



# The Future of Work at the Human-Technology Frontier



NSF 19-541: Core Research  
Proposal Deadline: March 6, 2019





# The NSF “Big Ideas”

In 2016 the NSF unveiled ten bold, long-term “[Big Ideas](#)” for future investment at the frontiers of science and engineering.

The Big Ideas represent unique opportunities to position our Nation at the cutting edge of global science and engineering leadership.

The ***Future of Work at the Human-Technology Frontier*** (FW-HTF), one of the Big Ideas, is one mechanism by which NSF is responding to the challenges and opportunities for the future of jobs and work.



# The Challenge

The landscape of jobs and work is changing at unprecedented speed, enabled by advances in computer and engineering technologies such as artificial intelligence and robotics, deeper understanding of societal and environmental change, advances in the learning sciences, pervasive, intelligent, and autonomous systems, and new conceptions of work and workplaces.

This technological and scientific revolution offers historical opportunities, but also comes with risks, including jobs lost to automation, strains on educational resources, security & privacy threats, algorithmic bias, and overdependence on technology & the erosion of human skills.



# FW-HTF Vision

The overarching vision of the FW-HTF program is to support convergent research within the **domain of work** to...

- Understand and advance the human-technology partnership;
- Promote new technologies to augment human performance;
- Illuminate the emerging socio-technological landscape and understand the risks and benefits of new technologies; &
- Foster lifelong and pervasive learning with technology.



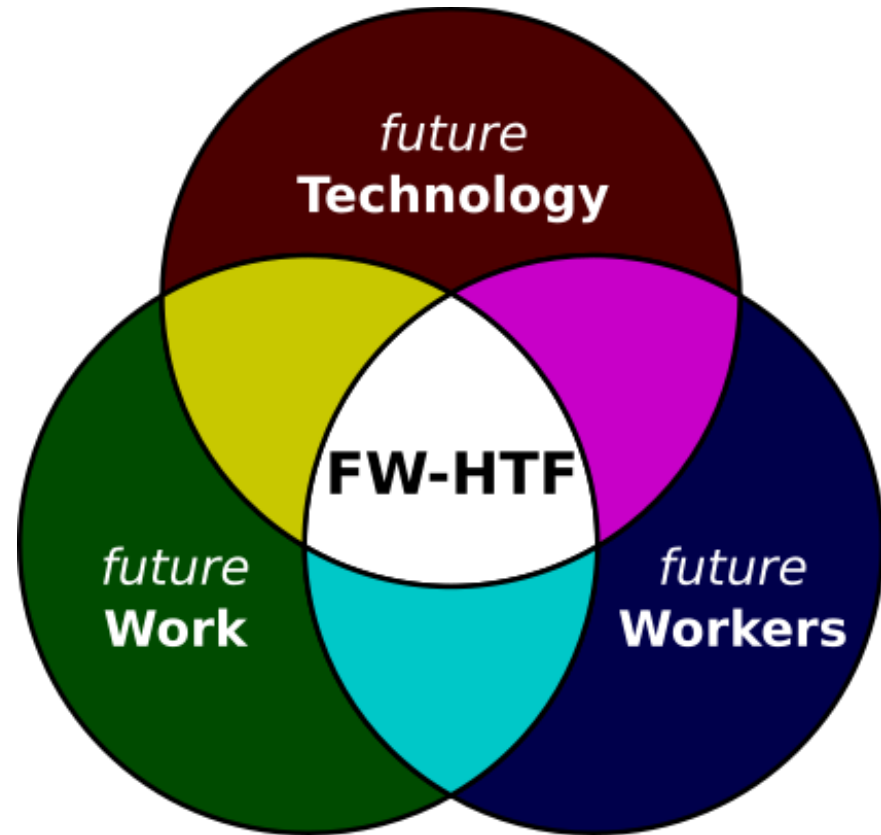
# Focus on Work

- Work is defined here as mental or physical activity to achieve tangible benefit such as income, profit, or community welfare.
- The “future of work at the human-technology frontier” is a conceptualization of work in the future that will be enabled or improved by the synergistic integration of advances in intelligent technology with human skill.

To reach this goal, research is sought that is anchored in work



# The FW-HTF Program



Convergent research integrating future work, future technology, and future workers.

- **Future Workers:** Address the worker as an individual or in teams, including education & training
- **Future Technology:** Engineering & computer science technologies that will develop the human-technology partnership in future workspaces, including offices, classrooms, warehouses, farms, & factories
- **Future Work:** Considers a societal, economic, professional, occupational, industrial, or national context

The FW-HTF program occupies the intersection of these elements



# Objectives

The specific objectives of the FW-HTF program are to ...

