

NSF Convergence Accelerator



Convergence Accelerator

WHY: Leverage the science across all fields of NSF research to produce outcomes in an accelerated timeframe, with streamlined operations allowing for nimbleness to support the most innovative results

WHAT: A new organizational structure to *accelerate* the transition of convergence research into practice, in areas of national importance

Characteristics

- Use-inspired research
- Testbeds, tools, living labs...
- Larger, national scale
- Requires partnerships with industry
- Clear goals, milestones, directed deliverables

Management

- Time-limited “tracks”
- Teams and Cohorts
- Cooperation and Competition
- More directed management
- Mission-driven evaluation



Overall Timeline – 2019-2021



2020 Solicitation ([NSF 20-565](#))

NSF Convergence Accelerator Phase I and II

PROGRAM SOLICITATION **NSF 20-565**



National Science Foundation

Convergence Accelerator Office

Preliminary Proposal Due Date(s) (*required*) (due by 5 p.m. submitter's local time):

May 11, 2020

Phase I Preliminary Proposal

Full Proposal Deadline(s) (due by 5 p.m. submitter's local time):

July 10, 2020

Phase I Full Proposals, by invitation only

May 17, 2021

Phase II Full Proposals, only Phase I awardees are eligible

- \$30 Million
- Up to 30 Awards
- Phase 1
 - 9 months
 - Up to \$1M
- Phase 2
 - 24 months
 - Up to \$5M

Evaluation Criteria ([NSF 20-565](#)) – Preliminary Proposals and Phase 1 Proposals

- Relevant to the Track
 - Sending “same old proposals” won’t work
- Must have multiple disciplines represented
 - Part of the definition of “Convergence”
- Must have multiple institutions represented
 - Can’t just be a bunch of professors from a single university
- Must have multiple “types” of institutions
 - Not just academic, must include industry, non-profits, state/local government, etc.
- Clearly defined deliverables
 - What will be delivered at the end of Phase 2? What impact will it have on how many people?

2020 Solicitation ([NSF 20-565](#)) Cohort Schedule

- Apr 10, 2020 Solicitation Released
- **May 11, 2020 Preliminary Proposals (PP) Due**
- May 2020 Preliminary Proposal Reviews
- May 2020 Phase 1 Proposal Invitations
- **July 10, 2020 Phase 1 Proposals Due**
- July 2020 Phase 1 Panels
- Aug 2020 Phase 1 Award Decisions Made
- Sep 2020 Phase 1 Grants Awarded
- Sep 23-25, 2020 Phase 1 Kickoff (@NSF)

Convergence Accelerator Curriculum

	SEP	OCT	NOV	DEC	JAN	FEB	MAR	MAY
		User interviews		Prototyping		Pitch Practice		
In-Person		Managing Differences		Managing Relationships		Managing Change		PITCH
		Government		Corporates		Foundations /Other		
	Design Thinking		Synthesis		Storytelling		Pitch Practice	
Webinar								

Coaches ←

Innovation Curriculum ←

Team Science ←

Specific Domain Topics ←

2020 Solicitation Topics ([NSF 20-565](#))

- Track C: Quantum Technology
 - Quantum Sensing
 - Quantum Simulators
 - Quantum Interconnects
 - Quantum Workforce

- Track D: AI-Driven Innovation via Data and Model Sharing
 - Tools, Platforms, Protocols for Curation and Sharing of open as well as sensitive protected data
 - Techniques and Services for dealing with issues related to sensitive data, privacy and data sanitization
 - Address ethics, fairness, and bias issues associated with research data



NATIONAL STRATEGIC OVERVIEW FOR QUANTUM INFORMATION SCIENCE

Product of the
SUBCOMMITTEE ON QUANTUM INFORMATION SCIENCE
under the
COMMITTEE ON SCIENCE
of the
NATIONAL SCIENCE & TECHNOLOGY COUNCIL

SEPTEMBER 2018

CA Quantum Technology Definition

Convergence Research to accelerate and translate QT capability that does not currently exist or is not possible today

Convergence Research to accelerate rapid advancements in defined QT components into a use-inspired unified vision of benefit to society



Bridge components and accelerate research to enable a quantum network

Quantum components Teams will work on:

- Sensors
- Simulators
- Interconnects
- Architectures

2020 Cohort Will Deliver:

1. Demonstrations of Quantum Channels
2. Prototypes of a Quantum Ecosystem



Creating a quantum smart and diverse workforce is a national priority

QT teams will establish partnerships between academia and industry to create convergent, trans-sector approaches to education, research, and development to prepare and support a diverse workforce.

