NATIONAL SCIENCE FOUNDATION
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NSF 21-104

Frequently Asked Questions (FAQs) for for Resilient & Intelligent NextG Systems (RINGS) (NSF 21-581)

DUE DATE:

Note to proposers: the deadline for submitting proposals has been changed to August 12, 2021.

ELIGIBILITY:

PARTNERS:

13. What kind of support would the partners provide? Does that include data sets, infrastructure, and evaluation testbeds?
14. Should principal investigators (PIs) contact the partner companies and agencies before writing the proposal?
15. I have an existing collaboration with a partner company/agency. Should I mention this in the proposal? Does it affect the chances of the proposal getting funded?
16. How do partners get involved in the funded projects?
17. Will the proposals shared with the companies be bound by a Non-Disclosure Agreement (NDA)?
18. What happens to a highly-ranked proposal that receives no specific interest from the partners?
19. Does the proposal need to be linked/applied to partners?
20. Does the fact that the US Department of Defense (DoD) and industry are involved in the program make the review process different?
21. Will the requirement to grant IP rights to industry partners prevent any open-source release of software or hardware?
22. Should we write the proposal with specific partners in mind? Different companies could offer different capabilities.
23. Is it possible to get measurement data from partners as part of a project?
24. Is there in-kind funding from partners in addition to cash funding?
25. Will awardees be able to collaborate with researchers at partnering companies?
26. Could solutions for interesting use cases (open-source code) potentially be fielded/evaluated on partner testbeds?
27. Can a proposal mention leveraging a partner's capabilities/resources (such as manufacturing, lab resources, data sets, etc.)?

RESEARCH, EXPERIMENTATION AND OUTCOMES:

28. Are quantum computing and communication of interest for this solicitation?
29. Is the use of NSF-funded experimentation testbeds/platforms mandatory? If we would like to use one or more of the Platforms for Advanced Wireless Research (PAWR), should we include any fees for using the platform in the solicitation?
30. Should PAWR platforms be contacted ahead before proposal submission? Would it be possible to obtain letters of collaboration from the platforms?

31. Is there a particular priority between the focus areas of communication, computation, sensing, and networking?
32. Do proposals need to pursue innovation in core wireless technologies and/or more broadly in the systems aspects?
33. Do you expect that RINGS research activities will impact standards development?
34. Can funds be used to support participation in community working groups like the NextG Alliance, Open WiFi, etc.?
35. What are the expected outcomes of this program?
36. Does this program place more emphasis on theory or on practice?
37. Will each proposal be reviewed by a joint panel from the Computer and Information Science and Engineering (CISE) and Engineering (ENG) directorates?
38. Do you expect the program to have additional calls for the following years?
39. What key challenges do you expect to be addressed?
40. Can you please elaborate on the interplay between research Group A (Resilient Network Systems) and Group B (Enabling Technologies)?
41. Can a proposal cover only two research vectors?
42. What technology readiness level (TRL) is expected of proposed projects? Do you anticipate a minimum TRL of any prototype that might be the outcome of a RINGS project?
43. How open are NSF and the partners to clean-slate approaches that may not be compatible with legacy systems?
44. Does hardware innovation fit for applying to this program?
45. How broad can resiliency be interpreted?
46. Does this program support emerging engineering applications that require the development of new communications technologies?

ELIGIBILITY:

1. **Do you allow collaborative proposals?**

   Yes, however, separately submitted collaborative proposals are not allowed. Support for

non-lead collaborating institutions should be requested as subawards.

2. **For a multi-institution effort, will the grant fund only one of the participating institutions?**

   Additional institutions can be funded via subawards.

3. **Can non-academic organizations submit proposals as the lead organization?**

   Only Institutions of Higher Education (IHE) are eligible to submit proposals.

4. **Can we include industrial partners, federal labs or FFRDCs in the budget as subawardees?**

   As specified in the solicitation, subawardees are subject to the same eligibility restrictions as those eligible to submit proposals as the lead organization. Therefore, only IHEs can be included in the budget as subawardees.

