



NETWORK OF EXPERTISE

HPC Advisory Council

HPC Advisory Council
European Workshop

May 30, 2010
Hamburg, Germany

Welcome!

- Welcome to the HPC Advisory Council European Workshop!
- Gold Sponsors



invent



- Media Sponsor



Agenda

- 8:30-8:45 Welcome session and the HPC Advisory Council recent activities (Gilad Shainer, HPC Advisory Council)
- 8:45-9:30 **Keynote session:** The development of CORE-Direct for MPI/SHMEM collectives offloads (Richard Graham, Oak Ridge National Lab)
- 9:30-10:15 **Keynote session:** Large scale experience at the Jülich Supercomputer Centre (Dr. Norbert Eicker, Jülich Supercomputing Centre)
- 10:15-10:30 Coffee break
- 10:30-11:15 **Keynote session:** Congestion management for HPC clusters (Tor Skeie, Simula Research Laboratory)
- 11:15-12:00 Sponsors presentations:
Microsoft
Dell
Panasas
- 12:00-13:00 Lunch
- 13:00-13:45 **Keynote session:** The HPC Vision (Steve Poole, Oak Ridge National Lab)
- 13:45-14:15 HPC in India (Abhishek Das, C-DAC India)
- 14:15-14:45 Sponsors presentations:
AMD
Scalable Graphics
- 14:45-15:15 HPC efficiency and scalability through best practices: lessons learned (Joshua Mora, AMD)
- 15:15-15:45 HPC Market Trends and Forecasts (John Barr, The 451 Group)
- 15:45-16:00 Coffee break
- 16:00-16:30 Characterization of HPC applications resource requirements and HPC system design (Craig Yamasaki, HP)
- 16:30-17:00 HPC and Virtualization (Josh Simons, VMware)
- 17:00-17:30 High Performance Computing with NVIDIA Tesla GPUs (Timothy Lanfear, NVIDIA)
- 17:30-18:00 Cloud Computing through Virtualization and HPC technologies (Dr. William Lu, Platform Computing)
- 18:00-18:30 Debugging the Future - GPU's and Petascale (Jacques Philouze, Alinea Software)
- 18:30-19:30 Adjourn and Dinner

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- WW HPC organization (140 members)
- Bridges the gap between HPC usage and its potential
- Provides best practices and a support/development center
- Explores future technologies and future developments
- Explores advanced topics – HPC|Cloud, HPC|Scale
- Leading edge solutions and technology demonstrations
- For more info: <http://www.hpcadvisorycouncil.com>



HPC Advisory Council – 140 Members



Maia



- Dell™ PowerEdge™ M610 14-node cluster
- Six-Core Intel® Xeon® processor X5670 @ 2.93 GHz
- Mellanox ConnectX®-2 40Gb/s InfiniBand adapters
- Mellanox 36-Port 40Gb/InfiniBand Switch
- Memory: 24GB memory per node

Apply for System Access



Plutus



- HP Cluster Platform 3000SL
- 16 nodes HP ProLiant SL2x170z scalable servers
- Six-Core Intel® Xeon® processor X5670 @ 2.93 GHz
- Mellanox ConnectX®-2 40Gb/s InfiniBand adapters
- Mellanox 36-Port 40Gb/InfiniBand Switch
- Memory: 24GB memory per node

Apply for System Access



Dodecas



- AMD 6000 Series platform, 8-node cluster (24-cores per node)
- AMD Opteron™ Model 6172, 45nm technology
- Mellanox ConnectX®-2 40Gb/s InfiniBand Adapters
- Mellanox M3601Q 36-Port 40Gb/InfiniBand Switch
- Memory: 32GB memory per node

Apply for System Access



Venus



- SUN 2200 8-node cluster
- Intel Xeon Quad-core X5472 CPUs
- Mellanox InfiniBand ConnectX® 20Gb/s InfiniBand adapters
- Mellanox 20Gb/s InfiniBand Switch
- Memory: 32GB

Apply for System Access



Helios



- Mellanox ConnectX 20Gb/s InfiniBand technology
- 32 Rackable Systems c1000 DC powered rack-mount servers
- 64 Quad-Core Intel® Xeon® 5300 Series Processors
- Light weight 30 AWG InfiniBand cables from W. L. Gore & Associates, Inc.
- Scyld ClusterWare™ HPC cluster management
- 8GB FBD host memory from WinTec Industries

