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Editorial

As we move from EGEE project to the proposed EGEE-II project, now is a good occasion to strengthen industrial relations to ensure technology transfer for business uptake, addressing the changing state of the Grid market as well as the experience gained in EGEE and the comments of our reviewers, external advisors and members of the Industry Forum.

For EGEE-II, the Industry Forum will be attached to the NA2 activity (which deals with Dissemination, Outreach and Communication), in order to maximise the exposure of the project in the industrial arena and benefit from general efforts in public relations. In addition, new industry-specific activities and structures are being set up within the project.

A key change for EGEE-II is the inclusion of a commercial partner within NA2, Metaware SpA, with extensive experience in industrial relations and EU projects. Using their experience and contacts, as well as the extensive network of NA2 partners around Europe, Metaware will

undertake a range of new tasks to promote industrial involvement in the project, including targeted material for industry and an increased number of workshops and industrial events, following on from the forthcoming Industry Day in Paris.

The project has also formed a new relationship with the CERN openlab for DataGrid applications, a collaboration between CERN and a range of leading IT firms to test Grid hardware and software in a real-world environment. The two projects will co-organise a number of events including "First Tuesday" business networking evenings, and will collaborate around other activities such as the openlab student programme. The results from openlab workshops and brainstorming events will be integrated into EGEE industry events and activities, while openlab members will get early access to new products of EGEE.

EGEE-II will also introduce a new category of industrial collaborator through the EGEE-II Business Associate (EBA) status. Designed for companies who would like to work with the project on Grid-related topics, the EBA concept will facilitate work on joint-interest subjects, as well as technology transfer and the impact of

EGEE and Grid technology on business and industry.

Recently, the project has also made contacts with other industrially relevant Grid initiatives starting up such as NESSI and BEinGrid. These will be continued and expanded throughout EGEE-II, exploiting links through common partners and working on a long-term strategy for Grid uptake in industry.

An industry task force, modelled on those already established for scientific research applications, is being assembled that will ensure the requirements of industrial applications are treated on an equal-footing and maintain links with the technical decision making process of the project.

Keeping the members of the Industry Forum informed about developments in the project as well as in the wider Grid field will continue to play a key role in the work of the industry forum, and we are exploring means to expand the Industry Forum newsletter and the EGEE newsletter into new formats.

While some changes are taking place for the Industry Forum and other areas of the project as we move into EGEE-II, the service provided to our users will continue seamlessly from EGEE to EGEE-II. The changes represent the results of the hard work carried out by all partners and contributors during EGEE, and are a step in the evolution of Grid computing from an innovative idea to a mature technology that is adopted by both research and industrial communities.

Bob Jones
EGEE Project Director

About Grid

Grid Computing in Finance

Computing problems in banking companies

Exchanges of derivative products have been constantly increasing for the past two decades. As a result, financial institutions made huge investments in order to give their traders and sellers sufficient computing power for efficient pricing.

Despite this, over the past few years, derivative products have become increasingly liquid and complex. Banking companies therefore face the following challenges:

- Real-time computations: these occur when valuating standard 'vanilla' derivatives. These products are very liquid and the challenge is to allow real-time pricing for a large quantity of simple products, in other words to run a large number of short computations in real-time.
- Long computations: these occur when valuating exotic products, when running portfolio rebalancing applications, etc. These computations may take a few minutes to a few hours. The challenge is to run these applications as fast as possible to allow traders to react quickly and precisely.
- One-night computations : these typically occur each night to compute value-at-risk and profit-and-loss for a whole trading desk. These involve a whole range of computations that must run before the opening of the markets the next morning.

at present, financial institutions have a costly solution to this situation: constantly upgrading hardware for their whole trading desks (middle and front office), but the emergence of Grid Computing provides them with an interesting alternative. Only 15 to 20 percent of computing power in financial institutions is estimated to be used at any one time. An efficient use of Grid technologies should allow them to achieve their pricing challenges at a reasonable cost.

Benefits of the Grid

Grid technologies should provide a convenient way to face the following issues :

- Data sharing: trading desks are constantly linked to the networks of the financial data

providers. Grid architectures are structurally distributed and should provide traders with efficient access to these data.

- Security: confidentiality is crucial for financial data. This is often the main concern expressed by CIO reluctant to sign up for the Grid. Developers of Grid middleware must emphasise their achievements concerning this aspect of the Grid.
- Efficient computing resource allocation: algorithms previously described must be re-designed to fit Grid architectures and be efficiently run.

