Keynote Speech

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Big Science on DEISA and PRACE - A European HPC Ecosystem

Computational sciences have advanced dramatically, due to ever faster and better computers, numerical algorithms, and software tools. But the better the technologies we build the more demanding our scientific applications. While the need for challenging high performance computing simulations only 5 years ago was in the order of a few teraflop/s, today we see requirements from engineers and scientists approaching petaflop/s performance, with the aim to further reduce job runtime and increase accuracy and insight.

Today, the computational foundations of these scientific grand challenges are compute clusters, and grid and cloud infrastructures. Our contribution will examine these e-Infrastructures and, as two examples, present the DEISA Distributed European Infrastructure for Supercomputing Applications and the PRACE Partnership for Advanced Computing in Europe. We will describe the DEISA system architecture and the service layers, the production environment, the UNICORE access infrastructure, the distributed user management and administration, all together forming a virtual European supercomputer center.

Finally, we will present a few results from science projects successfully run on DEISA and PRACE HPC systems, and a list of lessons learned and recommendations.

Short Bio: Prof. Wolfgang Gentzsch is Dissemination Advisor for the DEISA Distributed European Infrastructure for Supercomputing Applications, and Member at Large of the Board of Directors of the Open Grid Forum. Until recently, he was an adjunct professor of computer science at Duke University in Durham, and a visiting scientist at RENCI Renaissance Computing Institute at UNC Chapel Hill, both in North Carolina. From 2005 to 2008, Dr. Gentzsch was the Chairman of the German D-Grid Initiative; Vice Chair of the e-Infrastructure Reflection Group e-IRG; Area Director of Major Grid Projects of the OGF Open Grid Forum Steering Group; and a member of the US President’s Council of Advisors for Science and Technology (PCAST). Before, he was Managing Director of the MCNC Grid and Data Center Services in North Carolina; Sun's Senior Director of Grid Computing in Menlo Park, CA; President, CEO, and CTO of HPC software companies Genias and Gridware, and a professor of mathematics and computer science at the University of Applied Sciences in Regensburg, Germany. Wolfgang Gentzsch studied mathematics and physics at the Technical Universities in Aachen and Darmstadt, Germany.