Apply for System Access



Janus



- Dell™ PowerEdge™ M610 16-node cluster
- Quad-Core Intel® Xeon® processor X5570 @ 2.93 GHz
- Intel Cluster Ready certified cluster
- Mellanox ConnectX® MCQH29-XCC 4X 40Gb/s InfiniBand mezzanine card
- Mellanox M3601Q 36-Port 40Gb/InfiniBand Switch
- Memory: 24GB memory per node

Apply for System Access



Saturn



- Dell™ PowerEdge™ M605 12-node cluster
- Quad-Core AMD Opteron™ 2389 ("Shanghai") CPUs
- Mellanox ConnectX® 20Gb/s InfiniBand mezz card
- Mellanox 20Gb/s InfiniBand Switch Module
- Memory: 8GB memory, DDR2 800MHz per node

Apply for System Access



Osiris



- Dell PowerEdge SC 1435 24-node cluster
- Quad-Core AMD Opteron™ 2382 SE CPUs
- Mellanox InfiniBand ConnectX® HCAs
- Mellanox InfiniBand 36-port switch
- Memory: 16GB memory, DDR2 800MHz per node

Apply for System Access





The HPC Advisory Council also supports conferences, vendor content and best practices.

[Conferences](#)

[Best Practices](#)

[Case Studies](#)

[Market Data](#)

[Vendor Content](#)

HPC Advisory Council Technical Content

Conferences

The HPC Advisory Council supports a variety of end-user and OEM-based conferences throughout the year, regularly submits multi-vendor technical presentations for end-user audiences, and provides technical support for demonstrations.

Best Practices

The HPC Advisory Council provides best practices, that through experience and research, have shown to improve clustering and applications productivity. The HPC Advisory Council is encouraging HPC users to provide their feedback and suggest other application or HPC areas as candidates for future best practices.

Case Studies

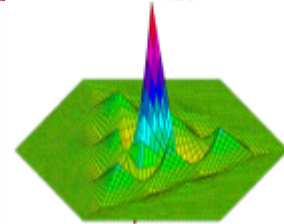
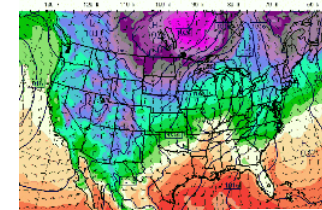
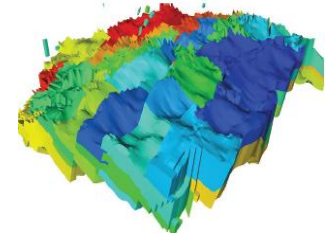
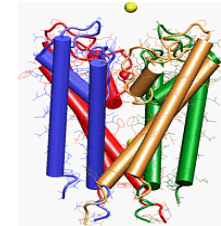
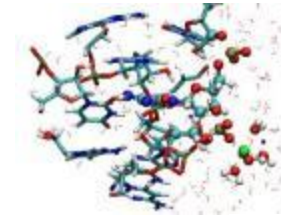
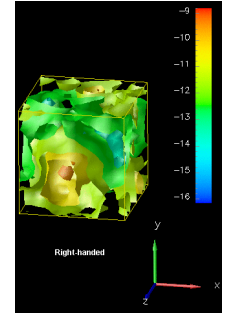
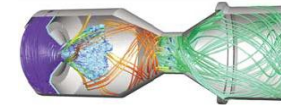
The HPC Advisory Council provides opportunities for its members to collaborate on various HPC initiatives that showcase real-world multi-vendor product demonstrations, education and outreach, and more. The HPC Advisory Council is encouraging members and HPC users to suggest other potential candidates for future case studies.

