

Guest Editors' Message

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This issue of the Journal of Grid Computing is focused on production grids.

Grid computing has now reached the phase where 24/7 production-level computing and storage resources are available for users to access large distributed data collections and run high-throughput compute-intensive applications. On the other hand, petascale-class supercomputing systems are becoming increasingly interlinked and available to wider international user communities.

The governments and scientific institutions around the world have strongly invested over the past decade in not just deploying national-level resources but also linking those with their international peers to form large federated structures spanning whole continents. As one of the most notable examples, the European Commission has co-invested to first set up, and then extend the European Electronic Infrastructure technology (particularly Grid) and its operational and organizational principles to a number of regions, supporting global scientific endeavors. A number of different collaboration models have thus been established between Europe and the rest of the world.

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This issue provides a comprehensive overview of production-level Grids, aiming at a clear picture of the current global ecosystem. The focus is on European Grid efforts, and their relationship to efforts in other world regions; while High-Performance computing initiatives in Europe are also touched upon.

This special issue contains six papers directly related to production Grids. The first paper, “Resources and Services of the EGEE Production Infrastructure”, sets the scene by describing the largest production Grid currently available for European researchers, established over 6 years of coordinated efforts. The second paper presents an example of the extension of this core European Grid technology to South-East European region, where added value was also provided through developing a very coherent operational and organizational approach for running a regional production Grid. The third paper describes further extensions and collaborations between Europe and other world regions, namely the Mediterranean Africa and Middle East, Latin America, China and India. Next paper describes an early collaboration, preceding the core European developments, where a production Grid was established between UK and Australia. This special edition continues with a paper describing the production-level issues in the Open Science Grid in the US, which also peers its operations with the pan-European EGEE/EGI Grid, and

where a number of operational and service overlaps can be distinguished. The next two papers focus on extensions of the core Grid technology to production and opportunistic Grids. The closing paper examines a parallel European effort (established through the DEISA initiative) which links High-Performance Computing resources across Europe into a common production system, complementing the High-Throughput Grid production infrastructure, completing the pan-European “computing hierarchy” and paving

the way towards future petascale and exascale systems.

In conclusion, we hope a solid overview of current production systems is provided to the reader, while also a number of technical solutions for operations and management described here can be of use for researchers and engineers setting up similar large collaborative operations in the future.

Dr. Ognjen Prnjat
Guest Editor