ISC High Performance

The HPC Event.

SUNDAY, JUNE 24 –

THURSDAY, JUNE 28, 2018

FRANKFURT, GERMANY

CONFERENCE GUIDE

isc-hpc.com

Platinum Sponsors

Atos

Hewlett Packard Enterprise

HUAWEI

intel

Welcome to ISC High Performance 2018

Thomas and Martin Meuer

Today ISC High Performance stands proudly as a globally recognized HPC event, driven by the extensive involvement of the high performance computing community. The contribution of new topics, speakers, stringent review processes, as well as diversity efforts, makes ISC distinctive.

There are a number of key facets to this distinctiveness. First, we are a truly international forum; over 70 percent of our attendees and exhibitors are from outside Germany, representing about 65 countries. This geographic diversity is apparent in our list of speakers, committees and the exhibition. Another unique aspect of the conference is the balance between academia and industry attendees, with 59 and 41 percent representation, respectively. Addressing their individual challenges and needs, we offer full-day sessions, such as the Industrial Day and Machine Learning Day.

Furthermore, the 2018 Program Chair, Horst Simon, has introduced topics like climate change and cosmology, to spur interesting conversations between researchers and vendors at the conference. He also ensured that this year's keynotes are about projects with global impacts. On Monday, Dr. Maria Girone will speak about the computing challenges of the Large Hadron Collider at CERN, while Dr. Keren Bergman will speak on Tuesday about research in optical interconnection networks for advanced computing systems.

This year we are also hosting the largest ISC exhibition, with 162 exhibitors. Take the time to meet the vendors and research organizations, whose products and technologies help advance science and engineering.

In recognizing underappreciated talent and to help alleviate the gender gap, we introduced a gender diversity strategy in 2017. As a result, this year almost 40 percent of our distinguished and keynote speakers are women. Even our student volunteer program received a record-breaking number of applications from female university students.

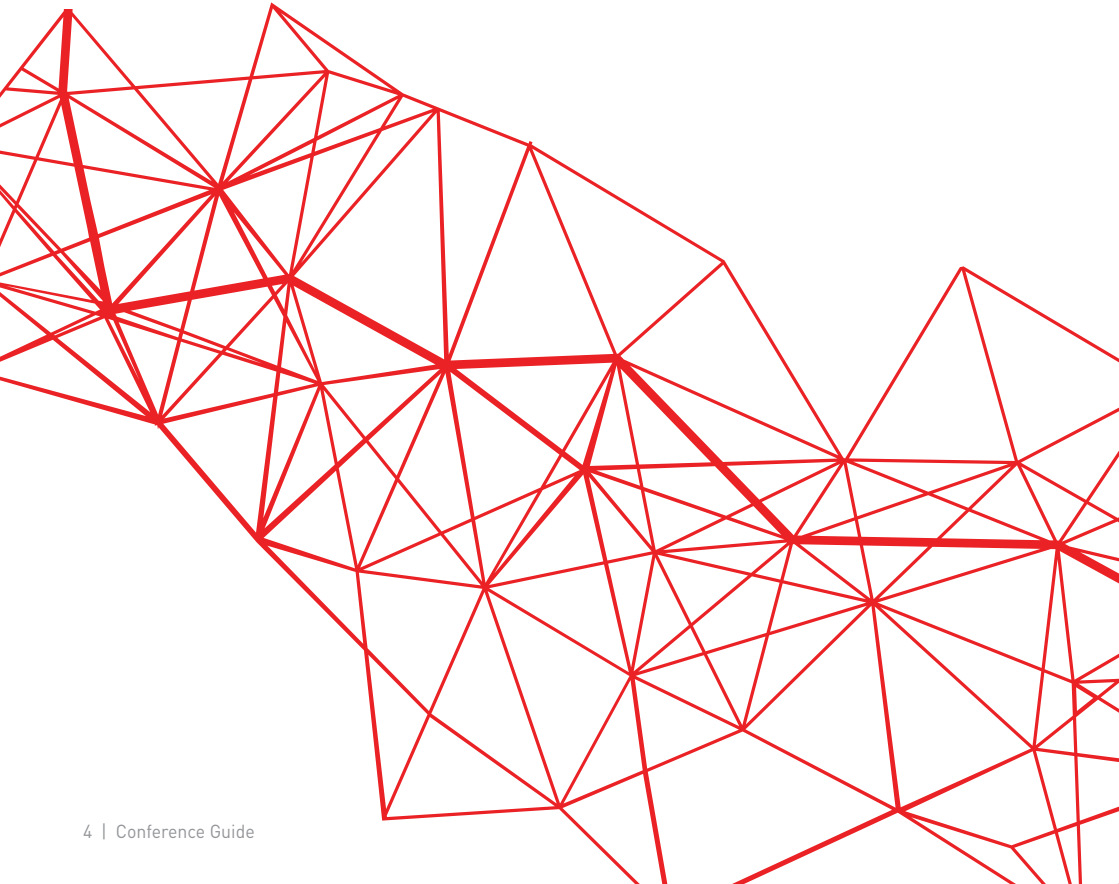
The ISC STEM Program returns to the benefit of 200 university students, where we provide them free access to the conference, a custom-made tutorial and career advice. This year we also set up the ISC Travel Grant to enable a student and a young researcher, who otherwise lack funding, to join us at the conference.

Here we thank everyone involved for making ISC 2018 a great conference.

Finally, we have added some football flavor to the event and hope you'll enjoy it.
Let's celebrate HPC and the World Cup at ISC 2018.

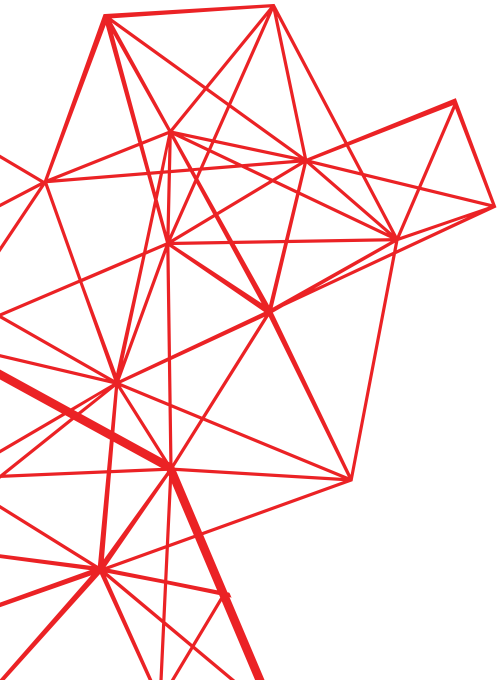
Best regards,

Martin Meuer and Thomas Meuer



General Information

ISC 2018



ACCESSIBILITY

To help you navigate the ISC Conference, please consult Messe Frankfurt's information on a barrier-free visit.

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 https://2018.isc-program.com/.

CHECK-IN & SELF REGISTRATION COUNTER

The Check-In and Self Registration Counter can be found in the Foyer of Hall 3.

Opening Hours

Sunday, June 24: ..... 07:30 am - 06:00 pm
Monday, June 25: ..... 07:30 am - 06:00 pm
Tuesday, June 26: ..... 07:30 am - 06:00 pm
Wednesday, June 27: ..... 07:30 am - 04:00 pm
Thursday, June 28 (Marriott Hotel): ..... 07:30 am - 02:00 pm

CLOAKROOM

A cloakroom is available in the Foyer of Hall 3.

Opening Hours

Sunday, June 24: ..... 07:30 am - 07:00 pm
Monday, June 25: ..... 07:30 am - 09:00 pm
Tuesday, June 26: ..... 07:30 am - 07:00 pm
Wednesday, June 27: ..... 07:30 am - 07:00 pm

COPY & PRINT CENTER

Irmschler Repro GmbH provides copy and printing services at booth #N-100 in the Exhibition Hall (Hall 3.0).

Opening Hours

Saturday, June 23: ..... 01:00 pm – 06:00 pm
Sunday, June 24: ..... 09:00 am – 06:00 pm
Monday, June 25: ..... 09:00 am – 06:00 pm
Tuesday, June 26: ..... 09:00 am – 06:00 pm
Wednesday, June 27: ..... 09:00 am – 01:00 pm

During these hours, orders can be placed and picked up at the service booth #N-100. Orders placed before Saturday, June 23, will be ready for pick-up on-site on Saturday afternoon.

Ordering and Questions:

Tel: +49 6103 930140
Email: mi@irmschler.eu (Mr. Michael Irmschler)
Website: https://ir-repro.de/ (German only)

EXHIBITION

The ISC High Performance exhibition features the largest collection of HPC vendors, universities, and research organizations assembled annually in Europe. Detailed information regarding the exhibition is available at http://isc-hpc.com/overview-sponsors-exhibitors.html and in the mobile app "ISC 2018 Exhibition".

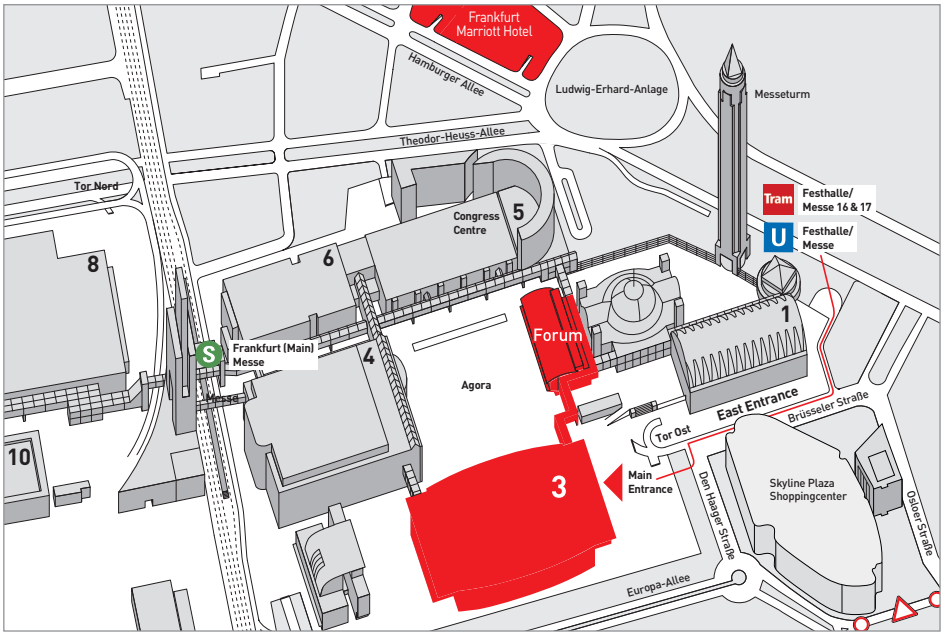
Exhibition Hours

Monday, June 25: ..... 03:00 pm – 08:30 pm
..... (ISC Welcome Party 06:30 pm – 08:30 pm)
Tuesday, June 26: ..... 10:00 am – 06:00 pm
Wednesday, June 27: ..... 10:00 am – 06:00 pm

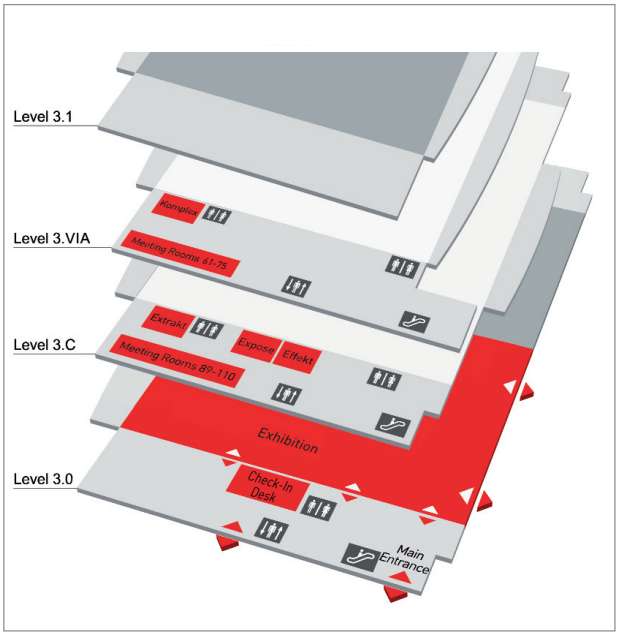
For the exhibition floor plan and the exhibitor listing, please refer to the Pocket Guide. The Pocket Guide is available at the Check-In Counter (Foyer, Hall 3) and the Information Counter (Foyer, Hall 3).

EXHIBITION LOUNGES

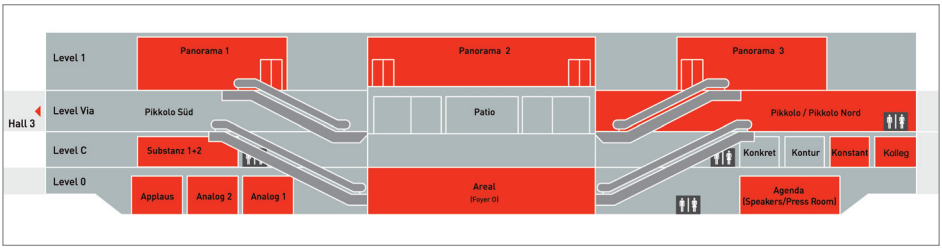
There are two lounges located inside the Exhibition Hall (Hall 3.0): The TOP500 Lounge (#N-222) and another cozy seating area at #L-420. Both lounges feature device charging stations.



Overview of Messe Frankfurt (Hall 3, Forum) and Frankfurt Marriott Hotel

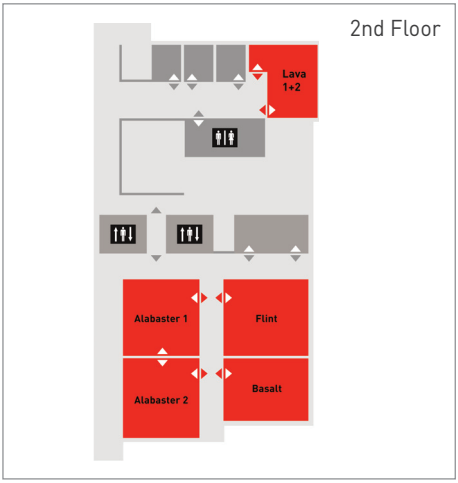


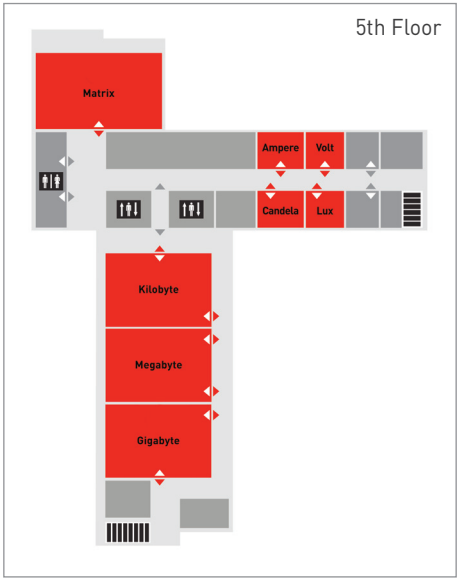
Hall 3



Forum

Workshop Rooms
at the
Frankfurt Marriott Hotel





EXHIBITOR SERVICES HELP DESK

If you have any exhibition-related questions or need technical assistance on-site, please contact us at booth #N-100 in the Exhibition Hall.

Service Hours
June 23 - June 27: ..... 09:00 am – 07:00 pm

If support is needed outside of these dates and times, please contact us via email:
exhibitor-support@isc-events.com

FIRST AID

In the event of a medical emergency, please contact the Check-In Counter (Foyer, Hall 3), Information Counter (Foyer) or the Exhibitor Services helpdesk in the Exhibition Hall (Hall 3). If you are unable to locate these, please call the emergency number 112 or the Frankfurt Messe Operation and Security Center Hotline + 49 (0)69 7575 3333.

FLOOR & EXHIBITION PLANS

Please refer to the Pocket Guide for floor and exhibition plans. The Pocket Guide is available at the Check-In Counter (Foyer, Hall 3) and the Information Counter (Foyer, Hall 3).

FREE PUBLICATIONS

Free HPC and IT magazines are available at the Check-In Counter (Foyer), in the Exhibition Hall (Hall 3) and the Forum Foyer (Level 0).

INFORMATION COUNTER

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

Opening Hours
Sunday, June 24: ..... 07:30 am – 05.00 pm
Monday, June 25: ..... 07:30 am – 07:30 pm
Tuesday, June 26: ..... 07:30 am – 05:00 pm
Wednesday, June 27: ..... 07:30 am – 05:00 pm

ISC CODE OF CONDUCT

ISC High Performance is dedicated to providing a harassment-free conference experience for everyone, regardless of gender, gender identity and expression, age, sexual orientation, disability, physical appearance, body size, ethnicity, religion (or lack thereof), manner of articulation, or technology choices. We do not tolerate harassment of participants in any form.

As a professional event that aims to bring together HPC enthusiasts from various countries to actively share knowledge, ideas and network, we recognize the inherent worth of every person by being respectful to them. All forms of communication should be appropriate for a professional audience including people of different backgrounds.

Participants violating the ISC High Performance Code of Conduct may be asked to leave the conference without a refund at the sole discretion of the conference organizers and also banned from future conferences.

Please contact us at conduct@isc-events.com if you have questions or experience any violation of our code of conduct.

ISC ORIENTATION SESSION

The ISC Orientation Session is intended as an introductory session for ISC High Performance attendees who want to learn to navigate through the conference, make the best use of their time at the event, and have fun in Frankfurt. We hope the information and tips we share with you at this session will make ISC 2018 a great experience for you.

Where: Room Konstant, Forum
When: Monday, June 25, 01:00 pm - 01:30 pm

ISC STEM STUDENT DAY & GALA

ISC High Performance is a forum for HPC community members to network and explore opportunities - for both current experts and future generations. We have created a program to welcome science, technology, engineering, and mathematics (STEM) students into the world of HPC, demonstrate how technical skills can propel their future careers, introduce them to the current job landscape, and also show them what the HPC workforce will look like in 2020 and beyond.