An emerging market with many research challenges

This market has been clearly identified by IT companies over past few years. According to numerous economical papers, companies such as Datasynapse, IBM, Platform or United Devices were the first to report successful cycle scavenging. Researchers have provided many important results in the same period. Old algorithms have been proved to be efficient on a parallel Grid architecture (see (1) for an example on American Monte Carlo), and new parallel pricing methods appeared for new products (see (2) for an example on weather derivative products). A few beta-versions of programming libraries for parallel computing in finance have also appeared (see (3)). The first Grid in Finance International Workshop will be held in February 2006 (www.gridinfinance.org).

These reports state some applications have been drastically improved: computing times can fall from two hours to ten minutes for some of the algorithms described above.

It is now important to show not only that Grid Computing provides immediate benefits with a better resource allocation, but also that new algorithms will arise from these new computing systems : prices of standard products can be more precise and be obtained faster ; prices for complex products that could not be valued before can now be given. The future of Grid technologies in the financial area is very promising.

(1) Monte Carlo Valuation of Multidimensional American Options with Grid Computing, Lecture Notes in Computer Science : LSSC05, Springer, 2006

(2) Lecture Notes in Computer Science : LSSC05, Springer, 2006

(3) A parallel library for financial engineering applications, IEEE Computer Society, 2005

Ioane Muni Toke, Ecole Centrale Paris, MAS Laboratory

About EGEE

EGEE: the experience of an industrial partner

Turning experience into business for the future

CS SI (www.c-s.fr), an IT services company, subsidiary of Communication & Systèmes group, aims to put the most innovative technologies at the service of its customers in order to build high-performance overall solutions. Grid computing is one of the most promising technologies in the IT field, and CS SI was an early Grid adopter with its involvement since the beginning of the DataGrid project in 2001, then to EGEE and in the future in the proposed EGEE-II project.

This article summarises CS SI involvement as an industrial partner in EGEE and analyses how to turn this experience to business and make it a success story for EGEE-II and related projects.

CS SI ranks as one of the European leaders in its markets. CS SI is firmly positioned at the top of the IT industry, ranking first in France for industrial and critical applications and third in computing infrastructure services. CS SI's main customers belong to major economic sectors, such as aviation, space, defence, energy, and the automotive industry. With 3000 employees, CS SI assists its customers over the long term by providing IT solutions for business, technical and scientific information systems.

With its specific skills in large infrastructures operations, CS SI contributes to the operation and management of the GEANT pan-European Network. As specialist of integrated solutions, with a proven record in integrated security architecture,

CS SI will be active in the continuation of the work done on EGEE, carrying out the following activities in EGEE-II:

- Quality Assurance: leading the overall quality assurance activity
- Operations: as contributor to the operation of one Regional Operation Centre, under the lead of CNRS
- Applications: for verification and validation activities and to support the Fusion community

CS SI as an Industrial partner in EGEE

Working in such a consortium led by CERN is a fruitful experience in merging academic and industrial best practices. This is particularly the case for the Quality Assurance activity, which is led by CS SI. An industrial QA approach has been adopted by the project to ensure that its processes, services and deliverables are of high-quality. As outlined in the second EU review report, the software development, quality assurance and deployment process follow disciplined industrial guidelines. The quality of service has improved significantly, with clarified work procedures in deployment and day-to-day operations of both the production and pre-production services, as well as the introduction and use of various automated tools. For EGEE II, the adoption of SLAs (Service Level Agreements) for the Grid environment is planned, thereby paving the way for further increased levels of service and commercial exploitation.

It is also a great opportunity to contribute to the program of work with CNRS within applications and operations activities. The results of this collaboration are significant in terms of common projects for promoting EGEE toward industry:

