

TERMS OF REFERENCE

2024 Call for Exploratory Research Projects under the UT Austin Portugal Program

DECEMBER 2024



CONTENTS

1. INTRODUCTION	3
1.1 OBJECTIVES	3
1.2 RESEARCH AREAS	3
<i>Advanced Computing</i>	3
<i>NanoMaterials for New Markets</i>	4
<i>Space-Earth Interactions</i>	4
2. AWARD INFORMATION	5
2.1 REGULATIONS AND GUIDELINES	5
2.2 NUMBER OF AWARDS AND FUNDING AMOUNT	5
2.3 DURATION OF PROJECTS	6
2.4 SUPPORTED ENTITIES	6
2.5 APPLICATION DEADLINE	7
2.6 FORMAT REQUIREMENTS	7
2.7 REVIEW OF APPLICATIONS	9
2.8 NOTIFICATION, START OF ACTIVITY AND REPORTING	9
3. ELIGIBILITY INFORMATION	9
3.1 REQUIREMENTS FOR PARTICIPATING	9
3.2 PRINCIPAL INVESTIGATORS (PI)	10
3.3 LIMIT ON NUMBER OF PROPOSALS PER PI AND PER ORGANIZATION	10
3.4 PI AND RESEARCHERS' DEDICATION	10
4. EVALUATION AND SELECTION	11
5. ADDITIONAL INFORMATION	14

1. Introduction

The UT Austin Portugal Program is a partnership program in Science and Technology between the Portuguese Foundation for Science and Technology (FCT) and the University of Texas at Austin (UT Austin), supported by the Portuguese Ministry of Education, Science and Innovation in close collaboration with the Council of Rectors of the Portuguese Universities.

The Partnership was launched in 2007 and renewed in 2018 towards a new decade until 2030. Phase 3 taps into key knowledge areas around which scientists and companies in Portugal engage with The University of Texas System, most notably with the University of Texas at Austin (UT Austin), to conduct research, educational and technology transfer activities. The vision driving this Partnership is to contribute to a knowledge-based society and foster science and innovation-based companies to help Portugal meet significant societal challenges.

1.1 Objectives

The UT Austin Portugal Program is now inviting its community to submit proposals for Exploratory Research Projects (ERPs). The Program seeks collaborative research work bringing together the University of Texas at Austin (UT Austin) and Portuguese research institutions, alongside industry partners or other collaborative institutions, to stimulate high-impact research activities of strategic relevance for the International Partnership.

Proposals for Exploratory Research Projects are expected to be high-risk/high-reward and show promise and a strategy for potential future expansion of project goals.

1.2 Research Areas

UT Austin Portugal focuses on enabling technologies spanning several thriving scientific fields: from **nanotechnologies**, which bring a revolution to products and systems through novel advanced materials to new **advanced computing** paradigms, technologies and services which, together with thriving data science approaches, allow us to make intelligent and valuable use of massive troves of data to which we have access today.

Additionally, the Program expanded its support **space-earth interactions**. with cross-cutting themes at the heart of the Atlantic International Research (AIR) Center - space, sea, climate, energy and data sciences – and elects the Atlantic Ocean as a unique testbed to develop knowledge-driven solutions addressing national priorities and global challenges.

Applicants are strongly encouraged to get an overview of the eligible topics in order to pick the core area that best aligns with their proposal. Proposals wrongly assigned by their proponents to a scientific area may end up being assessed by evaluators whose expertise does not relate to the topics addressed by such proposals.

Advanced Computing

A new research and innovation agenda to increase the usage of advanced computing resources by the scientific and industrial communities.

Novel paradigms, hardware, software and co-design architectures, algorithms, frameworks, tools and applications should be devised together with proof-of-concept or pilot projects to better assess and exploit the use of advanced computing facilities for digital simulation, big data processing, optimization, machine learning and visualization in a variety of domains, including cities, agriculture, fisheries, earth observation, transportation, health and security. Synergies with the Minho Advanced Computing Centre (MACC) are desirable.

