MIT Portugal

MIT Portugal Partnership 2030

2020 Call for Seed Funding Proposals at MIT

Summary

The MIT Portugal Partnership 2030 (MPP2030) is inviting submissions of project proposals for one-year seed funding at MIT. MPP2030 is a strategic international partnership between Portuguese universities and research institutions, MIT, the Portuguese government, and partners from industry and other non-academic institutions. Launched in June of 2018 and funded by the Fundação para a Ciência e Tecnologia (FCT), its goal is to strengthen Portugal's knowledge base and international competitiveness through a strategic investment in research, people, and ideas in areas of global relevance and with significant societal impact.

For the 2020 call at MIT, we are seeking outstanding proposals in the following four data-science driven areas, namely (see section "Research Areas" for more information):

1) Climate Science & Climate Change
2) Earth Systems: Oceans to Near Space
3) Digital Transformation in Manufacturing
4) Sustainable Cities

Eligible proposals submitted by an **MIT Principal Investigator** by **February 14, 2020, 11:59 pm EST**, with a maximum budget of $90,000.00 USD, that meet one or more of the following criteria will be considered:

- Carry out early-stage research or exploratory studies within the scope of one or more of the research areas; Cross-area proposals, which credibly include and combine multiple areas, are highly encouraged
- Create critical momentum and synergies among Portuguese and MIT faculty colleagues and engage in collaborative program activities

Call for Proposals: Summary

Program: MIT Portugal Partnership 2030

Proposals: Seed projects; early-stage research or exploratory studies

Award: Up to $90,000.00 USD (inclusive of overhead fees)

Term: One-year funding

Submission deadline: February 14, 11:59 pm, EST, 2020

Eligibility: Only MIT Principal Investigators are eligible to receive funding. A coordinated "exploratory" call is open for Portuguese PIs

Funding areas: Four data-science driven areas (cross-area proposals are highly encouraged):

1) Climate Science & Climate Change
2) Earth Systems: Oceans to Near Space
3) Digital Transformation in Manufacturing
4) Sustainable Cities

Specific collaborations with faculty colleagues, industry, and other institutions in Portugal—as well as with MIT colleagues—are highly encouraged and will be part of the evaluation.

Proposal format: See proposal template

Eligibility

The call is open to all MIT Principal Investigators (PIs) from any School, Department, Laboratory, or Center.

Only MIT PIs are eligible to receive funding.

We **strongly** encourage collaborations with faculty colleagues, industry, and other institutions in Portugal—as well as with MIT colleagues. While this funding is exclusively for MIT PIs, an "exploratory" call is open for Portuguese-only funding and collaborative efforts are ideal. See the MPP2030 website for more details on the exploratory call. *The MIT Portugal Program is currently curating a list of Portuguese university PIs who are seeking MIT collaborators. For more information on potential partners, please email mitportugal@mit.edu.*

Funding & Project Term

- The maximum funding for a seed project is $90,000.00 USD
- Awarded funds are inclusive of MIT overhead fees

- Awarded funds must be spent by the Program-designated completion date
- Awarded project teams must participate in the MIT Portugal Annual Conference which is typically held at the end of September in Portugal
- Project midterm research updates and a final report on all activities must be provided by each funded project

Application & Evaluation Process

- Applications must be submitted using the **proposal template**
- Current seed fund awardees are also eligible to receive funding with the application of a new proposal for 2020
- **The submission deadline for seed fund applications is February 14, 2020, 11:59 pm EST.**
- Proposals will be **evaluated** based on:
  - Relevance of the proposed research for the data-science driven research areas of MPP2030 (see sections Summary and Research Areas in this document)
  - Proposed synergistic program activities that increase the impact, sustainability, and visibility of MPP2030 (see section Summary in this document)
  - Quality, feasibility, and originality of proposed research
  - Specific collaborations with faculty colleagues, industry, and other institutions in Portugal—as well as with MIT colleagues
  - **Funding decisions** will be made by **April 1, 2020**
  - All proposals will be assessed based on scientific merit and relevance
  - Proposals with Portuguese collaborators will be prioritized
- **All proposals and questions** regarding the call should be submitted to **mitportugal@mit.edu**.

Research Areas

The research scope of each area is described below. It is important to highlight that the research topics are not limited to the examples given in the areas' description below. Proposals with different focuses from the ones presented but within the scope of the areas are welcome. Additionally, all research areas should consider data-science integration. The data-science driver should target the development of tools to collect, curate, and synthesize data from public and other repositories, and to make it available more broadly and in more useful forms for public and private use, including but not limited to the public, policy makers, consumers, and businesses.

Area 1: Climate Science & Climate Change

Climate change and global warming are urgent areas of interest to humanity. Climate data, measurements and instrumentation focused on the oceans, atmosphere, climate, and near-space enables the monitoring of Earth systems dynamics. Such data allows the understanding of how climate has changed over time, enables the development of complex climate models and provides the possibility to estimate in advance the impact of different climate control policies and strategies. With special focus on climate science and climate change, scientific Area 1 targets the study, measurement and modeling of the complex interactive system dynamics of climate, weather, atmosphere, ocean, land, and near-space. Integrative models and methods of studying and analyzing enormous volumes of data should be implemented.

Area 2: Earth Systems: Oceans to Near Space

The capacity to observe Earth in its full verticality (from deep-sea to space) enables the understanding of its subsystems (oceans, land, air, and space) including complex dynamics. In this research area, the focus is on investigating Earth's subsystems, namely its oceans, land masses, atmosphere, and near-space environment, with particular emphasis on measurements, developing technologies and capabilities, and addressing Earth's critical subsystems from oceans to space through technological innovation, big data, autonomy, and comprehensive systems analysis. Related topic areas include the development of ocean monitoring and measurement, ocean research vessel field deployments to demonstrate novel autonomy and human-machine concept of operations (ConOps) to small-satellite technology and launch capabilities, all to enable advances in ocean and earth science measurements, technology advances, and autonomous operations for exploration and science.

Area 3: Digital Transformation in Manufacturing

Today we can imagine-design-make, essentially in real-time. Human-centered design not only has inspirational effects but it also has societal relevance, having a psychological effect, which has changed how design is seen and valued. Technology, particularly digital technology and additive manufacturing are providing a set of valuable tools capable of providing new possibilities. Within this research topic, research includes multiple aspects of the digital transformation that is enabling new integrated approaches for adaptive design, manufacturing and sustainable solutions. Projects to develop cyber-physical products and systems, assuring improved user experience and value creation for society and the economy are sought. In this context, strategies for Designing at the Speed of Thought are solicited. Synergies are encouraged for research in Area 3 and Areas 1 and 2, for example, to design, manufacture and launch revolutionary Wafer Satellites and MicroSat constellations focused on land and ocean use, algae blooms, top soil erosion, and regenerative aqua- and agriculture.

Area 4: Sustainable Cities (Atlantic Interfaces)

Cities have currently the potential to serve as living-labs and as research units for large-scale environments on Earth. Advances in open data platforms, integration and accessibility are needed for "smart, sustainable cities." Within this area context, research involves urban science, design, and engineering with applications in areas such as energy utilization, air quality maintenance, transportation systems, internet-of-things connectivity, and smart cities. Moreover, high priority will be on the ocean-city interface with relevance to Areas 1 and 2, coastal cities are prioritized and relevant climate change, sea-level rise, temperature and natural disaster monitoring, and development of potential solutions to emerging urban problems.