

Grid@Asia
First workshop
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Session D - Future cooperation

Networking session

The Matrix Project

Jarek Nabrzyski

The Matrix Project an application in preparation for 5th call of the EU 6th Framework Program entitled 'Advanced Grid Technologies, Systems and Services'. The overall strategic plan of the Matrix Project is to develop an alliance of application-oriented projects that all use the same high level toolkits to Grid-enable existing applications, and just as importantly, to develop a new generation of innovative applications and application scenarios which truly take advantage of the new possibilities which grids provide. The applications we are going to work with include both, scientific and business/industry applications, however the latter ones will be in majority. Matrix takes as a starting point the existing European grid middleware and tool, such as Grid Application Toolkit, GRMS, GridSphere, iGrid, Mercury, Migrating Desktop and other tools developed by many successful EU projects such as GridLab (<http://www.gridlab.org>), CrossGrid, GRIA, etc. as well as other tools developed in other projects worldwide. With Matrix, we build on these successes, but shift the entire focus

upward, to be much more heavily focused on the application level and application user level. We have identified a series of important application areas that have complex problems that can only be solved on Grids. Using our experience we will further develop our generic tools, research and adopt other tools and services that suit our needs, and use them in two important ways:

- A Strong Research Component: We will develop the most appropriate mechanisms, application level abstractions, and building blocks for the development of innovative Grid usage scenarios for a new generation of production Grid applications.

- A Strong Deployment Component. Working with a broadly representative set of application communities, we will deploy these techniques to solve complex problems in areas of special importance in the EU, problems that cannot be adequately addressed with present-day computing or Grid technologies. The application areas have been carefully selected to maximize the impact of this project, while also providing broad feedback to the research component to make our tools practical and enabling for generic applications.

XtremOS

Domenico Laforenza

INRIA decided to take the initiative to build an IP project proposal (called XtremOS for the time being) to be submitted to the European Commission and related to the 'Advanced Grid Technologies, Systems and Services' strategic objective included within Call 5 of the IST priority ('Network Centric Grid Operating Systems : Research and Development on New or Enhanced Fabrics for Future Distributed Systems and Services' item in Section 2.5.4 of the 2005-2006 Work Programme). This proposal relates to network centric operating systems (operating system support for Grids) and will be led by INRIA. The overall objective of the XtremOS project is the design, implementation, evaluation and distribution of an open source Grid operating system (named XtremOS) to support virtual organizations (VO). On top of the extended traditional OS, several Grid OS distributed services are to be provided to deal with resource and application management in the Grid. These services should be designed to cope with the Grid dynamicity and scale. The XtremOS prototype will be built on Linux based systems. The ambition of XtremOS is to design the reference Grid OS in Europe and world-wide. We want to build a Grid operating system which can be used in production with real applications. It is our objective to distribute the XtremOS software in open source. Christine Morin, Senior INRIA researcher in the PARIS research group, will be in charge of the scientific and technical coordination of the proposal.

Towards Transparent Semantic Grid

Marian Bubak

Currently, mapping applications onto their most appropriate realizations on the Grid is left to the user who should discover best way to run the application, whereas Grid middleware is merely a passive tool implementing the user's plan. In the global Grid, the choice of alternative methods meeting the applications' demands may overwhelm the user - just like the overwhelming amount of modern Web resources. The solution to that issue may be obtained by introducing additional levels of automation in the process of user-middleware interaction through intelligent tools, assisting both the Grid developer and the user. Such tools would facilitate abstract semantic description of resources and events.

As the number of Grid resources grows, it becomes more difficult to distinguish and discover them. The automation of Grid application design and execution requires better means of inspecting, comparing and learning about the available resources. There is also need for a well-defined resource description methodology, which should take into account the event-driven Grid infrastructure of tomorrow, where semantically-enriched events and messages provided by the execution layer impact resource descriptions in a dynamic way.

The development may be based on experience of the CrossGrid and K-WfGrid EU IST Projects.

Monitoring and Security in the Era of GRIDS

Kostas Anagnostakis

Network monitoring is essential for improving the performance, security as well as our understanding of network applications. As most of the existing work on network monitoring has focused on a Web-centric model of network services, the evolution of GRIDS creates new threats, but also new opportunities. In this talk, we briefly discuss the challenges and potential benefits of using network monitoring infrastructures to support GRID applications, as well as using distributed, GRID infrastructures to support network monitoring and security services.

SimbioGrid

Yike Guo

SimbioGrid will establish a working collaboration between biomedical Grid activities in the EU and China by implementing a Grid testbed.

Together the partners in both Europe and China will make available significant Grid resources. The testbed will draw heavily on existing EU technology such as that developed in EGEE. This testbed will be trialled using 9 existing biomedical demonstrator applications (4 from China, 5 from the EU). SimbioGrid will promote the use of EU Grid technology, will demonstrate the portability of applications between EU and Chinese Grids, will give important feedback to European Grid middleware developers and will stimulate collaboration between the biomedical communities in China and the EU. Most importantly it will promote the use of Grids to the biomedical communities in both regions.