Where: Room Konstant (Forum), Hall 3 & Marriott Frankfurt
When: Wednesday, June 27, 09:30 am – 09:30 pm

Admission is free for undergraduate and graduate students, however is limited to 200 attendees who signed up in advance.

ISC WELCOME PARTY

The ISC Welcome Party is famous for its food, drinks, entertainment and amiable atmosphere. It gives you the opportunity to visit vendors and service providers of your choice, and also socialize with other HPC enthusiasts. An entertaining party duo - consisting of a DJane and a saxophonist - will be on the exhibition floor this year, to add swing and groove to the exhibition opening. We look forward to seeing you there!

Where: Exhibition Hall (Hall 3)
When: Monday, June 25, 06:30 pm – 08:30 pm

LOST BADGE FEE

If you lose your conference badge, please contact the Check-In Counter (Foyer, Hall 3). Please note there is a processing fee of € 30 to replace lost badges.

MOBILE APP - ISC 2018 EXHIBITION

In cooperation with the Poznan Supercomputing & Networking Center (PSNC), ISC offers the mobile app **"ISC 2018 Exhibition"**. This app is available in Google Play, App Store and Windows Phones stores free of charge to ISC 2018 attendees. If you have PSNC's "Conference4me" app installed on your device, you can also access all ISC 2018 exhibition information via this mobile conference assistant.

ISC 2018

NETWORK HELP DESK

WiFi is available throughout the venue, login data will be printed on your badge. If you need assistance or have any questions regarding internet connectivity, please contact iscnet@isc-events.com or Exhibitor Support at booth #N-100.

Please respect our WiFi Policy. ISC 2018 exhibitors and attendees are not allowed to operate any IEEE 802.11 wireless access point or any other equipment transmitting in the 2.4 GHz or 5.2 GHz frequency range in the conference and exhibition venue during ISC 2018. This also includes build-up hours.

The ISC 2018 organizers reserve the right to impose a fine on anyone who violates this policy.

PASSES OVERVIEW

	Tutorial Pass	Conference Pass	Exhibition Pass	Workshop Pass
Tutorials	✓			
Focus Sessions		✓		
Keynotes		✓		
Distinguished Speakers		✓		
Panels		✓		
Industrial Day		✓		
Machine Learning Day		✓		
HPC in Asia		✓		
Research Papers		✓		
Research Posters		✓		
PhD Forum		✓	✓	
Project Posters		✓	✓	
BoFs		✓	✓	
Vendor Showdown		✓	✓	
Exhibitor Forum		✓	✓	
HPCAC-ISC Student Cluster Competition Award Ceremony		✓	✓	
Exhibition		✓	✓	
Outreach & Networking Programs		✓	✓	
Workshops				✓

PARKING

To access the fair grounds with a vehicle please use Tor Nord (Gate North). The designated parking lot for the duration of the event (June 24-27) is P3. Parking permits can be obtained on site. Please note: vehicles seeking access to the fairgrounds between Monday, June 25, 03:00 pm and Wednesday, June 27, 02:00 pm, will have to pay a € 100 deposit, which will only be returned if the vehicle leaves the premises no later than one (1) hour after entry. This does not apply to small vehicles with a parking permit.

PRESS ROOM

A combined speakers and press room is located in the Forum building on Level 0 in room "Agenda".

Opening Hours

Sunday, June 24: ..... 07:30 am – 07:00 pm
Monday, June 25: ..... 07:30 am – 07:00 pm
Tuesday, June 26: ..... 07:30 am – 07:00 pm
Wednesday, June 27: ..... 07:30 am – 07:00 pm

PROCEEDINGS

The conference proceedings will be available online with presentations provided as PDF files a week after the event. The ISC 2018 attendees will receive an email with the access link. All accepted research papers will also be published in the Springer's Lecture Notes in Computer Science series (LNCS 10876), and the papers can be downloaded from Springer's website for a limited time after ISC 2018.

SEATING AREAS

There are seating areas in Hall 3, both on Level 0 (main entrance) and on Level Via (near Via Mobile). These areas feature power outlets to charge your devices.

SPEAKERS ROOM

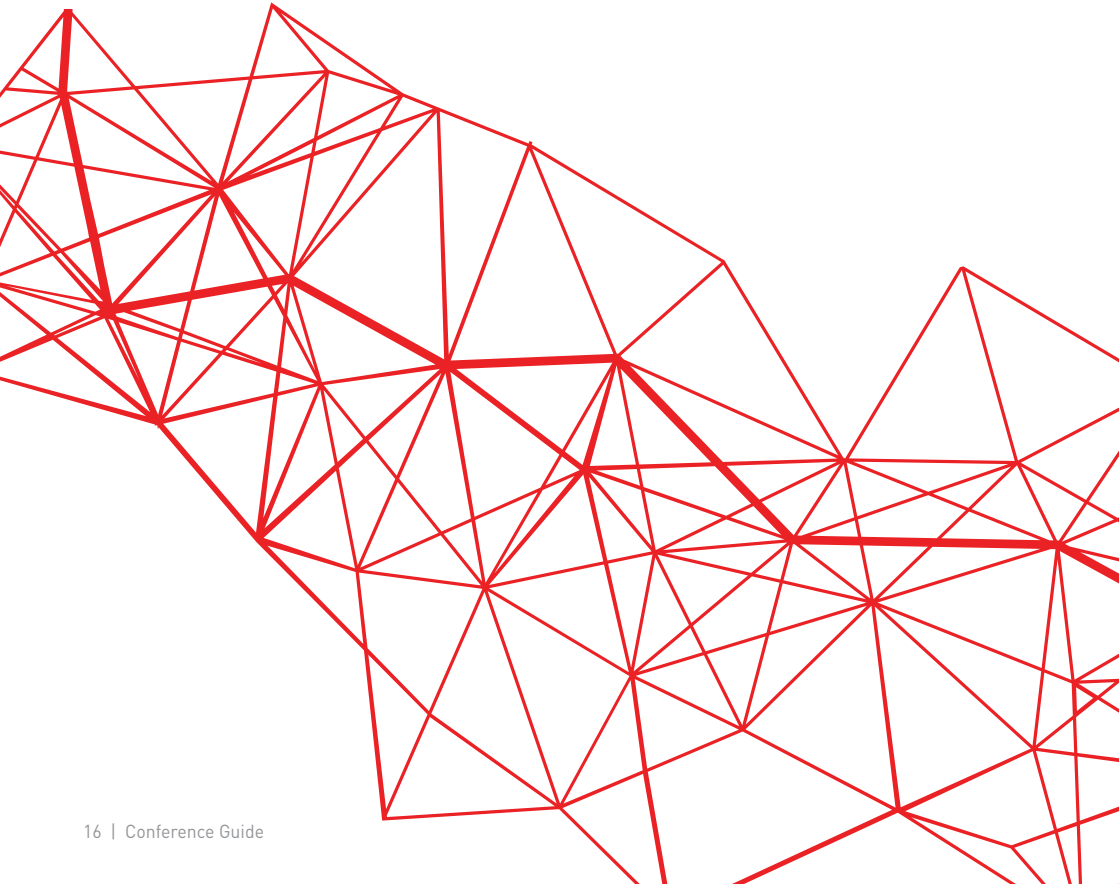
A combined speakers and press room is located in the Forum building on Level 0 in room "Agenda".

Opening Hours

Sunday, June 24: ..... 07:30 am – 07:00 pm
Monday, June 25: ..... 07:30 am – 07:00 pm
Tuesday, June 26: ..... 07:30 am – 07:00 pm
Wednesday, June 27: ..... 07:30 am – 07:00 pm

WORKSHOPS

The workshops will be held on June 28 at the Frankfurt Marriott Hotel, located on Hamburger Allee across from the Congress Center. If you are interested in attending the workshops but have not registered yet, you can do so at the Self Registration Counter, located in the Foyer of Hall 3 or at Marriott Hotel on June 28 from 07:30 am until 02:00 pm.

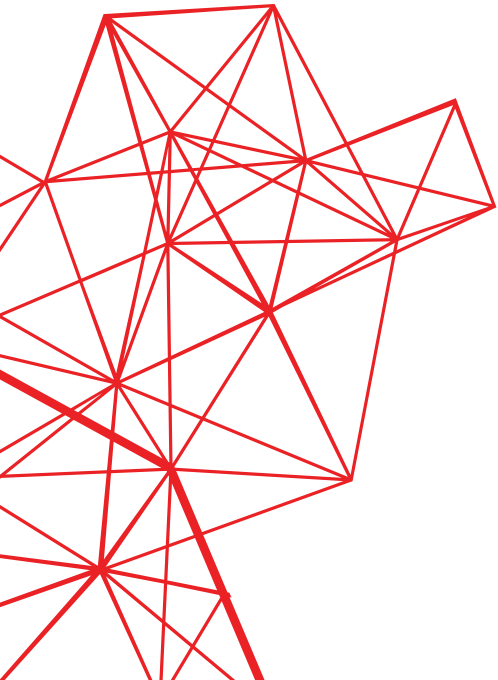


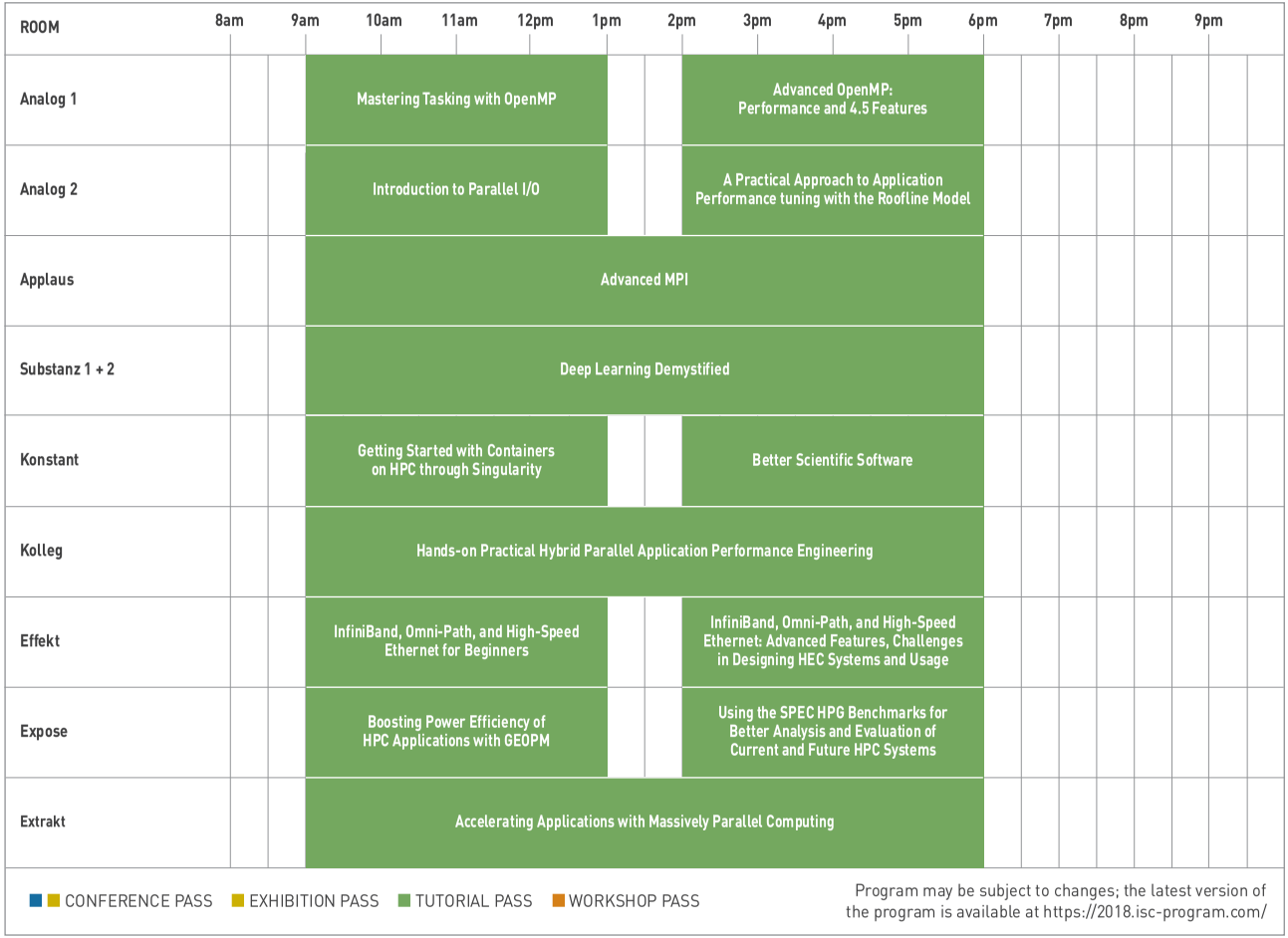
PROGRAM

Tutorials

(in chronological order per room)

SUNDAY, JUNE 24





Program may be subject to changes; the latest version of the program is available at https://2018.isc-program.com/

Analog 1

09:00 am - 01:00 pm — Analog 1

Mastering Tasking with OpenMP

Presenters:
Christian Terboven, RWTH Aachen University
Michael Klemm, Intel
Sergi Mateo Bellido, Barcelona Supercomputing Center
Xavier Teruel, Barcelona Supercomputing Center
Bronis R. de Supinski, Lawrence Livermore National Laboratory

02:00 pm - 06:00 pm — Analog 1

Advanced OpenMP: Performance and 4.5 Features

Presenters:
Christian Terboven, RWTH Aachen University
Michael Klemm, Intel
James C. Beyer, NVIDIA
Kelvin Li, IBM
Bronis R. de Supinski, Lawrence Livermore National Laboratory

Analog 2

09:00 am - 01:00 pm — Analog 2

Introduction to Parallel I/O

Presenters:
Ritu Arora, Texas Advanced Computing Center
John Cazes, Texas Advanced Computing Center
Robert McClay, Texas Advanced Computing Center

02:00 pm - 06:00 pm — Analog 2

A Practical Approach to Application Performance tuning with the Roofline Model

Presenters:
Tuomas S. Koskela, LBNL
Aleksandar Ilic, INESC-ID, Instituto Superior Técnico, Universidade de Lisboa
Zakhar A. Matveev, Intel
Roman Belenov, Intel
Charlene J. Yang, LBNL
Leonel Sousa, INESC-ID, Instituto Superior Técnico, Universidade de Lisboa

Applaus

09:00 am - 06:00 pm — Applaus

Advanced MPI

Presenters:
Pavan Balaji, Argonne National Laboratory
Torsten Hoefler, ETH Zurich

Kolleg

09:00 am - 06:00 pm — Kolleg

Hands-on Practical Hybrid Parallel Application Performance Engineering

Presenters:
Christian Feld, Jülich Supercomputing Centre (JSC)
Markus Geimer, Jülich Supercomputing Centre (JSC)
Sameer Shende, University of Oregon; ParaTools, Inc.
Ronny Tschüter, Technische Universität Dresden

Konstant

09:00 am - 01:00 pm — Konstant

Getting Started with Containers on HPC through Singularity

Presenters:
Andrew Younge, Sandia National Laboratories
Carlos Eduardo Arango, Sylabs

02:00 pm - 06:00 pm — Konstant

Better Scientific Software

Presenters:
Anshu Dubey, Argonne National Laboratory, University of Chicago
Michael Heroux, Sandia National Laboratories, St. Johns University

Substanz 1 + 2

09:00 am - 06:00 pm — Substanz 1 + 2

Deep Learning Demystified

Presenter:
Yu Wang, Leibniz Supercomputing Center

Effekt

09:00 am - 01:00 pm — Effekt

InfiniBand, Omni-Path, and High-Speed Ethernet for Beginners
Presenters:
Dhabaleswar Panda, The Ohio State University
Hari Subramoni, The Ohio State University

02:00 pm - 06:00 pm — Effekt

InfiniBand, Omni-Path, and High-Speed Ethernet: Advanced Features, Challenges in Designing HEC Systems and Usage
Presenters:
Dhabaleswar Panda, The Ohio State University
Hari Subramoni, The Ohio State University

Expose

09:00 am - 01:00 pm — Expose

Boosting Power Efficiency of HPC Applications with GEOPM
Presenters:
Tapasya Patki, Lawrence Livermore National Laboratory
Martin Schulz, Technical University of Munich
Jonathan M. Eastep, Intel

02:00 pm - 06:00 pm — Expose

Using the SPEC HPG Benchmarks for Better Analysis and Evaluation of Current and Future HPC Systems
Presenters:
Robert Henschel, Indiana University
Sandra Wienke, RWTH Aachen University
Bo Wang, RWTH Aachen University

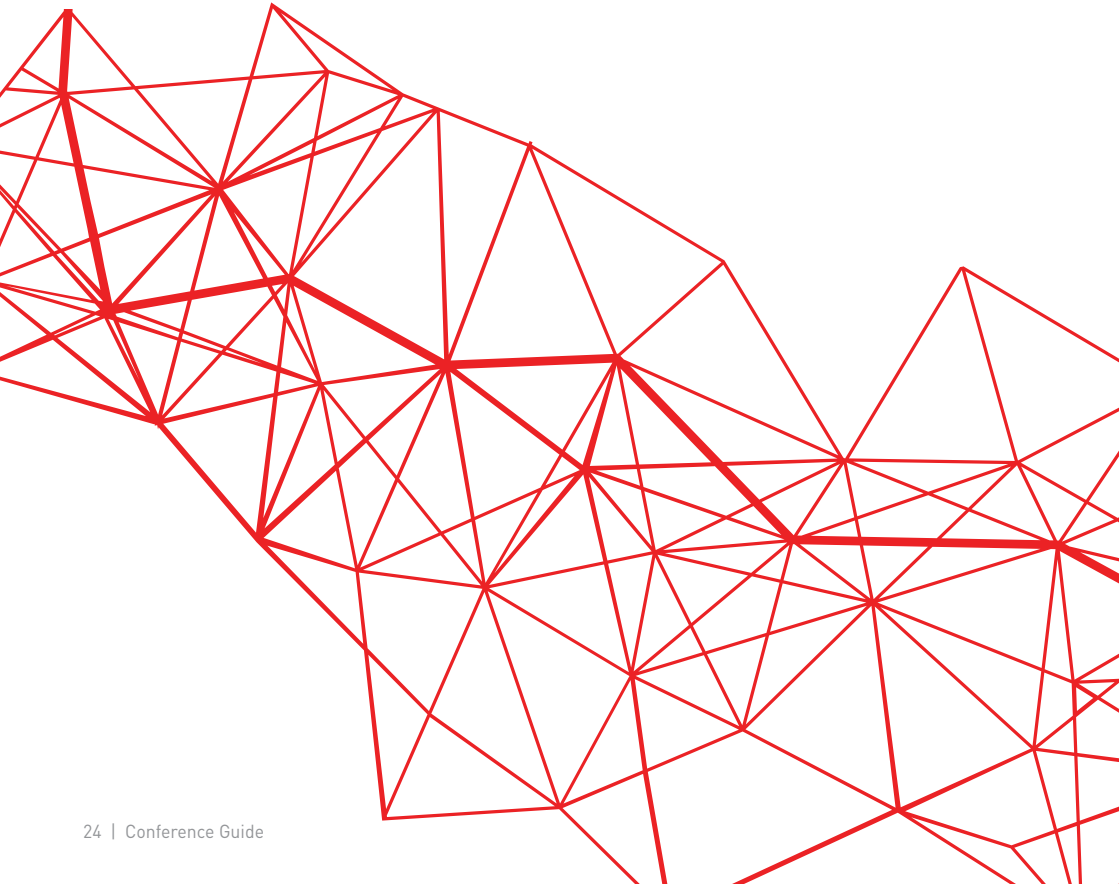
Extrakt

09:00 am - 06:00 pm — Extrakt

Accelerating Applications with Massively Parallel Computing
Presenter:
Wen-Mei Hwu, University of Illinois Urbana/Champaign