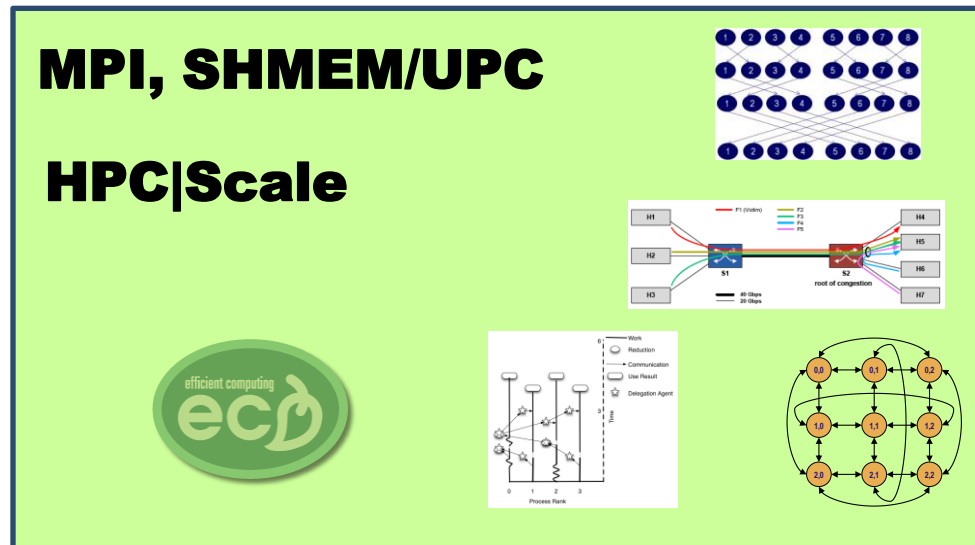
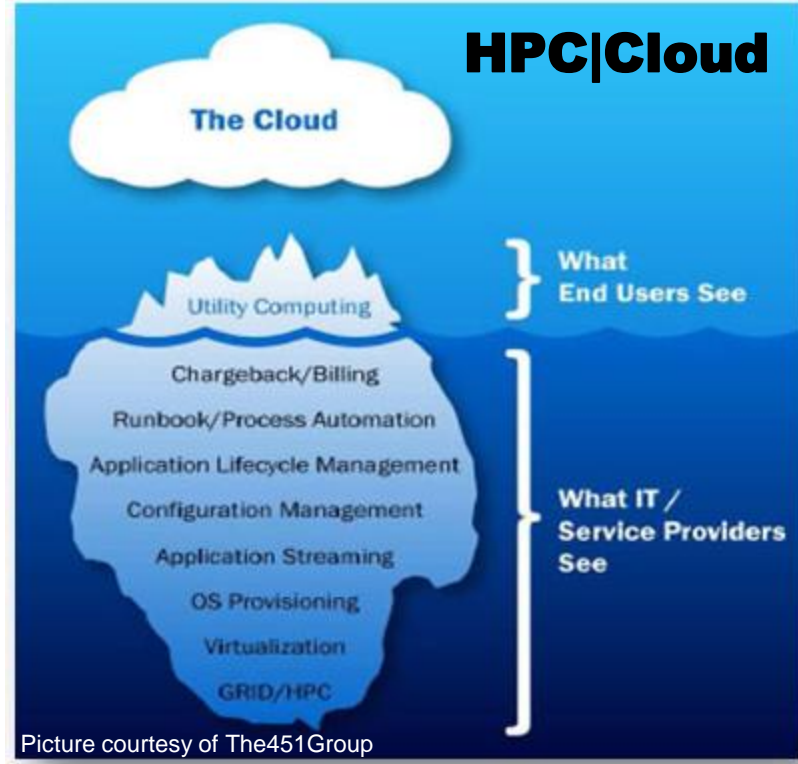
Market Data

The HPC Advisory Council provides market and revenue data, and results from end-users studies. This information provides a deep insight and perspective around the dynamics of the current and emerging HPC market segments, market trends and influences that effect customer behavior and technology adoption.

Applications Best Practices

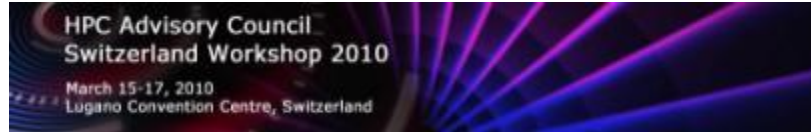
- LAMMPS - Large-scale Atomic/Molecular Massively Parallel Simulator
- D. E. Shaw Research Desmond
- NWChem
- MPQC - Massively Parallel Quantum Chemistry Program
- ANSYS FLUENT and CFX
- CD-adapco STAR-CCM+ and STAR-CD
- MM5 - The Fifth-Generation Mesoscale Model
- NAMD
- LSTC LS-DYNA
- Schlumberger ECLIPSE
- CPMD - Car-Parrinello Molecular Dynamics
- WRF - Weather Research and Forecast Model
- Dacapo - total energy program based on density functional theory
- Lattice QCD
- Open Foam
- GAMESS
- HOMME
- CCSM
- PARATEC
- Quantum ESPRESSO
- OpenAtom





