



✤ National Science Foundation

2022 NSF Convergence Accelerator: Information for Australian Applicants to Track I

11 May 2022, 8:00 am AEST



CSIRO Australia's National Science Agency

Webcast controls

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Please put your **QUESTIONS** in the Q&A





CSIRO and the US National Science Foundation



Nick Pagett with NSF Director Sethuraman Panchanathan ("Panch") at MOU signing in Jan 2022

First Joint Initiative: CSIRO and the NSF's "Convergence Accelerator"

- Track I: Sustainable Materials
- Co-funding material science to solve societal challenges
- Fostering US-Australian collaboration for global benefit

CSIRO

MISSIONS

Bringing the ecosystem together to accelerate the pace and scale at which **CSIRO** solves national challenges, leveraging science and technology for impact

A mission is a portfolio of coordinated science and technology projects and socio-technical initiatives that are directed at meeting a concrete and timebound objective that helps to solve a societal challenge

- **Objective** is ambitious but realistic and has broad societal relevance
- Mission activity encourages collaboration across multiple scientific disciplines (including social sciences) and industrial sectors and engagement with multiple actors, including public, private and civil society organisations

CSIRO's Missions Portfolio

FOOD SECURITY AND QUALITY	HEALTH AND WELLBEING	RESILIENT AND VALUABLE ENVIRONMENTS	SUSTAINABLE ENERGY AND RESOURECS	FUTURE INDUSTRIES	A SECURE AUSTRALIA AND REGION
Reducing the impact of drought on farms and communities	Stopping the next pandemic by building resilience to zoonotic infectious disease	Changing the way we make, use, recycle and dispose of plastics	Building Australia's clean hydrogen industry	Safeguarding our water resources from space	Powering the climate response of Australian businesses
Growing export earnings of Australian grown food	Securing a future where antimicrobials still save lives	Futureproofing against biosecurity threats of pests, weeds & diseases	Partnering with regions and industry for a low emissions future		
Helping capture high-growth global protein markets			Creating higher value products from our Critical Energy Metals		

Co-design and delivery is fundamental for CSIRO

Varied roles No mission will be delivered alone Advisory Government Industry Customers local, state, federal & international policy Multinationals **SMEs** Investors Delivery partners Communities Universities & Lead(s) Research Moving from 1:1 to hosting 1:many conversations **CSIRO CSIRO** 6 |



NSFF National Science Foundation

A Pivotal Moment for Our Nations



Climate change



Equitable access to education, health care



Critical and resilient infrastructure





A Pivotal Moment for Science & Engineering





Pace of discovery accelerated by data, emerging technologies

Demand for societal impact



Opportunity to leverage partnerships







MISSION:

To promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense; and for other purposes

VISION:

A national that leads the world in science and engineering research and innovation, to the benefit of all, without barriers to participation

NSF'S MISSION

To promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense.



Director's Vision

Ensure



Advance the frontiers of research into the future



Secure global accessibility leadership and inclusivity

Intensity of global competition



Urgent need for domestic talent



Broad support for science as path for solving global grand challenges SPEEDAND SCALE

We can accomplish this vision with:

PARTNERSHIPS



PEOPLE

We are in a

DEFINING MOMENT

CONVERGENCE RESEARCH

Today's grand challenges will **NOT** be solved by one discipline working alone.

Grand Challenges require **CONVERGENCE**: the merging of ideas, approaches, and technologies from widely diverse fields of knowledge to stimulate innovation and discovery.



NSF Convergence Accelerator Team



Doug Maughan Head



Lara Campbell Program Director



Aurali Dade Program Director



Pradeep Fulay Program Director



Jemin George

Senior Advisor

E.

