EGEE

PROGRESS REPORT ON INTERNATIONAL COOPERATION ACTIVITIES AND EUROPEAN GRID PROJECT SYNERGY

IN COLLABORATION WITH DEISA, SEE-GRID AND OTHER RELEVANT INITIATIVES AND EU PROJECTS

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Abstract: The document outlines the status of EGEE-related international cooperation activities along with the foreseen plans for the rest of the project and proposes a roadmap for enhancing the current synergies in the coming years.

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CONTENT

1. INTRODUCTION

1.1. PURPOSE OF THE DOCUMENT

The main purposes of this document are to record the status of EGEE-related international cooperation activities along with the foreseen plans for the rest of the project and to propose a roadmap for enhancing the current synergies in the coming years.

This document deals with the two major collaboration efforts according to the NA5 activity plan for the second part of the project, i.e. *the policy related activities* and the other *international cooperation efforts*. It begins by describing both policy related activities and other activities which require international collaboration (such as standardisation efforts). Recent progress in both of these fields is then reported. This leads on to a discussion of future plans for collaborative activities, which are finally presented in the form of a roadmap and recommendations.

1.2. APPLICATION AREA

This document is intended to act as a support material for the broader concertation activities that the EU-funded research and e-Infrastructure projects are engaging. The goal is to report the current efforts and concentrate on a concrete proposal for the future.

In addition, the policy related efforts mostly related to the e-Infrastructures Reflection Group (eIRG) are reported along with the future plans in this area. Thus, this part serves as a vehicle of promoting policy-related initiatives around Europe and beyond, highlighting the different types of events and discussion topics.

1.3. REFERENCES

[R1] Dublin White Paper of the eIRG http://www.e-irg.org/whitepapers/

[R2] The Hague White Paper of the eIRG http://www.e-irg.org/whitepapers/

[R3] Luxembourg White Paper of the eIRG http://www.e-irg.org/whitepapers/

[R4] EGEE Q4 Quarterly Report

[R5] EGEE Q5 Quarterly Report

[R6] The Proceedings of the First Concertation Meeting on eInfrastructures https://edms.cern.ch/document/529479/2

[R7] European Grid Project Synergy Roadmap https://edms.cern.ch/document/533194/1

1.4. DOCUMENT AMENDMENT PROCEDURE

The document will be formally updated at the EGEE project month 24 as a formal EU deliverable (DNA5.5).

1.5. TERMINOLOGY

Definitions

Glossary

e-IRG	e-Infrastructure Reflection Group, www.e-irg.org
e-IRGSP	e-IRG Support Programme FP6 project
ENOC	EGEE NOC
GATE	Geant4 Application for Tomographic Emission
Glite	EGEE web-services based middleware
M/W	Middleware
NOC	Network Operations Centre
GOC	Grid Operations Centre
NREN	National Research and Education Network
TLNC	Technical Network Liaison Committee
MWSG	Middleware Security Group
JSPG	Joint Security Project Group
CERT	Computer Emergency Response Team
EUGridPMA	EU Grid Policy Management Authority
IGTF	International Grid Trust Federation
APGridPMA	Asia-Pacific Grid Policy Management Authority
TAGPMA	The Americas Grid Policy Management Authority
GGF	Global Grid Forum
TACAR	Terena Academic CA Repository
CA	Certificate Authority
PKI	Public Key Infrastructures
IETF	Internet Engineering Task Force
GGUS	Global Grid User Support

2. EXECUTIVE SUMMARY

The main purposes of this document are to record the status of EGEE-related international cooperation activities along with the foreseen plans for the rest of the project and to propose a roadmap for enhancing the current synergies in the coming years.

This document deals with the two major collaboration efforts according to the NA5 activity plan for the second part of the project, i.e. *the policy related activities* and the other *international cooperation efforts*. It begins by describing both policy related activities and other activities which require international collaboration (such as standardisation efforts). Recent progress in both of these fields is then reported. This leads on to a discussion of future plans for collaborative activities, which are finally presented in the form of a roadmap and recommendations.

This deliverable demonstrates that policy and international cooperation efforts have been brought one step further. Efforts have been reported in both the policy-related and (other) international cooperation efforts among projects, national and pan-European efforts, as well as among continents. Cooperation is beneficial for all stakeholders bringing common problems and issues in open discussion fora, where experiences and solutions are shared, leading to economies of scales and increased efficiency.

A roadmap and a list of recommendations proposing synergy areas and working groups have been proposed, so that cooperation is further exercised and adopted among different project and bodies. Concertation activities are usually complex, and time-consuming, so good planning is needed, without underestimating the difficulties. EGEE, given its prominent position in the Grid infrastructures arena, is expected to play an important role in the above efforts, leading major working groups and activities, as outlined in the document. Given the fact, that a series of EGEE-related projects, of relatively small size, were recently approved, as opposed to the few major ones being the case during the first EGEE year, it is expected that concertation efforts will be more fruitful in the remainder of the project, as well as in EGEE-phase II. A first step in this direction will be the related session in the 4th EGEE conference. In the future, it is expected that EGEE conferences will play a major enabling such efforts.

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3. TYPES OF COLLABORATION ACTIVITIES

According to the updated plan of the NA5 activity for the second period of the project, NA5 will focus on two main axes: the *policy-related activities* producing a series of white papers and roadmaps in the framework of the e-Infrastructure Reflection Group (e-IRG, www.e-irg.org) and the *international cooperation activities* dealing mainly with the cooperation with other projects (called "concertation" activities) and other geographical areas (e.g. the US, Asia-Pacific), and finally keeping track of standardisation activities. The above classification has been used in the second phase of the project in order to assist the activity work organisation and separation of tasks. In an effort to further elaborate the two main areas, we propose the following taxonomy:

1. Policy Related Activities
    a. Cooperation with and support to the eIRG

This area mainly deals with the support efforts to the eIRG (coordinating, editing and contributing to a series of white papers and technology-policy roadmaps) as well as participating in the related workshops that gather experts in the different subjects of the eIRG documents and operate as stimuli for ideas and participation.

2. International Cooperation Activities (besides policy activities)
    a. Cooperation with other EU projects and initiatives (bilateral or as part of concertation activities)

This area mainly concerns the cooperation with other EU projects and initiatives. The cooperation can be either bilateral or in the framework of the so-called "concertation" activities, i.e. an effort to synchronise related projects and exploit potential synergies. The projects can be further categorised as follows:

    i. Infrastructure projects covering other facilities such as networking - supercomputing e.g. GN2 and DEISA or geographical areas such as BalticGrid, EELA, EuChinaGrid, EumedGrid, SEEGRID etc.
    ii. Application-related projects such as BIOINFOGRID, DILIGENT (Digital Libraties), GRIDCC (Real time control and visualisation of instrumentation), Health-e-Child
    iii. Other support projects and initiatives (such as ETICS, ICEAGE, ISSeG, NextGrid)

    b. Cooperation with other geographical areas such as US, AsiaPacific, etc.

This area concentrates on cooperation with other areas such as US, Canada, Korea, Taiwan, and their corresponding eInfrastructure projects.

    c. Participation in major international conferences and workshops

This area can be considered as indirect collaboration; workshops and conferences are another means of exchanging ideas, views and initiating collaborations.

    d. Participation in major standardisation efforts

The above argument (indirect collaboration) is also valid for the area of standardisation activities, but this has been intentionally documented in this deliverable, in order to highlight EGEE related plans.

The above taxonomy can be visualised in figure 3.1 below.

