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**Colorado State University's  
Information Science and Technology Center (ISTeC)  
presents two lectures by**



**Dr. Dan Reed**  
Scalable and Multicore  
Computing Strategist,  
Microsoft

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

## **“The Computing Revolution”**

Monday, April 13, 2009

Reception: 10:30 a.m.

Lecture: 11:00 – 12:00 noon

Location: Lory Student Center Grey Rock Room



**Special Electrical and Computer  
Engineering Seminar**  
*sponsored by ISTeC*

## **“ManyCore, Clouds, Research and the Future”**

Monday April 13, 2009

Lecture: 10:00 a.m. – 11:00 a.m.

Location: Lory Student Center Grey Rock Room

# ABSTRACTS

## “The Computing Revolution”

Ten years – a geological epoch on the computing time scale. Looking back, a decade brought the web and consumer email, digital cameras and music, broadband networking, multifunction cell phones, WiFi, HDTV, telematics, multiplayer games, electronic commerce and computational science. It also brought spam, phishing, identity theft, software insecurity, outsourcing and globalization, information warfare and blurred work-life boundaries. What will a decade of technology advances bring in communications and collaboration, sensors and knowledge management, modeling and discovery, electronic commerce and digital entertainment, critical infrastructure management and security?

Prognostication is always fraught with challenges, especially when predicting the effects of exponential change. Aggressively inventing the future, based on perceived needs and opportunities, is far more valuable. As Daniel Burnham famously remarked, “Make no little plans, they have no power to fire men’s spirits.” In this presentation, we present some visions of a technology-enriched future, driven by emerging technologies and by national and international policies and competitive strategies. We also discuss their implications for university futures, in a rapidly changing world.

## “ManyCore, Clouds, Research and the Future”

As Yogi Berra famously noted, “It’s hard to make predictions, especially about the future.” Without doubt, though, scientific discovery, business practice and social interactions are moving rapidly from a world of homogeneous and local systems to a world of multicore processors, distributed sensors and software, virtual organizations and cloud computing infrastructure. In science, a tsunami of new experimental and computational data poses vexing problems in data analysis, transport, visualization and collaboration. In society and business, software as a service and cloud computing are empowering distributed groups.

Let’s step back and think about the longer term future. Where is the technology going and what are the research implications? What architectures are appropriate for 100-way or 1000-way multicore designs? What are the design challenges for mega data centers? How do we develop and support software? What is the ecosystem of components in which they will operate? How do we optimize performance, power and reliability? What do all of these things mean for fundamental computing research and how do we balance research risk and reward?

## SPEAKER BIOGRAPHY

Daniel A. Reed is Microsoft’s Scalable and Multicore Computing Strategist, responsible for re-envisioning the data center of the future and coordinating Microsoft’s external multicore research program. Previously, he was the Chancellor’s Eminent Professor at UNC Chapel Hill, as well as the Director of the Renaissance Computing Institute (RENCI) and the Chancellor’s Senior Advisor for Strategy and Innovation for UNC Chapel Hill. Dr. Reed is a member of President Bush’s Council of Advisors on Science and Technology (PCAST) and a former member of the President’s Information Technology Advisory Committee (PITAC). He recently chaired a review of the federal networking and IT research portfolio for PCAST, and he is chair of the board of directors of the Computing Research Association.

He was previously Head of the Department of Computer Science at the University of Illinois at Urbana-Champaign (UIUC). He has also been Director of the National Center for Supercomputing Applications (NCSA) at UIUC, where he also led National Computational Science Alliance. He was also one of the principal investigators and chief architect for the NSF TeraGrid. He received his PhD in computer science in 1983 from Purdue University.

**To arrange a meeting with the speaker**, please contact MaryAnn Stroub at (970) 491-2708 or [mstroub@enr.colostate.edu](mailto:mstroub@enr.colostate.edu).

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