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GridLab - A Grid Application Toolkit and Testbed

Deliverable 2.2: Prototype implementation of CGAT

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Abstract: Cactus is an open source problem solving environment designed for scientists and engineers. Its modular structure easily enables parallel computation across different architectures and collaborative code development between different groups. The Grid Application Toolkit supports the migration of Cactus to grid environments by providing a unified application programming interface to access grid resources.

1 Overview

The CactusGAT is introduced into the Cactus Framework by providing a Cactus Thorn (CGAT) which uses the Grid Application Toolkit (WP1) to access grid resources. The CGAT thorn can be downloaded at cvs.gridlab.org/cvs/gridlab/wp-2/Codes/Thorns/CactusGAT/CGAT. A Cactus Thorn is a software module part of the Cactus Framework, which enables Cactus users to extend the functionality of Cactus by providing own code.

2 Functionality

The implementation of the CGAT thorn as of December 2003 provided remote checkpointing and status querieng capabilities. This functionality was used durring Supercomputing 2003 to demonstrate the migration of a running cactus simulation between two sides in Germany and Czech Republic initiated from the gridlab portal (portal.gridlab.org) as part of WP4.

3 Work in Progress

We are currently working to integrate resource monitoring (WP11) into the CactusGAT to enable the cactus simulation to migrate between different grid resources based on informations provided by the monitoring system. Further development is currently ongoing to control and present results of a running cactus simulation at the gridlab portal in close cooperation with WP8 (Data Management and Visualization).

4 Summary

Cactus is taking an essential part in testing the usability of the current implementation of the Grid Application Toolkit and is initiating new developments through the close cooperation with scientists at the Albert Einstein Institut in Germany. It could be shown that the Grid Application Toolkit is a reliable tool to access grid resources in a simple way providing Cactus with enhanced functionality, that makes it easy for scientists to recognize grids as their tool of choice to solve tomorrow's scientific problems.