



The Information Science & Technology Center

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CSU's Information Science and Technology Center (ISTeC)

presents *two* lectures by

**José E. Moreira**

Chief Architect, Commercial Scale Out  
IBM Thomas J. Watson Research Center



**ISTeC Distinguished Lecture**

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

**“Scale-up and Scale-out: Evolution and Trends in  
Parallel Processing”**

**Monday, October 29, 2007**

Reception: 10:30 a.m.

Lecture: 11:00 – 12:00 noon

Lory Student Center Grey Rock Room



**Joint Electrical and Computer Engineering Department  
and Computer Science Department Special Seminar**

*sponsored by ISTeC*

**“Delivering Teraflops: An Account of How Blue Gene  
was Brought to Life”**

**Tuesday, October 30, 2007**

Lecture: 9:30 – 10:30 a.m.

Natural Resources Room 109

# ABSTRACTS

## **“Scale-up and Scale-out: Evolution and Trends in Parallel Processing”**

An active research area since the 60s, parallel processing became mainstream in the information technology industry in the 90s. First, symmetric multiprocessors, or scale-up systems, with increasing number of processors became popular. More recently, clusters of interconnected machines, or scale-out systems, are the backbone of new important applications such as search engines and electronic markets. In this talk, we review the evolution and characteristics of these two types of systems. We identify their strengths and weaknesses and also the pain points associated with using them. We discuss new ideas that seek to combine the best of both worlds and present some preliminary results on that front. Finally, we discuss what are the business and innovation opportunities that can lead to new kinds of systems, such as the Blue Gene supercomputer.

## **“Delivering Teraflops: An Account of how Blue Gene was Brought to Life”**

The Blue Gene/L system at the Department of Energy Lawrence Livermore National Laboratory in Livermore, California, is the world’s most powerful supercomputer. It has achieved groundbreaking performance in both standard benchmarks as well as real scientific applications. In that process, it has enabled new science that simply could not be done before. Blue Gene/L was developed by a relatively small team of dedicated scientists and engineers. This talk presents a personal account of how this was accomplished. I will describe the technical characteristics of the system that made it possible to build such a powerful supercomputer. I will also talk about how teams across the world worked around the clock to accomplish this milestone of high-performance computing.

## **SPEAKER BIOGRAPHY**

José E. Moreira received B.S. degrees in physics and electrical engineering in 1987 and an M.S. degree in electrical engineering in 1990, all from the University of Sao Paulo, Brazil. He received his Ph.D. degree in electrical engineering from the University of Illinois at Urbana-Champaign in 1995. Since joining IBM in 1995, he has been involved in several high-performance computing projects, including the Teraflop-scale ASCI Blue-Pacific, ASCI White, and Blue Gene/L. José was the System Software Architect for Blue Gene/L, a project in which he worked for the last 6 years. Starting February 1st, José took a new job as Chief Architect of the new Commercial Scale Out initiative at IBM Research.

**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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