MURPA Seminar Friday 26 August 2011 at 9am: Delivering "Competitiveness" in High Performance Computing

Venue: Seminar Room 135, Building 26 Clayton

Professor James D. Myers Director, Computational Center for Nanotechnology Innovations (CCNI) Rensselaer Polytechnic Institute

Abstract:

It is hard to argue against the value of high performance computing HPC) as a key tool for academic discovery and industrial innovation - except by pointing out how limited its use is relative to its potential In industry, this seeming paradox - a high-value technique being underutilized - is being described as the 'missing middle' and the argument is made that access to HPC must be increased to support industrial competitiveness. Unfortunately, 'increasing access' quickly gets caricatured as a need to increase the visibility of HPC successes and to increase the provisioning of computing resources. In reality, 'access' is much more complex and a much broader change in the in the operational model and technical services provided by computing centers will be needed to expand academic and industrial use of HPC. In this talk, I will discuss the types of challenges that lower the value of HPC for academic and industry users and that therefore slow its adoption. I will also discuss the role of various e-Science-related technologies in meeting these technologies and argue that "delivering competitiveness" for research and design will require a holistic combination of these technologies and innovative interaction/business models with traditional HPC capabilities.

Bio plus CCNI Information:

James Myers has a strong grounding in a variety of scientific areas and his broad experience in developing data and computationally intensive infrastructure to support leading-edge research in high-performance computing environments. He has over 15 years of broad experience designing, developing, and operating cyberinfrastructure for scientific communities spanning academia, government, and industry.

Until recently Jim was Associate Director for Cyberenvironments at the National Center for Supercomputing Applications at the University of Illinois. In August 2010 he was selected by Rensselaer Polytechnic Institute to lead the Computational Center for Nanotechnology Innovations (CCNI) at Rensselaer. Located at Rensselaer's Technology Park in North Greenbush, N.Y., CCNI is a $100 million collaboration between Rensselaer, IBM and New York state. The center houses one of the world's most powerful university-based supercomputers and is considered one of the top supercomputer centers internationally. The center was formally opened in 2007. Work at the CCNI is designed both to help continue the impressive advances in shrinking device dimensions seen by electronics manufacturers, and to extend this model to a wide array of industries that could benefit from nanotechnology, according to the partners. The CCNI systems consist of massively parallel IBM Blue Gene supercomputers, POWER-based Linux clusters, and AMD Opteron processor-based clusters, providing more than 100 teraflops of computing power. The State of New York regards

CCNI as a key asset in the high-performance computing initiative in New York. One of the main goals of this collaboration between IBM, RPI, and NYS is to provide businesses, both large and small, the access and technical assistance to facilitate complex research which will allow them to enhance and grow their global competitiveness.

Prior to his current role, Myers led the development of scientific "collaboratories" for research and education at Pacific Northwest National Laboratory, serving as chief scientist for the Computational Science and Mathematics Division. Open source software developed by Myers and his colleagues — under U.S. Department of Energy, National Science Foundation, and Office of Naval Research funding — includes collaborative portals, workflow tools, scientific content management middleware, remote instrument control software, an electronic laboratory notebook (ELN), real-time collaboration tools, and data translation and metadata extraction tools that collectively have been used by thousands of researchers and educators.

His current development and deployment efforts include the creation of digital watershed technology that provides web 2.0 interfaces to integrated geospatial and time series information from models and sensors, the Dark Energy Survey telescope's petascale data processing system, the Mid-America Earthquake Center's MAEViz hazard risk management environment, and National Archives and Records Administration-supported data parsing technologies being integrated into the SHAMAN digital preservation environment. Myers is also active in cyberinfrastructure design and standardization efforts related to content management, semantic services, and provenance.

Myers received his Ph.D. in chemistry from the University of California, Berkeley; and his bachelor's degree in physics from Cornell University.