SUNDAY, JULY 12 –
THURSDAY, JULY 16, 2015
FRANKFURT, GERMANY

CONFERENCE & EXHIBITION GUIDE
If the Pocket Guide is missing here, there are a number of Pocket Guides available at the Registration Counter (Foyer, Hall 3) and the Information Counter (Foyer, Hall 3).
Dear ISC Attendee,

Welcome to ISC 2015! We are very glad that you’ve taken the effort to join us at ISC High Performance, in this brand new location of Frankfurt, Germany. This has been an incredible journey for us.

We started very humbly as an academic conference with 81 attendees back in 1986 and today we celebrate our 30th anniversary. We deeply regret that our father, Hans Meuer, the founder of this conference, couldn’t be with us at this memorable event.

This year, we proudly present three keynotes, 400 speakers, and 30 different topics, all of which will be spread out over 67 sessions from Monday through Wednesday. We encourage you to attend all the keynotes, which will focus on HPC innovations and future challenges. We also hope that you will stay back for the workshops, a new add-on driven by popular demand.

We have chosen Frankfurt as the conference location for its travel convenience, cosmopolitan atmosphere and charming reputation. This is the most international city in Germany and the smallest metropolis in the world. No matter where you come from, you are sure to meet people who speak your language. Likewise, Frankfurt boasts a diverse array of restaurants, providing you with an opportunity to indulge in your favorite cuisine.

Lastly, we would like to thank the entire HPC community, the ISC program chair, Prof. Dr. Arndt Bode, all committee chairs and members, sponsors, partners, volunteers, and, of course, our team for their commitment, dedication and hard work in making this year’s conference a success.

We wish you a pleasant stay in Frankfurt and at ISC High Performance.

Yours sincerely,

Martin and Thomas Meuer,
ISC General Co-Chairs
The TOP500 list provides the most accurate and reliable ranking of HPC systems worldwide.

Visit us at booth 432 in the exhibition hall to find out how TOP500 can provide valuable insights for your business.
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AGENDA

An updated version of the conference program can be found on our website. The ISC Agenda lets you navigate easily through the conference program and provides information on sessions and speakers. With a few clicks, you can design your own schedule, please visit isc-hpc.com

CLOAKROOM

A cloak room is available in the Foyer of Hall 3.

Opening hours
Monday, July 13 .................................................................08:00 am - 08:30 pm
Tuesday, July 14 .................................................................08:00 am - 07:00 pm
Wednesday, July 15 .............................................................08:00 am - 07:00 pm

COPY & PRINT CENTER

A copy and print center (Copyland) is available and provides document copying, printing and binding services. It is located in the Exhibition Hall at booth #100.

Opening hours
Saturday, July 11 .................................................................01:00 pm – 06:00 pm
Sunday, July 12 .................................................................09:00 am – 06:00 pm
Monday, July 13 .................................................................09:00 am – 08:30 pm
Tuesday, July 14 .................................................................09:00 am – 06:00 pm
Wednesday, July 15 .............................................................09:00 am – 06:00 pm

For assistance, you can also contact:
Phone +49(0) 351 801 198 9
Cell +49(0) 157 732 234 14 (Angelina Richter)
E-mail isc@copyland.de
EXHIBITION

The ISC High Performance exhibition features the largest collection of HPC vendors, universities, and research organizations who annually assembled and the largest exhibition in Europe. Detailed information regarding the exhibition is also available at http://isc-hpc.com/overview-sponsors-exhibitors.html

Exhibition Hours

Monday, July 13 ...........................................................................................................03:00 pm – 08:30 pm
..................................................................................................................(ISC 30th Anniversary Party 06:30 pm – 08:30 pm)
Tuesday, July 14 .........................................................................................................10:00 am – 06:00 pm
Wednesday, July 15 ....................................................................................................10:00 am – 06:00 pm

For the exhibition floor plan and the exhibitor listing, please refer to the Pocket Guide attached. The Pocket Guide is also available at the Registration Counter (Foyer, Hall 3), the Information Counter (Foyer, Hall 3).

EXHIBITION LOUNGES

There will be lounges located inside the Exhibition Hall (Hall 3). Please refer to the current floor plan for exact locations.

Opening Hours

Monday, July 13 ...........................................................................................................03:00 pm – 08:30 pm
Tuesday, July 14 .........................................................................................................10:00 am – 06:00 pm
Wednesday, July 15 ....................................................................................................10:00 am – 06:00 pm

EXHIBITOR SERVICES HELPDESK

If you have questions about your order or need technical assistance on-site, please contact us at booth #100 in the exhibition hall.

Hours of Service

July 11-15 ..................................................................................................................09:00 am – 07:00 pm

If support is needed outside of these dates and times, please contact us via e-mail.
Office +49 621 180 686 90
E-mail exhibitor-support@isc-events.com
Overview of Messe Frankfurt (Hall 3, Forum) and Frankfurt Marriott Hotel

Hall 3.0
Forum

Workshop Rooms at the Frankfurt Marriott Hotel
FIRST AID

In the event of a medical emergency, please contact the Registration Counter (Foyer, Hall 3), Information Counter (Foyer) or the helpdesk in the Exhibition Hall (Hall 3). If you are unable to locate these, please call the Frankfurt Messe Operation and Security Center Hotline +49 (0)69 - 7575-6075.

FLOOR & EXHIBITION PLANS

Please refer to the Pocket Guide, which is attached on page 2. Alternatively, you can find additional Pocket Guides, at the Registration Counter (Foyer, Hall 3) or at the Information Counter (Foyer, Hall 3).

FREE PUBLICATIONS

Free HPC and IT magazines are available at the Registration Counter (Foyer), Information Counter (Foyer) and in the Exhibition Hall (Hall 3).

INFORMATION COUNTER

The ISC Information Counter is located in the Foyer of Hall 3.

Opening Hours
Sunday, July 12 ................................................................. 08:00 am – 04.00 pm
Monday, July 13 ................................................................. 08:00 am – 06:00 pm
Tuesday, July 14 ................................................................. 08:00 am – 04.00 pm
Wednesday, July 15 ............................................................ 08:00 am – 04.00 pm

ISC 30th ANNIVERSARY PARTY

Come and join us as we celebrate 30 years of ISC conferences on Monday evening, in the Exhibition Hall. This evening expect great food and drinks, with live music from the diverse mobile band ‘Combo Combo’, who offers soft to funky sounds in Jazz, Pop, and Soul. It will be a remarkable evening!
ISC CLOUD & BIG DATA CONFERENCE 2015

The ISC Cloud & Big Data conference will take place on September 28 – 30, 2015 at the Marriott Hotel in Frankfurt. For more information, please visit the Information Counter in the Foyer of Hall 3.

LOST BADGE FEE

For lost conference badge, visit the Registration Counter (Foyer, Hall 3). Please note, there is a processing fee of 30€ to replace lost badges.

MOBILE APP - ISC 2015 AGENDA APP

An updated version of the conference guide can be found on our Mobile App. In cooperation with the Poznan Supercomputing & Networking Center (PSNC), ISC now offers a mobile conference and exhibition app named "ISC 2015 Agenda App". This app is available in Google Play, App Store and Windows Phones stores free of charge to ISC 2015 attendees. If you have PSNC’s "Conference4me" app installed on your device, you can also access all ISC 2015 conference and exhibition information via this mobile conference assistant.

NETWORK HELPDESK

The ISC Network team is located in the Exhibition Hall at booth 100 and is open during build-up and exhibition hours. Please contact them for any questions concerning the network.

Hours of Service
July 11-15 ...........................................09:00 am – 07:00 pm
## PASSES OVERVIEW

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<td>Mellanox InfiniBand Experts Day</td>
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<td>Industry Track</td>
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<td>HPCAC-ISC Student Cluster Competition Award Ceremony</td>
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<td>Workshops</td>
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PRAYER ROOM

There is a prayer room available, it is located in the Forum, level C in room Sentenz. It is open from July 12-15 08:00 am – 06:00 pm.

PRESS ROOM

A combined speakers and press room is located in the Forum on level C in room Substanz 1 (Sunday, July 12) and in room Substanz 1+2 (Monday, July 13 – Wednesday, July 15).

Opening hours
Sunday, July 12 07:30 am – 07:00 pm
Monday, July 13 07:30 am – 07:00 pm
Tuesday, July 14 07:30 am – 07:00 pm
Wednesday, July 15 07:30 am – 07:00 pm

PROCEDINGS

The conference proceedings will be available online with presentations provided as PDF files a week after the event. The ISC 2015 attendees will receive an e-mail with the access link. All accepted research papers will also be published in the Springer’s Lecture Notes in Computer Science (LNCS) series and can be downloaded from Springer’s website for a limited time after ISC 2015. A limited number of hardcopies is also available during ISC 2015.

REGISTRATION COUNTER

The Registration Counter is located in the Foyer of Hall 3 and will be open from Sunday, July 12, until Thursday, July 16. The registration counter is located near the Exhibition in foyer area of Hall 3.

Hours of availability
Sunday, July 12 07:30 am – 06:00 pm
Monday, July 13 07:30 am – 06:00 pm
Tuesday, July 14 07:30 am – 06:00 pm
Wednesday, July 15 07:30 am – 06:00 pm

Marriott Hotel - Workshops
Thursday, July 16 07:30 am – 01:00 pm
SOCIAL MEDIA

Facebook
We will be posting updates on our ISC - The HPC Event Facebook page. Don’t forget to hit Like!

Twitter
Please use the hashtags #ISC15 and #ISCexhibit in your tweets about the conference and exhibition. Don’t forget to tell your colleagues and customers to use it too!

Youtube
We will be filming at ISC 2015. If you are interested in viewing the footage, please visit http://isc-hpc.com/social-networking.html

SPEAKERS ROOM

A combined speakers and press room is located in the Forum on level C in room Substanz 1 (Sunday, July 12) and in room Substanz 1+2 (Monday, July 13 – Wednesday, July 15).

Opening hours
Sunday, July 12 .................................................................................................... 07:30 am – 07:00 pm
Monday, July 13 .................................................................................................... 07:30 am – 07:00 pm
Tuesday, July 14 ................................................................................................... 07:30 am – 07:00 pm
Wednesday, July 15 .............................................................................................. 07:30 am – 07:00 pm

Please note that speakers/chairpersons should submit their final presentation slides to the technicians in the Speakers Room no later than 60 minutes before their sessions.

STUDENT CLUSTER COMPETITION

The 4th HPCAC-ISC Student Cluster Competition is an opportunity to showcase student expertise in a friendly yet spirited competition. The competition features small teams that compete to demonstrate the incredible capabilities of state-of-the-art high-performance cluster hardware and software. In a real-time challenge, 11 teams of six undergraduate and/or high school students will build a small cluster of their own design on the ISC exhibit floor and race to demonstrate the greatest performance across a series of benchmarks and applications.

The students will have a unique opportunity to learn, experience and demonstrate how high-performance computing influence our world and day-to-day learning. Held in collaboration of the HPC Advisory Council and ISC, the Student Cluster Competition is designed to introduce the next generation of students to the high performance computing world and community.
Monday, July 13
Competition Kick-off .................................................................................. 03:00 pm – 03:10 pm
LINPACK and HPCC Run ................................................................................3:10 pm

Tuesday, July 14
Pre-competition Announcement ................................................................. 10:00 am – 10:10 am
Applications Run (Part 1) ........................................................................... 10:10 am – 05:50 pm

Wednesday, July 15
Pre-competition Announcement ................................................................. 10:00 am – 10:10 am
Applications Run (Part 2) ........................................................................... 10:10 pm – 04:00 pm
Award Ceremony (Panorama 2, Forum).......................................................06:30 pm

Tentative schedule is shown. Actual times and events are subject to change. For more information, please visit: http://www.hpcadvisorycouncil.com/events/2015/isc15-student-cluster-competition/

WIRELESS INTERNET ACCESS

Wireless Internet access is available during the whole conference. It can be accessed with a code each ISC 2015 participant receives upon registration.

WORKSHOPS

The newly introduced workshops will be held on July 16th at the Frankfurt Marriott Hotel, located on Hamburger Allee across from the Congress Center. If you are interested in attending one of the workshops but haven’t yet registered, you can do so at the Registration Counter, located in the Foyer of Hall 3.
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<tr>
<td><strong>Agenda</strong></td>
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<td>Metanox InfiniBand Experts Day</td>
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<td><strong>Analog 1</strong></td>
<td>Tutorial 01: A Beginner’s Guide to Supercomputing</td>
<td>Tutorial 07: Data Management, Analysis &amp; Visualization Tools for Data-Intensive Science</td>
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<td><strong>Analog 2</strong></td>
<td>Tutorial 02: MPI+X – Hybrid Programming on Modern Compute Clusters with Multicore Processors &amp; Accelerators</td>
<td>Tutorial 08: Advanced OpenMP: Performance &amp; 4.0 Features</td>
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<td>Tutorial 03: Best Practices for Programming the Xeon Phi</td>
<td>Tutorial 09: Linear Algebra Software for High Performance Computing</td>
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<td><strong>Substanz 2</strong></td>
<td>Tutorial 04: Advanced MPI</td>
<td>Tutorial 10: Effective HPC Visualization &amp; Data Analysis with VisIt</td>
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<tr>
<td><strong>Konstant</strong></td>
<td>Tutorial 05: InfiniBand &amp; High-Speed Ethernet for Dummies</td>
<td>Tutorial 11: InfiniBand &amp; High-Speed Ethernet: Advanced Features, Challenges in Designing HEC Systems &amp; Usage</td>
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<td><strong>Kolleg</strong></td>
<td>Tutorial 06: Hands-on Practical Hybrid Parallel Application Performance Engineering</td>
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<td><strong>Mellanox InfiniBand Experts Day</strong></td>
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**ISC 2015 | Sunday, July 12 | Program**
PROGRAM
Tutorials & Satellite Events
(in chronological order per room)

SUNDAY, JULY 12
## Agenda

<table>
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<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>09:00 am - 04:15 pm</td>
<td><strong>Mellanox InfiniBand Experts Day</strong></td>
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<tr>
<td>09:00 am - 12:00 pm</td>
<td>Best Practices for InfiniBand based Clusters Monitoring &amp; Diagnosing</td>
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<td><em>Tsila Ben Moshe, Mellanox</em></td>
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<tr>
<td>12:00 pm - 01:00 pm</td>
<td>Lunch Break</td>
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<tr>
<td>01:00 pm - 02:00 pm</td>
<td>Mellanox EDR Implementation Case Study [The first Production EDR Installation Ever]</td>
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<td><em>Yair Goldel, Mellanox</em></td>
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<tr>
<td>02:00 pm - 03:00 pm</td>
<td>The EDR Features Every HPC Expert Must Know</td>
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<td><em>Richard Graham, Mellanox</em></td>
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<td>03:00 pm - 03:30 pm</td>
<td>Coffee Break</td>
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<tr>
<td>03:30 pm - 04:15 pm</td>
<td>InfiniBand Roadmap – Paving the Road to Exascale Computing</td>
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<td><em>Gilad Shainer, Mellanox</em></td>
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### Analog 1

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<th>Time</th>
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<tr>
<td>09:00 am - 01:00 pm</td>
<td><strong>Tutorial 01: A Beginner’s Guide to Supercomputing</strong></td>
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<td><em>Presenters:</em></td>
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<td><em>Matthew Anderson, Indiana University</em></td>
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<td><em>Thomas Sterling, Indiana University</em></td>
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<tr>
<td>02:00 pm - 06:00 pm</td>
<td><strong>Tutorial 07: Data Management, Analysis &amp; Visualization Tools for Data-Intensive Science</strong></td>
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<td><em>Presenters:</em></td>
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<td><em>Jong Youl Choi, ORNL</em></td>
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<td><em>Dave Pugmire, ORNL</em></td>
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### Analog 2

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<td>09:00 am - 01:00 pm</td>
<td><strong>Tutorial 02: MPI+X – Hybrid Programming on Modern Compute Clusters with Multicore Processors &amp; Accelerators</strong></td>
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<td><em>Presenters:</em></td>
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<td><em>Georg Hager, RRZE</em></td>
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<td></td>
<td><em>Gabriele Jost, Supersmith</em></td>
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<td><em>Rolf Rabenseifner, HLRS</em></td>
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</table>
Tutorial 08: Advanced OpenMP: Performance & 4.0 Features  
Presenters:  
Bronis R. de Supinski, LLNL  
Michael Klemm, Intel  
Eric Stotzer, Texas Instruments  
Christian Terboven, RWTH Aachen University  
Ruud van der Pas, Oracle

Tutorial 03: Best Practices for Programming the Xeon Phi  
Presenters:  
John Cazes, TACC  
Lars Koesterke, TACC  
Kent Milfeld, TACC  
Carlos Rosales-Fernandez, TACC

Tutorial 09: Linear Algebra Software for High Performance Computing  
Presenters:  
Mike Heroux, Sandia National Laboratories  
Jakub Kurzak, University of Tennessee  
Stanimire Tomov, University of Tennessee

Tutorial 04: Advanced MPI  
Presenters:  
Pavan Balaji, Argonne National Laboratory  
Torsten Hoefler, ETH Zurich

Tutorial 10: Effective HPC Visualization & Data Analysis with VisIt  
Presenters:  
Eric Brugger, LLNL  
Allen Sanderson, University of Utah
### Konstant

**09:00 am - 01:00 pm**  
**Tutorial 05: InfiniBand & High-Speed Ethernet for Dummies**  
*Presenters:*
- Dhabaleswar K. Panda, Ohio State University
- Hari Subramoni, Ohio State University

**02:00 pm - 06:00 pm**  
**Tutorial 11: InfiniBand & High-Speed Ethernet: Advanced Features, Challenges in Designing HEC Systems & Usage**  
*Presenters:*
- Dhabaleswar K. Panda, Ohio State University
- Hari Subramoni, Ohio State University

### Kolleg

**09:00 am - 06:00 pm**  
**Tutorial 06: Hands-on Practical Hybrid Parallel Application Performance Engineering**  
*Presenters:*
- Markus Geimer, JSC
- Michael Gerndt, TU München
- Sameer Shende, University of Oregon
- Ronny Tschüter, TU Dresden

### Coffee & Lunch Breaks

<table>
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<td>WELCOME COFFEE</td>
<td>Level Via, Patio and Pikkolo Süd</td>
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<tr>
<td>11:00 am - 11:30 am</td>
<td>COFFEE BREAK</td>
<td>Level Via, Patio and Pikkolo Süd</td>
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<td>01:00 pm - 02:00 pm</td>
<td>LUNCH</td>
<td>Level Via, Patio and Pikkolo Süd</td>
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<tr>
<td>04:00 pm - 04:30 pm</td>
<td>COFFEE BREAK</td>
<td>Level Via, Patio and Pikkolo Süd</td>
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</table>
### ISC 2015 | Monday, July 13 | Program