Coffee & Lunch Breaks		
08:00 am - 09:00 am	Welcome Coffee	Tutorial Rooms
11:00 am - 11:30 am	Coffee Break	Forum, Level Via: Patio, Pikkolo Süd, Pikkolo Nord
01:00 pm - 02:00 pm	Lunch Break	Forum, Level Via: Patio, Pikkolo Süd, Pikkolo Nord
04:00 pm - 04:30 pm	Coffee Break	Forum, Level Via: Patio, Pikkolo Süd, Pikkolo Nord

NOTES

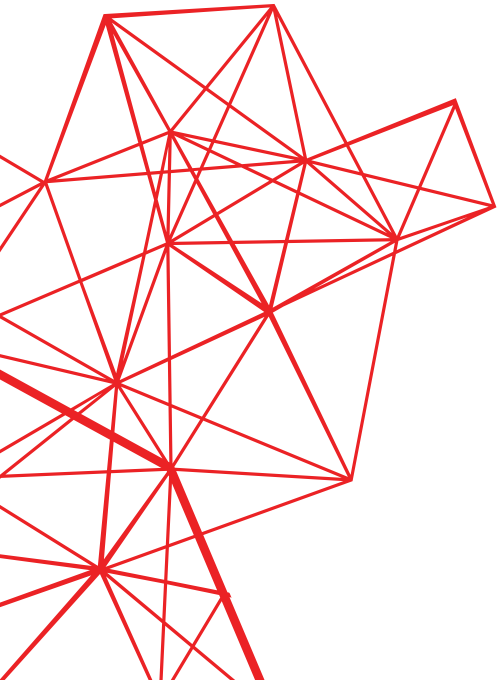


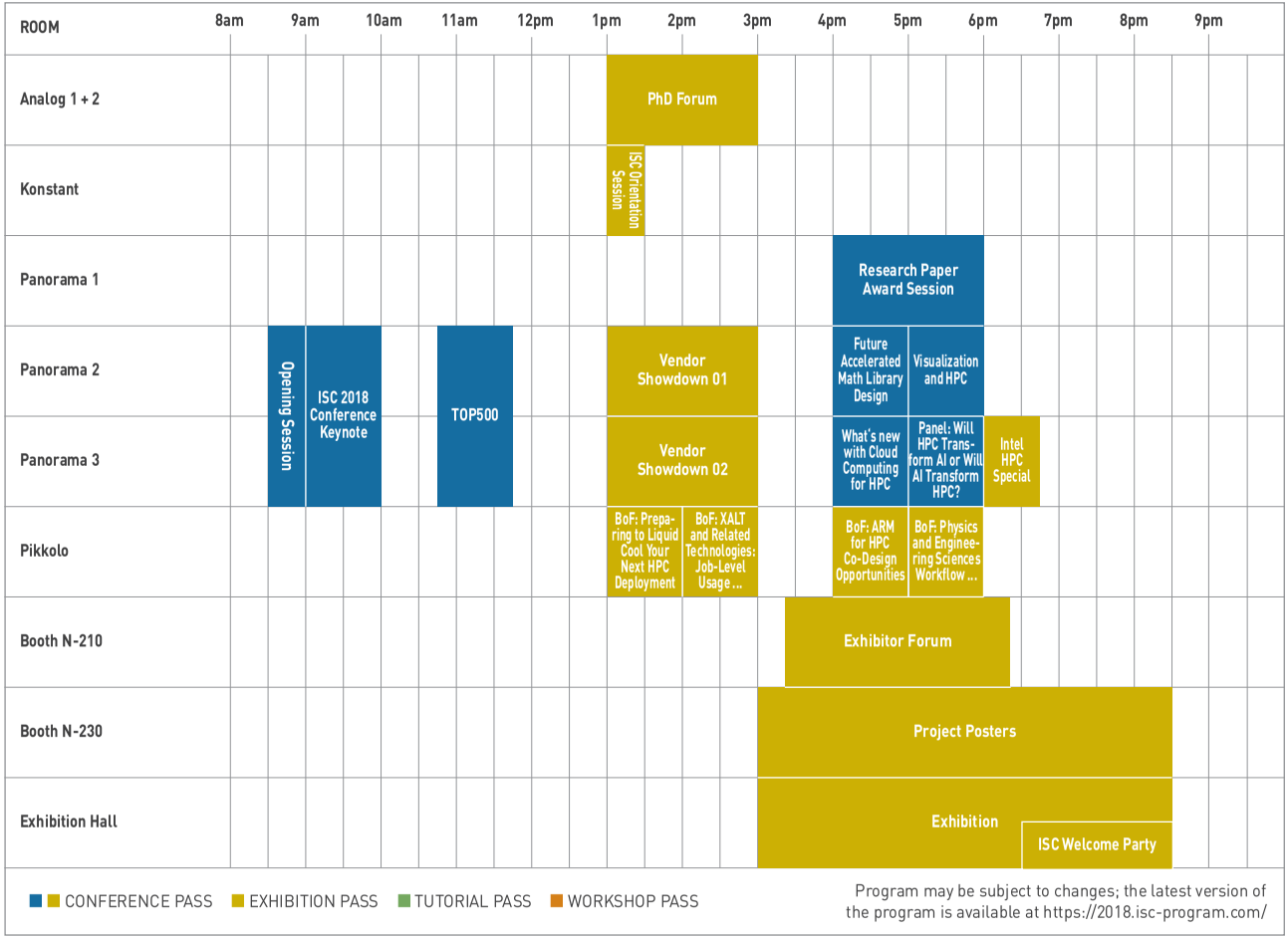
PROGRAM

Conference

(in chronological order per room)

MONDAY, JUNE 25





Program may be subject to changes; the latest version of the program is available at https://2018.isc-program.com/

	Panorama 2 + 3	
08:30 am - 09:00 am	**Opening Session** ***Chairs:*** ***Martin Meuer, ISC Group*** ***Thomas Meuer, ISC Group***	Panorama 2 + 3
08:30 am - 08:35 am	Welcome & Introduction ISC 2018 *Martin Meuer, ISC Group* *Thomas Meuer, ISC Group*	
08:35 am - 08:45 am	ISC 2018 Program *Horst Simon, Lawrence Berkeley National Laboratory*	
08:45 am - 08:55 am	Announcement of the Two Finalists of the Hans Meuer Award & Announcement of the Gauss Award *David Keyes, KAUST*	
08:55 am - 09:00 am	Towards providing Exascale Capacity to Scientists *Serge Bogaerts, PRACE AISBL*	
09:00 am - 10:00 am	**ISC 2018 Conference Keynote** ***Chair:*** ***Horst Simon, Lawrence Berkeley National Laboratory***	Panorama 2 + 3
09:00 am - 10:00 am	Tackling tomorrow's Computing Challenges today at CERN *Maria Girone, CERN - European Organization for Nuclear Research*	
10:45 am - 11:45 am	**TOP500** ***Chair:*** ***Horst Simon, Lawrence Berkeley National Laboratory***	Panorama 2 + 3
10:45 am - 10:55 am	TOP500 & Green500 Awards *Horst Simon, Lawrence Berkeley National Laboratory* *Jack Dongarra, Innovative Computing Laboratory; EECS Department; University of Tennessee* *Wu Feng, Virginia Tech* *Martin Meuer, ISC Group* *Erich Strohmeier, Lawrence Berkeley National Laboratory*	

10:55 am - 11:15 am	Highlights of the 51st TOP500 List *Erich Strohmeier, Lawrence Berkeley National Laboratory*
11:15 am - 11:45 am	Panel: TOP500's Relevance after 25 Years *Moderator:* *Horst Simon, Lawrence Berkeley National Laboratory* *Panelists:* *Steve Conway, Hyperion Research* *Yutong Lu, NUDT, National Supercomputer Center in Guangzhou* *Thomas Schulthess, Swiss National Supercomputing Center* *Steve Scott, Cray*

Panorama 1

04:00 pm - 06:00 pm	**Research Paper Award Session** ***Chairs:*** ***David Keyes, KAUST*** ***Horst Simon, Lawrence Berkeley National Laboratory***	Panorama 1
04:00 pm - 04:10 pm	Introduction *Horst Simon, Lawrence Berkeley National Laboratory* *David Keyes, KAUST*	
04:10 pm - 04:50 pm	Hans Meuer Award Finalist 1: Chebyshev Filter Diagonalization on Modern Manycore Processors and GPGPUs *Gerhard Wellein, University of Erlangen-Nuremberg*	
04:50 pm - 05:30 pm	Hans Meuer Award Finalist 2: Compiler-assisted Source-to-Source Skeletonization of Application Models for System Simulation *Jeremiah Wilke, Sandia National Labs*	
05:30 pm - 06:00 pm	Gauss Award Winning Paper: On the Accuracy and Usefulness of Analytic Energy Models for Contemporary Multicore Processors *Johannes Hofmann, University of Erlangen-Nuremberg*	

	Panorama 2	
01:00 pm - 03:00 pm	**Vendor Showdown 01** ***Moderators:*** ***Rupak Biswas, NASA Ames Research Center*** ***Addison Snell, Intersect360 Research***	Panorama 2
01:00 pm - 01:05 pm	Introduction *Addison Snell, Intersect360 Research* *Rupak Biswas, NASA Ames Research Center*	
01:05 pm - 01:15 pm	Hewlett Packard Enterprise *Jean-Luc Assor, Hewlett Packard Enterprise*	
01:15 pm - 01:25 pm	Huawei *Francis Lam, Huawei*	
01:25 pm - 01:35 pm	IBM *Sumit Gupta, IBM*	
01:35 pm - 01:45 pm	Lenovo *Scott Tease, Lenovo Data Center Group*	
01:45 pm - 01:55 pm	NVIDIA GmbH *Marc Hamilton, Nvidia*	
01:55 pm - 02:05 pm	Supermicro *Martin Galle, Supermicro*	
02:05 pm - 02:15 pm	Iceland for HPC: Anything is Possible *Anastasia Alexandersdottir, Opin Kerfi*	
02:15 pm - 02:25 pm	Cavium *Gopal Hegde, Cavium*	
02:25 pm - 02:35 pm	Fujitsu *Toshiyuki Shimizu, Fujitsu Limited*	
02:35 pm - 02:45 pm	Quantum *Molly Presley, Quantum Corporation*	
02:45 pm - 02:55 pm	Inspur *To be announced*	
02:55 pm - 03:00 pm	Voting Results & Awarding *Addison Snell, Intersect360 Research* *Rupak Biswas, NASA Ames Research Center*	

04:00 pm - 05:00 pm — **Future Accelerated Math Library Design** — Panorama 2

Chair:
Jack Dongarra, Innovative Computing Laboratory; EECS Department; University of Tennessee

04:00 pm - 04:20 pm — Numerical Linear Algebra for Future Extreme-Scale Systems (NLAFET)
Jack Dongarra, Innovative Computing Laboratory; EECS Department; University of Tennessee

04:20 pm - 04:40 pm — Accelerated Sparse Linear Algebra: Some Lessons, Challenges and Opportunities
Michael Heroux, Sandia National Laboratories, St. Johns University

04:40 pm - 05:00 pm — Numerical Library with High-Performance/ Adaptive-Precision/High-Reliability: Extension of ppOpen-HPC towards the Post Moore Era
Kengo Nakajima, The University of Tokyo/RIKEN R-CCS

05:00 pm - 06:00 pm — **Visualization and HPC** — Panorama 2

Chair:
Jean M. Favre, Swiss National Supercomputing Center

05:00 pm - 05:20 pm — Visualization in Earth System Research - Current Status and Challenges imposed by HPC Trends
Michael Böttinger, Deutsches Klimarechenzentrum (DKRZ)

05:20 pm - 05:40 pm — Visualizing the Atomic Detail Dynamics of Biomolecular Complexes in Our Compute-Rich but I/O-Constrained Future
John E. Stone, University of Illinois at Urbana-Champaign

05:40 pm - 06:00 pm — Preparations for Exascale Visualization at DOE
Kenneth Moreland, Sandia National Laboratories

06:00 pm - 06:45 pm — **Intel HPC Special** — Panorama 2

New Beowulf: The Bull or the Bear?
Rajeeb Hazra, Intel

	Panorama 3	
01:00 pm - 03:00 pm	**Vendor Showdown 02** ***Moderators:*** ***Dan Olds, Gabriel Consulting Group*** ***Mark Parsons, University of Edinburgh***	Panorama 3
01:00 pm - 01:05 pm	Introduction *Mark Parsons, EPCC, The University of Edinburgh* *Dan Olds, Gabriel Consulting Group*	
01:05 pm - 01:15 pm	Atos *Jean-Pierre Panziera, Atos*	
01:15 pm - 01:25 pm	Intel *Avinash Palaniswamy (Nash), Intel*	
01:25 pm - 01:35 pm	Samsung Semiconductor Europe *Thomas Arenz, Samsung Semiconductor Europe*	
01:35 pm - 01:45 pm	Cray *Steve Scott, Cray Inc.*	
01:45 pm - 01:55 pm	NEC Deutschland GmbH *Shintaro Momose, NEC Corporation*	
01:55 pm - 02:05 pm	Mellanox *Gilad Shainer, Mellanox Technologies*	
02:05 pm - 02:15 pm	DDN Storage *Jan Heichler, DDN Storage*	
02:15 pm - 02:25 pm	Dell EMC *Ed Turkel, Dell EMC*	
02:25 pm - 02:35 pm	Google *Kevin Kissell, Google Inc.*	
02:35 pm - 02:45 pm	Oracle *Taylor Newill, Oracle*	
02:45 pm - 02:55 pm	NetApp *Stan Skelton, NetApp*	
02:55 pm - 03:00 pm	Voting Results & Awarding *Mark Parsons, EPCC, The University of Edinburgh* *Dan Olds, Gabriel Consulting Group*	

04:00 pm - 05:00 pm — **What's new with Cloud Computing for HPC** — Panorama 3

Chairs:
Natalie Bates, Energy Efficient HPC Working Group, Lawrence Livermore National Laboratory
John Shalf, Lawrence Berkeley National Laboratory

04:00 pm - 04:20 pm — Constrained Computing at the Edge
Daniel A. Reed, University of Iowa

04:20 pm - 04:40 pm — Science as a Service: Delivering Constraint-Based Computing Services to Industry
Alison Kennedy, STFC Hartree Centre

04:40 pm - 05:00 pm — The Value of Data: Using Constraints to Drive Efficiencies in HPC and Cloud Computing
Gregory Koenig, KPMG, Energy Efficient HPC Working Group

05:00 pm - 06:00 pm — **Panel: Will HPC Transform AI or Will AI Transform HPC?** — Panorama 3

Moderator:
John Shalf, Lawrence Berkeley National Laboratory
Panelists:
Peter Messmer, NVIDIA
Alessandro Curioni, IBM
Satoshi Matsuoka, RIKEN, Tokyo Institute of Technology

	Analog 1 + 2	
01:00 pm - 03:00 pm	**PhD Forum** ***Chairs:*** ***Florina Ciorba, University of Basel*** ***Gerhard Wellein, Erlangen Regional Computing Center, University of Erlangen-Nuremberg***	Analog 1 + 2
01:00 pm - 01:05 pm	Welcome & Introduction *Gerhard Wellein, Erlangen Regional Computing Center, University of Erlangen-Nuremberg* *Florina Ciorba, University of Basel*	
01:05 pm - 01:09 pm	(PhD01) Modelling of Dynamic Network Objects: New Approaches and Adaptation Challenges for Future HPC Systems *Volodymyr Kushnarenko, Ulm University*	
01:09 pm - 01:13 pm	(PhD02) Mixed precision multi-level approach for FFTs *Malte Brunn, University of Stuttgart, Institute for Parallel and Distributed Systems*	
01:13 pm - 01:17 pm	(PhD03) Accelerators in a Hybrid HPC World: How Can Applications Benefit? *Antonio Maffia, University of Basel*	
01:17 pm - 01:21 pm	(PhD04) Global Tasking Data Dependencies for PGAS Applications *Joseph Schuchart, HLRS, University of Stuttgart*	
01:21 pm - 01:25 pm	(PhD05) Software-Based Fault Tolerance Techniques for Exascale HPC Systems *Grzegorz Pawelczak, University of Bristol*	
01:25 pm - 01:29 pm	(PhD06) A First Principles Approach to Performance and Power Models for Contemporary Multi- and Many-Core Processors *Johannes Hofmann, University of Erlangen-Nuremberg*	
01:29 pm - 01:33 pm	(PhD07) Pystencils - Automatic Generation, Optimization and Analysis of Stencil Codes *Jan Hönig, University of Erlangen-Nuremberg*	
01:33 pm - 01:37 pm	(PhD08) A Machine Learning Workflow for Hurricane Prediction *Albert N. Kahira, Barcelona Supercomputing Center, Universitat Politècnica de Catalunya*	
01:37 pm - 01:41 pm	(PhD09) Bringing Neuroscience to HPC *George Chatzikonstantis, National Technical University of Athens (NTUA); Institute of Communications and Computer Systems (ICCS)*	
01:41 pm - 01:45 pm	(PhD10) Quantification of Load Balancing related Performance Optimizations *Monika Harlacher, University of Siegen*	

