

- GridLab kick-off meeting in Poznan, Poland
- Introducing Gridlab People
- GridLab Goals

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GridLab – A Grid Application Toolkit and Testbed
IST-2001-32133

GridLab Kick-off Meeting

Poznan, Poland, February 2002 - During the GridLab kick-off meeting, participants from European and US research labs, as well as leading computer vendors Sun and Compaq, reaffirmed their cooperation and broad involvement in developing a Grid Application Toolkit (GAT). The GridLab project is the new international research project funded by the European Commission under the Fifth Framework Programme. The main objective of this project is to assist and provide set of essential tools, services and methodologies for efficient development of grid enabled applications. The GAT will enable researchers worldwide to develop new generations of engineering and scientific applications that can harness the power of the Grid.

According to *Jarek Nabrzyski*, the GridLab Project Manager and one of the project PIs, GridLab will change dramatically the way we use computing today. GridLab will develop core capabilities

for simulation and visualization codes to be self aware of the changing Grid environment, and to be able to fully exploit dynamic resources for fundamentally new and innovative applications scenarios.

The applications themselves will possess the capability to migrate from site to site during the execution, both in whole or in part, to spawn related tasks, and to acquire additional resources as needed, according to both the changing availabilities of various resources in the grid, and the needs of the applications themselves.

Ed Seidel, GridLab participant and a leader of the Cactus Project, one of the GridLab PIs, says that the GAT will provide core, easy to use functionality through a carefully constructed set of generic APIs for both simulation codes and Grid software. This toolkit will contain independent modules for handling many different aspects of Grid programming, including simulation, performance

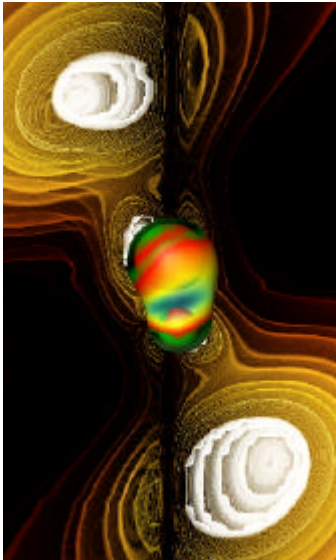
and grid monitoring, resource brokering and selecting, simulation, performance prediction, interacting with information servers, security, notification, collaborative working, data handling, remote visualization, and remote application steering. Real applications will be enhanced for the Grid, implementing new dynamic simulations with the GAT.



Jarek Nabrzyski
GridLab Project Manager



Ed Seidel
Cactus Project Leader



Cactus Simulation of the Black Holes

“The GAT will contain independent modules for handling many different aspects of Grid programming”

GridLab Participants

The following are the project partners are:

- Poznan Supercomputing and Networking Center (Poland), Project Coordinator
- Albert Einstein Institute (Germany)
- Konrad-Zuse Zentrum (Germany)
- University of Wales (UK)
- Vrije University (Netherlands)
- University of Lecce (Italy)
- Computer and Automation Research Institute - SZTAKI (Hungary)
- Masaryk University (Czech Republic)
- Sun Microsystems Gridware GmbH (Germany)
- Compaq Computer (France)
- Institute of Communication and Computer Systems, National Technical University of Athens (Greece)
- Three project partners come from the United States: Argonne National Laboratory, Information Sciences Institute (CA) and University of Wisconsin.

GridLab Objectives

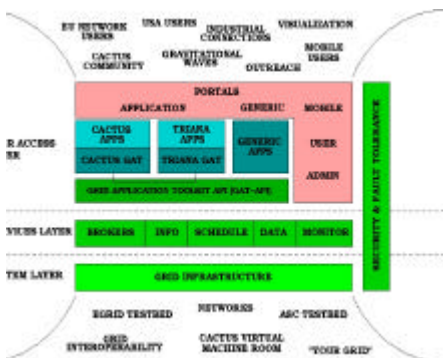
Specific key objectives of our project are to:

- **Design and develop a Grid Application Toolkit (GAT)**, to provide core, easy to use functionality through a carefully constructed set of generic APIs for *both simulation codes and Grid software*. The GAT will contain independent modules for handling many different aspects of Grid programming, including simulation, performance and grid monitoring, resource brokering and selecting, performance prediction, interaction with information servers, security, notification, collaboration, data handling, remote visualization, and remote

application steering.