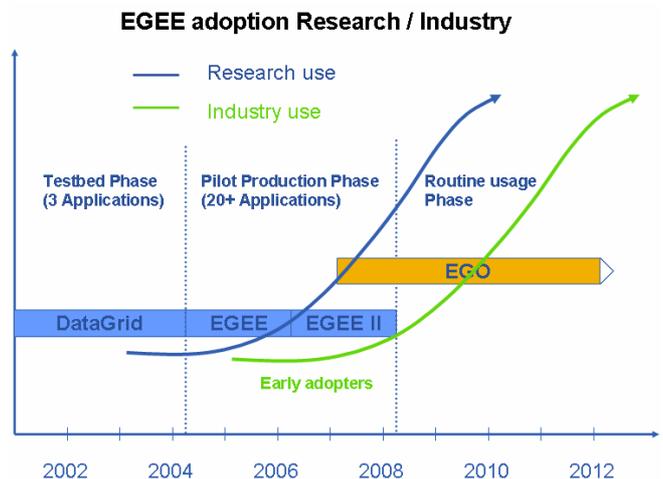
- **CNES** (the French Space Agency) wishes to use a Grid for the data processing of GAIA astronomy project and for collaborations with Mercator Ocean prevision project. After a survey of various technical solutions and Grid middleware solutions, carried out by CS SI since September 2004, an experiment will start in the next few weeks with a first deployment of gLite (the EGEE middleware) as a CNES intranet Grid. Detailed attention is paid to the criteria imposed by the CNES security policy and whether gLite matches these strict requirements.
- **SMEs**: Two projects, Rugby and OpenPlast, begun in 2003 and are dedicated to innovative SMEs involved in biotechnology and the plastic industry, will

arrive in production at the beginning of 2006. In order to make these regional Grids more attractive, an enrichment of the number of accessible applications is approaching completion: CFD – Fluent software, Mechanics – ASTER software.

- **Fusion**: Actions have been started by CS SI with the Tore Supra CEA team and contact with ITER project team, aimed at promoting the use of Grids by the fusion community. Experiments will be held within the framework of EGEE II. These experiments, carried out in collaboration with TORE SUPRA team in Cadarache, would concern simulation and data processing after the Tore Supra pulse.

Turning CS SI experience into Grid business

EGEE has already demonstrated its value to scientific research and it must now demonstrate its value to industry and business. As it is shown in the figure below, EGEE is at a phase in its transition from research and academic use to enterprise adoption and this will certainly be facilitated by the recent initiative taken by CERN with the EGO proposal for establishing a European Grid Organization as a long term, sustainable production quality Grid service to the scientific community and to industry.



As presented by the EGEE Project Director, several points should be closely considered in order to fulfil industry and business requirements:

- Security – ensure the middleware and infrastructure can handle sensitive data with sensitive applications
- Guaranteed QoS – establishing Service Level Agreements for Grid services

- Standards – to encourage long-term investment by enterprises
- Applications – need to support legacy applications so that ‘Gridifying’ them is not an expert task
- Portability – to a large number of platforms ensuring more wide-scale adoption
- Open source support – provide a robust reference Grid middleware implementation
- Software license management – demonstrate how Independent Software Vendors can generate revenue in a Grid context
- Accounting - tracking resource usage in multi-admin context
- Business models – determine what can be charged for as a service and provide clear plans to establish Return of Investments

However, early adopters (as presented above, CNES, Innovative SMEs, etc.) are willing to move to EGEE now for numerous reasons:

- Large companies (industry, banks and insurance groups) are willing to use EGEE first as an Intranet Grid in order to optimise their inter-site infrastructure and make more efficient use of their existing resources. Close attention is paid to the security aspects in this form of deployment. Depending on the results of such use as Intranet Grid and security policy, the Intranet Grid could be opened to external collaboration.
- SMEs are willing to share infrastructures, commercial software and collaborative distributed environment.

Specific actions are undertaken by CS SI for each one of these categories:

- Launching a CS SI internal program of Grid training for the sales staff
- Preliminary requirements analysis of Users/Applications/Security, architecture proposals and implementation of a pilot Grid infrastructure
- Support and training for the ‘Gridification’ of applications
- Realisation and experimentation of regional Grids for SMEs
- Launching a high performance simulation system for industry

EGEE is at a phase in its transition from research and academic use to a wide enterprise adoption. EGEE needs more

involvement from industry and needs business case requirements. CS SI will contribute here, helping to grow and to support the community of early adopters from industry, assisting them in becoming EGEE industry success stories and stimulating the long-term take-up of EGEE and future solutions by European business.

Gabriel Zaquine, CS SI
(gabriel.zaquine@cern.ch)

EGAAP recent news

EGAAP (EGEE Generic Applications Advisory Panel) is the scientific panel within EGEE charged with the election of the new applications wanting to be deployed on EGEE infrastructure. Every 6 months or so, it issues a call for new proposals, evaluates them and formulates recommendations. It also reviews formerly approved applications in a regular manner.

