Colorado State University's
Information Science and Technology Center (ISTeC)
presents <u>two</u> lectures by

Dr. Ian Foster
Distinguished Professor,
Director, Computation Institute,
Department of Computer Science,
University of Chicago
and Argonne National Laboratory

ISTeC Distinguished Lecture
in conjunction with the
Electrical and Computer Engineering Department and
Computer Science Department Seminar Series

"Collaborative Discovery"
Monday, February 28, 2011
Reception: 10:30 a.m.
Lecture: 11:00 – 12:00 noon
Location: Lory Student Center Room 205

Joint Electrical and Computer Engineering Department
and Computer Science Department Special Seminar
sponsored by ISTeC

"Accelerating Innovation by Outsourcing Complexity"
Monday, February 28, 2011
Lecture: 3:00 – 4:00 p.m.
Location: Lory Student Center Room 214

ABSTRACTS

"Collaborative Discovery"

The pace of discovery in science and engineering is frequently dependent on the speed at which researchers can collect, integrate, organize, and analyze large quantities of information. Automation and high-performance computing can assist with many of these information processing tasks, and thus continue to transform how we understand the world and solve problems. But the scale of the problems that humans tackle also result in increased demands for human intelligence and ingenuity. Thus we see the emergence of distributed and collaborative approaches to discovery, as characterized by terms such as team science, open innovation, crowdsourcing, grid computing, and citizen science. I review the forces and technologies that are driving and enabling these different approaches, and discuss their implications for both computer science and for the discovery process.

"Accelerating Innovation by Outsourcing Complexity"

We've all heard about how on-demand computing and storage will transform scientific practice. But by focusing on resources alone, we're missing the real benefit of the large-scale outsourcing and consequent economies of scale that cloud is about. The biggest IT challenge facing science today is not volume but complexity. Sure, terabytes demand new storage and computing solutions. But they're cheap. It is establishing and operating the processes required to collect, manage, analyze, share, archive, etc., that data that is taking all of our time and killing creativity. And that's where outsourcing can be transformative. An entrepreneur can run a small business from a coffee shop, outsourcing essentially every business function to a software-as-a-service provider--accounting, payroll, customer relationship management, the works. Why can't a young researcher run a research lab from a coffee shop? For that to happen, we need to make it easy for providers to develop "apps" that encapsulate useful capabilities and for researchers to discover, customize, and apply these "apps" in their work. The effect, I will argue, will be a dramatic acceleration of discovery.

SPEAKER BIOGRAPHY

Ian Foster (http://www.cs.uchicago.edu/people/foster) is Director of the Computation Institute, a joint institute of the University of Chicago and Argonne National Laboratory. He is also an Argonne Distinguished Fellow, and the Arthur Holly Compton Distinguished Service Professor of Computer Science at the University of Chicago. Ian received a BSc (Hons I) degree from the University of Canterbury, New Zealand, and a PhD from Imperial College, United Kingdom, both in computer science. His research deals with distributed, parallel, and data-intensive computing technologies, and innovative applications of those technologies to scientific problems in such domains as climate change and biomedicine. He has participated in the development of methods and software that underpin many large national and international cyberinfrastructures, including the NIH's cancer Biomedical Informatics Grid (caBIG), Biomedical Informatics Research Network (BIRN), Cardiovascular Research Grid (CVRG), TeraGrid, and Open Science Grid.

Dr. Foster is a fellow of the American Association for the Advancement of Science, the Association for Computing Machinery, and the British Computer Society. His awards include the Global Information Infrastructure (GII) Next Generation award, the British Computer Society's Lovelace Medal, R&D Magazine's Innovator of the Year, and honorary doctorates from the University of Canterbury, New Zealand, and CINVESTAV, Mexico. He co-founded Univa, Inc., a company established to deliver grid and cloud computing solutions.

To arrange a meeting with the speaker, please contact MaryAnn Stroub at (970) 491-2708 or mstroub@engr.colostate.edu.

ISTeC (Information Science and Technology Center) is a university-wide organization for promoting, facilitating, and enhancing CSU's research, education, and outreach activities pertaining to the design and innovative application of computer, communication, and information systems. For more information please see ISTeC.ColoState.edu.