

CALL FOR APPLICATIONS – AI Moonshot Challenge

1. Objective and budget of the AI Moonshot Challenge

In line with the Portuguese Space 2030 National Strategy, the AI Moonshot Challenge aims to boost the exploitation of space data and promote innovative ways to tackle societal problems and advance scientific research.

Satellite programs worldwide generate massive amounts of data containing information essential for numerous sectors, including valuable information to support policy decisions. Recent developments in powerful technologies such as Artificial Intelligence (AI) enable the analysis and exploitation of these data and retrieve such relevant information more than ever before.

Marine Litter Pollution is an urgent problem which is far from solved and only starting to be understood. More than 4.8 million tons of land-based plastic waste can end up in the ocean in a single year and most of it is still unaccounted for. Plastic materials in the oceans degrade slowly, putting sea-life at risk and causing numerous problems with environmental, economic, safety, health or cultural impacts.

Plastic debris can have many origins (i.e. land or ocean-based) varying in shape, composition and size. A significant portion is invisible to the naked eye, the microplastics, but others can extend for meters as is the case of discarded fishing gear. The monitoring of these debris is crucial to understand the dimension of the problem, to assess effectiveness of policy measures and to take action - remedial and preventive. Satellite data and AI can contribute to a solution by helping to identify and monitor such debris at a local and global scale.

Portugal Space opens this call to receive R&D project proposals on how to advance the detection, characterization, quantification and tracking of the various types of marine plastic litter in the marine environment, as well as in the inland water bodies, and at potential inland sources, making use of AI and satellite data. The team(s) with the best proposal(s) will be awarded up to 500k € to conduct the research for a period of up to **2** years from Portugal. Non-national teams can do it either in close cooperation with Portuguese beneficiary institutions or by establishing themselves in the country.

More than one proposal may be supported as long as the awarded budget does not exceed the total budget available (500k €).

2. Applicants

The Moonshot Challenge is a global competition aimed at research groups, individual experts, consortia or partnerships between different people or entities, including companies or start-ups, from different backgrounds and geographies.

Innovative ideas from these groups are expected and the proponent(s) of the awarded R&D project proposal(s) should prove to have means to develop the activities from Portugal. Non-national teams can do it either in close cooperation with Portuguese beneficiary institutions or by establishing themselves in the country.

Organisations that can submit a proposal are the following:

- Higher Education Institutions, their institutes and R&D units;
- State Laboratories;
- Non-profit private and public institutions developing or participating in scientific research activities;
- Companies of any nature and under any legal form, including startups;
- In addition to the entities mentioned above, the consortium may include other public or private entities, profit or non-profit, that may also invest in the project and bring relevant competencies to the project.

The team(s) whose proposal is awarded will become beneficiary entity(ies).

3. Timeline

Submissions for **proposals** will open in July and remain **open until the 4th October 2020, 23h59 (CET)**. After compliancy check to tender conditions proposals will be evaluated by a jury composed by **international experts** until the **15th November 2020, and soon after** the teams with the best proposals will be invited to pitch their innovative idea at the **Web Summit 2020**, to take place in 2nd-4th December 2020, **when the winner(s) will be announced**.

4. Submission of Applications

The applications to the Moonshot Challenge must follow the present Call guidelines and be sent to moonshot@ptspace.pt until the 4th October 2020, 23h59 (CET).

Proposals must include the information and follow the structure bellow and not exceed 40 pages, excluding annexes.

- 1. Project Title and Acronym**
- 2. Proposal Summary (500 words)**
- 3. Consortium** (with short description of each institution. Max 250 words/partner; how the project will be conducted from Portugal needs to be clearly explained)
- 4. Graphical Abstract** (1 page max. with schematics of the main concept being proposed)
- 5. Description of Work**
 - a. State of the Art
 - b. Objectives, Novelty and Impact of proposal
 - c. Research Plan and Methods (including work packages, tasks description and a first iteration of the main tasks)
 - d. Milestones, Deliverables and Reviews (considering at least a Kick-off meeting, annual reviews, a final report and presentation of results)
 - e. Timeline and Management (including a Gantt chart)
 - f. Outreach
 - g. Outcomes (e.g. patents; papers; thesis, others)
- 6. Team**
 - a. People with short CV - max 150 words for each team member
 - b. List of max 10 relevant publications of the team
 - c. List of max 10 relevant projects of the team
- 7. Budget and budget justification (max 2 pages)**
- 8. Annexes**
 - a. Letters of commitment (PI, institutions)
 - b. Letters of support (if relevant)

5. Evaluation:

5.1 - Jury

The jury will be composed by international recognized experts in remote sensing and AI and co-chaired by **Paolo Corradi** from **ESA** and **Carolina Sá** from **Portugal Space**. The full constitution of the jury will be published by the end of September.

The **support team** to the jury will be composed by the FCT, I.P. and Unbabel staff.

The jury will:

- a) Apply the evaluation criteria;
- b) Prepare an evaluation opinion for each project;
- c) Select and prioritize the applications;
- d) Prepare a report with the evaluation results.

5.2. Evaluation criteria

After compliancy check to tender conditions, projects will be **evaluated by the jury based on the following evaluation criteria**.

Criterion 0 – Innovative ideas making use of satellite data and AI

Use of satellite data and AI in the project are mandatory. AI can be applied/combined with different types of data but ideas must include at least a space asset. This criterion is of eliminatory nature. Proposals that are not innovative or do not include use of satellite data and AI will not be evaluated further.