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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</table>
| 08:30 am - 10:00 am | **Opening Session**  
**Chairs:**  
Martin Meuer, ISC Group  
Thomas Meuer, ISC Group | Panorama 2 + 3 |
| 08:30 am - 08:45 am | Welcome & Introduction ISC 2015  
Martin Meuer, ISC Group  
Thomas Meuer, ISC Group |          |
| 08:45 am - 08:55 am | Welcome Address  
Augusto Burgueño Arjona, EC  
Jan Schneider, City of Frankfurt am Main |          |
| 08:55 am - 09:10 am | ISC 2015 Program  
Arndt Bode, LRZ & TU München |          |
| 09:10 am - 09:15 am | Hans Meuer Award  
Arndt Bode, LRZ & TU München |          |
| 09:15 am - 09:25 am | Gauss Award & PRACE ISC Award  
Michael M. Resch, HLRS  
Kenneth Ruud, Arctic University of Norway |          |
| 09:25 am - 09:40 am | TOP500 Awards  
Jack Dongarra, University of Tennessee & ORNL  
Martin Meuer, ISC Group  
Horst D. Simon, LBNL  
Erich Strohmaier, LBNL |          |
| 09:40 am - 10:00 am | Highlights of the 45th TOP500 List  
Erich Strohmaier, LBNL |          |
| 10:30 am - 11:30 am | **ISC 2015 Conference Keynote**  
Chair: Arndt Bode, LRZ & TU München | Panorama 2 + 3 |
| 10:30 am - 11:30 am | ISC 2015 Conference Keynote:  
High-Performance Computing – Highly Efficient Development – Mercedes-Benz Cars  
Jürgen Kohler, Daimler |          |
01:00 pm - 03:00 pm  

**Vendor Showdown 01**  

**Moderators:**  
- Frank Behrendt, TU Berlin  
- Peter ffoulkes, 451 Research | TheInfoPro

- **01:00 pm - 01:05 pm**  
  Introduction  
  Frank Behrendt, TU Berlin  
  Peter ffoulkes, 451 Research | TheInfoPro

- **01:05 pm - 01:16 pm**  
  Supermicro  
  Don Clegg, Supermicro

- **01:16 pm - 01:27 pm**  
  Intel  
  Charles Wuischpard, Intel

- **01:27 pm - 01:38 pm**  
  Micron Technology  
  Steve Pawlowski, Micron Technology

- **01:38 pm - 01:49 pm**  
  Fujitsu  
  Toshiyuki Shimizu, Fujitsu

- **01:49 pm - 02:00 pm**  
  DataDirect Networks  
  Molly Rector, DDN

- **02:00 pm - 02:11 pm**  
  Huawei  
  Francis Lam, Huawei

- **02:11 pm - 02:22 pm**  
  Seagate  
  Torben Kling-Petersen, Seagate

- **02:22 pm - 02:33 pm**  
  IBM  
  James Sexton, IBM

- **02:33 pm - 02:44 pm**  
  Mellanox  
  Gilad Shainer, Mellanox

- **02:44 pm - 02:55 pm**  
  Sugon  
  Bin Li, Sugon

- **02:55 pm - 03:00 pm**  
  Voting Results & Awarding  
  Frank Behrendt, TU Berlin  
  Peter ffoulkes, 451 Research | TheInfoPro

- **04:00 pm - 05:00 pm**  

**Future HPC System Design Concepts**  

**Chair:** Jeffrey Vetter,  
ORNL & Georgia Institute of Technology

- **04:00 pm - 04:30 pm**  
  Architectural Directions for the Post Exascale Decade  
  Al Gara, Intel

- **04:30 pm - 05:00 pm**  
  In-Memory Supercomputing  
  Paolo Faraboschi, HP
05:00 pm - 06:00 pm  
**On-Chip & Off-Chip Interconnection Networks for Future HPC Systems**  
*Chair: Holger Fröning, University of Heidelberg*

05:00 pm - 05:30 pm  
A Highly Partitionable & Configurable Manycore Architecture for HPC Systems  
*José Flich, UPV*

05:30 pm - 06:00 pm  
Optical Interconnection Networks for Ultra-High Bandwidth Energy Efficient Data Movement in High-Performance Computing  
*Keren Bergman, Columbia University*

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**Panorama 3**

01:00 pm - 03:00 pm  
**Vendor Showdown 02**

*Moderators:*
*Rupak Biswas, NASA Ames Research Center  
Addison Snell, Intersect360 Research*

01:00 pm - 01:05 pm  
Introduction  
*Rupak Biswas, NASA Ames Research Center  
Addison Snell, Intersect360 Research*

01:05 pm - 01:16 pm  
Bull  
*Jean-Pierre Panziera, Atos*

01:16 pm - 01:27 pm  
Samsung  
*Thomas Arenz, Samsung*

01:27 pm - 01:38 pm  
Lenovo  
*Christopher Maher, Lenovo*

01:38 pm - 01:49 pm  
Cray  
*Barry Bolding, Cray*

01:49 pm - 02:00 pm  
RSC  
*Alexander Moskovsky, RSC*

02:00 pm - 02:11 pm  
Hewlett-Packard  
*Scott Misage, HP*

02:11 pm - 02:22 pm  
Cavium  
*Gopal Hedge, Cavium*

02:22 pm - 02:33 pm  
T-Platforms  
*Elena Churakova, T-Platforms*

02:33 pm - 02:44 pm  
NEC Deutschland  
*Rudolf Fischer, NEC*

02:44 pm - 02:55 pm  
Amazon Web Services  
*Rolf Kersten, AWS*

02:55 pm - 03:00 pm  
Voting Results & Awarding  
*Rupak Biswas, NASA Ames Research Center  
Addison Snell, Intersect360 Research*
04:00 pm - 05:00 pm  ■ Highlights from Europe’s Horizon 2020 Panorama 3
Chair: Panagiotis Tsarchopoulos, EC
04:00 pm - 04:12 pm  HPC Funding in H2020: Status & Future
Panagiotis Tsarchopoulos, EC
04:12 pm - 04:24 pm  ETP4HPC, the Strategic Research Agenda: From 2014 to 2020
Jean-Francois Lavignon, Bull
04:24 pm - 04:36 pm  EXDCI: European eXtreme Data & Computing Initiative
Sergi Girona, PRACE
04:36 pm - 04:48 pm  Technical & Scientific Challenges for the EXDCI Initiative
François Bodin, IRISA
04:48 pm - 05:00 pm  SESAME Net – Supercomputing Expertise for Small & Medium Sized Enterprises Network
Karen Padmore, HPC Wales

05:00 pm - 06:00 pm  ■ Understanding Urban Development through HPC Panorama 3
Chair: Marek T. Michalewicz, A*STAR
05:00 pm - 05:30 pm  Graph Analysis & High-Performance Computing Techniques for Realizing Urban OS
Katsuki Fujisawa, Kyushu University
Hisato Matsuo, Kyushu University
05:30 pm - 06:00 pm  A Modeling Perspective on How Interactions Shape the Complexity of City Dynamics
Christopher Monterola, A*STAR

01:00 pm - 03:00 pm  ■ Research Papers 01 – Award Session Agenda
Chairs:
Thomas Ludwig, DKRZ
Michael M. Resch, HLRS
Kenneth Ruud, Arctic University of Norway
01:00 pm - 01:05 pm  Introduction
Thomas Ludwig, DKRZ
01:05 pm - 01:10 pm  Hans Meuer Award Ceremony
Thomas Ludwig, DKRZ
01:10 pm - 01:50 pm  Hans Meuer Award Winning Paper: Accelerating LBM & LQCD Application Kernels by In-Memory Processing
Thorsten Hater, JSC
01:50 pm - 01:55 pm  PRACE ISC Award Ceremony
Kenneth Ruud, Arctic University of Norway
<table>
<thead>
<tr>
<th>Time</th>
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| 01:55 pm - 02:25 pm | PRACE ISC Award Winning Paper: Lattice-CSC: Optimizing & Building an Efficient Supercomputer for Lattice-QCD & to Achieve First Place in Green500  
*David Rohr, University of Frankfurt* |
| 02:25 pm - 02:30 pm | Gauss Award Ceremony  
*M. M. Resch, HLRS* |
| 02:30 pm - 03:00 pm | Gauss Award Winning Paper: Updating the Energy Model for Future Exascale Systems  
*Peter Kogge, University of Notre Dame* |
| 04:00 pm - 06:00 pm | **Research Posters - Award & Presentations**  
*Chair: Julian Kunkel, DKRZ* |
| 04:00 pm - 04:05 pm | Welcome  
*Julian Kunkel, DKRZ* |
| 04:05 pm - 04:09 pm | Research Poster Award Ceremony |
| 04:09 pm - 04:24 pm | (01) ISC 2015 Award Winning Research Poster: Performance Enhancement of an Internal Combustion Engine CFD Simulation on IBM BG/Q  
*Janardhan Kodavasal, Argonne National Laboratory* |
| 04:24 pm - 04:32 pm | (02) GPS: An Efficient & Spectrally Accurate Code for Computing Gross-Pitaevskii Equation  
*Philippe Parnaudeau, UPMC* |
| 04:32 pm - 04:40 pm | (03) Performance of Three-dimensional Fluid Simulation with XcalableMP on the K Computer  
*Hitoshi Sakagami, National Institute for Fusion Science* |
| 04:40 pm - 04:48 pm | (04) JUBE – A Flexible, Application- and Platform-Independent Environment for Benchmarking  
*Sebastian Lührs, Forschungszentrum Jülich* |
| 04:48 pm - 04:56 pm | (05) Advanced Data Sieving for Non-Contiguous I/O  
*Enno Zickler, University of Hamburg* |
| 04:56 pm - 05:04 pm | (06) Using Machine Learning to Predict the Performance of Non-Contiguous I/O  
*Michaela Zimmer, University of Hamburg* |
| 05:04 pm - 05:12 pm | (07) The Octotron Approach: Towards Autonomous & Reliable Operation of Supercomputers  
*Konstantin Stefanov, Moscow State University* |
| 05:12 pm - 05:20 pm | (08) Extreme-Scaling Applications 24/7  
*Dirk Brömmel, JSC* |
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<tr>
<th>Time</th>
<th>Session</th>
<th>Chair and Location</th>
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<tbody>
<tr>
<td>05:20 pm - 05:28 pm</td>
<td>[09] Coupling Efficiency of Models, Algorithms &amp; Hardware: Atomistic Simulation Perspective</td>
<td>Vladimir Stegailov, RAS</td>
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<tr>
<td>05:28 pm - 05:36 pm</td>
<td>[10] Integrative Parallel Programming</td>
<td>Victor Eijkhout, TACC</td>
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<tr>
<td>05:44 pm - 05:52 pm</td>
<td>[12] Towards Distributed, Semi-Automatic Content-Based Visual Information Retrieval (CBVIR) of Massive Media Archives</td>
<td>Christian Kehl, University of Bergen</td>
</tr>
<tr>
<td>05:52 pm - 06:00 pm</td>
<td>[13] Neptunius: The ENEA HPC Portal for Multiphysics Simulations</td>
<td>Antonio Colavincenzo, ENEA</td>
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<tr>
<td>01:00 pm - 02:00 pm</td>
<td>[1] Programming Models on the Road to Exascale</td>
<td>Chair: Michèle Weiland, EPCC</td>
</tr>
<tr>
<td>01:00 pm - 01:20 pm</td>
<td>MPI in 2020: Opportunities &amp; Challenges</td>
<td>Bill Gropp, University of Illinois in Urbana-Champaign</td>
</tr>
<tr>
<td>01:20 pm - 01:40 pm</td>
<td>MPI+X Programming Models on Future Systems – the Search for Lowest-Order Effects</td>
<td>Georg Hager, RRZE</td>
</tr>
<tr>
<td>01:40 pm - 02:00 pm</td>
<td>Domain-Specific Representations in Code Generation for Mesh-Based Computational Science Applications</td>
<td>Paul Kelly, Imperial College London</td>
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<tr>
<td>02:00 pm - 03:00 pm</td>
<td>[2] Operating System &amp; Runtime Challenges on the Path to Exascale</td>
<td>Chair: Martin Schulz, LLNL</td>
</tr>
<tr>
<td>02:00 pm - 02:20 pm</td>
<td>Codesign of System Software in Post K</td>
<td>Yutaka Ishikawa, RIKEN AICS &amp; University of Tokyo</td>
</tr>
<tr>
<td>02:20 pm - 02:40 pm</td>
<td>Runtime Challenges in Fine-grained Threading Models</td>
<td>Pavan Balaji, Argonne National Laboratory</td>
</tr>
<tr>
<td>02:40 pm - 03:00 pm</td>
<td>Resource Management &amp; the NANOS Runtime</td>
<td>Jesús Labarta, BSC</td>
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</table>
04:00 pm - 05:00 pm

Preparation HPC Software for Extreme Scaling
Thanks to Joint Initiatives

Chair: Marie-Christine Sawley, Intel

04:00 pm - 04:20 pm

Scalability in the Era of Many-Core High-Performance Computing

Alexander Reinefeld, ZIB & Humboldt-University Berlin

04:20 pm - 04:40 pm

Pushing Back the Limit of Nanoelectronic Device Simulation on Petascale Computers

Mathieu Luisier, ETH Zurich

04:40 pm - 05:00 pm

Phi in the Sky & the Extreme COSMOS: Joint IPCC Initiatives Supporting Planck Satellite Analysis Abstract

Edward Paul Scott Shellard, University of Cambridge

05:00 pm - 06:00 pm

Young & Bright HPC Researchers

Chair: Michael M. Resch, HLRS

05:00 pm - 05:20 pm

Design Space Exploration for Green Micro-architectures in the “More-than-Moore” Era

Ryusuke Egawa, Tohoku University

05:20 pm - 05:40 pm

Reducing the Time to Solution for Large-Scale Industrial Flow Simulations

Daniel Harlacher, University of Siegen

05:40 pm - 06:00 pm

High-Performance Computing for the Simulation of Breast Conserving Therapy

Remi Salmon, University of Houston

01:00 pm - 06:00 pm

Research Posters & HPC in Asia Posters

For a complete list of the Research Posters and HPC in Asia Posters on display at ISC 2015, please refer to pages 30 and 54 respectively.

03:30 pm - 04:30 pm

BoF 01: Planning for Liquid Cooling in the Data Center

Organizer:
Geoff Lyon, CoolIT Systems

Speakers:
Tahir Cader, The Green Grid
Nicolas Dubé, HP
Peter Hopton, Iceotope
Geoff Lyon, CoolIT Systems
Ingmar Meijer, IBM Research Zurich
Michael K. Patterson, Intel
Jon Summers, University of Leeds
04:30 pm - 05:30 pm  ■ BoF 02: The Message Passing Interface: MPI 3.1 and Plans for MPI 4.0  Organizer: Martin Schulz, LLNL

05:30 pm - 06:30 pm  ■ BoF 03: Tenth Graph500 List  Speakers: David A. Bader, Georgia Institute of Technology Torsten Hoefler, ETH Zurich Richard Murphy, Micron Technology

Exhibitor Innovation Forum

03:30 pm - 04:30 pm  ■ Exhibitor Innovation Forum  Moderator: Steve Conway, IDC

03:30 pm - 03:35 pm  Introduction  Steve Conway, IDC

03:35 pm - 03:45 pm  10Gtek: The 100Gb/s DAC for Next Generation Datacenter  Frank Lau, 10Gtek

03:45 pm - 03:55 pm  Teraproc: OpenLava & Its Use Cases in HPC & Analytics  William Lu, Teraproc

03:55 pm - 04:05 pm  Concat: RozoFS – A Revolutionary Approach to Filestorage: Open-Source, New Erasure-Coding, Scale-Out, Highest Performance  Didier Feron, Concat

04:05 pm - 04:15 pm  Goopax: A Very New & Easy Way of GPGPU Programming with the GOOPAX Compiler [Patent Pending]  Ingo Josopait, Goopax

04:15 pm - 04:25 pm  2CRSI: When High-Performance Computing Meets High-Performance Storage  Jean Georges Perrin, 2CRSI

04:25 pm - 04:30 pm  Wrap-Up  Steve Conway, IDC
04:40 pm - 06:00 pm  ■ Exhibitor Forum 01  Booth #500
04:40 pm - 05:00 pm  Rausch Netzwerktechnik: Seagate Kinetic Open Storage Platform – Innovation to Enable Scale-Out Storage
Joe Fagan, Seagate
05:00 pm - 05:20 pm  SanDisk: Infinite All-Flash-Solutions
Axel Rosenberg, SanDisk
05:20 pm - 05:40 pm  Scality: Inroads of Scale-Out Object Based Storage in Massively Parallel HPC
Brad King, Scality
05:40 pm - 06:00 pm  Spectra Logic: Harnessing Big Data Storage: New Technologies to Store Data Forever at Virtually No Cost
Matthew Starr, Spectra Logic

Exhibition Hall

03:00 pm - 08:30 pm  ■ Exhibition  Exhibition Hall
06:30 pm - 08:30 pm  ■ ISC 30th Anniversary Party  Exhibition Hall

Come and join us as we celebrate 30 years of ISC conferences on Monday evening, in the Exhibition Hall. This evening expect great food and drinks, with live music from the diverse mobile band ‘Combo Combo’, who offers soft to funky sounds in Jazz, Pop, and Soul. It will be a remarkable evening!

Coffee & Lunch Breaks

10:00 am - 10:30 am  COFFEE BREAK  Forum, Level 1, Foyer and Panorama 1
11:30 am - 01:00 pm  LUNCH  Forum, Level 1, Foyer and Panorama 1
03:00 pm - 04:00 pm  COFFEE BREAK  Exhibition Hall
06:30 pm - 08:30 pm  ISC 30TH ANNIVERSARY PARTY  Exhibition Hall
NOTES
08:30 am - 10:00 am

**Energy Efficiency & HPC Systems**
Chair: Satoshi Matsuoka,
*Tokyo Institute of Technology*

- 08:30 am - 09:00 am The L-CSC Construction & Its Applications
  *Volker Lindenstruth, University of Frankfurt*

- 09:00 am - 09:30 am Submersion Cooling for VSC
  *Ernst J. Haunschmid, Technical University of Vienna*

- 09:30 am - 10:00 am Beyond Measurement: Monitoring & Managing Power & Energy
  *Natalie Bates, EE HPC WG*

11:00 am - 12:30 pm

**Memory Technologies & Systems for HPC**
Chair: Thomas Sterling, *Indiana University*

- 11:00 am - 11:20 am Rethinking Memory System Design for Data-Intensive Computing
  *Onur Mutlu, Carnegie Mellon University*

- 11:20 am - 11:40 am Memory Dynamics: The Impending Expansion of the Memory Hierarchy
  *Dean Klein, Micron Technology*

- 11:40 am - 12:00 pm Programming Persistent Memory with Linux NVM Libraries
  *Maciej Maciejewski, Intel*

- 12:00 pm - 12:20 pm Innovations in Memory Systems for Big Data Analysis Applications
  *Dong-Gi (Daniel) Lee, Samsung Electronics*

- 12:20 pm - 12:30 pm Questions & Answers

01:45 pm - 02:45 pm

**Distinguished Speakers 01**
Chair: Sverre Jarp, *CERN*

- 01:45 pm - 02:45 pm IoT from a Manufacturer’s Perspective
  *Dirk Slama, Bosch Software Innovations*

- 02:15 pm - 02:45 pm High Performance Computing in the Financial Industry: Problems, Methods & Solutions
  *Erik Vynckier, AllianceBernstein*

03:30 pm - 04:30 pm

**HPC & the Public Health Sector**
Chair: Cynthia R. McIntyre,
*Council on Competitiveness*

- 03:30 pm - 04:00 pm The Role of Computation in Controlling Health Epidemics & Pandemics
  *Terry Boyd, CDC*

- 04:00 pm - 04:30 pm Computational Ebola Response Plan Analysis
  *Joan King, University of North Texas*
Panorama 2

08:30 am - 10:00 am Node Architecture: From Present Technology to Future Exascale Nodes
Chair: John Shalf, LBNL

08:30 am - 08:55 am LOCs, TOCs, NICs & Nodes
Steve Oberlin, NVIDIA

08:55 am - 09:20 am HPC Node Architecture – What It Is, & What It Should...
Shekhar Y. Borkar, Intel

09:20 am - 09:45 am Balance, Flexibility & Partnership: An ARM Approach to Future HPC Node Architectures
Eric van Hensbergen, ARM

