

Midwest Big Data Innovation Hub

Collaboration Cafe

November 2021



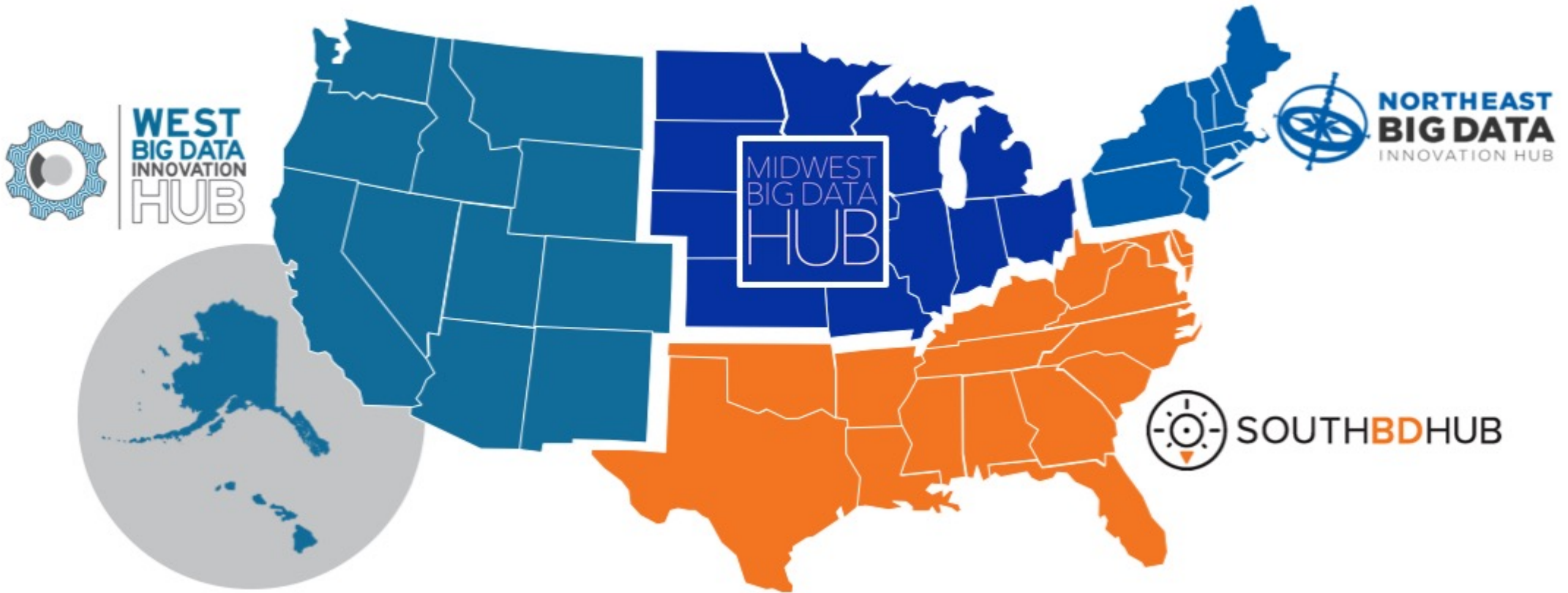
IOWA STATE
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Four Hubs, One Mission



What We Do

Engage communities, share resources, and build partnerships that harness data science to address societal and scientific challenges.



Priority Areas and Cross-cutting Themes

- Advanced Materials and Manufacturing
- Big Data in Health
- Digital Agriculture
- Smart & Resilient Communities
- Water Quality
- Data Science Education and Workforce Development
- Cyberinfrastructure and Data Sharing

Collaboration Cafe webinar series



Goals:

- Building regional capacity for large-scale proposal response
- Growing a cross-disciplinary network of data science collaborators
- Elevating early career researchers
- Creating a more diverse data science community by actively engaging with non-R1 institutions, including minority-serving institutions (MSIs), tribal colleges and universities (TCUs), and predominantly undergraduate institutions (PUIs)
- Partnering with industry, government, nonprofits, and civic organizations to support translational research and transition-to-practice activities

