up with some other partners, go ahead targeting a feasibility study, or a demonstration project in a single or a two phases approach). Please note that ESA may provide this Activity Pitch Questionnaire to the National Delegations of the Member States of your consortium.

In case you need explanation of the terminology used here, please refer to [the document](#) linked here.

Please, keep your answers to a **maximum limit of 7 pages** (including this introduction), maintaining font size and structure.

8.1 Section AP.1: Background information

AP.1.1 Idea name:			
AP.1.2 Company proposing: <i>(address, country, website, contact point name, telephone and e-mail)</i>			
AP.1.3 Company background: <i>(year of creation, size, turnover, number of employees)</i>		AP.1.4.a Are you familiar with ESA Business Applications? <i>(Yes/No)</i>	
		AP.1.4.b Are you familiar with ISS utilisation opportunities, implementation processes and related ground-based research platforms? <i>(Yes/No)</i>	
AP.1.5 Are you applying as a consortium? <i>(Yes/No)</i> Who are the other entities? <i>(name, country, website)</i>			
AP.1.6 Does your team (company / consortium) have the right skills and experience to deliver what you are proposing? <i>(Yes/No/Partial + comments)</i>			
AP.1.8 How did you become aware of this CFI? <i>(e. g. via ESA Web site, specific event, Ambassador Platform, National Delegation, brochure, Twitter, Facebook, from previous activities)</i>			



8.2 Section AP.2: What do you want to offer and what is the added-value?

AP.2.1	What is the product/service you want to offer?
AP.2.2	Who will be the customers/users of the final product / service? <i>Market size?</i> (please note: users and customers can be different: users will use the final product/ service but they do not necessarily pay for it; customers will pay for the service, but they do not necessarily use it)
AP.2.3	What are the customers'/users' pains (e.g. problems) and gains (e.g. benefits)? Can you quantify them? (please note: whenever users and customers are different, pains and gains can be different as well)
AP.2.4	What is innovative in what you propose? What is your unique selling point with respect to what is available in the market?
AP.2.5	Which kind of research do you want to perform? What kind of ground-based R&D do you need? What kind of space-based R&D do you need? <i>Please explain why your service/product is achievable only performing R&D in Space</i>



8.3 Section AP.3: Who are the target beneficiaries?

AP.3.1	Who are the target beneficiaries addressed by your offer, and what is the expected impact?
AP.3.2	Have you already identified potential individual customers? <i>(Yes/No + comments; if YES, indicate who they are and what is your engagement with them)</i>
AP.3.3	Have you already elaborated a business plan for this idea? <i>(Yes/No/Partial + comments. If Yes, please provide the financial indicators: NPV and IRR, together with the associated time scale)</i> <i>(If the answer is NO, go to Section AP.4: How do you intend to implement?)</i>
AP.3.4	When do you plan to enter the market with the proposed product / service?
AP.3.5	How do you plan to bring the activity results to commercial exploitation?

8.4 Section AP.4: How do you intend to implement?

AP.4.1 What is the starting point of your activity? <i>(e.g., idea, prototype, existing product, existing service, results from other activities, discussions with potential users)</i>
AP.4.2 What are the key activities you propose to execute? <i>(e.g. commercial aspects: market analysis, winning over potential customers, business case investigation/definition, validation of business plan assumptions, preparation of service level agreement e.g. technical aspects: proof of technical feasibility, proof of concept, design, development, integration, testing validation with pilot customers)</i>
AP.4.3 What are the expected goals / outputs at the end of the activity? And how will they contribute to the final product / service?
AP.4.4 What is the overall planning and costing of the intended activity and how to you intend to cover the costs?
AP.4.5 What support are you seeking from ESA? Phase 1. [Specify the support] Phase 2. [Specify the support] Phase 3. [Specify the support] <i>(e.g. kEUR, percentage of the cost of the activity)</i>
AP.4.6 What are the most important risks (technical / business / commercial) to your activity? What are your mitigation plans?

PLEASE SEND THIS QUESTIONNAIRE TO: biz-hsf@esa.int