2010 HPC Council Workshops

- **Three days (March 15th-17th) at Switzerland together with the Swiss National Supercomputing Centre, Lugano, Switzerland**



- **One day as part of ISC 10, May 29th Germany**



- **Half day as part of TeraGrid, US**
- **One day as part of HPC China, Oct 2010**



- **One day as part of Daresbury Machine Evaluation Workshop (UK), Dec 2010**

ISC'10 ISCnet 120Gb/s Demonstration



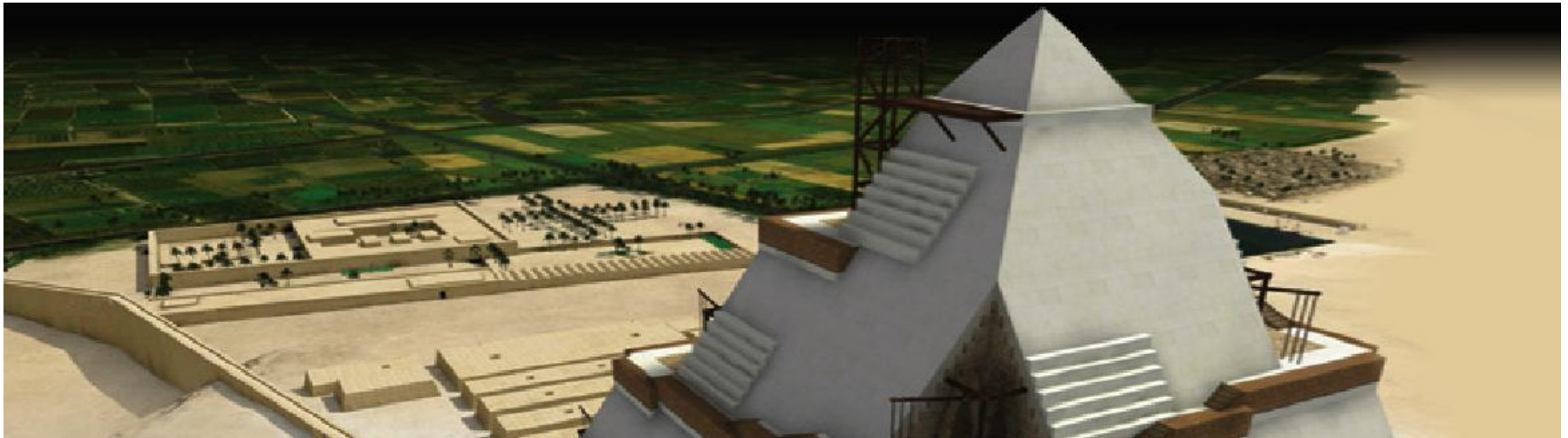
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"The Reconstruction of the Kheops Pyramid"
3D High Visualization Demonstration
Utilizing ISCnet InfiniBand Network



- **The demo will shed light on the 4,500-year-old Khufu Pyramid mystery using real-time, 3D simulation. A small cluster will “recreated” the Kheops construction site, exactly as it was 4,500 years ago. The demo will merge real and virtual worlds via an interactive 3D experience on the ISC10 show floor!**



ISC'10 HPC Council Awards Ceremony

- **Thursday, June 03, 2010**
- **Categories**
 - Recognition for contribution to the HPC Council Compute Center
 - Recognition for the HPC outreach/education
 - The innovative hardware technology of the year
 - The innovative software technology of the year

<input type="checkbox"/>	01:00PM -01:10PM	Closing Session	HPC Advisory Council Awarding <i>Gilad Shainer, HPC Advisory Council, USA</i>	Hall B
<input type="checkbox"/>	01:10PM -01:15PM	Closing Session	ISC-Cloud <i>Prof. Dr. Wolfgang Gentzsch, Independent Consultant & Director Open Grid Forum, Germany</i>	Hall B
<input type="checkbox"/>	01:15PM -01:30PM	Closing Session	ISC'11 with the Four Platinum Sponsors <i>Prof. Dr. Hans Meuer, ISC'10 General Chair, Prometheus & University of Mannheim, Germany</i>	Hall B
<input type="checkbox"/>	01:30PM -03:00PM	Farewell Lunch		

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