09:45 am - 10:00 am Panel Discussion
Shekhar Y. Borkar, Intel
Eric van Hensbergen, ARM
Steve Oberlin, NVIDIA

11:00 am - 12:30 pm From Data to Knowledge
Chair: Wolfgang E. Nagel, TU Dresden

11:00 am - 11:30 am The Power of Visual Analytics: Unlocking the Value of Big Data
Daniel A. Keim, University of Konstanz

11:30 am - 12:00 pm Big Data Meets HPC
Daniel A. Reed, University of Iowa

12:00 pm - 12:30 pm When Big Data Gets Smart: Use Cases in Text Analytics
Matthias Hagen, Bauhaus-Universität Weimar

01:45 pm - 02:45 pm Computational Approaches to Understanding Health & Disease
Chair: Manuel C. Peitsch, PMI R&D, SIB & University of Basel

01:45 pm - 02:15 pm Computational Systems Biology Applied to Pharmacology & Nutrition
Corrado Priami, University of Trento

02:15 pm - 02:45 pm Systems Toxicology: Identification of Pathways of Toxicity & their Application to Product Assessment
Manuel C. Peitsch, PMI R&D, SIB & University of Basel
03:30 pm - 04:30 pm  
**Great Success Stories of HPC**  
Chair: Frank Baetke, HP  
03:30 pm - 04:00 pm  
Solving the Mysteries of Supernova Explosions by 3D-Simulations  
Hans-Thomas Janka, MPA  
04:00 pm - 04:30 pm  
HPC – Flight Physics Aircraft Development Expectations for the Future  
Klaus Becker, Airbus  

05:15 pm - 06:00 pm  
**Tuesday Keynote**  
Chair: Taisuke Boku, University of Tsukuba  
05:15 pm - 06:00 pm  
Tuesday Keynote: Applications Leveraging Supercomputing Systems  
Yutong Lu, NUDT  

06:15 pm - 06:45 pm  
**ISC HPC Special**  
(HPC & Big Data) vs. (HPC | Big Data)  
Rajeeb Hazra, Intel  

**Panorama 3 - INDUSTRY TRACK**  
08:30 am - 09:15 am  
**IDC Annual HPC Market Update**  
Chair: Earl Joseph II, IDC  
Speakers:  
Steve Conway, IDC  
Bob Sorensen, IDC  
09:15 am - 10:00 am  
**Technology Update & Trends**  
Thomas Warschko, Bull  
11:00 am - 12:30 pm  
**Use Cases for Various Applications**  
Chair: Merle Giles, University of Illinois at Urbana-Champaign  
11:00 am - 11:30 am  
High Performance Computing in Financial Modeling  
Drona Kandhai, ING Bank  
11:30 am - 12:00 pm  
Large-Eddy Simulation of Tip-Leakage Flow  
Wolfgang Schröder, RWTH Aachen University  
12:00 pm - 12:30 pm  
Luna Rossa Challenge & Cineca: Driving HPC to the Marine Industry Thanks to the Most Prestigious Sailling Yachts Trophy  
Claudio Arlandini, Cineca
01:45 pm - 02:45 pm  **CAE Solutions for HPC Systems 01**  
**Panorama 3**

**Industry Track**

01:45 pm - 02:00 pm  **ANSYS: HPC from Desktop to Cloud**  
*Wim Slagter, ANSYS*

02:00 pm - 02:15 pm  **CADFEM: HPC Solutions for CAE**  
*Gerhard Zelder, CADFEM*

02:15 pm - 02:30 pm  **Scilab for High Performance Computing**  
*Yann Debray, Scilab*

02:30 pm - 02:45 pm  **Kitware**

03:30 pm - 04:30 pm  **CAE Solutions for HPC Systems 02**  
**Panorama 3**

**Industry Track**

03:30 pm - 03:45 pm  **ESI Group: Virtual Prototyping Leveraging the HPC-Cloud Computing & Augmented by Virtual Reality: State of the Art Industry Solution**  
*Fouad El-Khaldi, ESI Group*

03:45 pm - 04:00 pm  **COMSOL Multiphysics & COMSOL Server: HPC Simulations for Everyone**  
*Pär Persson Mattsson, COMSOL Multiphysics*

04:00 pm - 04:15 pm  **CAE in the Cloud: Case Studies & Lessons Learned**  
*Wolfgang Gentzsch, UberCloud Community & Marketplace*

04:15 pm - 04:30 pm  **Go Virtual: Metacomp Technologies, Beyond Conventional Computing**  
*Faranggis Bagheri, Go Virtual*

**Agenda**

08:30 am - 10:00 am  **Research Papers 02 – Libraries**  
**Chair: Weicheng Huang, NCHC**

08:30 am - 09:00 am  **Framework for Batched & GPU-resident Factorization Algorithms Applied to Block Householder Transformations**  
*Stanimire Tomov, University of Tennessee*

09:00 am - 09:30 am  **Dtree: Dynamic Task Scheduling at Petascale**  
*Kiran Pamnany, Intel*

09:30 am - 10:00 am  **On the Design, Development & Analysis of Optimized Matrix-Vector Multiplication Routines for Coprocessors**  
*Stanimire Tomov, University of Tennessee*
### Research Papers 04 – Applications

**Chair:** Kengo Nakajima, University of Tokyo

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<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker/Institution</th>
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<tbody>
<tr>
<td>11:00 am - 12:30 pm</td>
<td><strong>Matrix Multiplication on High-Density Multi-GPU Architectures:</strong> Theoretical &amp; Experimental Investigations</td>
<td>Yuxiang Gao, Cray</td>
</tr>
<tr>
<td>11:00 am - 11:30 am</td>
<td><strong>A Scalable, Linear-Time Dynamic Cutoff Algorithm for Molecular Dynamics</strong></td>
<td>Paolo Bientinesi, RWTH Aachen University</td>
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<tr>
<td>11:30 am - 12:00 pm</td>
<td><strong>Asynchronous Iterative Algorithm for Computing Incomplete Factorizations on GPUs</strong></td>
<td>Edmond Chow, Georgia Institute of Technology</td>
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<tr>
<td>12:00 pm - 12:30 pm</td>
<td><strong>Predicting Performance of Non-Contiguous I/O with Machine Learning</strong></td>
<td>Julian Kunkel, DKRZ</td>
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<td>01:45 pm - 02:45 pm</td>
<td><strong>Dynamically Adaptable I/O Semantics for High Performance Computing</strong></td>
<td>Michael Kuhn, University of Hamburg</td>
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<tr>
<td>03:30 pm - 04:30 pm</td>
<td><strong>Hop: Elastic Consistency for Exascale Data Stores</strong></td>
<td>Latchesar Ionkov, LANL</td>
</tr>
<tr>
<td>04:00 pm - 04:30 pm</td>
<td><strong>An Efficient Clique-Based Algorithm of Compute Nodes Allocation for In-Memory Checkpoint System</strong></td>
<td>Tao Tang, NUDT</td>
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### Research Papers 06 – Storage & Data

**Chair:** Yuichi Tsujita, RIKEN AICS

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<tr>
<th>Time</th>
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<th>Speaker/Institution</th>
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<tr>
<td>01:45 pm - 02:15 pm</td>
<td><strong>Predicting Performance of Non-Contiguous I/O with Machine Learning</strong></td>
<td>Julian Kunkel, DKRZ</td>
</tr>
<tr>
<td>02:15 pm - 02:45 pm</td>
<td><strong>Dynamically Adaptable I/O Semantics for High Performance Computing</strong></td>
<td>Michael Kuhn, University of Hamburg</td>
</tr>
<tr>
<td>03:30 pm - 04:00 pm</td>
<td><strong>Hop: Elastic Consistency for Exascale Data Stores</strong></td>
<td>Latchesar Ionkov, LANL</td>
</tr>
<tr>
<td>04:00 pm - 04:30 pm</td>
<td><strong>An Efficient Clique-Based Algorithm of Compute Nodes Allocation for In-Memory Checkpoint System</strong></td>
<td>Tao Tang, NUDT</td>
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</tbody>
</table>

### Research Papers 08 – Storage & Data

**Chair:** Mahdi Bohlouli, University of Siegen

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<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker/Institution</th>
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</thead>
<tbody>
<tr>
<td>03:30 pm - 04:00 pm</td>
<td><strong>Hop:</strong> Elastic Consistency for Exascale Data Stores**</td>
<td>Latchesar Ionkov, LANL</td>
</tr>
<tr>
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<td><strong>An Efficient Clique-Based Algorithm of Compute Nodes Allocation for In-Memory Checkpoint System</strong></td>
<td>Tao Tang, NUDT</td>
</tr>
</tbody>
</table>

### Analog 1 + 2

**Chair:** Osamu Tatebe, University of Tsukuba

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker/Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30 am - 09:00 am</td>
<td><strong>On Quantum Chemistry Code Adaptation for RSC</strong></td>
<td>Vladimir Mironov, MSU</td>
</tr>
<tr>
<td>09:00 am - 09:30 am</td>
<td><strong>BWTCP: A Parallel Method for Constructing BWT in Large Collection of Genomic Reads</strong></td>
<td>Shaoliang Peng, NUDT</td>
</tr>
<tr>
<td>09:30 am - 10:00 am</td>
<td><strong>Parallel Efficient Sparse Matrix-Matrix Multiplication on Multicore Platforms</strong></td>
<td>Mostofa Ali Patwary, Intel</td>
</tr>
<tr>
<td>Time</td>
<td>Session</td>
<td>Speaker/Details</td>
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</tr>
<tr>
<td>11:00 am - 12:30 pm</td>
<td><strong>Research Papers 05 – HPC Theory</strong></td>
<td>Chair: Peter Ziegenhein, Institute of Cancer Research</td>
</tr>
<tr>
<td>11:00 am - 11:30 am</td>
<td>Hunting Down Load Imbalance: A Moving Target</td>
<td>Christoph Pospiech, Lenovo</td>
</tr>
<tr>
<td>11:30 am - 12:00 pm</td>
<td>Formal Metrics for Large-Scale Parallel Performance</td>
<td>Kenneth Moreland, Sandia National Laboratories</td>
</tr>
<tr>
<td>12:00 pm - 12:30 pm</td>
<td>Orchestrating Docker Containers in the HPC Environment</td>
<td>Joshua Higgins, University of Huddersfield</td>
</tr>
<tr>
<td>01:45 pm - 02:45 pm</td>
<td><strong>Research Papers 07 – Architectures</strong></td>
<td>Chair: Simon McIntosh-Smith, Bristol University</td>
</tr>
<tr>
<td>01:45 pm - 02:15 pm</td>
<td>Porting of a Particle Transport Code to an FPGA</td>
<td>Iakovos Panourgias, EPCC</td>
</tr>
<tr>
<td>02:15 pm - 02:45 pm</td>
<td>A Machine Learning Approach for a Scalable, Energy-Efficient Utility-Based Cache Partitioning</td>
<td>Gurhan Kucuk, Yeditepe University</td>
</tr>
<tr>
<td>03:30 pm - 04:30 pm</td>
<td><strong>Research Papers 09 – Algorithms &amp; Analysis</strong></td>
<td>Chair: Michael M. Resch, HLRS</td>
</tr>
<tr>
<td>03:30 pm - 04:00 pm</td>
<td>A Scalable Algorithm for Radiative Heat Transfer Using Reverse Monte Carlo Ray Tracing</td>
<td>Alan Humphrey, University of Utah</td>
</tr>
<tr>
<td>04:00 pm - 04:30 pm</td>
<td>A Run-Time System for Power-Constrained HPC Applications</td>
<td>Martin Schulz, LLNL</td>
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</tbody>
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**Foyer 0**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>08:30 am - 06:00 pm</td>
<td><strong>Research Posters &amp; HPC in Asia Posters</strong></td>
</tr>
<tr>
<td>10:15 am - 11:15 am</td>
<td><strong>BoF 04: Getting Scientific Software Installed:</strong></td>
</tr>
</tbody>
</table>

**Booth #210**
11:15 am - 12:15 pm  BoF 05: Women in HPC: How Can the HPC Industry Benefit from the Diversity Dividend?
Organizers:
Antonia Collis, WHPC & EPCC
Alison Kennedy, EPCC & PRACE
Speakers:
Lilit Axner, KTH
Marie-Christine Sawley, Intel

12:15 pm - 01:15 pm  BoF 06: Acceleration of Numerical Applications on POWER
Organizers:
Costas Bekas, IBM Research Zurich
Axel Koehler, NVIDIA
Dirk Pleiter, JSC
Speakers:
Benedikt Anlauf, IBM
Thorsten Hater, JSC
Erik Lindahl, KTH
Dirk Pleiter, JSC

01:15 pm - 02:15 pm  BoF 07: Update on European HPC Ecosystem Development
Organizers:
Jean-Philippe Nominé, CEA
Marcin Ostasz, BSC
Speakers:
Jean-Francois Lavignon, Bull
Michael Malms, IBM

02:15 pm - 03:15 pm  BoF 08: Data Analytics & Monitoring of HPC Computer Systems & Scientific Instruments
Moderators:
Hans-Christian Hoppe, Intel & FZJ
Marie-Christine Sawley, Intel
Speakers:
Dorian Krause, JSC
Wolfgang E. Nagel, TU Dresden
Mark Parsons, University of Edinburgh
Axel Voitier, CERN
03:15 pm - 04:15 pm  ▪ BoF 09: Data Intensive HPC
Moderators:
Hans-Christian Hoppe, Intel & FZJ
Marie-Christine Sawley, Intel
Speakers:
Sepp Hochreiter, University of Linz
Fons Rademakers, CERN
Happy Sithole, CSIR

04:15 pm - 05:15 pm  ▪ BoF 10: Refining Power Measurement Methodology for Supercomputer-System Benchmarking
Organizer:
Natalie Bates, EE HPC WG
Speakers:
Wu Feng, Virginia Tech
David Rohr, University of Frankfurt
Erich Strohmaier, LBNL

10:20 am - 05:20 pm  ▪ Exhibitor Forum 02
10:20 am - 10:40 am  CALYOS: Practical Benefits of 2-Phase “Loop Heat Pipe” Cooling for HPC Servers
Olivier de Laet, CALYOS
Maxime Vuckovic, CALYOS

10:40 am - 11:00 am  NEC Deutschland: HPC Product Portfolio
Alexander Menck, NEC Deutschland

11:00 am - 11:20 am  Inspur: Inspur & ASC Efforts on HPC Promoting
Qing (Kitty) Ji, Inspur

11:20 am - 11:40 am  Seagate: Building a True Enterprise HPC Storage
Derek Burke, Seagate

11:40 am - 12:00 pm  EXTOLL: An HPC Interconnect with Functions, Features & Opportunities
Ulrich Brüning, University of Heidelberg & EXTOLL
Mondrian Nüssle, EXTOLL

12:00 pm - 12:20 pm  Intel: Discovery at Every Scale – Better Together
Stephan Gillich, Intel

12:20 pm - 12:40 pm  Omnibond: Self Service HPC in the AWS Cloud
Boyd Wilson, Omnibond

12:40 pm - 01:00 pm  Sugon Information Industry: Si-Cube Supercomputer & Prototype of Earth System Numerical Simulator
Weidong Shen, Sugon

01:00 pm - 01:20 pm  Altair: Architected for Exascale: Introducing PBS Professional 13.0
Bill Nitzberg, Altair
01:20 pm - 01:40 pm  Numascale: Explore the Value of Your Data Using In-Memory Analytics with Numascale’s Scalable Solutions Designed to Grow with Your Needs
Raphael Hirschi, Keele University
Atle Vesterkjaer, Numascale

01:40 pm - 02:00 pm  Oracle: How To Approach to HPC Long-Term Storage
Philippe Deverchère, Oracle

02:00 pm - 02:20 pm  Mellanox: Interconnect Your Future
Gilad Shainer, Mellanox

02:20 pm - 02:40 pm  Bull: Atos HPC at the Crossroad of Intensive Computing & Big Data
Claude Derue, Atos

02:40 pm - 03:00 pm  Panasas: Panasas ActiveStor: Hybrid Scale-Out NAS for Mixed Workload Performance
Geoff Noer, Panasas

03:00 pm - 03:20 pm  CoolIT Systems: Planning for Liquid Cooling in the Data Center
Patrick McGinn, CoolIT Systems

03:20 pm - 03:40 pm  RSC: Enabling Leading Energy Efficient, Ultra High Dense & Large Scale Supercomputing towards Exascale
Alexander Moskovsky, RSC
Alexey Shmelev, RSC

03:40 pm - 04:00 pm  Hewlett-Packard: HP Apollo – Meet the Future of High Performance Computing
Joseph George, HP
Craig Yamasaki, HP

04:00 pm - 04:20 pm  Fujitsu: Fujitsu HPC Vision for a Better & More Self-Sustaining Society
Pierre Lagier, Fujitsu

04:20 pm - 04:40 pm  transtec: Challenges of Large Parallel File System Deployments
Michael Wirth, transtec

04:40 pm - 05:00 pm  Asetek: Hybrid HPC Liquid Cooling Adoption – 2015 Update
David Garcia, Asetek

05:00 pm - 05:20 pm  Boston Limited: Boston Lustre HPC Storage Featuring Automatic Load Balancing for Clients
David Power, Boston Limited

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**Exhibition Hall**

**10:00 am - 06:00 pm**  Exhibition

Exhibition Hall
**Vendor Parties**

There will be various vendor-organized parties held in different locations in Frankfurt on Tuesday, July 14. Please visit the exhibitors to receive your invitations, as some parties are by invitation only.