- Facilitate convergent research among engineering, computer science, learning sciences, research on education and workforce training, and social, behavioral, and economic sciences;
- Encourage the development of a research community dedicated to designing intelligent technologies and work organization and modes;
- Promote deeper basic understanding of the interdependent human-technology partnership to advance societal needs; and
- Understand, anticipate, and explore mitigation of potential risks arising from future work at the human-technology frontier.



# Proposal Requirements:

- MUST address a well-defined form of work or workplace domain with the purpose of creating new or improved partnerships of technology and human workers;
- MUST focus on advancing fundamental understanding of future work, and potential improvements to work, workplaces, workforce preparation, or work outcomes for workers and society;
- MUST be convergent research that addresses technological as well as human and societal dimensions; and
- MUST incorporate a conceptualization of future work that is embedded in a social and economic context.

FW-HTF proposals should not be suitable for consideration by other NSF programs





# Important Revisions: FY 2019 Competition

The FY2019 program solicitation has been revised from 2018. Prospective PIs should read the new solicitation carefully. Among the changes are the following:

- Project Categories now include Planning Grants and two sizes of Research Grants;
- Proposers no longer submit to a designation of Theme 1 or Theme 2;
- Solicitation Specific Review Criteria have been removed;
- The Letter of Intent requirement has been removed;
- The proposal deadline has been revised.
- **In addition to the sections required by the PAPPG, the Project Description must also include sections labeled as “Work Context,” “Integrative Research,” and “Methods, Measures, and Metrics”;**



# Proposal Submission Deadline: March 6, 2019

Due by 5 PM Submitter's Local Time on  
March 6, 2019



# Eligibility Requirements

- PIs must hold an appointment at the US-based campus or office of an eligible Institution of Higher Education or non-profit organization.
- There are no restrictions beyond those outlined in the PAPPG on who may serve as Co-PI, Senior Personnel or Consultant.

An individual may appear as PI, Co-PI, Senior Personnel, Other Personnel, or Consultant on ***only one*** proposal submitted in response to the FY 2019 FW-HTF solicitation.

***This eligibility constraint will be strictly enforced!***





# Three Categories of FW-HTF proposals

Proposals for ***FW-HTF Research Grants*** (FW-HTF-R) are invited in two sizes.

- ***Medium*** projects have budget up to \$1,500,000 for up to 3 years.
- ***Large*** projects have budget of \$1,500,001 - \$3,000,000 for up to 4 years.

Proposals for ***FW-HTF Planning Grants*** (FW-HTF-P) are also invited.

- ***Planning Grants*** have budget up to \$150,000 for a period of 1 year.

Proposals should clearly justify the chosen category on the basis of project scope, required team size, and projected project outcomes







# Planning Grants (FW-HTF-P)

Planning Grant awards support a range of ***planning activities*** to stimulate research capacity and foster a convergent research team that can...

- Integrate multiple disciplinary perspectives;
- Build collaborations with relevant stakeholders; and
- Hone research gaps, questions, and hypotheses.

Activities within scope include, but are not limited to, travel, multidisciplinary workshops, stakeholder meetings, data collection, preliminary experiments, and pilots.

At the conclusion of the Planning Grant, researchers should be prepared to pursue a well-defined research agenda responsive to FW-HTF program vision





# FW-HTF Proposals: Additional Sections Required

In addition to the required sections described in the PAPPG, the Project Description **MUST** include the following separate sections, clearly labeled with the specified headings:

- A ***Work Context*** section to clearly identify and define the work domain, workers, and workplaces, and the scope and scale of outcomes and benefits envisioned;
- An ***Integrative Research*** section to describe how knowledge, techniques, and expertise from multiple fields and sectors will create new and expanded frameworks for addressing research goals;
- A ***Methods, Measures, and Metrics*** section to describe how progress and outcomes of the project will be assessed.



# FW-HTF: Supplemental Documents Required

In addition to the Supplemental Documents described by the PAPPG, FW-HTF proposals MUST include the following:

- A ***Management and Coordination Plan*** describing specific steps the project team plans to take to achieve the goal of convergent research, in which knowledge, techniques, and expertise from multiple fields and sectors create new and expanded frameworks for addressing research goals;
- A ***List of Project Personnel and Partner Institutions*** (FW-HTF-R only) providing current, accurate information for all personnel and institutions involved in the project.



Thank you for your interest in exploring the Future of Work at the Human-Technology Frontier: Core Research

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We look forward to receiving your submissions by March 6<sup>th</sup>. Please address questions to the cognizant program officers listed in the solicitation.

**NSF 19-541: Future of Work at the Human-Technology Frontier: Core Research (FW-HTF)**







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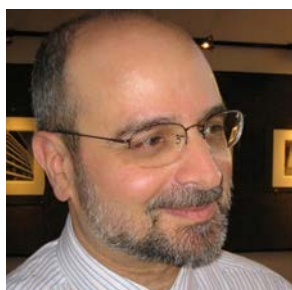
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