Alex Loewi AAAS Fellow



Ibrahim Mohedas Program Director



Linda Molnar Program Director



Michael Pozmantier Program Director



Michael Reksulak Program Director



Shelby Smith Communications & Outreach Lead



Nicole Tehrani Student Trainee, Pathways

CONVERGENCE ACCELERATOR PROGRAM MODEL

IDEATION

CONVERGENCE RESEARCH FOCUS SOCIET

PHASE 2

SOCIETAL IMPACT

DCL/RFI

Topics begin by gathering ideas from

the community through a Dear Colleague Letter, Request for Information

The NSF focuses on ideas that are convergence-research applicable and beneficial to society

WORKSHOPS

Promising ideas that meet the program's criteria are further explored in funded workshops

> The workshop findings assist NSF in selecting future convergence research track topics

FUNDING OPPORTUNITY

Selected track topics are released in a traditional solicitation and BAA Awarded projects are selected based on research track focus, acceleration of basic research, multidisciplinary approach and national-scale societal impact

PHASE 1 Selected teams are funded up to \$750K for a nine-month planning phase

Teams participate in an innovation curriculum to strengthen collaboration, foster partnerships and transform basic research into high-impact solutions

Teams participate in a formal phase 2 proposal and pitch to be selected for phase 2

Selected teams are funded up to \$5 million for a 24 month solution development phase

Teams participate in an idea-to-market curriculum to unleash an entrepreneurial mindset and skill set and to ensure each project reaches its full potential National-scale Sustainable beyond NSF support may include:

Follow-on funding and investment

Integration into existing system

Tools/knowledge accessible through open source

Solutions expanded into new markets

Convergence Accelerator Portfolio



2022 COHORT



NSF CONVERGENCE ACCELERATOR 2022 COHORT TRACK TOPICS



TRACK H: Enhancing Opportunities for Persons with Disabilities



TRACK I: Sustainable Materials for Global Challenges



TRACK J: Food & Nutrition Security



TRACK I: Sustainable Materials for Global Challenges



This track will converge advances in fundamental materials science with materials design and manufacturing methods with the goal to couple their end-use and full life-cycle considerations for environmentally and economically sustainable materials and products that address global challenges.

- Current production and use of materials is not sustainable for human or planet health
- Urgent need for circular economy principles, standards, tools, and metrics across all levels of the supply chain
- Urgent need to educate and train current and future generations of scientists and engineers on circular design

Reimagine and transform how we design across all levels – from molecules to materials products, and to the built environment and envision the end-of-life and/or re-use from the cradle to the grave using systems tools to guide the design.

Potential for positive societal impact by mitigating and preventing climate change due to materials production in areas of highest unmet need (e.g., health, energy, transportation, infrastructure, technology).



TRACK I: Sustainable Materials for Global Challenges



- Sustainable materials and manufacturing development for global competitiveness and security
- Building a sustainable future. Remediation of spent materials from the environment for reuse of critical materials
- Transformation of training for next generations scientists to include key focuses like transdisciplinary, design principles, equitable, and fairness

Some Possible Areas

- Biomanufacturing, microchip production, energy, transportation
- Critical metal remediation, plastic waste remediation, and design of replacement materials
- Materials-based infrastructure networks will be affected by the impacts of climate change and must be rendered resilient in an equitable way

Potential Deliverables Examples

- Data sharing principles and infrastructure that drive enhanced data sharing between materials research, design, and manufacturing
- Multistakeholder projects that de-risk solutions in a sustainable materials area such as infrastructure or polymers
- Experiential education programs such as industrial internships, and joint training across sectors

NSF & CSIRO Partnership

The Commonwealth Scientific and Industrial Research Organization (CSIRO), Australia's National Science Agency, is partnering with the NSF Convergence Accelerator on Track I.

"There has never been a more important time for partnership, because now more than ever, we need big, visionary programs that shift the needle." – Dr Larry Marshall, CSIRO Chief Executive.



CSIRO

MISSION: To promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense; and for other purposes

NSF's Convergence Accelerator Goals:

- Build and support creative partnerships to address complex national and societal challenges
- Speeds the transition of convergence research into practice

MISSION: As one of the world's largest mission-driven multidisciplinary science and research organizations, CSIRO is focusing on the issues that matter the most: for our quality of life, for the economy and for our environment.

CSIRO Goals:

- Seizing the opportunity to tackle our greatest challenges through co-developing missions.
- Missions are large-scale, impact focused scientific and collaborative research initiatives aimed at making significant breakthroughs with a tangible end goal.