### Coffee & Lunch Breaks

<table>
<thead>
<tr>
<th>Time</th>
<th>Break</th>
<th>Location</th>
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<tbody>
<tr>
<td>10:00 am - 11:00 am</td>
<td>COFFEE BREAK</td>
<td>Exhibition Hall</td>
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<tr>
<td>12:30 pm - 01:45 pm</td>
<td>LUNCH</td>
<td>Exhibition Hall</td>
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<tr>
<td>02:45 pm - 03:30 pm</td>
<td>COFFEE BREAK</td>
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<tr>
<td>04:30 pm - 05:15 pm</td>
<td>COFFEE BREAK</td>
<td>Exhibition Hall</td>
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</table>
PROGRAM
Conference & Exhibition
(in chronological order per room)

WEDNESDAY, JULY 15
## Panorama 1

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Notes</th>
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<tbody>
<tr>
<td>08:00 am - 10:00 am</td>
<td><strong>Supercomputing &amp; Human Brain Project – Following Brain Research &amp; ICT on 10-Year Quest</strong></td>
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<td><em>Chair: Thomas Lippert, JSC</em></td>
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<tr>
<td>08:00 am - 08:05 am</td>
<td><strong>Introduction</strong></td>
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<td><em>Thomas Lippert, JSC</em></td>
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<tr>
<td>08:05 am - 08:15 am</td>
<td><strong>HPC Platform: Unified Portal &amp; Platforms</strong></td>
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<td><em>Jeffrey Muller, EPFL</em></td>
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<tr>
<td>08:15 am - 08:25 am</td>
<td><strong>HPC Platform: UNICORE</strong></td>
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<td><em>Bernd Schuller, JSC</em></td>
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<tr>
<td>08:25 am - 08:35 am</td>
<td><strong>HPC Platform: HPC Platform Integration</strong></td>
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<td><em>Colin McMurtrie, CSCS</em></td>
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<td>08:35 am - 08:43 am</td>
<td><strong>HPC Platform: Questions &amp; Answers</strong></td>
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<tr>
<td>08:43 am - 08:58 am</td>
<td><strong>Simulation: Design Space of Neurosimulations</strong></td>
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<td><em>Felix Schürmann, EPFL &amp; Blue Brain Project</em></td>
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<tr>
<td>08:58 am - 09:13 am</td>
<td><strong>Simulation: Mathematics of Neurosimulations</strong></td>
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<td><em>Matthias Bolten, Bergische Universität Wuppertal</em></td>
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<tr>
<td>09:13 am - 09:21 am</td>
<td><strong>Simulation: Questions &amp; Answers</strong></td>
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<tr>
<td>09:21 am - 09:31 am</td>
<td><strong>Beyond: Neuromorphic Approaches in HBP</strong></td>
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<td><em>Karlheinz Meier, University of Heidelberg</em></td>
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<tr>
<td>09:31 am - 09:51 am</td>
<td><strong>Beyond: The New Cortical Learning Center at IBM Research</strong></td>
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<td><em>Winfried Wilcke, IBM</em></td>
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<tr>
<td>09:51 am - 10:00 am</td>
<td><strong>Beyond: Questions &amp; Answers</strong></td>
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| 11:00 am - 12:30 pm | **TOP3 Exascale Research Topics**                                                                 |                        |
|                   | *Chair: Ed Seidel, University of Illinois at Urbana-Champaign*                                   |                        |
| 11:00 am - 11:30 am | **Progress in Extreme Astrophysics via Large-Scale Computation**                                   |                        |
|                   | *Christian D. Ott, Caltech*                                                                       |                        |
| 11:30 am - 12:00 pm | **Fluid Simulations Using Exascale Capabilities**                                                 |                        |
|                   | *Philipp Schlatter, KTH*                                                                          |                        |
| 12:00 pm - 12:30 pm | **Software Challenges for Extreme-Scale Computing**                                               |                        |
|                   | *Bill Gropp, University of Illinois in Urbana-Champaign*                                         |                        |

| 01:45 pm - 02:45 pm | **Distinguished Speakers 02**                                                                     |                        |
|                   | *Chair: Horst Gietl, ISC Group*                                                                   |                        |
| 01:45 pm - 02:15 pm | **Usable Exascale & Beyond Moore’s Law**                                                          |                        |
|                   | *Horst D. Simon, LBNL*                                                                            |                        |
| 02:15 pm - 02:45 pm | **Anatomy of Optimizing an Algorithm for Exascale**                                               |                        |
|                   | *Jack Dongarra, University of Tennessee & ORNL*                                                     |                        |
03:30 pm - 04:30 pm  Advanced Display & Visualization Technology  Panorama 1
Chair: Kelly Gaither, TACC

03:30 pm - 03:50 pm  Too Much Data & Too Many Pixels: Interactive Visualization on High-Resolution Displays
Thomas Ertl, University of Stuttgart

03:50 pm - 04:10 pm  Interacting with Large Format, High Resolution Displays
Luis Francisco-Revilla, TACC

04:10 pm - 04:30 pm  Immersive Visualization: A Retrospective
Bill Sherman, Indiana University

Panorama 2

08:30 am - 10:00 am  Potential Impact of Quantum Computing on HPC  Panorama 2
Chair: Rupak Biswas,
NASA Ames Research Center

08:30 am - 09:00 am  Quantum Computing, Quantum Annealing & Coherent Computing – Principle, Implementation & Performance
Yoshi Yamamoto, ImPACT & Stanford University

09:00 am - 10:00 am  Panel: What Can the IT Community Expect from a Quantum Computer?
Vadim Smelyanskiy, Google
Lieven Vandersypen, TU Delft
Yoshi Yamamoto, ImPACT & Stanford University

11:00 am - 12:30 pm  HPC & Cloud Computing in Financial Services  Panorama 2
Chair: Johannes Watzl,
Independent Consultant

11:00 am - 11:30 am  Cloudsoft, Brooklyn, Clocker & Opengamma
Duncan Johnston-Watt, Cloudsoft

11:30 am - 12:00 pm  The Good, Bad & Ugly of Accelerators in Finance & an Alternative Path
John Holden, NAG

12:00 pm - 12:30 pm  Enterprise Grade Cloud – What Factors Matter for Financial Services Industry
Prodosh Banerjee, Safe Swiss Cloud

01:45 pm - 02:45 pm  Cyber Security Situation in Germany – Cyber Crime, Cyber Espionage & Cyber Sabotage  Panorama 2
Chair: Andreas Könen, BSI

01:45 pm - 02:15 pm  Cyber Espionage & Cyber Sabotage – Protection of Critical Infrastructures in Germany & Europe
Andreas Könen, BSI

02:15 pm - 02:45 pm  Facing Cybercrime – Targeting the Cybercriminals
Carsten Meywirth, BKA
03:30 pm - 04:15 pm  
Analyst Crossfire
Moderator: 
Addison Snell, Intersect360 Research  
Panelists: 
Rudolf Fischer, NEC  
Alexander Moskovsky, RSC  
Ryan Quick, PayPal

05:15 pm - 06:00 pm  
Wednesday Keynote
Chair: Frank Baetke, HP

06:00 pm - 06:30 pm  
Closing Session
Chairs: 
Martin Meuer, ISC Group  
Thomas Meuer, ISC Group

06:30 pm - 07:00 pm  
HPCAC-ISC Student Cluster Competition 2015 Award Ceremony
Chairs: 
Thomas Meuer, ISC Group  
Gilad Shainer, Mellanox

Panorama 3 - INDUSTRY TRACK

08:30 am - 10:00 am  
HPC System Software
Chair: Jan Wender, science+computing

08:30 am - 09:00 am  
HPC on Windows: Does It Make Sense?  
Jan Wender, science+computing

09:00 am - 10:00 am  
Performance Optimization of HPC Applications: From Hardware to Source Code  
Fisnik Kraja, science+computing  
Oliver Schröder, science+computing
11:00 am - 12:30 pm  ■ Cloud & Big Data: Examples from Industry  Panorama 3
Chairs: Wolfgang Gentzsch, UberCloud Community & Marketplace
Sverre Jarp, CERN

11:00 am - 11:20 am  Connecting Business & Numerical Adaptivity for CFD Simulations
Matthias Reyer, CPU 24/7

11:20 am - 11:40 am  CloudFlow: Computational Cloud Services & Workflows for Agile Engineering – Current Success Stories, New Application Experiments & Future Open Calls
André Stork, Fraunhofer IGD

11:40 am - 12:00 pm  Real Time High Performance Data Analysis for Operational Analytics in an Enterprise Environment
Arno Kolster, PayPal

12:00 pm - 12:20 pm  Big Data for Healthcare & Privacy by Design. Gnúbila’s Experience
David Manset, Gnúbila

12:20 pm - 12:30 pm  Questions & Answers

01:45 pm - 02:45 pm  ■ Solving Complex Problems with Affordable Compute Clusters  Panorama 3
Chair: Rosemarie Meuer, Rheinmetall Waffe Munition

01:45 pm - 02:15 pm  Computational Chemistry at BASF
Stephan Schenk, BASF

02:15 pm - 02:45 pm  Using Compute Clusters to Predict Crystalline Structures
Andreas Delleske, Avant-Garde Simulation

03:30 pm - 04:30 pm  ■ HPC in the Global Automotive Industry  Panorama 3
Chair: Earl Joseph II, IDC

03:30 pm - 04:00 pm  Findings of IDC Study of the Global Automotive Industry
Steve Conway, IDC
Earl Joseph II, IDC

04:00 pm - 04:30 pm  Panel: Significance of HPC in the Automotive Industry
Moderator: Michael M. Resch, HLRS
Panelists:
Christoph Altmann, Bosch
Burkhard Hupertz, Ford
Jürgen Kohler, Daimler
Gunther Mayer, VW
08:30 am - 10:00 am  
**HPC in Asia 01**

*Chair: Zhong Jin, CAS*

08:30 am - 08:40 am  
Welcome Address  
*Taisuke Boku, University of Tsukuba*

08:40 am - 08:50 am  
Status Report from Australia  
*Neil Stringfellow, Pawsey Supercomputing Centre*

08:50 am - 09:00 am  
Status Report from Singapore  
*Tin Wee Tan, A*STAR & National Supercomputing Centre of Singapore*

09:00 am - 09:10 am  
Status Report from Taiwan  
*Weicheng Huang, NCHC*

09:10 am - 09:20 am  
Status Report from India  
*Rajat Moona, C-DAC*

09:20 am - 09:30 am  
Status Report from Japan  
*Taisuke Boku, University of Tsukuba*

09:30 am - 09:40 am  
Status Report from Korea  
tba

09:40 am - 09:50 am  
Status Report from China  
*Yutong Lu, NUDT*

09:50 am - 10:00 am  
Discussion on Collaborative Work on National Infrastructure Supercomputers

10:00 am - 11:00 am  
**HPC in Asia Poster Session**

*01A*  
BARAM: Virtual Wind-Tunnel System for CFD Simulation  
*Gibeom Gu, KISTI*

*02A*  
Implementation & Evaluation of Coupled Multi-Scale Simulation for Seismic Wave & Building Vibration  
*Masaharu Matsumoto, University of Tokyo*

*03A*  
HPC Real View, Analysis, Report through InClus  
*Ashish Ranjan, C-DAC*

*04A*  
Interfacial Properties of Methanol-Water & Ethanol-Water Mixtures  
*Thuy Pham, Curtin University*

*05A*  
Performance Optimization of Large-Scale Traffic Simulation on Parallel & Distributed Systems  
*Hiroki Kanezashi, Tokyo Institute of Technology*

*06A*  
Dynamic Load Balancing for Parallel Computation of Hierarchical Matrices  
*Tasuku Hiraishi, Kyoto University*
(07A) Evaluation of FFT Code for GPU Cluster Using Tightly Coupled Accelerators Architecture
Toshihiro Hanawa, University of Tokyo

(08A) Improving Cluster Management – KARAAGE
Vera Hansper, VLSCI

(09A) High Performance Quad-Precision Eigenvalue Solver: QPEigenK
Susumu Yamada, Japan Atomic Energy Agency

(10A) Sparse Linear Solver Based on Extended ELL Storage Format of Coefficient Matrix for Manycore Architectures
Kengo Nakajima, University of Tokyo

(11A) HPC in Asia Award Winning Poster: Long Term Failure Analysis of 10 Petascale Supercomputer
Fumiyoshi Shoji, RIKEN AICS

(12A) Towards Cloud-Based Burst Buffers for I/O Intensive Computing in Cloud
Tianqi Xu, Tokyo Institute of Technology

(13A) SuCCoMBE: Spectral Coupled Multiphysics & Mechanics Bifurcation Method
Brian Skjerven, Pawsey Supercomputing Centre

(14A) Implementation & Performance of ICCG Solver Using OpenMP & OpenACC
Satoshi Ohshima, University of Tokyo

11:00 am - 12:30 pm  ■ HPC in Asia 02

Agenda

Chair: Hiroshi Nakashima, Kyoto University

11:00 am - 11:20 am Best Poster Award Ceremony & Talk
Fumiyoshi Shoji, RIKEN AICS

11:20 am - 11:40 am A Challenge to Graph500 Benchmark:
Trillion-Scale Graph Processing on K Computer
Katsuki Fujisawa, Kyushu University

11:40 am - 12:00 pm Bioinformatics Petascale Pioneers Program in Australia
Brian Skjerven, Pawsey Supercomputing Centre

12:00 pm - 12:20 pm High Performance Computational Biology & Drug Design on TianHe Supercomputers
Shaoliang Peng, NUDT

12:20 pm - 12:30 pm Closing
Taisuke Boku, University of Tsukuba
<table>
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<tbody>
<tr>
<td>01:45 pm - 02:45 pm</td>
<td>Research Papers 12 – Network Agenda</td>
<td>Chair: Xavier Vigouroux, Bull</td>
</tr>
<tr>
<td>01:45 pm - 02:15 pm</td>
<td>Design Methodology for Optimizing Optical Interconnection Networks in High Performance Systems</td>
<td>Sébastien Rumley, Columbia University</td>
</tr>
<tr>
<td>02:15 pm - 02:45 pm</td>
<td>Designing Non-Blocking Personalized Collectives with Near Perfect Overlap for RDMA-Enabled Clusters</td>
<td>Hari Subramoni, Ohio State University</td>
</tr>
<tr>
<td>03:30 pm - 04:30 pm</td>
<td>Research Papers 14 – Algorithms &amp; Analysis Agenda</td>
<td>Chair: Thomas Ludwig, DKRZ</td>
</tr>
<tr>
<td>03:30 pm - 04:00 pm</td>
<td>Performance &amp; Scaling of WRF on Three Different Parallel Supercomputers</td>
<td>Zaphiris Christidis, Lenovo</td>
</tr>
<tr>
<td>04:00 pm - 04:30 pm</td>
<td>Quantifying Communication in Graph Analytics</td>
<td>Cyriel Minkenberg, IBM Zurich Research</td>
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08:30 am - 10:00 am

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<tbody>
<tr>
<td>08:30 am - 09:00 am</td>
<td>Research Papers 10 – Cost Efficiency Analog 1 + 2</td>
<td>Chair: Alexander Moskovsky, RSC</td>
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<tr>
<td>08:30 am - 09:00 am</td>
<td>Modeling the Productivity of HPC Systems on a Computing Center Scale</td>
<td>Sandra Wienke, RWTH Aachen University</td>
</tr>
<tr>
<td>09:00 am - 09:30 am</td>
<td>A Case Study – Cost of Preemption for Urgent Computing on SuperMUC</td>
<td>Siew Hoon Leong, LRZ</td>
</tr>
<tr>
<td>09:30 am - 10:00 am</td>
<td>Large-Scale Neo-Heterogeneous Programming &amp; Optimization of SNP Detection on Tianhe-2</td>
<td>Yingbo Cui, NUDT</td>
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11:00 am - 12:30 pm

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<tr>
<th>Time</th>
<th>Session</th>
<th>Description</th>
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<tbody>
<tr>
<td>11:00 am - 11:30 am</td>
<td>Taking Advantage of Node Power Variation in Homogenous HPC Systems to Save Energy</td>
<td>Torsten Wilde, LRZ</td>
</tr>
<tr>
<td>11:30 am - 12:00 pm</td>
<td>High-Order ADER-DG Minimizes Energy- &amp; Time-to-Solution of SeisSol</td>
<td>Alexander Heinecke, Intel Parallel Computing Lab</td>
</tr>
<tr>
<td>12:00 pm - 12:30 pm</td>
<td>Energy-Efficient Data Processing through Data Sparsing with Artifacts</td>
<td>Pablo Graubner, University of Marburg</td>
</tr>
</tbody>
</table>
01:45 pm - 02:45 pm  ■ Research Papers 13 – Storage & Data  
Chair: Julian Kunkel, DKRZ
A Best Practice Analysis of HDF5 & NetCDF-4 Using Lustre  
Michael Kuhn, University of Hamburg
Striping Layout Aware Data Aggregation for  
High Performance I/O on a Lustre File System  
Yuichi Tsujita, RIKEN AICS

03:30 pm - 04:30 pm  ■ Research Papers 15 – Libraries  
Chair: Fang-Pang Lin, NCHC
ACCOLADES: A Scalable Workflow Framework for  
Large-Scale Simulation & Analyses of Automotive Engines  
Shashi Aithal, Argonne National Laboratory
Optimizing Processes Mapping for Tasks  
with Non-Uniform Data Exchange Run on Cluster  
with Different Interconnects  
Victor Getmanskii, Singularis Lab

Foyer 0

08:30 am - 06:00 pm  ■ Research Posters & HPC in Asia Posters  
Foyer 0
For a complete list of the Research Posters and HPC in Asia Posters on display at ISC 2015, please refer to pages 30 and 54 respectively.

Booth #210

10:15 am - 11:15 am  ■ BoF 11: Drilling Down: Understanding User-Level Activity on Today’s Supercomputers With XALT  
Organizer:  
Robert McLay, TACC  
Speaker:  
Mark R. Fahey, Argonne National Laboratory

11:15 am - 12:15 pm  ■ BoF 12: Motivating, Engaging & Educating the Young into the HPC World: High-Performance Communications for High-Performance Computing  
Organizer:  
Angela Detjen, CSCS  
Speakers:  
Qing (Kitty) Ji, Inspur  
Tiina Leiponen, CSC – IT Center for Science  
Jack Wells, ORNL
12:15 pm - 01:15 pm  
**BoF 13: Unleashing the Power of Next-Generation Many-Core Processors**  
*Booth #210*  
Organizers:  
*Richard A. Gerber, LBNL/NERSC*  
*Chris Gottbrath, Rogue Wave Software*  
*Chris Newburn, Intel*  
*Thomas Steinke, ZIB*

01:15 pm - 02:15 pm  
**BoF 14: Community Supported HPC Repository & Management Framework**  
*Booth #210*  
Speakers:  
*Karl W. Schulz, Intel*  
*Dan Stanzione, TACC*

02:15 pm - 03:15 pm  
**BoF 15: How to Achieve Memory-Efficient Communication towards Exascale HPC**  
*Booth #210*  
Organizer:  
*Takeshi Nanri, Kyushu University*  
Speakers:  
*Yuichiro Ajima, Fujitsu*  
*Yoshiyuki Morie, Kyushu University*  
*Takeshi Nanri, Kyushu University*  
*Shinji Sumimoto, Fujitsu Laboratories*  
*Toshiya Takami, Kyushu University*

03:15 pm - 04:15 pm  
**BoF 16: Exploiting SIMD-Parallelism – Today & Tomorrow**  
*Booth #210*  
Organizer:  
*Georg Zitzlsberger, Intel*  
Speakers:  
*Alexander Nicolas Breuer, TU München*  
*Soon-Heum “Jeff” Ko, Linkoping University*  
*Matthias Noack, ZIB*  
*Nikola Tchipev, TU München*  
*Florian Wende, ZIB*

04:15 pm - 05:15 pm  
**BoF 17: EOFS & OpenSFS: Challenges & Opportunities for Lustre File System within HPC & Big Data**  
*Booth #210*  
Speakers:  
*Charlie Carroll, Cray*  
*Hugo Falter, ParTec*  
*Jacques-Charles Lafoucriere, CEA*  
*Stephen Simms, Indiana University*
10:20 am - 04:40 pm

10:20 am - 10:40 am  Exhibitor Forum 03
GiDEL: Why FPGA is a Hot Topic
Reuven Weintraub, GiDEL

10:40 am - 11:00 am  DataDirect Networks: Building Advanced IO Architectures to Improve the Productivity of Single and Multi-Cluster Environments
Jeff Sisilli, DDN

11:00 am - 11:20 am  Micron Technology: Automata Processing: A Massively Parallel Computing Solution
Dan Skinner, Micron

11:20 am - 11:40 am  Samsung: Samsung Memory for HPC Update
Thomas Arenz, Samsung

11:40 am - 12:00 pm  Huawei: Research & the Best Practice in HPC
Francis Lam, Huawei

12:00 pm - 12:20 pm  Dell: Dell’s New HPC Scope, Strategy & Solutions
Robert W. Hormuth, Dell

12:20 pm - 12:40 pm  IBM: Data Centric HPC
James Sexton, IBM

12:40 pm - 01:00 pm  Adaptive Computing: Moab Paves the Way for HPC & Beyond
Bernhard Schott, Adaptive Computing

01:00 pm - 01:20 pm  Cavium: Cloud HPC Enablement & Applications
Rishi Chugh, Cavium

01:20 pm - 01:40 pm  UNIVA: Widening the Scope – A New Era of Workload Management
Fritz Ferstl, UNIVA

01:40 pm - 02:00 pm  Cray: Supercomputing & Big Data Challenges in Practice: Weather Forecasting & Climate Research
Philip Brown, Cray

02:00 pm - 02:20 pm  Supermicro: Supermicro HPC-Parallel Processing Solutions: Advances & Architecture
Peter Maas, Supermicro

