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Conferences:

Industry Experts to Showcase Innovative HPC Applications

Sept 19 -- What do golf clubs, race cars, biofuels and household appliances have in common? They are all being improved by high performance computing, communications and storage technologies, and are among a list of creative approaches to issues presented by industry experts participating in the Masterworks sessions at SC07 in Reno, Nevada, November 12-16, 2007.

Sponsored by ACM and the IEEE Computer Society, SC07 showcases the latest advances in high performance computing, networking, storage and analysis. This year, the Council on Competitiveness has collaborated with Masterworks to assemble a stellar list of industry experts from various disciplines to present case study examples of how HPC is being used to drive innovation, productivity and competitiveness.

Tuesday, November 13

Kicking off the Masterworks sessions chaired by Thom Dunning, NCSA Director on Tuesday, November 13, at 10:30AM, Torbjorn Larson of BMW will discuss an evolving paradigm shift in Formula One Racing as R&D moves from physical testing to computational simulations with the use of CFD and high performance computing. Next on the program will be an HPC industry veteran, John Picklo of Chrysler, who will give an overview of Chrysler's use of HPC for NASCAR and other motorsports activities, and how the lessons learned from HPC efforts at the blazing edge translate to innovative improvements in passenger vehicle designs.

Masterworks then takes you from race cars to the timely topic of Biofuels and alternative energy, chaired by Dona Crawford, Lawrence Livermore National Lab Associate Director for Computation. Starting at 1:30PM on Tuesday, November 13, Mark Cooper, a Research Fellow in complex trait genetics & molecular breeding for Pioneer Hi-Bred International, Inc., will review three case studies in a colorful discussion of the co-evolution of high performance computing infrastructure and the emergence of industrial scale hybrid maize breeding strategies. Next on the program, Sharan Kalwani of General Motors, another HPC industry veteran, will discuss HPC's mission critical role in harnessing and using different energy sources appropriate for the automotive industry.

The SC conference is recognized around the globe for bringing together the brightest minds in science and technology, dealing with the cutting edge issues of applying advanced computing technologies to drive science and improve business competitiveness. The arrival of MultiCore chip technology has presented a new roadmap of challenges for business and science research that depends on continually pushing the envelope. In a session chaired by Stan Ahalt, Ohio Supercomputer Center Executive Director, Jamil Appa, an aeronautical engineer and group leader for Technology and Engineering Services at BAE Systems, will present, "A Grand Challenge: MultiCore and Industrial Modeling and Simulation." Appa's presentation will discuss current examples of modeling and simulation in the design and life support for a range of industry products, followed by recent results illustrating the effects of current MultiCore architectures, concluding with how industry is looking to proactively address this challenge.

The first day of Masterworks wraps up with a well recognized luminary in the field of HPC driven design improvement, Dr. Thomas P. Gielda of Whirlpool, who will use examples of everyday appliances from the kitchen to the laundry room to discuss how HPC is used from the very beginning of the design process to "design out" potential conflicts, all the way through to designing more secure packaging to reduce shipping damage.

Wednesday, November 14

On Wednesday, November 14, Barbara Helland, U.S. Department of Energy Program Manager, introduces two of the first industry winners of DOE's Innovative and Novel Computational Impact on Theory and Experiment

(INCITE) program. The INCITE program awards significant allocations on DOE's leadership class supercomputers to innovative, large-scale computational science projects to enable high-impact advances. Evan Smyth, a principal software engineer at DreamWorks Animation will discuss "Rendering at the Speed of Shrek" featuring DreamWorks Animation, SKG, a Department of Energy INCITE Award winner for "Real-Time Ray-Tracing" highlighting his group's scalable, distributed-memory rendering architecture along with the challenges his team faces in accomplishing a rendering speedup of five orders-of-magnitude.

Next on Wednesday's program is a topic near and dear to many of the thousands of attendees who will have used commercial airlines to travel to Reno. Department of Energy INCITE Award winner Pratt & Whitney will discuss the use of HPC in developing a "greener" jet engine. Peter Bradley has spent 20 years with Pratt & Whitney and is a Fellow in High Performance Technical Computing. Peter will discuss how Pratt & Whitney is combining HPC-integrated production design systems with INCITE to develop the next generation of fuel-efficient, low emission jet engines.