2022 SOLICITATION DETAILS



FUNDING OPPORTUNITY

Two Submission Pathways

Purpose of this Parallel Activity: Provide increased opportunities for non-academic entities to submit and lead proposals

1. NSF Solicitation, NSF-22-583: bit.ly/CA_Solicitation_NSF-22-583

2. Broad Agency Announcement (BAA), NSFBAA-CA22-02: bit.ly/NSFBAA-CA22-02

Academic Submitters: It is recommended to submit to the traditional NSF solicitation

Australian Lead Submitters: Must submit to the BAA solicitation

For-profit or Non-profit (or similar): It is recommended to submit to the BAA solicitation

- Submitters must have a Unique Entity Identifier (UEI) and be registered in the System for Award Management (SAM) (<u>www.sam.gov</u>) prior to proposal submission
 - SAM.gov registration may take up to 2 weeks
- Fee/profit is an allowable cost
- BAA questions are to be directed to <u>nsf-solicitation@nsf.gov</u>

Track I: Australian Participation Requirements

Four Scenarios for Australians Submitting to Track I

CSIRO, is providing sponsorship for the participation of one Australian team, either as a Principal Investigator or as a team member, in Track I.

Additional Eligibility Info:

NSF and CSIRO anticipates the four possible scenarios for Track I proposal preparation and submission.

- 1. Proposals submitted with solely U.S. entities.
- 2. Proposals submitted by a **U.S. lead from academia with Australian participants**. These proposals could also be submitted through the BAA. The Australian participants may be funded through CSIRO.
- 3. Proposals submitted by a **U.S. lead from industry, non-profits, etc. with Australian participants**. The Australian participants may be funded through CSIRO.
- 4. Proposals submitted by an Australian lead with U.S. participants from academia, industry, etc. This type of proposal must be submitted through the BAA. If this type of proposal is recommended for award after the NSF-managed review process AND CSIRO funds the Australian participants, then NSF will fund only the U.S. participants.

Please refer to https://www.csiro.au/missionsaccelerator for additional information.

Solicitation Details - Letter of Intent (Required)

Purpose: The LOI is used by NSF to assess requirements for proposal review. No feedback will be provided to submitters

Due Date: May 31, 2022; due by 5 p.m. submitter's local time

All proposals that include Australian entities that wish to be eligible for CSIRO funding are required to complete a presubmission review to confirm fit to CSIRO Eligibility Criteria.

NSF Solicitation:

- Submit your LOI through the <u>NSF Research.gov</u> system and <u>globalapplications@csiro.au</u>
- Refer to Section V for required information

BAA:

- Submit your LOI at <u>https://baam.nsf.gov/s/</u> and <u>globalapplications@csiro.au</u>
- Submit to Refer to Section 4 for required information

Other LOI Details

- Should identify a multidisciplinary team to build a convergence research effort
- Must identify one or more deliverables; how those research outputs could impact society at scale, and the team that will be formed to carry this out
- Proposals that include Australian Participants to be funded through CSIRO should consult <u>https://www.csiro.au/missionsaccelerator</u> for additional information

Solicitation Full Proposal

CSIRO is providing sponsorship for the participation of one Australian team, either as a Principal Investigator or as a team member, in Track I

Full Proposal Deadlines: Due by 5 p.m. submitter's local time

Phase 1 Full Proposal: July 20, 2022

Phase 2 Full Proposal: August 29, 2023, only phase 1 awardees are eligible to apply

Phase 1 Full Proposal Details:

NSF Solicitation Submitters:

- Submit your full proposal through the <u>NSF Research.gov</u> system and/or grants.gov
- Collaborative proposals submitted as separate submissions from multiple organizations will **NOT** be accepted.
- Refer to Section V for required information

BAA Submitters:

- Submit your full proposal at <u>https://baam.nsf.gov/s/</u>
- Refer to Section 5 for required information

Solicitation Full Proposal Continued

CSIRO is providing sponsorship for the participation of one Australian team, either as a Principal Investigator or as a team member, in Track I

Other Full Proposal Details

• Must describe the deliverables, a research plan, and the process of team formation that will help lead to a proof-of-concept during Phase 1

Other Considerations

- **PI/Co-PIs:** One PI and four co-PI; if there is more than five team members add them as senior personnel
- International Partners/Collaborators: International organizations are allowed as a sub-awardee and/or collaborator, but must be justified
- Government Partnerships/Collaborators: Federal, state, and local government organizations are encouraged to participate as partners (e.g., provide expertise, resources, data). Depending on the government organization, some may be eligible for fees for service