Benefits brought by the powerful EGEE infrastructure

During the 3th EGEE conference in Athens, EGAAP made an extensive review of the benefits brought to all these applications by the powerful EGEE infrastructure.

The first conclusion is that after an initial period of a few months, all applications were successfully deployed on the Grid and started meaningful scientific work. The initial start-up time depends on many applications-specific features, on the manpower available from EGEE and from the applications community, and on the Grid-awareness of the community. It has significantly shortened with time and an upper limit of three months can be estimated.

Also, each application was able to convince EGAAP of very valuable Grid-added value, that goes in most cases way beyond the opportunistic usage of “free” CPUs. In fact, many results or potential results were simply unobtainable without the Grid.

The key points are transparent access to millions of files across different administrative domains, the possibility to quickly mobilise very large numbers of CPUs on very prompt peak use basis, the possibility of producing and storing massive amounts of data with reduced manpower, and to be able to develop Distributed software with complex workflows.

All applications insisted very strongly on the benefits of the collaboration-building tool which the Grid represents. Thanks to the Grid, it is possible to reflect the distributed nature of a scientific collaboration into its computing and storage model.

Finally, one should not neglect the fact that minimising the cost of access to large CPU resources is also key for some applications where by definition, the corresponding appropriate funding will otherwise never materialise.

The satisfaction of these applications mean that the user support organization that has been put in place by EGEE generic applications and operation teams is now functioning in a satisfactory manner.

New applications approved

During the 4th EGEE Conference, EGAAP held its 4th meeting and approved the following applications :

- Nuclear Fusion simulation and data analysis

This new application domain proposed by Russia, Spain and France is of clear scientific interest, has very high international visibility, (especially in view of the recently approved ITER project) and a strong Grid added value: the Grid can be used to combine data and expertise from the existing network of fusion labs to plan next the experiments to be done a few hours later.

- Archeogrid

The proposal, aimed in particular at studying the complete environment of the ancient mediterranean cities, to include applications from human sciences in the applications EGEE portfolio is very attractive. The Archeogrid community should approach the DILIGENT collaboration since many questions raised in Archeogrid are common to the DILIGENT program of work. The Archeogrid community should deploy their paleoclimate application on GILDA.

- EELA , EUCHINA and EUMEDGRID

These three projects are funded by the EU and start on January 1, 2006. They all have foreseen two phases: import applications presently running on EGEE to the their local nodes (Latin America, China and North Africa) and export some new applications to EGEE. EGAAP recommends general approval of the collaboration between EGEE and these three projects. The first phase of these collaborations

will be to install in these three regions, applications presently running on EGEE. Once this is completed, new applications originating from these regions will be deployed on the whole infrastructure.

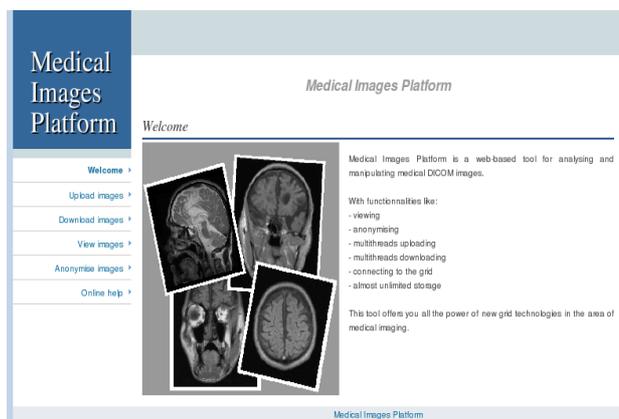
Guy Wormser, In2p3

First EGEE User Forum

The beginning of March saw the first EGEE User Forum at CERN, Switzerland. This event brought together some 250 delegates from the diverse user communities of the EGEE infrastructure to discuss their experiences, learn about new developments within the project and give feedback to the project staff. Spread over three days, the event featured a mix of plenary sessions as well as smaller more focussed discussions on a wide range of subjects.

The full programme and all presentations are available online, and videos of the session will be added shortly. See <http://indico.cern.ch/conferenceTimeTable.py?confId=286> for details. In addition, all 90 abstracts submitted to the event have been collated to provide a snapshot of the EGEE user community, and the resulting pdf is available at <http://indico.cern.ch/conferenceDisplay.py/abstractBook?confId=286>.