02:20 pm - 02:40 pm  Lenovo: HPC Storage
Michael Hennecke, Lenovo

02:40 pm - 03:00 pm  Amazon Web Services: Trends for Scalable HPC & Big Data in the Cloud
David Pellerin, AWS

03:00 pm - 03:20 pm  ClusterVision: Managing HPC Clusters in the Cloud with Trinity
Themis Athanassiadou, ClusterVision
<table>
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<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>03:20 pm - 03:40 pm</td>
<td>COMSOL Multiphysics: Democratization of HPC: How COMSOL-Apps Redefine CAE</td>
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<td>Winfried Geis, COMSOL Multiphysics</td>
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<tr>
<td>03:40 pm - 04:00 pm</td>
<td>T-Platforms: JURECA: Jülich, ParTec and T-Platforms towards Exascale Cluster Architectures</td>
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<td>Elena Churakova, T-Platforms</td>
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<td>04:00 pm - 04:20 pm</td>
<td>AMD: Heterogeneous Computing: The Rise of Open Programming Frameworks</td>
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<td>Karl Freund, AMD</td>
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<td>04:20 pm - 04:40 pm</td>
<td>SGI: Why HPC Matters</td>
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<td>Eng Lim Goh, SGI</td>
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<td>Michael Woodacre, SGI</td>
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**Exhibition Hall**

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<tr>
<th>Time</th>
<th>Event</th>
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<tr>
<td>10:00 am - 06:00 pm</td>
<td>Exhibition</td>
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**Coffee & Lunch Breaks**

<table>
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<tr>
<th>Time</th>
<th>Event</th>
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<tr>
<td>10:00 am - 11:00 am</td>
<td>COFFEE BREAK</td>
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<tr>
<td>12:30 pm - 01:45 pm</td>
<td>LUNCH</td>
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<tr>
<td>02:45 pm - 03:30 pm</td>
<td>COFFEE BREAK</td>
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<tr>
<td>04:30 pm - 05:15 pm</td>
<td>COFFEE BREAK</td>
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<td>Time</td>
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<tr>
<td>8am</td>
<td>Performance Modeling Methods &amp; Applications</td>
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<tr>
<td>9am</td>
<td>Power &amp; Energy-Aware High Performance Computing on Emerging Technology</td>
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<tr>
<td>10am</td>
<td>HPCSET 2015, 2nd International Workshop on High Performance Computing</td>
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<tr>
<td>11am</td>
<td>Simulations in Energy Transport Domains</td>
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<tr>
<td>12pm</td>
<td>PRACE Training Day</td>
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<td>1pm</td>
<td>International Activities in Big Data &amp; Extreme-Scale Computing BDIEC</td>
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<tr>
<td>2pm</td>
<td>Workshop on HPC European/Latin American Collaboration</td>
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<td>3pm</td>
<td>Job Application Performance in Latin America</td>
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<tr>
<td>4pm</td>
<td>The Road to Application Performance on Intel Xeon Phi</td>
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<tr>
<td>5pm</td>
<td>A Summary of Four Years of European Exascale Research</td>
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<tr>
<td>6pm</td>
<td>Is Europe Ready for Exascale?</td>
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<tr>
<td>7pm</td>
<td>Application Extreme-Scale Experience of Leading Supercomputing Centers</td>
</tr>
<tr>
<td>8pm</td>
<td>Germany’s Path to Exascale &amp; Extreme-Scale Computing</td>
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<tr>
<td>9pm</td>
<td>Germany’s Path to the Data Center (HPC-UDE)</td>
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<tr>
<td>10am</td>
<td>Workshop on Software Frameworks for Scalable Scientific Simulations</td>
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<tr>
<td>11am</td>
<td>Amazon Web Services Tutorial – Cluster Computing in the Cloud</td>
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<tr>
<td>12pm</td>
<td>Scalable &amp; Cost Effective IT for Engineering Simulation</td>
</tr>
<tr>
<td>1pm</td>
<td>Exascale: First International Workshop on Communication Architectures</td>
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THURSDAY, JULY 16

PROGRAM

Workshops
(in chronological order per room)
WORKSHOPS – FRANKFURT MARRIOTT HOTEL

09:00 am - 06:00 pm  Performance Modeling: Methods & Applications  Lava 1 + 2

Organizers:
Georg Hager, RRZE
Gerhard Wellein, RRZE & University of Erlangen-Nuremberg

09:00 am - 10:00 am  Keynote: Engineering for Performance in High Performance Computing
Bill Gropp, University of Illinois in Urbana-Champaign

10:00 am - 10:30 am  Palm: Easing the Burden of Analytical Performance Modeling
Nathan Tallent, PNNL

10:30 am - 11:00 am  Exploring Emerging Technologies in the Extreme Scale HPC Co-Design Space with Holistic Performance Prediction
Jeffrey Vetter, ORNL & Georgia Institute of Technology

11:30 am - 12:00 pm  Putting a Dent into the Memory Wall: Combined Power-Performance Modeling for Memory Systems
Laura C. Carrington, SDSC

12:00 pm - 12:30 pm  Modeling Performance Under a Power Bound: A Short Tour of the Near Future
Martin Schulz, LLNL

12:30 pm - 01:00 pm  Server Resource Provisioning for Real-Time Analytics Using Iso-Metrics
Dimitrios S. Nikolopoulos, Queen’s University of Belfast

02:00 pm - 02:30 pm  Mass-Producing Insightful Performance Models of Parallel Applications
Felix Wolf, TU Darmstadt

02:30 pm - 03:00 pm  Performance-Influence Models
Alexander Grebhahn, University of Passau

03:00 pm - 03:30 pm  Computational Time, Energy, Power & Action
Robert W. Numrich, City University of New York

03:30 pm - 04:00 pm  Bridges between Macroscopic & Microscopic Models for Co-Design
Rich Vuduc, Georgia Tech

04:30 pm - 05:00 pm  The Empirical Roofline Toolkit
Brian Van Straalen, LLNL

05:00 pm - 05:30 pm  Performance Engineering via Analytical Models
Georg Hager, RRZE

05:00 pm - 06:00 pm  Speakers & Attendees: Survey, Open Discussion & Closing Remarks
09:00 am - 06:00 pm  | Power & Energy-Aware High Performance Computing on Emerging Technology

**Organizers:**
Costas Bekas, IBM Research Zurich
Vincent Heuveline, University of Heidelberg
Thomas Ludwig, DKRZ

09:00 am - 09:10 am  | Introduction
09:10 am - 09:50 am  | Keynote: The Role of Supercomputing Centers in Raising Energy Efficiency Awareness
Axel Auweter, LRZ
09:50 am - 10:20 am  | Design of Tools for Power- & Energy Analysis on HPC Systems
Manuel Dolz, University of Hamburg
10:20 am - 11:00 am  | Keynote: Why Energy-Aware Systems Need a Little Bit of LUC
Kirk W. Cameron, Virginia Tech
11:30 am - 12:00 pm  | Fast & Energy-Efficient Computations of Natural Exponential Function on SIMD Architectures
Cristiano Malossi, IBM Research Zurich
12:00 pm - 12:40 pm  | Keynote: Why Energy-Efficient High-Performance Computing is Harder than Energy-Efficient Embedded Computing
Dimitrios S. Nikolopoulos, Queen’s University of Belfast
12:40 pm - 01:10 pm  | Investigating the Energy Efficiency of Iterative Sparse Linear System Solvers
Enrique S. Quintana-Ortí, University Jaume I
02:10 pm - 02:50 pm  | Keynote: To Cool or Not to Cool? Energy Efficiency from an HPC-Operator’s View
Rudolf Lohner, KIT
02:50 pm - 03:20 pm  | Energy-Efficient Parallel Multigrid Methods
Martin Wlotzka, University of Heidelberg
03:20 pm - 04:00 pm  | Keynote: Challenges & Prospects of Optimizing the Coupled Chemistry-Meteorology Model COSMO-ART
Dominik Brunner, Empa
04:30 pm - 05:00 pm  | Showcase for Energy-Optimised Aerosol Chemistry Packages
Joseph Charles, CSCS
05:00 pm - 06:00 pm  | Open Discussion
09:15 am - 05:30 pm  ■ HPCSET 2015: 2nd International Workshop on
High Performance Computing Simulation in Energy/Transport Domains

Organizers:
Christophe Calvin, CEA
Christophe Denis, EDF
Thiên-Hiêp Lê, ONERA
Alain Refloch, ONERA

09:00 am - 09:30 am  Introduction

APPLICATIONS

Chair: Christophe Calvin, CEA

09:30 am - 10:00 am  Large-Scale LES Simulation of Rod Bundles
Elia Merzari, Argonne National Laboratory

10:00 am - 10:30 am  Recent Developments in EUROPLEXUS Software
Vincent Faucher, CEA

10:30 am - 11:00 am  Some HPC Challenges for Multi-Physics
Extended CFD Computations
Alain Refloch, ONERA

PERFORMANCES

Chair: Christophe Denis, EDF

11:30 am - 12:00 pm  MPMD Parallelization of an Aerodynamic Code with Bodies in Relative Motion
Jean-Marie Couteyen, INRIA

12:00 pm - 12:30 pm  Performance Study of Industrial Hydrocodes: Modeling, Analysis & Aftermaths on Innovative Computational Methods
Florian De Vuyst, ENS Cachan

12:30 pm - 01:00 pm  Parallel Scalable Anisotropic Adaptation & Cloud-Based Solvers for Computational Fluid Dynamics
Elie Hachem, MINES ParisTech

EVOLUTION

Chair: Andrew Siegel, Argonne National Laboratory

02:00 pm - 02:30 pm  A Proxy Application for the Domain of Computational Fluid Dynamics
Christian Simmendinger, T-Systems

02:30 pm - 03:00 pm  CFD Code Modernization by Means of Proto-Applications
Eric Petit, UVSQ

03:00 pm - 03:30 pm  Porting Nuclear Engineering Applications on Intel Xeon Phi
Christophe Calvin, CEA
## VERIFICATION

**Chair: Alain Refloch, ONERA**

- **04:30 pm - 05:00 pm** Numerical Reproducibility in Open TELEMAC: A Case Study within the Tomawak Library  
  *Rafife Nheili, Université de Perpignan*

- **05:00 pm - 05:30 pm** Numerical Verification of Large Parallel Scientific Codes Using Monte Carlo Arithmetic  
  *Christophe Denis, EDF*

## Alabaster 1 (2nd Floor)

### Workshop on HPC European/LatinAmerican Collaboration

**Organizers:**
- Carlos Jaime Barrios Hernández, UIS
- Gonzalo Hernandez, Universidad Técnica Federico Santa María
- Mariano Vasquez, BSC

**Speakers:**
- Rosa Badía, BSC
- Roberto Barbera, INFN
- Ulises Cortes, BSC
- Alvaro de la Ossa, CENAT
- Yves Denneulin, Université de Grenoble
- Guillermo Diaz, CETA-CIEMAT
- Phillipe Navaux, GPPD-UFRGS
- Carsten Trinitis, TU München

## Alabaster 2 (2nd Floor)

### PRACE Training Day

**Organizers:**
- Nia Alexandrov, BSC
- Ondrej Jakl, VSB
- Ioannis Liabotis, GRNET

09:00 am - 09:20 am  
**Welcome Address**

09:20 am - 09:50 am  
**PATC Curriculum & Links with Universities**  
*Maria-Ribera Sancho, BSC*

09:50 am - 10:10 am  
**Seasonal Schools**  
*Ondrej Jakl, VSB*

10:10 am - 10:30 am  
**The International Summer School**  
*David Henty, EPCC*

10:30 am - 10:40 am  
**HPC Courses On-Line – Challenges & Opportunities**  
*David Henty, EPCC*
10:40 am - 11:00 am  PRACE Training Portal & Events System  
*Stelios Erotokritou, The Cyprus Institute*

11:30 am - 11:50 am  Training the Trainer Program in HLRS  
*Rolf Rabenseifner, HLRS*

11:50 am - 12:10 pm  Summer of HPC  
*Leon Kos, University of Ljubljana*

12:10 pm - 01:00 pm  Panel Discussion: HPC Training for Advancing EU  
HPC Eco System  
*Ioannis Liabotis, GRNET*  
*Jürgen Kohler, Daimler*  
*Vladimir Voevodin, MSU*  
*Brian J. N. Wylie, JSC*

02:00 pm - 06:00 pm  **Docker: User-Friendly Application & Service Containers for HPC Environments**  
*Alabaster 2*

02:00 pm - 02:15 pm  Introduction  
*Andreas Schmidt, Cassini Consulting*

02:15 pm - 03:15 pm  Docker in a Nutshell  
*Andreas Schmidt, Cassini Consulting*

03:15 pm - 04:00 pm  Service Disruption through Docker  
*Christian Kniep, QNIB Solutions*

04:30 pm - 05:00 pm  Docker for Software Development, Testing & Verification  
*Nishant Agrawal, TCS Innovation Labs*

05:00 pm - 05:30 pm  Containers for HPC Workloads, Practical Demos & Use Cases  
*Wolfgang Gentzsch, UberCloud Community & Marketplace*

05:30 pm - 06:00 pm  Panel & Interactive Q&A  
*Matrix (5th Floor)*

09:00 am - 06:15 pm  **International Activities in Big Data & Extreme-Scale Computing (BDEC)**  
*Matrix*

09:00 am - 09:10 am  Introduction  
*Pete Beckman, Argonne National Laboratory*  
*Jack Dongarra, University of Tennessee & ORNL*
09:10 am - 09:30 am  BDEC Software
Kate Keahey, Argonne National Laboratory
Satoshi Matsuoka, Tokyo Institute of Technology

09:30 am - 09:50 am  BDEC Algorithms
Mike Heroux, Sandia National Laboratories

09:50 am - 10:10 am  BDEC Architecture
Bill Kramer, NCSA

10:10 am - 10:30 am  BDEC Applications
Rosa Badia, BSC
David Keyes, KAUST

10:30 am - 11:00 am  EXDCI (EESI3)
François Bodin, IRISA

11:30 am - 12:00 pm  SPExxA2: A Success Story of Multi-Agency Collaboration
Mark Asch, ANR
Wolfgang E. Nagel, TU Dresden
Marcus Wilms, DFG

12:00 pm - 12:15 pm  DOE Perspective
William Harrod, DoE

12:15 pm - 12:30 pm  NSF Perspective via WebEx
Irene Qualters, NSF

12:30 pm - 01:00 pm  US Japanese
Pete Beckman, Argonne National Laboratory
Yutaka Ishikawa, RIKEN AICS & University of Tokyo
Jeffrey Vetter, ORNL & Georgia Institute of Technology

02:00 pm - 02:10 pm  Welcome & Goals/Objectives for BDEC Cooperation
James Ang, Sandia National Laboratories

02:10 pm - 02:30 pm  Opening Remarks & A Personal Perspective from an International BDEC Road Warrior
Thomas Sterling, Indiana University

02:30 pm - 03:00 pm  SKA Project Update & Collaboration Opportunities
Happy Sithole, CSIR

03:00 pm - 03:30 pm  SKA, DOME & Astron Project
Ronald P. Luijten, IBM Research Zurich

03:30 pm - 04:00 pm  BDEC Collaboration Opportunities in Russia
Vladimir Voevodin, MSU

04:30 pm - 05:00 pm  tba

05:00 pm - 05:30 pm  BDEC Collaboration Opportunities at A*Star/Singapore
Marek T. Michalewicz, A*STAR

05:30 pm - 06:00 pm  BDEC Collaboration Opportunities at KAUST/Saudi Arabia
David Keyes, KAUST

06:00 pm - 06:15 pm  Wrap-Up
James Ang, Sandia National Laboratories
Thomas Sterling, Indiana University
### Kilobyte (5th Floor)

**09:00 am - 01:00 pm**

- **The Road to Application Performance on Intel Xeon Phi**
  
  **Organizers:**
  - Richard A. Gerber, LBNL/NERSC
  - Chris Newburn, Intel
  - Thomas Steinke, ZIB

**02:00 pm - 06:00 pm**

- **Women in HPC**
  
  **Organizers:**
  - Sunita Chandrasekaran, University of Houston
  - Antonia Collis, WHPC & EPCC
  - Athina Frantzana, EPCC
  - Rebecca Hartman-Baker, LBNL
  - Daniel Holmes, EPCC
  - Adrian Jackson, EPCC
  - Alison Kennedy, EPCC & PRACE
  - Catherine Revière, GENCI
  - Lorna Smith, EPCC

**02:00 pm - 02:05 pm**

- Welcome
  - Alison Kennedy, EPCC & PRACE

**02:05 pm - 02:30 pm**

- Invited Talk: Women in the World of HPC: Why Diversity Matters & Why We Don’t Have Enough of It
  - Antonia Collis, WHPC & EPCC

**02:30 pm - 02:55 pm**

- Talk 1 (by peer review)

**02:55 pm - 03:20 pm**

- Talk 2 (by peer review)

**03:20 pm - 03:45 pm**

- Talk 3 (by peer review)

**03:45 pm - 04:00 pm**

- Poster Pitches & Mixer

**04:00 pm - 05:00 pm**

- Invited Talk: Careers in HPC
  - Trish Damkroger, LLNL

**05:00 pm - 06:00 pm**

- Panel Session: Diversity in the Workplace

### Megabyte (5th Floor)

**09:00 am - 04:00 pm**

- **Is Europe Ready For Exascale? A Summary of Four Years of European Exascale Research**
  
  **Organizers:**
  - Filippo Mantovani, BSC
  - Estela Suarez, JSC

**09:00 am - 09:15 am**

- Welcome & Introduction

**09:15 am - 09:45 am**

- Keynote: The Race towards Exascale – A Global Perspective
  - Gilad Shainer, Mellanox
09:45 am - 11:00 am Session 1: Developing Hardware for the Exascale Era – Best Practices from DEEP/-ER & MontBlanc
Axel Auweter, LRZ
Norbert Eicker, Bergische Universität Wuppertal & JSC
Filippo Mantovani, BSC

11:30 am - 01:00 pm Session 2: Changing Programming Paradigms, Novel Algorithms & User-Friendly Tools for the Exascale Era
Pooyan Dadvand, CIMNE & UPC
Erwin Laure, KTH
Tom Vander Aa, imec

02:00 pm - 02:45 pm Session 3: Preparing Applications & Software for Exascale
Mark Parsons, University of Edingburgh

02:45 pm - 03:45 pm Panel Discussion: Is Europe Ready for Exascale?