01:45 pm - 01:49 pm	(PhD11)	Numerical Simulation of Flow around Complex Geometries using immersed Boundaries and DG *Neda Ebrahimi Pour, University of Siegen*
01:49 pm - 01:53 pm	(PhD12)	From Molecular Dynamics towards a Node-Level Auto-Tuning Library for N-Body Simulations *Fabio Gratl, Technical University Munich*
01:53 pm - 01:57 pm	(PhD13)	Parallel Low Memory Footprint Eikonal Solver in Cardiovascular Applications *Daniel Ganellari, Institute of Mathematics and Scientific Computing, University of Graz*
01:57 pm - 02:01 pm	(PhD14)	Hybrid Hierarchical Data Management System: Accelerating Data Processing on HPC Systems *Peng Cheng, National University of Defense Technology*
02:01 pm - 02:05 pm	(PhD15)	HasFS: A File System for NVM-based Hybrid Storage Architecture *Yubo Liu, Sun Yat-Sen University, National Supercomputer Center in Guangzhou*
02:05 pm - 02:50 pm		PhD Forum Poster Session
02:50 pm - 03:00 pm		ISC 2018 PhD Forum Award Ceremony *The ISC 2018 PhD Forum Award is sponsored by **Springer**, the international publisher specializing in science, technology and medicine.*

Konstant

01:00 pm - 01:30 pm — **ISC Orientation Session** — Konstant

Speakers:
Kimberly McMahon, McMahon Consulting
Nages Sieslack, ISC Group

Pikkolo

01:00 pm - 02:00 pm — **BoF: Preparing to Liquid Cool Your Next HPC Deployment** — Pikkolo

Speaker:
Patrick McGinn, CoolIT Systems

02:00 pm - 03:00 pm — **BoF: XALT and Related Technologies: Job-Level Usage Data on Today's Supercomputers** — Pikkolo

Speaker:
Robert McLay, TACC

04:00 pm - 05:00 pm — **BoF: ARM for HPC Co-Design Opportunities** — Pikkolo

Speakers:
Stephen Poole, Los Alamos National Laboratory
Jeffrey Young, Georgia Institute of Technology
Oscar Hernandez, Oak Ridge National Laboratory
Filippo Mantovani, Barcelona Supercomputing Center
Mitsuhisa Sato, RIKEN
Simon Hammond, Sandia National Laboratories
Dirk Pleiter, Jülich Supercomputing Centre (JSC)
Jonathan Beard, Arm Research
Guillaume Colin de Verdière, CEA

05:00 pm - 06:00 pm — **BoF: Physics and Engineering Sciences Workflow at Scale - Practice and Challenges** — Pikkolo

Speakers:
Dan Laney, Lawrence Livermore National Laboratory
Giovanni Pizzi, EPFL
George Orient, Sandia National Laboratory

Booth N-210

03:20 pm - 06:20 pm — **Exhibitor Forum** — Booth N-210

03:20 pm - 03:40 pm — Altair: Access, Control, and Optimize HPC Clusters & Clouds with PBS Works 2018
Bill Nitzberg, Altair

04:00 pm - 04:20 pm — Boston Limited: HPC and The SuperCloud
David Power, Boston Limited

04:20 pm - 04:40 pm — GiDEL: Different Methodologies for Optimizing Algorithms for FPGA Processing
Reuven Weintraub, GiDEL

05:00 pm - 05:20 pm — National Supercomputer Center in Guangzhou (NSCCGZ) Tianhe-Starlight: Leading HPC into the Era of Cloud Computing
Yufei Du, NSCC-GZ

05:20 pm - 05:40 pm — National University of Defense Technology (NUDT): TianHe-2A and the future TianHe-3
Ruibo Wang, National University of Defense Technology (NUDT)

05:40 pm - 06:00 pm	Thercon-LHP: To be announced *To be announced*	
06:00 pm - 06:20 pm	Atempo: Protecting Massive File-Based Data Sets and Improving Data Availability with reduced TCO *Hervé Collard, Atempo* *Thomas Ahrens, Atempo*	

Booth N-230

03:00 pm - 08:30 pm	**Project Posters** For a complete list of the Project Posters on display at ISC 2018, please refer to page 52	Booth N-230

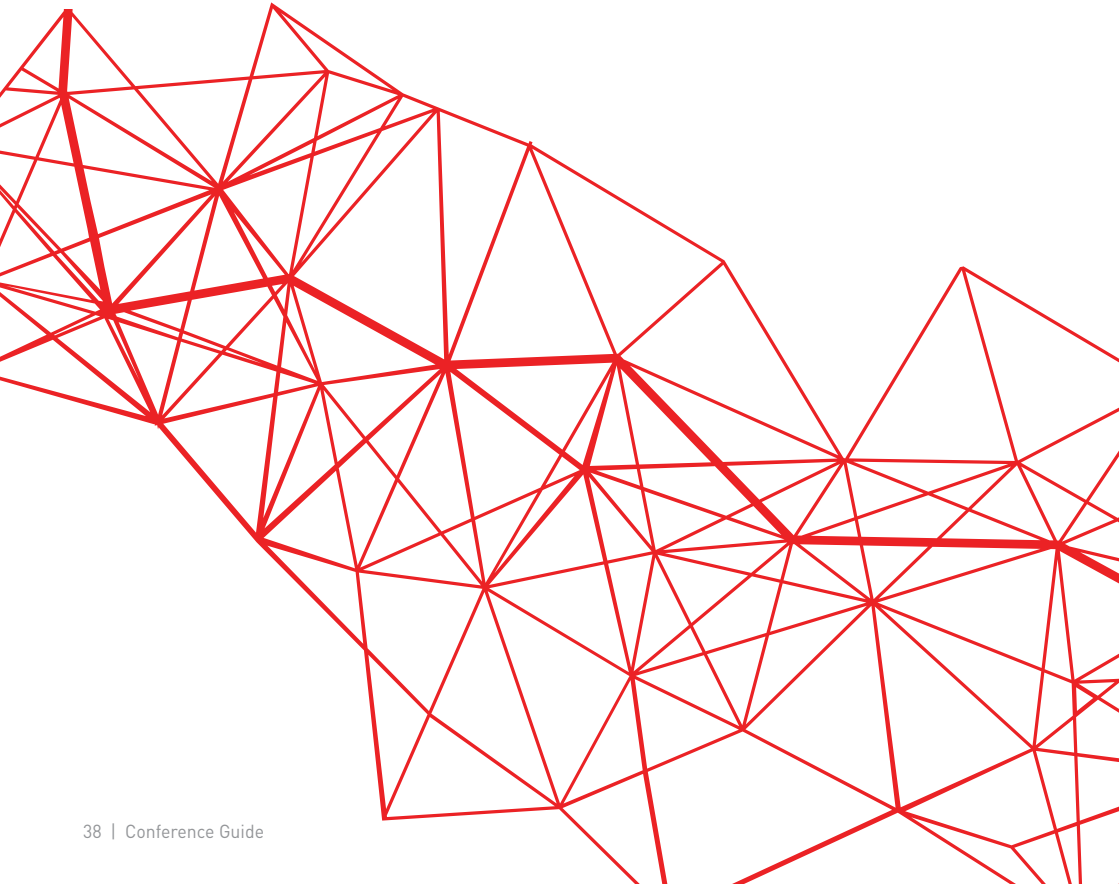
Exhibition Hall

03:00 pm - 08:30 pm	**Exhibition**	Exhibition Hall
06:30 pm - 08:30 pm	**ISC Welcome Party** The ISC Welcome Party is famous for its food, drinks, entertainment and amiable atmosphere. It gives you the opportunity to visit vendors and service providers of your choice, and also socialize with other HPC enthusiasts. An entertaining party duo - consisting of a DJane and a saxophonist - will be on the show floor this year, to add swing and groove to the exhibition opening. We look forward to seeing you there!	Exhibition Hall

Coffee & Lunch Breaks

07:30 am - 08:30 am	Welcome Coffee	Panorama Foyer
10:00 am - 10:45 am	Coffee Break	Areal
11:45 am - 01:00 pm	Lunch Break	Areal
03:00 pm - 04:00 pm	Coffee Break	Exhibition Hall

NOTES

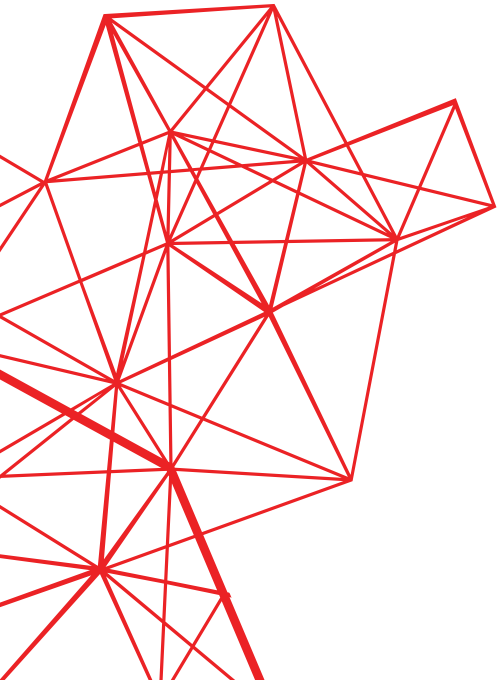


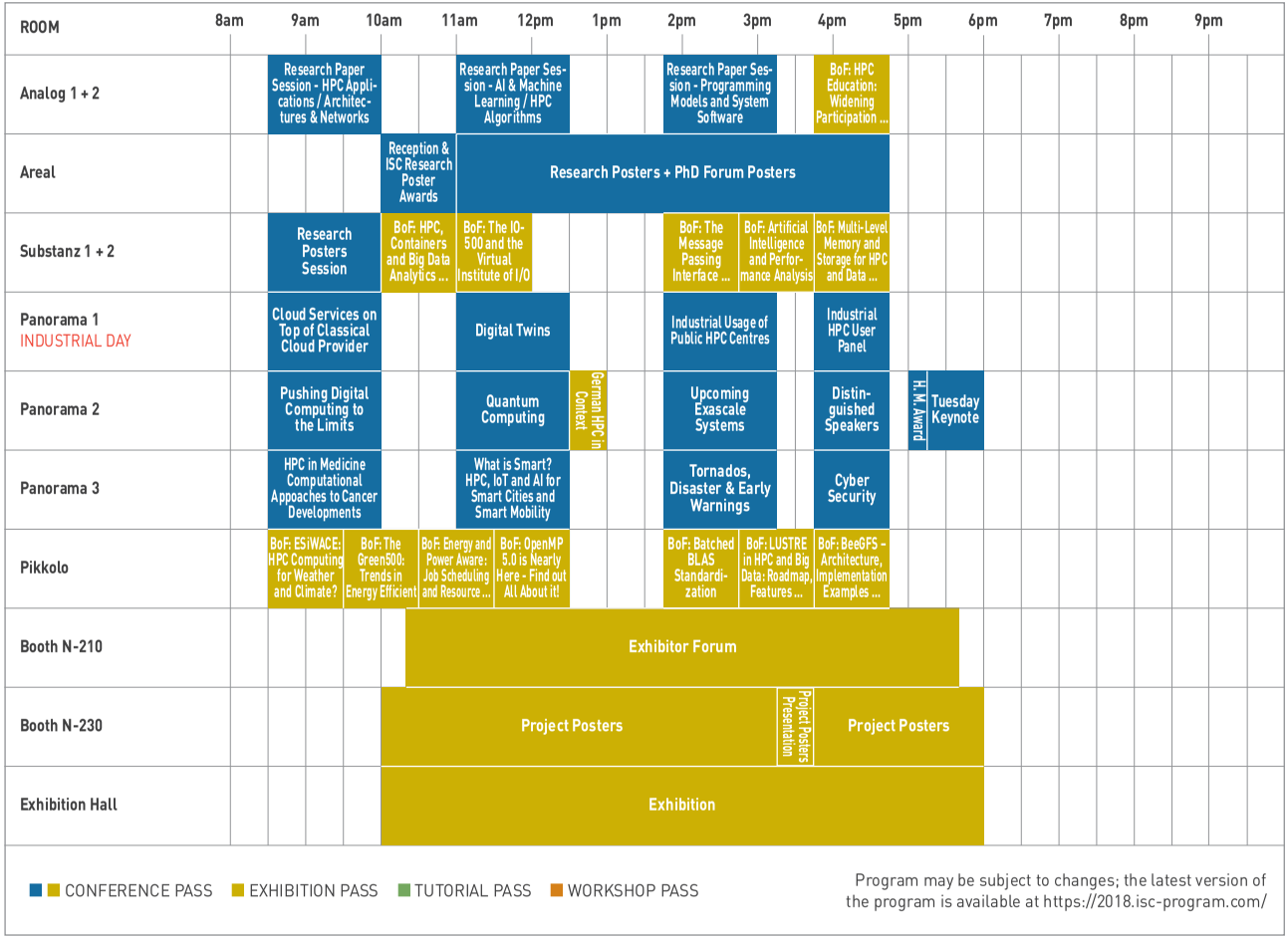
PROGRAM

Conference

(in chronological order per room)

TUESDAY, JUNE 26





Program may be subject to changes; the latest version of the program is available at https://2018.isc-program.com/

Panorama 1 - INDUSTRIAL DAY		
08:30 am - 10:00 am	**Cloud Services on Top of Classical Cloud Provider** ***Chair:*** ***Gerd Buettner, Airbus Operation GmbH***	Panorama 1 INDUSTRIAL DAY
08:30 am - 09:00 am	Keynote: Using MantiumFlow as an Automation Tool for OpenFOAM to run external Car Aerodynamics CFD Simulations with Rotating Wheels in the Cloud *Andre Zimmer, MantiumCAE*	
09:00 am - 10:00 am	Cloud Services on Top of Classical Cloud Provider *Andre Stork, Fraunhofer* *David Ingersoll, Penguin* *Gabriel Broner, Rescale* *Karl-Heinz Hierholz, T-Systems* *Wolfgang Gentzsch, UberCloud*	
11:00 am - 12:30 pm	**Digital Twins** ***Chair:*** ***Marie-Christine Sawley, Intel***	Panorama 1 INDUSTRIAL DAY
11:00 am - 11:22 am	Digital Twins and Artificial Intelligence *Englim Goh, HPE*	
11:22 am - 11:44 am	1.2 Million GE Digital Twins and Counting... Real Uses Cases of Productivity Boost for Industrial Companies *Andreas Neuhold, GE*	
11:44 am - 12:06 pm	Digital Twin and Smart Data – New Business Models in the Era of Digitalization *Thomas Hahn, Siemens*	
12:06 pm - 12:30 pm	Towards the 2nd Generation of Digital Twins mixing real-time Simulation in Operation and Artificial Intelligence *Jacques Duysens, Ansys*	
01:45 pm - 03:15 pm	**Industrial Usage of Public HPC Centres** ***Chair:*** ***Alfred Geiger, T-Systems***	Panorama 1 INDUSTRIAL DAY
01:45 pm - 02:15 pm	Driving Adoption of HPC by SMEs in Europe *Mark Parsons, EPCC, The University of Edinburgh*	
02:15 pm - 02:45 pm	NCSA Industry-Overview and Computational Breakthroughs *Brendan McGinty, National Center for Supercomputing Applications (NCSA), University of Illinois* *Seid Koric, National Center for Supercomputing Applications (NCSA), University of Illinois*	

02:45 pm - 03:15 pm — Simulation and Validation of Watermanagement in Vehicle Development using High Performance Computing
Steffen Hagmann, Porsche AG

03:45 pm - 04:45 pm — **Panel: Industrial HPC User Panel** — Panorama 1 INDUSTRIAL DAY
Moderator:
Andreas Wierse, SICOS BW GmbH
Panelists:
Claudio Arlandini, CINECA
Keith Foston, Siemens AG
Stephan Schenk, BASF SE
Steffen Poppitz, Robert Bosch GmbH
Brendan McGinty, NCSA

Panorama 2

08:30 am - 10:00 am — **Pushing Digital Computing to the Limits** — Panorama 2
Chair:
Andreas Stiller, A20-Gate

08:30 am - 08:52 am — Technology Challenges and Trends over the next Decade (A Look through a 2030 Crystal Ball)
Al Gara, Intel

08:52 am - 09:14 am — Future-Proof: GPU-Accelerated Computing Beyond Moore's Law
Steve Oberlin, NVIDIA

09:14 am - 09:36 am — The Future of Vector Processing
Rudolf Fischer, NEC Deutschland GmbH

09:36 am - 10:00 am — Adaptable Compute Acceleration for Future Workloads
Ivo Bolsens, Xilinx

11:00 am - 12:30 pm — **Quantum Computing** — Panorama 2
Chair:
Matthias Troyer, Microsoft

11:00 am - 11:22 am — Q# Software Libraries and Applications for Scalable Quantum Computers
Martin Roetteler, Microsoft

11:22 am - 11:44 am — The ProjectQ Software Framework for Quantum Computing
Thomas Haener, ETH Zurich

11:44 am - 12:06 pm — Quantum Computing at Google
Kevin D. Kissell, Google

12:06 pm - 12:30 pm — Quantum Computing at IBM
Paul Nation, IBM - T. J. Watson

12:30 pm - 01:00 pm — **German HPC in Context** — Panorama 2

Chair:
Michael M. Resch, HLRS High Performance Computing Center Stuttgart

01:45 pm - 03:15 pm — **Upcoming Exascale Systems** — Panorama 2

Chair:
Yutong Lu, NUDT, National Supercomputer Center in Guangzhou

01:45 pm - 02:07 pm — The U.S. Department of Energy Exascale Computing Project
Douglas Kothe, Oak Ridge National Laboratory