Three kinds of research directions are envisaged:

- i. Technologies and infrastructure: groundbreaking research addressing the level of operating systems, data, communication and processing management middleware, high-performance libraries and tools for processing and visualization;
- ii. Models, paradigms, programming languages and algorithms: research on innovative methods and tools to underpin or develop high-performance systems and applications;
- iii. Applications: research on innovative applications for any scientific domain justifiably requiring or taking advantage of high-performance computing systems.

NanoMaterials for New Markets

This area establishes a research and innovation agenda focused on materials engineering and science with an integrative approach to nanoscience over diversified applications. Research focuses on discovering and developing innovative nanomaterials, with a range of unique properties suitable for applications in space, sensing, the internet of things, information technology and energy harvesting and storage, including quantum computing, medical diagnostics and therapy, efficient chemical and materials transformations.

Space-Earth Interactions

Research involving transatlantic and north-south cooperation in complex systems engineering and science towards an integrative approach to space technologies, climate and clean energy, earth and ocean science in the Atlantic, together with emerging data science methods, with synergies with the AIR Centre being desirable.

This Call should focus on exploiting the potential of integrating space-borne, airborne, and in-situ (including underwater) data to better understand the ocean. Special emphasis will be placed on the deep sea and the ocean's interaction with the other Earth system components to improve predictive capabilities under climate change scenarios.

Three initial research thrusts have been identified:

- i) Satellite remote sensing of the oceans: This research thrust is focused on different but complementary topics that can concur for a better understanding of processes occurring in open-ocean, coastal and island regions, and for improving ocean bottom topography resolution, characterizing regional sea-level variations and unravelling ocean circulation patterns at different spatial and temporal scales.

Topics to be addressed are:

- innovative methods for the exploitation of new satellite 'mission's data, reanalysis of historical satellite data, and exploitation of available satellite signals, acquired from space or air, including GNSS-R and GNSS-SAR;

- new technologies for dense low-cost ocean monitoring, including in-situ or remote observations that complement satellite data. Optimal integration of different sensors and platforms (spatial (micro or nanosatellites), aerial (unmanned aeroplanes, drones, etc.) to maritime (autonomous vehicles, buoys, etc.)) is also a target.
- ii) Deep sea science and exploration: This research thrust targets the development of scalable approaches for deep-sea monitoring across the physical, biogeochemical, biological and ecosystems disciplines. The research is guided by the Framework for Ocean Observing developed by the Global Ocean Observing System (GOOS) and refined for essential deep ocean variables by the Deep Ocean Observing Strategy (DOOS) project. A focus will be on the Azores Archipelago as a gateway for developing scalable multidisciplinary deep ocean observing approaches. The research will target platform and sensor technology, numerical simulation approaches for advanced model-data synthesis and calibration, and advanced cyberinfrastructure for advancing deep ocean data analytics.
- iii) Computational science and engineering for the next generation of spacecraft: This research thrust addresses simulation-based science that supports the advanced design and manufacture of disruptive spacecraft structures and mechanical systems, including nano to microsatellites, new launcher concepts, and deployable structures and mechanisms.

Project proposals under the areas of Advanced Computing, Nanotechnologies and Space-Earth Interactions addressing Clean Energy-related topics will be deemed of strategic interest to this Call.

2. Award Information

2.1 Regulations and guidelines

Rules and guidelines governing access to funding can be consulted on the following official documentation:

- Call Opening Announcement;
- Application Guide;
- [Roadmap for Phase III of the UT Austin Portugal Program](#);
- Guide for Peer Reviewers;
- CIÊNCIAVITAE Guide;
- The Ethics Self-Assessment Guide.

2.2 Number of awards and funding amount

A maximum of 8 (eight) Exploratory Projects (ERPs) are expected to be awarded funding, pending the available budget and the quality of the proposals received.

The total funding available through this Call for eligible Portuguese institutions will be up to € 400,000 (four hundred thousand euros).

At least \$400,000 (four hundred thousand U.S. dollars) will be available to support complementary activities of UT Austin research teams, covered by the UT Austin Portugal Program budget at UT

Austin. The exact budget at UT Austin will be determined when FCT communicates the evaluation results to UT Austin.