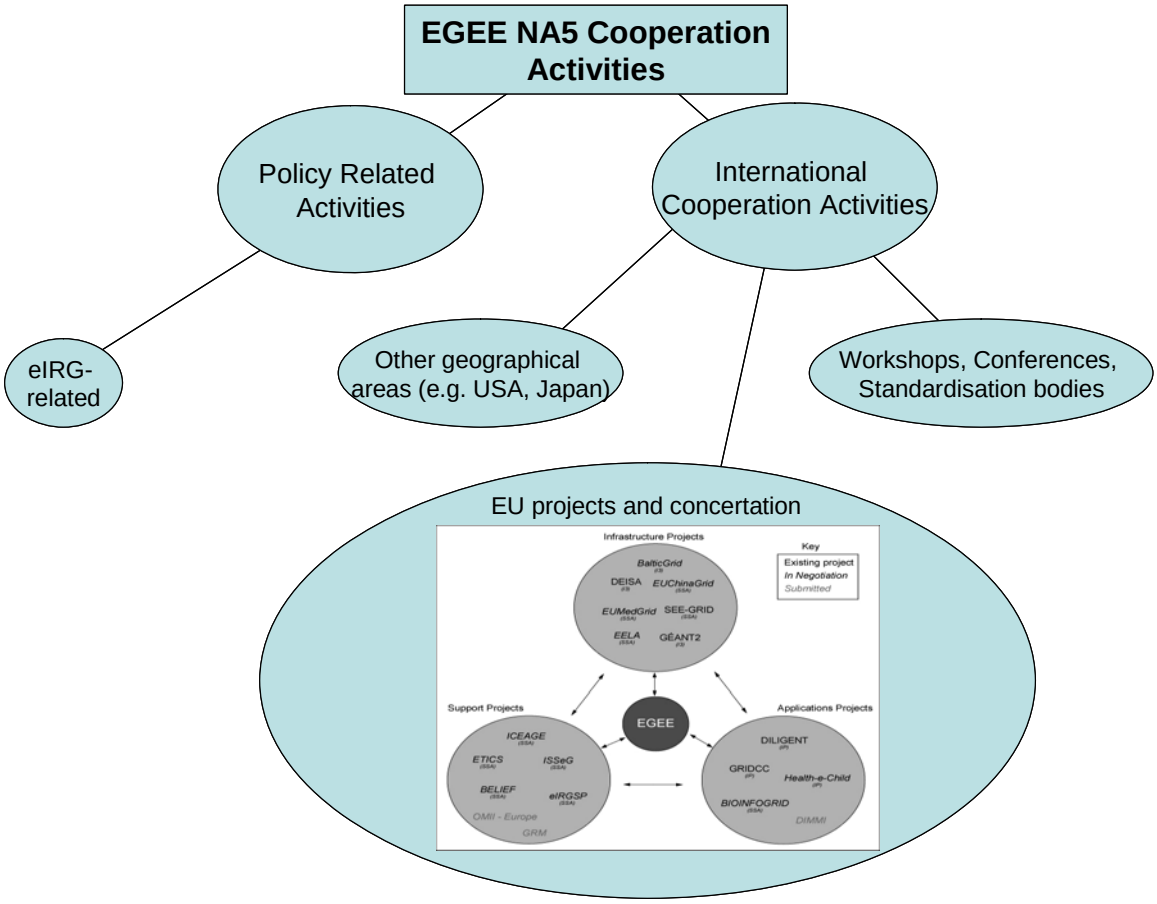

Figure 3.1: A taxonomy of EGEE's collaboration activities

4. POLICY RELATED ACTIVITIES SUMMARY REPORT AND PLANS

4.1. REPORT OF EIRG SUPPORT (WORKSHOPS, WHITE PAPERS AND ROADMAPS)

The goal of the e-IRG (http://www.e-irg.org/about/) is to support the creation of a policy framework for the easy and cost-effective shared use of electronic resources in Europe and beyond. This will be achieved mainly through a series of policy-related White Papers and Roadmap documents.

The eIRG consists of official delegations appointed by the related ministry (e.g. Education, Research, Development, Industry, etc.) in each country of the various European countries, as well as EC officials. eIRG also coordinates these activities with international initiatives outside of Europe. It is co-ordinated by rotating EU Presidencies within a 'troika' schema made up of the past, current and future presidencies, while it is supported by a Technical Support Group, via resources from EU flagship projects (EGEE, DEISA, GN2) and potentially other initiatives.

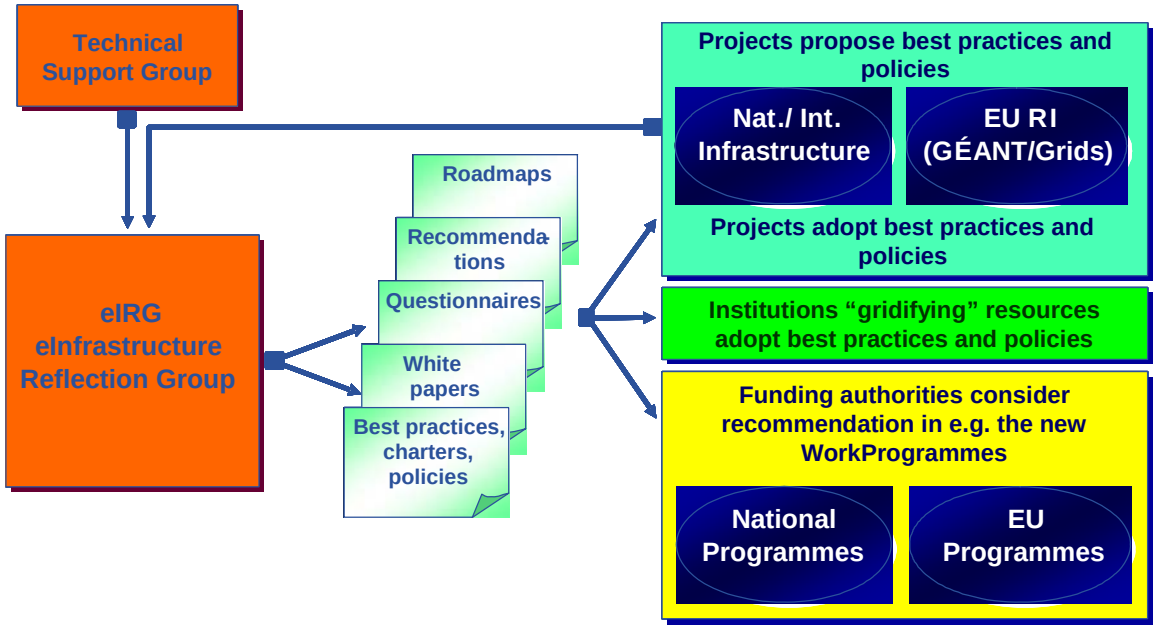

Figure 4.1 – e-IRG framework

EGEE members, both funded as part of NA5, but also unfunded from other EGEE activities, have played a significant role for the development of the above support structure. In short:

a. EGEE coordinated the Technical Support Group which became the so-called e-IRG "virtual office", leading the publication of the white papers and roadmaps, participating in the "executive committees" to define the programmes for the workshop meetings, keeping notes and minutes for the different meetings and events, and co-organising the different events. The virtual office corresponded to at least 3 half time persons including the NA5 activity leader.
b. Policy and technology experts from different EGEE activities contributed to the sections of the e-IRG documents, in many cases acting as sub-editors.
c. EGEE experts participated to the (more open) e-IRG workshops and acted in many cases as rapporteurs or area leaders.
d. The EGEE project director participated in the eIRG meetings as an observer, presenting the project's experiences and views to the e-IRG community.

Note that the *White Papers* are policy-oriented with a short term vision of up to 3-5 years, while the *Roadmap* documents are planning for more than five years ahead with a wider scope, i.e. not only policy-oriented, but also covering general e-Infrastructure issues. Representative subjects for the White Papers are "Generic versus disciplinary grids", "Authentication, Authorization, Accounting policies", "International connectivity policies", "Network developments & grid requirements", "Acceptable usage policies", "User support policies", "Legal issues in e-infrastructures". The expected outcome of the white paper is a list of policy-related *recommendations, best practices, policies etc.* to enable sharing of resources. For the roadmap, the focus is more on basic directives for research eInfrastructures, looking towards FP7 and beyond. Note that e-IRG white papers deal with the policy aspects of both infrastructure layers (network and grid middleware), thus not only with Grid-related policy. Finally, the workshops bring together policy and technology experts in the different subjects of the eIRG documents and operate as stimuli for ideas and a source of inputs for the documents.

In order for the reader to get a clearer picture for the actual content of the eIRG documents such as the White Papers, we attach as Annex 8.1 the list of recommendations from all the previous eIRG meetings. The complete White papers [R1][R2][R3] and other documents can be found in the e-IRG web site under the publications section.

4.1.1. List of e-IRG events with EGEE support

All e-IRG events are listed under http://www.e-irg.org/meetings/ and had EGEE support even before the official start of the project (in the latter case obviously unfunded). Note that because of the coordinating role of EGEE, the e-IRG white papers have been incorporated in the EGEE NA5 plan. The e-IRG white papers of Dublin, the Hague and Luxembourg have been delivered as deliverables DNA5.1-3. Note that initially the e-IRG meetings were also combined with the EGEE project conferences (Dublin and the Hague) but for practical reasons (the two events together extending across two different weeks), this idea had to be abandoned.

Presidency	Date	Location	Type of event
Luxembourg	13-14 June 2005	Mondorf, Luxembourg	e-IRG delegates meeting
Luxembourg	13 May 2005	Amsterdam, Netherlands	e-IRG workshop
Luxembourg	18 March 2005	Amsterdam, Netherlands	Roadmap event
The Netherlands	19 November 2004	The Hague, Netherlands	e-IRG delegates meeting
The Netherlands	18 November 2004	The Hague, Netherlands	e-IRG workshop
Ireland	16 April 2004	Dublin, Ireland	e-IRG delegates meeting
Ireland	15 April 2004	Dublin, Ireland	e-IRG workshop
Italy	10 December 2003	Rome, Italy	e-IRG delegates meeting
Italy	9 December 2003	Rome, Italy	e-IRG workshop
Greece	12 June 2003	Athens, Greece	e-IRG workshop

Table 4.1 – List of e-IRG events

From the above events, emphasis will be given to the latest ones, where more concrete results have been achieved. In Athens, where the first workshop took place, the creation of the e-IRG was decided. During the Italian presidency the first e-IRG delegates meeting took place, where the first white paper was presented. The second white paper was presented in Dublin, just after the start of EGEE (mainly

with EGEE unfunded effort). The third white paper was the one of the Hague, while after that, the e-IRG started to work on the long-term roadmap documents.

Note that for the eIRG meeting of the 18th of March, the so-called "opportunities list" summary document was created, acting as a short *roadmap* document on research eInfrastructure areas (networking, grids and supercomputing). Under the supervision of the eIRG chair staff, the EGEE NA5 team collected all national contributions (produced by the eIRG national delegates based on given *questionnaires*) and formed a coherent document that was presented to the eIRG for comments. After the meeting, under the coordination of the e-IRG chair, the same team gathered the eIRG delegates' comments and produced the final document which was sent to the two related commissioners: Janez Potocnik, Science and Research, and Viviane Reding, Information Society and Media. The final list of the eIRG FP7 opportunities list can be found under http://www.e-irg.org/meetings/2005-roadmap/OpportunitiesList.pdf

The work of the NA5 team focused then on the next eIRG workshop that took place on 13 May in Amsterdam (http://www.e-irg.org/meetings/2005-NL/). The main purpose of the workshop being held separately from the meeting was to gather further input and ideas for the next White Paper due at the end of the June. The NA5 support team contributed initially to the organisation of the event, and a series of conference calls took place starting after the third EGEE conference in Athens. Various EGEE members were also invited to chair corresponding parallel sessions or express their views.