02:07 pm - 02:29 pm — Update on Post-K Development
Yutaka Ishikawa, RIKEN AICS

02:29 pm - 02:51 pm — EuroHPC, Exascale for Europe
Sergi Girona, BSC, Barcelona Supercomputing Center

02:51 pm - 03:15 pm — A Blueprint of Road to Exascale in China
Kai Lu, NUDT

03:45 pm - 04:45 pm — **Distinguished Speakers** — Panorama 2

03:45 pm - 04:15 pm — Redesigning Climate Model on Sunway TaihuLight for Peta-Scale Performance and Ultra-High Resolution
Lin Gan, Tsinghua University, National Supercomputing Center in Wuxi

04:15 pm - 04:45 pm — Incentives and Games in Large Scale Mobility
Alexandre M. Bayen, University of California, Berkeley

05:00 pm - 05:15 pm — **Hans Meuer Award Ceremony** — Panorama 2

Chairs:
David Keyes, KAUST
Horst Simon, Lawrence Berkeley National Laboratory

05:15 pm - 06:00 pm — **Tuesday Keynote** — Panorama 2

Chair:
Satoshi Matsuoka, RIKEN, Tokyo Institute of Technology

05:15 pm - 06:00 pm — Empowering flexible and scalable High Performance Architectures with embedded Photonics
Keren Bergman, Columbia University

	Panorama 3	
08:30 am - 10:00 am	**HPC in Medicine Computational Approaches to Cancer Developments** ***Chair:*** ***Tilo Wettig, University of Regensburg***	Panorama 3
08:30 am - 09:00 am	Precision Medicine and the AI/BD/HPC Nexus *Dimitri Kusnezov, US Department of Energy/NNSA*	
09:00 am - 09:30 am	Discovery of two States of Neuroblastoma Cells via the Analysis of Super-Enhancer Landscape *Valentina Boeva, Inserm U1016, Institut Cochin*	
09:30 am - 10:00 am	Advances in Understanding Tumour Evolution through HPC *Katharina Jahn, ETH Zurich*	
11:00 am - 12:30 pm	**What Is Smart? HPC, IoT and AI for Smart Cities and Smart Mobility** ***Chair:*** ***Frank Baetke, EOFS***	Panorama 3
11:00 am - 11:25 am	Urban Science and High Performance Computing *Mary Ann Piette, Lawrence Berkeley National Laboratory*	
11:25 am - 11:50 am	How Car Manufacturers Face Challenges of Urban Mobility by Changing the Way They Think and Act *Martin Hauschild, BMW Group*	
11:50 am - 12:15 pm	Accelerating Singapore's AI Adoption *Laurence Liew, Singapore AI Industry Innovation*	
12:15 pm - 12:30 pm	Questions & Answers	
01:45 pm - 03:15 pm	**Tornados, Disaster & Early Warnings** ***Chair:*** ***Xavier Vigouroux, Atos / BULL SAS***	Panorama 3
01:50 pm - 02:12 pm	EC-Earth, a coupled Climate Model for extreme Event Prediction *Kim Serradell Maronda, Barcelona Supercomputing Center*	
02:12 pm - 02:34 pm	A Step Ahead: Novel HPC Approaches to provide Early Warnings for Severe Weather *Xavier Lapillonne, Meteoswiss*	
02:34 pm - 02:56 pm	Towards Global Cloud-Resolving Weather and Climate Prediction at Exascale *Philipp Neumann, German Climate Computing Center, University of Hamburg*	
02:56 pm - 03:15 pm	Wildfires Simulation, Front Evolution, Fire induced Weather and Pollution *Jean-Baptiste Filippi, CNRS, Università di Corsica*	

03:45 pm - 04:45 pm — **Cyber Security** — Panorama 3

Chair:
Dona Crawford, Lawrence Livermore National Laboratory (ret.)

03:45 pm - 04:05 pm — Cyber Security Challenges and Opportunities in High-Performance Computing Environments
Sean Peisert, Lawrence Berkeley National Laboratory

04:05 pm - 04:25 pm — To be announced
Arno Edelmann, Verizon

04:25 pm - 04:45 pm — To be announced
To be announced

Analog 1 + 2

08:30 am - 10:00 am — **Research Paper Session - HPC Applications / Architectures & Networks** — Analog 1 + 2

Chairs:
Martin Schulz, Technical University of Munich
Antonino Tumeo, Pacific Northwest National Laboratory

08:30 am - 09:00 am — Performance Optimization and Evaluation of Scalable Optoelectronics Application on Large Scale KNL Cluster
Yuta Hirokawa, University of Tsukuba

09:00 am - 09:30 am — Megafly: A Topology For Exascale Systems
Mario Flajslik, Intel

09:30 am - 10:00 am — Packetization of Shared-Memory Traces for Message Passing Oriented NoC Simulation
Davide Patti, University of Catania

11:00 am - 12:30 pm — **Research Paper Session - AI & Machine Learning / HPC Algorithms** — Analog 1 + 2

Chairs:
Philipp Neumann, German Climate Computing Center, University of Hamburg
Yu Wang, Leibniz Supercomputing Centre

11:00 am - 11:30 am — Bayesian Optimization of HPC Systems for Energy Efficiency
Takashi Miyazaki, Yahoo Japan Corporation

11:30 am - 12:00 pm — Distributed Deep Reinforcement Learning: Learn how to Play Atari Games in 21 Minutes
Robert Adamski, Intel, Biz On Sp. z o.o.
Tomasz Grel, deepsense.ai

12:00 pm - 12:30 pm — Combining HTM with RCU to Speed Up Graph Coloring on Multicore Platforms
Christina Giannoula, National Technical University of Athens

01:45 pm - 03:15 pm — **Research Paper Session - Programming Models and System Software** — Analog 1 + 2

Chair:
Sven-Bodo Scholz, Heriot-Watt University

01:45 pm - 02:15 pm — Heterogeneity-aware Resource Allocation in HPC Systems
Alessio Netti, Department of Computer Science and Engineering, University of Bologna

02:15 pm - 02:45 pm — A Survey of Programming Tools for D-Wave Quantum-Annealing Processors
Scott Pakin, Los Alamos National Laboratory

02:45 pm - 03:15 pm — DTF: An I/O Arbitration Framework for Multi-Component Data Processing Workflows
Tatiana Martsinkevich, RIKEN AICS

03:45 pm - 04:45 pm — **BoF: HPC Education: Widening Participation and Increasing Skills through Contests, Challenges and Extra Curricular Learning** — Analog 1 + 2

Speakers:
Nitin Sukhija, Slippery Rock University of Pennsylvania
Maciej Cytowski, Pawsey Supercomputing Center
Scott Lathrop, University of Illinois
Victor Sande, Fundación Pública Galega Centro Tecnolóxico de Supercomputación de Galicia (CESGA)
Matthew L. Curry, Sandia National Laboratories
Benson Muite, University of Tartu
Maciej Szpindler, ICM, University of Warsaw
Bryan Johnston, Centre for high performance computing (CHPC)
Alexander Ditter, University of Erlangen-Nuremberg

Areal

10:00 am - 11:00 am — **Reception & ISC Research Poster Awards** — Areal

The seven ISC Research Poster Award Winners will be announced at the reception. The seven ISC Research Poster Awards are sponsored by **ISC Group.**

11:00 am - 04:45 pm — **Research Posters + PhD Forum Posters** — Areal

For a complete list of the Research Posters on display at ISC 2018, please refer to page 47.
For a complete list of the PhD Forum Posters on display at ISC 2018, please refer to page 33.

Substanz 1 + 2

08:30 am - 10:00 am — **Research Posters Session** — Substanz 1 + 2

Chairs:
Sunita Chandrasekaran, University of Delaware
Matthias Müller, IT Center, RWTH Aachen University

08:30 am – 08:35 am — Introduction
Sunita Chandrasekaran, University of Delaware
Matthias Müller, IT Center, RWTH Aachen University

08:35 am – 09:55 am — **Architectures & Networks**

(RP01) Can Unified-Memory support on Pascal and Volta GPUs enable Out-of-Core DNN Training?
Hari Subramoni, The Ohio State University

(RP02) Early Evaluation of a New Vector Processor SX-Aurora TSUBASA
Kazuhiko Komatsu, Tohoku University

(RP03) HPC with Unstructured Meshes on Novel Architectures
Alban Lumi, University of Graz

(RP04) GPU-based Parallel PO-SWE Algorithm for the Design of Large-sized Dual-Reflector Antennas
Saki Matsuo, Mitsubishi Electric Corporation, Information Technology R&D Center

(RP05) Multicore Platform Efficiency Across Remote Sensing Applications
Ekaterina Tyutlyaeva, RSC Technologies

Artificial Intelligence and Machine Learning

(RP06) A Deep Learning Tool for fast Simulation
Sofia Vallecorsa, CERN - European Organization for Nuclear Research

HPC Algorithms

(RP07) GPU-accelerated Simulation of Elastic Wave Propagation
Kristian Kadlubiak, Faculty of Information Technology, Brno University of Technology

(RP08) Using GPU's FP16 Tensor Cores Arithmetic to Accelerate Mixed-Precision Iterative Refinement Solvers and Reduce Energy Consumption
Azzam Haidar, University of Tennessee

(RP09) iReceptor: A Platform for Exploring and Analyzing Antibody/B-cell and T-cell Receptor Repertoire Data across Federated Repositories
Brian Corrie, Simon Fraser University

(RP10) Deep Learning Hardware Accelerates Fused Discontinuous Galerkin Simulations
Alexander Heinecke, Intel

(RP11) Task-Parallel Domain-wise Multifrontal Solver for High-Performance Finite Element Analysis on Multi-core Systems
Jeong Ho Kim, Inha University

Performance Modeling & Measurement

(RP12) A user-controlled GGDML Code Translation Technique for Performance Portability of Earth System Models
Nabeeh Jum'ah, University of Hamburg

(RP13) Cross-architectural Modelling of Power Consumption Using Neural Networks
Vadim Elisseev, IBM Research

(RP14) Automatic Generation of Full-Set Batched BLAS
Yusuke Hirota, RIKEN Advanced Institute for Computational Science

Programming Models & Systems Software

(RP15) Automatic Classification of System Logs
Siavash Ghiasvand, Technische Universität Dresden / ZIH

(RP16) HuronFS: Hierarchical, User-level and On-demand Burst Buffer File System
Tianqi Xu, Tokyo Institute of Technology, National Institute of Advanced Industrial Science and Technology

(RP17) Event Driven Asynchronous Tasks (EDAT)
Nick Brown, Edinburgh Parallel Computing Centre (EPCC)

(RP18) BONSAI (Benchtesting OpeN Software Autotuning Infrastructure)
Piotr Luszczek, University of Tennessee, Innovative Computing Laboratory

09:55 am – 10:00 am — Closing & Transition to the Poster Reception
Matthias Müller, IT Center, RWTH Aachen University
Sunita Chandrasekaran, University of Delaware

10:00 am - 11:00 am — **BoF: HPC, Containers and Big Data Analytics – How can Cloud Computing contribute to the New Challenges** — Substanz 1 + 2
Speakers:
Andrea Chierici, INFN-CNAF, Istituto Nazionale di Fisica Nucleare
Jurry de la Mar, T-Systems International GmbH

11:00 am - 12:00 pm — **BoF: The IO-500 and the Virtual Institute of I/O** — Substanz 1 + 2
Speakers:
Julian Kunkel, University of Reading
Jay Lofstead, Sandia National Laboratories
John Bent, DDN

01:45 pm - 02:45 pm	**BoF: The Message Passing Interface: Towards MPI 4.0 and Beyond** *Speaker:* *Martin Schulz, Technical University of Munich*	Substanz 1 + 2
02:45 pm - 03:45 pm	**BoF: Artificial Intelligence and Performance Analysis/Optimization** *Speakers:* *Hans-Christian Hoppe, Intel* *Felix Wolf, Technische Universitaet Darmstadt*	Substanz 1 + 2
03:45 pm - 04:45 pm	**BoF: Multi-Level Memory and Storage for HPC and Data Analytics** *Speakers:* *Hans-Christian Hoppe, Intel* *Michèle Weiland, Edinburgh Parallel Computing Centre* *Kathryn Mohror, Lawrence Livermore National Laboratory*	Substanz 1 + 2

Pikkolo

08:30 am - 09:30 am	**BoF: ESiWACE: What is Special about HPC Computing for Weather and Climate?** *Speakers:* *Oliver Perks, Arm* *Reinhard Budich, Max-Planck-Institut für Meteorologie*	Pikkolo
09:30 am - 10:30 am	**BoF: The Green500: Trends in Energy Efficient Supercomputing** *Speakers:* *Wu Feng, Virginia Tech* *Erich Strohmaier, Lawrence Berkeley National Laboratory*	Pikkolo
10:30 am - 11:30 am	**BoF: Energy and Power Aware: Job Scheduling and Resource Management** *Speakers:* *Gregory Koenig, KPMG, Energy Efficient HPC Working Group* *Siddhartha Jana, Intel* *Milos Puzovic, The Hartree Centre* *Matthias Maiterth, Ludwig-Maximilians University of Munich, Intel*	Pikkolo
11:30 am - 12:30 pm	**BoF: OpenMP 5.0 is Nearly Here - Find out All About It!** *Speakers:* *James H. Cownie, Intel* *Michael Klemm, OpenMP ARB, Intel*	Pikkolo

01:45 pm - 02:45 pm	**BoF: Batched BLAS Standardization** *Speakers:* *Jack Dongarra, Innovative Computing Laboratory; EECS Department; University of Tennessee* *Mawussi Zounon, The University of Manchester* *Sven Hammarling, The University of Manchester* *Piotr Luszczek, Innovative Computing Laboratory* *Pedro Valero-Lara, Barcelona Supercomputing Center*	Pikkolo
02:45 pm - 03:45 pm	**BoF: LUSTRE in HPC and Big Data: Roadmap, Features and Challenges** *Speakers:* *Frank Baetke, EOFS* *Sarp Oral, Oak Ridge National Laboratory*	Pikkolo
03:45 pm - 04:45 pm	**BoF: BeeGFS – Architecture, Implementation Examples, and Future Development** *Speakers:* *Frank Herold, ThinkParQ GmbH* *Frank Baetke, EOFS*	Pikkolo

Booth N-210

10:20 am - 05:40 pm	**Exhibitor Forum**	Booth N-210
10:20 am - 10:40 am	UNIVA: Fair Weather, with an excellent Chance of Cloud Bursting - Migrating HPC Workloads to the Cloud *Fritz Ferstl, UNIVA*	
10:40 am - 11:00 am	Huawei: AI-Accelerated HPC Hardware Infrastructure *Francis Lam, Huawei Enterprise USA*	
11:00 am - 11:20 am	Cray: Artificial Intelligence – From Ideation to Impact *Per Nyberg, Cray Inc.*	
11:20 am - 11:40 am	NVIDIA GmbH: Deep Learning comes to HPC *Axel Koehler, NVIDIA*	
11:40 am - 12:00 pm	DDN Storage: Considerations in Architecting an AI Ready Data Platform *James Coomer, DDN Storage*	
12:00 pm - 12:20 pm	Dawning Information Industrie Co. Ltd (Sugon): Sugon's AI enabler: SothisAI and XSystem *Qing Ji, SUGON*	
12:20 pm - 12:40 pm	Google: TensorFlow Performance Optimizations *Christian Sigg, Google Inc.*	
12:40 pm - 01:00 pm	IBM: The World's Fastest Supercomputer *James Sexton, IBM*	

01:00 pm - 01:20 pm	Dell EMC: To be announced *Ed Turkel, Dell EMC*
01:20 pm - 01:40 pm	Cavium: High-Performance Arm Processors for Exascale Computing *Surya Hotha, Cavium*
01:40 pm - 02:00 pm	Atos: Atos QLM, a future-proof Approach to Quantum Computing *Christelle Piechurski, Atos*
02:00 pm - 02:20 pm	Intel: Unleash the Future with HPC, HPDA & AI combined *Stephan Gillich, Intel*
02:20 pm - 02:40 pm	Hewlett Packard Enterprise: Unleash faster Insights using HPE's extreme Performance Solutions *Bill Mannel, Hewlett Packard Enterprise*
02:40 pm - 03:00 pm	Lenovo: AI for Enterprise: How to get started from Concept to Deployment *Boris Tvaroska, Lenovo Data Center Group*
03:00 pm - 03:20 pm	CoolIT Systems: Direct Liquid Cooling – Considerations for Data Center Operators *Patrick McGinn, CoolIT Systems*
03:20 pm - 03:40 pm	Motivair Corporation: Cooling Considerations for Liquid Cooling in HPC Applications *Rich Whitmore, Motivair Corporation*
03:40 pm - 04:00 pm	Iceland for HPC: Anything is Possible: Thinking ahead: Why Proactive Clean Energy Strategy Pays Off for Data Centers *Vala Valthorsdottir, Iceland for HPC: Anything is Possible*
04:00 pm - 04:20 pm	Asetek: Flexibility in Cooling Options: Brownfields & Greenfields *Larry Vertal, Asetek*
04:20 pm - 04:40 pm	Verne Global: TrueHPC delivered at industrial Scale *Tate Cantrell, Verne Global*
04:40 pm - 05:00 pm	Stäubli Tec-Systems GmbH Connectors: Connection Solutions for Liquid Cooling *Jean-Christophe Duisit, Stäubli Faverges*
05:00 pm - 05:20 pm	AMD: AMD's Radeon Instinct™ Accelerators for HPC & Machine Intelligence *Derek Bouius, AMD*
05:20 pm - 05:40 pm	PNY Technologies Europe: Meet AIRI Your first AI-Ready Infrastructure at Scale *Gautier Soubrane, PNY Technologies*

Booth N-230

10:00 am - 06:00 pm — **Project Posters** — Booth N-230

For a complete list of the Project Posters on display at ISC 2018, please see below.

