

- GridLab All-hands Meeting, Zakopane, September 2002
- Introducing Gridlab People

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

## GridLab All-hands Meeting in Zakopane

**Zakopane, Poland, September 13-22 2002**

During the GridLab All-hands Meeting the GridLab participants have confirmed their commitment and collaboration within the project. During 10-days long meeting we have been working on making real the application scenario, in which a GAT (Grid Application Toolkit being developed under GridLab) application, using the GridLab services, migrates from resource to another resource when its performance goes down. This non trivial scenario involves the coordination of all the services being developed within GridLab, i.e. Resource Management, Adaptive Components, Monitoring, Data Managements etc. The scenario has been implemented in full and will be presented during the Supercomputing 2002 Conference in Baltimore, MD.

Several demos are foreseen for this Conference.

Summarizing, the third quarter of the GridLab project was very successful.

The aim of this quarter was

to deliver the first prototypes even before they have been scheduled (Please note that the first prototypes have been scheduled for the end of month 12).

The pilot GAT and the GridLab services implemented so far allow applications themselves to 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 to needs of the applications themselves.

During the meeting we have agreed on the final

GridLab architecture (see figure below).

This architecture gives applications full freedom to access whatever services they like. In this way applications can dynamically react to all the changes in grid environment. Using the GAT the application developer does not have to even know in what kind of grid environment the application will be running. The GAT will discover the environment and use proper adaptors to adapt to underlying infrastructure.

To find out about the GAT architecture please go to the GridLab web pages.

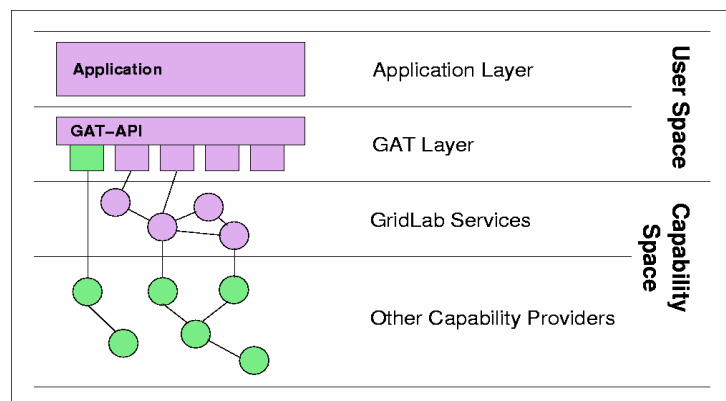
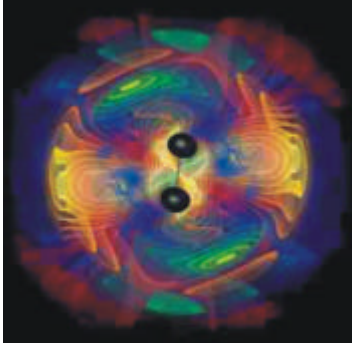


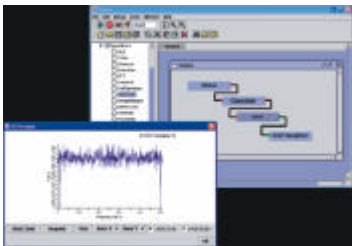
Figure1: GridLab Architecture

## GridLab People from Albert Einstein Institute



Cactus Simulation of the Black Holes

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



Triana Application

### Prof. Edward Seidel (AEI)

Seidel has led both the Computer Science and the Numerical Relativity research groups at the AEI for the past five years, with over 120 publications spanning both disciplines, and has a PhD from Yale University. Seidel holds additional positions as Senior Research Scientist at NCSA and as Adjunct Professor at the University of Illinois, and a visitor

position at ANL. He has active collaborations and connections with leading centers and both computational science and astrophysics based research projects in the US, strengthening the cross-Atlantic nature of this project. Seidel is the Chair of the GGF Applications Working Group. In the US, he is a PI for the NSF funded KDI project to establish a Astrophysics Simulation Collaboratory, and a NASA

Grand Challenge Project. In Europe, he led the DFN project TIKSL: TeleImmersion of Black Holes, and is the Coordinator of the EU funded network for Astrophysical Sources of Gravitational Wave Astronomy. All these projects provide both technologies and user communities for testing Grid components in GridLab.

### Dr Gabrielle Allen (AEI)

G. Allen, who holds a PhD in astrophysics from Cardiff University, has led the Cactus Team for the past 3 years. Previous to this she spent ten years as a computational physicist in the field of numerical astrophysics, and so has a deep understanding of user requirements for computational software and infrastructure. Allen is involved in collaborations with other advanced grid projects, including Globus, the Global Grid Forum, the Grid Adaptive Development Software (GrADs) project, the European Grid Forum Applications Working Group, the Grid Portal Collaboration and the Astrophysics Simulation Collaboratory.

Allen is a member of the Steering Committee for the proposed EU project

Computational and Information Infrastructure in the Astronomical DATAGRID: Towards Virtual Astronomy, and a PI for the DFN project GriKSL: Development of Grid Based Simulation and Visualization Techniques. She is also a member of the EU funded network Sources of Gravitational Wave Astronomy and holds a visitor position at the Argonne National Laboratory in the USA.

