



NATIONAL SCIENCE FOUNDATION
4201 WILSON BOULEVARD
ARLINGTON, VIRGINIA 22230

NSF 17-035

Dear Colleague Letter: IUCRC Clusters for Grand Challenges, a Collaborative Opportunity for Research to Address Grand Challenges

November 21, 2016

Dear Colleagues:

The National Science Foundation (NSF) invites supplemental requests to establish collaborative research clusters between NSF Industry/University Cooperative Research Centers (IUCRCs). To this end, NSF is interested in supporting two types of activities: Planning Conferences and Collaborative Research Cluster Partnerships.

The goal is to enable active IUCRCs to leverage each other's expertise, research results, resources and existing networks and partnerships to establish a cross-center cluster that will tackle a cross-disciplinary, cross-sector portfolio of research projects that hold the potential to catalyze technology breakthroughs and advance national priorities. As appropriate, the cluster of existing IUCRCs may team up with Engineering Research Centers (ERCs), Science and Technology Centers (STCs), and/or additional academic and industrial collaborators to advance these goals. The active participation of industry in the design and implementation of cluster research efforts is expected. Projects proposed under this mechanism must have industrial relevance as evidenced by the written approval of all of the Industry Advisory Boards (IABs) of the involved IUCRCs. Research projects could be accelerated or scope enhanced with industry funds directed to the cluster. Additional industry and other sponsors external to IABs can participate in cluster research activities.

IUCRCs planning to respond to this DCL may request funds to organize a preparatory conference with all stakeholders to identify research priorities and develop the portfolio of research projects prior to submission of a request for supplemental funding for a collaborative research cluster. A limited amount of funds are available for these conferences. Substantial industry presence and participation in the conference is critical.

In light of the recent call by the President to identify the most pressing challenges and transformative opportunities to improve the technologies, processes and products across multiple manufacturing industries (see "Ensuring American Leadership in Advanced Manufacturing" in the President's Council of Advisors on Science and Technology report, *Accelerating U.S. Advanced Manufacturing, Advanced Manufacturing Partnership 2.0*, available at http://www.whitehouse.gov/sites/default/files/microsites/ostp/PCAST/amp20_report_final.pdf and <http://www.whitehouse.gov/the-press-office/2014/10/27/fact-sheet-president-obama-announces-new-actions-further-strengthen-us-m>), potential precompetitive research topics that are of particular interest include but are not limited to:

- Advanced sensing, controls, and platforms for manufacturing;

- Visualization, informatics & digital manufacturing; and
- Advanced materials manufacturing.

Although Advanced Manufacturing has been highlighted, IUCRC clusters addressing any precompetitive research areas identified among the science and technology priorities for the nation are welcome and will be fully considered.

Supplements for Planning Conferences

Eligibility and Funding Information

- **Cluster Eligibility:** This opportunity is open to all existing IUCRCs that continue to meet the criteria as outlined in the current IUCRC program solicitation, and for which all Sites belonging to the Centers have:
 - Maintained sufficient industrial memberships to meet program requirements for the past two years with in-kind limited to one full membership per site; and
 - Disseminated current and accurate information to the public about their center via the NSF website. NSF directory listings must be current and accurate by the supplement deadline date. Updates can be sent to the IUCRC Program Director if needed.
- **Maximum Supplement Amount and Budget Information:** Requests should not exceed \$35,000 per planned cluster inclusive of indirect costs (IDC).
- **Duration:** Supplemental funding may be requested for one year, concurrent with the award.
- **Limit on the Number of Supplement Funding Requests:** An IUCRC cannot participate in more than one planning conference supplemental funding request.
- **Estimated Number of Supplements:** Four or more conference awards pending the availability of funds.

Preparation and Submission Instructions

Potential proposers should contact an IUCRC Program Director prior to submission of a cluster request for supplemental funding.

The cluster MUST designate a participating IUCRC as the lead organization in the cluster.