Solicitation Full Details Continued

CSIRO is providing sponsorship for the participation of one Australian team, either as a Principal Investigator or as a team member, in Track I

Anticipated Phase 1 Funding: \$36 Million

Phase 1:

- Funding up to **\$750k per phase 1 award**
- Up to 48 awards (total across the NSF solicitation and BAA)
- 12 months duration, of which 9 months includes intense hands-on activities. Three months of other activities include formal pitch presentations and participating in the NSF Convergence Accelerator's 2023 Expo
 - Due to program intensity consider a teaching buyout and/or adding a full-time project manager to support the effort

Phase 2:

- Phase 1 awardees will be invited to submit a Phase 2 full proposal
- Funding up to \$5M per award, up to \$3M in first year
- 24 month duration
- ²⁵ |• Up to **5 awards per track** (total across the NSF solicitation and BAA)

Australian Proposal Budgets:

Proposals conducted by the Australian participants and to be funded by CSIRO are not to exceed:

- Phase 1: 255,000 AUD of the possible total 750,000 USD dollars Phase 1 budget
- Phase 2: 1,624,000 AUD of the possible total 5,000,000 USD dollars Phase 2 budget

Note: If an Australian participant to be funded by CSIRO is selected, the Australian awardee will be required to, subsequent to being selected, send a breakout budget for the Australian awardee to CSIRO.

Solicitation Evaluation/Review Criteria

Convergence Accelerator: Submitting the "same old proposals" won't work!

Intellectual Merit & Broader Impacts:

Intellectual Merit: Encompasses the potential to advance knowledge

Broader Impacts: Encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes

Program Specific Criteria:

Convergence: Multiple disciplines with a focus on social science aspects; think big—you **MUST** include experts from more than a single institution

Cross-cutting Partnerships:

- Multiple organizations and sectors; not just academia; must include industry, nonprofits, government, and other communities of practice
- Role and Responsibilities Table: Describe the roles of different partners and team members in developing deliverables
- Coordination Plan: Describe team collaboration and effectiveness will be achieved

Current Convergence Accelerator Cross-Cutting Partners Roles & Sectors

Partner Roles in the Convergence Accelerator Teams

- Advisory, Consulting
- Data provider
- End-user
- Education support
- Resources
- Talent pipeline
- Testing

Partners are from the following sectors

- Communications
- Consumer
- Education
- Energy
- Financial

- Government
- Healthcare
- Industrial
- Information Technology
- Utilities

Solicitation Evaluation/Review Criteria

Convergence Accelerator: Submitting the "same old proposals" won't work!

Deliverables: What can teams deliver in 3 years, (e.g., prototypes); What impact will your solution have a national and/or global scale

Broadening Participation: Describe activities that will be undertaken to increase the participation of underrepresented groups (e.g., expertise, partnerships, user groups, resource needs); Refer to the Broadening Participation Plan requirements

Track Alignment: How can multiple teams work together to solve a national-scale complex challenge?

- Each track funds a set of diverse teams focusing on different aspects of a national-scale societal challenge
- Teams are uniquely positioned to ensure the highest societal impact

Convergence Accelerator Model Convergence Research Focus, Phase 1

Accelerated 9 months planning phase of 12-month award

Innovation Curriculum to fast-track solution development

- The curriculum stimulates innovative thinking and challenges teams to consider many facets to ensure that their ideas moves toward real-world application; as well as to help the teams function effectively.
- The curriculum is a lot of time but is valuable; setting teams up for success!
 - Human-centered design thinking
 - Team science
 - Early-stage prototyping

- Pitch preparation
- Use-inspired research
- User/Customer engagement

Other Activities

- Teams receive mentors/coaches to assist with solution acceleration
- Track teams engage in both competition and cooperation (e.g., coopetition, Give & Get Marketplace)
- Partnerships help to achieve the proposed deliverable through diverse expertise (e.g., different sectors/expertise, end-user, prototyping)
- Participate in a proposal evaluation and a pitch review

