NSF CONVERGENCE ACCELERATOR (NSF C-ACCEL)

NSF C-Accel Funding
(Dollars in Millions)

	FY 2018 Actual	FY 2019 (TBD)	FY 2020 Request
NSF-Funded Activities	-	-	$60.00
IA	-	-	*60.00*
Partnership-Funded Activities	-	-	40.00
Total	**-**	**-**	**$100.00**

Overview

NSF C-Accel seeks to transform how NSF supports the most innovative science, reflecting its commitment to be at the cutting-edge, supporting foundational research, while also encouraging rapid advances through partnerships between academic and non-academic stakeholders. NSF C-Accel is an entity that will make timely investments that (1) initiate new capabilities to accelerate convergence research in areas of national importance, and (2) build capacity in multi-stakeholder convergence teams to address these critical challenges. Focusing on use-inspired, convergence research, with directed deliverables and using an approach that rewards innovation, risk-taking, and transition to use, NSF C-Accel is modeled on acceleration and innovation activities that have proven successful at the most forward-looking universities and companies.

NSF C-Accel will align NSF's processes and operations with contemporary science and engineering research. As the only federal agency that funds foundational research and education across all fields of non-biomedical science and engineering, NSF is uniquely poised to initiate this structural change. NSF also has a unique role with colleges and universities, which are critical participants in this activity, as well as with other stakeholders, such as other federal agencies, industry, non-profits, foundations, and funding agencies around the world. While NSF C-Accel is separate from directorates in leadership, budget, and programmatic approaches, it will be aligned with, build upon, and stimulate new directions for directorates' foundational research investments. These activities will become a standard part of NSF's portfolio of funding mechanisms to accelerate research across a broad range of themes.

To build partnerships, NSF C-Accel will use a variety of methods, such as multi-stakeholder roundtables and workshops, to surface grand challenge themes that are of mutual interest and that could benefit from acceleration. Individual themes are anticipated to last up to five years with the option to continue another five years, if deemed successful. Each theme will engage a number of multi-stakeholder teams that will work collaboratively to accelerate science and engineering and the transition from research to practice.

An initial NSF C-Accel pilot in FY 2019 focuses on two of NSF's research Big Ideas: HDR and FW-HTF. Themes (or tracks) that come from these particular research areas have been identified by the cross-agency NSF C-Accel Working Group and align with Administration R&D Priorities,[1] the President's Management Agenda,[2] and the U.S. Five-Year STEM Education Strategic Plan.[3] Pilot tracks include, for HDR, advancing data-driven discovery using artificial intelligence (AI) and machine learning, through early

[1] Office of Management and Budget's and Office of Science and Technology Policy's "FY 2020 Administration Research and Development Budget Priorities" memo (M-18-22), www.whitehouse.gov/wp-content/uploads/2018/07/M-18-22.pdf
[2] Office of Management and Budget (2018), www.whitehouse.gov/wp-content/uploads/2018/03/The-President%E2%80%99s-Management-Agenda.pdf
[3] Charting a Course for Success: America's Strategy for STEM Education" National Science and Technology Council (2018), www.whitehouse.gov/wp-content/uploads/2018/12/STEM-Education-Strategic-Plan-2018.pdf.

prototypes of an open knowledge network. The pilot tracks for FW-HTF include (1) smart job matching, including the development of predictive analytic tools, economic and labor market analyses of future workplace skill requirements, and educational technologies for life-long, adult learning; and (2) innovative approaches to support the development of workers with the skills required for 21st century work, including data science, predictive analytics and AI/machine learning techniques.

These initial NSF C-Accel tracks are distinguished from the corresponding Big Ideas by the nature of the research, the time scale of the activities supported, and the more hands-on, agile approach to project management and support that is envisioned.

Goals

1. Accelerate the progress of use-inspired convergence research.
    - Accelerate scientific discovery and innovation by applying more agile team identification, funding, and project management mechanisms to use-inspired, convergence research that requires the integration of knowledge, skills, and methodologies from multiple disciplines and stakeholders.
2. Harness partnerships to design and enable translational convergence research.
    - Assist academic researchers to engage with non-NSF partners – such as commercial entities, non-profits, foundations, philanthropies, other state or federal agencies, and international funders – to create partnerships that identify high-impact research directions and collaborate to achieve the research goals.
3. Focus cohorts of teams around broad national goals.
    - Support activities that bring together the range of expertise needed to tackle pressing, transdisciplinary research challenges and enable the formation of advanced research teams. Use coopetition mechanisms to enable cohorts of teams to progress towards research goals more rapidly than single teams alone can do.

FY 2020 Investments

In FY 2020, $60.0 million will support the continuation of the two initial tracks of the NSF C-Accel. This funding will also support new tracks stimulated by research in HDR, FW-HTF, and other Big Ideas, based on mutual interest of the partners and readiness of the research community to respond. New tracks will develop through community workshops, roundtables (e.g., with industry, non-profits, and foundations) and analysis of emerging foundational advances in NSF's 10 Big Ideas.

NSF anticipates that external partners will contribute an additional $40.0 million in FY 2020. For the partners, this is a new avenue for R&D, allowing access to academic researchers working at the forefront of knowledge. For the academic researchers, this allows access to partners who are interested in contributing to research projects and the broader themes/tracks.