An IUCRC cluster that wishes to request funds to organize a preparatory conference may do so by submitting a supplement request via FastLane (contents of the supplement should follow the guidelines provided for conference proposals, which may be found in the [NSF Proposal & Award Policies & Procedures Guide](#)(PAPPG)).

The summary of proposed work should also include a brief description of the grand challenge, of the proposed IUCRC cluster and of all its stakeholders, of its interdisciplinary and potential impact, and clearly demonstrate how the organization and conduct of the meeting will help identify the research priorities and develop the portfolio of research projects for the cluster. Proposers may refer to the instructions below for Collaborative Research Cluster Partnerships for guidance. Requests for supplemental funding must demonstrate substantial industry presence and participation in the conference.

Submission Deadlines:

Conference requests can be submitted any time prior to the supplement for collaborative clusters due date (first Wednesday in April, annually, by 5:00 PM, submitter's local time), but are best submitted by

early December to allow time to process the request and hold the conference prior to said deadline (see below for instructions for submitting Collaborative Research Cluster Partnerships supplements).

Review Information

All supplemental funding requests for conferences will be internally reviewed by cognizant Program Officers.

Supplements for Collaborative Research Cluster Partnerships:

Eligibility and Funding Information

- **Maximum Supplement Amount and Budget Information:**
 - Up to \$750,000 per year for a cluster with up to \$150,000 per year per IUCRC (inclusive of IDC). Each cluster must consist of two or more existing IUCRCs.
 - Any non-IUCRC research partner(s) either will be budgeted as a subaward above and beyond the \$150,000 per year per IUCRC or will bring its own funding to the partnership.
 - In the case of a partnership with a Federally-funded National Laboratory or Federally Funded Research and Development Center, that lab, center or agency must co-fund its portion of the effort.
 - A minimum of one co-PI or co-advisor from an industry partner is required; however, NSF funds cannot be used by the industrial research partners. Letters from industrial partners are required to confirm the participation of a co-PI or co-advisor. If applicable, the letter must also state the degree of industry participation and detail of any support the industry partner is providing to the academic partners. The industry partners must include existing Industry Advisory Board (IAB) members, as well as any participating non-IAB member companies and trade organizations or associations specifically recruited by the cluster.
- **Duration:** Supplemental funding may be requested for up to two years, concurrent with the award.
- **Limit on the Number of Supplement Funding Requests:** An IUCRC cannot participate in more than one cluster supplemental funding request.
- **Estimated Number of Supplements:** Two or more supplements to support collaborative research clusters, pending the availability of funds.

Preparation and Submission Instructions

Potential proposers should contact an IUCRC Program Director prior to submission of a cluster request for supplemental funding.

The cluster **MUST** designate a participating IUCRC as the lead organization in the cluster. The designation of lead IUCRC must be identified along with the description of the cluster organizational structure in a memorandum of understanding (MOU) among all parties involved in cluster research activities.

The supplemental funding request must be submitted by the Center Director of the lead IUCRC (complete guidelines may be found In the [PAPPG](#)).

A request for supplemental support must be submitted electronically via FastLane and must include:

