

**Terms of Reference for
Exploratory Research Projects
under the
UT Austin Portugal Program – Call for Proposals 2022**

1. Introduction	2
1.1. Objectives	2
1.2. Research Areas	2
a) Advanced Computing	3
b) Medical Physics for Emerging Cancer Therapies	3
c) NanoMaterials for New Markets	3
d) Space-Earth Interactions	3
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	6
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	11
3.4. PI and Researchers' dedication	11
4. Evaluation and selection	11
5. Additional Information	13

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 Science, Technology, and Higher Education 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 we have access today.

Additionally, the Program expanded its support to the areas of **medical physics**, looking to create an impact on health and patients' quality of life and **space-earth interactions**. The latter intersects 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.

a) 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.*

b) Medical Physics for Emerging Cancer Therapies

Collaborative research in medical physics, proton therapies, and radiation oncology bringing together, on the U.S. side, faculty at UT Austin - namely at Dell Medical School and Cockrell School of Engineering – and/or at The University of Texas MD Anderson Cancer Center (MDACC), with Portuguese universities and research institutions.

c) 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.

d) 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.

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 available [here](#);
- Guidelines for proposal writing and submission available [here](#);
- Roadmap for Phase III of the UT Austin Portugal Program available [here](#);
- Guide for Peer Reviewers available [here](#);
- CIÊNCIAVITAE guide available [here](#).
- The ethics self-assessment guide available [here](#).

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 with projects starting at the beginning of 2023 will be up to € 400,000 (four hundred thousand euros).

Up to \$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 plus \$ 50,000 (fifty-thousand dollars) for teams at the American counterpart.

Research Teams in Portugal – Financing payment procedures

An advance payment of 75% of the funding approved for the financed projects will be made by FCT, I.P. after the Acceptance Documents are return.

The remaining amount - up to the maximum FCT, I.P. financing - will be paid after the scientific and financial components of the project are closed and by means of final refund payment.

The expenditure justification should be made via electronic submission of only one payment request, in a specific form provided through the FCT, IP internet [Portal](#).

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

The UT Austin Portugal Program's budget at UT Austin will provide matched funding for UT Austin's research teams involved in the projects selected for funding under the present Call.

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

The Program's budget at UT Austin will fund UT Austin research teams independently but at a level similar to that of research teams in Portugal. The participating researchers at UT Austin will be funded up to a maximum of \$50,000 (fifty-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 or International Laboratories with head office in Portugal;
- Non-profit private institutions whose main objective is R&D activities;
- 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:
<http://www.fct.pt/apoios/projectos/concursos/instrucoes.phtml.pt>.

The Call is open from **October 11, 2022, until November 17, 2022, closing at 5 p.m. Lisbon time.**

2.6 Format requirements

Submitted applications must include:

- **The FCT application form**, available on the sponsor's platform, duly completed as per the *Guidelines for Writing Exploratory Research Projects Proposals*.
<https://concursos.fct.pt/projectos/>
- **The CVs of the research team in Portugal:** The PI, Co-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.
 - 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.
- 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.
- 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 10 Mbytes.

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

▪ **The following eligibility documents:**

- The document that certifies the PhD degree of the lead Principal Investigator (PI) in Portugal;
- A statement from the PI at UT Austin (or at The UT MD Anderson Cancer Center for applications in the area of Medical Physics) 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;
- File with the project timeline and main tasks.

Please refer to the document "Guidelines for Exploratory Research Projects Proposals Writing (<https://www.fct.pt/apoios/projectos/concursos/instrucoes>)."

The Statement of Commitment for the Principal Contractor will be available on myFCT platform, for agreement by the head of the Principal Contractor or someone appointed by him, following the deadline for submission of applications and up to 2 December 2022 at 17:00 (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, co-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 [Proposal Submission 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 (or from The UT MD Anderson Cancer Center for applications in the area of Medical Physics). 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, municipalities, CoLabs 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 identify a co-responsible for the project, the Co-Principal Investigator (Co-PI), that will replace the PI when he/she is unable to fulfil his/her duties; The Co-PI can only be identified as such in only one proposal and cannot present an application as PI;
- Must have a Doctoral degree. The document certifying the doctoral degree must be attached to the application;
- 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.

As far as the area of Medical Physics is concerned, The University of Texas MD Anderson Cancer Center faculty may also participate and/or lead projects. 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. However, a PI may be listed as a co-PI or senior researcher in multiple proposals.

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.

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 and innovative nature 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;
- B.** Scientific merit of the research team;
- C.** Feasibility of the work program and budget adequacy;
- D.** Potential social and economic impact of the research work;

The merit of the project is given by:

$$\mathbf{MP= 0.40 A + 0.20 B + 0.20 C + 0.20 D}$$

The criteria A, B, C and D are 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 criteria A, B, C and D 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:

This criterion aims to assess the following:

- i. Relevance and originality of the project proposed (based on the state-of-the-art in a determined scientific area and previous work done by the proposing team);
- ii. Thematic alignment of the proposal with the Exploratory Research Projects topics as outlined in the Project Areas' section described above;
- iii. Adequacy of the methodology adopted for carrying out the project;
- iv. Expected results and their contribution to scientific and technological knowledge;
- v. Resulting publications and articles;
- vi. Contribution towards promoting and disseminating science and technology;
- vii. Production of knowledge deemed beneficial to society or a business sector.

CRITERION B:

The present criterion is intended to evaluate the following:

- i. Scientific productivity of the team (references to publications and citations in published works, other relevant indicators);
- ii. Abilities and skills to adequately execute the proposed project (team configuration, PI's qualifications);
- iii. Ability to involve young researchers in training;
- iv. Availability of the team and non-duplication of objectives concerning other projects underway;
- v. Degree of internationalization of the team;
- vi. Degree of success in previous projects concerning the Principal Investigator (PI) (in the case of young PIs, this requirement must be assessed based on the potential revealed by the PI's curriculum vitae in the absence of prior concrete accomplishments);
- vii. Level of commitment of any companies participating in the project (if applicable).

CRITERION C:

This criterion aims to assess the following:

- i. Organization of the project in terms of the proposed objectives and resources (duration, equipment, size of the team, institutional and management resources);
- ii. Institutional resources of the proposing and participating entities (technical-scientific, organizational and managerial resources and, when appropriate, co-funding capacity on the part of potentially involved companies).

CRITERION D

The present criterion is intended to evaluate the following:

- i. Potential of developing the R&D results further and beyond the ERP project's scope (also including through engagement with prospective exploitation partners, other stakeholders, users and/or society) leading to technologies with a relevant social and economic impact.

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 concursoprojetos@fct.pt.