We live at a time when social megatrends present the planet with wicked problems that are broad, challenging and complex. The answers to these global challenges require an ambitious approach that integrates big science and engineering ideas with a comprehensive understanding of the underlying social and policy dynamics.

Furthermore, in today’s era of rapid advances in science and technology, the convergence of traditional STEM disciplines and novel information science and data-based approached presents a unique opportunity to devise new solutions to global challenges. As a world-class institution that is keenly focused on societal impact, Purdue University is uniquely positioned to bring all of these disciplines together to foster creative, comprehensive solutions to global challenges.

**Discovery Park at Purdue University** is an open innovation laboratory for transdisciplinary collaboration focused on the grand challenges in global health, global conflict and security, and sustainability. At Discovery Park, we answer the call to solve global challenges by focusing on disruptive innovation. Researchers move beyond and across traditional boundaries, collaborating across disciplines and with policy makers, economists and business leaders to create solutions for a better world. We bring all of Purdue’s institutional strengths together to tackle global challenges and accelerate the delivery of practical solutions that impact society in direct and tangible ways.

**The Program: Charting New Pathways of Research at Purdue**

To spark additional interdisciplinary research on global challenges, we are launching a new program called “The Discovery Park Big Idea Challenge”. The program will provide resources to interdisciplinary teams of Purdue faculty and students pursuing bold proposals. These projects will position the university as a leader in generating new insights and game-changing, disruptive contributions to solving global challenges in health, security and sustainability, as well as in the enabling science and technology of the digital and nano revolutions.

The path to meeting these goals is long and complex. This program will not provide the full resources required to create the ultimate solution to a global challenge. It serves another purpose. This program is designed to nurture ideas and create opportunities for new and significant external funding—both public and private. At the same time, it will chart new pathways to discoveries, innovations, and social and policy solutions, while training the next generation of future interdisciplinary talent.

The themes for the Big Ideas Challenge align with Discovery Park’s strategic framework. In addressing these themes, successful proposals will be multi-faceted, involving both social sciences and STEM faculty, outlining the contribution of each to the overall project. Topics will focus on several themes:

- **One Health**: The science of animal and human disease, and the future of healthcare.
- **Sustainability**: The interconnected themes of energy, climate change, food security, water, infrastructure and resiliency, and the environment.
Global security and defense innovation, including Third Offset technologies (Autonomy, robotics, cognitive systems, hypersonics, etc), policy studies, energetics and propulsion, cybersecurity, rapid prototyping and manufacturing, and related themes.

Digital/Nano:
- All aspects of nano-, and nano-bio technology
- Internet of Things development and applications;
- Data Science development and applications to the future of agriculture, energy, manufacturing, transportation, healthcare, and other fields such as social sciences and the humanities;
- Ethics and policy aspects of data science and digital technology applications
- The future of nanoelectronics, photonics, and computing, both architectures and algorithms.

Proposals should outline how the team will work with at least one, and preferably more than one, Discovery Park Research Center, and should be endorsed, via email to the Discovery Park Executive Director, by at least one Center Director. Center Directors may support as many proposals as they wish. Proposals should incorporate elements related to entrepreneurship and policy dimensions of the global challenge, as appropriate.

The program will fund several teams for up to two years (depending on scope of the proposal) with a pool of strategic investment resources (see below).

**The Proposal Process: Pre-proposals, Presentations and Budget**

Teams planning to submit proposals are strongly encouraged to work closely with relevant Discovery Park center directors, who must endorse the proposal. A proposal narrative, not to exceed two pages (single spaced, 12-point font, Times Roman), should be submitted first. The written proposals will be used to down select projects for an oral presentation. The written proposal should include:

- A brief executive summary that articulates the proposal’s Big Idea, and the intellectual value or contribution represented by the idea
- A brief description of the need that the Big Idea tackles
  - What is the un-met need that the Big Idea addresses?
  - What are the goals and expected outcomes, and impact of the project?
  - Why now?
- A brief description of the team’s approach to meeting the goals, including an articulation of the path to sustained external funding, and how the approach leverages Purdue resources,
- A brief description of the benefits of the proposed solution to Purdue and the world;
- Why Purdue? Including a description of the competition in the field and possible partnerships; and
- A set of milestones that will be met over the period of performance (not to exceed 24 months)

Other considerations include the following:

- The proposal must clearly identify a team leader and project champion who must be an experienced faculty member.
- The milestones should set targets for tangible progress to be achieved and will be reviewed every six months for continuing funding.
Emphasis will be placed on milestones that demonstrate progress in soliciting and gaining new funding for research from sources external to Purdue in the topical area of the project.

A detailed budget request aligned with the milestones should also be included, but will not count toward the two-page limit. It is expected that a typical project will have a budget of up to $300,000 per year. However, final budget determinations will be made after selection based on final scope and schedule. Budget resources will be provided by Discovery Park. There is no need to show cost-share in the proposals.

Full budget allocation to the project will be contingent on satisfactory progress in meeting the bi-annual milestones.

**Support Available Through Discovery Park**

The Discovery Park business office will be available to help with budget determination and structure. Budget questions should be directed to Donna J. Brown (brown746@purdue.edu) in the Discovery Park business office. In addition, to help teams assemble and construct an effective proposal, personnel in the Agile Strategy Laboratory in Discovery Park will be available during the Fall 2016 semester to assist teams in developing their Value Proposition. Please contact Ed Morrison (efmorris@purdue.edu).

**Proposal Evaluation**

Proposals will be evaluated by a team of selected Discovery Park Center Directors, Associate Deans for Research, and other academic leaders and external advisors representing the broad interests and capabilities of the campus. Care will be exercised to ensure that there is no conflict of interest in the proposal evaluation process. The same evaluation team will be tasked with the milestone reviews. The proposals will be scored based on the following weighed criteria:

- **30%** - How compelling is the Value Proposition? What intellectual value or contribution is represented by the idea? How strong is the scholarship/research base for the proposal? What will be the value of this proposed research beyond enriching the research program of the lead PI? Will it catalyze or enable new areas of research or new collaborations?
- **50%** - How likely is it that the big idea challenge funding will result in new federal, corporate, donor and/or foundation funding at significant scale? Identify likely funding sources as specifically as possible. Why is this team, and why is Purdue, the right place to lead this effort?
- **20%** - How strong is the track record of the team in successfully tackling complex problems and working collaboratively over the long term? Is the team interdisciplinary?

Teams whose proposals are selected for oral presentation will be invited to pitch their Big Idea to the evaluation committee. The teams will compete in a public process akin to an entrepreneur’s pitch to venture capitalists. Presentations will be strictly limited to 8 minutes, with 7 minutes for questions, and are expected to succinctly, but clearly address all elements of the project, as well as describe the project team leadership qualifications, milestones and the budget. Details on presentation framework will be shared with the selected teams.

**Schedule**

Proposals will be due to the Discovery Park office by December 20, 2016. Presentations for selected proposals will take place on February 23, 2017. Please submit all materials to Ms. Lisa Muncy (lamuncy@purdue.edu).
Additional Questions

Research teams with additional questions can contact:

- Cliff Wojtalewicz, Assistant Director of Discovery Park: cliffw@purdue.edu
- Laurel Weldon, Director of the Purdue Policy Research Institute: weldons@purdue.edu

For questions related to the Agile Strategy Laboratory, please contact:

- Ed Morrison, Director, Purdue Agile Strategy Lab: efmorris@purdue.edu