Regular segments:

- Funding opportunity walkthroughs
- Researcher lightning talks
- Lessons learned from prior awardees
- Speed networking
- Small group discussions



Collaboration Cafe resources



- MBDH website
 - Web page with upcoming sessions
 - Short form for engagement
- Slack community
 - Networking
 - Input on future sessions
 - New solicitations
- Shared Google Drive
 - Running notes doc
 - Relevant prior awards to Midwest institutions
- YouTube playlist of webinar recordings

Cafe Ground Rules

- Multi-disciplinary team science is a core focus here - all proposal ideas are welcome for discussion
- Research proposals are competitive; some people may not be willing to discuss the details of their projects in this venue
- Private conversations in breakout rooms or Slack private messages are private
- Participating in Collaboration Cafe activities falls under our [NSF Code of Conduct](#)



MBDH engagement on proposals

There are multiple opportunities to have MBDH participate on proposals for the AI Institutes program, or other projects:

- Engagement partner: Communications, outreach, community assessments, participation in Hub events and activities
 - Non-exclusive Letter of Collaboration
 - Minimal to no funding to MBDH
- Collaborative partner: Engagement roles + involvement in developing and managing project activities
 - Non-exclusive Letter of Collaboration, subaward, co-PI roles, etc.
 - Funding to recover costs of MBDH staff time and other expenses
- **Note:** The MBDH is a neutral party and often provides non-exclusive Letters of Collaboration to multiple proposers to a solicitation

November Solicitation: NSF AI Institutes program



	22-011	due May 13, 2022*
Tracks	Full institutes only - no planning grants in this round (FAQs 14 & 28)	
Size and duration (max)	Cooperative agreements, awarded in 2023 \$16-20m each over 4-5 years	
Estimated # of awards	7 (1 each for Themes 1-5, tracks for Theme 6 will each have one award [FAQ 23])	
Directorate	CISE, but there are multiple themes and partners	
LOI/preproposal	Preproposals due January 14, 2022; Full proposals due May 13, 2022	
Eligibility limits & guidance	PI/co-PI on only 1 ; maximum of 2 proposals per lead institution	

NSF official webinar: November 16, 2021

Video and slides available (linked from MBDH Cafe page)



NSF AI Institutes program



- New in this round:
 - No planning grants
 - Preproposals required; final proposal must be from the same institution as the preproposal
- Must plan and budget for a managing director, external advisory board, and multiple site visits and coordination activities
- Agency and Industry partners
 - Department of Homeland Security, Science & Technology Directorate;
 - Institute of Education Sciences, U.S. Department of Education;
 - USDA National Institute of Food and Agriculture (NIFA);
 - National Institute of Standards and Technology;
 - DOD Office of the Under Secretary of Defense for Research and Engineering;
 - IBM



NSF AI Institutes program

Milestone	Program-wide timeline
Solicitation release/	Oct 8, 2021
Webinar	Today
Preliminary proposals due	Jan 14, 2022
Results of preliminary proposal review	Mid-Feb 2022
Full proposals due	May 13, 2022
Schedule Reverse Site Visits*	Oct 10-28, 2022
Reverse Site Visits*	Nov 28-Dec 22, 2022
Anticipated start date of awards*	Jun 1, 2023

* Proposers to Theme 6 Track B can anticipate earlier milestones for these steps.