After the workshop all efforts were centred on the next version of the White Paper. The White Paper not only extended the previous version's topics (AAA, User Support, Networking Developments and Grid requirements, etc.), but also covered new areas such as the idea of introducing a European Grid Organisation (EGO) to coordinate the Pan-European Grid and a complementary Federated Middleware Institute, legal issues in electronic infrastructures, supercomputing and storage themes, as well the role of industry in the e-Infrastructures. The White Paper was presented in the eIRG meeting that took place in Mondorf, Luxemburg on 13-14 June. (http://www.e-irg.org/meetings/2005-LU/e-IRG-meeting.html)

The June eIRG meeting also dealt with the corresponding roadmap for the next 10 years and beyond (i.e. FP7 vision and beyond). The roadmap was based on the Opportunities list, and was essentially an updated version with more material and details. The EGEE NA5 team under the supervision of the eIRG chair staff also contributed to this task. The final Luxembourg versions of the White paper and Roadmap documents were delivered in August to the e-IRG members. More details can be found in the EGEE Q4 and Q5 Quarterly Reports [R4] [R5].

4.2. EIRG SUPPORT FUTURE PLANS

One more version of the "White Paper" is planned for the remainder of the project. The next version will be presented at the next e-IRG meeting which will be held in the United Kingdom in December 2005 under the corresponding EU presidency.

A specific project aimed at supporting the work of the e-IRG (called e-IRG Support Programme or e-IRGSP for short) has been accepted by the EC and began on October the 1st. The EGEE Virtual Office will therefore be moved to this new project, leaving EGEE with its big pool experts in a consulting / contributory role. It is yet to be clarified whether the last White Paper deliverable will be coordinated by e-IRGSP.

It is also expected that after the UK presidency, the Austrian presidency will host a first workshop probably in the lifetime of EGEE phase I. In addition, a proposal entitled EGEE-II, acting as the second phase of EGEE (as was initially envisaged) has been submitted to the European Commission. In the case of a positive evaluation and acceptance of the proposed programme of work, the EGEE-II NA5 activity is planned to continue the above contributory work in cooperation with the e-IRGSP project, which will have the main support role for e-IRG.

5. INTERNATIONAL COOPERATION SUMMARY REPORT AND FUTURE PLANS

5.1. COOPERATION WITH OTHER EU PROJECTS

EGEE, as the leading Grid infrastructure project in Europe, has established close links with a series of other projects, either on a bilateral basis or in the framework of the so-called "concertation" activities, where all related projects meet together in an effort to synchronise their related activities and exploit possible synergies. A series of projects (or proposals) have requested an official letter of support from EGEE, so that they establish links and align their efforts with EGEE. The Project Office in cooperation with NA5 has kept a record of all the projects for which the Project Management Board has agreed to sign a letter of support and a table will be presented in this section. In order to better organise the work, we have tried to organise the projects according to the following classification:

i. Infrastructure projects covering other facilities (such as networking, supercomputing, e.g. GN2 and DEISA) or geographical areas (such as BalticGrid, EELA, EuChinaGrid, EumedGrid, SEEGRID etc.)
ii. Application-related projects such as BIOINFOGRID, DILIGENT (Digital Libraties), GRIDCC (Real time control and visualisation of instrumentation), Health-e-Child
iii. Other support projects and initiatives dealing with different subjects such as middleware, training, security, next generation grids etc. such as ETICS, ICEAGE, ISSeG, NextGrid.

The above projects are summarized in the following table and more detailed information can be found in Annex 8.2:

Project name/Category	**Relation/Status**	**Comments**
Infrastructure projects		
GN2 (GEANT2)	MoU / On-going	Pan-European Research Network linking all NRENs. Cooperation on the networking, operational, and policy aspects (EGEE SA2-JRA4, SA1, NA5 activities), close links through the TNLC (Technical Network Liaison Committee) and the many common partners (NRENs).
DEISA	Letter of Support and Joint Deliverables / On-going	Complementary project, covering the supercomputing arena. Collaboration and testing interoperability in the application area (GATE) and future collaboration in the middleware interoperation.
SEE-GRID	MoU / On-going (to be continued between EGEE-II and SEE-GRID II if evaluation is positive)	Sister project, extending the EGEE infrastructure in South East Europe areas not part of EGEE (e.g. Western Balkans). First successful example of regional Grid infrastructure project, which was followed by many other areas in next calls. Cooperation in multiple activities, using EGEE m/w (LCG2), operations, cooperation in dissemination, training, security, policies, etc.

BalticGrid	Letter of Support / Project start: 1-11-2005	Extension to the Baltic area, similar to the SEEGRID one. Planned cooperation in many activities such as operations, applications, m/w, security, training, etc.
EELA	Letter of Support / Project start: 1-1-2006	Extension to China area. Planned cooperation in many activities such as operations, applications, m/w, training, dissemination, etc.
EuChinaGrid	Letter of Support / Project start: 1-1-2006	Extension to China area. Planned cooperation in many activities such as operations, applications, m/w, training, dissemination, etc.
EUMEDGRID	Letter of Support / Project start: 1-1-2006	Extension to the Mediterranean region (Africa and Middle-East). Planned cooperation in many activities such as operations, applications, m/w, training, dissemination, etc.
Application related projects		
DILIGENT	Letter of Support / On-going	Adapting Digital Libraries to the Grid environment. Close cooperation adopting the Glite middleware. Further collaboration in dissemination, training, etc.
GRIDCC	Letter of Support / On-going	Handling of real-time constraints and interactive response into the existing Grid middleware. GRIDCC will benefit of the EGEE infrastructure (computing and storage), as well as the EGEE M/W components, mainly during its implementation and demonstration phase.
BIOINFOGRID	Letter of Support / Project start: 1-1-2006	Establishing a Bioinformatics Grid. Bioinfogrid will use the EGEE infrastructure (and possibly extend it with extra resources) as well as establish a related VO in cooperation with EGEE. Further cooperation in dissemination and training.
Health-e-Child	Letter of Support / Project start: 1-1-2006	Establishing an integrated healthcare platform for European paediatrics. Close collaboration with NA4 activity is planned on application requirements, security, EGEE infrastructure usage.
Other support projects		
ETICS	Letter of Support / Project start: 1-1-2006	Framework for software configuration, integration, testing and benchmarking for the scientific community. Planned cooperation mainly in the middleware and security areas.
ICEAGE	Letter of Support / Project start: 1-3-	Establish a world-wide initiative to inspire innovative and effective Grid education.

	2006	Planned cooperation in the training area.
ISSeG	Letter of Support / Project start: 1-1-2006	Focuses on inter-site security, middleware, and authentication for Grids, establishing an Integrated Site Security (ISS) strategy.
BELIEF	Letter of Support / Project start: 1-11-2006	BELIEF plans to build a Digital Library and a supporting outreach framework for e-Infrastructures. Cooperation planned mainly in dissemination, training and policy areas.
eIRGSP	Letter of Support / Project start: 1-10-2006	Supporting the e-IRG body providing secretarial, editorial, and dissemination backing. Close cooperation with the EGEE NA5 activity.

Special emphasis is given below to the first Research e-Infrastructure projects with which EGEE has already established synergies, such as GN2, DEISA and SEEGRID, as well with IST Research Networking test-bed projects such as DILIGENT and GRIDCC. A short report and future plans are given in the text below:

GN2 (Project reference: 511082)

GN2 is the project providing the GÉANT2 network, a high-performance, state-of-the-art research network infrastructure that is fundamental to the European Union's vision of a European Research Area (ERA). The network is the core activity of a coherent set of initiatives that seek to develop all aspects of European research and education networking. The project also includes an integrated research programme, the development of support services for network users, initiatives to monitor and address disparities in the level of development of research and education networking around Europe, and a comprehensive study into the future of European research and education networking.

GÉANT2 builds and operates the multi-gigabit pan-European backbone research network interconnecting Europe's national research and education networks (NRENs), over which a suite of advanced services will be offered to meet the increasingly demanding requirements of Europe's research and education community. EGEE can be considered as a user of this network, which is used to connect together the sites of the e-Infrastructure. Strong links have been established between the two projects, as foreseen by the corresponding Memorandum of Understanding identifying the areas of collaboration. The areas of collaboration are mainly the network-related activities (SA2, JRA4), the operation activities (SA1), and the dissemination and collaboration activities (NA2, NA5) activities. In the network related ones, there is direct interaction with the GN2 activities providing Differentiated Services and QoS, Bandwidth on Demand, etc. EGEE provides requirements from the Grid community to GN2 and assists in the usage and deployment of advanced networking facilities. Furthermore the idea of EGEE NOC acting in cooperation with the user support framework of SA1 and the operational structures of GN2 has been studied. The Technical Networking Liaison Committee (TNLC) operated as a bonding mechanism between the two projects for the above issues, bringing mutual expertise and solutions to the identified problems. Cooperation has been established in the dissemination and international cooperation aspects, as part of the EGEE conferences and the concertation activities that will be analysed in the next section. EGEE also participated in the major GN1 and GN2 events (as in the GN2 launch even in Luxembourg) and both projects cooperated in the development of the e-IRG related documents. Obviously the common partners such as DANTE and TERENA, along with multiple NRENs, catalysed such cooperation. The networking partners are also represented with a seat in the EGEE Project Management Board (one of the few non-geographic "federations" in the PMB along with CERN and the LCG project), which shows the importance of the collaboration with the networking community. The collaboration will be continued in the future, provided that EGEE phase II is successfully evaluated.