- **Simultaneously enhance real applications for the Grid**, implementing new dynamic simulation scenarios using the GAT. Both *Cactus* and *Triana* will be extended to integrate and exploit GAT elements, making Grid Computing easily exploitable by a wide range of applications. Our **simulation driven**, compute intensive applications are fundamentally different from the highly data driven applications in many other Grid projects (e.g., DataGrid, GriPhyN, EuroGrid).
- **Develop and test Grid infrastructure/applications on real testbeds**, constructed by linking

heterogeneous collections of supercomputers and other resources spanning Europe and the USA, using and extending existing testbeds. Interoperability with different testbeds will be ensured by also using production testbeds in the USA, driving international high speed network connectivity. Testing will be carried out by the project and by several large, closely related user communities, including an EU Astrophysics Network, and various multidisciplinary US funded collaborations.



GridLab Management: Steering Group and Technical Board

The following people form the Steering Committee:

- Jarek Nabrzyski (Chair, GridLab Project Manager, PSNC)
- Zbyszek Krzewinski (PSNC)
- Gabrielle Allen (AEI)
- Ed Seidel (AEI)
- Alexander Reinefeld (ZIB)
- Peter Kacsuk (SZTAKI)
- Ludek Maryska (MU)
- Thilo Kielmann (VU)
- Martin Walker (Compaq)
- Ian Taylor (Cardiff)
- Giovanni Aloisio (Lecce)
- Friez Ferstl (Gridware).

The following people form the Technical Board:

- Andre Merzky (Chair, ZIB)
- Thomas Radke (AEI)
- Tom Goodale (AEI)
- Ian Taylor (Cardiff)
- Michael Russel (AEI)
- Mirek Ruda (MU)
- Tomasz Ostwald (PSNC)
- Thilo Kielmann (VU)
- Juliusz Pukacki (PSNC)
- Massimo Cafaro (Lecce)
- Zoltan Balaton (SZTAKI)
- Bartek Lewandowski (PSNC)
- Konstantinos Dolkas (NTUA)
- John Shalf (LBNL, USA)
- Dave Angulo (ANL, USA)



Andre Merzky, ZIB
Technical Board Chair

GridLab Applications

CACTUS

The primary application framework and environment for the development and testing of the GAT is the open source Cactus Computational Toolkit (Cactus). Cactus is a modular, collaborative framework for developing parallel scientific and engineering applications which is already widely used for Grid computing. Cactus, was developed over many years to solve some of the largest scale problems in computational science, and to enable large scale collaborations of different communities to work together.

TRIANA

The Work-Flow Application Toolkit, based on the Trianapackage developed originally for gravitational wave (GW) data analysis, will provide a second example application toolkit for GridLab. GW data analysis has a large community of users that will benefit significantly from the developments gravitational wave. However, the class of applications covered by Triana Grid Application Toolkit (TGAT) is much larger than GW data analysis. Complementing the

CGAT, which is aimed primarily at supporting large scale simulation applications, the TGAT will be developed to exploit Grids for many different workflow applications, through extensions to the Triana data-flow programming environment.

OTHER APPLICATIONS

GridLab develops a generic GAT which can be used by all the other scientific and engineering applications. Using the GAT you can make your applications grid-enabled in a very fast way. Please contact: office@gridlab.org if you are interested in using the GAT.

For more information on GridLab applications refer to the following links:

- *Cactus:* www.cactuscode.org
- *Triana:* www.triana.co.uk

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www.GridLab.org

GridLab Innovations

Grids promise, but have not yet delivered, application users the ability to harness global computing resources, providing easy access to significantly more resources, improved collaborative environments, dynamic interaction with simulations, and global mobile access. Our GridLab project will significantly advance the current state-of-the-art by developing: (i) key components necessary for application oriented Grid computing (resource estimators and brokers,

platform independent portals accessible even from mobile devices, security infrastructure, monitoring tools, etc.); (ii) interfaces to functionally similar components developed by others, (iii) a Grid Application Toolkit (GAT), for both infrastructure and applications, enabling new generations of Grid enabled applications, and (iv) innovative new Grid computing scenarios to dramatically increase the scale or throughput of possible applications. All

components will be tightly integrated and built on present state-of-the-art infrastructure and application tools, coordinated and co-developed with other leading international Grid projects and industrial partners. Field tested by real application communities on inter-continental testbeds and production environments.

Upcoming GridLab Events

- GridLab Conference and Workshop, 12-22.09.2002, Zakopane, Poland
- GridLab Demonstration at the IST Conference, 3-5.11.2002 Copenhagen, Denmark
- GridLab Demonstration at Supercomputing 2002, 18-22.11.2002, Baltimore, USA

