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Title

Methods for large-scale and real-time simulations on distributed heterogeneous resources

Prof. Michael Resch

Dr. N. Currele-Linde

Chair of High Performance Computing
Institute of High Performance Computing

High Performance Computing Center Stuttgart

HPC Center Stuttgart (HLRS)

University of Stuttgart

University of Stuttgart

Summary

The efficient utilization of concepts of parallelization confronts the scientific software developer with many problems when having to solve complex applications on distributed heterogeneous resources or Grid resources. Very often this is due to the fact that the subject areas are already highly complex in themselves. So far for many fields there has been no systematic approach for the development of complex time-critical Grid applications.

Besides, the existing methods and tools for the execution of complex applications do not provide the required level of quality for their handling and monitoring.

This project is therefore devoted

- to the study of the peculiarities of the organisation of distributed heterogeneous computation environments and of their components in order to solve the problem of the efficient execution of complex applications.
- to the development of resource management methods guaranteeing a certain level of functional reliability for time-critical applications (applications that have to be done within a certain time like business simulations) and real-time simulations (applications that are part of a process and run permanently like weather forecast) to improve the quality of the handling, the design, the deployment and the execution of complex large-scale simulations.