National Science Foundation's Convergence accelerator accelerates solutions for societal challenges

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Current portfolio for the National Science Foundation Convergence Accelerator.

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The National Science Foundation (NSF) is known for funding basic research and education in all science and engineering fields, and in 2019, the agency launched the Convergence Accelerator (**https://beta.nsf.gov/funding/initiatives/convergence-accelerator**) to speed innovative tangible solutions to address national-scale societal challenges.

This first-of-its-kind program builds upon basic research and discovery to strengthen the nation's innovation ecosystem in key research and development (R&D) priority areas and practices that intersect sustainability, climate change, geology, environmental management, and more. The program funds teams to accelerate

solutions using convergence research and innovation practices, but to enhance its impact, teams are placed together in cohorts to synergize their work through a collaborative environment, network with fellow professionals, and develop novel solutions to the most pressing modern issues.

The Convergence Accelerator **program model** includes three phases: topic ideation and Phases 1 and 2 of the convergence research (Figure 1). Ideation begins by gathering ideas from the community. Ideas that meet the program's criteria are then funded by NSF in community workshops, and the findings assist NSF in selecting the convergence research tracks to be funded for the next year.
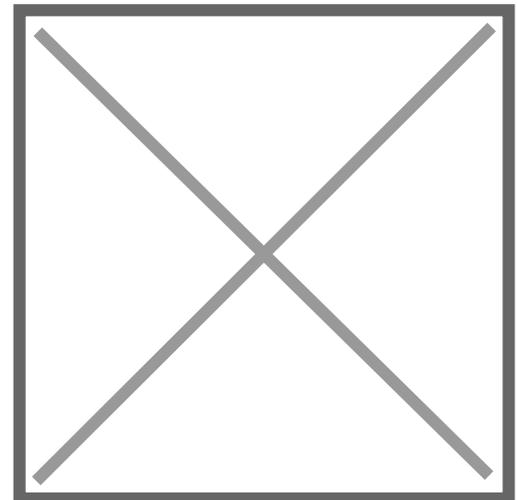

Figure 1 The National Science Foundation Convergence Accelerator program model.

Phases 1 and 2 of the convergence research focus on the acceleration of use-inspired research into practice. Phase 1—a nine-month planning effort—provides funding up to $750,000 to further develop initial concepts, identify new team members and partners, and participate in a program led *innovation curriculum.*

At the end of Phase 1, teams participate in a formal pitch and Phase 2 proposal evaluation. Selected teams then proceed to Phase 2 with potential funding up to $5 million available for 24 months where they further develop their solution and participate in an entrepreneurial curriculum. By the end of Phase 2, teams are expected to provide solutions that meet societal needs at scale and are sustainable beyond NSF support.

Basic Research Funding: How Does the Convergence Accelerator Differ?

National-scale societal challenges cannot be solved by a single discipline. Instead, these challenges require convergence: the merging of innovative ideas, approaches, and technologies from a wide and diverse range of sectors and expertise.

The Convergence Accelerator utilizes a multidisciplinary approach by funding teams composed of diverse disciplines, expertise, and organizations from academia, industry, government, and non-profit and other organizations. This enables teams to scale their project needs, merge ideas, and share approaches and techniques to speed use-inspired solutions toward real-world application. Partnerships also strengthen each solution by providing end-user insights, resources, services, transition to practice pathways, and more. Within three years, teams are expected to provide high-impact solutions that address societal challenges and enhance the nation's competitiveness and security.

To assist NSF-funded teams through the intense, accelerated journey, the program provides an expert-led curriculum in human-centered design, team science, communication, and storytelling and pitching designed to move an idea into a proof of concept, to prototype, then solution.

The Convergence Accelerator also fosters a "coopetitive" (cooperative and competitive) environment to stimulate ideas. Funded teams are required to share expertise and resources while competing to advance to the next phase.

Finally, track integration is a Phase 2 focus. To guarantee the track focus is greater than the "sum of its parts," Phase 2 team solutions converge toward track integration to create a combined solution design for national-scale societal impact.

What Convergent Research Topics Are Being Funded?

The Convergence Accelerator program is composed of three cohorts, started in 2019, 2020, and 2021. Each cohort focuses on two research track topics. The 2019 and 2020 cohorts are currently in Phase 2. The 2021 cohort is currently in Phase 1.

