

Workshop: Building Community Codes for Effective Scientific Research on HPC Platforms

Abstract

Decades of advancements in mathematical models, numerical algorithms and computing capabilities have brought many complex non-linear problems that occur in science and engineering closer to understanding through simulations. The increased resolution and modeling fidelity comes with an increase in the complexity of developing and managing advanced simulations software. A key factor in effective utilization of HPC resources for simulation is the availability of sophisticated, scalable, and robust community codes. These codes can be defined as simulation tools developed to cover the needs of a wide community of researchers, where various individuals and groups contribute to enhancing the range of the code's applicability. Because of the complexity of these codes, their development demands interdisciplinary, collaborative efforts by teams of experts in focused, multiyear efforts.

We announce an NSF supported workshop, "Building Community Codes for Effective Scientific Research on HPC Platforms," to be held at the University of Chicago on September 6-7, 2012. The workshop will bring together individuals interested in developing and/or using community codes for science and engineering research on high performance computing platforms. The primary objective of the workshop is to develop and then put forward ideas on how to widen the user base for HPC platforms through:

- sharing experiences of scientific teams at the national labs and in the academic community that have been successful in effectively using the largest HPC platforms
- advocating for an integrated computing approach to scientific research
- fostering engagement among computational and domain scientists, and researchers in visualization, data analysis, tools, software engineering, and workflow management.

The workshop will provide a forum for sharing hard-won knowledge about what has been successful, and what has not been successful, at various institutions. By bringing together practitioners from many relevant research fields, the workshop will give attendees a unique opportunity for exploring and initiating interdisciplinary collaborations. Attendees will also benefit from exposure to ideas and state-of-the-art research in multiple disciplines. *The workshop will be an open forum for suggestions on how to address these challenges; representatives from different communities will be encouraged to weigh in.*

The specific topics addressed in the workshop include: (1) community codes - what does it take to develop them?; (2) software engineering for scientific codes; (3) integrated computing for science - interdisciplinary interactions; and (4) data management and analysis for scientific simulations.

Limited funding is available to support participant travel costs; please contact the organizers if you need such funds. We especially wish to encourage graduate students and post-doctoral fellows interested in pursuing science and engineering research through simulations to attend the workshop.

Organizers

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