Source: NSF webinar Nov 16, 2021

NSF AI Institutes themes

- Round 1:

1. Trustworthy AI
2. Foundations of Machine Learning
3. AI-Driven Innovation in Agriculture and the Food System
4. AI-Augmented Learning
5. AI for Accelerating Molecular Synthesis and Manufacturing
6. AI for Discovery in Physics

- Round 2:

1. Human-AI Interaction and Collaboration
2. AI Institute for Advances in Optimization
3. AI and Advanced Cyberinfrastructure
4. Advances in AI and Computer and Network Systems
5. AI Institute in Dynamic Systems
6. AI-Augmented Learning
7. AI to Advance Biology
8. AI-Driven Innovation in Agriculture and the Food System

- Round 3:

1. Intelligent Agents for Next-Generation Cybersecurity (NSF, DHS, IBM)
2. Neural and Cognitive Foundations of Artificial Intelligence (NSF, DOD)
3. AI for Climate-Smart Agriculture and Forestry (NIFA)
4. AI for Decision-making (NSF)
5. Trustworthy AI (NSF, NIST)
6. AI-Augmented Learning to Expand Education Opportunities and Improve Outcomes (NSF, ED)

NSF AI Institutes program

Desiderata for All AI Research Institutes

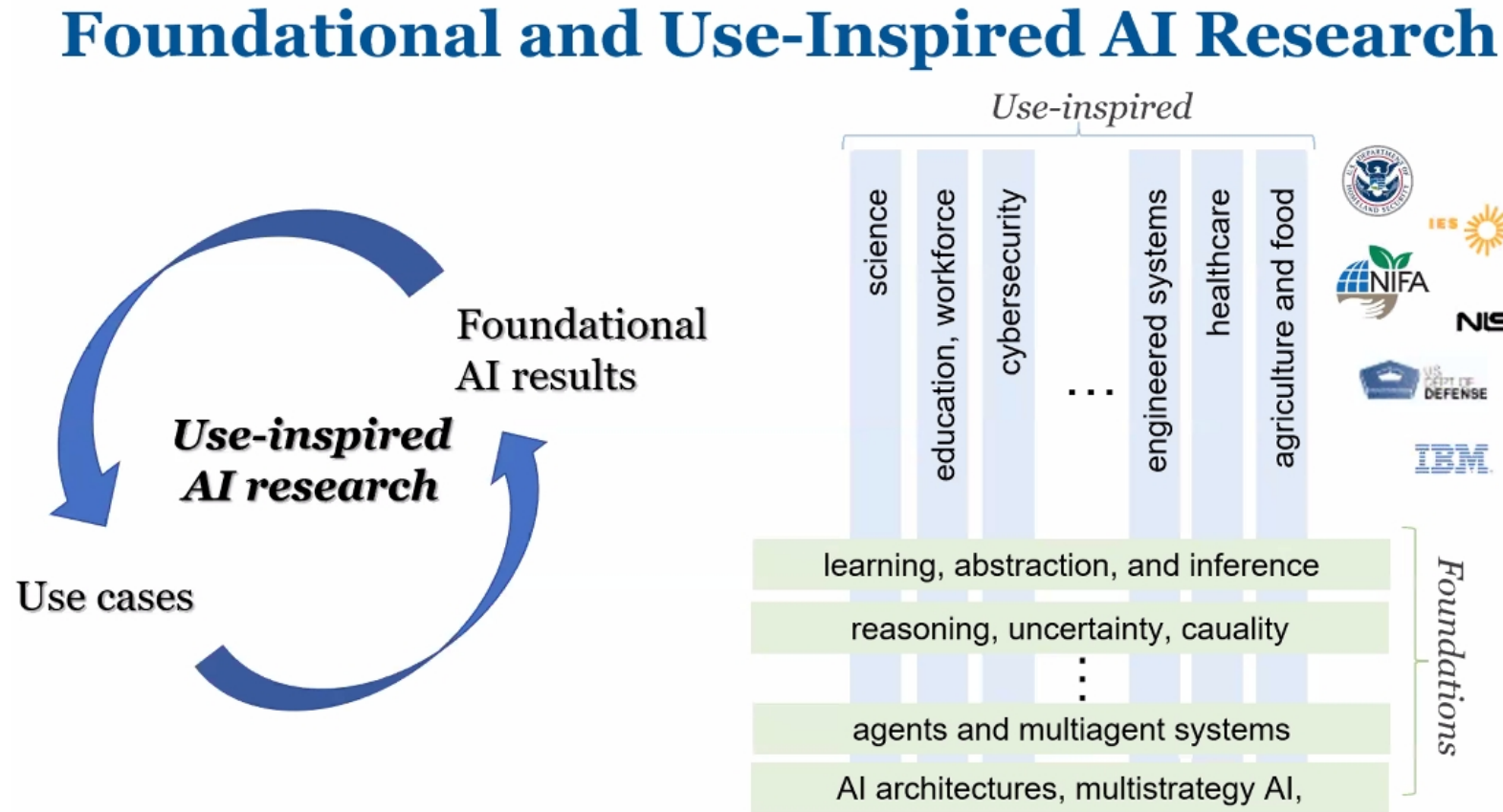
1. Advance foundational research
2. Conduct use-inspired research
3. Grow the next generation of talent
4. Be multidisciplinary
5. Leverage multiple organizations
6. Be nexus points for collaborative efforts