5. **May I include a letter of support or collaboration in the proposal?**

   Letters of support are not allowed, but proposers may include one or more letters of collaboration. Note that letters of collaboration should follow the guidelines in Chapter II.C.2.j of the *NSF Proposal & Award Policies & Procedures Guide (PAPPG)*. Letters of collaboration from any participating companies are not allowed, as noted in the solicitation.

6. **Does NSF have mechanisms to facilitate team formation?**

   NSF and its partners hosted a webinar on May 27, 2021. The recording of that webinar is available at https://nsf.zoomgov.com/rec/play/06vUr0jPCH20y9PjvNbnhwMzYX6HUjQVaZKjZf0FaJ2kPkvh3mdjK3t-Fda86BhAx0hmUnUL21OcoeSt.LmCxyNNKJXdso3gw?continueMode=true. In addition, the NSF-funded Networking Technology and Systems (NeTS) Virtual Organization has hosted a community workshop to facilitate team formation (see https://www.nets-vo.org/ for more details). No additional team-building mechanisms or events are anticipated prior to the submission deadline for this program.

7. **I am a faculty member at a foreign institution. Am I eligible to participate?**

   Yes, you are eligible to participate. However, since RINGS is an NSF program, only US IHEs are eligible to submit proposals, and the program can only provide funding for US institutions and US-based researchers. An international partner may be an unfunded collaborator or would need to have to have their own source of funding.

8. **Given the funding amount, is there a preference on the team size?**

The team size and requested funding level should be commensurate with the scope of the proposed activities specified in a given proposal.

9. **Can I list my collaborators from other institutions as co-PIs?**

   PI eligibility is determined by proposing institutions. Please contact your institution's sponsored research office for guidance.

10. **Does this solicitation involve co-funding from the Established Program to Stimulate Competitive Research (EPSCoR)?**

    Projects involving institutions from EPSCoR-eligible states could be candidates for EPSCoR co-funding.

11. **How many PIs are expected per proposal?**

    The solicitation states that each proposal must include a PI and one or more co-PIs forming a team with complementary expertise.

PARTNERS:

12. **Will the industry partners aggressively seek licenses to patents? Can we improve our odds of funding if we can produce intellectual property (IP)?**

    The award terms and conditions will state that awardees shall grant to the sponsoring entities (the Federal Government and all the industry partners named in this solicitation) a non-exclusive, worldwide, paid-up, non-transferable, royalty-free license to all intellectual property rights in any inventions or works of authorship resulting from research conducted under the Program. For more details, please see the solicitation.

    Generating IP is not one of the review criteria for this solicitation and will not be factored into the funding decision.

13. **What kind of support would the partners provide? Does that include data sets, infrastructure, and evaluation testbeds?**

    Support provided by the partners can vary depending on the individual partner. Proposers are welcome to contact individual partner companies and agencies to determine what support options are available from each partner. In addition, proposers are encouraged to watch the webinar linked in #6 above.

14. **Should principal investigators (PIs) contact the partner companies and agencies before writing the proposal?**

    PIs may reach out to the partner companies and agencies to engage them in

exploratory conversations to validate their details or approaches, but this is not required. Please note that the PIs are not allowed to list anyone from a partner company or agency as a collaborator. Also, letters of collaboration from partner companies/agencies are not allowed.

15. **I have an existing collaboration with a partner company/agency. Should I mention this in the proposal? Does it affect the chances of the proposal getting funded?**

    If you have an ongoing collaboration with one or more of the RINGS partners, please include this in the "Collaborators and Other Affiliations Information" section of the proposal This information is used during the merit review process to manage reviewer selection. You can mention that you have experience working with the partners on certain topics but avoid tying the success of ongoing work with a partner to the proposed activities in the project description. Ongoing collaborations with partners do not impact the chances of a proposal getting funded under this program.

