Preparing an NSF Proposal for CC* 18-508

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CTO

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A Division of the Ohio Department of Higher Education

Goals of Webinar

- Provide Overview
  - Global Solicitation Requirements
  - Specific requirements for all areas of solicitation
- Support OARnet can offer/OARnet intentions
- Helpful proposal hints/suggestions
  - Comment on items that are not prevalent in solicitation but will impact success
- Spawn further conversations
- Questions

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Presenter's Background

- CO-PI on CC-NIE
- PI on CC-IIE

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Program Officers

- Kevin Thompson, OAC Program Director, telephone: (703) 292-4220, email: kthompso@nsf.gov

- Anita Nikolich, OAC Program Director, telephone: (703) 292-4551, email: anikolic@nsf.gov

- Jack Brassil, CNS Program Director, telephone: (703) 292-8950, email: jbrassil@nsf.gov

Proposal Areas

1. **Data Driven Networking Infrastructure for the Campus and Researcher** awards will be supported at up to $500,000 total for up to 2 years;

2. **Network Design and Implementation for Small Institutions** awards will be supported at up to $750,000 total for up to 2 years;

3. Network Integration and Applied Innovation awards will be supported at up to $1,000,000 total forup to 2 years; and

4. Network Performance Engineering and Outreach awards will be supported at up to $3,500,000 total for up to 4 years.

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Basics

Who may submit –

- Universities and Colleges - Universities and two- and four-year colleges (including community colleges) accredited in, and having a campus located in, the US acting on behalf of their faculty members. Such organizations also are referred to as academic institutions.

- Non-profit, non-academic organizations: Independent museums, observatories, research labs, professional societies and similar organizations in the U.S. associated with educational or research activities.

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Basics

- There are no restrictions or limits on
  - Who may serve as PI
  - Number of proposals per institution
  - Number of proposals per PI or Co-PI

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Basics

- Full Proposals submitted via FastLane: *NSF Proposal and Award Policies and Procedures Guide* (PAPPG) guidelines apply. The complete text of the PAPPG is available electronically on the NSF website at: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg.

- Full Proposals submitted via Grants.gov: *NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov* guidelines apply

- (Note: The *NSF Grants.gov Application Guide* is available on the Grants.gov website and on the NSF website at: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide).

Basics

Full proposals due:

    January 30, 2018 5:00 PM Submitters local time
    For us that is Eastern Time!

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Basics – Helpful Hints

- Your proposal should be constructed in a way that follows the form of the solicitation

- What you are proposing must be tied to a "why" you want to do it, i.e. what science projects on your campus will be supported

- It is critical you include all required supplemental documentation, broader impact and intellectual merit statements

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Global Requirements

All proposals into the CC* program must include a Campus Cyberinfrastructure (CI) plan within which the proposed CI improvements are conceived, designed, and implemented in the context of a coherent campus-wide strategy and approach to CI that is integrated horizontally intracampus

and vertically with regional and national CI investments and best practices. This Campus CI plan must be included as a Supplementary Document and is limited to no more than 5 pages. It should include how this infrastructure fits into ongoing costs and operations.

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Global Requirements

CI plan should also include:

- Cyber Security campus approach
- Campus approach to privacy and data
- Trust and Identity – InCommon
    - Should meet InCommon Baseline Expectations for Trust in Federation
- IPv6 Deployment
- http://fasterdata.es.net/science-dmz

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Global Requirements

Proposal should address

As noted in CISE/OAC's companion solicitation, Cybersecurity Innovation for Cyberinfrastructure (NSF 17-528), security is a shared requirement across collaborative scientific environments and the institutions supporting these activities. All proposals submitted to CC* are expected to address the relevant cybersecurity issues and challenges related to their proposed activities. Depending on the type of proposal, these issues may include, but are not limited to: data integrity, privacy, network security measures, federated access and identity management, and infrastructure monitoring.

As a campus CI program, funded activities should represent ongoing opportunities for student engagement, education, and training. Proposals that demonstrate opportunities to engage students directly in the deployment, operation, and advancement of the CI funded activities, consistent with the required Campus CI plan, are welcome.