The Medical Images Platform



In September 2005, the Clermont-Ferrand Corpuscular Physics Laboratory team (France) has started to develop the Medical Images Platform (M.I.P.)

This Platform is a DICOM (Digital Imaging and Communications in Medicine) medical images sharing web-based tool – DICOM is the most established standard in medical imagery. The M.I.P. provides a Grid storage interface and images manipulation functionalities (i.e viewer, anonymiser, uploader etc.). It allows doctors to work together, sharing and querying images by using all the power of the Grid in a very secure way. This tool is designed to support concurrent users and it allows broader collaboration between doctors in order to share, compare, and improve diagnoses. It intends – among other things – to better serve the needs of rare diseases research.

The M.I.P. is developed with Java technology. It will interface with the Medical Data Management System, which is currently developed in EGEE, within the framework of a collaboration between the NA4 biomedical application sector, the Middleware Reengineering and Integration activity and the Security activity.

This tool is designed for doctors who have to work with medical images in DICOM format (IRM, NMR, etc.). A first version is already available and will be installed for a doctor working at the Clermont-Ferrand CHU (France). The M.I.P. development should last at least until September 2006.

For any questions please contact fessy@clermont.in2p3.fr

Arnaud Fessy, LCP Clermont-Ferrand

Synergies between EGEE and other Grid projects

In recent months, EGEE has been exchanging information with Grid- and other related EC-funded Research Infrastructure projects at a series of events designed to locate and exploit areas of common interests. The first of these meetings was held at the fourth EGEE project conference in Pisa, Italy at the end of October 2005. NA5, EGEE's 'Policy and International Co-operation' activity, organised a session on Grid-related projects where twelve related projects were present and described their relationship with all the other projects, including EGEE itself.

All projects present had signed Memoranda of Understanding with EGEE and included infrastructure-, applications- and support projects. The Infrastructure projects were SEE-GRID, BalticGrid, EELA, EUMEDGRID and EUChinaGRID, which plan to extend the EGEE infrastructure in South-Eastern Europe, the Baltic region, Latin America, the Mediterranean region and China respectively. Two applications projects were introduced: BIOINFOGRID, which will evaluate bioinformatics services for molecular biology, and DILIGENT, a digital library infrastructure using Grid enabled technology, and one of the first external users of gLite, the EGEE middleware.

There are also a number of support projects to contribute to Grid development, enhancing the impact and effectiveness of infrastructure and application projects. In Pisa, we heard from the e-IRGSP (e-Infrastructures Reflection Group Support Project); ISSeG, who will work in the area of site security for Grid computing; BELIEF, who will help European Grid projects to develop contacts worldwide and with industry; ICEAGE, which aims to advance Grid education; and ETICS, which will bring together facilities for software configuration, integration, testing and benchmarking to enable developers to ensure the quality and compatibility of their products.

The next chance for cross project collaboration was given in December in Bordeaux, at the e-Infrastructures concertation meeting organised by DANTE, the coordinator of the pan-European Research Network GÉANT. Topics under discussion included monitoring and performance enhancement, resource allocation and management, interoperability and interfacing, security and authentication and authorisation infrastructure. This time the projects present included BELIEF, DILIGENT, SEE-GRID, DANTE, HPC4U, LOBSTER, MUSE, BalticGrid, EUChinaGrid, EUMEDGRID, GÉANT2, ETICS and EXPReS. In the final session, rapporteurs for the various topics reflected back the results of the discussions, identifying the areas of highest priority and areas where it will be essential for projects to work together to define common standards and approaches.

At both meetings, suggestions were aired for working groups and other fora to address these issues collaboratively. As these crystallise,

EGEE and EGEE-II look forward to working alongside related projects in the coming months and years to solve some of the key challenges that have been identified, as well as strengthening such synergistic ways of working at events such as the EGEE User.

Fotis Karayannis, CERN
(Fotis.Karagiannis@cern.ch) and *Joanne Lawson, CERN* (Joanne.Lawson@cern.ch)

The Networked European Software & Services Initiative (NESSI)

NESSI and the infrastructure domain

Promoted by thirteen major European ICT corporations (Atos Origin, BT, Engineering Ingegneria Informatica S.p.A., IBM, HP, Nokia, Object Web, SAP, Siemens, Software AG, Telecom Italia, Telefonica, Thales) totalling almost a million employees and about 300 B€ revenues, the NESSI Technology Platform aims to provide a unified view for European research in Services Architectures and Software Infrastructures that will define technologies, strategies and deployment policies fostering new, open, industrial solutions and societal applications that enhance the safety, security and well-being of citizens.