03:45 pm - 04:00 pm Conclusions & Farewell

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**Gigabyte (5th Floor)**

09:00 am - 06:00 pm **Application Extreme-Scaling Experience of Leading Supercomputing Centers**

**Organizers:**
Dirk Brömmel, JSC
Wolfgang Frings, JSC
Brian J. N. Wylie, JSC

09:00 am - 11:00 am Session 01: Blue Gene/Q Systems
Dirk Brömmel, JSC
Bronis R. de Supinski, LLNL
Mark R. Fahey, Argonne National Laboratory
Brian J. N. Wylie, JSC

11:30 am - 01:00 pm Session 02: Accelerated Systems (MIC)
Yunfei Du, NSCC-GZ
Ferdinand Jamitzky, LRZ
Carlos Rosales-Fernandez, TACC

02:00 pm - 04:00 pm Session 03: Accelerated Systems (GPU)
Stefan Andersson, Cray
Akihiro Nomura, Tokyo Institute of Technology
Will Sawyer, CSCS
Neil Stringfellow, Pawsey Supercomputing Centre

04:30 pm - 06:00 pm Session 04: Homogeneous HPC Systems
Jean-Philippe Nominé, CEA
Miwako Tsuji, RIKEN/AICS
**09:00 am - 01:00 pm**

**Germany’s Path to Exascale & Extreme Scale Computing**

**Ampere**

*Organizer:*
Michael M. Resch, HLRS

*Speakers:*
Hans-Joachim Bungartz, TU München
Thomas Ludwig, DKRZ
Wolfgang E. Nagel, TU Dresden
Michael M. Resch, HLRS

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**02:00 pm - 06:00 pm**

**Workshop on Software Frameworks for Scalable Scientific Simulations**

**Ampere**

*Organizers:*
José Gracia, HLRS
Daniel Harlacher, University of Siegen
Harald Klimach, University of Siegen
Sabine Roller, University of Siegen
Martin Schulz, LLNL

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**09:00 am - 01:00 pm**

**Scalable & Cost Effective IT for Engineering Simulation**

**Volt**

*Organizer:*
Wim Slagter, ANSYS

*Speakers:*
Georg Scheuerer, ANSYS
Wim Slagter, ANSYS

09:00 am - 09:15 am Welcome & Registration
09:15 am - 10:00 am ANSYS IT Vision & Strategy
10:00 am - 11:00 am Cloud for Enterprise Engineering – Roundtable Discussion
11:30 am - 12:30 pm Data Management and Security – Roundtable Discussion
12:30 pm - 01:00 pm General Discussion & Action Items for ANSYS

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**02:00 pm - 06:00 pm**

**Amazon Web Services Tutorial – Cluster Computing in the Cloud**

**Volt**

*Organizer:*
David Pellerin, AWS
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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| 09:00 am -   | HPC I/O in the Data Center [HPC-IODC]  
                | *Organizers:*  
                |  Julian Kunkel, DKRZ  
                |  Jay Lofstead, Sandia National Laboratories  
                |  Colin McMurtrie, CSCS  
                |  Welcome  
                |  Julian Kunkel, DKRZ  
                |  Summary of the DoE Storage Systems & Input/Output Workshop 2014  
                |  Jay Lofstead, Sandia National Laboratories  
                |  I/O at DKRZ  
                |  Julian Kunkel, DKRZ  
                |  I/O Studies at CSCS  
                |  Colin McMurtrie, CSCS  
                |  I/O in an Industrial Scientific Computing Environment  
                |  Gerd Büttner, Airbus  
                |  I/O at HLRS  
                |  Thomas Bönisch, HLRS  
                |  Discussion Round 01  
                |  Michael Kluge, TU Dresden  
                |  Activities Towards High Availability of Parallel I/O at the K Computer  
                |  Yuichi Tsujita, RIKEN AICS  
                |  I/O at Argonne National Laboratory  
                |  Florin Isaila, Argonne National Laboratory & University Carlos III  
                |  I/O at JSC  
                |  Wolfgang Frings, JSC  
                |  Percipient Storage: A Big Data & Extreme Compute Storage Architecture  
                |  Sai Narasimhamurthy, Seagate  
                |  Discussion Round 02  
                |  Feedback & Farewell  
| 09:15 am -   | 10:00 am  
| 10:00 am -   | 10:30 am  
| 11:30 am -   | 12:00 pm  
| 12:00 pm -   | 12:30 pm  
| 12:30 pm -   | 01:00 pm  
| 02:00 pm -   | 02:30 pm  
| 02:30 pm -   | 03:00 pm  
| 03:00 pm -   | 03:30 pm  
| 03:30 pm -   | 04:00 pm  
| 04:30 pm -   | 05:00 pm  
| 05:00 pm -   | 05:30 pm  
| 05:30 pm -   | 06:00 pm  |
ExaComm: First International Workshop on Communication Architectures at Extreme Scale

Organizers:
Khaled Hamidouche, Ohio State University
Dhabaleswar K. Panda, Ohio State University
Hari Subramoni, Ohio State University

09:00 am - 09:15 am Opening Remarks
09:15 am - 10:15 am Keynote: Exascale Computing Architecture Trends & Implications for Programming Systems
John Shalf, LBNL

10:15 am - 11:00 am Invited Talk 1: Paving the Road to Exascale
Dror Goldenberg, Mellanox

11:30 am - 12:15 pm Invited Talk 2: Tool Interfaces in MPI: Challenges & Opportunities in the Exascale Era
Martin Schulz, LLNL

12:15 pm - 01:00 pm Invited Talk 3: Interconnection Networks Beyond 50Gbps: Architecture & Protocols for High Performance Datacenters
Mitch Gusat, IBM Zurich Research

02:00 pm - 02:45 pm Invited Talk 4: Interconnect Related Research at Oak Ridge National Laboratory
Arthur [Barney] Maccabe, ORNL

02:45 pm - 04:00 pm Research Paper Session
04:30 pm - 06:00 pm Panel: Top 5 Challenges for Exascale Interconnects
Ron Brightwell, Sandia National Laboratories
Taisuke Boku, University of Tsukuba
Richard Graham, Mellanox
Mike Heroux, Sandia National Laboratories
Cyriel Minkenberg, IBM Zurich Research
Mondrian Nüssle, EXTOLL
Duncan Roweth, Cray

06:00 pm - 06:10 pm Closing Remarks

Coffee & Lunch Breaks

08:30 am - 09:00 am WELCOME COFFEE Marriott Hotel Floor 2 & 5
11:00 am - 11:30 am COFFEE BREAK Marriott Hotel Floor 2 & 5
01:00 pm - 02:00 pm LUNCH Marriott Hotel Floor 2 & 5
04:00 pm - 04:30 pm COFFEE BREAK Marriott Hotel Floor 2 & 5
NOTES
Exhibition

The ISC High Performance exhibition features the largest collection of HPC vendors, universities, and research organizations annually assemble and the largest exhibition in Europe. Detailed information regarding the exhibition is also available at http://isc-hpc.com/overview-sponsors-exhibitors.html

Exhibition Hours

Monday, July 13 .....................03:00 pm – 08:30 pm
ISC 30th Anniversary Party ....06:30 pm – 08:30 pm
Tuesday, July 14 .....................10:00 am – 06:00 pm
Wednesday, July 15 ...............10:00 am – 06:00 pm

For the exhibition floor plan and the exhibitor listing, please refer to the Pocket Guide attached. The Pocket Guide is also available at the Registration Counter (Foyer, Hall 3) and the Information Counter (Foyer, Hall 3).
Exhibitor Profiles

10Gtek Transceivers Co., LTD  
Booth 814
10Gtek is a leader of Twinax DAC Cable Assembly, which released 100G Copper DAC Passive & Active with CDR Solution, including QSFP28, CFP, CFP2. 10Gtek’s DAC Twinax Cables, AOC Cables and Optical Transceiver modules are a cost-effective and low-power solution for the rapidly growing Data Center and High Performance Computing (HPC) markets.

2CRSI  
Booth 1251
2CRSI is the destination for storage systems, high-performance computing (HPC) and customized IT appliances. Our servers are designed and manufactured in France and assembled in both France and the US. Helping our customers and users to be most efficient, effective, and successful with their IT is our motivation.

A*STAR Computational Resource Centre  
Booth 1430
A*STAR Computational Resource Centre (A*CRC) provides HPC resources and mass storage facilities for more than 800 scientists from the Agency for Science, Technology and Research (A*STAR) in Singapore. Operating two data centers located at ultra-modern facilities – Fusionopolis and Biopolis – A*CRC systems have a combined computational power of 116 TFlops. www.acrc.a-star.edu.sg

ACAL BFi Germany GmbH  
Booth 537
Our roots founded in design and engineering knowledge. We provide you services along with access to the leading edge technologies. Our world leading suppliers act as a technical partner to help solve your design challenges. Our unique approach guides you through the design process. We Consult. We Design. We Integrate. All kinds of SFP+, XFP, AOC. 4x25G QSFP28 PSM4 500m. 32G Fiber Channel Transceiver.

Adaptive Computing  
Booth 1012
Adaptive powers many of the world’s largest cloud and HPC environments with its award-winning Moab optimization and scheduling software. Moab enables large organizations to perform simulations and analyze data faster and most cost-effectively delivering game-changing results. Moab’s patented policy-based workload manager delivers dynamic scheduling, provisioning and management of multi-step/multi-application services giving companies a competitive advantage.

AIC  
Booth 740
AIC is a leading provider of OEM/ODM server and storage solutions, ideal to meet unique demands of different markets. With expertise in in-house design, validation, and production, our selection of products can be configured to any custom configuration.
Allinea Software
Expoiting high performance computing to the maximum is a demanding challenge – and requires software that runs fast, and runs right. Allinea provides world leading tools that answer that challenge. The Allinea Forge development toolsuite and Allinea Performance Reports analytics tools speed up the development and deployment of fast, correct and energy efficient software.

Altair
Altair’s PBS Works, named “Best HPC Software” by HPCwire readers, is the trusted leader in HPC workload management. Proven for 25 years, the suite’s flagship PBS Professional delivers powerful policy-based job scheduling and management for the largest most complex systems. With portals for submission, analytics and remote visualization – plus industry-leading support – PBS Works is a comprehensive solution for improving ROI on HPC investments. Altair knows HPC: With experts in 48 offices across 22 countries, only Altair produces both HPC infrastructure software and end user applications.

Altera Europe co-exhibitor of Nallatech
Altera is a leading provider of programmable logic solutions and offers FPGA, SoC and CPLD products, along with complementary technologies, such as power management, to provide high-value system solutions to more than 12,000 customers worldwide.

Amazon Web Services
Launched in 2006, Amazon Web Services offers a robust, fully featured technology infrastructure platform in the cloud comprised of a broad set of compute, storage, database, analytics, application and deployment services from data center locations in the U.S., Australia, Brazil, China, Germany, Ireland, Japan, and Singapore. More than a million customers, including fast-growing startups, large enterprises, and government agencies across 190 countries, rely on AWS services to innovate quickly, lower IT costs and scale applications globally.

To learn more about AWS, visit http://aws.amazon.com/de/.

AMD
The latest AMD FirePro™ professional S-series graphics cards are designed for advanced GPGPU compute calculations via OpenCL 1.2 and OpenCL 2.0 ready, and workflows and simultaneous engineering in mind, combining complex modeling with sophisticated rendering and simulation. With local and remote workstation graphics solutions available today, AMD FirePro offers a range of graphics solutions that are certified by all major ISV’s giving you the best choice and value for your business. For more information visit www.fireprographics.com

ANSYS Germany GmbH
ANSYS brings clarity and insight to customers’ most complex design challenges through fast, accurate and reliable engineering simulation. Our technology enables organizations - no matter their industry - to predict with confidence that their products will thrive in the real world. Customers trust our software to help ensure product integrity and drive business success through innovation.
Applied Micro Circuits Corporation  
Applied Micro Circuits Corporation (Nasdaq: AMCC) is a global leader in computing and connectivity solutions for next-generation cloud infrastructure and data centers. AppliedMicro delivers silicon solutions that dramatically lower total cost of ownership. Corporate headquarters are located in Sunnyvale, California. www.apm.com

Asetek  
Asetek, with over 2 million units deployed, is the world-leading provider of hot water liquid cooling systems for data centers, workstations and high-performance PCs. Asetek’s RackCDU™ provides data center cooling cost reductions exceeding 50%. RackCDU D2C™ (Direct to Chip) captures 60% to 80% of server heat with 2.5x-5x increases in compute density. RackCDU provides HPC and commercial data centers improved TCO by decreasing energy consumption, increasing data center compute density and enabling server energy reuse.

ASRock Rack  

Automation N.V.  
Automation is a center of expertise delivering low-voltage electrical Power and Data center Facilities solutions. Pioneering containerised solutions in Telecom since 1997, with a 600-unit base installed, ranging from Cable Landing Stations, Repeater Stations and manufacturing of All-in-One prefabricated Modular Data centers, tailor-made to fit the customer’s needs.

Avnet Technology Solutions GmbH  
Avnet Global Computing Components, a business unit of Avnet TS, are the premier distributor of leading technologies, expertise & supply chain services enabling partners to successfully bring quality products to market. This is achieved by integrating globally recognised server, storage, signage computing technology & component products with a wide array of value-added services to create custom solutions.

Barcelona Supercomputing Center (BSC)  
Barcelona Supercomputing Center (BSC) is the national supercomputing centre in Spain specialised in HPC. Its mission is to provide infrastructure and supercomputing services to scientists, and to generate knowledge and technology to transfer to business and society. It’s a Severo Ochoa Center of Excellence and a first level hosting member of PRACE. There are over 300 experts and R&D Professionals.
Boston Limited

Since 1992 Boston have been dedicated to helping our partners succeed; we are a world renowned systems integrator, designing our own award-winning range of servers, storage and workstation solutions. Striving to provide our clients with first-to-market technology and award-winning, tailored solutions, our high performance, mission-critical server and storage solutions can be customised for every client. We can help you to create your ideal solution, customising the specification, design and even full custom branding.

Visit www.boston.co.uk for more information on our range of products.

Bright Computing BV

Bright Computing provides high performance infrastructure management solutions for cloud, big data and HPC. With Bright, users can easily install a complete cluster from bare-metal, and provision, operate, monitor, manage, and scale clusters of any size. Bright’s 400+ customers include Boeing, ExxonMobile, ING, Roche, Volvo. Partners include Amazon, Cisco, Cray, Dell.

www.brightcomputing.com

Bull

Bull is the Atos brand for its technology products and software, which are today distributed in over 50 countries worldwide. With a rich heritage of over 80 years of technological innovation, 2000 patents and a 700 strong R&D team supported by the Atos Scientific Community, it offers products and value-added software to assist clients in their digital transformation, specifically in the areas of Big Data and Cybersecurity. Bull is the European leader in HPC and its products include bullx, the energy-efficient supercomputer. Bull is part of Atos. For more information: www.bull.com

Atos SE (Societas Europaea) is a leader in digital services with revenue of €10 billion and 86,000 employees in 66 countries. Serving a global client base, the Group provides Consulting & Systems Integration services, Managed Services & BPO, Cloud operations, Big Data & Security solutions, as well as transactional services through Worldline, the European leader in the payments and transactional services industry. With its deep technology expertise and industry knowledge, the Group works with clients across different business sectors: Defence, Financial Services, Health, Manufacturing, Media & Utilities, Public Sector, Retail, Telecommunications and Transportation. Atos is focused on business technology that powers progress and helps organizations create their firm of the future. Atos operates under the brands Atos, Bull, Canopy, Worldline, Atos Consulting and Atos Worldgrid.

CADFEM GmbH

ANSYS + CAE competence – This is for what CADFEM stands since 1985 in Germany, Austria and Switzerland. Today about participation and partnerships CADFEM is worldwide active, among other things in USA, China, India and East Europe. CADFEM offers a complete spectrum of leading software solutions for the numerical simulation including all to product-accompanying Services.
Unlock your innovation with bullx supercomputers

CALYOS SA
Booth 1224
Calyos is the global leader in Advanced 2-Phase Cooling Solutions for electronic components. Based upon its unique expertise in Loop Heat Pipe technologies, Calyos provides a comprehensive range of high performance and passive platform cooling solutions for HPC servers. Solution provider for OEM/ODM integrators, Calyos will showcase its product line CALYTRONICS. Combining high performance cooling (thanks to the fluid full vaporization) and energy efficiency (thanks to its passive pumping), CALYTRONICS enable high heat loads (+600W per chip) while having very low thermal resistance (<0.1K/W).

Cavium Inc.
Booth 1105
Cavium is a leading provider of highly integrated semiconductor products that enable intelligent processing in enterprise, data center, cloud and wired and wireless service provider applications. Cavium offers a broad portfolio of integrated, software-compatible processors ranging in performance from 100 Mbps to 100 Gbps that enable secure, intelligent functionality in enterprise, data-center, broadband/consumer and access and service provider equipment. Cavium’s processors are supported by ecosystem partners that provide operating systems, tool support, reference designs and other services. Cavium’s principal office is in San Jose, CA with design team locations in California, Massachusetts, India and China. Website: www.cavium.com

CEA
Booth 1325
CEA is a global leader in R&D&I, in low-carbon energies, defense and security, information technologies and health technologies. CEA builds on the synergies between fundamental and technological research, and takes advantages of exceptional installations (super-computers, large physics instruments).
Chenbro Europe BV
Founded in 1983, Chenbro is a pioneer in designing and manufacturing of mechanical solutions for rackmount systems, tower servers and personal computers. With its expertise and reputation, Chenbro is also qualified by first tier server brands to provide OEM, ODM and JDM services with EMS companies and has successfully extended business footprints toward datacenter and industrial solutions these years.

CHPC (CSIR)
CHPC provides world-class HPC that enables cutting-edge research. The centre forms part of the South African cyberinfrastructure system. Join the CHPC National Conference, the only HPC conference in the southern hemisphere: 30 Nov - 4 Dec 2015 or visit: www.chpcconf.co.za for more info.

ClusterVision BV
ClusterVision specialises in the design, build and management of HPC clusters. By combining cutting-edge hardware and software components with customised professional services, ClusterVision helps its customers create top-quality, efficient and reliable solutions. ClusterVision offers a full portfolio of professional services, covering the total cluster lifecycle – from design, assembly and certification, to management, support and training. The ClusterVision team has designed and built some of the largest and most complex, computational, storage, and database clusters in Europe.

CoCoLink Corp
CoCoLink is a leading company of HPC solutions. The goal of CoCoLink is reaching the Exascale computing. To achieve this goal, CoCoLink has been focusing on the system integration, application development, interconnection and processor design. As a result of that CoCoLink will announce products – the system node, vectorized applications, interconnect solutions and processor.

COMSOL Multiphysics
COMSOL is a high tech engineering software company and a leading provider of multiphysics simulation tools. Its flagship products COMSOL Multiphysics® and COMSOL Server™ are software environments to be used for product design, research, and development and are particularly suited for coupled or multiphysics phenomena. COMSOL Multiphysics models can easily be turned into applications that can be used at any stage of the product development process. To fulfill the increasing need for HPC solutions COMSOL Multiphysics offers a convenient GUI and license model and is Intel Cluster Ready certified.

concat AG
RozoFS: a highly innovative filesystem for HPC and/or large amounts of unstructured data. Forget Reed-Solomon – be surprised by the effects of an intelligent Mayotte Transformation. RozoFS is a perfect consolidation of valuable features, as seen in object-storage, with modern functionality of a filesystem. Unlimited scalability (performance and capacity)! Vendor-Independent! Easy GUI! Open-Source!
CoolIT Systems Inc

CoolIT Systems Inc. is the global leader in Direct Contact Liquid Cooling for the data center, server and desktop markets. CoolIT Systems Rack DCLC™ platform is a modular, rack-based, advanced cooling solution that allows for dramatic increases in rack densities, component performance and energy efficiency. With technology that can be deployed with any server and in any rack, CoolIT offers a flexible solution for today’s highly competitive market.

CPU 24/7 GmbH

CPU 24/7 specialises in providing scalable HPC power ‘as a service’ for industrial and academic R&D. CPU 24/7 is “Hosted in Germany” and was founded by German engineers with many years of experience in the field of numerical simulations and the respective computing power. CPU 24/7 solutions comprise on demand HPC instances on bare metal servers incl. CAE software, support, storage & data traffic.

Cray

Global supercomputing leader Cray provides systems and solutions that help organizations of all types solve their most difficult science, engineering and analytics challenges. The company’s portfolio consists of supercomputers, storage and data management systems, and data analytics and discovery platforms – all offered individually or integrated into a complete solution. Research and development at Cray is guided by an adaptive supercomputing vision focused on delivering next-generation products integrating diverse processing technologies into a unified architecture that meets the market’s demand for realized performance. Founded in 1972, Cray has focused exclusively on supercomputing technologies for over 40 years.