The consortium making this proposal is strongly involved both in Grid developments and in biomedicine. It comprises 7 EU partners from 4 member states, complemented by 8 Chinese partners. Of the EU partners, 6 are directly involved in the EGEE project. These partners will use their considerable expertise to implement and support the testbed for biomedical applications. The consortium has direct access to significant national biomedical activities in the UK, Spain and the Netherlands and to the EU-wide HealthGrid initiative. The Chinese partners bring in access to the Chinese National Grid (CNGrid) and to Chinese biomedical applications. All applications have a strong end user emphasis.

InGRID

Denis Caromel

FP6 call 5 (sept. 2005): an SSA on ' Interoperability & Standardisation for GRIDS'

The objectives of the SSA will be:

- Identification of current experiences and issues on interoperability in GRIDS, linked with GridCoord SSA and CoreGrid NOE activities : target both middleware and programming environment levels
 - Identification of all projects, available specifications and approaches addressing interoperability and the necessity of standardisation
- Animate debate on standardisation and interoperability with cross-fertilization between various sectors having successful experiences in interoperability
 - Provide guidance on standard-making process and interoperability test methodologies
- Define guidance, recommendations and even standards to be developed or used for achieving grid interoperability
- Conduct interoperability initiatives (face-to-face interop events, plugtests, network interconnections, etc)

Cooperation

Tuan-Anh Nguyen

1. Grid middleware: we are currently working on the ISS (Intelligent Scheduler System) project (2005-2008) led by the Swiss National Supercomputing Center (CSCS) which aims at connecting resources of Swiss universities and institutes (CSCS, EPFL, EIA-FR, UNIFR) to form a national Grid of Switzerland. We are constructing the Grid middleware to support intelligent resource discovery and resource matching for HPC applications. We would like to share our vision of the Grid and to find opportunities to collaborate with Vietnam, China and other Asia partners through possible EU funded projects:
 - Help Vietnam to construct their national Grid infrastructure.
 - Connect Vietnam Grid to our Swiss Grid and the China Grid.
 - Study different resource discovery models (centralized, distributed and peer to peer), categorize and implement them for different type of Grids.
 - Join and share Grid middleware development.
 - Develop high level Grid services for scientific computing and engineering.
 - Integration of the Swiss Grid infrastructure with other Grids.
 - Investigate and support different programming models.
 - Share Grid resources and create a Grid testbed.
2. Grid programming models and tools: we are building an object-oriented programming system for the Grid called POP-C++ by extending C++ with the concept of requirement driven distributed parallel objects. POP-C++ has been used to develop the Snow and avalanche warning system for Alpine region of Switzerland (Alpine3D) and running on the dedicated Grid resources of the Swiss Federal Institute of Snow and Avalanche Research at Davos, Switzerland. This tool will also evolve to provide Grid programming supports for the ISS project. We would like to introduce our POP-C++ tool and to call for participations from Asia countries to:
 - Develop and adapt POP-C++ programming tool to their Grid environments.
 - Co-develop and improve POP-C++ model as well as other programming model to support challenging issues of the Grid for large scale distributed applications: resource connectivity and firewall issues of the Internet which would prevent a single application from running over distributed sites; fault tolerant issues; Grid usability issue; and Grid performance evaluation issues.
 - Provide Grid programming supports for Grid standards such as Web Services Resource Framework (WSRF) from the Global Grid Forum.
3. Develop and co-develop applications on the Grid.
4. Possibility to involve Vietnam and other Asia participants to EU-Asia Grid projects.
5. Organize and co-organize EU-Asia workshops and conferences on the Grid research.

BEINGRID

santi.ristol@atosorigin.com

BEINGRID is a proposal led by ATOS ORIGIN for an Integrated Project (IP) that will be submitted to the strategic objective Advanced Grid Technologies, Systems and Services IST FP6 Call 5 (closing date 21st September 2005).

The main objective of the project consists in exploiting the existing Grid adoption. This objective is breakdown in two key aspects:

- a) to **foster the adoption** of the called Next Grid Generation by means of several vertical business experiments of key sectors (media, industrial, financial, oilfield, tourism, etc).
- b) to **create a toolset repository of Grid middleware upper layers** for business exploitation.

In short, a business experiment (BE) is a real pilot application that answers an identified customer need. The involvement of the end user and a service provider in the vertical pilots is considered mandatory to demonstrate its potential and to capitalise the derived benefits. The description of each experiment will be complemented with an early business plan at the proposal level.

This project will not have as an objective the development of low-level grid middlewares although in some cases a necessary adaptation or development of software missing pieces (glue software) may be required to settle the repository.

Look at www.beingrid.com for further information.