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Hello, thank you for your interest in the Office of Advanced Cyberinfrastructure's or OAC's newest program, the OAC-core research program.

I am Sushil Prasad and I have been steering the Learning and Workforce Development thrust in OAC for the last three years.

Today, I will summarize key aspects of the OAC-Core solicitation. I have with me another Cognizant Program Director, Vipin Chaudhary. After this presentation, we will take any questions. We are very excited with this new strategic initiative, and look forward to your participation as principal investigators or as reviewers in this Fall round of competition and in the coming years! We also need your help to disseminate this to your colleagues.

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OAC is very pleased to announce its core research program solicitation, with the goals of supporting all aspects of advanced cyberinfrastructure (CI) research that will significantly impact the future capabilities of advanced research CI, as well as the research career paths of cyber scientists and engineers who are researchers, scientists, faculty and students.

Through this solicitation, OAC seeks to foster the development of new knowledge in the innovative design, development, and utilization of robust research CI.

The OAC core research program will support and sustain advancements in multiple disciplinary areas spanning computer as well as computational and data-driven science and engineering with advanced CI research thrusts.

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So, what is advanced CI? Advanced CI includes the spectrum of computational, data, software, networking, and security resources, tools, and services, along with the computational and data skills and expertise that individually and collectively can transform science and engineering research.

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- The OAC core research program seeks innovative proposals for translational research on the design, development, deployment, experimentation, and application of advanced research CI.
- OAC research investments are characterized by their translational nature, i.e., building on basic research results and spanning the design to practice stages.
- They are further characterized by one or more of the following key attributes: multi-disciplinary, extreme-scale, driven by science and engineering research, end-to-end, and deployable as robust research CI.

- Multi-disciplinary research require leveraging techniques from multiple disciplines. For a multi-disciplinary project requiring CI and domain expertise, the proposal must include at least one funded or unfunded collaborator with expertise relevant to the targeted research discipline.
- Extreme-scale CI research includes exploration of pathways to leading-edge, leadership-scale research CI, from architecture to algorithms to models.
- CI research driven by science and engineering research explores scalable models, algorithms, techniques and tools needed for fundamentally new scientific and engineering advances.
- End-to-end CI solutions include integrated systems in novel ways to support complete research workflows.
- And finally, deployable CI research explores seamless pathways for integration into robust CI systems or operational research applications.

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All OAC-Core projects must address new CI frontiers for discovery and lead to major innovations – developmental aspects can be secondary tasks but may not be primary.
The OAC core research areas include architecture and middleware for extreme-scale systems, scalable algorithms and applications, and the advanced CI ecosystem. Examples of research topics supported by OAC include (but are not limited to) the following:
- Research in architecture for extreme-scale systems may include design, benchmarking, and analysis of extreme-scale systems for performance, programmability, and usability; storage, networks, and I/O; data centers and extreme-scale networked systems; and next-generation architectures;
- Research in middleware may include resource management, monitoring, fault tolerance, and cybersecurity;
- Research in scalable algorithms and applications shall be driven by science and engineering applications and may include numerical and high-performance scientific computing methods; data, software and visualization; and modeling and simulation; and
- Research in the advanced CI ecosystem may include research in programming languages, libraries, and environments; performance tuning and interoperability tools; shared cyberinfrastructures, e.g., platforms and gateways; and sociotechnical aspects relevant to the advanced CI ecosystem, e.g., best practices, standards, policies, and virtual organizations.

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OAC proposers are strongly encouraged to include a validation plan or a transition-to-practice plan for their proposed research in the Project Description.
- A validation plan may include setup, mechanisms, metrics, and exploration of leading-edge production systems (or equivalent simulated, emulated, or experimental systems).
- Transition-to-practice entails planning for incorporation of research results into production research CI.

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- OAC will accept only Small proposals this year under this solicitation. The maximum award is $500K for up to 3 years. The submission window is Nov 1-15 of this year.
    - Estimated number of awards is 10-15.
    - Response to this solicitation will inform future changes.

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    - OAC is part of CISE's coordinated solicitations, along with core program solicitations for the CISE Divisions of Computing and Communication Foundations (CCF), Computer and Network Systems (CNS) and Information and Intelligent Systems (IIS). This basically means that you may participate as PI, co-PI or Senior Personnel in no more than two proposals across all size classes submitted in response to the coordinated solicitations.
    - For overlapping research agendas, PIs may choose the OAC core program as the primary program and another program as a secondary program on the cover page.
    - Proposal titles should begin with "OAC Core" followed by a colon, then the project class ("Small") followed by a colon, then the title of your project.

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    - Potential Principal investigators (PIs) are *strongly encouraged* to contact an OAC cognizant program director listed in this solicitation with a 1-page project summary for further guidance. Please do that at least a month in advance to the deadline. Include project overview, intellectual merit and broader impact, and a few keywords. There are two other cognizant program directors, Vipin Chaudhary and Stefan Robila.

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Here are some frequently asked questions, while you get ready for your own questions:
Q1. Can you explain the term translational research for OAC?
    • Translational research is often a term employed in medicine to mean research needed in the space from lab or bench to the bedside.
    • Analogously, OAC is interested in CI research that builds on basic or foundational research results and is in the research space spanning design to practice stages. Note that NSF does fund NOT research around medicine.

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Q2. I have a project that I believe would align with OAC and another CISE program. How will the proposal be handled?
    • You can identify a primary and a secondary program on your cover page; We may co-review and/or co-fund.

- If co-paneled by two programs, it is not a double jeopardy – if it reviews well in either, it has a chance of funding.

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Q3. Explain the limit of 2 on number of proposals per PI or Co-PI or senior personnel.
- In any contiguous September through November period, an individual may participate as PI, co-PI or Senior Personnel in no more than two proposals across all size classes submitted in response to the coordinated solicitations (where coordinated solicitations are defined to include core program solicitations in CCF, CNS, IIS and OAC

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- We also want to make sure that you are aware of OAC monthly webinar series which takes place on 3rd Thursday @ 2PM ET, and are receiving OAC newsletters. If not, join OAC mailing list by sending an email to: oac-announce@listserv.nsf.gov
- There are also other opportunities to get involved with this solicitation and other programs by letting us know of your willingness to review proposals and serve on panels. You may also visit NSF and get to know your program directors, participate in NSF conferences and visioning activities. Also, consider joining NSF as program or division director, or science advisor.

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This completes our slide presentation. Please note that these slides and the transcript for this webcast as well as an audio recording will be available at the webinar website.
Now, we welcome your questions. You may also email to sprasad@nsf.gov.
Thank you!