16. **How do partners get involved in the funded projects?**

    The partners will form a working group. This working group will coordinate with NSF or an NSF-funded coordination entity that will help in organizing PI meetings, community webinars, and program information sites; in facilitating collaboration and teaming; and in providing student internships. The funded research teams are expected to engage with the working group through this mechanism.

17. **Will the proposals shared with the companies be bound by a Non-Disclosure Agreement (NDA)?**

    After completion of the merit review process, NSF may share a subset of proposals with the partners for additional input. The partners will be bound by NSF's standard confidentiality policy. In addition, please refer to the solicitation about placement of proprietary or privileged information; if appropriately provided as a Single Copy Document, such information will not be shared beyond NSF.

18. **What happens to a highly-ranked proposal that receives no specific interest from the partners?**

    While NSF will take into consideration the input of all industry funding partners prior to making final funding decisions, NSF will retain final authority in making all award decisions.

19. **Does the proposal need to be linked/applied to partners?**

    The proposal should not be linked to the partners. Note that letters of collaboration from partners are not allowed.

20. **Does the fact that the US Department of Defense (DoD) and industry are involved in the program make the review process different?**
    The RINGS program will follow the standard NSF merit review process. However, the partners will be consulted in the later stages of the process, as outlined in the solicitation.

21. **Will the requirement to grant IP rights to industry partners prevent any open-source release of software or hardware?**
    The IP conditions specified in the solicitation do not prevent release of open-source software or hardware.

22. **Should we write the proposal with specific partners in mind? Different companies could offer different capabilities.**
    The proposals should respond to the NextG research vectors outlined in the solicitation. There is neither an expectation to target the proposal for a specific company, nor does writing a proposal in such a way increase a proposal's chance of success.

23. **Is it possible to get measurement data from partners as part of a project?**Partners might be able to help with data sets, subject to privacy and confidentiality safeguards. There also exists a significant body of data already available, e.g., through the National Institute of Standards and Technology (NIST) NextG Channel Model Alliance.

24. **Is there in-kind funding from partners in addition to cash funding?**
    A partner may be willing to provide in-kind resources to the awarded projects during the award phase, but such support is entirely at the discretion of the partner and is not part of the NSF award.

25. **Will awardees be able to collaborate with researchers at partnering companies?**
    There will be opportunities for collaboration and internships at partnering companies. The industry working group, which will be set up, will help to facilitate collaborations post-award. These types of collaboration activities will be at the discretion of the partnering companies and awardees.

26. **Could solutions for interesting use cases (open-source code) potentially be fielded/evaluated on partner testbeds?**
    There will be many opportunities for interaction with the partners, including using partners' testing facilities. Again, such interaction is at the discretion of the partnering companies and awardees.

27. **Can a proposal mention leveraging a partner's capabilities/resources (such as manufacturing, lab resources, data sets, etc.)?**

    Yes, the proposal can mention leveraging a partner's resources subject to discussion and agreement with the partner.

RESEARCH, EXPERIMENTATION AND OUTCOMES:

28. **Are quantum computing and communication of interest for this solicitation?**

    Yes, to the extent that they can demonstrate a fit to resilient and intelligent NextG systems, as outlined in the solicitation. Note that the topics listed in the solicitation are exemplars, not exhaustive.

29. **Is the use of NSF-funded experimentation testbeds/platforms mandatory? If we would like to use one or more of the Platforms for Advanced Wireless Research (PAWR), should we include any fees for using the platform in the solicitation?**

    The use of NSF-funded platforms is encouraged, but not mandatory. PIs can use testing platforms of their choice, depending on the best fit(s) for their proposed activities.

    The current PAWR platforms (COSMOS, POWDER, AERPAW and ARA) will be available for free for RINGS researchers (and other academic users) as long as they are funded by NSF. Beyond that period, NSF will work with the platforms and PIs supported by NSF grants to determine appropriate arrangements to enable continued use of the platforms. Given the above, academic users need not explicitly request any fees for using the PAWR platforms at this time.