### Prof B F Schutz (AEI)

Schutz is a founding director of the Max-Planck-Institute for Gravitational Physics (AEI), holds an honorary professorship at the University of Potsdam, and retains a part-time professorship at the University of Cardiff, where he established leading research groups in both

gravitational wave astronomy and numerical relativity in the 1980's. He holds a PhD in theoretical physics from Caltech. He is one of the leaders of the GEO600 project, which will be among the first of a new generation of gravitational wave detectors to come online next year. He is also the founder and Editor in Chief of Living Reviews in Relativity, an electronic review international journal. Schutz is the leader of the Triana Work flow Analysis package which is an important part of the GridLab project. He has served on numerous editorial boards, international advisory committees, and review boards for institutes around the world.

## GridLab Services

In addition to GAT, other WPs developing components that will be incorporated through APIs developed by the GAT include the sequence of seven WPs: Security (WP6), Adaptive Application Components (WP7), Data Handling and Visualization (WP8), Resource Management (WP9), Information Services (WP10), Monitoring (WP11), and Access for Mobile Users (WP11). Each of these WPs develops a particular set of components and services that can be plugged into the GATs. For example, **Data Handling and Visualization (WP8)** will provide tools to track the flow of data and the location of files generated during a dynamic Grid simulation, as well as tools to visualize the data, whether it is live, streamed from a

distributed simulation, or archived, distributed across several supercomputing sites. These tools will again operate through a set of APIs defined in the GAT, so that information can be published to any conforming information server and accessed by any application or user, for example, through a Portal.

**Resource Management (WP9)** will provide examples of resource brokers that are needed to best match the requirements of an application to those resources currently available to it. Through the resource APIs developed for the GAT, different resource brokers, even developed in other projects, will be able to be used and evaluated.

The GridLab broker is just a part of the GridLab Resource Management System, which provides dynamic grid resource management capabilities.

**Monitoring (WP11)** will provide various tools that collect information about the present performance of the Grid and applications running on it (sensors), and that can also effect changes according to user input or algorithms developed. These will be callable through APIs developed by GridLab in collaboration with other projects and especially through the Performance Working Group of the GGF. Again, any conforming systems developed by other projects will be interchangeable with those developed by this workpackage.

## Globus in GridLab

The Globus Project is developing fundamental technologies needed to build computational grids. Globus is now being used in GridLab testbed as the core grid middleware and infrastructure. All the services being built by GridLab are based on this infrastructure; however, GAT itself will be middleware independent.

GridLab is one of the OGSA early adopters. All the GridLab services will be OGSA compliant in near future, as soon as OGSA is fully defined. Right now all the services are being developed using Grid Services technology. The

migration to OGSA is foreseen in the first half of 2004.

In the current testbed Globus 2.0 is being used, with MDS 2.2. Testbed services include: gatekeeper, GISS, GRIS, GSIFTP, GSISSE, jobmanagers (LSF, PBS, Condor, SGEE, fork). First prototype GridLab services on the testbed include: GRMS, monitoring, adaptive components, mobile user support (notification services), data management services. Myproxy server runs at [myproxy.gridlab.org](http://myproxy.gridlab.org). Users can use the grid using the pilot version of the GridLab Portal.

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*For more information on*

*GridLab refer to:*

[www.gridlab.org](http://www.gridlab.org)

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We're on the Web!

See us at:

[www.GridLab.org](http://www.GridLab.org)

## Upcoming GridLab Events

- GridLab will have a booth together with the GridStart project at the IST 2002 conference in Copenhagen, 3-5.11.2002
- GridLab Demonstrations and Talks at the Supercomputing 2002, 18-22.11.2002, Baltimore, USA
  - Monday, 18.11.2002, 11.15 p.m. Jarek Nabrzyski will give a talk at the GRID2002 Workshop. "Enabling Applications on the Grid"
  - Tuesday, 19.11.2002, 12.00 - 1.00 p.m., Ed Seidel will give a GridLab talk and demo at Sun Microsystems Booth.
  - Tuesday, 19.11.2002, 1.00 - 1.30 p.m., Michael Russell will give a GridLab Portal Demo at the Argonne National Laboratory (ANL) Booth
  - Thursday, 21.11.2002, 12.30 - 1.30 p.m., Ed Seidel will give a Cactus demo at the ANL Booth
  - Thursday, 21.11.2002, 2.30 - 3.00 p.m., Ed Seidel and Michael Russell will give a GridLab Portal Demo at the ANL Booth

GridLab will take part in the Bandwidth Challenge and HPC Challenge competition in collaboration with other partners. Please come to the following presentations and demos:

- Tuesday, 19.11.2002, 1.00 - 1.45 p.m., Ed Seidel will give a talk and demo titled: "Big Splash: Gravitational Waves from Colliding Black Holes" at the NERSC Booth
- Tuesday, 19.11.2002, 3.30 - 4.30 p.m., HPC Demo at ANL Booth
- Wednesday, 20.11.2002, 4.00 - 5.00 p.m., Bandwidth Challenge (bandwidth measured!),
- Wednesday, 20.11.2002, 5.00 - 6.00 p.m., GridLab related demo at the Alliance Booth
- Thursday, 21.11.2002, 11.00 a.m - 2.00 p.m., Bandwidth Challenge Demos including VizTools and GridLab Portal.