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Data Driven Networking Infrastructure for the Campus and Researcher

- Network upgrades within a campus network to support a wide range of science data flows (including large files, distributed data, sensor networks, real-time data sources, and virtualized instruments for computer systems research);

- Re-architecting a campus network to support large science data flows, for example, by designing and building a Science DMZ (see http://fasterdata.es.net/fasterdata/sciencedmz/ for more information on the Science DMZ approach); and/or

- **A network connection upgrade for the campus connection to a regional optical exchange or point-of-presence that connects to a state/regional/national network aggregation point prioritizing support for research and education.**

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Data Driven Networking Infrastructure for the Campus and Researcher

- Should include:
  - Address scientific and engineering project and application drivers that require network engineering or upgrades of their existing infrastructure
  - Expected outcomes
  - Project Plan addressing clear project goals and milestones resulting in a working system in the target environment
  - All proposals in this area must document explicit partnerships or collaborations with the campus Information Technology (IT)/networking organization, as well as one or more domain scientists, research groups, and educators in need of the new network capabilities. Letters of collaboration needed.
  - Proposals are encouraged, but not required, to include a network diagram of the proposed network upgrades. Proposals are encouraged to document current utilization in the context of the proposed upgrades

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Network Design and Implementation for Small Institutions

- Designed for small schools
  - NSF has no formal definition, rather need of resource must be demonstrated
- Can be used for planning, execution or both
- Drivers are the same as the Data Driven Networking area
- Area now allows a multi-institutional approach; preference will be given to such an approach
- Resources can be centralized at the regional layer

Network Design and Implementation for Small Institutions

- Should address scientific research or educational needs
- Can be used to upgrade connectivity to regional/national networks or campus network improvements
- Must be able to show how project improves or addresses aspirational aspects of campus vision
- Campus in not required to submit technical plan or equipment budget but will be required to submit those for year 2 of the grant for release of funds

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Network Design and Implementation for Small Institutions

- Proposals in this area are required to partner with a leadership institution in their jurisdiction or region, and at a minimum are expected to actively participate in CC*-related community events and engineering exchanges, especially in the first year while developing the technical solution

- Strength of science use case are primary evaluation metric

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Network Design and Implementation for Small Institutions

- In the Project Description should provide
  - Summary table of science drivers and network requirements
  - Functional description of network improvements proposed
  - Clear goals and metrics of success
- All of the partner/collaborator requirements from area one apply here as well.
- A letter of support from a campus leader is encouraged and should address sustainability and commitment from the institution

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Network Integration and Applied Innovation

This program area supports end-to-end network CI through integration of existing and new technologies and applied innovation. The goal is to take advantage of research results, prototypes, and emerging innovations to use them to enable specified researchers in a networking context. Proposals in this area may leverage new and existing investments in network infrastructure, services, and tools by combining or extending capabilities to work as part of the CI environment used by scientific applications and users.

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Network Integration and Applied Innovation

Unlike proposals directed to the "Data Driven Networking Infrastructure for the Campus and Researcher" program area that focus primarily on equipment-based data networking improvements, proposals in this area support the development and integration of innovative networking capabilities; network-related software development and deployment activities resulting in an operational environment prototype are expected to be part of the proposed activities.

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Unlike proposals directed to the "Data Driven Networking Infrastructure for the Campus and Researcher" program area that focus primarily on equipment-based data networking improvements, proposals in this area support the development and integration of innovative networking capabilities; network-related software development and deployment activities resulting in an operational environment prototype are expected to be part of the proposed activities.

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Network Integration and Applied Innovation

- Integration of networking protocols and technologies with science application layer processes and workflows;
- Transition of successful research prototypes in Software Defined Networking (SDN) and
- wireless networking technologies to distributed scientific environments and campus
- infrastructure;
- Networking architectures and components explored in the Future Internet Architectures-Next Phase (FIA-NP) program;
- Applications of networking hardware and software developed on NSFFutureCloud facilities (e.g., ChameleonCloud and CloudLab), including the integration of new technologies such as programmable network interfaces;
- Networking solutions exploiting virtualization, distributed computing and Software Defined
- Infrastructure (SDI), including cloud services and direct campus-to-cloud connections;

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Network Integration and Applied Innovation

- Innovative research prototypes integrating programmable packet processing components into campus infrastructure or exploring applications of software-defined data planes in support of high-performance data distribution; and

- Network engineering support through the creation and application of new and novel

- procedures and tools and network measurement and monitoring software for solving endto-end network performance issues, especially for dynamically constructed network services.

Network Performance Engineering and Outreach

This program area will establish a national entity of expertise and resources in improving end-to-end network performance across the NSF research and education communities.

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Areas of OARnet expertise and assistance

- Regional network connections
  - Connectivity
  - Science DMZ
  - IPv6
  - perfSONAR
- Identity and Security
  - Eduroam
  - InCommon

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Questions

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