30. **Should PAWR platforms be contacted ahead before proposal submission? Would it be possible to obtain letters of collaboration from the platforms?**

    PIs are encouraged to contact the PAWR platforms to discuss the feasibility of their proposed experiments and the capabilities offered by the platforms. The platforms will not be able to provide letters of collaboration since their mission is to serve the entire community.

31. **Is there a particular priority between the focus areas of communication, computation, sensing, and networking?**

    No, there is no priority between these areas. A successful proposal in response to the RINGS solicitation would address the resilient networked systems aspect in addition to an enabling technology; there is no implicit preference on what that enabling technology might be. NSF is committed to reviewing all proposals that are in scope.

32. **Do proposals need to pursue innovation in core wireless technologies and/or more broadly in the systems aspects?**

    We solicit proposals pursuing not only in core wireless innovation, but also the larger systems aspects and system support for the broader interpretation of NextG networked systems, including the systems, cloud, and core networks.

33. **Do you expect that RINGS research activities will impact standards development?**

    We expect some of the research activities may lead to refinement in current standards development processes. For example, results from some projects that are shared with all partners may inform these processes. However, there is no expectation that research outcomes of each funded project will evolve into standards.

34. **Can funds be used to support participation in community working groups like the NextG Alliance, Open WiFi, etc.?**

    RINGS funding can be used for participation in community working groups, provided that there is a strong link to the proposed research including broader-impact activities.

35. **What are the expected outcomes of this program?**

    We expect that this program will advance the field of NextG broadband systems, broadly defined. The program will create new knowledge that will impact the design, development, standardization, and deployment of future NextG networked systems.

36. **Does this program place more emphasis on theory or on practice?**

    There is no specific emphasis on either theory or practice - all proposals that advance the goals of the program are welcome. Proposals focusing on fundamental performance limits or generic techniques that have broader applications than NextG might have a better fit in the "core" programs of CISE and ENG, as well as in other NSF funding opportunities.

37. **Will each proposal be reviewed by a joint panel from the Computer and Information Science and Engineering (CISE) and Engineering (ENG) directorates?**

    The panels will be formed in a way that ensures sufficient expertise to evaluate the submitted proposals. The composition of any panel will depend on several factors, including the number of proposals submitted and topic areas of those proposals. We expect that a significant number of proposals will be evaluated by a panel spanning CISE and ENG.

38. **Do you expect the program to have additional calls for the following years?**

At present, this is the only active solicitation for this program. NSF continually reassesses all programs, so the community is encouraged to stay tuned about future funding NextG-related opportunities.

39. **What key challenges do you expect to be addressed?**

    Please refer to the solicitation for a description of the challenges that NSF expects proposers to address.

40. **Can you please elaborate on the interplay between research Group A (Resilient Network Systems) and Group B (Enabling Technologies)?**

    The solicitation requires every proposal to address at least one of the research vectors in each of Group A and Group B. Proposals must clearly describe the synergy between the research vectors chosen in Group A and Group B, i.e., how the proposed technology advances in Group B contribute to commensurate advances in Group A attributes - this is an essential requirement of the program.

41. **Can a proposal cover only two research vectors?**

    Yes, but in that specific case, one of the research vectors needs to be from group A and the other from group B.

42. **What technology readiness level (TRL) is expected of proposed projects? Do you anticipate a minimum TRL of any prototype that might be the outcome of a RINGS project?**

    The solicitation does not specify any TRL requirements for project outcomes.

43. **How open are NSF and the partners to clean-slate approaches that may not be compatible with legacy systems?**

    The solicitation is open to clean-slate approaches. However, the constraints of practical systems and the potential for adoption should be considered as well.

44. **Does hardware innovation fit for applying to this program?**

    Yes, provided that it can lead to demonstrable impact on NextG network systems.

45. **How broad can resiliency be interpreted?**

    Proposers should read the entire text of Section II.1 in the Program Description section of the solicitation to understand how resiliency is defined.

46. **Does this program support emerging engineering applications that require the development of new communications technologies?**

The solicitation focuses on technologies for NextG networked systems, including their support for emerging applications.