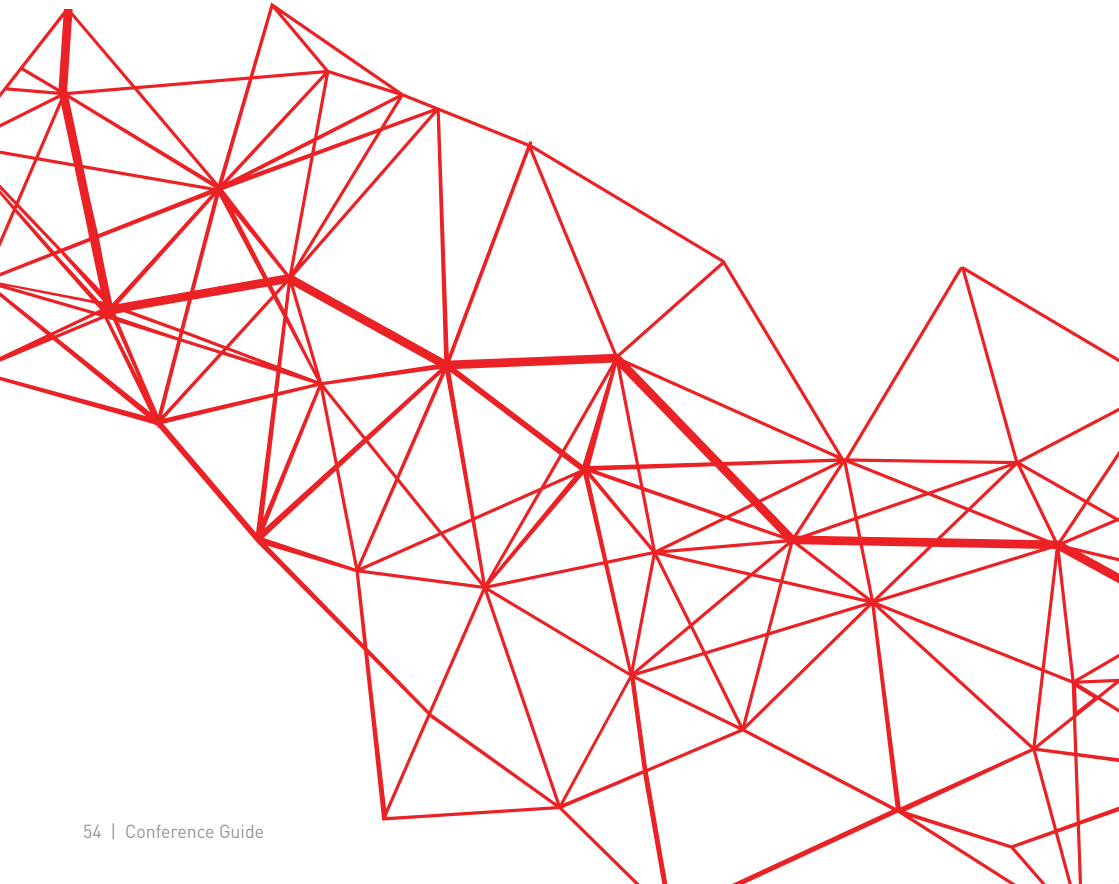
03:15 pm - 03:45 pm — **Project Posters Presentation** — Booth N-230

Chairs:
Julian Kunkel, University of Reading
Ekaterina Tyutlyaeva, RSC Tech

(PP01) TaLPas: Task-Based Load Balancing and Auto-Tuning in Particle Simulations
(PP02) Inverse Coil Design by Machine Learning-based Optimization
(PP03) The Virtual Institute for I/O and the IO-500
(PP04) The High-Q Club
(PP05) The Fast Fourier Transform in the Exascale Era
(PP06) International HPC Certification Program
(PP07) ProPE – A joint Effort to Establish a unified Service Infrastructure for Performance Engineering in German HPC-Center
(PP08) Performance Conscious HPC (PeCoH) - 2018
(PP09) ProfiT-HPC: A Profiling Toolkit for HPC in Tiers 2 and 3
(PP10) ESiWACE: Centre of Excellence in Simulation of Weather and Climate in Europe
(PP11) EuroEXA: European Co-Design for Exascale Applications
(PP12) DEEP-HybridDataCloud
(PP13) An Auto Climate Model continuous Integration Strategy
(PP14) Mont-Blanc 2020, European Scalable, Modular and Power Efficient HPC Processor
(PP15) Energy Efficient Computing Research at UKRI Hartree
(PP16) Advanced Computation and I/O Methods for Earth-System Simulations (AIMES)
(PP17) Efficient Time Stepping in Partitioned Multi-Physics
(PP18) MYX - MUST Correctness Checking for YML and XMP Programs
(PP19) Towards Supporting Heterogeneous Hardware in GROMACS
(PP20) ESSEX-II: Equipping Sparse Solvers for Exascale
(PP21) EXASTEEL: Multiscale Simulation of Steel using FE2TI
(PP22) A Deep Learning Tool for fast Simulation
(PP23) Decimate: A Portable and Fault-Tolerant Scheduler Extension Efficiently Handling a Large Number of Dependent Jobs
(PP24) Intelligent Digital Rock Modeling
(PP25) In Situ Visualization of Laser-Plasma Interaction

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

Coffee & Lunch Breaks		
07:30 am - 10:00 am	Welcome Coffee	Foyer Hall 3
10:00 am - 11:00 am	Coffee Break	Exhibition Hall
12:30 pm - 01:45 pm	Lunch Break	Exhibition Hall
03:15 pm - 03:45 pm	Coffee Break	Panorama Foyer, Exhibition Hall
04:45 pm - 05:15 pm	Coffee Break	Panorama Foyer, Exhibition Hall

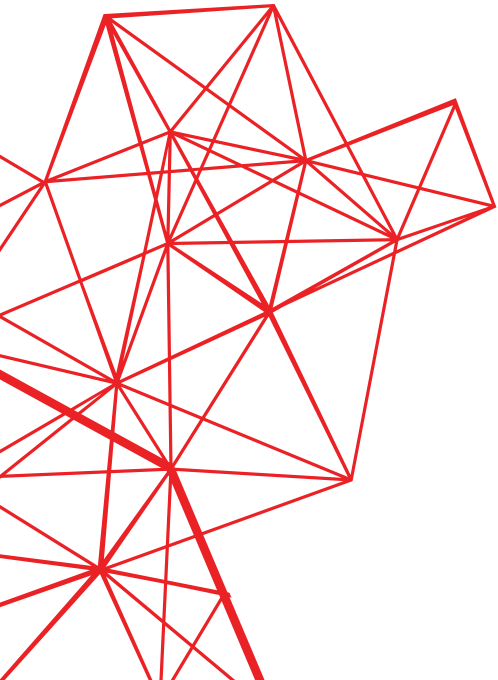


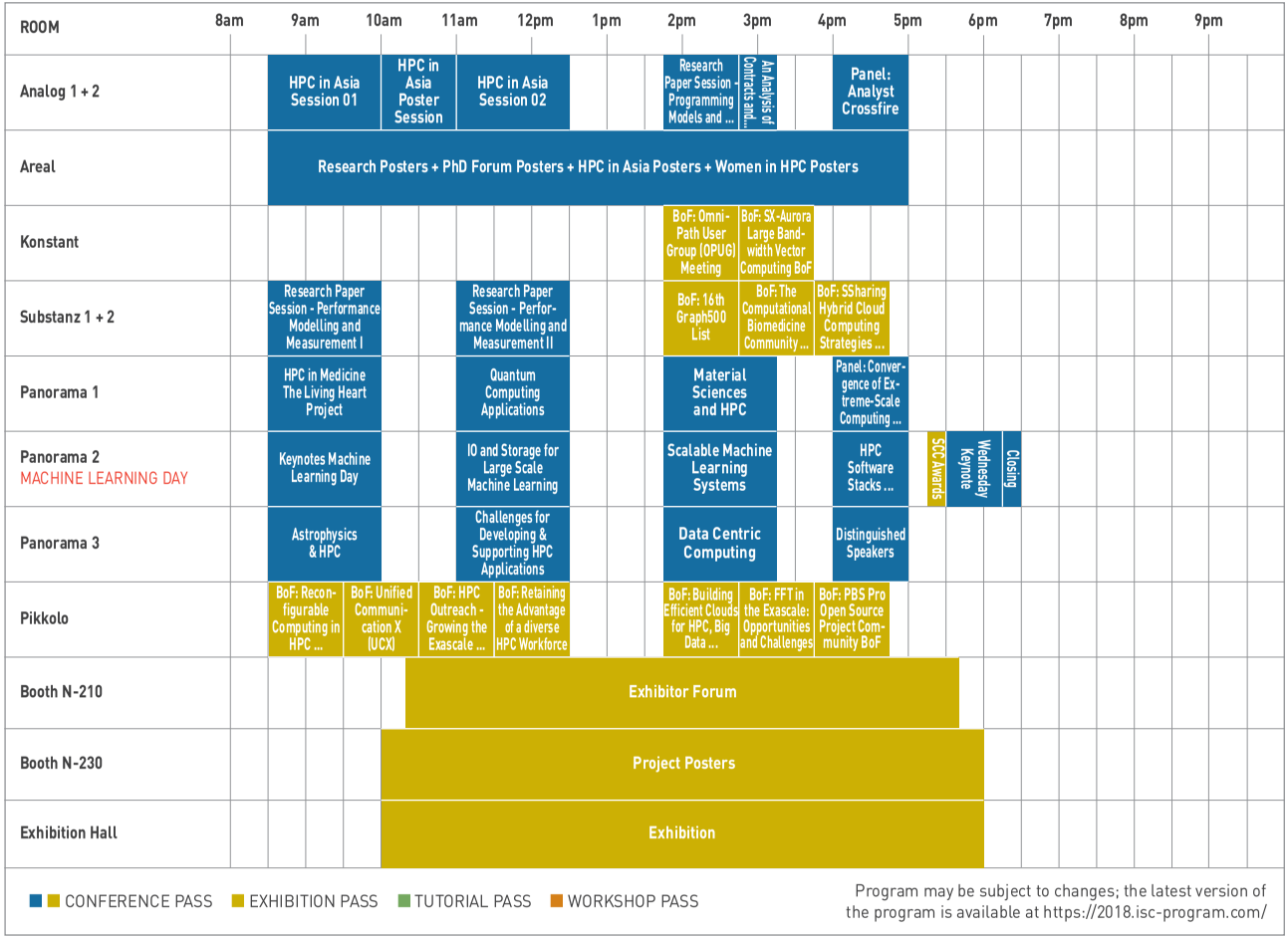
PROGRAM

Conference

(in chronological order per room)

WEDNESDAY, JUNE 27





Program may be subject to changes; the latest version of the program is available at https://2018.isc-program.com/

	Panorama 1	
08:30 am - 10:00 am	**HPC in Medicine The Living Heart Project** ***Chair:*** ***Philipp Hempel, Admedes***	Panorama 1
08:30 am - 09:00 am	Fluid Structure Interaction Study for Hemodynamic Evaluation of Transcatheter Aortic Valve Replacement Device using HPC *Deepanshu Sodhani, Enmodes*	
09:00 am - 09:30 am	Investigation of Different Deployment Positions of a Generic Transcatheter Self-expandable Heart Valve Frame Using the Living Heart Model *Philipp Hempel, Admedes GmbH*	
09:30 am - 10:00 am	The Living Heart Project - Breaking the Barriers to Realistic Simulation of the Human Body *Björn Butz, Dassault Systèmes, SIMULIA*	
11:00 am - 12:30 pm	**Quantum Computing Applications** ***Chair:*** ***Kristel Michielsen, Jülich Supercomputing Centre (JSC), RWTH Aachen University***	Panorama 1
11:00 am - 11:15 am	The Difference between Programming a Gate-Based Quantum Computer and a Quantum Annealer *Presenter: Kristel Michielsen, Institute for Advanced Simulation / Jülich Supercomputing Centre (JSC), RWTH Aachen University*	
11:15 am - 11:40 am	Material Simulation on current Quantum Computers *Michael Streif, Volkswagen Data:Lab*	
11:40 am - 12:05 pm	Flight Gate Assignment with a Quantum Annealer *Elisabeth Lobe, German Aerospace Center (DLR)*	
12:05 pm - 12:30 pm	Leveraging Adiabatic Quantum Computation for Election Forecasting *Maxwell Henderson, QxBranch LLC*	
01:45 pm - 03:15 pm	**Material Sciences and HPC** ***Chair:*** ***Satoshi Matsuoka, RIKEN, Tokyo Institute of Technology***	Panorama 1
01:45 pm - 02:15 pm	Quantum Chemistry on the K Computer *Takahito Nakajima, RIKEN*	
02:15 pm - 02:45 pm	Discovering Novel Materials: The Convergence of HPC, HTC and Data Analytics *Nicola Marzari, EPFL*	
02:45 pm - 03:15 pm	Atomistic Simulations to understand and Mimic Biomaterials: Where the Nanoscale Matters *Frauke Gräter, Heidelberg University, Interdisciplinary Center for Scientific Computing (IWR); Heidelberg Institute for Theoretical Studies*	

04:00 pm - 05:00 pm — Panorama 1

Panel: Convergence of Extreme-Scale Computing and Big Data – Looking Back and Looking Ahead
Moderator:
Sadaf Alam, Swiss National Supercomputing Centre
Panelists:
Jeff Nichols, Oak Ridge National Laboratory
Haohuan Fu, National Supercomputing Center in Wuxi
John Shalf, Lawrence Berkeley National Laboratory
Simon McIntosh-Smith, University of Bristol

Panorama 2 - MACHINE LEARNING DAY

08:30 am - 10:00 am — Panorama 2 MACHINE LEARNING DAY

Keynotes Machine Learning Day
Chairs:
Janis Keuper, Fraunhofer ITWM
Brian C. Van Essen, Lawrence Livermore National Laboratory

08:30 am - 09:15 am — Summit Architecture for ML
Jack Wells, Oak Ridge National Laboratory

09:15 am - 10:00 am — Towards Automated Deep Learning
Frank Hutter, University of Freiburg

11:00 am - 12:30 pm — Panorama 2 MACHINE LEARNING DAY

IO and Storage for Large Scale Machine Learning
Chair:
Janis Keuper, Fraunhofer ITWM

11:00 am - 11:30 am — Device Placement Optimization with Reinforcement Learning
Azalia Mirhoseini, Google Brain

11:30 am - 12:00 pm — Exploiting NVM for High-Performance I/O on POWER Architectures
Dirk Pleiter, Jülich Supercomputing Centre (JSC)

12:00 pm - 12:30 pm — HPC-DA: An Architecture on the Intersection between Flexibility and Maximum I/O Performance
Michael Kluge, ZIH, Technische Universität Dresden

01:45 pm - 03:15 pm — **Scalable Machine Learning Systems** — Panorama 2

MACHINE LEARNING DAY

Chair:
Brian C. Van Essen, Lawrence Livermore National Laboratory

01:45 pm - 02:15 pm — On Scale-out Deep Learning Training for Cloud and HPC
Pradeep Dubey, Intel

02:15 pm - 02:45 pm — Forging Large Scale AI Supercomputing - Inspiration from NVIDIA's SATURNV Supercomputer
Louis Capps, NVIDIA

02:45 pm - 03:15 pm — Machine Learning Hardware Targeted for Automotive Application: Requirements and Constraints
Bernhard Vogginger, Technische Universität Dresden

04:00 pm - 05:00 pm — **HPC Software Stacks for Machine Learning** — Panorama 2

MACHINE LEARNING DAY

Chair:
Janis Keuper, Fraunhofer ITWM

04:00 pm -04:30 pm — ONNX, an open DNN Standard Format
Sarah Bird, Facebook

04:30 pm - 05:00 pm — Carme - An Open Source Framework for Multi-User, Interactive Machine Learning on Distributed GPU-Systems
Dominik Straßel, Fraunhofer Center Machine Learning, Fraunhofer ITWM

Panorama 2

05:15 pm - 05:30 pm — **HPCAC-ISC Student Cluster Competition 2018 Award Ceremony** — Panorama 2

Dan Olds, Gabriel Consulting Group
Gilad Shainer, HPC Advisory Council

05:30 pm - 06:15 pm — **Wednesday Keynote** — Panorama 2

Chair:
Frank Baetke, EOFS

05:30 pm - 06:15 pm — HPC Achievement and Impact – 2018
Thomas Sterling, School of Informatics, Computing, and Engineering Indiana University

06:15 pm - 06:30 pm — **Closing Session** — Panorama 2

Chairs:
Martin Meuer, ISC Group
Thomas Meuer, ISC Group

Panorama 3

08:30 am - 10:00 am — **Astrophysics & HPC** — Panorama 3

Chair:
Edward Seidel, University of Illinois

08:30 am - 09:00 am — Binary Neutron Stars: Einstein's Richest Laboratory
Lurciano Rezzolla, Institute for Theoretical Physics

09:00 am - 09:30 am — Frontiers at the Interface of HPC, Artificial Intelligence and Multimessenger Astronomy
Eliu Huerta, NCSA, University of Illinois at Urbana-Champaign; Department of Astronomy, University of Illinois at Urbana-Champaign

09:30 am - 10:00 am — Software between Theory and Observation: Challenges and Strategies in Scientific Computing for relativistic Astrophysics
Eloisa Bentivegna, IBM Research UK

11:00 am - 12:30 pm — **Challenges for Developing & Supporting HPC Applications** — Panorama 3

Chair:
William Gropp, University of Illinois at Urbana-Champaign

11:00 am - 11:15 am — Parallel Programming is the Easy Part: The Real Challenges in Developing HPC Applications
William Gropp, National Center for Supercomputing Applications and Department of Computer Science, University of Illinois at Urbana-Champaign

11:15 am - 11:40 am — To be announced
Torsten Hoefler, ETH Zurich

11:40 am - 12:05 pm — Bugs and Speed in HPC Applications: Past, Present, and Future
Jeffrey Hollingsworth, University of Maryland

12:05 pm - 12:30 pm — Modeling the Next-Generation High Performance Schedulers
Michela Taufer, University of Tennessee Knoxville, Department of Electrical Engineering and Computer Science

01:45 pm - 03:15 pm — **Data Centric Computing** — Panorama 3

Chair:
Torsten Hoefler, ETH Zurich

01:45 pm - 02:07 pm — Data Centric Programming Abstractions Suitable from a Multiphysics Application Perspective
Anshu Dubey, Argonne National Laboratory, University of Chicago

02:07 pm - 02:29 pm — Empirical Performance Modeling of HPC Workloads
Felix Wolf, Technische Universitaet Darmstadt

02:29 pm - 02:51 pm — Spatial Computing: A Synthesis of Data-Centric Computing and Extreme Hardware Specialization
John Shalf, Lawrence Berkeley National Laboratory

02:51 pm - 03:15 pm — Parallel Program = Operator + Schedule + Parallel Data Structures
Keshav Pingali, The University of Texas at Austin

04:00 pm - 05:00 pm — **Distinguished Speakers** — Panorama 3

04:00 pm - 04:30 pm — Simulation of Large-Scale Coupled Systems
Miriam Mehl, University of Stuttgart

04:30 pm - 05:00 pm — Blockchain: Technology Issues and Applications
Wolfgang Prinz, Fraunhofer FIT, RWTH Aachen University

Analog 1 + 2

08:30 am - 10:00 am — **HPC in Asia Session 01** — Analog 1 + 2
Chair:
Yutong Lu, NUDT, National Supercomputer Center in Guangzhou

08:30 am - 08:35 am — Welcome Address
Yutong Lu, NUDT, National Supercomputer Center in Guangzhou

08:35 am - 08:45 am — Status Report from China
Depei Qian, SYSU

08:45 am - 08:55 am — Status Report from Japan
Mitsuhisa Sato, RIKEN

08:55 am - 09:05 am — Status Report from Korea
Kwang-Jin Oh, KISTI

09:05 am - 09:15 am — Status Report from Qatar
Othmane Bouhali, Texas A&M University at Qatar; Qatar Computing Research Institute, HBKU

09:15 am - 09:25 am — Status Report from Singapore
Stephen Wong, NSCC-SG

09:25 am - 09:35 am — Status Report from Taiwan
Weicheng Huang, NCHC

09:35 am - 09:45 am — Status Report from Thailand
Putchong Uthayopas, Kasetsart University

09:45 am - 09:55 am — Status Report from Saudi Arabia
David Keyes, KAUST

09:55 am - 10:00 am — Questions & Answers

10:00 am - 11:00 am **HPC in Asia Poster Session** Analog 1 + 2

Chair:
Yutong Lu, NUDT, National Supercomputer Center in Guangzhou

(A01) Poster from China: A Low Communication Overhead Breadth-First Search based on Global Bitmap .pdf
Yunfei Du, National Supercomputer Center in Guangzhou; School of Data and Computer Science, Sun Yat-sen University

(A02) Poster from China: SW-eMD: Molecular Dynamics Simulation Framework on Sunway TaihuLight Supercomputer
Shun Xu, Supercomputing Center, Chinese Academy of Sciences

(A03) Poster from Egypt: Accelerated Reverse Time Migration with optimized IO
Kareem Metwaly, Brightskies Inc.