The maximum funding for each project is € 50,000 (fifty-thousand euros) for research teams in Portugal. The UT Austin Portugal Program's budget at UT Austin will fund its teams with between \$50K (fifty-thousand US dollars) and \$100K (one hundred thousand US dollars) per project to make possible for PIs to hire full time PhD students who may spend some time in Portugal as exchange students during the projects. UT Austin teams will be officially notified of their selection for funding by the Program's office at UT, not by FCT.

Research Teams in Portugal – Financing payment procedures

Supports to be granted are non-refundable, applying the option of simplified costs in the form of a lump sum. The contribution is paid upon presentation of evidence and results that demonstrate the effective completion of the project as contractually agreed.

The initial advance payment for the project is 75% of the approved funding. The remaining amount, up to the approved funding for each project, is paid upon project completion, through a final reimbursement payment method.

For budget definition purposes, refer to the terms defined in the "[Methodology for Applying Simplified Costs – Lump Sums](#)", as well as to Articles 8 and 9 of the FCT Projects Regulation.

FCT will not fund companies or independent non-academic organizations partnering with eligible applicants.

Research Teams at UT Austin – Eligible and non-eligible expenses

The Program's budget at UT Austin will fund UT Austin research teams independently. The participating researchers at UT Austin will be funded to at least \$50,000 (fifty-thousand U.S. dollars) and up to a maximum of \$100,000 (one hundred thousand U.S. dollars) per project.

Eligible expenses at UT Austin are directly related to research activities: e.g. materials, lab time, equipment usage, graduate student tuition/stipends, and travel. Faculty salary and equipment are non-eligible.

2.3 Duration of projects

The projects will have a maximum of 12 months, renewable for a maximum of 3 months, in duly justified cases. Project accomplishments will be assessed, once finished, by the Board of Directors of the UT Austin Portugal Program and FCT. The progress achieved by the team may, nevertheless, be assessed after the first semester.

2.4 Supported entities

The following non-entrepreneurial Portuguese entities of the R&I can apply individually or as co-promotion beneficiaries:

- Higher Education Institutions, their institutes and R&D units;
- State, international or associated Laboratories with head office in Portugal;
- Non-profit private institutions whose main objective is R&D activities, including Collaborative Laboratories (CoLab) and Centres for Technology and Innovation (CTI);
- Other non-profit private and public institutions developing or participating in scientific research activities.

2.5 Application deadline

Applications must be submitted online following the Call for Proposals Announcement and using the FCT's dedicated platform myFCT (<https://myfct.fct.pt/>).

Applications must comply with these Terms of Reference and follow FCT's guidelines for the online submission of competing grant applications

The Call is open from December 2, 2024 to January 22, 2025, 5 p.m., **Lisbon time**.

2.6 Format requirements

Submitted applications must include:

- **The FCT application form**, available on the sponsor's platform, [myFCT platform](#), duly completed as per the Application Guide.
- **The CVs of the research team in Portugal**: The PI and other team members are responsible for submitting an updated version of their **CV in English to the CIÊNCIAVITAE** platform.
- **A Technical Annex**, appended to the online FCT form, which must provide a holistic understanding of the project and include the following sections:
 - **Cover page** (single page):
 - The reference and the addressed scientific area(s) of this Call;
 - Title and acronym of the project;
 - Name, organization, email address and telephone number of both PIs, in Portugal and at U.T.;
 - A summary of the project.
 - **Description** (not exceeding four pages):
 - Objectives: Describe the overall and specific objectives of the project, which should be clear, measurable, realistic and achievable within the duration of the project;
 - Concept: Describe and explain the overall concept underpinning the project. Describe the main ideas and assumptions involved;