DEISA

DEISA is a consortium of leading national supercomputing centres that deploys and operates a persistent, production quality, distributed supercomputing environment with continental scope. The purpose of this FP6 funded research infrastructure is to enable scientific discovery across a broad spectrum of science and technology, by enhancing and reinforcing European capabilities in the area of high performance computing. This becomes possible through a deep integration of existing national high-end platforms, tightly coupled by a dedicated network and supported by innovative system and Grid software (UNICORE).

While EGEE attracts resources that are typically clusters of commodity PCs, there are a number of user communities and application domains that can make use of super-computer facilities as coordinated by the DEISA project. EGEE and DEISA are thus complementary and provide the foundations of the European e-Infrastructure benefiting European science and technology.

The GATE (Geant4 Application for Tomographic Emission) Monte-Carlo simulation platform was selected as a pilot application to understand the inter-operability issues between EGEE and DEISA. GATE and the underlying GEANT4 package has now been ported to supercomputer installations at several DEISA sites and comparative performance tests have been performed. Work has started to allow simple job submission from EGEE user interface machines to DEISA sites.

SEE-GRID (Project reference: FP6-RI-002356)

The aim of SEE-GRID is to provide specific support actions to assist the participation of South Eastern European states to the pan-European Grid initiatives. SEE-GRID focuses on the countries which are not part of EGEE such as the Western Balkan countries and Turkey (called beneficiary countries), aiming to eliminate the digital divide and bringing these countries on-board.

EGEE and SEE-GRID have signed a Memorandum of Understanding detailing the collaboration per EGEE activity and SEE-GRID Work Package. Leveraging EGEE middleware has allowed SEE-GRID to rapidly plan and deploy a pilot regional Grid infrastructure. As SEE-GRID sites matured in stability, several sites joined the EGEE production infrastructure while still maintaining membership in SEE-GRID. In particular, with SEE-GRID funding, the neighbouring countries' partners such as Greece and Hungary, along with CERN, have assisted the integration of sites from Croatia, FYROM, Serbia, and Turkey into the EGEE production infrastructure. This is part of the SEE-GRID strategy, which foresees, besides CERN and GRNET, the direct involvement of a subset of EGEE partners in SEE-GRID, who act as a conduit for technology transfer from EGEE to SEE-GRID. Further collaboration has been achieved in dissemination, training, and policy areas (NA2, NA3, NA5), either as part of the EGEE conferences, the e-IRG and the concertation efforts, or through direct cooperation between the two (e.g. EGEE-SEE-GRID training in Istanbul).

The successful collaboration was also due the close links between the two project coordinators, CERN and GRNET, which helped the implementation of the MoU.

Further collaboration will be feasible in the future, provided that EGEE-II and SEE-GRID-II are successfully evaluated.

DILIGENT (Project reference: 4260)

The DILGENT project aims to integrate Grid and Digital Library technologies to create an advanced test bed to allow secure and coordinated sharing of knowledge. DILIGENT is now preparing its first year review in November. DILIGENT and EGEE have continued their collaboration through coordination meetings, training and dissemination events, EGEE conferences, technical discussions and mailing lists. In addition, DILIGENT has provided feedback to EGEE on DILIGENT status, requirements, progress and on gLite. A first gLite infrastructure was deployed last month. This

infrastructure is up and running most gLite services and a second infrastructure is now under deployment.

Several initial gLite testing activities were conducted this summer. At the moment, a more intense set of tests is being carried out, trying to stress the DILIGENT infrastructure and understand how DILIGENT services can interact better and exploit gLite. DILIGENT was granted access to the EGEE Pre-Production testbed; a DILIGENT VO has now been created and experiments have started.

CoreGRID (Project Reference: 4265)

The CoreGRID Network of Excellence (NoE) aims at strengthening and advancing scientific and technological excellence in the area of Grid and Peer-to-Peer technologies. To achieve this objective, the Network brings together a critical mass of well-established researchers from forty-two institutions who have constructed an ambitious joint programme of activities. CoreGRID organized a summer school in Lausanne in September 2005, attended by representatives of many EU funded Grid projects including EGEE. EGEE representatives gave a talk on 'The EGEE project – Building a global production Grid'. A second presentation or tutorial gave a practical introduction to working on EGEE and how to use the gLite interface.

GRIDCC (Project reference: 511382)

The GRIDCC project extends the state-of-the-art of computing Grid technologies, by introducing the handling of real-time constraints and interactive responses into the existing Grid middleware. The goal is to build a widely distributed system that is able to remotely control and monitor complex instrumentation that ranges from a set of sensors used by geophysical stations monitoring the state of the earth to a network of small power generators supplying the European power Grid. These new applications introduce requirements for real-time and highly interactive operation of GRID resources. One of the main objectives of the project is to verify the feasibility of a Grid-based remote control of systems requiring real-time response with real applications running on existing Grid test beds over both national and international network infrastructures (e.g. GÉANT). GRIDCC integrates a "Grid of instrumentation" into existing Grid infrastructures that provide the computational power and storage needed for the applications.

The architecture combines existing Grid resources with new services, such as virtual control rooms, diagnostic and problem-solving services, data-mining services and tele-presence. The integration of all these services gives added value to developing Grid infrastructures such as EGEE. This will open new fields of application, integrating data acquisition from sophisticated or rare/expensive instrumentation with immediate worldwide data storage, data modelling, and intense computation using the processing power available worldwide.

GRIDCC will deploy and extend the EGEE middleware for use in real-time applications. GRIDCC has also been granted access to the EGEE Industry Forum to establish contact with industrialist and commercial enterprises.

CROSSGRID (Project reference: IST-2001-32243)

The CrossGrid project was an FP5 project extending the Datagrid EC project infrastructure in areas which have not been covered by Datagrid. Besides the actual infrastructure, CrossGrid delivered a series of gridified applications, (e.g. floods and meteo) along with corresponding services and toolkits that facilitate the development and tuning of parallel distributed, interactive applications on the Grid. EGEE had many common partners with CrossGrid (mainly in the Central and Eastern federations) and this was a first step of exchanging information. The majority of CrossGrid sites was gradually integrated to the EGEE computing and storage infrastructure. The EU CrossGrid project then approached EGEE in order to set up a clear relation between the projects and use synergies for the sustainable uptake of CrossGrid technology and the CrossGrid testbed. At the third EGEE conference,

colleagues from CrossGrid received the prize for the best demo, based on the selection of the EAC. Following this, EGEE has invited respective CrossGrid partners to cooperate on a series of exemplary components: flooding crisis application, GridBench performance benchmark, and the glogin tool.

A plan for porting the flooding crisis application from CrossGrid to gLite has been set up. The implementation is currently ongoing and is expected to conclude within the next few months. Similarly, EGEE and CrossGrid have studied possibilities to port the CrossGrid benchmarking tool GridBench to gLite. In this case, a detailed work plan is currently being established, which will be carried out in the remainder of EGEE and EGEE-II.

The glogin tool, enables tunnelling of interactive communication between nodes on the Grid and the user's desktop has been ported to gLite. More detailed investigations about its utilization for applications (e.g. gPMT3D) as well as a tool for grid site administration are ongoing.

Other Projects

EGEE, as summarised in the table above, will also collaborate with a number of related projects to achieve geographical expansion of the e-Infrastructure and its use by an even broader range of applications.

5.1.1. Related EU Projects Concertation Efforts

As explained above, “concertation” activity refers to the efforts made by all related projects to synchronise their related activities and exploit possible synergies. In other words concertation efforts focus on leveraging and harmonizing the activities of the projects in a more focused manner in order to support the European e-science (which is seen as an early adapter for the broad adaptation of the e-Infrastructure services in the society). The concertation efforts are aimed at facilitating contacts between projects and offer a forum where they can share their experiences with other practitioners, and find ways to collaborate more efficiently. On the other hand, the e-Infrastructures Reflection Group (eIRG) meetings and workshops are, a forum where the practitioners and policymakers can discuss policy-level actions that could help the broader adoption of the e-Infrastructures as a common service platform.

The concertation efforts can be categorised as follows:

- “Concertation” events, such as the ones in the Hague (eInfrastructures Unit) and the two events in Brussels (Grid Technologies Unit)
- Cross project working groups, such as the Security Groups

Concertation events

❖ First Concertation Meeting on eInfrastrutures, The Hague

EGEE, belonging to the Research Infrastructures Unit of the DG INFSOM, in cooperation with the other major infrastructure projects and the European Commission, has organised a “concertation” event during the second EGEE conference in the Hague, November 2004. The meeting was called “First Concertation Meeting on eInfrastrutures” (http://public.eu-egee.org/concertation/), and, as said, was coordinated by EGEE and co-organised by DEISA, SEEGRID, DILIGENT and GN2. 12 projects besides EGEE were present including DEISA, SEEGRID, DILIGENT, GN2, COREGRID, GRIDLAB, SIMDAT, GRIDCC, LOBSTER, GRIDSTART, NEXTGRID and AKOGRIMO. Each project did a presentation, while there were two panels for discussion. The focus of the discussions was to identify potential areas of collaboration and synergies. The main points that have been raised in the meeting were related to security, grid middleware-, application- and network services interfaces, as well as other topics including user support, training, software quality, sustainability of the projects’ infrastructures beyond their ends and retention of information. Related working groups have been

proposed, some of which have already been established, as will be outlined in the corresponding section below. The follow-up of this event will take place this December (see future events below).
Details can be found in the Proceedings of the First Concertation Meeting on eInfrastructures [R6]

❖ *Grid Technologies Days 2004, Brussels*

The Grid Technologies Unit of DG INFSOM projects in cooperation with the European Commission have also made corresponding efforts in this direction, focusing more on Grid Research and Business topics. The first event took place in September 2004 in Brussels, where a series of project was also present, including EGEE, giving a related presentation. Related thematic areas discussions also took place, forming corresponding working groups. (http://www.cordis.lu/ist/grids/agenda_15_09_04.htm for details)

The second event took place at the end of May and beginning of June in Brussels. http://www.cordis.lu/ist/grids/egtd_2005.htm. A focused concertation meeting took place during this event co-organised by the SIMDAT project and the European Commission. During this event parallel working group meetings took place http://www.scai.fraunhofer.de/1451.0.html and EGEE did contribute to several of those. EGEE provided contributions in the areas of Monitoring and Fabric Management, Data Management and Business Models. In addition a series of other EGEE high-level persons participated to the events. It is felt that the eInfrastructure related efforts are complementary to the Grid research efforts.

