

Community Infrastructure for Research in Computer and Information Science and Engineering (CIRC)

NSF 23-589

Formerly CCRI

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Overview of the CIRC Program



Synopsis

- Funds the creation and enhancement of world-class **community** research infrastructure
- Funds infrastructure for communities of researchers pursuing focused research agendas in **computer and information science and engineering (CISE)**
- Infrastructure may include equipment, testbeds, software, data repositories, and the creation or curation of data sets needed for CISE research, including benchmark datasets for driving CISE systems and testbeds for verification and measurement purposes
- Includes developing user services and engagement to attract, nurture, and grow a robust research community
- Enable advances not possible with existing infrastructure
- Project Classes
 - **Planning:** Supports planning efforts to engage research communities to develop new CISE community research infrastructure
 - **Exploratory Development:** Supports validation of unproven infrastructure designs
 - **Medium:** Supports the creation or enhancement of CISE community research infrastructure
 - **Grand:** Supports significant efforts to develop, enhance, or sustain CISE community research infrastructure



Expectations

- Provide compelling new research opportunities for a community of CISE researchers that extends beyond the awardee organization(s)
- Enable unique and compelling research opportunities otherwise inaccessible to the CISE research community
- Include a vision for future long-term community sustainability and operation
- Define metrics relevant to the proposal goals and address measurement and evaluation of the infrastructure
- Provide robust user services and support to the community



Revisions from previous solicitation

- Changed name from CCRI to CIRC
- PI limits increased to 2 for Medium and Grand Proposals
- Enhance/Sustain (ENS) eligibility clarified
- Grand category includes option to request Internet Measurement Research infrastructure mentioned in NSF 22-519
- Cooperative agreements added as a possible award type
- Limit added to 5 letters of collaboration
- Exploratory Development track added

Project Classes





Grand Community Infrastructure (Grand)

- Develop significant new, innovative CISE community research infrastructure or enhance and sustain existing CISE community research infrastructure
- Develop or enhance testbeds and platforms with an integrated set of user services that enable CISE researchers to conduct research experiments, test and validate methodologies and systems, and evaluate research results
- Well-designed plans for involving the related CISE research community in the design, development, testing, and oversight of the infrastructure as well as to guide future enhancements
- Promote bold, emerging research directions, build infrastructures that catalyze CISE research and provide leadership and support to develop robust, diverse research communities capable of advancing CISE research frontiers
- Total Budget: \$2,000,001 to \$5,000,000 up to 5 years



Medium Community Infrastructure (Medium)

- Supports the creation of new CISE community research infrastructure or the enhancement of existing CISE community research infrastructure, and the accompanying user services and outreach
- **New:** Develop new, focused CISE research infrastructure and user services, and to engage the associated research community as part of the development and testing
- **Enhance/Sustain (ENS):** Support significant enhancement of existing CISE research infrastructure to meet research community needs and directions, outreach to broaden and diversify the associated user research community, and implementation of a plan to attain long-term community operation of the infrastructure
- Total Budget: \$750,001 to \$2,000,000 up to 3 years

Exploratory Development ("Dev" track)

- Supports activities that involve the validation of unproven infrastructure designs and/or technologies
- Projects that may help lay the technical foundations for future CIRC, Midscale RI-1, or Midscale RI-2 projects
- Total Budget: \$250,001 to \$750,000 up to two years
- Note:
 - The proposers should consider hiring professional staff to ensure that a high-quality, well-tested prototype is shovel-ready for a future research infrastructure request.
 - Exploratory Development projects must include significant community engagement to determine community needs, priorities, and support for the proposed infrastructure and to provide input into the design and development.



