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New Division "Civil Security and Traffic" at JSC

A new division "Civil Security and Traffic" was established at JSC in May 2012. This division grew out of a working group that had been developing simulation models in the areas of fire safety and pedestrian dynamics at JSC over the past few years. The research activities conducted so far were supported by BMBF (Hermes) and DFG and were completed in 2011.

Since the demand for research on civil security is rising and has become a priority at BMBF and HGF, the new division will strengthen further developments in this research area. It will also work on the HGF portfolio project "Security Research", in cooperation with the Karlsruhe Institute of Technology (KIT) and Deutsches Zentrum für Luft- und Raumfahrt (DLR - German Aerospace Centre, project leader). Funding for the portfolio amounts to a total of € 14 million.

Furthermore, the division is collaborating on the new BMBF-funded project BaSiGo launched in March 2012. One goal of this project is to understand the emergence of critical states in large crowds. Therefore, large-scale experiments are planned and will be conducted with up to 1000 people.

The new division aims to strengthen its pioneering role in the conception and execution of large-scale laboratory experiments involving pedestrians, in the analysis and evaluation of these experiments, and in the development of models for pedestrian dynamics. Moreover, in order to foster this research field, the models and analysis tools developed so far have been made available to the scientific community in the form of two open source projects combined with a database of experimental results.

In cooperation with the University of Wuppertal and the University of Cologne, it is planned to extend these activities from the local evacuation of buildings and venues to the evacuation of cities or regions, where intermodal traffic also has to be considered. (Contact: Prof. Dr. Armin Seyfried, *a.seyfried@fz-juelich.de*)

eeClust Project Successfully Completed

The eeClust project (Energy-Efficient Cluster Computing), funded by the German Ministry of Education and Research under the call "HPC-Software für skalierbare Parallelrechner", was successfully completed in March 2012. The project partners were the University of Hamburg (coordinator), JSC, Dresden University of Technology (TUD/ZIH) and ParTec Cluster Competence Center GmbH. The goal of the project was to investigate the relation between the behaviour of parallel programs and the energy consumption of their execution on a compute cluster. Furthermore, the project aimed to reduce the energy consumption of the application by switching temporarily unused components to a lower power state.

In the project, a small test cluster with high-resolution power meters was procured by the University of Hamburg. This cluster

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consists of 5 nodes with Intel Nehalem and 5 nodes with AMD Opteron processors, thus enabling the possibilities and results of hardware power mode management to be studied for the dominant x86 architectures. To determine the phases of inactivity, the well-known performance analysis tools Vampir and Scalasca were used. At JSC, the Scalasca toolset was extended during the project to identify the energy-saving potential in wait states of an application.

An API was developed to manually instrument an application to communicate the required hardware resources to a system process. This daemon, also developed in the project, switches the unused hardware to a lower power state and back again and ensures that no component needed by another process is switched.

The tools and methods developed in the project are now being used and extended in other JSC projects, specifically in the Exascale Innovation Center (EIC), to efficiently manage large-scale machines. Further information on eeClust and a list of publications can be found at *http://www.eeclust.de*.

A final workshop is planned in the context of the 3rd International Conference for Energy-Aware High-Performance Computing (EnA-HPC'12) in Hamburg in September, where the project partners will present the findings of the project.
(Contact: Michael Knobloch, *m.knobloch@fz-juelich.de*)

High Demand for 2012 Guest Student Programme

The call for the JSC Guest Student Programme ended on 9 May 2012, attracting a record response of over 30 applications from 13 countries. This meant that competition for the 14 available places was especially strong this year, and many high-quality applications unfortunately had to be turned down. Applicants came from a particularly wide range of disciplines, including mathematics, physics, chemistry, computer science and engineering, biomedicine and earth sciences.

After the final selection process, twelve students were invited to work at JSC; two others will work on projects based at neighbouring Jülich institutes. All candidates already have some experience in scientific programming and/or high-performance computing.

The programme will run from 6 August to 12 October 2012. It will start with ten days of introductory courses on parallel programming, including use of MPI on distributed-memory cluster systems and CUDA for GPU-accelerated machines. For the remainder of their stay, the participants will work on short research projects under the supervision of local scientific staff members, concluding with a presentation at a 2-day colloquium followed by a short report on their achievements.
(Contact: Mathias Winkel, *m.winkel@fz-juelich.de*)

New Simulation Laboratory Neuroscience

A new Simulation Laboratory Neuroscience has been founded at Forschungszentrum Jülich. JSC and the Institute of Neuroscience and Medicine, Computational and Systems Neuroscience (INM-6) will work together in close cooperation to provide advisory support for scientists in the field of neuroscience. The new SimLab is funded by the Helmholtz Association within the portfolio project "Supercomputing and Modelling for the Human Brain" and is expected to be operational by 1 January 2013.

Simultaneously, this SimLab will be integrated into the National Bernstein Network Computational Neuroscience as the "Bernstein Facility Simulation and Database Technology (BFSD)" contributing its expertise in simulation and database technology to the Bernstein network.

Computer simulations and theoretical models are increasingly important tools for understanding the complex processes of our brain. The Simulation Laboratory supports neuroscientists from all over Europe in the optimal use of the Jülich supercomputers. It will also encourage the development of theoretical models, the development of simulation technology, and standardization in the field of brain research. For more information, see *http://www.fz-juelich.de/bfsd* and *http://www.nncn.de*.
(Contact: Dr. Sabine Höfler-Thierfeldt,
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Events

Blue Gene/Q Workshop
Speakers: Representatives of IBM, JSC staff members
Date: 5 July 2012, 9:00-15:00
Venue: Hörsaal, Jülich Supercomputing Centre
Registration: *e.bielitza@fz-juelich.de*,
phone +49 2461 61 5642

Tutorial "Developing Scientific Applications with the Eclipse Parallel Tools Platform (PTP)"
Instructors: Greg Watson, IBM; Carsten Karbach, JSC
Date: 5 July 2012, 9:00-15:00
Venue: Rotunda, Jülich Supercomputing Centre
Registration: *c.knobloch@fz-juelich.de*,
phone +49 2461 61 2054

Introduction to parallel programming with MPI and OpenMP
Instructors: Dr. Florian Janetzko, Dr. Alexander Schnurpfeil, JSC
Date: 7-10 August 2012, 9:00-16:30
Venue: Ausbildungsraum 1, Jülich Supercomputing Centre
Registration: *f.janetzko@fz-juelich.de*, ext. 1446

If you would like to receive regular information on our events, please send an e-mail to *jsc-events-join@fz-juelich.de*.

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