❖ *EGEE 3rd Conference, Athens*

Given the fact the EGEE conferences provide the framework for bringing together the major Grid and Infrastructure stakeholders, the 3rd EGEE conference also served this purpose. The conference took place in Athens, April 2005 and related projects such as DILIGENT, SEEGRID and NEXTGRID were present. A specific training session was organised on Saturday before the conference between EGEE and DILIGENT, which was really successful and more than 30 participants attended. There was also another gLite training on the Sunday before the conference start, which also had similar attendants. Space in the plenary was given to the above projects giving a detailed presentation, while other ad-hoc meetings took place during the conference. One of them was related to Compute Resource Management, where representatives from EGEE, Condor, Globus and Unicore came together to discuss a common definition for the Job Description Language and Compute Element interface. The meeting reviewed the status of the document that was prepared in previous meeting held in Rome.

Another important aspect of the EGEE conferences is the fact that demonstrations are hosted, both from within the project, but also from external projects. Demonstrations are scheduled in the programme and can be seen, during specific slots or in the different breaks. A competition for the best demo took place during the Athens conference, being judged by the External Advisory Committee of the project, and the award was given to the CrossGrid project http://www.crossgrid.org/. This shows that EGEE is open for all other projects for cooperation and synergies. For more details please visit http://indico.cern.ch/sessionDisplay.py?sessionId=93&slotId=0&confId=0513#2005-04-20

❖ *TERENA NREN-GRID workshops, Amsterdam*

TERENA (Trans European Research and Education Networking Association) has also made liaison efforts between the GRID and the NREN community. EGEE has also contributed in the above workshops through corresponding presentations. The first workshop took place in Asmterdam in May 2005. The aim of the workshop was to reach common understandings and agreements on how the NREN and Grid communities can best work together at the technical, organisational and political levels. Reaching common understandings about the likely impact of Grids on NRENs & future requirements and investigation of organisational and political issues were two of the main objectives of the session. The first meeting focused more on networking issues and EGEE network-related

activities (SA2/JRA4) gave a corresponding presentation. User support, Service Level Agreement between the two communities along with potential charging of networking services and Authentication-Authorisation aspects were the main subjects. For more details and a report, see *http://www.terena.nl/tech/grid/workshop-01/nren-workshop.html*. Note that the second such workshop is planned for October 17th (*http://www.terena.nl/tech/grid/workshop-02/nren-workshop.html)*

Future events:

EGEE 4th Conference – Session on Related Project

The goal of the session is to bring together the major Research Infrastructure projects and provide a framework for exchange of information and cooperation. The main goal for this open session is to get information about all related projects, identify common areas of work and propose corresponding working groups in cooperation with the e-IRG structures and possibly others (such as the above TERENA NREN-GRID workshop). Furthermore EGEE, as the main Grid infrastructure project, will present its services in the different activities, such as training and related infrastructure (e.g. GILDA), operations and user support (e.g. how to commit resources and which groups are involved).

In addition, a related training session will take place on Sunday before the conference start, where all related projects will have the chance of getting to know better the EGEE internal activities and technical details such as the gLite middleware and the operations procedures.

Since the number of projects that have requested a letter of support and will be using the EGEE infrastructure and services has greatly rose because of the Research Infrastructure March call, it is expected that EGEE4 and future EGEE conferences (as part of phase II, if this will be the case) will play a major role in hosting such concertation events.

http://indico.cern.ch/sessionDisplay.py?sessionId=18&slotId=0&confId=a0514#2005-10-25

Second Concertation Event on eInfrastructures coordinated by DANTE

This event will focus on networking aspects and is expected to take place in December, probably in France. The main organiser will be DANTE, GN2 coordinator, but EGEE and the other main projects are expected to contribute. Besides the networking flavour of the event, a series of general interest subjects will be discussed, such as defining well established structures for better concertation and developing cross-project working groups, taking as input the EGEE session on related projects during the EGEE 4th conference.

Cross project working groups

The cross project working groups are strongly related to the above events and workshops, as either formal or informal working groups have been defined as an outcome of the corresponding events (such as the formal working groups of the Hague eInfrastructure concertation event or the informal TERENA NREN-Grid one).

The basic plan in this area is to define working groups in different cross-project thematic areas such as security, Grid middleware, operations, applications, etc. as well as a general purpose group (with a corresponding mailing list) for dissemination, exchange of information and identification of common problems (e.g. administrative ones).

The first main effort in the area was established during the first Concertation Meeting on eInfrastructures, in the Hague, as mentioned above [R6]. The outcome was that two main groups were established: a generic group (project-eu-egee-concertation@cern.ch) and one related to security with Ake Edlund as chair (project-eu-egee-concertation-security-gp@cern.ch). In addition, the question of extending the successful EGEE working groups such as the Joint Security Policy Group (JSPG) and the Middleware Security Group (MWSG) by including members from other projects such as GN2, DEISA, SEEGRID, DILIGENT, GRIDCC etc. was considered. This extension has been recently

implemented; in addition the idea of having a group coordinating security incidents and interfacing with the national Computer Emergency Response Teams (CERTs) has been proposed and discussed.

Concerning the MWSG concertation efforts, during the last Global Grid Forum in Boston (GGF15) there was an EGEE-initiated MWSG Bird of Feather (BOF) session, proposing to use the MWSG way of working to ensure security service interoperability between grids (still the details are to be decided). It is expected that the MWSG BOF will be followed by a MWSG official meeting at the next GGF in Athens (GGF16), and possibly at the following Europe based GGFs.

Attached corrected status doc.

Finally, the above concertation mailing list will be extended to contain contact persons from the coordinators of the eInfrastructure projects (including the ones that will be approved by the new call), in order to disseminate information in the EU F3 Unit group of projects.

Besides these efforts, the e-IRG support team has been employing different expert groups, in order to prepare the corresponding white papers or chair e-IRG workshop sessions. These can be also considered as informal working groups. Related to that, the e-IRG UK presidency has proposed to formalise the e-IRG working groups in the different thematic areas of the White Papers and Roadmap.

In addition, a number of new projects are expected to start at the last 2005 quarter, which are strongly related to EGEE and in fact have requested an EGEE letter of support. As mentioned above a related session will take place during the 4th EGEE conference in Pisa, aiming at providing a framework for exchange of information and cooperation. It is expected that 12 projects will participate in this session and discuss about the cooperation and synergies.

From the above analysis it is obvious that there is a strong motivation for consolidating existing working groups or creating new ones in the areas of research e-Infrastructures. Such discussions will take place during the related session in the 4th EGEE conference as well as the 2nd concertation event organised by DANTE. A table of all the above efforts is given below.

Concertation Working Group effort	**Initiator / Place-Event**	**Comments**
Generic e-Infrastructures concertation group	EGEE / Hague, 1st Concertation meeting	project-eu-egee-concertation@cern.ch The group will be reconsidered during the 2nd concertation event.
Security e-Infrastructures concertation group	EGEE / Hague, 1st Concertation meeting	project-eu-egee-concertation-security-gp@cern.ch When MWSG and JSPG will be fully extended, it will be reconsidered.
MiddleWare Security Group (MWSG)	EGEE / Extending the existing group	Recently extended to include other projects such as DILIGENT, GRIDCC, SEE-GRID.
Joint Security Policy Group (JSPG)	EGEE / Extending the existing EGEE/ LCG/OSG group	In the process of being extended
CERT related group	EGEE	Under discussion
e-IRG related working	EGEE e-IRG support	Informal groups up to now

groups (networking and grid related)	team / e-IRG events	Under discussion to promote them to official groups
TERENA NREN-Grid workshop	TERENA / Related workshops	nrens-n-grids@terena.nl
EGEE Grid-related projects (12 projects)	EGEE / 4th EGEE conference	projects-eu-egee-collaboration@cern.ch Discussion will take place during the conference session.

As far as the monitoring of the Grid Technologies Unit (F2) concertation activities http://www.cordis.lu/ist/grids/projects.htm, EGEE delegates participated in the F2 events that took place in Brussels as mentioned above.

EGEE provided contributions in the following areas:

T4 – Monitoring and Fabric Management, by Sergio Andreozzi, CNAF, INFN

T5 – Data Management, by Erwin Laure, CERN

T8 – Business models, by Marc Elian Begin and Robert Jones, CERN

In addition a series of other EGEE high-level persons participated to the events.

5.2. COOPERATION WITH OTHER GEOGRAPHICAL AREAS AND INITIATIVES

This section summarizes the cooperation that EGEE has established beyond Europe, mainly focusing in the US and Asia-Pacific areas, as well as record other international efforts, such as the latest development on the International Grid Trust Federation (IGTF).

