



National Science Foundation
4201 Wilson Boulevard
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NSF 10-050

Dear Colleague Letter: Scientific Software Innovation Institutes (S2I2) – Call for Exploratory Workshop Proposals

Software is an integral part of the computation paradigm for supporting innovation and discovery in science and engineering, and is a primary modality for realizing *NSF's Cyberinfrastructure Framework for 21st Century Science and Engineering (CF21)* ¹ vision. In order to nurture, accelerate and sustain this critical mode of scientific progress, NSF has established the crosscutting Software Infrastructure for Sustained Innovation (SI2) program ², a long-term investment with the overarching goal of transforming innovations in research and education into sustained software resources that are an integral part of the cyberinfrastructure. Scientific Software Innovation Institutes (S2I2) will be the anchors of the SI2 program and will focus on the establishment of long-term community-wide hubs of sustained software excellence.

The objective of this Dear Colleague Letter is to invite proposals from the community, in response to PD 10-7684, for organizing workshops that will explore appropriate (1) foci and target communities; (2) attributes, models, structures, expertise and processes, (3) linkages with community, national and international cyberinfrastructure and (4) desired transformative impacts for S2I2. It is expected that these workshops will result in reports outlining requirements and recommendations that will (1) inform NSF in its writing of the solicitation, (2) inform the community as it responds to the solicitation in FY11, and (3) provide a forum of discussions about the SI2 vision, and S2I2 models and structures within and across communities.

The SI2 program envisions that the Scientific Software Innovation Institutes would provide the expertise, processes, resources and implementation mechanism to transform computational science and engineering innovations and community software into a robust and sustained software infrastructure for enabling science and engineering. They would provide pathways for community involvement, enable software elements developed within the community to be transitioned to conform to community software frameworks standards, and make them accessible, usable and extendible by the community. Furthermore, education, and workforce and career development would be an integral part of an S2I2. S2I2 awards are expected bring together multidisciplinary teams of domain scientists and engineers, computer scientists and software engineers, technologists and educators.

Understanding community requirements as well as the appropriate architectures and processes are essential to the success of an S2I2. Recognizing this, NSF is inviting proposals from the community for organizing workshops that are focused on exploring discipline-specific as well as crosscutting foci for S2I2, including appropriate models, structures and processes. Examples of issues that should be explored by the workshops include:

1. What communities have significant challenges that can benefit, in terms of scientific innovation/discovery as well as productivity, from an S2I2?
2. What are the key attributes of an S2I2? What are appropriate organizational, personnel and management structures, as well as operational processes?
3. What expertise and capabilities should an S2I2 provide and how should it interface and interact with science communities? What education and outreach functionalities are meaningful in an S2I2?

4. What are the critical linkages between an S2I2 and other components of a community cyberinfrastructure (i.e., software tools, databases, instruments, etc.)? What is the unique role of an S2I2 in the broader cyberinfrastructure ecosystem (e.g., TeraGrid/XD, DataNet, MREFC, etc.)?
5. What are meaningful metrics, evaluation mechanisms and governance structures for an S2I2? What are appropriate approaches to sustainability of the S2I2?
6. How would an S2I2 impact the science and engineering community and impacts its practices, capabilities and productivity?

Workshop proposals must follow instructions outlined in the Grant Proposal Guide (GPG) ³ and must be submitted via FastLane in response to the Strategic Technologies for CyberInfrastructure (STCI) PD 10-7684. It is expected that the workshops will be held during the summer, preferably in the Washington DC area, and that workshop reports will be available by September 2010. NSF expects to fund about 4-8 workshops at \$50K each.

Questions related to the SI2 initiative and the S2I2 exploratory workshop process should be directed to the SI2 working group (see <http://www.nsf.gov/si2/>) by sending email to si2wg@nsf.gov.

José Muñoz
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¹ <http://www.nsf.gov/pubs/2010/nsf10015/nsf10015.jsp>

² <http://www.nsf.gov/si2/>

³ http://www.nsf.gov/pubs/policydocs/pappguide/nsf10_1/gpg_2.jsp#IID8