- Exploratory nature and non-incrementality of the proposed research: Identify the relevant state-of-the-art, explain the exploratory nature of the proposed research and the non-incrementality of the envisaged results;
- Impact: Discuss the potential science-to-technology breakthrough, contributions to the foundation of a new technology, and potential to develop it further and beyond the ERP project's scope; innovative interactions across domains. Whenever possible, use quantified indicators and targets;
- Deliverables: Identify the expected outcomes objectively considering the project's standard time frame.
- o Transatlantic Team (not exceeding 1 page per Applicant):
 - The profiles of key staff members per Applicant (name, organization, individual profile and ORCID/Scopus/Google Scholar id);
 - A concise description of the nature and aims of each Applicant's contribution.
- o Budget (not exceeding 1 page):
 - Indicate the overall budget for the international consortium and budget allocation by Applicant; provide a detailed description of the estimated costs by Applicant and explain how they correlate with the project's work plan and expected outcomes.
- o Commitments of private non-academic organizations (if applicable):
 - Attach Letters of Commitment (LoCs) written on the official letterhead paper of private non-academic organizations participating in the project and signed by their legal representative. The LoCs shall explain the nature of the organization's involvement, and specify the financial and/or in-kind contribution provided by the organization to the consortium. Copies of the original signed letters are accepted at application submission.

The Technical Annex should be uploaded as a .pdf file with less than 1 Mbytes.

Important note: It is at the sole discretion of evaluators to consult external sources included in the Technical Annex.

▪ **The following eligibility documents:**

- o A statement from the PI at UT Austin confirming that he/she will be the PI at the American counterpart and that he/she holds a tenure-track faculty appointment at the same university:
 - In the case of proposals in the area of Advanced Computing, led by PIs at the Texas Advanced Computing Center (TACC), the confirmation statement must indicate the PI is a full-time senior researcher with PI status;
- o File with the project timeline and main tasks.

Please refer to the document "Application Guide".

Additionally, for each application, Declaration of Commitment from the Proposing Institution will be available on the myFCT platform for agreement by the head of the Proposing Institution, or by someone delegated by them, after the application submission deadline and until February 5, 2025, 5 p.m., **Lisbon time**.

Important note: All sections of the FCT form must be filled out. Except where mentioned otherwise, **all the requested information needs to be entered in English**. Please make sure that any text entered into the online form is formatted and comprehensive.

The PI, the core elements, as well as the remaining elements of the research team in Portugal, are responsible for submitting an updated version of their **CV in English on the CIÊNCIAVITAE platform**.

2.7 Review of applications

Projects will be selected on a competitive basis.

An international panel of independent experts affiliated to foreign institutions, organized by FCT, will review the applications. The review panel will be responsible for evaluating the merit of each proposal. The selection for funding is based on the criteria presented in section "4. Evaluation and Selection" of the present document.

The applications must follow the guidelines in these Terms of Reference and the Application Guide.

2.8 Notification, start of activity and reporting

The applicants will be notified of the evaluation outcomes under Article 15 of the [Regulation for Projects Exclusively Funded by National Funds](#).

After project completion, PIs will be asked to report to the UT Austin Portugal Program and FCT the progress made and overall achievements using specific report forms. This reporting may also take place after the first six months upon request.

3. Eligibility Information

3.1 Requirements for participating

Applications must be submitted by research consortia involving:

- at least one Applicant from an eligible Portuguese research institution;
- at least one Applicant from The University of Texas at Austin. In the case of Advanced Computing proposals, full-time senior researchers from the Texas Advanced Computing Center (TACC) with a PI status may also lead applications on the American side under this Call.

One of the eligible Portuguese research institutions is the lead institution in Portugal. The UT Austin Principal Investigator is the lead at UT Austin.

The project consortium in Portugal may include collaborative institutions, i.e., companies and other similar entities, that may also invest in the exploratory research project and whose

participation may contribute relevant expertise to the project. However, such entities will not be funded under this call.

3.2 Principal Investigators (PI)

The PI in Portugal must meet the following requirements:

- Can only submit one proposal as PI in this call;
- Must have a Doctoral degree by the closing date of the call, the document certifying the doctoral degree must be presented at the time of the Acceptance Document;
- Should also have an employment contract or grant contract with the Principal Contractor. In the absence of such a link, at the time of the Acceptance Document a written agreement between the parties must be submitted, according to point c) of item 1 of Article 6 of FCT's of [FCT's Project Regulations](#);
- If a PI has had a final scientific report rejected in the two years before the opening of the call for reasons attributable to them, they are not allowed to submit an application;
- The PI cannot be in a situation of unjustified non-fulfilment of the regulatory requirements regarding the presentation of reports on scientific execution, of projects concluded and financed through FCT, and in which acted as PI.