A. A summary of the proposed work, which should address the following (not to exceed 15 pages):

1. **Cluster:** The request for supplemental funding from the lead IUCRC must clearly describe the role of each IUCRC forming the cluster and the skill set brought by that IUCRC to the cluster. Additionally, the request must describe how all other research partners were selected to add complementary skill sets to the proposed cluster so that proposed research projects, which neither party could address as well or rapidly alone, will accelerate solutions in response to national priorities and will transfer to industry for further development and commercialization.
2. **Industry Participation:** It is expected that the research and education projects proposed by the cluster are jointly designed and implemented by IUCRCs and industry engineers and scientists. Research projects must demonstrate measurable industry collaboration and involvement to accelerate research outcomes.
3. **Interdisciplinarity:** Requests for supplemental funding must address questions at the interfaces of the IUCRCs involved in the cluster, as opposed to incorporating individual center contributions additively. Requests for supplemental funding must identify and justify how the project spans across the IUCRCs forming the cluster, for example by:
 - Combining concepts/methods from multiple fields in new, innovative ways;
 - Proposing problem-driven research that requires a comprehensive and integrative approach;
 - Raising new fundamental questions or interesting new directions for research at the interface of the centers; or
 - Making major changes in understanding by integrating existing concepts or methods in new ways to address industry-inspired complex scientific and engineering challenges.
4. **Potential Impact:** Requests for supplemental funding should include clear statements as to why the proposed research projects have the potential to catalyze innovation to promote sustainable economic growth, enhance U.S. global competitiveness, and prepare a strong workforce with industry-relevant skill sets.
 - **Expected Outcomes:** The intended outcomes (deliverables) from the cluster and its collaborative project(s) must be clearly indicated. The short-term and long-term impact on the advancement of the specified national priority must be described. The expected outcomes should include feasibility studies, proof of concept, prototypes, models, decision support tools, demonstration and case studies, or scalable and sustainable solutions. Proposers are encouraged to provide evidence that the proposed research and innovation has a path to commercialization and will attract investments.

B. A budget and budget justification

A single supplemental funding request should be requested by the lead IUCRC with subawards to be administered by the lead IUCRC for all other IUCRCs forming the cluster (up to \$150,000 per year per IUCRC) and all non-IUCRC research partner(s) requesting funding. Care must be taken to ensure that the cluster supplemental funding request does not exceed \$750,000 per year.

C. “Other Supplementary Documents”

- **Project Management:** Proposed cluster research projects must be well planned with professional project management principles applied to help assure project success. As such, in order to be considered responsive to this DCL, the supplemental funding request must use the Project Proposal Form in Appendix B, similar to the Project Proposal Form that the center should be using in its IAB meetings (Gray and Walters, *Managing the Industry/University Cooperative Research Center: A Guide for Directors and Other Stakeholders*, p. 181, 1998), to detail each cluster research project. All fields of this form must be completed.
- **Sponsor Research Office (SRO) membership certifications for each IUCRC and for the previous three years** provided on the form shown in Appendix A, one form per IUCRC.

A memorandum of understanding (MOU) is a binding agreement among all parties involved in cluster research activities with appropriate signatures. The MOU must address the following:

- The designation of lead IUCRC along with the description of the cluster organizational structure and management; and
- Intellectual property (IP) strategies and practices, including patent disclosures and filings, with all academic and industry partners. NSF is not responsible for the type of agreement reached among grantees and all other parties involved in the cluster. Documentation outlining cluster IP agreements should be submitted with the MOU. A cooperative research agreement can follow the example from the IUCRC membership agreement or from the Small Business Innovation Research/ Small Business Technology Transfer [SBIR/STTR] program, and the signed agreement must be submitted before NSF funding will be released.

For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail fastlane@nsf.gov. The FastLane Help Desk answers general technical questions related to the use of the FastLane system. When contacting FastLane, inform the technician that you are required to apply for this opportunity as a supplement.

Submission Deadlines:

The first Wednesday in April, annually, by 5:00 PM, submitter's local time.

Review Information

All supplemental funding requests for collaborative research clusters will be competitively reviewed by Ad hoc Review and/or Panel Review.

Contact Personnel

Please contact one of the following program officials if you have questions about this IUCRC supplemental funding opportunity for a Planning Conference or Collaborative Research Cluster or are interested in submitting a request:

Raffaella Montelli, Lead Program Director, ENG/IIP, Telephone (703)-292-2421, email: rmontell@nsf.gov

Thyaga Nandagopal, Program Director, CISE/CNS, Telephone (703) 292-4550, email: tnandago@nsf.gov

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[Appendix A](#) - SRO membership certification form

[Appendix B](#) - One page overall project proposal form

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