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PRACE Inaugurated

In a special ceremony, PRACE, the pan-European Research Infrastructure for High Performance Computing, was inaugurated on 9 June 2010 in Barcelona. EC Deputy Director General Zoran Stancic and representatives of the Spanish and Italian governments welcomed the participants. They emphasized the importance of HPC for Europe as a key driver for the development of modern science and technology addressing the major challenges of our times such as climate change, energy saving, and the ageing population. In spite of the present economic climate, only continuing investment will ensure Europe's scientific and industrial competitiveness.

PRACE, the Partnership for Advanced Computing in Europe, has been established as a non-profit association (AISBL) under Belgian law with its seat in Brussels. Founding members are: Austria, Bulgaria, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Poland, Portugal, Serbia, Spain, Switzerland, Turkey, and the United Kingdom.

The German representative in PRACE is the Gauss Centre for Supercomputing (GCS). France, Germany, Italy, and Spain are committed to funding and operating HPC systems for PRACE with a total value of € 400 million for the next five years. Resources on the first PRACE production system – the Blue Gene/P in Jülich – have already been made available through a Europe-wide call for proposals.

At the first council meeting of the PRACE association, Prof. Achim Bachem from Forschungszentrum Jülich was unanimously elected chairman of the PRACE Council for an initial term of two years. The Council admitted three more states – the Czech Republic, Cyprus, and Sweden – as members of PRACE. During the next two years, the implementation of the PRACE research infrastructure will be supported in part by the EC-funded First Implementation Phase project (PRACE-1IP), which is expected to start on 1 July 2010. This project will also be coordinated by JSC. (Contact: Dr. Thomas Eickermann, ext. 6596)

ExaCluster Laboratory Launched

At ISC on 31 May 2010, Forschungszentrum Jülich, Intel, and ParTec signed a multi-year agreement to create a new ExaCluster Laboratory (ECL) located on the campus of Forschungszentrum Jülich. The new lab will explore the key challenges of building computing systems with a thousand times the performance of today's fastest supercomputers. ECL will initially employ about a dozen researchers and is expected to triple its staff over time. It will conduct research into current challenges in systems management software for large heterogeneous supercomputer systems, with a view to scaling this software to reach exaflops performance. This will include research on open exascale runtime system software, software tools and simulation software.

For JSC, this is the second collaboration dealing with exascale systems after the foundation of the Exascale Innovation Center with IBM in March 2010. (Contact: Dr. Sabine Höfler-Thierfeldt, ext. 6765)

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Final DECI Call

The 6th call from the DEISA Extreme Computing Initiative (DECI), which closed on 16 February 2010, was very successful. It attracted the record number of 122 applications, an increase of 62 % compared to last year's call. The proposals submitted involve researchers from 22 European countries and 8 countries from the continents of America, Asia, and Australia. More than half a billion compute-hours have been requested.

In total, 56 projects were accepted and awarded more than 90 million compute-hours. The researchers will be given access to Europe's most powerful supercomputers at one or more of the 13 DEISA partner sites, including JUGENE and JUROPA hosted by the Jülich Supercomputing Centre. Staff from DEISA will work closely with the researchers on each project, providing specialist application support to optimize the scientific codes and deploy them on the most appropriate architecture. For more information, please see *http://www.deisa.eu/news_press/press-2010-03-17*.
This was the final DECI call, since the DEISA project will be terminated in April 2011.
(Contact: Dr. Florian Janetzko, ext. 1446).

1st SimLab Porting Workshop

From 9 - 11 June, the JSC Simulation Laboratories organized a Porting Workshop to promote HPC activities within their respective scientific communities. About half of the 26 selected participants were either researchers from Forschungszentrum Jülich or students at the GRS, while the other half came from other German labs and universities. Their scientific profiles matched one of the research fields covered by the four SimLabs: Biology, Climate, Molecular Systems, and Plasma Physics. Although the participants were distributed quite evenly across the SimLabs, the HPC expertise and experience varied widely from group to group.

The programme included a combination of lectures and hands-on sessions held largely by JSC SimLab staff members. Tutorial lectures on advanced computational methods for HPC provided an opportunity for the SimLabs to present their activities and scientific expertise. Complementary hands-on sessions covered a wide range of practical issues, including accessing the systems, compiling and executing jobs, single core optimization, JUGENE's torus network, and usage of HPC tools. Additional contributions came from three invited speakers: Frank Schmitz (KIT) presented an overview of the current SimLab status at KIT, while Paolo Carloni (GRS) and Maxim Fedorov (MPI Leipzig), reviewed topical HPC challenges in biology and molecular systems respectively. All tutorial talks and exercises are freely available at the workshop's webpage:
http://www.fz-juelich.de/jsc/simlab-porting-workshop

Finally, the workshop concluded with round-table discussions within each SimLab group about current supercomputing issues particular to each discipline. Overall the meeting proved to be a highly effective community outreach event and generated invaluable feedback for a planned call for high-level HPC support to be announced by JSC later this year. (Contact: Dr. Paul Gibbon, ext. 1499)

ParMA project successfully completed

The European research project ParMA (Parallel Programming for Multicore Architectures) was concluded at the end of May with a very successful review meeting at Aranjuez, Spain. Seventeen academic and industrial partners from France, Germany, Spain, and the UK, funded by national ministries in the context of the European ITEA2 programme, worked for three years on developments and enhancements of programming and optimization tools for large-scale industrial applications with a special focus on supporting modern multicore architectures. Parallel debugging, verification, and performance analysis tools were enhanced to be able to handle hybrid programming paradigms (e.g., MPI with OpenMP) and their ease-of-use and robustness was greatly improved.

JSC main contributions centred around its very portable and scalable performance analysis toolset Scalasca. Besides improving the various tools, the project also worked on integrating all the tools into a common "UNiform Integrated Tool Environment" (UNITE) to enable a more efficient analysis and tuning process for application programmers. All tools integrated in UNITE can be downloaded, configured, built, and installed as a single package from *http://apps.fz-juelich.de/unite/*. UNITE is already in use on the production machines of JSC, RWTH Aachen, ZIH, and HLRN and it is planned to employ it on other systems of the GAUSS alliance in the near future.

During the project, the industrial partners very successfully used the tools to optimize their applications which resulted in a (sometimes dramatic) reduction of computation time and a much better scalability. The optimized algorithms are now already being used in the latest products available to customers of the participating companies. This very successful early exploitation of project results, together with the extensive dissemination at a multitude of workshops, conferences, tutorials and exhibitions, was regarded very favourably by the reviewers. Rudolf Haggenmüller, Chairman of ITEA2, explained that ParMA is the first and only ITEA project ever to receive a "++" (best score) in exploitation and called it "a milestone in the history of ITEA". More information can be found on the project website *http://www.parma-itea2.org/*.
(Contact: Dr. Bernd Mohr, ext. 3218)

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