EXAMPLE: WEEKLY PROGRAM & CURRICULUM SCHEDULE

Weekly sessions will occur EVERY WEDNESDAY from 1:30 - 3 p.m. ET

Date	Торіс	Date	Торіс	Date	Торіс
Sept. 30, 2021	2021 Cohort P1: Pre-Kickoff Informational Webinar	Jan. 26, 2022	Communications & Storytelling	April 20, 2022	Closing Workshop
Oct. 13, 2021	2021 Cohort Kickoff: Introduction	Feb. 2, 2022	 Cross-Team Share 	May 16 - 20, 2022	Preparation: Formal Phase 2 Proposal and Pitch; Expo 2022
Oct. 20, 2021	• Team Science: Fundamentals	Feb. 9, 2022	Mid-Semester Report Out	May 25, 2022	Formal Phase 2 Proposal Due
Oct. 27, 2021	First Pitch	Feb. 16, 2022	Team Science Check-In	May 30 – July 17, 2022	Coaching Support: Pitch Practice
Nov. 3, 2021	Cross-Team Share	Feb. 23, 2022	Cross-Sector Partnerships: Panel II	June 20 – 24, 2022	Formal Pitch Note: week is tentative. Formal pitch dates may change
Nov. 10, 2021	Human-Centered Design: Use-Inspired Research	March 2, 2022	• Cross-Team Share	June 27 – July 22, 2022	Final Preparation: Expo 2022
Nov. 17, 2021	 Team Science: Embracing Difference and Managing Disagreement 	March 9, 2022	 Human-Centered Design: Low-Fidelity Prototyping 	lulv 25-29. 2022	Participate in Expo 2022
Dec. 1, 2021	Cross-Sector Partnerships: Panel 1	March 16, 2022	Cross-Team Share		Convergence Accelerator finalizes the event dates.
Dec. 8, 2021	• Team Science: How Making Assumptions Can Get in the Way of Productivity	March 23, 2022	Communications & Pitching	Кеу	
Dec. 15, 2021	Cross-Team Share	March 30, 2022	Cross-Team Share	Orange	Communications
Jan. 12, 2022	Human-Centered Design: Research Synthesis	April 6, 2022	Cross-Sector Partnerships: Panel 3	Green	Cross-Team Share Cross-Sector Partnerships Panels
Jan. 19, 2022	Cross-Team Share	April 13, 2022	• Cross-Team Share	Teal	Human-Centered Design

Convergence Accelerator Model Convergence Research Focus, Phase 2

Continue accelerated 24 months phase

Leverage Idea-to-Market Curriculum

- The idea-to-market curriculum unleashes an entrepreneurial mindset and skill set and ensures each funded project reaches its full potential.
 - Applying product mindset

- Resource, financial requirements
- Creating sustainable impact
- Solution development

• Pitching, storytelling

Other Activities

- Teams receive mentors/coaches to assist with solution acceleration
- Participate in a site visit (end of year one)
- Teams are expected to deliver high-impact deliverable(s)
- Sustainability plan beyond NSF support

Solicitation & Cohort Schedule

May 31, 2022	Letters of Intent Due (required) Note: For CSIRO funding eligibility submit in parallel to globalapplications@csiro.au		LOI and Proposal
July 20, 2022	Phase 1 Full Proposals Due		reparation
November 2022	Phase 1 Grants & Contracts Awarded		Proposals Review and Decisions
January 18, 2023	2022 Cohort Phase 1 Kickoff		2022 Cohort
August 29, 2023	Phase 2 Full Proposals Due		

LEARN MORE – Recorded Webinars

NSF Convergence Accelerator 2022 Phases 1 and 2 for the 2022 Cohort – TRACKS H, I, AND J

90 minute informational webinar recordings are available on the NSF web site:

- The Convergence Accelerator program, including our phased approach and innovation processes
- The solicitation opportunity's research track focuses, Convergence Accelerator fundamentals, and submission information

Webinar Recordings Available:

May 4, 2022 https://youtu.be/73e5GdzJ5yw

May 5, 2022 https://youtu.be/KsMatt0NwFM

NSF Convergence Accelerator Resources, Past Webinars https://beta.nsf.gov/funding/initiatives/convergenceaccelerator/resources

Questions: Convergence-Accelerator@nsf.gov



Share this webinar with Australian colleagues

Link will be posted at <u>https://www.csiro.au/missionsaccelerator</u>

QUESTIONS?

Please put them in the Q&A Feature





NSF

CSIRO

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Thank you

NSF Convergence Accelerator

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CSIRO

https://www.csiro.au/missionsaccelerator globalapplications@csiro.au

CSIRO Australia's National Science Agency