



European Conference on Parallel Computing

Topic 16: Applications of High-Performance and Grid Computing

Description

The use of high performance and grid computing has spread rapidly, revolutionising the ability of scientists and engineers to tackle the challenges they face. Driven by commoditisation and open standards: the widespread availability of parallel computers, large data storage, fast networks, maturing Grid middleware, and distributed service-oriented technologies have led to the development and deployment of large scale distributed simulation and data analysis solutions in many areas. This topic will highlight recent progress in applications of all aspects of distributed computing technologies with an emphasis on successes, advances, and lessons learned in the development, implementation, and deployment of novel scientific, engineering and industrial applications on high performance and grid computing platforms.

Today's large computational solutions often require access to or generate large volumes of data- indeed today seamless data access and management can be as important to the underlying computational algorithm as raw computing power. We welcome papers highlighting data intensive applications which couple together High Performance/ Grid computing with large-scale data access/ management.

We invite papers that describe new applications which have been enabled by recent advances in high performance/ grid computing, as well as results where existing applications have been migrated to new environments or platforms, e.g., from single workstations to high-performance parallel or Grid computing or where a heterogeneous infrastructure has been employed.

Focus

- Advances in applications of science and engineering modelling, simulation and design which leverage high performance/ grid computing and/or data management e.g. fluid dynamics, structural mechanics/dynamics, computational electromagnetics, medicine, physics, chemistry, pharmaceutical, environmental and the life sciences,
- New applications in non-traditional areas like health care, social sciences, archaeology, financial modeling, transportation, and economics.
- Tightly and loosely coupled multi-physics and/or multiscale applications, particularly those which require the integration of heterogenous systems or a combination of high performance parallel computing and Grid computing resources.
- Scalability of parallel applications, with a particular emphasis to the challenges of scaling to very large scales (from TeraFLOPS to PetaFLOPS)
- Successful implementation and deployment of large-scale Grid-enabled systems and associated problem-solving environments for applications in the above areas which may provide e.g. portal services, visual analysis, data mining solutions, or assistance with the composition and management of complex workflows

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