(A04) Poster from Japan: ppOpen-SOL: Robust ILU Preconditioner for Exascale
Masatoshi Kawai, RIKEN R-CCS

(A05) Poster from Japan: Accelerating HPC Applications on FPGAs using OpenCL and FPGA Network
Norihisa Fujita, Center for Computational Sciences (CCS), University of Tsukuba

(A06) Poster from Korea: Application Characterization by using Hardware Performance Counters with Data Mining
Jieun Choi, Korea Institute of Science and Technology Information (KISTI)

(A07) Poster from Qatar: Optimization and Parallelization of charged Particle Detector Simulation
Faisal Chaudhry, Texas A&M University at Qatar

(A08) Poster from Saudi Arabia: Hierarchical Computations on Manycore Architectures
Hatem Ltaief, KAUST

(A09) Poster from Singapore: Picking the Right One - Biosimulations on Various Architectures
Jernej Zidar, Institute of High Performance Computing

(A10) Poster from Taiwan: Simulation Studies of Sub-Terawatt Laser Wakefield Acceleration
Chia-Ying Hsieh, National Central University (NCU)

(A11) Poster from Taiwan: The Design and Implementation of Bare Metal Cluster Deployment Using BitTorrent
Steven Shiau, National Center for High-Performance Computing

(A12) Poster from Taiwan: The Development and Implementation of National Data Service Platform
Weicheng Huang, National Center for High-Performance Computing, Taiwan

11:00 am - 12:30 pm — **HPC in Asia Session 02** — Analog 1 + 2

Chair:
Yutong Lu, NUDT, National Supercomputer Center in Guangzhou

11:00 am - 11:20 am — Sophisticated urban Earthquake Simulation for enhancing Smart Cities
Tsuyoshi Ichimura, University of Tokyo, Earthquake Research Institute

11:20 am - 11:40 am — Enabling Industrial CFD Simulations on Sunway TaihuLight
Haohuan Fu, Tsinghua University

11:40 am - 12:00 pm — Practices on HPC + AI from Huawei
Francis Lam, HUAWEI

12:00 pm - 12:20 pm — Convergence and Integration of Data Science and HPC in Asia
Kengo Nakajima, The University of Tokyo/RIKEN R-CCS

12:20 pm - 12:30 pm — HPC in Asia Poster Awarding & Closing

01:45 pm - 02:45 pm — **Research Paper Session - Programming Models and System Software** — Analog 1 + 2

Chair:
Sven-Bodo Scholz, Heriot-Watt University

01:45 pm - 02:15 pm — TaskGenX: A Hardware-Software Proposal for Accelerating Task Parallelism
Kallia Chronaki, Barcelona Supercomputing Center

02:15 pm - 02:45 pm — Classifying Jobs and Predicting Applications in HPC Systems
Keiji Yamamoto, RIKEN

02:45 pm - 03:15 pm — **An Analysis of Contracts and Relationships between Supercomputing Centers and Electricity Service Providers** — Analog 1 + 2
Gregory Koenig, Energy Efficient HPC Working Group

04:00 pm - 05:00 pm — **Panel: Analyst Crossfire** — Analog 1 + 2

Moderator:
Addison Snell, Intersect360 Research
Panelists:
Depei Qian, Sun Yat-Sen University & Beihang University
Stephan Schenk, BASF SE
Alex Bouzari, DDN
Ian Colle, HPC at Amazon Web Services

Areal

08:30 am - 05:00 pm — Areal

Research Posters + PhD Forum Posters + HPC in Asia Posters + Women in HPC Posters

For a complete list of the Research Posters on display at ISC 2018, please refer to page 47.
For a complete list of the PhD Forum Posters on display at ISC 2018, please refer to page 33.
For a complete list of the Women in HPC Posters on display at ISC 2018, please see below.

08:30 am - 05:00 pm — Areal

Women in HPC Posters

(WHPC01) Performance Analysis of GS2 Plasma Turbulence Code
Sally Bridgwater, Numerical Algorithms Group
Nick Dingle, Numerical Algorithms Group

(WHPC02) High-volume Data Processing for Ambient Healthcare Research Prototyping
Emma Tonkin, University of Bristol

(WHPC03) The Movement towards HPC inclusivity: Achieving on-demand Accessibility of High Performance Computing (HPC) in single-user, ephemeral Projects through the Alces Gridware Project
Cristin Merritt, Alces Flight Limited
Wil Mayers, Alces Flight Limited
Mark Titorenko, Alces Software Limited
Steve Norledge, Alces Software Limited

(WHPC04) DYNAMO - Dynamic Analysis Modelling and Optimisation of GDI engines
Aiman Batul Shaikh, STFC Hartree Centre

Konstant

01:45 pm - 02:45 pm — Konstant

BoF: Omni-Path User Group (OPUG) Meeting

Speakers:
Sergi Girona, BSC, Barcelona Supercomputing Center
David Vicente, BSC, Barcelona Supercomputing Center
Philip Murphy, Intel

02:45 pm - 03:45 pm — Konstant

BoF: SX-Aurora Large Bandwidth Vector Computing BoF

Speakers:
Erich Focht, NEC Deutschland GmbH
Rudolf Fischer, NEC Deutschland GmbH
Uwe Küster, HLRS High Performance Computing Center Stuttgart
Tim Cramer, RWTH Aachen University

Substanz 1 + 2

08:30 am - 10:00 am — **Research Paper Session - Performance Modelling and Measurement I** — Substanz 1 + 2

Chair:
Saday Sadayappan, The Ohio State University

08:30 am - 09:00 am
The Pitfalls of Provisioning Exascale Networks: A Trace Replay Analysis for Understanding Communication Performance
Joseph Kenny, Sandia National Laboratories

09:00 am - 09:30 am
Zeno: A Straggler Diagnosis System for Distributed Computing Using Machine Learning
Huanxing Shen, Intel

09:30 am - 10:00 am
Hardware Performance Variation: A Comparative Study using Lightweight Kernels
Hannes Weisbach, Technische Universität Dresden

11:00 am - 12:30 pm — **Research Paper Session - Performance Modelling and Measurement II** — Substanz 1 + 2

Chair:
Saday Sadayappan, The Ohio State University

11:00 am - 11:30 am
Applicability of the ECM Performance Model to Explicit ODE Methods on Current Multi-Core Processors
Johannes Seiferth, University of Bayreuth

11:30 am - 12:00 pm
Machine Learning Based Parallel I/O Predictive Modeling: A Case Study on Lustre File Systems
Sandeep Madireddy, Argonne National Laboratory

12:00 pm - 12:30 pm
A Novel Multi-Level integrated Roofline Model Approach for Performance Characterization
Tuomas Koskela, Lawrence Berkeley National Laboratory, NERSC

01:45 pm - 02:45 pm — **BoF: 16th Graph500 List** — Substanz 1 + 2

Speakers:
Richard Murphy, Micron Technology Inc., Boise State University
David Bader, Georgia Tech
Peter Kogge, University of Notre Dame
Andrew Lumsdaine, Pacific Northwest National Laboratory

02:45 pm - 03:45 pm — Substanz 1 + 2

BoF: The Computational Biomedicine Community and the HPC Industry: Working together to advance Personalised Medicine

Speakers:
Xavier Vigouroux, Atos / BULL SAS
Benjamin Pajot, Atos / BULL SAS
Myrtille Deldossi, Atos / BULL SAS
Marcin Ostasz, ETP4HPC, European HPC Technology Platform; BSC
Cristin Meritt, Alces Flight Limited
Peter Coveney, University College of London
Mariano Vázquez, Barcelona Supercomputing Center
Gavin Pringle, EPCC, University of Edinburgh
Marco Verdicchio, SURFsara

03:45 pm - 04:45 pm — Substanz 1 + 2

BoF: Sharing Hybrid Cloud Computing Strategies in HPC

Speakers:
Fritz Ferstl, Univa
Rob Lalonde, Univa

Pikkolo

08:30 am - 09:30 am — Pikkolo

BoF: Reconfigurable Computing in HPC, ML and Data Analytics

Speakers:
Hans-Christian Hoppe, Intel
Marie-Christine Sawley, Intel

09:30 am - 10:30 am — Pikkolo

BoF: Unified Communication X (UCX)

Speakers:
Gilad Shainer, Mellanox
Richard Graham, Mellanox
Jeff Kuehn, Los Alamos National Laboratory
Pavel Shamis, Arm

10:30 am - 11:30 am — Pikkolo

BoF: HPC Outreach - Growing the Exascale Community

Speakers:
Nicholas Brown, EPCC
Weronika Filinger, EPCC
Martin Quinson, ENS Rennes
Bryan Johnston, CHPC

11:30 am - 12:30 pm — Pikkolo

BoF: Retaining the Advantage of a diverse HPC Workforce: How to deal with Microaggression

Speakers:
Toni Collis, Appentra, Collis-Holmes Innovations
Emmanouil Farsarakis, EPCC
Mozhgan Kabiri Chimeh, The University of Sheffield
Kelly Nolan, Talent Strategy

01:45 pm - 02:45 pm — Pikkolo

BoF: Building Efficient Clouds for HPC, Big Data, and Deep Learning Middleware and Applications

Speakers:
Dhabaleswar K. Panda, The Ohio State University
Xiaoyi Lu, The Ohio State University

02:45 pm - 03:45 pm — Pikkolo

BoF: FFT in the Exascale: Opportunities and Challenges

Speakers:
Samar Aseeri, King Abdullah University of Technology (KAUST)
Daisuke Takahashi, University of Tsukuba
Benson Muite, University of Tartu
Cris Cecka, Nvidia, Stanford University
Jens Henrik Göbbert, Jülich Supercomputing Centre (JSC)
Hari Subramoni, The Ohio State University
Peter Steinbach, Max Planck Institute of Molecular Cell Biology and Genetics, Scionics Computer Innovation GmbH

03:45 pm - 04:45 pm — Pikkolo

BoF: PBS Pro Open Source Project Community BoF

Speaker:
Bill Nitzberg, Altair

Booth N-210

10:20 am - 05:40 pm	**Exhibitor Forum**	Booth N-210
10:20 am - 10:40 am	Quantum: Intelligent Data Management for Scientific Research *Jason Coari, Quantum Corporation*	
10:40 am - 11:00 am	Inspur: To be announced *To be announced*	
11:00 am - 11:20 am	D-Wave Systems: Software Tools for Quantum Computing Applications Development *Victoria Goliber, D-Wave Systems*	
11:20 am - 11:40 am	Quanta Cloud Technology (QCT): Simplify your HPC Implementation and Enhance Performance with QCT Solution *Theo Luecke, Quanta Cloud Technology (QCT)*	
11:40 am - 12:00 pm	Supermicro: Green HPC by Resource Saving *Martin Galle, Supermicro*	
12:00 pm - 12:20 pm	Mellanox: Super-Connecting the World's Number One Supercomputers *Scot Schultz, Mellanox Technologies*	
12:20 pm - 12:40 pm	Fujitsu: Fujitsu *Pierre Lagier, Fujitsu*	
12:40 pm - 01:00 pm	Bright Computing: Scalable Accounting & Reporting for Compute Jobs *Martijn de Vries, Bright Computing*	
01:00 pm - 01:20 pm	ClusterVision: Scalable HPC Storage That Delivers on Performance *Andy Georgi, ClusterVision*	
01:20 pm - 01:40 pm	Automation N.V: CERN's Reply to the Computing and Storage Challenges related to the Large Hadron Collider's (LHC) Upgrade Program: Prefabricated Datacenter Modules *Niko Neufeld, CERN - European Organization for Nuclear Research*	
01:40 pm - 02:00 pm	EXTOLL GmbH: Evaluation of Lustre RDMA Performance over EXTOLL *Sarah Neuwirth, University of Heidelberg*	
02:00 pm - 02:20 pm	Fraunhofer Institute for Computer Graphics Research (IGD): Open Call for Application Experiment *André Stork, Fraunhofer Institute for Computer Graphics Research (IGD)*	
02:20 pm - 02:40 pm	NEC Deutschland GmbH: NEC's Portfolio in HPC: Comprehensive Solutions for the Demanding Customer *Michael Wirth, NEC Deutschland GmbH*	
02:40 pm - 03:00 pm	NetApp: Optimize Scale-Out Architectures *Stan Skelton, NetApp*	

03:00 pm - 03:20 pm	Oracle: Run Cloud HPC and GPU Applications Without a Virtual Layer *Taylor Newill, Oracle*
03:20 pm - 03:40 pm	RSC Group: Hyper-converged and ultra-compact RSC Tornado solution for HPC, datacenter and cloud *Alexey Shmelev, RSC Group* *Alexander Moskovsky, RSC Group*
03:40 pm - 04:00 pm	Red Hat Inc.: To be announced *To be announced*
04:00 pm - 04:20 pm	SUSE: Enabling New Discoveries with SUSE Linux Enterprise for HPC *Jay Kruemcke, SUSE* *Jeff Reser, SUSE*
04:20 pm - 04:40 pm	One Stop Systems: Rack Scale Composable Infrastructure for Mixed Workload Datacenters *Jaan Mannik, One Stop Systems*
04:40 pm - 05:00 pm	Rausch Netzwerktechnik GmbH: To be announced *To be announced*
05:00 pm - 05:20 pm	Penguin Computing: To be announced *To be announced*

Booth N-230

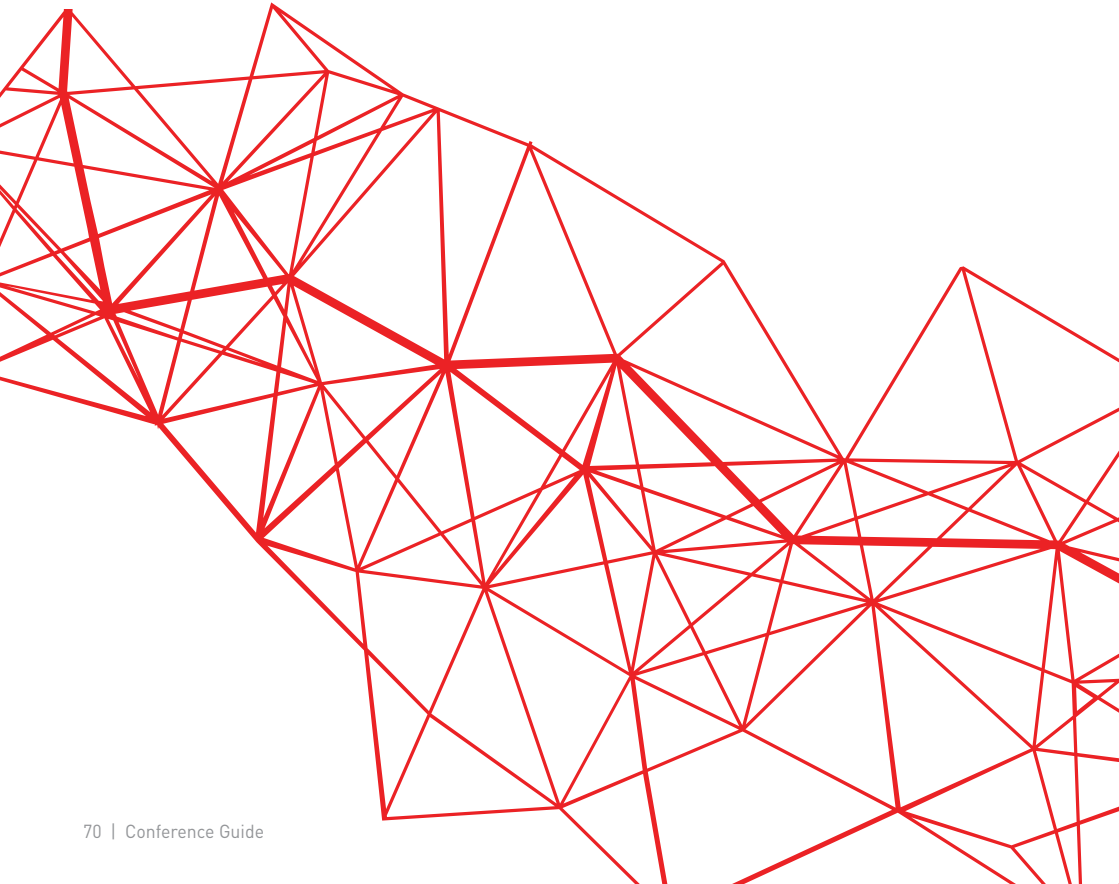
10:00 am - 06:00 pm	**Project Posters** For a complete list of the Project Posters on display at ISC 2018, please refer to page 52.	Booth N-230

