Institute Seminar on Supercomputers

Speaker

Dr. Jack Wells

Director of Science for the Oak Ridge Leadership Computing Facility at Oak Ridge National Library (ORNL), USA.

Title: What does the Titan supercomputer teach us about preparing for exascale supercomputers?
Date: Tuesday, December 16, 2014
Time: 11:30 AM
Venue: Seminar Room No. 31, Victor Menezes Convention Centre (VMCC)

About the Speaker:
Jack Wells is Director of Science for the Oak Ridge Leadership Computing Facility at Oak Ridge National Laboratory (ORNL) where he is responsible for devising a strategy to ensure cost-effective, state-of-the-art scientific computing. In previous leadership positions at ORNL, he leads both the Computational Materials Sciences group in the Computer Science and Mathematics Division and the Nanomaterials Theory Institute in the Center for Nanophase Materials Sciences. Jack has authored or co-authored over 70 scientific papers and edited 1 book, spanning nano science, materials science, nuclear and atomic physics computational science, and applied mathematics. He has a Ph.D. in Theoretical Physics from Vanderbilt University.

Abstract of the Lecture:
Modeling and simulation with petascale computing has supercharged the process of innovation, dramatically accelerating time-to-insight and time-to-discovery. The Titan supercomputer is the United States Department of Energy, Office of Science’s flagship Cray XK7 supercomputer managed by the Oak Ridge Leadership Computing Facility (OLCF). With its hybrid, accelerated architecture of traditional CPUs and graphics processing units (GPUs), Titan allows advanced scientific applications to reach speeds exceeding 20 petaflops with a marginal increase in
electrical power demand over the previous generation leadership-class supercomputer. Prof. Wells will summarize the benefits, challenges, and lessons learned from 2012 to 2014 in deploying Titan and in preparing applications to move from conventional CPU architectures to a hybrid, accelerated architecture. In doing so, Prof. Wells will focus on early science outcomes from Titan in diverse areas such as materials sciences, nuclear physics, engineering sciences, and a growing number of industrial partnerships.

Prof. Wells will discuss implications for the research community as he prepares for exascale computational science and engineering within the next decade, and will introduce his recently announced project to replace Titan in 2018 with a new hybrid, accelerated supercomputer to be called Summit. Prof. Wells will also provide an overview of user programs at the Oak Ridge Leadership Computing Facility with specific information how researchers may apply for allocations of computing resources.