It should be noted that EGEE has played the role of incubator for new projects, extending EGEE in other geographical areas, such as Asia. EGEE has assisted other areas to form appropriate consortia and submit proposals extending the EGEE infrastructure. In most of the cases appropriate European EGEE partners took the lead in such efforts and helped organise a corresponding proposal. The list of infrastructure projects shows other areas that proposals were submitted including among others Mediterranean, Baltics, Latin-America, China, India. The EGEE also cooperated with the SEE-GRID project to accomplish the above target. GRNET, being both an EGEE partner and the SEE-GRID coordinator played a catalytic role in the forming new regional project consortia, following the SEE-GRID successful paradigm for the Western Balkans. They provided support material (documentation), as well as series of presentations to understand the project structure, objectives and work programme. Direct cooperation of other areas in the EGEE programme of work was foreseen not only in this current phase but also in the second phase.

5.2.1. USA

The EGEE management, even before the start of the EGEE proposal submission, gave particular attention to global collaboration. It was a general feeling that US, being a major stakeholder in the global grid developments, should be part of the project. For this reason, three main US institutes became contractual partners in the project, namely University of Chicago, University of Southern California and University of Wisconsin, each of them coordinated by leading figures in the Grid worldwide scene. Funding for the institutes was secured by the US National Science Foundation (NSF). In addition, the US federation got a seat in the project's steering body (Project Management Board) along with the other EGEE geographical federation.

All three institutes have broad expertise in Grid infrastructures, with specific focus on Globus and Condor. Their work focused mainly on the EGEE middleware-related activities and especially in advanced data management services and resource management and interoperability. Their effort concentrated on providing support for Condor, Globus and the Virtual Data Toolkit packaging. These groups also participated in the development and design of the gLite middleware, implementing changes to Condor and Globus to incorporate this design and provided a bridge to the Open Science Grid. Cooperation with US will be continued, giving special emphasis in interoperability, and efforts will be given to make integrated middleware releases with the Virtual Data Toolkit (VDT). Such an agreement with VDT is seen as the most appropriate strategy to drive and maintain interoperability with the US projects. In addition, a series of new partners have been proposed in EGEE phase II, dealing besides middleware with applications and training, and direct funding to support the US travel to Europe has been proposed.

Further cooperation has been achieved with the Open Science Grid project (OSG) http://www.opensciencegrid.org/. The Open Science Grid is a US grid computing infrastructure that supports scientific computing via an open collaboration of science researchers, software developers and computing, storage and network providers. The OSG Consortium builds and operates the OSG, bringing resources and researchers from universities and national laboratories together and cooperating with other national and international infrastructures to give scientists from many fields access to shared resources worldwide. EGEE and OSG cooperated at various levels and working groups, such as operations (cooperation with SA1, where a series of joint operations workshops took place), middleware, policy and security mainly in the framework of the two related security groups i.e. the Middleware Security Group (MWSG) (http://agenda.cern.ch/fullAgenda.php?ida=a055763 latest

meeting) and the Joint EGEE/LCG Security Policy Group (JSPG) http://proj-lcg-security.web.cern.ch/proj-lcg-security/. Note that the above groups are in the process of being extended with other related projects as has been outlined in the previous section.

Finally, cooperation has been established during the e-IRG meetings, where representatives from the NSF cyber-infrastructure projects presented their corresponding plans.

5.2.2. ASIA-PACIFIC

Asia-Pacific area is also vital for building a global cooperation and has been given special attention. The EGEE Project Director visited many times the Asia-Pacific region with emphasis in *Japan, China, South Korea, Taiwan and India*. Special focus has been given to the collaboration with the Japanese community, and besides the EGEE visits in Japanese Grid project representatives and experts such as NAREGI, http://www.naregi.org/index_e.html, the Japanese national research grid initiative, were invited in EGEE and e-IRG events.

For China and Taiwan, following the corresponding communications and visits, a specific support action proposal was submitted called EUChinaGrid, which has been explained in the EU projects section. A similar proposal was the case for India, the EUIndiaGrid, a proposal submitted recently to the same call with EGEE Phase II.

Note that already sites from the above countries such as Japan, Taiwan, India, China, as well as other such as Pakistan and Singapore have been integrated into the EGEE computing and/or storage infrastructure.

Relations with Asia-Pacific have recently been re-enforced by the visit of the EGEE Project Director to the region in the summer of 2005. The aim of this visit was to lead the EGEE dissemination team composed by NA3 and NA4. China-Taipei was first visited where the Project Director gave a tutorial in parallel to the APAN meeting (Asia Pacific Advanced Network) organized by the Academia Sinica Computing and Networking staff. The tutorial concentrated on the EGEE new middleware (gLite) and was well received. The audience was mixed between more beginners, among them some American colleagues from Internet2, and more experienced people such as Academia Sinica staff. The participants came from all over the region, including China-Taipei, Singapore and Korea. The Project Director gave a general introduction to the project and to the plans for the future.

In Japan the tutorial was hosted by the Japanese e-Infrastructure project NAREGI at the site of NII (National Institute of Informatics). The tutorial was attended by a smaller number of people than in Taiwan, but of higher technical knowledge on the Grid and at a more homogeneous level, being almost all members of the NAREGI project but with also participation from Tokyo University and KEK LCG people. Strong interest in gLite and in the practical part of the tutorial was demonstrated, which they are going to consider as example for their own tutorial which they are developing. The tutorial concluded with a panel discussion including the Head of NAREGI, the NAREGI principal architect, the head of KEK computing service and EGEE staff. The panel focussed on the interoperability and the international collaboration towards international e-Infrastructures.

5.2.3. Other

National Grid Initiatives and European Grid Organisation

Besides the above efforts, EGEE has played an important role in integrating National Grid Initiatives in the Pan-European arena. For advanced European countries such as the UK and Italy, where established e-Science programs with ample funding are well under way, cooperation at various levels was feasible, bringing their knowledge and experience in EGEE. On the other hand, in less advanced countries, lacking an established National Grid Initiative / e-Science programme or an national infrastructure, EGEE was an incubator in persuading their Ministries and Funding Agencies to get financial support and develop their Grid infrastructure. EGEE made a significant push in this direction, also receiving the positive results being its extended grid infrastructure. In addition, an effort has been given to try to push for the establishment of National Grid Initiative and a pan-European Grid

Organisation, similar to the NREN/GEANT model. Some first attempts in this direction have been discussed both inside the EGEE Project Management Board and within the European Union Bodies. A more detailed roadmap is planned during EGEE Phase II, with an analysis of the National Grid Initiatives in Europe and a more specific proposal for Framework Programme 7. Note that EGEE was the first to adopt and "test" the new administrative mechanisms that can support National Grid Initiatives, such as Third parties and Joint Research Units, and in fact there are already 4-5 National Grid Initiatives that are using such a model.

EUGRIDPMA www.eugridpma.org

The European Policy Management Authority for Grid Authentication in e-Science (hereafter called EUGridPMA) is a body to establish requirements and best practices for grid identity providers to enable a common trust domain applicable to authentication of end-entities in inter-organisational access to distributed resources. As its main activity the EUGridPMA coordinates a Public Key Infrastructure (PKI) for use with Grid authentication middleware. The EUGridPMA itself does not provide identity assertions, but instead asserts that - within the scope of this charter - the certificates issued by the Accredited Authorities meet or exceed the relevant guidelines. The EUGridPMA is responsible for the European infrastructure but is working in close collaboration with the other regional peers: APGridPMA for the Asia-Pacific and the Americas Grid PMA via the International Grid Trust Federation (IGTF). The first group of projects to join the common trust domain included EGEE, along with the other two EU e-Infrastructure projects, DEISA and SEEGRID and the Nordic European Grid (NorduGrid). The strong support from the e-Infrastructure Reflection Group at the European policy level further accelerated the building of the federation. EGEE also supports and co-funds the activities of this group via the JRA3 and SA1 activities.

IGTF http://www.gridpma.org/

Very recently, and as part of the 15th Global Grid Forum (GGF) in Boston (October, 2005), the International Grid Trust Federation (IGTF) was established, bringing together Grid organizations representing Asia, the Americas and Europe that are working towards allowing scientific researchers to identify themselves to any Grid resource in the world with just a single online identity.

The IGTF is a federation of certification authorities or grid policy management authorities (grid PMAs) and the major grid infrastructure projects that together define the policies and standards for grid identity management. Comprising the three regional grid policy management bodies, the Asia Pacific Grid PMA (APGridPMA), the European Policy Management Authority for Grid Authentication in e-Science (EUGridPMA) and the Americas GridPMA (TAGPMA), the federation today has 61 members and covers 50 countries and regions.

TACAR http://www.tacar.org/

The other important element for enabling a wide trust base is the use of the TACAR repository run by TERENA, the Trans-European Research and Educational Networking Association: a single source for all relying parties to validate their trust infrastructure both for the IGTF and for many other academic identity providers.

TACAR answers to a major problem linked to the use of Public Key Infrastructures (PKI), which is how to get the appropriate root CA certificates needed by users' browsers in a practical and cost-effective manner. A solution that can be applied is the provision of a trusted repository which can contain verified root-CA certificates. This concept, now known as TACAR (TERENA Academic CA Repository) was originally proposed by members of a Terena Task Force and officially accepted by the TERENA formal bodies.

The certificates to be collected are those directly managed by the member NRENs, or belonging either to a National Academic PKI in the TERENA member countries (NPKIs), or to non-profit research projects directly involving the academic community. TACAR complements the EUGRIDPMA providing the appropriate trusted repository.

5.3. OTHER MAJOR INTERNATIONAL CONFERENCES AND WORKSHOPS

A list of other international events and workshops with EGEE participation is outlined below focusing on international cooperation. This complements the list of "concertation-related" workshops that have been analysed above. Note that there is a series of other thematic conferences or workshops, which are not listed below. In fact, a detailed list of workshops is given in the EGEE quarterly reports.

