

European Exascale Efforts continue

On October 7-8, 2011, Jülich Supercomputing Centre organized and hosted the 7th meeting of the International Exascale Software Project (IESP) in Cologne. The objectives of IESP are to develop and maintain an international Exascale system software roadmap, to investigate opportunities for international collaborations and funding, and to explore governance structure and models for an international effort to create the Exascale system software needed. Around 80 experts from China, Europe, Japan, Russia, and the USA, including specialists from the Gauss Centre for Supercomputing, meet about two to three times a year to discuss these topics. The first meeting in 2012 in April in Kobe, Japan, concentrated on the Asian efforts to Exascale computing. For further information see:

<http://www.exascale.org>

Subsequent to the last European IESP meeting, on October 10-11, 2011, the EU-funded support action "European Exascale Software Initiative" (EESI)

presented their final results to the general public after 18 months of expert consultations and meetings. Furthermore, the three new EU-funded Exascale projects CRESTA, Mont-Blanc and DEEP were presented. The meeting, attended by over 220 guests from science and industry, concluded with presentations of comparable efforts in the USA, Japan, and China and discussions on possible international collaborations.

The goals of EESI support action were to intensify IESP efforts on the European level, to develop a European Exascale system and application software vision and roadmap, to investigate Europe's strengths and weaknesses, to identify sources of competitiveness for Europe, and finally to investigate and propose programmes in education and training for the next generation of computational scientists. Jülich Supercomputing Centre (JSC) managed work package 4 which coordinated four of the eight EESI expert groups working under the topic "Enabling technologies for Exaflop

computing". Three of the eight expert groups were chaired by Leibniz Supercomputing Centre or JSC.

The 120 experts involved in EESI concluded that a sustainable, long term, coordinated effort is needed to reach the goal of Exascale computing resources available for European researchers by 2020. Strategic projects where Europe is strong and able to federate significant critical mass should be funded. This includes funding research and development projects, both hardware and software, implementing the EESI/IESP Technological Exascale roadmap, funding co-design programs, mixing vendor / application community / computer science and mathematics specialists, targeted to Grand Challenge Applications, and finally funding two to three R&D projects each aiming at delivering one Exascale hardware platform in Europe. The technological transfer of Exascale projects into products should be organized and monitored by a European Exascale Software Center. This needs to be accompanied by extensive education and training efforts in High Performance Computing. The necessary total estimated budget is about 2,5 to 3,5 Billion Euro over the next 10 years. The detailed recom-

mendations for each of the eight EESI expert groups on the topics "Industrial and engineering applications", "Weather, climatology and earth sciences", "Fundamental sciences", "Life science and health", two Hardware vendor Exascale R&D and roadmaps, "Software eco-system", "Numerical libraries, solvers and algorithms", and "Scientific software engineering" are available on the EESI project website <http://www.eesi-project.eu> in the area "Publications" under "Working group reports". Two reports which summarize the work and results of the application and of the hard- and software working groups are also available. A new EU support action (EESI2), continuing and extending the work of EESI until 2014 is in preparation.

Following the EESI recommendations, the European Commission announced in February 2012 (press release IP/12/139 <URL:<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/12/139>>) to make EU the world leader in High Performance Computing by 2020. For these reasons, the Commission set out a plan for the EU to reverse its relative decline in HPC use and capabilities, and to double its investment in HPC (from 630 Million to 1.2 Billion Euro).

• Bernd Mohr

Forschungszentrum
Jülich

