

# Ian Foster

## Opportunities for X-ray Science in Future Computing Architectures

B E A G L E

The world of computing continues to evolve rapidly. In just the past 10 years, we have seen the emergence of petascale supercomputing, cloud computing that provides on-demand computing and storage with considerable economies of scale, software-as-a-service methods that permit outsourcing of complex processes, and grid computing that enables federation of resources across institutional boundaries. These trends show no signs of slowing down. The next 10 years will surely see exascale, new cloud offerings, and other terabit networks. This talk reviews various of these developments and discusses their potential implications for x-ray science and x-ray facilities.

Ian Foster is Director of the Computation Institute, a joint institute of the University of Chicago and Argonne National Laboratory. He is an Argonne Distinguished Fellow, and the Arthur Holly Compton Distinguished Service Professor of Computer Science at the University of Chicago. He received a BSc (Hons I) degree from the University of Canterbury, New Zealand, and a Ph.D. 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 cyber infrastructures. 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 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 was a co-founder of Univa UD, Inc., a company established to deliver grid and cloud computing solutions.

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