Supercomputing Annual Events

Supercomputing is one of the major international conferences on high performance computing, networking and storage taking place in the USA. ACM and IEEE Computer Society are the usual conference series sponsors. Supercomputing 2004 (SC2004) was held in Pittsburgh in November. During Supercomputing 2004 a delegation of EGEE representatives attended the conference, while selected EGEE partners were present in the corresponding exhibition with booths. Senior EGEE representatives were also present in the Grid Workshop that takes place every year in parallel with SC.

Supercomputing 2005 will convene in November 2005 in Seattle. Under the theme, "Gateway to Discovery," SC|05 will showcase how high performance computing, networking, storage and analysis lead to advances in research, education and commerce. The NA2 activity is coordinating the EGEE presence, so that the appropriate dissemination and collaboration in the US is the case.

OECD Global Science Forum

The OECD (Organisation for Economic Co-operation and Development) Global Science Forum (formerly the Megascience Forum) is a venue for meetings of senior science policy officials of OECD countries. Its goal is to identify and maximise opportunities for international co-operation in basic scientific research. The Forum establishes special-purpose working groups and workshops to perform technical analyses, and to develop findings and recommendations for actions by governments. These groups bring together government officials, scientific experts, and representatives of international organisations.

The last OECD Global Science Forum meeting took place in Sydney, Australia and focused "on Issues Related to Grid and Basic Research Programmes". The EGEE project director and deputy attended the workshop and represented the project in such a global scale. The discussions highlighted that the area of policies –which in Europe are handled by the e-IRG and supported by EGEE NA5-, should be given more emphasis and discussed at a global level. Europe seems to be leading this area.

GN2 launch event

The GN2 project launched in June its new high-speed network (GEANT2) in Luxembourg, which held the EU presidency at that time http://www.geant2.net/server/show/nav.00d00b008. The EGEE project was also represented by a high-level delegation during the event following the eIRG meeting in Mondorf. Interfaces have been accomplished with other areas of the world, such as India and South Africa in order to establish international Grid efforts.

TERENA conferences

TERENA hosts every year the so-called Terena Networking Conferences (TNCs). TNC 2004, which was held in Rodos, Greece in June, Grids was one of the sessions of the conference, while EGEE was given a keynote speech slot in the plenary, which was delivered by the Project Technical Director. TNC 2005 was held in Poznan, Poland, focusing more on networking aspects. The TNC conferences is an opportunity for EGEE to provide requirements to the NRENs and exchange information on Middleware and AAI issues, as well as to gain experiences from the NREN community.

www.terena.nl/tnc2004 www.terena.nl/tnc2005

Internet2 events www.internet2.edu

The above argument is valid also for the Internet2 events, but more in an international scale, since this event is the corresponding one for the US. Internet2 is the US Research Network and develops / deploys advanced network applications and technologies for research and higher education. The last event was attended among others by the NA5 activity leader, in Philadelphia. Middleware related initiatives such as the NSF Middleware Initiative were also presented there, aiming at creating a national interoperable middleware infrastructure for education and research. Different tools for VO management and security were presented such as the MyVOCS (my Virtual Organization Collaboration Suite) and GridShib (allowing the use of Shibboleth-transported attributes for authorisation in Grids based on Globus Toolkit v4). Such efforts might be useful in a potential EGEE Phase II, since EGEE will be working in similar areas integrating and being interoperable with other Authentication and Authorisation frameworks. Besides the Middleware initiatives, US efforts in the area of advance reservation and accessing networking resources were presented, similar to the EGEE JRA4 ones.

iGrid2005 and GLIF meeting www.igrid2005.org

iGrid 2005, a biennial International Grid event, is a coordinated effort to accelerate the use of multi-10Gbit international and national networks, to advance scientific research, and to educate decision makers, academicians and industry researchers on the benefits of these hybrid networks. iGrid2005 showcased more than four-dozen real-time application demonstrations from 20 countries, as well as a symposium with 25 lectures, panels and master classes on the applications, middleware, and underlying next generation e-infrastructure, using optical networking. On the last day of iGrid 2005, the Global Lambda Integrated Facility (GLIF) http://www.glif.is/ had its annual meeting. GLIF is the international virtual organization creating a world-scale LambdaGrid laboratory, driven by the demands of application scientists, engineered by leading network engineers, and enabled by grid middleware developers. iGrid showcases the latest advances in scientific collaboration and discovery enabled by GLIF partners, by providing a forum for these far-flung teams to test interoperability on a global scale.

Integrated advance reservation and accessing of networking and computing resources were presented during the iGrid2005 meeting, along with very impressive demos using advanced visualisation techniques and equipment. During the conference and the GLIF meeting a lot of discussions took place in the area of control and management planes of hybrid IP and optical networks, and issues related to the network related EGEE activities were covered.

Standaridisation bodies workshops

EGEE follows a series of standards bodies and its related workshops. The Global Grid Forum www.ggf.org is the one attracting most EGEE attention, but other bodies such as OASIS http://www.oasis-open.org/, W3C http://www.w3.org/ and IETF www.ietf.org are also related to the EGEE work. An inventory of EGEE standardisation efforts will be prepared for the EGEE technical review in December. A first attempt on the methodology and initial input captured follows in the next section.

5.4. STANDARDISATION EFFORTS

As mentioned in the previous section EGEE, as the leading Grid infrastructure project in Europe and with its gravity is expected to promote the standardisation activities. EGEE currently follows and contributes to many standardisation groups, as the first attempt shows later on. EGEE NA5 has started tracing the standardisation efforts and is expected to complete its effort by the end of the year; an effort that will be presented during the next review.

The following procedure has been drafted. A table has been prepared covering the Standardisation Body, Area and Working Group, along with the EGEE contributor, its role and its institute. This table has been distributed in the corresponding activity leaders for inputs, who in turn are expected to circulate this table in the activities mailing lists and gather inputs from the different members.

Standardisation Body	**Area**	**Working Group**	**EGEE contributor**	**EGEE contributor's role**	**EGEE contributor's institute and country**
GGF	Grid Operations	CAOPS-WG	Christos Kanellopoulos	Chair	AUTH/GRNET, Greece

Figure 5.1: Standards contribution template table

A first attempt to document the EGEE relation with the standardisation bodies has lead to the following categories of relations with standards:

- Standards to which EGEE is currently adhering
- Standards which EGEE should adopt soon
- Standards to which we are contributing
- Standards which EGEE is keeping track of (and to which occasionally gives input)

A first attempt can be summarised as follows:

Standardisation Body	Area	Working Group
GGF	Management	Usage Record (UR-WG) https://forge.gridforum.org/projects/ur-wg/
	Infrastructure	Network Measurement (NM-WG) http://nmwg.internet2.edu/schemas-v1/index.html
	Compute	WS-Agreement (GRAAP-WG) https://forge.gridforum.org/projects/graap-wg
	Security	AC in Grids (OGSA-AUTHZ-WG) https://forge.gridforum.org/projects/ogsa-authz/document/draft-OGSA-authorization-attributes-sept-04/en/1
		GLUE http://www.cnaf.infn.it/~sergio/datatag/glue/
W3C		XML www.w3.org
		SOAP 1.1 www.w3.org
		WSDL 1.1 www.w3.org
IETF		X509 http://www.ietf.org/rfc/rfc3280.txt
OASIS		WS-I Basic Profile 1.0 http://www.ws-i.org/

Figure 5.2: Standards to which EGEE is currently adhering

Standardisation Body	Area	Working Group
OASIS		Web Services Resource Framework (WSRF) http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=wsrf
		Extensible Access Control Markup Language (XACML) http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=xacml
		Security Assertion Markup Language (SAML) http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=security
W3C		WS-Addressing www.w3.org

Figure 5.3: Standards which EGEE should adopt soon

Standardisation Body	Area	Working Group
GGF	Data	Grid Storage Management / Scheduling and Resource Management (GSM/SRM) https://forge.gridforum.org/projects/gsm-wg/
	Management	Usage Record (UR-WG) https://forge.gridforum.org/projects/ur-wg/
	Security	AC in Grids (OGSA-AUTHZ-WG) https://forge.gridforum.org/projects/ogsa-authz/document/draft-OGSA-authorization-attributes-sept-04/en/1
		GLUE http://www.cnaf.infn.it/~sergio/datatag/glue/
Ad-hoc association involving Condor, Globus, EGEE, NorduGrid, INFNGrid and interfacing with CE		Common Resource Management (CRM)

Figure 5.4: Standards to which EGEE is contributing

Standardisation Body	Area	Working Group
	Data	Grid Storage Management / Scheduling and Resource Management (GSM/SRM) https://forge.gridforum.org/projects/gsm-wg/
		Grid File System (GFS-WG) https://forge.gridforum.org/projects/gfs-wg
		Information Dissemination (INFOD-WG) https://forge.gridforum.org/projects/infod-wg/
	Management	Usage Record (UR-WG) https://forge.gridforum.org/projects/ur-wg/
	Infrastructure	Network Measurement (NM-WG) http://nmwg.internet2.edu/schemas-v1/index.html
		Grid High Performance Networking (GHPN-RG) https://forge.gridforum.org/projects/ghpn-rg
	Security	AC in Grids (OGSA-AUTHZ-WG) https://forge.gridforum.org/projects/ogsa-authz/document/draft-OGSA-authorization-attributes-sept-04/en/1
		Simple API for Grid Applications (SAGA-WG) https://forge.gridforum.org/projects/saga-rg/

		Distributed Resource Management Applications (DRMAA) https://forge.gridforum.org/projects/drmaa-wg
	Architecture	Open Grid Service Architecture (OGSA-WG) https://forge.gridforum.org/projects/ogsa-wg
	Compute	Job Submission Description Language (JSDL) https://forge.gridforum.org/projects/jsdl-wg/
		GLUE http://www.cnaf.infn.it/~sergio/datatag/glue/
OASIS		Web Services Notification (WSN) http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=wsn
		Web Services Resource Framework (WSRF) http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=wsrf
W3C		WS-Addressing http://www.w3.org
		WS-Eventing http://msdn.microsoft.com/library/en-us/dnglobspec/html/ws-eventing.asp
An ad-hoc association involving Condor, Globus, EGEE, NorduGrid, INFNGrid and interfacing with CE		Common Resource Management (CRM)

Figure 5.5: Standards which EGEE tracks (and to which EGEE occasionally contributes)

As mentioned above, EGEE NA5 is expected to complete its related standardisation inventory by the end of the year. This will be accomplished through the Activity Leader, that will circulate the template to their activities and gather the feedback. It is expected that this effort will be presented during the next Technical Review.