Planning Community Infrastructure (Planning)

- Supports planning activities and community outreach towards the development of a CIRC, MSRI-1, or MSRI-2 proposal
- Must have a clear research vision and robust set of planning activities
- Must include significant community engagement to determine needs, priorities, and support
- **Planning-C:** Planning activities towards CIRC Grand or Medium (New, not ENS)
- **Planning-M:** Planning activities towards MSRI-1 or MSRI-2 (more info on coming slides)
 - Planning grants are not required for submission to MSRI-1 or MSRI-2, but enable preliminary planning work
- Budget Information
 - Up to 1.5 years (Planning-C) or 2 years (Planning-M)
 - Up to \$100,000 (Planning-C) or \$250,000 (Planning-M)



Midscale Research Infrastructure-1 (MSRI-1) Scope

- Most recent solicitation: NSF 22-637
- The goal of Mid-scale RI-1 is the fulfillment of a community-defined need that enables current and next-generation U.S. researchers to be competitive in a global research environment
- NSF defines Research Infrastructure as any combination of facilities, equipment, instrumentation, or computational hardware or software, and the necessary human capital in support of the same
- May involve new or upgraded research infrastructure
- "Design" and "Implementation" Tracks
- The “Design” track is intended to facilitate progress toward readiness for a mid-scale range implementation project
 - \$400,000 to \$20,000,000
- "Implementation" projects support acquisition, assembly, construction and commissioning of research infrastructure
 - \$4,000,000 to \$20,000,000



Midscale Research Infrastructure-2 (MSRI-2) Scope

- Most recent solicitation: NSF 23-570
- Supports the implementation of unique and compelling research infrastructure projects
- Will only consider the implementation stage of a project, including a limited degree of final development or necessary production design immediately preparatory to implementation
- \$20,000,000 to \$100,000,000



Estimated Number and Size of CIRC Awards

- Planning
 - Up to 10 Awards
 - Up to 1.5 years (Planning-C) or 2 years (Planning-M)
 - Budget up to \$100,000 (Planning-C) or \$250,000 (Planning-M)
- Exploratory Development
 - Up to 3 Awards
 - Up to 2 years
 - Budget \$250,001 - \$750,000
- Medium
 - Up to 12 Awards
 - Up to 3 years
 - Budget \$750,001 - \$2,000,000
- Grand
 - Up to 3 Awards
 - Up to 5 years
 - Budget \$2,000,001 - \$5,000,000
- Total Funding Amount: \$24,000,000

Deadlines & Eligibility

- Next Deadline: September 13, 2024
- Can submit (as PI, co-PI, or Senior Personnel) two Dev, Medium, or Grand proposals per year
- Can submit (as PI, co-PI, or Senior Personnel) one Planning proposal per year

Review Criteria





Intellectual Merit

- The Intellectual Merit criterion encompasses the potential to advance knowledge
- What is the potential for the proposed activity to advance knowledge and understanding within its own field or across different fields?
- To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
- Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
- How well qualified is the individual, team, or organization to conduct the proposed activities?
- Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?

For example (for New/ENS):

- *How important are the proposed plans to create/enhance a successful community research infrastructure?*
- *To what extent will the envisioned/enhance community research infrastructure enable innovative research?*

Broader Impacts

- The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes
- What is the potential for the proposed activity to benefit society or advance desired societal outcomes?
- To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
- Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
- How well qualified is the individual, team, or organization to conduct the proposed activities?
- Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?



Solicitation Specific Review Criteria:

Planning Category

- Soundness of planning process and activities
- Compelling new CISE research and education opportunities due to infrastructure
- Fit with CISE core disciplines
- Evidence of community need as well as impending community involvement
- For the Planning-M category, will this infrastructure be of national importance, and does it address the goals of the mid-scale research infrastructure program?
- Project management plan soundness
- Adequate metrics to document the success of the infrastructure

Solicitation Specific Review Criteria:

Exploratory Development Category

- Soundness of design, prototyping, and validation approaches
- Necessity of exploratory design versus existing methods/technologies
- Engagement of relevant communities
- Would proposed infrastructure result in compelling new research and education opportunities
- Enabling core CISE disciplines
- Evidence of community need
- Soundness of project management plan and timeline
- Metrics of success

Solicitation Specific Review Criteria:

Medium (New) Category

- Is the infrastructure essential for the research agenda to move forward?
- Soundness of plan for an integrated set of user services and tools
- Fit with CISE core disciplines
- Newness of infrastructure or differentiation from existing infrastructure
- Project team preparedness to develop, operate, and provide service and support
- Project management plan soundness
- Plans for community involvement in development and future use
- Quality of community outreach plans
- Adequate metrics to document the success of the infrastructure