The UT Austin team should be led by a tenured or tenure-track faculty member, responsible for leading the project at UT Austin. Faculty and researchers from UT Austin must be closely involved in the development of the research proposals. UT Austin researchers are encouraged to spend short or long-term research periods in Portuguese institutions.

In Advanced Computing, full-time senior researchers with a PI status from the Texas Advanced Computing Center (TACC) may also lead projects.

3.3 Limit on number of proposals per PI and per organization

The PI in Portugal cannot submit more than one application as a PI.

There is no limit on the number of proposals a PI can submit at UT Austin.

There is no limit on the number of proposals submitted by a lead research institution and on the number of consortia a research institution may join as a partner.

3.4 PI and Researchers' dedication

The remaining members of the Portugal research team shall be dedicated to the project according to their participation.

The members of the UT Austin Portugal Program governance structure (Governing Board, External Review Committee, Board of Directors and Executive Team) are not allowed to participate as PI, team members or consultants.

4. Evaluation and selection

Applications will be reviewed by an international panel of independent experts, set up by the Program's Board of Directors and FCT.

The selection and ranking of the applications will be based on the following criteria, further detailed in the Regulations Governing Access to Funding for Scientific Research and Technological Development Projects and in the Guide for Peer Reviewers:

- A. Scientific merit (A1) and innovative nature (A2) of the project from an international standpoint and alignment with the objectives of the UT Austin Portugal Program and the scientific area where it falls under – 40%;
- B. Scientific merit of the PI and the research team (B1), including the impact of project execution in developing the PI's career and/or research (B2) – 35%;
- C. Feasibility of the workplan and the expected indicators (C1), as well as the budget adequacy (C2) – 25%.

The Merit of the Project (MP) is given by:

$$MP = 0,40 (0,50 \cdot A1 + 0,50 \cdot A2) + 0,35 (0,60 \cdot B1 + 0,40 \cdot B2) + 0,25 (0,50 \cdot C1 + 0,50 \cdot C2)$$

Each sub-criterion is scored using a 9-point scale system (1- minimum; 9-maximum) with decimal numbers. The final score of MP is rounded to two-decimal places.

If information made available in the application does not allow for evaluating a given criterion, then the respective criterion will receive a score of 1.0 (one).

For a proposal to be eligible for funding, a minimum score of MP equal or higher than 5.00 points is required.

For the purpose of selection and decision-making regarding funding, projects will be ranked by MP in decreasing order. In case of ties (projects with the same MP score), the ratings assigned to sub-criteria A2, B1, A1, B2, C1 and C2 will be used sequentially and by decreasing order to provide the final ranking of the projects.

Application of these evaluation criteria shall take into account, among other considerations, the following:

CRITERION A (40%)

This criterion aims to assess the scientific merit and innovative nature of the project from an international standpoint, considering two sub-criteria:

- A1 – Scientific merit of the project (50%)

- A2 – Innovative nature of the proposal (50%)

A1 – Scientific merit of the project (50%)

This sub-criterion is intended to evaluate the scientific merit of the proposal, considering the following dimensions, in an integrated manner:

- i. Relevance and clear identification of the project objectives and challenges addressed based on the state-of-the-art.
- ii. Thematic alignment of the proposal with the Exploratory Research Projects topics as outlined in the Research Areas' section described above.
- iii. Potential contribution of the research project to the advancement of knowledge.
- iv. Potential impact of the project's outcomes on the economic, technological, and societal dimensions (also including through engagement with prospective exploitation partners, other stakeholders, users and/or society).

A2 – Innovative nature of the proposal (50%)

The sub-criterion A2 aims to assess the innovative nature of the proposal, considering the following aspects:

- i. Originality of the project proposed and breakthrough potential beyond the current state-of-the-art (e.g., novel concepts or development between or across disciplines).
- ii. Methodological innovation and replication potential.

