Preface

ISC High Performance, formerly known as the International Supercomputing Conference, was founded in 1986 as the Supercomputer Seminar. Originally organized by Professor Hans Meuer, Professor of Computer Science at the University of Mannheim and former director of the computer center, the seminar brought together a group of 81 scientists and industrial partners who all shared an interest in high-performance computing. Since then the annual conference has become a major international event within the HPC community, and accompanying its growth in size over the years, the conference has moved from Mannheim via Heidelberg, Dresden, Hamburg and Leipzig to Frankfurt. With 2,405 attendees and 156 exhibitors from over 51 countries in 2014, we were happy to see that this steady growth of interest also turned ISC High Performance 2015 into a powerful and memorable event.

In 2007, we decided to strengthen the scientific part of the conference by presenting selected talks on relevant research results within the HPC field. These research paper sessions began as a separate day preceding the conference, where slides and accompanying papers were made available via the conference website. The research paper sessions have since evolved into an integral part of the conference, and this year the scientific presentations took place over a period of three days.

This year, the organizers of the ISC High Performance conference reintroduced an ISC-sponsored award to encourage outstanding research in high-performance computing and to honor the overall best research paper submitted to the conference. This annual award is now called the Hans Meuer Award in memory of the late Dr. Hans Meuer, general chair of the ISC conference from 1986 through 2014, and co-founder of the TOP500 project. From all research papers submitted, the Research Paper Committee consider the three papers with the highest review scores for the award and elect the winner among them.

The call for participation was issued in fall 2014, inviting researchers and developers to submit the latest results of their work to the Program Committee. As in the year before, we invited the submission of full papers and technical short papers. In all, 67 papers were submitted from authors all over the world. In a peer-review process, an international committee selected 27 full papers and 10 short papers for publication and for presentation in the research paper sessions.

We are pleased to announce that many fascinating topics in HPC are covered by the proceedings. The papers address the following issues in regards to the development of an environment for exascale supercomputers:

– Cost-efficient data centers
– Scalable applications
– Advancements in algorithms
– Scientific libraries
– Programming models
– Architectures

- Performance models and analysis
- Automatic performance optimization
- Parallel I/O
- Energy efficiency

We believe that this selection is highly appealing across a number of specializations and that the presentations will foster inspiring discussions with the audience.

Three award committees selected papers considered to be of exceptional quality and worthy of special recognition.

- The Hans Meuer Award honors the overall best research paper submitted to the conference. The award went to:
  "Accelerating LBM and LQCD Application Kernels by In-Memory Processing" by Paul F. Baumeister, Hans Boettiger, José R. Brunheroto, Thorsten Hater, Thilo Mauer, Andrea Nobile and Dirk Pleiter

- PRACE, the Partnership for Advanced Computing in Europe, awards a prize to the best scientific paper by a European student or scientist. This year's award was granted to:
  "Lattice-CSC: Optimizing and building an efficient supercomputer for Lattice-QCD and to achieve first place in Green500" by David Rohr, Matthias Bach, Gvozden Neskovic, Volker Lindenstruth, Christopher Pinke and Owe Philipsen

- The Gauss Centre for Supercomputing sponsors the Gauss Award. This award is assigned to the most outstanding paper in the field of scalable supercomputing and went to:
  "Updating the Energy Model for Future Exascale Systems" by Peter M. Kogge.

We would like to express our gratitude to all our colleagues for submitting papers to the ISC scientific sessions, as well as to the members of the Program Committee for organizing this year's attractive program.

June 2015   Julian M. Kunkel
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