Working towards achieving the initiative's objectives will be supported by an integrated roadmap of research and development in the technology domains of infrastructure (mainly software related, Grid services and similar), service integration and semantics. These domains are inter-related, and aim to create a holistic framework where high-level services contextualise flexible low-level infrastructures. Cross-domain aspects (quality and reliability, security and trust, interoperability, management services) will drive this holistic approach.

The infrastructure domain aims at the virtualisation of resources across servers, storage, distributed systems (including Grid) and the network. Infrastructures have to be architected and implemented to be robust, fault-tolerant and secure. From a users' perspective, infrastructures must be transparent (almost invisible) during the entire lifecycle – allowing a plug-and-play approach to infrastructure usage as well as to Grid provisioning and operation of services.

EGEE and NESSI

EGEE is currently working on possible collaboration with the NESSI initiative. In order to explore potential links with the NESSI programme and see how to expand on its industrial involvement, EGEE has already participated to a workshop organised by NESSI to discuss the Strategic Research Agenda Challenges paper in Brussels, and also participated the NESSI Forum Conference, January 26th.

For more information about NESSI, see <http://www.nessi-europe.com/index.htm>

From EGEE to EGEEII

EGEE second review

On the 6 and 7 December, EGEE underwent its second review. The reviewers, all experts in Grid technology with a variety of academic and industrial backgrounds, stated in their report that the overall performance of the project continues to be very good. They accepted all the deliverables and approved the plans for the remaining months of the project. The first phase of the project will indeed end on March 2006, while the second phase – EGEE-II – should start on 1 April 2006.

The reviewers pointed out the importance for such a project to be able to adapt quickly to changing requirements. They added that some of these requirements came from the new user communities that have become involved during the project ramp-up due to the extensive dissemination and training activities. To maintain the momentum, the reviewers made several recommendations about refining the process of passing application requirements into the gLite EGEE middleware development process.

Key numbers

The first phase of the EGEE project has now been running for 21 months, and the overall metrics shown bellow (see figure) demonstrate that in many aspects it is quite successful. The "target" values are the ones given in the Technical Annex of the project, and are the values expected at the end of the project. Also, the number of registered users for supported VOs may seem quite low, but some applications provide portals which actually use

Target	Current status	End Year 2 target values
Number of Users	~ 1200	≥ 3000
Number of sites	180	50
Number of CPU	~18000	9500 at month15
Number of Disciplines	7	≥ 5 disciplines
Multinational	38	≥ 15 countries

single certificates but which in turn are used by many users (e.g. GPS@ biomedical application). In the physics domain, the experiments nominate production managers who submit thousands of jobs from a single account (certificate), even though the collaboration includes many people. The dTeam VO is not included as it exists essentially for infrastructure testing purposes (this represents ~400 users). An attempt to evaluate scientists who benefit from results of EGEE infrastructure will be estimated from a user's survey.

The number of CPUs provided by EGEE partners includes around 1000 CPUs provided through non-EGEE sites in Taiwan, China, US, Japan, Canada, Pakistan, and India.

The science disciplines for which applications are running on the infrastructure (production and GILDA testbed) are Physics, BioMed, Chemistry, Astronomy, Earth Sciences, Geo-Physics, Finance (GILDA).

Multinational corresponds to the number of countries in which the Grid service infrastructure is provided.

For further information about these metrics, see <http://egee-jra2.web.cern.ch/EGEE-JRA2/QoS/Follow-up/Overall.htm>

News

News from the Industry Forum

Industry Forum meeting, Pisa

The major event for the Industry Forum during the last three months was the Industry Forum meeting, in Pisa, October 25th, the themes of which were Independent Software Vendors, and Finance.

The Industry Forum session was very interesting and dynamic, with lots of questions and discussions. Speakers (ORACLE, EDS,

SUN, DATAMAT, IBM, ATOS) presented real customer cases (finance and stock exchange applications, distributed crash tests), and also the results of the projects (optimisation of the computing capacities, minimisation of investments, time, and computing cost).

