

MILWAUKEE WELCOMES HPC User Forum



MILWAUKEE MITCHELL
INTERNATIONAL AIRPORT



**Welcome To The 66th
HPC User Forum
Meeting
September 5-7, 2017**



**WE WANT TO THANK
DELL/EMC & INTEL
FOR Dinner!**

Thank You To Our Sponsors!

GOLD:

- Dell/EMC
- HPE
- Intel

BRONZE:

- Altair
- Mellanox

Important Dates For Your Calendar

FUTURE HPC USER FORUM MEETINGS:

2018 Meetings:

- March 6 & 7, CEA & Teratec, Bruyeres-Le-Chatel, France
- April 16 to 18, Tucson, Arizona
- September 4 to 6, Dearborn, Michigan

Introduction: Logistics

Ask Mary if you need a receipt

We have a very tight agenda (as usual)

- Please help us keep on time!

Review handouts

- Note: We will post most of the presentations on the web site
- Please complete the evaluation form

CHAIRMAN'S WELCOME

HPC User Forum Mission

**To Improve The Health Of The
High Performance Computing Industry
Through Open Discussions, Information-
sharing And Initiatives Involving
HPC Users In Industry, Government And
Academia
Along With HPC Vendors
And Other Interested Parties**



The IDC HPC User Forum: 66 Meetings Worldwide Since 2000

Amsterdam, Netherlands (SARA)

Annecy, France

Bangalore, India (Indian Institute of Technology)

Beijing, China (Chinese Academy of Sciences)

Bologna, Italy (CINECA)

Bristol, UK

Bruyères-le-Châtel, France (Teratec)

Canberra, Australia

Geneva, Switzerland (CERN)

Kobe, Japan (RIKEN)

Lausanne, Switzerland (EPFL)

London, UK (Imperial College)

Manchester, UK (Manchester University)

Melbourne, Australia

Munich, Germany (LRZ)

New Delhi, India (Indian Institute of Science)

Paris, France (GENCI)

Seoul, Korea (National Institute of Supercomputing & Networking)

Stuttgart, Germany (HLRS)

Warsaw, Poland (University of Warsaw)

Yokohama, Japan (Earth Simulator Center)

Zurich, Switzerland (ETH Zurich)

United States (many locations)

Recent HPC User Forum Meetings



■ 2016 Meetings:

- September 6 to 8, Austin Texas
- September 22/23, Beijing, China
- September 29/30, Oxford, UK



■ 2017 Meetings:

- February 28-March 1, Stuttgart, Germany
- April 17 to 19, Santa Fe, New Mexico
- September 5 to 7, Milwaukee, Wisconsin



Introduction

HPC User Forum Steering Committee

- Paul Muzio, City University of New York (Chair)
- Rupak Biswas, NASA Ames (Vice Chair)
- Earl Joseph, IDC (Executive Director)
- Swamy Akasapu, General Motors
- Vijay Agarwala, Penn State University
- Alex Akkerman, Ford Motor Company
- C. Scot Atkins, Industry Expert: Advanced Analytics/Dense Supercomputing
- Doug Ball, HPC expert (formerly Boeing)
- Jeff Broughton, NERSC/Lawrence Berkeley National Lab
- Paul Buerger, Avetec
- Simon Burbidge, Imperial College London
- Chris Catherasoo, Caltech
- Clayton Chandler, Credit Suisse/New York
- Jack Collins, National Cancer Institute
- Steve Conway, IDC Research Vice President
- Steve Finn, Cherokee Information Services
- Merle Giles, NSCA/University of Illinois
- Keith Gray, British Petroleum
- Sharan Kalwani, Fermilab
- Arno Kolster, PayPal
- Doug Kothe, Oak Ridge National Laboratory
- Jysoo Lee, King Abdullah University of Science and Technology (KAUST)
- David Martin, Argonne National Laboratory
- Stephane Requena, GENCI
- Michael Resch, HLRS, University of Stuttgart
- Vince Scarafino, Industry Expert
- Suzy Tichenor, Oak Ridge National Laboratory