CSC - IT Center for Science Ltd.

CSC - IT Center for Science provides versatile IT services for science, research, education, information management, libraries, archives, museums and culture. CSC also operates and develops Funet, the Finnish Research and Education Network. Our energy efficient datacenter provides services to the national and international research and education community and companies.
CSCS and hpc-ch
Booth 810
The Swiss HPC community hpc-ch & the Swiss National Supercomputing Centre (CSCS) invites you to visit the “Swiss House of HPC” at the booth 810, where you can meet Swiss HPC specialists and scientists, and get the latest news about HPC and science in Switzerland. Our staff representing the HPC community in Switzerland will give you all the desired information and gladly answer all your questions.

D-Wave Systems
Booth 1324
D-Wave is the world’s first quantum computing company. Our mission is to integrate new discoveries in physics, engineering, manufacturing, and computer science into breakthrough approaches to computation to solve some of the most challenging technical, commercial, scientific, and national defense problems. D-Wave systems are used by world-class organizations such as Lockheed Martin, Google, NASA.

DataDirect Networks
Booth 1010
DDN – The Leader in HPC Storage. For over 15 years, our innovative technology has been proven to resolve high performance storage challenges, in-production in the world’s largest & most demanding environments. DDN solutions can be relied on to deliver unrivaled performance, scalability and availability, so it is no surprise we power over 2/3 of the Top100 fastest systems on the planet. Whether you need to accelerate your data-intensive applications & workflows, or start small and scale, DDN can help. Visit DDN at booth #1010 to meet with our European technical team and to see a live preview of our HPC Burst Buffer and DDN’s Exascale Architecture – Infinite Memory Engine™ (IME).
Dell
Booth 731
Dell offers a comprehensive portfolio of integrated, scalable HPC solutions to enable companies and organizations to obtain faster results, achieve deeper insights, and make new discoveries. Dell HPC solutions are configurable and scalable for the widest range of workloads, and our cost-effective engineered HPC solutions deliver optimized, validated systems that are faster to deploy and simpler to manage. Through our tested and flexible configurations, skilled expertise and single source of support, Dell helps you achieve maximum productivity. By collaborating with leading technology companies and research institutions, Dell designs solutions that integrate the most advanced processors and accelerators, network fabrics, storage systems and software to tackle challenging computational problems.

Deutsches Klimarechenzentrum (DKRZ)
Booth 550
The national HPC center DKRZ provides high performance computers, high capacity data storage and management, and superior service for German climate research. The earth cannot be experimented with. Therefore, DKRZ’s computer systems are the laboratory for climate modelers. DKRZ operates an archive for the extremely large volumes of climate model data and has the scientific knowledge to manage it.
DIINI Group  Booth 535
Located in La Jolla, California, The Dini Group is a professional hardware and software engineering firm specializing in high performance digital circuit design and application development. We specialize in FPGA hardware for High Performance Computing, Network Acceleration and ASIC Prototyping.

Dr. Markus Blatt - HPC-Simulation-Software & Services  Booth 811
Dr. Blatt provides tailor made simulation software that scales. Dr. Blatt is the author of one of the most scalable algebraic multigrid methods and coauthor of DUNE. Over 10 years of hands on experience in scientific software development for supercomputers, scientific support, and the power of massively parallel open source components for simulation software will let you explore new frontiers.

Dynatron Corporation  Booth 1354
Dynatron Corporation, a global leading manufacturer and designer of high-quality thermal solution products including liquid coolers, CPU coolers and case fans for server, workstation, PC, embedded system and industry.
For more information, please visit www.dynatron-corp.com or email sales@dynatron-corp.com.

E4 Computer Engineering  Booth 914
E4 Computer Engineering spa specializes in the production and architectural integration of highly customized HPC & DataCenter solutions for scientific/research and Enterprise environments. From designing HPC clusters to implementing turn-key data centers, E4 guarantees quality and expertise by consistently investing in R&D to meet the ever changing requirements of customers.

EMC  Booth 1250
EMC is a global leader enabling businesses and service providers to transform their operations and deliver information technology as a service. Fundamental to this transformation is cloud computing. Through innovative products and services, EMC accelerates the journey to cloud computing, helping IT store, manage, protect and analyze their information in a more agile, trusted, cost-efficient way.

Emulex co-exhibitor of Avnet  Booth 740
Emulex provides connectivity solutions for high-performance networks. The Company's I/O portfolio has been designed into servers from leading OEMs. It enables organizations to create low latency Ethernet connectivity using hardware offloaded RoCE.

EPCC, Edinburgh University  Booth 1203
EPCC is a unique centre for advanced computing and the management and use of data. We research and develop novel computing solutions; write software; manage computing and data systems and provide HPC and data-related training. Our combination of resources and expertise is unmatched by any European University. Clients and partners include local and global industry, government and academia.
ETP4HPC
ETP4HPC is an industry-led association of companies and research centres involved in HPC technology research in Europe. It aims to build a world-class HPC Supply Chain and multiply the share of European HPC vendors. ETP4HPC issues a Strategic Research Agenda to define the EU research priorities in the Horizon 2020 HPC programme and it is the EC’s partner in the HPC Public-Private Partnership.

European Exascale Projects
The European Exascale Projects combine all Exascale research related efforts funded by the European Commission. To resolve the Exascale challenges, the projects address all relevant research areas. These span from innovative approaches to hardware design and programming models as well as to application development. All current projects are present: DEEP/-ER, EPIGRAM, EXA2CT, Mont-Blanc & Numexas.

European Open File System (EOFS)
The EOFS (European Open File Systems Cooperative SCE) was founded on 15th December 2010 in Munich as a Non-Profit Organization. The purpose of EOFS is to promote the establishment and adoption of open source parallel file systems, sustain and enhance its quality, capabilities and functionality and ensure that requirements of European organizations, institutions and companies are upheld.

ExaScaler Inc
ExaScaler Inc. is specialized in submersion liquid cooling technology and its HPC system. Together with 1,024 core MIMD processor “PEZY-SC” developed by sister company PEZY Computing K.K., its first Supercomputer “ExaScaler-1” was ranked at #2 in Green500 last November. ExaScaler will present the second generationsystem, but the first fully optimized version for submersion liquid cooling system.

EXTOLL
EXTOLL GmbH is dedicated to innovative HPC network technology. The novel network chip TOURMALET provides superior performance as well as unique features like ultra low latency, extremely high hardware message rate, high bandwidth, switchless design, fault tolerance, virtually unlimited scalability, support for multi-core environments and direct communication of accelerators, like GPUs. EXTOLL delivers an integrated network stack consisting of hardware, software and services. Please visit: www.extoll.de

Fabriscale Technologies
Fabriscale is a start-up that specialises in fabric management software with an emphasis on smart algorithms that simplify network configuration, management and monitoring. Our first product is the Fabriscale Fabric Manager for InfiniBand, which features agnostic routing, fast fault-tolerance, and great monitoring capabilities. Come visit us at ISC’15 in booth no. 515 to learn more.

Finisar Corporation
Finisar Corporation is the world’s largest supplier of fiber optic subsystems and components for high-speed data communication networks. For over 25 years, Finisar has provided critical optics technologies to system manufacturers to meet the ever increasing demands for network bandwidth.
Fivetech Technology Inc.
Fivetech specialize in design manufacturing fastener hardware component: captive screw, plunge, handle, security screw, SMT nut/standoff, quarter turn captive fastener, latch plunger, ejector handle; We innovate tool-less, quick release, easy assembly fastening technology. Our approach is to save operation time to save cost to result maintenance efficiency. Fivetech is ISO certified/ RoHS compliant.

Fraunhofer Institut SCAI
The Fraunhofer Institute for Algorithms and Scientific Computing SCAI conducts research in the field of computer simulations for product and process development. SCAI designs and optimizes industrial applications, implements custom solutions for production and logistics, and offers HPC and Cloud solutions. Services are based on industrial engineering and methods from applied mathematics and IT.

Fraunhofer Institute for Industrial Mathematics ITWM
The Competence Center for HPC, located at Fraunhofer ITWM, is supporting industry in developing and using HPC applications and tools. We present the Fraunhofer Parallel File System, GPI, the Global Address Space Programming Interface and scalable visualization solutions. With GPI-Space a new technology for more productive parallel application development and BIG Data Analytics will be demonstrated.

FUJIFILM Recording Media GmbH
Fujifilm is Nº1 manufacturer worldwide for data storage tapes. We manufacture various tape formats such as LTO, 3592 tapes for IBM or T10000D tapes for Oracle. Our main asset is Fujifilm’s exclusive tape coating methodology named Barium Ferrite. Barium Ferrite allows manufacturing tapes with higher capacity, transfer rate, data security and archive life.

A new level of HPC productivity
Make a difference in HPC operational readiness and efficient workflow management
New HPC Gateway Demo Center
Web-based user workspace for immediate usability
Visit our booth #826
shaping tomorrow with you
Fujitsu Limited

Fujitsu has been leading the HPC market for over 30 years, and today offers a comprehensive portfolio of computing products – high-end supercomputer PRIMEHPC series, x86-based PRIMERGY clusters, software, and solutions – to meet wide-ranging HPC requirements. At ISC’15, Fujitsu will demonstrate its sustained progress towards Exascale computing, PRIMEHPC FX100, and present leading innovations for workload optimized HPC cluster solutions. An intuitive web based user interface – the Fujitsu HPC Gateway – lowers entry barriers and makes HPC accessible to a much wider set of end-users. With cutting-edge PRIMERGY hardware and a proven software stack users have at hand the most productive and coherent HPC workplace in the market today.

Gauss Centre for Supercomputing e. V.

The Gauss Centre for Supercomputing (GCS) combines the High Performance Computing Center Stuttgart/HLRS, the Jülich Supercomputing Centre/JSC, and the Leibniz Supercomputing Centre/ LRZ, Garching/Munich into Germany’s Tier-0 supercomputing institution. GCS provides europeans largest and most powerful supercomputing infrastructure to serve scientific and industrial research activities.

GENCI

Offering a total of 5.7 petaflop/s and with more than one billion core hours now available every year, GENCI provides the French researchers with the best resources to achieve outstanding scientific results. Since 2007, GENCI is working to develop a coordinated and effective national policy, based at three complementary levels – regional, national and European within the PRACE infrastructure.

GiDEL

With over twenty years of experience, GiDEL is a market leader continuously providing cutting-edge High-Performance Reconfigurable Computing (HPRC) products. GiDEL sees its customers as partners and uses its vast experience at the project-level and FPGA design to focus on its customers’ projects success. GiDEL’s innovative high-performance systems, productivity-enhancing development tools, uncompromising support, and commitment for product long-life cycle have been appreciated for over two decades by satisfied customers continuously using GiDEL’s products, generation after generation.

GIGABYTE Technology

Founded in 1986, GIGABYTE has established an uncontested position in continuous technological innovation. Known for our excellent motherboards and graphics cards, we are also a longtime creator of server hardware. From server boards and rackmounts, to hybrid systems and OPC datacenter solutions, GIGABYTE is a choice provider of cutting edge solutions for your mission-critical computing needs.

Gigalight Technology Co., Ltd

Founded in 2003, Gigalight is a pioneer and market innovator in the global fiber optics industry. We develop and manufacture optical modules for ranges of application, including, but not limited to data centers, storage networks, and cloud computing. The competitive prices of our first-class product portfolio can ideally match the complex of organizational and industrial network infrastructure.
Globus - University of Chicago
Booth 453
Globus is software-as-a-service for research data management. Globus is a preferred service for high performance, secure, reliable transfer and sharing of big data on a variety of HPC and campus computing resources around the world. With the recent release of data publication and discovery capabilities, Globus now provides useful tools for managing data at every stage of the research lifecycle.

Go Virtual Nordic
Booth 1140d
Go Virtual was founded in 2002 with the mission to supply virtual simulation technology to the market enabling customers to bring their innovative and customer focused designs faster, more accurate, and more cost effective to the market. With products like CFD++, Pointwise and FieldView together with Supercomputers from Hewlett Packard and Dell we have products to support our mission.

Goopax
Booth 1151
We are an innovative company with extensive knowledge in software development, GPGPU programming, HPC and numerical simulations.

Redefining compute - Optimizing HPC Solutions
See us at booth # 732
GRAU DATA AG  
GRAU DATA is a medium-sized company with its headquarters in Germany. Since 2007, GRAU DATA is focused on development and sales of software products. The product family of GRAU DATA allows business-critical data to be archived and exchanged flexibly and with high scalability. GRAU DATA is indirectly or directly represented by partners in all major European countries and in the United States.

Greek Research and Technology Network S.A.  
GRNET is the national eInfrastructure provider for the Greek Academic and Research community. GRNET operates the National High Performance Computing system and offers user and application support services. GRNET also offers innovative IaaS cloud computing services as well as advanced network and international connectivity services to the Greek and global research & education communities.

Heidelberg University (URZ)  
The Engineering Mathematics and Computing Lab (EMCL) is a research group at the Interdisciplinary Center for Scientific Computing at Heidelberg University. The EMCL currently pursues 4 major research areas: Energy efficiency for IT, Hardware aware computing, High performance computing and data mining.

Hessisches Kompetenzzentrum für Hochleistungsrechnen (HKHLR)  
Computational scientists need to know how to develop performant software and suitably deploy it on HPC platforms. The Hessian Competence Center on HPC (HPC-Hessen) provides support to develop those skills. It was founded by the universities in Darmstadt, Frankfurt, Giessen, Kassel, Marburg, with funding by the Hessian State Ministry of Higher Education, Research and the Arts.

Hewlett-Packard  
As a world-leading information technology company, HP applies new thinking and ideas to create more simple, valuable and trusted experiences with technology. More information about HP’s products and services can be found at www.hp.com. Specific details about HPC and Big Data products can be found at www.hp.com/go/hpc. Information about HP’s worldwide conference series HP-CAST with a focus on all aspects of HPC, HPC Clouds, Scalable Computing and Big Data systems can be found at www.hp-cast.org or at www.hp.com/go/hpcast.

HGST, a Western Digital Company  
HGST a Western Digital Company, is a new storage company for a world where ever-increasing amounts of content are being generated from cloud services, Internet content providers, social networks, mobile devices, and enterprise business transactions.  

HLRN  
The North-German Supercomputing Alliance is a joint project of seven North-German states. HLRN operates a distributed PetaFlop/s Cray XC30 supercomputer at the sites Leibniz Universität Hannover and Zuse Institute Berlin. We deliver high-performance computing services to scientific institutions and support a competence network bringing together users and scientific consultants.
In a real-time competition, teams of undergraduate students from around the world will build a small cluster of their own design on the ISC’15 exhibit floor and race to demonstrate the greatest performance across a series of benchmarks and applications.

See the future of HPC talent in the exhibition hall today!

For additional information, visit www.hpcadvisorycouncil.com
HLRS Stuttgart
HLRS – a European Tier 0 center and member of GCS – supports German and European researchers with leading edge supercomputing technology and services. Industrial support goes through hww GmbH. Special support for SMEs is provided through SICOS GmbH.

HPC Advisory Council
The HPC Advisory Council’s mission is to bridge the gap between high-performance computing (HPC) use and its potential, bring the beneficial capabilities of HPC to new users for better research, education, innovation and product manufacturing, bring users the expertise needed to operate HPC systems.

HPC in Latin America
HPC in Latin America is an international initiative focused in bringing together Latin American HPC centers, research groups and industry partners interested in HPC. Its main goal is to foster the growth of HPC communities in Latin America as well as promote international collaboration, by providing a regional forum for exchange, training and dissemination of ideas, techniques and research in HPC.

HPC Today
For the complete profile of this media sponsor, please see page 119.
Huawei

Driven by customer-centric innovation and open partnerships, Huawei has established an end-to-end ICT solutions portfolio that gives customers competitive advantages in telecom and enterprise networks, devices and cloud computing. With rich experiences in hardware and software field, cooperating with application software provider, Huawei provides converged architecture, flexible deployment, intelligent management and energy saving HPC solution. In the past two years, Huawei has provided 50+ successful cases which is used in petroleum exploration, weather forecasting, aerospace and defense, life sciences, animation rendering, physical chemistry and other fields. Choosing Huawei is your easy way to build PetaFlops system.

IBM

Gain insights and realise faster time to value with IBM High Performance Computing solutions. Powerful Systems, Storage and Software built and designed to accelerate big data, analytics and high performance computing applications. OpenPOWER based innovations, including middleware, developer tools, and system management that enables your organisation to deliver HPC services with Spark or Hadoop enabling data-centric computing through Elastic Storage Server (based on the GPFS filesystem), CAPI-based flash storage solutions, HPSS, LSF, HPC Stack, cloud services including Watson in translational medicine that can leverage IBM Global Services.

For more go to: http://www-03.ibm.com/systems/uk/platformcomputing/

Iceotope

Iceotope is a leading designer and manufacturer of high performance, liquid cooled servers in Sheffield, UK. Our patented technology addresses the cooling inefficiencies generated in HPC and cloud computing. Backed by Schneider Electric and Solvay, Iceotope is making HPC smaller, denser and more efficient by eliminating air and associated infrastructure when it comes to cooling IT.

Imagine an entire IT infrastructure controlled not by hands and hardware, but by software.

One in which application workloads such as Big Data, Analytics, HPC Cloud, workload management, simulation and design are automatically serviced by the most appropriate resources, either locally or in the cloud. An IBM Software Defined Infrastructure enables your organisation to deliver IT services in the most efficient way possible, optimizing resource utilization to accelerate results and reduce costs.

For more information visit: http://www-03.ibm.com/systems/uk/platformcomputing/
IEEE Spectrum
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Inspur
INSPIR group is a leading provider of business IT computing platforms and solutions with three listed companies. As a subsidiary company of INSPIR group, INSPIR HPC concentrates on HPC related hardware, software and heterogeneous computing services. INSPIR HPC has complete and self-owned patent product line. The hardware includes but not limited to rack server, blade server, GPU server and the INTEL latest MIC server. The functions of the software are job management, cluster monitor and system deployment. We have win 60%+ Smartrack market and one of the top HPC share in China (en.inspur.com)

Intel
Intel Corporation is a world leader in computing innovation. We design and build the essential technologies that serve as the foundation for the world’s computing devices. From workstations to the world’s most powerful supercomputers, ever-higher performance for technical computing applications is needed to speed time to results, handle today’s unprecedented growth in data volumes, and improve the accuracy and precision of modeling and simulation applications. Intel® architecture is designed to address the heavy demands of technical computing at every scale, so users can continue to push the boundaries of discovery.
To learn more about Intel in technical computing, visit www.intel.com/hpc and @IntelHPC.

Irish Centre for High End Computing (ICHEC)
The Irish Centre for High-End Computing (ICHEC) operates the national HPC service and provides compute resources, and software and domain expertise for research communities and industrial partners through collaborative partnerships and programmes of education. ICHEC is an active participant in EU-wide FP7 and H2020 consortia.

IT4Innovations National Supercomputing Center
IT4Innovations National Supercomputing Center is an important part of e-Infrastructure of the Czech Republic focused on HPC research and services. The research activities address HPC problems in engineering, nanosciences, big data, disaster and traffic management. The center is currently operating the most powerful cluster with Intel Xeon Phi coprocessors in Europe.

JARA-HPC
JARA-HPC’s scientists, as part of the Jülich Aachen Research Alliance, combine their knowledge of engineering, medicine, and natural sciences with special knowledge of highly parallel computing on supercomputers. In doing so they considerably contribute to making full use of the opportunities computer simulations offer in regards to addressing current scientific issues.
DISCOVER YOUR PARALLEL UNIVERSE

Explore a universe where humanity’s greatest challenges are conquered by the efforts of the HPC community – from curing disease to finding our next energy sources to predicting the next dangerous weather system.

