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The goal of the SDCI/STCI workshop is to bring together the Principle Investigators of the leading software cyberinfrastructure projects and discuss issues relevant to the community as we move into the future. It is critical that the funds used by NSF for middleware development result in software being used effectively by scientists and engineers so that researchers in a number of domains can make advances in their respective fields without being burdened by the interactions with the cyberinfrastructure.

To achieve its goals, the workshop will focus on three main themes:

- Understanding the needs of today's Observatories and large-scale projects
- Sharing experiences in building quality software and services
- Fostering collaboration and providing incentives for collaboration and cyberinfrastructure development as a career
- Sustaining the software capabilities in the long term

Understanding the needs of today's Observatories and large-scale projects There are many large-scale cyberinfrastructure based project today, some already established such as the Southern California Earthquake Center [1], Earth Systems Grid [2], Network for Earthquake Engineering Simulation (NEES) [3], and some that are just beginning to build cyberinfrastructure and services for scientific communities, such as the iPlant Collaborative [4], the Ocean Observatory Initiative [5], and the new DataNet projects [6]. These communities are using the existing national cyberinfrastructure and are developing software solutions that rely on the existing middleware and its capabilities. As a middleware provider community, we need to understand the needs of the science and engineering communities so that our work is relevant and enhances the productivity of their community members. Members of the above mentioned projects and other current and potential users of the national cyberinfrastructure will be invited to participate in the workshop.

Sharing experiences in building quality software and services A number of SDCI and STCI projects have been active for over two years. As the new wave of STCI is funding new software development efforts, it is necessary to understand how to build quality software that is tested, supported, and maintained. Some key capabilities needed to provide quality software is the ability to build and test it on a number of different execution platforms that are found today on the national cyberinfrastructure. Such capabilities are provided today by the NMI Build and Test infrastructure [7] which is used by a number of software projects. Additional testing capabilities, including wide-area network and bare metal hardware control will be provided by the newly funded FutureGrid project [8]. Having these types of testbeds can help in code hardening and code portability among others. Some cyberinfrastructure is based on providing services to the community, so we can also learn lessons from the current NMI testing environment and from service providers such as nanoHUB [9] and other science gateways [10]. Leaders of the testing environments and science gateways will be invited to participate in the workshop.

Fostering collaboration and providing incentives for collaboration and cyberinfrastructure development as a career. With the number of projects currently funded by OCI, it is important to try to leverage the various efforts and identify potential collaborations. This will also include a discussion on collaborating with domain scientists and how to best engage users from various communities. Additional topics of discussion will include the need to support cyberinfrastructure within the academic community and how to develop a support system for cyberinfrastructure developers.

Sustaining the software capabilities long term In 2010 a number of SDCI and STCI projects will potentially come to an end. At the same time, a number of science and engineering projects are relying on the existing software. For example, over the period of six years, the OOI cyberinfrastructure component of OOI is building infrastructure that needs to support an ocean science observatory well into the future. Thus, current middleware projects are faced with the need to sustain their codes in a longer term. Additionally, new projects need to also examine sustainability issues so that they are prepared to support their communities over time. The proposed workshop will have discussions on the topic and will include members of the community and representatives from NSF and possibly DOE.

References

[1] "Southern California Earthquake Center (SCEC)," 2006. http://www.scec.org/

[2] "Earth System Grid." vol. 2009. http://www.earthsystemgrid.org/

[3] "Network for Earthquake Engineering Simulation." www.nees.org/ (https://%3ca%20href=/)"

[4] "iPlant Collaborative." http://www.iplantcollaborative.org/

[5] "Ocean Observatory Initiative." http://www.oceanleadership.org/programs-and-partnerships/ocean-observing/ooi/

[6] "DataOne." https://datanet.ecoinformatics.org/

[7] "NMI Build and Test Lab." http://nmi.cs.wisc.edu/

[8] "FutureGrid." http://futuregrid.org/

[9] "Nanohub." http://nanohub.org/

[10] "TeraGrid Science Gateways." http://www.teragrid.org/gateways/

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