Proposals passing Criterion 0 will be further evaluated considering the following criteria, and according to the formula presented:

- A. Innovative nature and Scientific and Technical merit
- B. Team expertise in the context of the project
- C. Management and planning
- D. Technology transfer potential and outreach

$$\text{Merit of Proposal} = 0,55 A + 0,30 B + 0,10 C + 0,05 D$$

Each criterion will be evaluated considering the following scale: 0-Worthless, 40-Barely acceptable, 50-Fair, 60-Good, 75-very good, 90-Excellent and 100-Perfect.

Criterion A - Innovative Nature and Scientific and Technical Merit of the project

This criterion evaluates how satellite data and AI are integrated in the project. Innovation and creativity aligned with a sound scientific reasoning are expected and valued.

A1. Novelty of the idea

The novelty of the proposal will be evaluated according to the following definition:

- the proposal should address a not yet described or tested, but feasible and theoretically working concept;
- the proposal should identify the features that make it new.
- the proposal should be compared to prior activities and published state of the art.

A2. Scientific and Technical Merit

This sub-criterion will evaluate the feasibility of the proposal, if the proposed idea and methodology are realistic and promising to obtain the expected results, leading to an effective implementation in order to advance the detection / quantification / characterization / tracking of plastic marine litter. It will evaluate the justification of the satellite data and AI approach to be used and how they will be used to contribute to tackle marine plastic litter pollution. The exploitation of satellite remote sensing, addressing the upstream and/or the downstream segment will be valued.

Quality of the proposal with demonstration of in depth understanding of the plastic marine litter subject (problems and requirements) and clear identification of objectives and targets to be addressed will be also valued.

Criterion B – Team expertise in the context of the project

The team background will be evaluated under this criterion. The team should have enough expertise and skills to adequately execute the proposed project (team configuration, PI's qualifications) namely in the areas of satellite remote sensing, Artificial Intelligence and marine pollution. The team should demonstrate how the project will be conducted **from** Portugal.

Criterion C – Management and planning

This criterion will consider the project organization and costs.

C1. Milestones, Timeline, Management

In this sub-criterion, the organization of the project will be evaluated in terms of the proposed milestones, deliverables, reviews, duration and management structure.

C2. Budget justification

The organization and use of resources of the participating entities will be evaluated, regarding technical-scientific, organizational and managerial and, if it applies, co-funding capacity on the part of the companies.

Criterion D – Technology Transfer potential and Outreach

This criterion will account for the project impact in terms of potential services and public engagement.

D1. Technology Transfer potential

This sub-criterion will evaluate the potential of tools and technology developed within the scope of this project to be applied to other sectors.

D2. Public engagement

Outreach activities can take various forms including Citizen science approaches. This sub-criterion will take in consideration the degree of impact and interactivity of activities, range of targeted audience and expected engagement level.

6. ELIGIBLE EXPENSES

This section describes those expenses that the submissions can include in Section 7 of the proposals (as per Chapter 4 above).

Eligible expenses are those taken by the Beneficiary Entities arising exclusively from the implementation of the project and determined by its nature, reasonableness and adequacy to the objectives of the proposed activities, namely:

- a) Expenditure on human resources dedicated to or associated with the development of R&D activities related to the implementation of the project;
- b) Expenses for national or international missions directly attributable to the project;
- c) Acquisition of scientific and technical instruments and equipment, essential to the project, if they are used throughout the project's lifetime;

- d) Amortization of scientific and technical instruments and equipment, essential to the project, whose useful life period is contained in the period of execution, but is not exhausted in the project;
- e) Subcontracts directly related to the execution of scientific tasks of the project;
- f) Expenses associated with the national and foreign registration of patents, copyrights, utility models and designs, national models or trademarks, when associated with other forms of intellectual protection, namely, fees, research on the state of the art and consulting expenses;
- g) Expenses with the demonstration, promotion and dissemination of project results, namely publication fees in compliance with and in accordance with national open access policies;
- h) Acquisition of other goods and services directly related to the execution of the project, including costs with consultants that do not configure subcontracts;

The following expenses are not eligible for funding:

- a) Acquisition of vehicles;
- b) Subscription to periodicals;
- c) Overheads;
- d) Current operation of institutions, such as water, electricity and gas, etc;
- e) Recoverable VAT, by any means whatsoever, even if it has not been or will not be effectively recovered by the beneficiary and other taxes, contributions or fees, including direct taxes and social security contributions on salaries and wages, unless effectively and definitively borne by the beneficiary;
- f) Transactions between entities participating in the project;
- g) Expenses prior to the start date of the project referred to in the term of acceptance;
- h) Expenditure paid under contracts through intermediaries or consultants, where the amount to be paid is expressed as a percentage of the amount co-financed or the eligible expenditure of the operation;
- i) Expenditure not accompanied by receipted invoices or equivalent documents and payment documents proving the purchase and liquidation of the goods and services.

7. Amendments to the project

1. Amendments to the awarded project shall be authorized by the Agency through a requirement containing detailed information and justifying the need for change.

2. Notwithstanding the previous point, the Beneficiary Entity is responsible for, and does not need approval from Portugal Space for making the following changes:

- a. Budgetary, provided they are included in the total financial support granted and in the approved budget for each Beneficiary Entity;

- b. The nature of the expenditure, on each budget line, foreseen in the application and approved;
- c. The number or type of human resources to be contracted;
- d. The proposed equipment being applied for.

3. The changes referred to in the previous paragraph shall be duly identified and justified and shall be considered when examining the eligibility of expenditure.

8. FURTHER INFORMATION

Situations that cannot be solved by the rules set out in this call are decided by PT Space Board.

For any questions or further information contact the Moonshot Challenge organization through email address: moonshot@ptspace.pt.