Participants also pointed out the difficulties they encounter when they want to convince their customers, especially at the CEO level, to adopt Grid technology. Topics like security, licensing, legacy, software maturity and reliability, algorithms and applications "Gridification" and standards were discussed. To be mentioned also, the fact that participants do not consider the Grid as a universal solution, but as complementary to other existing solutions.

For more information and to access the industrial presentations, see <http://public.eu-egee.org/industry/meetings.html>

Industry Plenary meeting in Pisa

The Industry Forum was associated to the Industry Plenary meeting in Pisa, October 25th, during which speakers (IBM, APC, SUN, NICE and Platform, DATAMAT) presented their view of the perspective of Grid in the Industry.

Next Industry Forum Meeting: dedicated to industrials

The Industry Day, a special event dedicated to Industry will take place in Paris on Thursday 27 April:

Details and registration:
<http://public.eu-egee.org/industry/>

A new Steering Committee member: ATOS ORIGIN

Last December, ATOS ORIGIN decided to join the Industry Forum Steering Committee.

News from members

The Grid for Alcatel: Significant Enabler of New Research in Telecommunications

In the context of rapidly growing mass broadband service, Alcatel Research & Innovation addresses a ubiquitous Grid Computing technology dedicated for Internet, the so-called invisible Grid, where an enhanced network infrastructure enables the interconnection and integration of an infinite

number of resource-end systems and end-users.

Invisible Grid refers to embracing various new technologies at networks resource, and applicative levels over the Internet in a seamless and transparent way for end-users. The technological integration implies that many different systems are combined into a virtual system by using collaborative tools and facilities.

Indeed, classical approaches to accommodate network resource provisioning requirements of applications using distributed resources, such as Grid applications, are difficult to apply in multi-domain, multilayer networks over the Internet. Data-oriented communication embodied in software-centric client infrastructures requires resource instantiating at execution time as well as accurate, automated network resource provisioning over volatile topologies in space and time. The research activity aims at enhancing the cooperation between distributed applications and the network to answer this requirement in an efficient and opened way.

Supportive of the invisible Grid, virtualisation aims at making resource-end systems both implementation transparent and locations transparent. It involves a resource location, discovery, and selection mechanism and requires taking into account the network's connectivity and capacity to interconnect resource-end systems with the support of the desired Quality of Service.

Beyond the current Enterprise and scientific Grid environments, Grid Computing technology over the Internet, as envisioned at Alcatel Research & Innovation, will likely form the foundation of the next challenges in Information Technology, providing the opportunity to democratize Grid Computing, with the main goal of preserving the increasing level of advanced infrastructure and service based competition for Operators and Service Providers.

With the above objectives, Alcatel participates in the Pôle de Compétitivité "Sytem@TIC Paris-Région".

Bela Berde, Ph.D., Alcatel Research & Innovation, (bela.berde@alcatel.fr)

Fujitsu and the Grid

During 2005 Fujitsu publicly entered the market for Grid infrastructures with the announcement of version 2 of SynfiniWay, its framework for service-oriented computing. Primary development of SynfiniWay is being done in France by Fujitsu Systems Europe, a strategic business unit of the Fujitsu global organisation.

SynfiniWay is founded on a service-oriented architecture programming model, and provides the global task management layer between the end-user and dispersed computing resources. SynfiniWay services virtualise a networked computing infrastructure allowing the tasks to execute anywhere, from desktops to remote servers, with the same robust end-user view. Services are then linked in workflows to encode and create innovative engineering business processes, including loop and branch conditions. An integral component of SynfiniWay is the automatic data movement between nodes of the workflow providing timely and transparent file exchange anywhere across the Grid infrastructure.

One business that can be implemented with SynfiniWay is the ASP (Application Service Provider) model, where compute resources are provided on a usage basis. These resources may be completely external to the organisation, or may comprise an intra-enterprise topology, or a seamless mix of both. SynfiniWay manages the scheduling of each service to the most appropriate system, and maintains an account and trace of all usage and file movement.

Present customers are implementing SynfiniWay frameworks for resource pooling across a physically dispersed organisation to increase aggregate utilisation, standardisation of the end-user interface for local heterogeneous systems, and meta-scheduling of workflows for optimised process turnaround. For 2006 Fujitsu expects to further expand SynfiniWay within the aerospace and automotive markets, and to increase the number of integrated industrial solutions with ISV partners.