Track D: Background

- The National AI R&D Strategic Plan: 2019 Update, June 2019
- CReD: A Deep Residual Network of Convolutional and Recurrent Units for earthquake signal Detection¹
- STanford EArthquake Dataset (STEAD): A Global Data Set of Seismic Signals for AI²
- <http://moleculenet.ai/>, Stanford
- Coleridge Initiative, first Federal example of Secure Access to Confidential Data



Track D: Context

- RFI Workshops
 - Future of Privacy Technologies
 - Network for Earth-space Research Education and Innovation with Data
 - AI and Disasters



- Highlighted themes
 - Linkage between AI and data
 - Strong linkages with industry and industry challenges
 - Importance of making data available for AI innovation
 - Cross-training: Education and training in this area
 - Need for processes and protocols for data sharing
 - Importance of open data as well as sensitive / proprietary / private data



Track D: AI-Driven Innovation via Data and Model Sharing

- AI systems are becoming ubiquitous but to gain the most benefit from AI technologies key challenges need to be addressed that require convergence research.
- Convergence Research challenges Track D addresses:
 - Data privacy
 - Fairness and bias
 - Reproducibility
- Track D will deliver a data sharing platform (*ModelCommons*) for open, as well as sensitive/private data, including associated protocols and processes, can address these challenges in a convergent fashion



2021 DCL/RFI (NSF 20-061)

<https://www.surveymonkey.com/r/2021RFI>

nsf.gov/pubs/2020/nsf20061/nsf20061.jsp

NSF 20-061

Dear Colleague Letter: Request for Information on Future Topics for the NSF Convergence Accelerator and Call for Future Topics Conference Proposals

March 23, 2020

Dear Colleague:

OVERVIEW

This Dear Colleague Letter (DCL) replaces [NSF 19-065](#), which was a Request for Information (RFI) on Future Topics for the NSF Convergence Accelerator for FY2020.

The purpose of this RFI and call for future topics conference proposals is to seek input from global industry, institutions of higher education (IHEs), non-profits, government entities, and other interested parties on potential NSF Convergence Accelerator tracks for FY 2021.

Potential NSF Convergence Accelerator tracks for FY 2021 can be related to [Industries of the Future \(IoT\)](#), [NSF's Big Ideas](#), or other topics, that may not relate directly to an IoT or Big Idea, but nonetheless have the potential for significant national impact. Ideas suggested in response to this RFI should be similar in breadth to [NSF 19-050](#) tracks, which are broad enough to each support a set of related research teams working together as a cohort.

Note that this RFI does not invite research proposals, though the process itself may result in the identification of potential topics for future research funding opportunities. Respondents to this RFI may submit their ideas and they are highly encouraged to also submit conference proposals to develop and refine those ideas so as to incorporate convergence research, breadth, and collaboration among key stakeholders from industry, IHE's, non-profits, government entities, and other interested parties.



2021 RFI DCL & 2021 Cohort Schedule

<https://www.surveymonkey.com/r/2021RFI>

- Mar 23, 2020 RFI and Workshop Call for 2021 topics
- Apr 30, 2020 RFI Responses
- May 18, 2020 Workshop Proposals Due (for funding in FY 2020)
- Jun 2020 Workshop Decisions
- Jul-Sep 2020 Workshops
- Oct-Nov 2020 2021 Solicitation
- Nov-Dec 2020 Preliminary Proposals (PPs) Due
- Dec 2020–Jan 2021 Preliminary Proposal Reviews and Phase 1 Proposal Invitations
- Feb 2021 Phase 1 Proposals Due
- Mar 2021 Phase 1 Panels
- Apr 2021 Phase 1 Award Decisions Made
- May 2021 Phase 1 Grants Awarded

Inviting Participation from the Community

<https://www.surveymonkey.com/r/CAccel>

- 2019 Cohort
 - Looking for **proposal review panel members**
 - Technical knowledge in either Track A or Track B
 - Looking for people who would NOT have Conflict of Interest with existing teams
 - Looking for **pitch competition review panel members**
 - Technical knowledge in either Track A or Track B
 - Looking for people who would NOT have Conflict of Interest with existing teams
 - Prefer people who have business experience and understand transition-to-practice and use-inspired research
 - Suggestions for possible attendees for the Day 2 Open Pitch Session
 - Looking for suggestions of names from industry, foundations, government, non-profits who might be interested in **co-investing** with NSF for Phase 2
- 2020 Cohort
 - Inviting all parties to respond to the [2020 Solicitation \(NSF 20-565\)](#) with **pre-proposals by May 11, 2020**
- 2021 Cohort
 - Inviting all parties to [respond to the RFI](#) with **topic ideas by April 30, 2020**, and submit **workshop proposals** (supporting RFI submissions) **by May 18, 2020**

Summary

- New program with a new way of doing things
 - Focus on convergence research for national challenges
- Accelerated pace with hands-on program management
 - Non-traditional for NSF; Supportive R&D environment
- Requirement to include non-academic partners; projects can be led by non-academic entities
 - New way of getting academia and industry together; multiple opportunities
- Focus on clearly defined deliverables
 - It's all about what you're going to deliver to the American people and what impact your solution will it have; must also think about long-term sustainability



THANKS!!!

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