

## JSCNews

Jülich  
Supercomputing  
Centre

No. 216 • Oct. 2013

### Human Brain Project Launched

Eight months after its selection by the EU as one of its FET Flagships, the Human Brain Project (HBP) is underway. About 250 scientists from the 135 partner institutions involved in the project came together on 7 October 2013 for the official launch at the EPFL (Ecole Polytechnique Fédérale de Lausanne) in Switzerland, the coordinating institution. The researchers, including neuroscientists and supercomputing experts from Jülich, presented the project to the general public and, over the course of the week, fine-tuned the details of the HBP's work plan for the next 30 months (*ramp-up phase*). The whole project, with an estimated budget of more than € 1 billion, is planned to last ten years.

The goal of the HBP is to collect all existing knowledge about the human brain and to reconstruct the brain, piece by piece, in multi-scale models and supercomputer-based simulations of these models. The resulting *virtual human brain* offers the prospect of a fundamentally new understanding of the brain and its diseases and of novel, brain-like computing technologies. The HBP's initial mission is to build six research platforms, dedicated respectively to Neuroinformatics, Medical Informatics, Brain Simulation, Neuromorphic Computing, Neurorobotics, and High-Performance Computing. Over the next 30 months, scientists will set up and test the platforms. Starting in 2016, the platforms will be ready to be used by HBP scientists as well as by researchers from around the world. The resources will be available on a competitive

basis, similar to other major research infrastructures such as the large telescopes used in astronomy.

JSC leads the HBP's High Performance Computing Platform subproject that will develop, build and operate the required supercomputing and data hard- and software infrastructure. A pre-exascale version of the HBP Supercomputer, the project's main production system, to be deployed at JSC in the second phase of the project, will be designed to meet the specific requirements of brain simulations such as large memory and interactivity. (Contact: Dr. Boris Orth, [b.orth@fz-juelich.de](mailto:b.orth@fz-juelich.de))

### CHANGES Workshop 2013

The second workshop in the CHANGES series took place from 10 to 12 September 2013 in Chicago. CHANGES stands for CHinese-AmericaN-German E-Science and cyberinfrastructure. Partners are the Computer Network Information Center (CNIC) of the Chinese Academy of Sciences (CAS), the National Center for Supercomputing Applications (NCSA) at the University of Illinois at Urbana-Champaign (UIUC) and the Jülich Supercomputing Centre at Forschungszentrum Jülich. CHANGES provides a high-level platform to discuss the latest trends in supercomputing, sophisticated information techniques and interdisciplinary applications. It does not only consider the issues of the partner institutions but also takes national topics into account. This workshop addressed the topic *Data Management, Analytics and Visualization*.

Forschungszentrum Jülich GmbH  
in der Helmholtz-Gemeinschaft  
Jülich Supercomputing Centre  
52425 Jülich | Germany

Phone +49 2461 61-6402

[jsc@fz-juelich.de](mailto:jsc@fz-juelich.de)  
[www.fz-juelich.de/jsc](http://www.fz-juelich.de/jsc)

About 40 well-known experts were invited to discuss the latest data-related challenges in their research fields. Besides the presentations, the workshop provided a forum for bi- and trilateral cooperations on student exchanges and mutual research projects. Special emphasis was placed on the question of how to select promising common research projects and how to secure funding for them. Further information: <http://www.ncsa.illinois.edu/Conferences/CHANGES2013/> (Contact: Dr. Norbert Attig, [n.attig@fz-juelich.de](mailto:n.attig@fz-juelich.de))

## JSC @ SC13

SC13, the premier international exhibition and conference on high-performance computing, networking, storage, and analysis, will take place in Denver, Colorado, USA, from 17 to 22 November 2013, where JSC will present its supercomputing activities at booth #3336. JSC staff will demonstrate scientific simulations on supercomputers and the supercomputing tools LLView, Scalasca, Sionlib, and UNICORE, all developed in-house. JSC's activities in current European supercomputing activities will also be showcased, particularly its involvement in the Human Brain Project. JSC staff will also be on hand continuously at the joint booth of the European Exascale Projects DEEP, MontBlanc, and CRESTA (#3741), and at the PRACE booth (#3341).