During Wednesday afternoon's session chaired by John Grosh, Director of the LLNL Center for Applied Scientific Computing, attendees will be treated to an entertaining presentation as Robert Eicholz, vice president of technology and corporate development for EFILM, LLC, gives a perspective of the many aspects of HPC influencing the new Digital Laboratory industry. Robert's presentation will include clips from several recent blockbuster movies, and a discussion of the technologies and platforms used to make them.

Finally, to close out the Wednesday Masterworks session, a full house is expected to hear the presentation from Eric Morales of PING Golf as he discusses how PING uses HPC to build leading-edge products, accomplish world class testing and simulation, and bring new generations of golf clubs to market in a timely fashion that keeps PING Golf at the top of their game.

Thursday, November 15

On the final day of the Masterworks sessions at SC07, the attendees will be in very good hands indeed with chair Rick Stevens, Argonne Computing and Life Sciences Associate Laboratory Director as Cathy Brune and Anthony Abbattista of Allstate Insurance discuss how the company is using high performance computing techniques to drive business results and increase the utilization of its technology investment. Business and technology decision makers alike will benefit from their discussion highlighting practical ways to embrace high performance computing and provide measurable value to the business.

Next, attendees will blast off for a journey into deep space with tour guide, Dr. Mordecai-Mark Mac Low of the American Museum of Natural History. At the Hayden Planetarium in the Rose Center for Earth and Space of the American Museum of Natural History in New York City, high-performance computing coupled to high-resolution video projection enables travel in the third dimension, off the Earth and into the observable universe. This presentation will describe the techniques used to enable the visualization of large-scale scientific data sets, bringing the latest research to audiences numbering in the millions while competing with other location-based leisure activities.

Chaired by Thomas Zacharia, Oak Ridge National Laboratory Associate Laboratory Director, the afternoon brings us back down to earth with Lynn Chou, the GM of global technology and strategy at Chevron Information Technology Company. HPC plays an ever increasing role in the energy sector as it enters a new era characterized by supply and demand uncertainties, increased concern about global warming, and changing roles for oil companies. Lynn's presentation, "From the Molecule to the Pump: Global Energy Supply Chain Optimization with HPC for Maximum Energy Security" will cover the computing technology trends regarding optimizing the immense and diverse energy supply chain, and unique information technology challenges facing the oil and gas industry.

Another session speaker on Thursday's Masterworks program is Don Fike, vice president of Common Services and Chief Technical Architect for FedEx Information Services. Delivering 6.5 million packages daily to more than 220 countries, and supported by a fleet of about 670 aircraft and more than 75,000 motor vehicles, Fed Ex has adopted a cutting edge use of HPC to keep the company at the forefront of delivery services. Fike's presentation will impress the audience as he discusses HPC at Fed Ex – a company that continues to have a profound effect on each of us in our daily lives.

This year, Masterworks will sign off with a free flowing and highly interactive CTO panel, chaired by Suzy

Tichenor, Council on Competitiveness Vice President. Don't miss this gathering of industry luminaries and thought leaders. The CTO panel will be moderated by Dr. David E. Shaw of D.E. Shaw Research, LLC, also an "invited speaker" at SC07 and the winner of the SC06 Best paper award with his research team. Panel participants will include Anna Ewing, executive vice president of operations and technology and Chief Information Officer of The Nasdaq Stock Market, Kevin Humphries, senior vice president of technology systems for FedEx Corporate Services, Reza Sadeghi CTO of MSC Software, and Nancy Stewart, senior vice president and Chief Technology Officer in the Information Systems Division of Wal-Mart Stores. A standing room only crowd is expected for this capstone session scheduled to start at 3:30PM on Thursday, November 15.

More information on Masterworks is available at http://sc07.supercomputing.org/?pg=masterworks.html. Questions on Masterworks sessions can be directed to masterworks@sc07.supercomputing.org.

About SC07

SC07, sponsored by ACM and IEEE Computer Society, will showcase how high-performance computing, networking, storage and analysis lead to advances in research, education and commerce. This premiere international conference includes technical and education programs, workshops, tutorials, an exhibit area, demonstrations and hands-on learning. For more information, please visit http://sc07.supercomputing.org/.

About the Council on Competitiveness

The Council on Competitiveness is the only group of corporate CEOs, university presidents and labor leaders committed to ensuring the future prosperity of all Americans through enhanced competitiveness in the global economy and the creation of high-value economic activity in the United States. For more information, please visit www.compete.org.

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