Yearly, the program will launch funding opportunities for two convergent research "tracks"; however, as the program grows, additional tracks may be added. The current portfolio includes six topics (Figure 2).
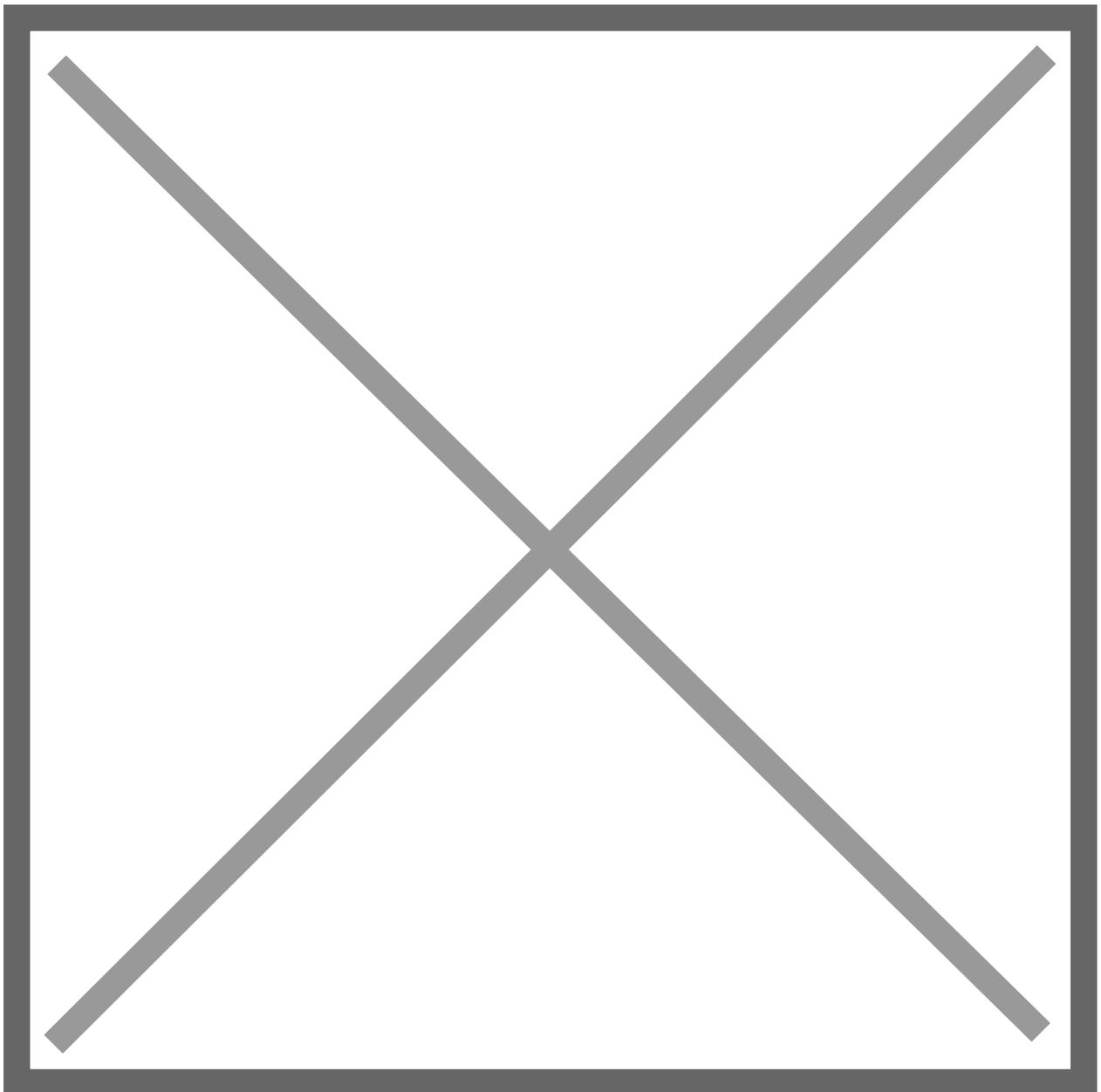

*Figure 2*Current portfolio for the National Science Foundation Convergence Accelerator.

How Can You Engage the Convergence Accelerator?

Researchers, innovators, and business and technical practitioners from the agronomy field are encouraged to connect with the Convergence Accelerator through several opportunities in 2022 and 2023:

Submit an Idea

Each year, the program gathers ideas from the community. Selected ideas are further explored in funded workshops.

Participate in a Workshop to Further an Idea

In 2021, the NSF funded a variety of expert-led workshops covering topics such as Coastal Sustainability, Biocultural Restoration, Digital and Precision Agriculture, Food Security, and Climate Change. Workshops are held to further develop an idea, incorporating convergence research and various disciplines and expertise. The NSF welcomes experts to participate in these workshops, and if an idea that you submitted during the ideation process is chosen by NSF, the program may fund you to lead the development of a workshop on that topic.

Form a Team and Apply to a Convergence Research Solicitation

Each year, the program releases a solicitation funding opportunity featuring several convergent research topics selected from the program's ideation process. Researchers and innovators are encouraged to apply. The submitted project team must represent a mix of disciplines, expertise, and organizations from academia, industry, non-profits, government, and other communities of practice and sectors.

Contribute to a Currently Funded Solution

Cross-cutting partnerships are vital to the Convergence Accelerator and the funded teams. Partners provide expertise, represent end-users, provide resources, services, and infrastructure, or support a transition or educational pathway. View currently funded teams on the program's portfolio page, or email them to learn how you can support a team and funded solution.

Be a Reviewer

Provide your expertise to assist NSF in funding the best research ideas and solutions. This is an excellent opportunity to lend your expertise to future proposals and site visits and participate in both phases of a Convergence Accelerator track. If you are interested, send the Convergence Accelerator an email.

Whether you are a scientist, academic, industry professional, or agribusiness leader, NSF welcomes your involvement with the Convergence Accelerator. The program is structured to facilitate collaboration, learning, and shared success among its public, private, and academic members as we work together on current and future complex societal challenges.

For additional information about the NSF Convergence Accelerator, visit **https://beta.nsf.gov/funding/initiatives/convergence-accelerator** or email at Send Message.