Fujitsu has recently joined the Ter@tec Consortium, which today includes 26 partners. The goals of Ter@tec are to :

- facilitate the use of HPC for industrial companies, through collaborations and capacity sharing,

- develop academic research and collaborations especially in HPC technologies, algorithms, and simulation applications,
- interact with HPC vendors, both in specification and tuning of very high-performance HPC platforms.

Ter@tec is located in the HPC complex around CEA-DAM Ile de France. Furthermore, Tera@tec is a member of the Paris-Region System@tic competence cluster.

Ian GODFREY, Business Development, Fujitsu Systems Europe (ian.godfrey@fujitsu.fr)

Upcoming Grid events

Industry Day

Location: PARIS

Date: 27 Apr 2006

EGEE will host a special event for members of Industry on 27 April 2006 at LPNHE (Laboratoire de Physique Nucleaire et des Hautes Energies), located in the centre of Paris. The EGEE Industry Day will be a unique platform for Industry to interact directly with the EGEE project, the biggest Grid infrastructure in Europe, and will bring together decision makers, research heads, policy makers and CTOs to learn how industrial applications can be deployed on EGEE.

The event will highlight where Grid computing can create new industrial solutions and how organizations can benefit from sophisticated computing resources of the Grid, not available in traditional IT infrastructures. Interactive discussions will provide an opportunity to get an industry perspective and discover how to EGEE can work towards a commercial Grid. More information is available at <http://public.eu-egee.org/industry/industryday.html>.

International Parallel & Distributed Processing Symposium (IPDPS 2006)

Location: Rhodes Island, Greece

Date: 25-29 Apr 2006

The conference is presented by IEEE Computer Society Technical Committee on Parallel Processing in cooperation with ACM SIGARCH, IEEE Computer Society Technical Committee on Computer Architecture, and IEEE Computer Society Technical Committee on Distributed Processing. The conference will

be hosted by the Research Academic Computer Technology Institute (CTI), Greece.

For more information please visit:

<http://www.ipdps.org/>

The First International Conference on Grid and Pervasive Computing

Location: Tunghai University, Taichung, Taiwan

Date: 3-5 May 2006

The International Conference on Grid and Pervasive Computing (GPC) is an annual international conference on the emerging areas of merging Grid and pervasive computing, aimed at providing an exciting platform and paradigm for all the time, everywhere services. Grid and Pervasive Computing (GPC) is a forum for scientists, engineers and practitioners throughout the world to exchange ideas and research results related to the design, use, analysis and application in the field of Grid computing and pervasive computing.

For more information please visit:

<http://hpc.csie.thu.edu.tw/gpc2006>

8th International Conference on Enterprise Information Systems (ICEIS)

Location: Paphos, Cyprus

Date: 23-27, May 2006

The purpose of this conference is to bring together researchers, engineers and practitioners interested in the advances and business applications of information systems. Five simultaneous tracks will be held, covering different aspects of Enterprise Information Systems Applications, including Enterprise Database Technology, Systems Integration, Artificial Intelligence, Decision Support Systems, Information Systems Analysis and Specification, Internet Computing, Electronic Commerce and Human Factors.

For more information please visit:

<http://www.iceis.org/index.htm>

Grid Networks and Services (International Conference on Networking and Services)

Location: California, United States

Date: 16-18 Jul 2006

The conference will draw together researchers and developers from academia and industry to exchange ideas and experiences.

Topics of interest include, but are not limited to, the following: Grid theory, frameworks, methodologies, architecture, ontology Grid infrastructure and technologies, Grid

middleware, Grid protocols and networking, Grid computing, utility computing, autonomic computing and metacomputing Programmable Grid Data Grid.

For more information please visit:

<http://www.aria.org/conferences/ICNS06.html>

The 2006 IFIP International Conference on Embedded And Ubiquitous Computing (EUC2006)

Location: Seoul, Korea

Date: 1-4 Aug 2006

Embedded and Ubiquitous computing are emerging rapidly as exciting new paradigms and disciplines to provide computing and communication services all the time, everywhere. Its systems are now invading every aspect of life to the point that they are disappearing inside all sorts of appliances or can be worn unobtrusively as part of clothing and jewellery etc.

For more information please visit:

<http://euc06.euc-conference.org/>

Anyone interested in joining the EGEE Industry Forum should contact either Christian Saguez (christian.saguez@ecp.fr), or Guy Wormser (wormser@lal.in2p3.fr)