As part of the conference programme, JSC staff will give a tutorial on "Practical Hybrid Parallel Application Performance Engineering", and also present talks, and participate in numerous special interest group sessions. For up-to-date information on JSC's activities at SC13 see:

<http://www.fz-juelich.de/ias/jsc/events/sc13>.

(Contact: Dr. Walter Nadler, [w.nadler@fz-juelich.de](mailto:w.nadler@fz-juelich.de))

## Score-E – Scalable Tools for Energy Analysis and Tuning in HPC

For some time, computing centres have been feeling the severe financial impact of the energy consumption of computing systems, especially in the area of high-performance computing (HPC). Today, the share of energy already accounts for a third of the total costs of ownership and is continuously growing. The main objective of the Score-E project, funded under the 3rd call by the Federal Ministry of Education and Research (BMBF) for "HPC software for scalable parallel computers", is to provide user-friendly analysis and optimization tools for the energy consumption of HPC applications. These tools (Scalasca, Vampir, Periscope, and TAU) will enable software developers to investigate the energy consumption of their parallel programs in detail and to identify the program parts with excessive energy demands, together with suggestions on how to make improvements and to evaluate them quantitatively.

In addition, the project will develop models to describe energy-related aspects that are not directly measurable and

provide a powerful visualization of the measurement results. At the same time, the project will further develop and maintain the community instrumentation and measurement system Score-P, which forms the common base of all four tools mentioned above. Training and support for the software will be offered by VI-HPS, and will continue beyond the lifetime of the Score-E project itself.

The project is coordinated by the Gesellschaft für numerische Simulation mbH in Braunschweig and involves – besides the Jülich Supercomputing Centre – four partners from German universities and three associated project partners. The project website will soon be online at <http://www.vi-hps.org/projects/score-e>.

(Contact: Christian Rössel, [c.roessel@fz-juelich.de](mailto:c.roessel@fz-juelich.de))

## Norbert Eicker Appointed Professor at Bergische Universität Wuppertal

In 2004, Norbert Eicker started work at JSC in the research fields of cluster computing and innovative architectures. His activities since then have included the design and implementation of various experimental and production cluster systems including the JUROPA supercomputer. He was also involved in the development of QPACE, a joint project by physicists at the Universities of Wuppertal and Regensburg. Beyond that he is the architect of the DEEP system implementing a novel heterogeneous cluster-booster architecture. As of 21 August 2013, Norbert Eicker has been appointed W2 professor in parallel hard- and software systems at Bergische Universität Wuppertal, retaining his position as a scientist at JSC ("Jülich Model"). During the last few years, cooperation between the Faculty of Mathematics and Natural Sciences at Bergische Universität Wuppertal and JSC has been continuously expanded by activities in teaching and research projects. In his new position, Prof. Eicker will strengthen this link by further joint research projects and the development of innovative supercomputer architectures.

JSC wishes Norbert all the best in his new position!

## MATSE: New Course Started

On 2 September 2013, 34 new students started the bachelor's course in Scientific Programming at Aachen University of Applied Sciences in combination with a training course as a MATSE at Forschungszentrum Jülich. Of these students, 27 will receive their practical training in various institutes at Forschungszentrum Jülich, while seven students are with external partners (five industrial companies). Both the vocational training and academic studies are designed to take three years. The curriculum and further information can be found at <http://www.fz-juelich.de/matse>.

(Contact: Prof. Paul Jansen, [p.jansen@fz-juelich.de](mailto:p.jansen@fz-juelich.de))

**Editor: Dr. Sabine Höfler-Thierfeldt, ext. 6765**