Source: NSF webinar Nov 16, 2021

Theory and practice /
translational research:

"It is critical that proposals clearly specify how the use-inspired context for Institute research reveals the opportunities for *foundational AI* advances and how those *foundational AI* advances in turn contribute to the related sectors that define the use-inspired context."
[II.A.]

NSF AI Institutes program



Source: NSF webinar Nov 16, 2021

NSF AI Institutes program



Grow The Next Generation of Talent

- Drive education about AI across educational levels and institution types, including post-secondary, workforce training, and other public education.
- Develop innovative pedagogy and instructional materials, advanced learning technologies, project-driven training, cross-disciplinary and collaborative research, industry partnerships, and new career pathways.
- Offer broad, deep, and diverse experiences with a focus on broadening participation among the full range of groups traditionally under-represented in science and engineering.
- Leverage the visionary research focus and integrate education and workforce development for a whole *“greater than the sum of its parts.”*

Source: NSF webinar Nov 16, 2021



Additional Solicitation Specific Review Criteria



1. Advance foundational AI: How well does the proposed Institute contribute new knowledge or methods toward understanding of the mechanisms underlying thought and intelligent behavior and their implementation in machines?
2. Conduct use-inspired research: How well does the proposed Institute leverage the use-inspired research context to both advance AI and drive innovations in related sectors of science and engineering, segments of the economy, or societal needs?
3. Strategic impact: What is the potential for the Institute to make a lasting strategic impact beyond its research outcomes? Specifically,
 - How will the proposed Institute actively nurture and grow the next generation of talent?
 - To what extent is the proposed Institute activity comprised of a multidisciplinary group of scientists, engineers, and educators appropriate to the project?
 - How well does the proposed Institute leverage multiple organizations to create significant new research capabilities in new centers of AI leadership and create a network for broadening participation from underrepresented groups and diverse institutions?
 - How well does the proposal exhibit plans to operate as a nexus point for collaborative efforts to engage externally and add to a diverse Institute that is more than just the sum of the parts?



Discussion

- Existing awards in the region (see the Cafe notes doc)
- Prior experiences with the AI Institutes program?
 - What would you do differently (or the same)?
- Regional AI needs and opportunities
 - Where are the gaps?
 - Are there specific disciplinary drivers?
 - How does AII relate to other programs that have data science elements?
 - What are some of the trends that are driving the needs for the next generation of AI research, services, and training?
 - Quantum computing
 - Data visualization
 - Large-scale data acquisition from IoT devices

Get involved

- <https://midwestbigdatahub.org/cafe>
- info@midwestbigdatahub.org

January Collaboration Cafe topic:

- NIH Research Experience in Genomic Research for Data Scientists (R25) (PAR-21-075)

January 13, 2021

3:00–4:00 p.m. CT / 4:00–5:00 p.m. ET



Get Involved ▾

MBDH Collaboration Cafe

Community Development and Engagement Program

Community Advisory Panel

Midwest Carpentries Community

Data Science Student Community

Regional Activities

Event in a Box Tool Kit

Explore Funding Opportunities

Join a Working Group