CRITERION B (35%)

The criterion B evaluates the scientific merit of the Principal Investigator and the research team, analysing their curricula in an integrated way and valuing the quality of their research achievements, and analyses the relevance of the project execution for the PI's career, through 2 sub-criteria:

- B1 – Scientific merit of the Principal Investigator and the research team (60%)
- B2 – Impact of project execution for PI's career progression and/or research (40%)

According to the FCT's commitment to The Agreement on Reforming Research Assessment, as set out by the Coalition for Advancing Research Assessment (CoARA), evaluation panels are advised not to use metrics as a surrogate measure of the quality of individual outputs and applicant's contributions.

When assessing this criterion, the evaluation panel should also consider the information provided by the applicant in terms of their quality, relevance, and impact, rather than in a quantitative way and its specificities in terms of the scientific area(s) and subarea(s) of each application.

B1 – Scientific merit of the Principal Investigator and the research team (60%)

Sub-criterion B1 aims at assessing the scientific merit of the Principal Investigator, his/her contributions to science and society, and the research team profile by focusing on the information provided in the Narrative CV and Team CV synopsis fields (the CIÊNCIAVITAE CV, written in English, should only be used to confirm the information provided in those fields), considering the following parameters:

- i. Career profile of the PI (education, key qualifications, professional path and periods of leave from research, such as parental leave, long-term absence due to illness, volunteering, etc.).
- ii. Contributions to the generation of new ideas, tools, methodologies, or knowledge, including publications, key data sets, software, intellectual property (patents, licences, trademarks, copyrights, novel assays and reagents), conference presentations, research and policy publications, or other scientific, technological, cultural or artistic achievements.
- iii. Contributions to the development of individuals and/or research teams, including project participation, leadership or management, supervision of students, collaborative initiatives, and team support.
- iv. Contributions to the research community and the broader society.
- v. Scientific experience, productivity and skills of the research team to adequately execute the proposed project in its specific area, focusing on the last 5 years of activities, and considering the team's configuration and the availability and commitment of its members.

B2 – Impact of project execution for PI's career progression and/or research (40%)

The sub-criterion B2 focus on how this grant is timely for the PI and the impact of the proposal in his/her career and/or research path, considering the following:

- i. The PI's current career stage.
- ii. The PI's current research lines and path, and the degree of novelty regarding other previous challenges addressed by the PI.
- iii. Timeliness and career development potential in areas such as scientific production and dissemination, team and project leadership, engagement of students/young researchers, and the ability to enable future research and to attract funding or other resources.

CRITERION C (25%)

This criterion is intended to evaluate the feasibility of the project considering the adequacy of its several dimensions, including the proposed objectives, team, resources, and budget to achieve the expected outputs, divided into two sub-criteria:

- C1 – Feasibility of the work plan and proposed indicators (50%)
- C2 – Budget adequacy (50%)

C1 – Feasibility of the work plan and proposed indicators (50%)

Sub-criterion C1 assess the feasibility of the project considering the proposed objectives and expected outcomes, taking into account the following:

- i. Feasibility of the research project, considering the theoretical framework, the proposed research methodology and innovation, particularly its planned tasks and deliverables.
- ii. Clear identification of the proposed activities and timelines, institutional and management resources of the participating entities, and PI's, team members and companies (if applicable) commitment to the project.
- iii. Valuation of the potential of the predicted indicators (e.g., publications, communications, reports, seminars and conferences organization, patents, etc.).
- iv. If applicable, analysis of the risks associated, including ethical issues, to the different stages of the project should be considered, with special focus on the identified critical points and the corresponding contingency plan.

C2 – Budget adequacy (50%)

Sub-criterion C2 intends to analyse the reasonability of estimated costs associated to each task of the project considering:

- i. The adequacy and consistency of the estimated costs (Lump Sum) to accomplish the objectives.

5. Additional Information

For inquiries of a **scientific nature**, please contact the UT Austin Portugal program at research@utaustinportugal.org.

For specific information related to the **application submission**, please contact concursosprojetos@fct.pt.



fct

Fundação
para a Ciência
e a Tecnologia