Come visit the Intel booth to see real-world examples of organizations and companies who are realizing their breakthroughs faster through parallel computing. Join Intel and HPC partners for product demonstrations, presentations and discussions on the importance of parallelizing software for modern hardware architectures while maintaining a common code base.

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Jülich Supercomputing Centre (JSC) at Forschungszentrum Jülich is currently operating the most powerful German supercomputer, JUQUEEN, providing resources to researchers through national (GCS, NIC) and European (PRACE) peer-review procedures. JSC has been fostering scientific computing since 1983, conducting interdisciplinary, supercomputer-oriented scientific research, and offering education and training.

Kalray
Kalray is a fabless semiconductor company and pioneer in developing large-scale many-core processor solutions. The company’s MPPA® processor family, based on its patented supercomputing on a chip™ many-core technology, delivers differentiated solutions for server acceleration and data center optimization, as well as for critical embedded applications in aerospace, defense and automotive.

KISTI
The Korea Institute of Science and Technology Information (KISTI) plan to identify its international status through an international assessment on its general level, including research performance, and development direction; and to establish a new direction for development by incorporating the recommendations that result from the assessment.

KIT / SCC
The Steinbuch Centre for Computing (SCC) is the information technology centre of Karlsruhe Institute of Technology and ranks among the largest scientific computing centres in Europe. SCC stands for internationally visible research, development and innovation in the fields of high-performance computing, data-intensive computing, secure IT federations, and GridKa, the German Tier 1 centre of WLCG.

Kitware SAS
As recognized leader in image and data visualization, Kitware develops innovative technologies for industrial and research environments. Kitware creates and supports leading edge, high quality technologies in the fields of 2D-3D data visualization, image processing, data management & computer vision. Kitware’s technologies are developed around open source solutions (VTK, ParaView, CMake, OpenCV...)

Leibniz Supercomputing Centre (LRZ) is one of Germany’s national HPC centers and is part of the German Gauss Centre for Supercomputing. LRZ will provide details about SuperMUC Phase 2, the new highly energy-efficient 3 PFlop/s extension of SuperMUC.

Lenovo
Lenovo (HKSE: 992) (ADR: LNVGY) is a $39 billion global Fortune 500 company and a leader in providing innovative consumer, commercial, and enterprise technology. Our HPC portfolio of high-quality products and services includes servers, storage, networking, and software spanning entry through supercomputing.

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Megware Computer

As an established manufacturer of HPC MEGWARE offers innovative and solution-orientated products combined with more than 15 years of experience in the business. We installed 1000 supercomputers to research institutes, universities and industrial and business customers throughout Europe. Drawing on our project experience we explore what is technologically feasible and develop tailor-made solutions.

Mellanox

Mellanox Technologies is a leading supplier of end-to-end InfiniBand and Ethernet interconnect solutions and services for servers and storage. Mellanox interconnect solutions increase data center efficiency by providing the highest throughput and lowest latency, delivering data faster to applications and unlocking system performance capability. Mellanox offers a choice of fast interconnect products: adapters, switches, software and silicon that accelerate application runtime and maximize business results for a wide range of markets including high performance computing, enterprise data centers, Web 2.0, cloud, storage and financial services.

More information is available at www.mellanox.com.
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Micron Technology, Inc., is a global leader in advanced semiconductor systems. Micron’s broad portfolio of high-performance memory technologies – including DRAM, NAND and NOR Flash – is the basis for solid state drives, modules, multichip packages and other system solutions. Backed by more than 35 years of technology leadership, Micron’s memory solutions enable the world’s most innovative computing, consumer, enterprise storage, networking, mobile, embedded and automotive applications. Micron’s common stock is traded on the NASDAQ under the MU symbol. To learn more about Micron Technology, Inc., visit www.micron.com

Microtronica - A DIVISION OF ARROW
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Lomonosov Moscow State University, the oldest and the largest university in Russia, was established in 1755. 40 000+ students, 2500+ full doctors, 6000+ PhDs, 1000+ full professors, 41 faculties. Supercomputing center of MSU is one of the world-leading petascale centers with strong fundamental science and a serious focus on Supercomputing Education.

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National Center for High-performance Computing (NCHC)

The NCHC is Taiwan’s only institute providing a large computing platform and academic research networking facilities to its domestic HPC communities. For 20+ years, The NCHC plays a leading role in Taiwan’s cloud technology services by integrating HPC, storage, and networking to provide cloud services in storage, big data analysis, and scientific and engineering simulation.
National Computational Infrastructure
Booth 1323
NCI is Australia’s most highly integrated e-infrastructure environment, offering world-class high-end computing services for Australian research and innovation. NCI’s infrastructure includes:
• the Southern Hemisphere’s first petaflop supercomputer, Raijin
• Australia’s highest performance research cloud, Tenjin
• Australia’s fastest filesystems. Head to nci.org.au or visit booth 1323.

National University of Defense Technology (NUDT)
Booth 940
National University of Defense Technology (NUDT) is located in Changsha, the capital city of Hunan Province in south-central China. As the first department of computer science in China, the Department of Computer Science in NUDT was established in 1966. In the National General Evaluation of computer subject, the subject of computer science and technology was ranked NO.1 and NO.2 in China. Since 1978, NUDT has begun to research and build supercomputers. A series of supercomputers were developed by NUDT, and most of them reached the highest performance in China and the world.

NEC Deutschland
Booth 922
NEC is a leading provider of HPC-solutions, focusing on sustained performance for real-life scientific and engineering applications. To achieve this goal NEC delivers technology and professional services to industry and academia. Commodity based LINUX-clusters as well as the proprietary high-end vector-systems are available to address the different needs in the most flexible way. Energy-efficiency is one of the key design objectives, addressed by advanced cooling technologies or by the high-bandwidth vector-architecture, which delivers unprecedented efficiency on real world code. The service-capabilities from the operation of complex systems to the optimization of scientific codes and NEC’s storage-appliances complete the solution offering.

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Numascale

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Numerical Algorithms Group (NAG)

NAG is a specialist provider of expertise and experience in HPC, algorithms and numerical software engineering. NAG delivers consulting, professional services and training across the whole HPC life-cycle. Including strategy, technology evaluation, procurement, commissioning, user support, application performance enhancement, code modernization, porting and testing.

Omnibond

Omnibond is a software development company providing cutting edge products including the OrangeFS HPC file system, acilos social media aggregator and NetIQ IDM drivers. With thousands of customers around the world, Omnibond announces CloudyCluster, which merges expertise from our research HPC work with OrangeFS and OpenGENI and our Identity Management work, enabling collaboration and HPC in the cloud. CloudyCluster allows users to create and use an HPC cluster in the Amazon Web Services cloud from any device, making HPC cloud computing easily available 24/7/365.

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One Stop Systems pioneers PCIe High Performance Computing solutions. OSS continues its pioneering tradition by producing 179 TFLOP dense compute accelerators with over 80,000 compute cores, petabyte PCIe flash storage array systems and expansion optimized server solutions targeting advanced technologies in all HPC vertical markets. OSS provides the high-performance, highest-density PCIe systems.

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Optomark is optically active in high speed ISPs, DCs & in the Cloud. TRANSPORT: DWDM P-to-P install’s (ISPs), TRANSCEIVERS in volume (top ISPs). DATA CENTRE: 8/12/24 CORE ROUTING – meshing MXP/QSFP+’s (Streamer), COUPLER ARRAYS - MTP/MPO 12/24 core (Cloud-Provider). FttX (xPON & RFoG): 10G PON on HFC (ISP), ONU GPON stick & RFOF (OEM & ISP). Loving cost-effective challenges, the www.OPTOMARK.com team

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**Panasas**
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Panasas ActiveStor® hybrid scale-out NAS appliances drive research innovation by accelerating workflows and simplifying data management. ActiveStor solutions leverage the patented PanFS® storage operating system, delivering high performance and reliability at scale from an appliance that is as easy to manage as it is fast to deploy. Now in its fifth generation, ActiveStor has been deployed in more than fifty countries worldwide. For more information, visit www.panasas.com

**Pawsey Supercomputing Centre  co-exhibitor of National Computational Infrastructure**  Booth 1323
The Pawsey Supercomputing Centre is based in Perth, Western Australia. It provides supercomputing, data & visualisation resources & expertise for high-end science – including Magnus, the Southern Hemisphere’s fastest public research supercomputer.

**Penguin Computing**
Booth 1413
Penguin Computing is one of the largest private suppliers of enterprise and HPC solutions in North America and has built and operates the leading specialized public HPC cloud service Penguin Computing on Demand. Penguin Computing has systems installed with over 2,500 customers in 40 countries across eight major vertical markets. Visit www.penguincomputing.com or follow @PenguinHPC on Twitter.

**Percona**
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With more than 3,000 customers worldwide, Percona is the only expert data performance company that delivers enterprise-class solutions for both MySQL® and MongoDB®. Percona provides Software, Support, Consulting, and Managed Services to companies of any size including some of the well-known world brands such as Cisco Systems, Time Warner Cable, Alcatel-Lucent, Groupon and the BBC.

**PRACE**
Booth 1201
The Partnership for Advanced Computing in Europe (PRACE) is composed of 25 members representing European Union and associated countries. PRACE’s mission is to make world class HPC computing resources and services available for high impact multidisciplinary scientific discovery and engineering R&D to enhance European competitiveness and to address society’s grand challenges.

**Q-Leap Networks GmbH**
Booth 654
Q-Leap is all about Linux Clustering Software. Core product is the Linux Cluster OS Qlustar (www.qlustar.com) featuring the superb cluster management software QluMan and its unique lightweight OS image technology to run, manage and monitor any number of compute, storage or cloud nodes. Based on Qlustar, Q-Leap installs and operates Linux HPC/Storage/Cloud Clusters for its customers since 2001.

**QCT (Quanta Cloud Technology)**
Booth 1041
Quanta Cloud Technology is a global datacenter solution provider extending the power of hyperscale datacenter design in standard and open SKUs to all customers. Product lines include servers, storage, network switches, integrated rack systems and cloud solutions, all delivering hyperscale efficiency, scalability and optimized performance for each workload.
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RapidIO® unified fabrics address needs in Data Center & HPC, Communications Infrastructure, Industrial Automation and Mil-Aero markets by offering high reliability, increased bandwidth, and low latency in an intra-system unified fabric. RapidIO® provides chip-to-chip, board-to-board and shelf-to-shelf peer-to-peer connectivity at performance levels scaling to 100s of Gbps and beyond.

Rausch Netzwerktechnik GmbH

For more than 15 years Rausch Netzwerktechnik has been working as a distributor of individual and standard server and storage systems for data center and can relate on more than 250,000 systems in data centers across the globe. With a wide range of high-quality products for server, storage and HPC computing, Rausch offers the perfect solutions for your business. Beginning with the development and manufacture followed by delivery, installation and maintenance – Rausch Netzwerktechnik is at your service.

Red Oak Consulting

Red Oak Consulting is a leading high-performance computing consultancy providing tailored, expert advice to government, industry and academia on high-end technologies and their applications.

Riken

Located in Japan, the RIKEN Advanced Institute for Computational Science (AICS) is an international research center dedicated to achieving breakthroughs in computing and computational science. It runs the 10-petaflops K computer, a general-purpose supercomputer with a user-friendly environment, and is leading the development of the post-K supercomputer with the aim to begin operations in FY2020.

Rogue Wave Software

Rogue Wave provides software development tools for mission-critical applications. Our trusted solutions address the growing complexity of building great software and accelerates the value gained from code across the enterprise. The Rogue Wave portfolio of complementary, cross-platform tools helps developers quickly build applications for strategic software initiatives.
RSC

RSC Group, the leading Russian and Top10 ranked world vendor of innovative energy efficient HPC and Data Center solutions, introduces a next generation of RSC Tornado cluster architecture delivering even more performance, density, modularity, scalability and efficiency. RSC PetaStream massively-parallel supercomputer set world records of computing and power density: 1.2PFLOPS and 400kW per 1 m² cabinet with 1024x Intel Xeon Phi. RSC PetaStream is focused to respond Exascale challenges protecting SW investments for HPC & Big Data applications. RSC PetaStream and RSC Tornado solutions, RSC BasIS software stack are deployed in a large number of projects, including 1.1PFLOPS supercomputer center at Saint Petersburg State Polytechnic University.

Samsung Semiconductor Europe

Samsung’s Memory Business offers the industry’s most advanced and extensive range of memory semiconductor products. As a leader in memory semiconductor since 1993, we provide next generation DRAM and NAND flash technologies such as DDR4 and V-NAND. Find more information at www.samsung.com/greenmemory

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At SanDisk, we’re expanding the possibilities of data storage. SanDisk offers the industry’s broadest product portfolio with our solid state drives, PCIe application accelerators and flash-optimizing software designed to maximize application performance and efficiency for enterprise IT, systems manufacturers and hyperscale data centers. As a vertically integrated company, we deliver innovative, high quality storage solutions that make the incredible possible.

Scality

Scality is the industry leader in petabyte-scale, software defined storage. Founded in 2009, Scality has deployed software-based storage solutions that deliver billions of files to more than one hundred million users daily with 100% availability. The Scality RING software runs on any standard x86 server hardware and makes it scale to hundreds of petabytes and billions of objects. The RING’s robust architecture provides unsurpassed performance, the ability for mixed workloads and mixed application support, and parallel data loading for very large objects while providing high data durability and low overhead through erasure coding. One of Scality’s customers, Los Alamos National Laboratory, is deploying a 500 petabyte Scality RING environment.

scapos AG

The scapos portfolio of advanced software solutions focuses on technical computing and software from research organisations and their spin-off companies. R&D beyond current HPC-related products includes the HPC-Cloud project Fortissimo.

Scientific Computing World

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Where the future becomes standard

A full NVMe SSD lineup for all your HPC applications

Our industry leading line-up of NVMe SSD’s offers you all the form factor flexibility and performance options you’re looking for. Visit us at our booth #1030 to get the latest updates.

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Scilab Enterprises

Booth 1140b

Worldwide leader of open source numerical and scientific computation software, Scilab supports companies in the implementation of innovative technology solutions. Scilab software is downloaded every month by more than 100,000 engineers and scientists from 150 countries. Publisher of the Scilab software, the company also provides businesses with consulting, support, training, development services...

Seagate

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Seagate® is a world leader in storage solutions. Our new Cloud Systems and Solutions strategy brings innovation and an open approach to Intelligent Information Infrastructure™ to help all organizations manage their next-generation workloads – with scale, performance, and cost aligned to business needs. Our portfolio includes integrated high-performance computing solutions; do-it-yourself components and engineered solutions; custom, modularized systems for original equipment manufacturers (OEMs); and the EVault® line of cloud backup and restore, disaster recovery, and rapid archive services.

SGI

Booth 910

SGI is a global leader in high performance solutions for compute, data analytics and data management that enable customers to accelerate time to discovery, innovation and profitability.

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Unmatched speed and efficiency from the Trusted Leader in HPC storage

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SLURM
Booth 517
SchedMD is the core company behind the Slurm workload manager software, a open-source workload manager designed to satisfy the demanding needs of high performance computing. Slurm is in widespread use at government laboratories, universities and companies world wide. As of the November 2014 Top 500 computer list, Slurm is performing workload management on six of the ten most powerful computers.

Spectra Logic
Booth 450
Spectra Logic develops deep storage solutions that solve the problem of long term storage for business and technology professionals dealing with exponential data growth. Dedicated solely to storage innovation for more than 35 years, Spectra Logic’s uncompromising product and customer focus is proven by the largest information users in multiple vertical markets globally. Spectra enables affordable, multi-decade data storage and access by creating new methods of managing information in all forms of deep storage – including archive, backup, cold storage, cloud and private cloud.

Stäubli Tec-Systems GmbH
Booth 1350
Stäubli Connectors is one of the worlds leading manufacturer of quick couplings, multi couplings, robot tool changers and quick mould change systems for the plastic industry. Stäubli offers standardized and individual solutions specifically for respective requirements. These innovative solutions are used in various industries.

STFC – Hartree Centre
Booth 1150
The Hartree Centre with £170M of government investment, part of Scientific Computing in the Science & Technology Facilities Council, UK is a research collaboratory in association with IBM. It works with IBM to collaborate with industry and academia to accelerate research and innovation:
• Enabling you to harness the power & potential of HPC and “Big-Data”
• Developing software for supercomputers.

Technology fights the smog and haze
In action
Sugon provides strong scientific and technological support for preventing the smog and haze, as well as the scientific facts for the making of government policies.

www.sugon.com
Sugon Information Industry

Sugon high-performance computer has ranked the 1st domestic high-performance computers successively for 20 years with more than 30% of shares in domestic high-performance computers market. Sugon has ranked the 1st in China Supercomputer TOP100 List issued by authoritative institution successively for 6 years. According to the latest IDC data, Sugon has ranked the 6th in the world and 1st in Asia. The "Nebula" high-performance computer developed by Sugon ranked the second in the 35th Global Supercomputer TOP 500 List, which made it the third super computer in the world with a measured performance over a petaflop. In 2014, Sugon was successfully listed on the Shanghai Stock Exchange (Stock code: 603019).

Supermicro

Super Micro Computer, Inc. or Supermicro® (NASDAQ: SMCI), a global leader in high-performance, high-efficiency server technology and innovation is a premier provider of end-to-end green computing solutions for HPC, Data Center, Cloud Computing, Enterprise IT, Hadoop/Big Data and Embedded Systems worldwide. Supermicro’s advanced server Building Block Solutions® offers a vast array of modular, interoperable components for building energy-efficient, application-optimized, computing solutions. This broad line of products includes servers, blades, GPU systems, workstations, motherboards, chassis, power supplies, storage technologies, networking solutions, server management software and SuperRack® cabinets/accessories. Architecture innovations include Twin, FatTwin™, TwinPro™, SuperServer®, SuperBlade®, MicroBlade, MicroCloud, Storage Bridge Bay (SBB), Double-Sided Storage®, Battery Backup Power (BBP®) modules, Universal I/O (UIO) and WIO expansion technology all of which deliver unrivaled performance and value. Supermicro combines 20 years of advanced engineering experience with efficient production and integration expertise to develop first-to-market green computing solutions. The company is committed to protecting the environment through its "We Keep IT Green®“ initiative. Founded in 1993 and headquartered in San Jose, California, Supermicro has operations centers in Silicon Valley, the Netherlands and its Science & Technology Park in Taiwan, serving customers and partners worldwide.

T-Platforms

The leader of Russian supercomputing industry, T-Platforms Group, provides comprehensive high-performance “turn-key” hardware and software solutions since 2002. With portfolio of more than 400 projects, T-Platforms has accumulated a vast experience of hardware and software development. The company prides itself on designing several generations of high-performance computing equipment that has been used to build world-class supercomputers. The most prominent T-Platforms system so far, the 1st phase of the “Lomonosov-2” supercomputer at the Moscow State University, has been ranked 1st in Eastern Europe and 22nd worldwide (TOP500, November 2014) with peak performance over 2.5 Pflops. T-Platforms also offers a unique added value with its ability to provide end-to-end modeling, simulation and analysis services. The company has deep technical talent with particular expertise in areas such as CFD, structural analysis, and other extreme computational disciplines.
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This report seeks to answer that question by digging deep into the disruptive trends of two specific industries. Disruptions big enough to change an industry usually don’t happen overnight and many times are not new at all, but scale familiar concepts to new heights, forcing major players to keep pace just to remain competitive. To stay in the race, join us as we take an in-depth look at how two very different industries are utilizing similar technologies in high-end computing.

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