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MEETING
PRESENTATIONS

FUTURE
MEETINGS

HYPERION RESEARCH UPDATE

SWITCH SLIDE DECKS

Agenda: Morning, September 6th

- 8:15am Meeting Welcome: Paul Muzio, Rupak Biswas, Earl Joseph, and Steve Conway**
- 8:20am HPC Market Update, Earl Joseph and Steve Conway (Hyperion Research):**
- **Forecasts For HPC-based Machine Learning, Deep Learning, AI**
 - **New Storage Market Tracking – HPC Storage Forecasts by Industries**
- 8:40am Session Chair: Paul Muzio, City University of New York**
- Exascale Initiatives Around the World (Part 1)**
- **Europe's HPC Strategy: Leonardo Flores (European Commission)**
 - **Summary of Tracking Exascale Programs, Bob Sorensen (Hyperion Research)**
- 9:30am Keynote: Technologies for Making Self-Driving Vehicles the Norm, Maarten Sierhuis (Nissan Research Center Silicon Valley)**
- 10:00am Networking Break**
- 10:30am Intel Vendor Technology Update**
- 10:45am Study Findings: A Mapping of the Opportunities for Government, Academia, and Industry Engagement in HPC, Mark Sims (DoD) and Bob Sorensen (Hyperion Research)**
- 11:15am Findings: Worldwide Study of Best Practices in Partnerships between HPC centers and Industrial Users**
- **Ed Walker (NSF) and Bill Kramer (NCSA)**
- 11:45am Networking Lunch**

PLEASE RETURN

AT 12:45PM

Agenda: Afternoon, September 6th

12:45pm HPC for Manufacturing – Session Chair: Lori Diachin (LLNL)

- **Lori Diachin, HPC4mfg (LLNL)**
- **Use of AI/Cognitive Analytics in the Manufacturing Industry, Mary Bunzel (Intel)**
- **Direct Solver for Multiphysics Modeling on Petascale Architecture, Seid Koric (NCSA)**

2:15pm Will HPC Move to the Cloud? Gabriel Broner (Rescale)

2:30pm Exascale Initiatives Around the World (Part 2)

- **The DOE Exascale Computing Project: Doug Kothe (ORNL)**

3:00pm Networking Break

3:30pm Session: HPC for Manufacturing (continued)

- **Highly-Scalable Multi-Scale FEA Simulation for Efficient Paper Fiber Structure, Will Elmer (Lawrence Livermore National Laboratory)**
- **High Pressure Casting for Structural Requirements and the Implications on Simulation, Hal Gerber (Shiloh Industries)**
- **CFD Study of a New Cooling Technology for High-pressure Die Casting, Adrian Sabau (Oak Ridge National Laboratory)**

5:00pm Networking Break

6:30pm Special Dinner Event: Live music

**Welcome To The
Second Day Of The
HPC User Forum
Meeting**



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Agenda: Morning, September 7th

- 8:10am Welcome: Paul Muzio, Rupak Biswas, Earl Joseph and Steve Conway**
- 8:15am Keynote: Toward a Leadership-Class Computer Facility, Ed Walker (NSF)**
- 8:45am Disruptive Technologies Panel: Panelists will briefly (in 2-3 minutes) respond to questions pertaining to potentially disruptive technologies – Moderator: Rupak Biswas (NASA-Ames)**
 - Intel, Mellanox, Spectra Logic, and Rigetti
- 9:45am HPE Vendor Technology Update**
- 10:00am Networking Break**
- 10:15am Innovation Award Winners Panel: Short presentations of HPC-enabled innovations**
 - Paul Morin (The Polar Geospatial Center University of Minnesota)
 - Leigh Orf (University of Wisconsin at Madison)
 - Rupak Biswas (NASA-Ames)
- 11:00am Dell-EMC Technology Update**
- 11:15am Running HPC Jobs in the Cloud**
 - Charliecloud, Reid Priedhorsky (Los Alamos National Laboratory)
 - R-Systems Update, Brian Kucic (R Systems)
- 12:00pm Networking Lunch**

Please Return

At 1:15pm



Agenda: Afternoon, September 7th

- 1:00pm Research in Deep Learning: A Perspective from NSF: Weng-keen Wong (National Science Foundation)**
- 1:30pm Session: Machine Learning, Deep Learning, Early AI**
- **Machine & Deep Learning: Practical Deployments and Best Practices for the Next Two Years, Arno Kolster (Providentia Worldwide)**
 - **The National Science & Technology Council ML/AI Initiative, Michael Garris (NIST)**
 - **Perspective on HPC-enabled AI, Tim Barr (Cray)**
 - **NASA Perspective on Machine Learning, Nikunj Oza (NASA Ames)**
- 3:30pm Networking Break**
- 3:45pm Session: Machine Learning, Deep Learning, Early AI (continued)**
- **Characterization and Benchmarking of Deep Learning, Natalia Vassilieva (HP Labs)**
 - **AI Breakthroughs and Initiatives at the Pittsburgh Supercomputing Center, Nick Nystrom and Paola Buitrago (Pittsburgh Supercomputing Center)**
 - **In Pursuit of Sustainable Healthcare through Personalized Medicine with HPC, Graham Anthony (BioVista)**
- 5:15pm Meeting Wrap-Up, Paul Muzio, Rupak Biswas, Earl Joseph and Steve Conway**

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Questions?

Please email:

ejoseph@hyperionres.com

Or check out:

www.hpcuserforum.com

