ABSTRACT:
The Blue Waters system, the largest supercomputer Cray has ever built, is the first general purpose, open science, sustained-petaflop supercomputer. It is a powerful resource for the nation’s open-science researchers. Blue Waters is a ten-year project with an overall cost of over $500M and went into full service in April 2013 and supports thousands of researchers doing Frontier Science and Engineering computation and data analysis that is not possible any other way.

This talk begins with a brief overview of the Blue Waters project, a Leadership-class system, and how Blue Waters is used to support extreme-scale Frontier Science. I will discuss how the system and the science being done on it has evolved over the past four years. I will then discuss lessons learned from Blue Waters and highlight a very few of the best practices that have helped the Blue Waters Project excel. We will briefly explain why Blue Waters publically refused to be listed on the Top 500 list. The talk will conclude by looking to the future regarding how the experience gained with Blue Waters will help guide the delivery of future sustained performance Leadership Class technologies.

Dr. William T.C. Kramer
National Center for Supercomputing Applications, University of Illinois at Urbana-Champaign

TUESDAY, OCTOBER 3, 2017
11:00AM-12:15PM | Davis Auditorium
412 CEPSR | 530 West 120th Street
OPEN TO THE PUBLIC | REGISTRATION NOT REQUIRED

HOST: Renata Wentzcovitch | Professor of Material Science & Applied Physics, and Earth & Environmental Science


BLUE WATERS: A SUPER SYSTEM FOR HIGHLY PRODUCTIVE FRONTIER SCIENCE -- EXPERIENCES AND LESSONS LEARNED

Under Kramer’s guidance, the Blue Waters publically declined to be listed on the Top 500 list to make the point that the list does not correlate to the actual sustained performance of large-scale systems. In addition to Blue Waters Director, Kramer is a Research Professor of Computer Science in the Computer Science department at UIUC, and is currently the PI of the NSF funded Global Initiative to Enhance @scale and distributed Computing and Analysis Technologies (GECAT) project, and the DOE/ASCR funded Holistic Measurement Driven Resiliency HMDR award that studies failure and recovery for exascale systems.

Previously, Kramer was the General Manager of DOE’s premier supercomputer facility, the National Energy Research Supercomputing Center (NERSC) at Lawrence Berkeley National Laboratory (LBNL) and was responsible for all aspects of operations and customer service for NASA’s Numerical Aerodynamic Simulator (NAS) supercomputer center. Blue Waters was the 20th supercomputer Kramer deploys and manages, deployed and managed large clusters of workstations, several extremely large data repositories, some of the world’s most intense networks. He has also been involved with the design, creation and commissioning of six “best of class” HPC facilities. He is known for developing the Sustained System Performance (SSP) and Effective System Performance evaluations methods for large scale systems.

Bill holds a BS and MS in computer science from Purdue University, an ME in electrical engineering from the University of Delaware, a PhD in computer science at UC Berkeley. Kramer’s research interests include large-scale system performance evaluation, systems management, resource scheduling, system resiliency and fault detection, large scale system monitoring and assessment and cyber protection.

Kramer has awards from NASA, the Association for Computing Machinery (ACM) and was named one of HPCWire’s “People to Watch in 2005” and Inside HPC first “Rockstar of HPC”. He is the founder of several organizations, including the ACM/IEEE George Michael Memorial HPC Fellowship, the Open Science Grid Executive Committee and the DECUS Seminar Program. Kramer served as the General Chair of the international Supercomputing Conference in 2005 and chaired the SC Steering committee in 2006. Bill advises consults around the world on large-scale systems and facilities. URL: http://www.ncsa.illinois.edu/assets/php/directory/contact.php?contact=wkramer

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