Exhibition Hall

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

Coffee & Lunch Breaks

08:00 am - 09:00 am	Welcome Coffee	Foyer Hall 3
10:00 am - 11:00 am	Coffee Break	Exhibition Hall
12:30 pm - 01:45 pm	Lunch Break	Exhibition Hall
03:15 pm - 04:00 pm	Coffee Break	Panorama Foyer, Exhibition Hall
04:45 pm - 05:15 pm	Coffee Break	Exhibition Hall
05:00 pm - 05:30 pm	Coffee Break	Panorama Foyer



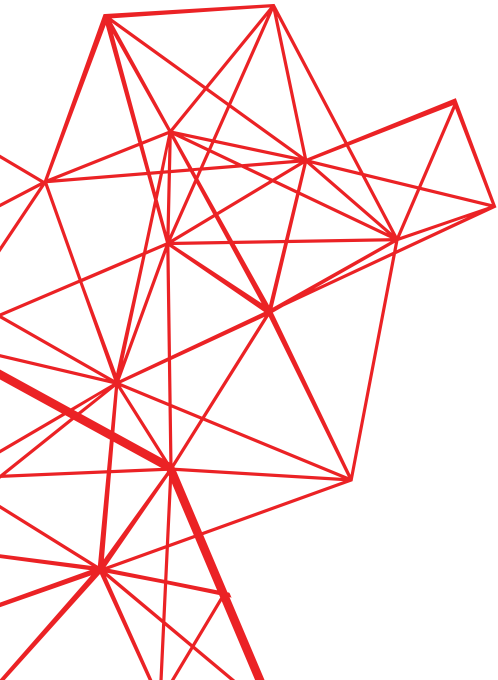
PROGRAM

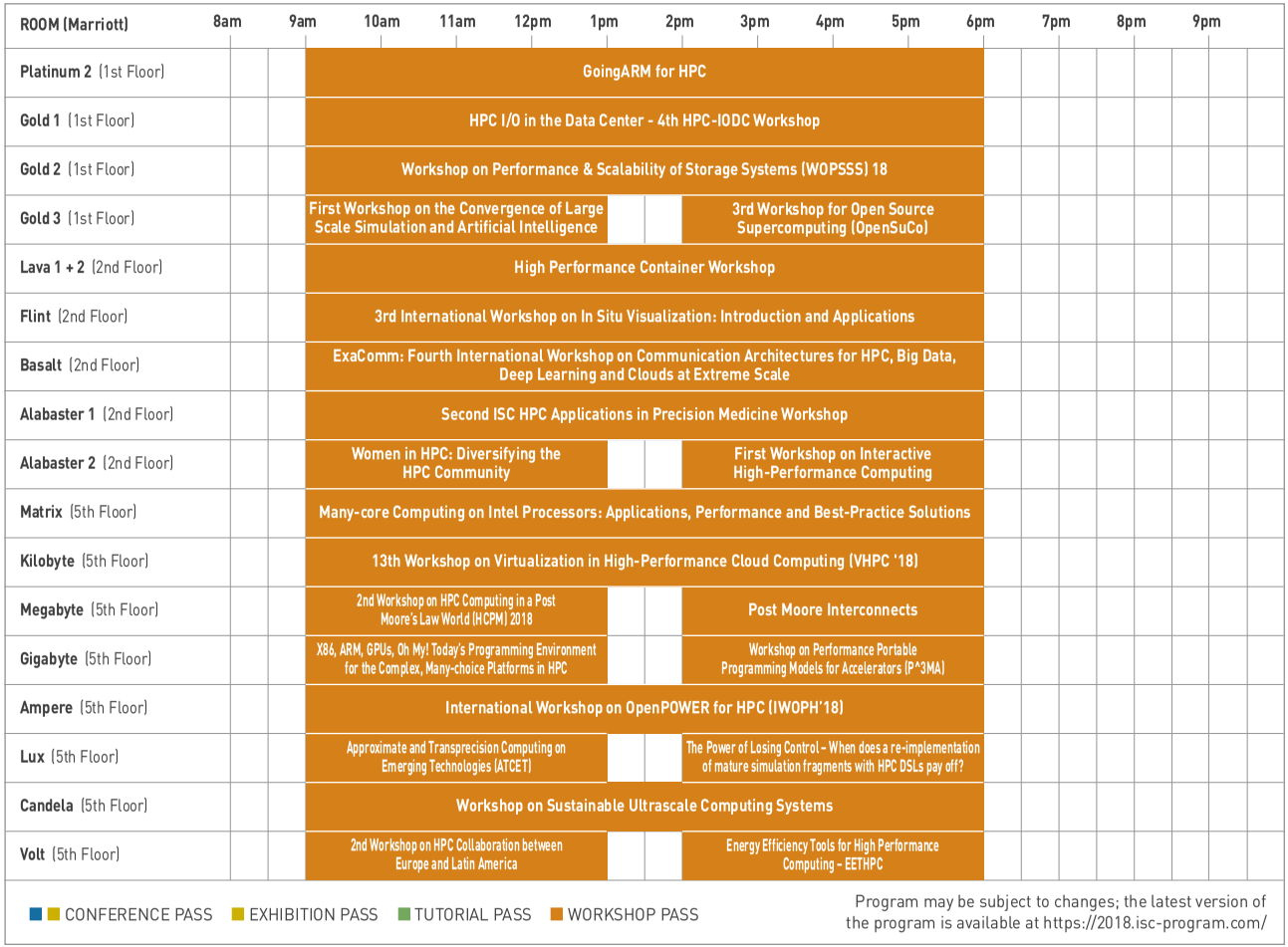
Workshops

(in chronological order per room)

THURSDAY, JUNE 28

The workshops will be held at the
Frankfurt Marriott Hotel
(Hamburger Allee 2, 60486 Frankfurt am Main)





Program may be subject to changes; the latest version of the program is available at https://2018.isc-program.com/

Platinum 2 (1st Floor)

09:00 am - 06:00 pm — Platinum 2

GoingARM for HPC

Organizers:
Jonathan Beard, Arm Inc.
Roxana Rusitoru, Arm Ltd.
Oscar Hernandez, Oakridge National Labs
Mitsuhisa Sato, RIKEN
Simon McIntosh-Smith, University of Bristol
Filippo Mantovani, Barcelona Supercomputing Center
Robert Hoekstra, Sandia National Laboratories

For more details, please visit the workshop website at:
http://www.goingarm.com

Gold 1 (1st Floor)

09:00 am - 06:00 pm — Gold 1

HPC I/O in the Data Center - 4th HPC-IODC Workshop

Organizers:
Julian Kunkel, University of Reading
Jay Lofstead, Sandia National Laboratories

For more details, please visit the workshop website at:
https://hps.vi4io.org/events/2018/iodc

Gold 2 (1st Floor)

09:00 am - 06:00 pm — Gold 2

Workshop on Performance & Scalability of Storage Systems (WOPSSS) 18

Organizer:
Jean-Thomas Acquaviva, DDN

For more details, please visit the workshop website at:
http://wopsss.com

Gold 3 (1st Floor)

09:00 am - 01:00 pm — Gold 3

First Workshop on the Convergence of Large Scale Simulation and Artificial Intelligence

Organizers:
Christoph Angerer, NVIDIA
Axel Koehler, NVIDIA

For more details, please visit the workshop website at:
https://sites.google.com/nvidia.com/ai-hpc

02:00 pm - 06:00 pm — Gold 3

3rd Workshop for Open Source Supercomputing (OpenSuCo)

Organizers:
Farzad Fatollahi-Fard, Lawrence Berkeley National Laboratory
David Donofrio, Lawrence Berkeley National Laboratory
John Leidel, Tactical Computing Laboratories, Texas Tech University
Anastasiia Butko, Lawrence Berkeley National Laboratory
Sven Karlsson, Technical University of Denmark

For more details, please visit the workshop website at:
http://www.opensuco.community/

Alabaster 1 (2nd Floor)

09:00 am - 06:00 pm — Alabaster 1

Second ISC HPC Applications in Precision Medicine Workshop

Organizers:
Thomas Steinke, Zuse Institute Berlin
Sunita Chandrasekaran, University of Delaware
Patricia Kovatch, Mount Sinai Icahn School of Medicine
Eric Stahlberg, Frederick National Laboratory for Cancer Research

For more details, please visit the workshop website at:
http://www.scworkshops.net/precision2018

Alabaster 2 (2nd Floor)

09:00 am - 01:00 pm — Alabaster 2

Women in HPC: Diversifying the HPC Community

Organizers:
Elsa Gonsiorowski, Lawrence Livermore National Laboratory
Toni Collis, Appentra Solutions S.L., Collis-Holmes Innovations
Misbah Mubarak, Argonne National Laboratory

For more details, please visit the workshop website at:
http://www.womeninhpc.org/whpc-isc18/workshop

02:00 pm - 06:00 pm — Alabaster 2

First Workshop on Interactive High-Performance Computing

Organizers:
Peter Messmer, NVIDIA
Michael Ringenburg, Cray Inc.

For more details, please visit the workshop website at:
https://sites.google.com/view/interative-hpc/home

Flint (2nd Floor)

09:00 am - 06:00 pm — Flint

3rd International Workshop on In Situ Visualization: Introduction and Applications

Organizers:
Kenneth Moreland, Sandia National Laboratories
Guido Reinà, University of Stuttgart
Thomas Theussl, KAUST
Tom Vierjahn, RWTH Aachen University

For more details, please visit the workshop website at:
http://woiv.org/

Basalt (2nd Floor)

09:00 am - 06:00 pm — Basalt

ExaComm: Fourth International Workshop on Communication Architectures for HPC, Big Data, Deep Learning and Clouds at Extreme Scale

Organizers:
Hari Subramoni, The Ohio State University
Dhabaleswar Panda, The Ohio State University

For more details, please visit the workshop website at:
http://nowlab.cse.ohio-state.edu/exacomm/

Lava 1 + 2 (2nd Floor)

09:00 am - 06:00 pm — Lava 1 + 2

High Performance Container Workshop

Organizer:
Christian Kniep, Docker Inc.

For more details, please visit the workshop website at:
http://qnib.org/isc/

Kilobyte (5th Floor)

09:00 am - 06:00 pm — Kilobyte

13th Workshop on Virtualization in High-Performance Cloud Computing (VHPC '18)

Organizers:
Michael Alexander, IST Austria
Anastassios Nanos, National Technical University of Athens (NTUA), Onapp Ltd.
Romeo Kienzler, IBM

For more details, please visit the workshop website at:
http://vhpc.org

Megabyte (5th Floor)

09:00 am - 01:00 pm — Megabyte

2nd Workshop on HPC Computing in a Post Moore's Law World (HCPM) 2018

Organizers:
George Michelogiannakis, LBNL
Jeff Vetter, ORNL, Georgia Institute of Technology

For more details, please visit the workshop website at:
http://workshops.postmoore.org/hcpm2018/

02:00 pm - 06:00 pm — Megabyte

Post Moore Interconnects

Organizers:
Neena Imam, Oak Ridge National Laboratory
Barney Maccabe, Oak Ridge National Laboratory
Sebastien Le Beux, University of Lyon
Torsten Hoefler, ETH Zurich
William Harrod, IARPA

For more details, please visit the workshop website at:
https://beyondcmos.ornl.gov/2018/

Gigabyte (5th Floor)

09:00 am - 01:00 pm — Gigabyte

X86, ARM, GPUs, Oh My! Today's Programming Environment for the Complex, Many-choice Platforms in HPC

Organizer:
Luiz DeRose, Cray Inc.

For more details, please visit the workshop website at:
https://pe-isc.github.io/workshop

02:00 pm - 06:00 pm — Gigabyte

Workshop on Performance Portable Programming Models for Accelerators (P^3MA)

Organizers:
Sunita Chandrasekaran, University of Delaware
Graham Lopez, Oak Ridge National Laboratory

For more details, please visit the workshop website at:
http://www.csm.ornl.gov/workshops/p3ma2018/

Matrix (5th Floor)

09:00 am - 06:00 pm — Matrix

Many-core Computing on Intel Processors: Applications, Performance and Best-Practice Solutions

Organizers:
David E. Martin, Argonne National Laboratory
Simon J. Pennycook, Intel
Thomas Steinke, Zuse Institute Berlin
Estela Suarez, Jülich Supercomputing Centre (JSC)

For more details, please visit the workshop website at:
https://www.ixpug.org/events/ixpug-isc-2018-workshop

Ampere (5th Floor)

09:00 am - 06:00 pm — Ampere

International Workshop on OpenPOWER for HPC (IWOPH'18)

Organizers:
Jack Wells, Oak Ridge National Laboratory
Dirk Pleiter, Jülich Supercomputing Centre (JSC)

For more details, please visit the workshop website at:
https://indico-jsc.fz-juelich.de/event/64/

Volt (5th Floor)

09:00 am - 01:00 pm — Volt

2nd Workshop on HPC Collaboration between Europe and Latin America

Organizers:

Carlos Jaime Barrios Hernandez, Advanced Computing Services for Latin America and Caribbean, Universidad Industrial de Santander

Pascal Bouvry, Luxembourg University

Rafael Mayo, RICAP - Iberoamerican Network for HPC, CIEMAT - Center For Research in Energy and Environment of Spain

Ulises Cortes, Barcelona Supercomputing Center, Universidad Politécnica de Catalunya

Salma Jaliffe, Advanced Computing Services for Latin America and Caribbean, Corporación Universitaria de Internet

For more details, please visit the workshop website at:
http://www.sc3.uis.edu.co/2ndwhpceurolatam/

02:00 pm - 06:00 pm — Volt

Energy Efficiency Tools for High Performance Computing – EETHPC

Organizers:

Robert Schöne, Technische Universität Dresden

João M.P. Cardoso, University of Porto

Barry L. Rountree, Lawrence Livermore National Laboratory

For more details, please visit the workshop website at:
http://www.eethpc.net

Candela (5th Floor)

09:00 am - 06:00 pm — Candela

Workshop on Sustainable Ultrascale Computing Systems

Organizer:

Jesus Carretero, University Carlos III of Madrid

For more details, please visit the workshop website at:
http://www.nesus.eu/workshop-sustainable-ultrascale-computing-systems/

	Lux	
09:00 am - 01:00 pm	**Approximate and Transprecision Computing on Emerging Technologies (ATCET)** *Organizers:* *Costas Bekas, IBM Research - Zurich* *A. Cristiano I. Malossi, IBM Research - Zurich* *Luca Benini, ETH Zurich* *Enrique S. Quintana-Ortí, Universidad Jaime I* *Dimitrios S. Nikolopoulos, Queen's University* For more details, please visit the workshop website at: http://oprecomp.eu/atcet	Lux
02:00 pm - 06:00 pm	**The Power of Losing Control – When does a re-implementation of mature simulation fragments with HPC DSLs pay off?** *Organizers:* *Tobias Weinzierl, Durham University* *Michael Bader, Technical University of Munich* For more details, please visit the workshop website at: https://community.dur.ac.uk/tobias.weinzierl/workshops.html	Lux

	Coffee & Lunch Breaks	
08:30 am - 09:00 am	Welcome Coffee	Foyers
11:00 am - 11:30 am	Coffee Break	Foyers
01:00 pm - 02:00 pm	Lunch Break	Platinum 1, Platinum Foyer
04:00 pm - 04:30 pm	Coffee Break	Foyers

NOTES

NOTES

NOTES

Thank you to all of our sponsors for supporting ISC High Performance 2018.

Platinum Sponsors

Atos
Hewlett Packard Enterprise
HUAWEI
intel

Gold Sponsors

CRAY
DDN STORAGE
DELL EMC
IBM
ARKTINN IS POSSIBLE HPC IN ICELAND
Lenovo
Mellanox TECHNOLOGIES
Orchestrating a brighter world NEC
NVIDIA
SAMSUNG
SUPERMICRO

Silver Sponsors

CAVIUM
FUJITSU
Google Cloud
inspur
NetApp
ORACLE Cloud Infrastructure
Quantum

Bronze Sponsors

Altair
AMD
ASETEK
Atempo Data Protection Solutions
AUTOMATION DATACENTER FACILITIES
BOSTON Servers | Storage | Solutions
Bright Computing
clustervision
CoolIT systems
D-Wave QUBITS EUROPE 2018
中科曙光 Sugon
E4 COMPUTER ENGINEERING
eXTOLL latency matters.
Fraunhofer SCAI
Gidel
MEGWARE
ChilledDoor Rack Cooling System motivair
国家超级计算广州中心
OSS ONE STOP SYSTEMS
PENGUIN COMPUTING
PNY
QCT
RAUSCH NETZWERKTECHNIK www.rnt.de
redhat
RSC
STÄUBLI
SUSE
THEROON-LHP
UNIVA
VERNE GLOBAL LEADERS IN HIGH PERFORMANCE COMPUTING

Media Sponsors

ADMIN Network & Security
CAE-FORUM NETWORK OF SIMULATION EXPERTS
DIGITAL ENGINEERING
ENTERPRISETECH
HPC Today The High-Performance IT Global Media
HPC wire
inside HPC
LINUX MAGAZINE
physicsworld
Primeur Magazine
SCIENCE NODE
SCIENTIFIC COMPUTING WORLD
THENEXTPLATFORM
TOP 500 News

Organizer: ISC Group, P.O. Box 1107, 74913 Waibstadt, Germany