Solicitation Specific Review Criteria:

Medium (ENS) Category

- Benefit and need of proposed enhancements
- Has compelling new research and education opportunities come from the infrastructure?
- Fit with CISE core disciplines
- Project team preparedness to develop, operate, and provide service and support
- Project management plan soundness
- Track record with the infrastructure
- Long-term sustainability plans
- Community Advisory Board plan soundness
- Adequate metrics to document the success of the infrastructure



Solicitation Specific Review Criteria:

Grand Category

- Innovative and bold vision and that could lead to advancing CISE research frontiers
- Fit with CISE core disciplines
- Robustness of infrastructure plan and accompanying services, tools, and resources
- Project team preparedness to develop, operate, and provide service and support
- Quality of community outreach plans
- Newness of infrastructure or differentiation from existing infrastructure
- Project management plan soundness
- For projects involving enhancements to existing community research infrastructure: Track record with the infrastructure
- Long-term sustainability plans
- Community Advisory Board plan soundness
- Adequate metrics to document the success of the infrastructure

New & Grand proposals: Sections Required

- 1.Fundamental infrastructure:** describe what is to be developed;
- 2.Tools, resources, and datasets:** describe ancillary resources to be developed and integrated into the infrastructure system; Medium proposals should indicate items that will be developed by the initial award, along with a vision for possible tools that might be appropriate for future enhancements;
- 3.User services:** describe services to be integrated into the infrastructure, including mechanisms by which researchers will gain access to the infrastructure;
- 4.Community engagement:** describe how the community will be engaged in the design, development, and management of the infrastructure, including plans for a Community Advisory Board;
- 5.Community outreach:** describe plans for ongoing outreach to develop a diverse user community led by the Community Outreach Director (required for **Grand** proposals) and the outreach team:

ENS Proposals: Sections required

1. **Existing infrastructure;**
2. **Plan for enhancement/sustainment of the infrastructure;**
3. **Tools, resources, and datasets:** describe supporting resources to be developed and/or enhanced and integrated into the infrastructure system;
4. **User services:** describe user services to be added or enhanced and integrated into the infrastructure, including mechanisms by which researchers will gain access to the infrastructure;
5. **Community engagement:** describe ongoing community engagement in the design, development, and management of the enhancements and implementation of the sustainability plan, as well as plans for creating and engaging a Community Advisory Board (if none present); and
6. **Community outreach:** describe plans for ongoing outreach to broaden and diversify the user community:

Dev Proposals: Sections Required

- 1.Fundamental infrastructure:** describe what is to be developed;
- 2.Tools and resources:** describe ancillary resources to be designed and prototyped during the exploratory development; proposals should indicate items that will be developed by the initial award, along with a vision for infrastructures this work will enable;
- 3.Community engagement:** describe how the community will be engaged in the design, development, and management of the infrastructure, including plans for a Community Advisory Board;
- 4.Community outreach:** describe plans for ongoing outreach to develop a diverse user community led by the Community Outreach Director (required for **Grand** proposals) and the outreach team:

Additional Information



Supplementary Documents

- Project roles and responsibilities (required)
- List of individuals providing letters of collaboration (required)
- Community outreach documentation (required)
- Data management plan (required)
- Letters of collaboration (details later)
- A Supplementary Document identifying:
 - Budget items for operational expenses
 - Budget items related to community outreach
 - (must be included for New Medium proposals and New Grand proposals)

Letters of Collaboration

- Explicitly state intent to collaborate and nature of collaboration
- Must be on organization's letterhead and be signed by the appropriate organizational representative
- Letters are not needed from organizations submitting linked collaborative proposals
- Should be no longer than one page
- Letters of Collaboration should have the collaboration details and should not simply contain only the collaboration letter template found in the PAPPG
- Limited to 5 letters



Community Advisory Board

- Must include provision in Medium (New) and Grand (New) proposals
- Helps guide the development and future directions of the infrastructure
- Should plan to assemble one and describe the structure and role
- *Do NOT name potential members in proposal*
- *Do NOT approach potential members during proposal process*

Questions