6. SYNERGY ROADMAP AND RECOMMENDATIONS

6.1. INTRODUCTION

Following the first e-Infrastructures concertation meeting and given the EGEE NA5 deliverable that was published after that, entitled European Grid Project Synergy roadmap [R7], a series of synergy areas have been identified, including User Support and Training Organizations, Joint Dissemination Activities, Security, Interoperability (mostly infrastructure related), Common timeline.

The same deliverable [R7] concluded that there are both top-down and bottom-up efforts to promote and leverage the synergies between projects. The first category included more active and visible role of the eIRG and an increased support for concertation events. The latter category included bilateral activities between projects, which have their own, fast-paced dynamics. The success *of aligning these two activity fronts* depends to a large degree on active participation in the concertation events by both the technical developers and the management of the projects.

Given the [R7] deliverable analysis and the analysis that took place in this deliverable, EGEE NA5 would like to propose an update list of synergy areas, along with a list of cross project synergy recommendations to the EC and the other projects, which are given below.

6.2. SYNERGY AREAS

An attempt to provide a list of cross-project synergy areas is given below.

i. Infrastructure-related

a. Resource sharing (or integration of resources under one major project) and reservation among projects with different or similar types of resources (e.g. Supercomputing-Grid, Grid-Grid, both with the networking layer)

b. Cross-project cooperation and interoperability in the operations and user support of collaborating infrastructures E.g. between Grid and Networking projects such as GN2 and EGEE (NOCs and GOCs), NOC Helpdesks and GGUS or among different Grid infrastructures.

ii. **Middleware** (although part of the infrastructure, it is treated separately to give more emphasis)

a. Interoperability between different projects' middleware products and stacks

iii. Applications

a. Cooperation between application projects with middleware and infrastructure projects, in order for the applications to interwork with the lower layers (e.g. "gridification" of applications

iv. Training and Dissemination

a. Joint strategies for training and dissemination activities

b. Joint training and dissemination activities including concertation ones.

v. **Security** (for most of the above areas) including Authentication and Authorisation

vi. **Policies** (for most of the above areas and other ones identified in the e-IRG White Paper roadmaps are listed below:

a. Future model of governing the pan-European Grid infrastructure (e.g. National Grid Initiatives and a central organisation) and/or a central Applications/ Middleware/ Operations repository.

b. Security policies (mostly related to a common Authentication, Authorisation Infrastructure)

c. Usage policies and legal issues

An attempt to graphically depict the areas is given below. The bottom-up (i.e. bilateral or driven by a user community) vs. top-down approaches are identified along with the different synergy areas. The policy and security areas apply to most of the synergy areas.

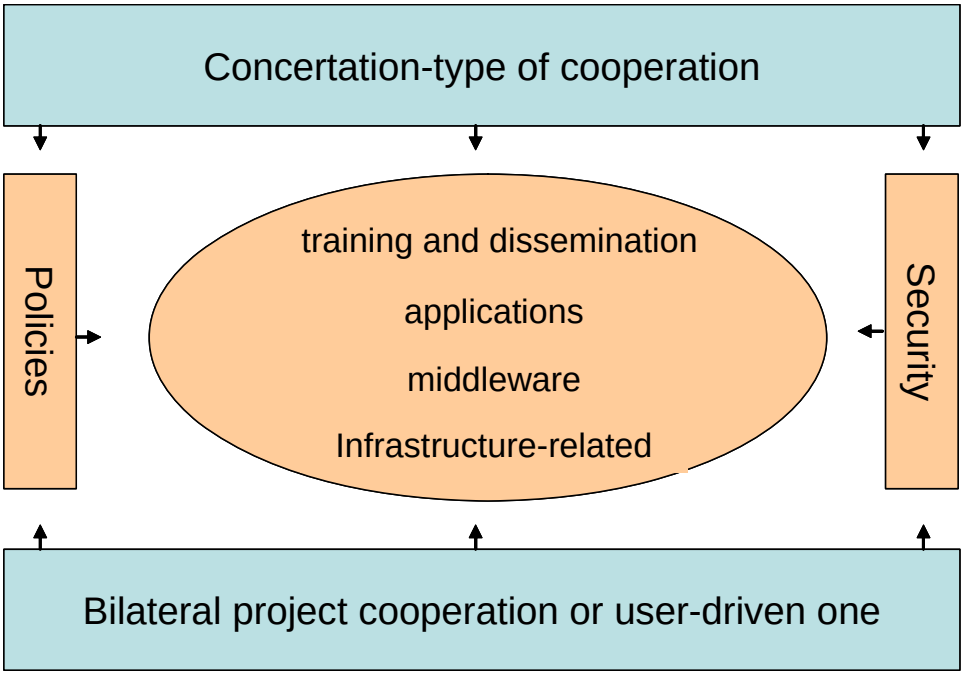

Figure 6.1 – Synergy areas and cooperation types (bottom-up vs. top-down)

6.3. SYNERGY RECOMMENDATIONS

According to the above analysis, a list of recommendation is presented in this section. As mentioned the recommendations are intended to be given towards the other projects, as well as the EC. In this section, we consider GEANT as the pan-European research networking platform, EGEE as the basic Grid research infrastructure platform and DEISA as the major supercomputing infrastructure platform.

- **Synergy areas and cooperation types**: EGEE proposes the above areas of cooperation as outlined in the previous section and elaborated in figure 6.1. Both bottom-up (bilateral or user-driven) and top-down (concertation) efforts are beneficial for the projects.
  - Infrastructure-related
  - Middleware (on purpose extracted from the infrastructure related as considered important)
  - Applications
  - Training and dissemination
  - Security (including Authentication and Authorisation infrastructure)
  - Policies

- **Working Groups**:
  - EGEE proposes that separate working groups should be examined in the above synergy areas. In some areas, it is felt more appropriate to do this in a more closed circle (e.g. Grid only projects for Grid infrastructure areas), while in other areas such as AAI and policies, broader cooperation should be attempted.
  - Cooperation should be sought among different efforts and layers such as the policy ones (e-IRG) and the technology or strategy ones (e-Infrastructures concertation ones, thus bringing technology and policy experts together. Joint workshop between e-IRG and the concertation ones could be attempted.
  - Bilateral ones (that could be extended to other projects) and others (TERENA NREN-Grid one).
  - Synergy priorities should be set, since it felt that forming too many groups might be risky.
  - Co-funding for working groups (e.g. by the EC or other source) would be favoured in order to have committed and/or dedicated personnel. Concertation projects are also a possible solution, where each project participates with funded effort. Over-commitment of personnel should be taken into account.
  - The evolution towards the next phase of the e-Infrastructure (FP7) should be also handled by a cross-project group lead by the major infrastructure projects such as GN2, EGEE and DEISA.
  - Cooperation with other geographical areas such as the US, Asia-Pacific etc is vital for a Global infrastructure. Examples such as the IGTF that started out from Europe and expanded all over the world should be encouraged.
  - The EGEE conferences are a major enabler and driver towards concertation efforts. This does not exclude other events with broader scope.

7. CONCLUSIONS

This deliverable demonstrates that policy and international cooperation has been brought one step further since the previous deliverable [R7]. Efforts have been reported in both the policy-related and (other) international cooperation efforts among projects, national and pan-European efforts, as well as among continents. Cooperation is beneficial for all stakeholders bringing common problems and issues in open discussion fora, where experiences and solutions are shared, leading to economies of scales and increased efficiency.

A roadmap and a list of recommendations have been proposed, so that cooperation is further exercised and adopted among different project and bodies. Concertation activities are usually complex, and time-consuming, so good planning is needed, without underestimating the difficulties. EGEE, given its prominent position in the Grid infrastructures arena, is expected to play an important role in the above efforts, leading major working groups and activities, as outlined in the document. Given the fact, that a series of EGEE-related projects, of relatively small size, were recently approved, as opposed to the few major ones being the case during the first EGEE year, it is expected that concertation efforts will be more fruitful in the remainder of the project, as well as in EGEE-phase II. A first step in this direction will be the related session in the 4th EGEE conference. In the future, it is expected that EGEE conferences will play a major enabling such efforts.

8. ANNEXES

8.1. E-IRG WHITE PAPERS RECOMMENDATIONS

Irish Presidency

The two main issues were endorsed by the e-IRG during the Irish presidency as follows:

"The e-IRG notes the timely operation of the EUGridPMA in conjunction with the TACAR CA Repository and it expresses its satisfaction for a European initiative that serves e-Science Grid projects.

The e-IRG endorses the principle of the EUGridPMA and TACAR. The e-IRG welcomes this development which positions Europe in the forefront of Grid and e-Science interoperability. The e-IRG strongly encourages the EUGridPMA / TACAR to continue their valuable work and recommends that they be supported by the relevant EU / national projects and agencies."

Dutch Presidency

The issues endorsed by the eIRG during the Dutch presidency are as follows:

"The e-IRG encourages work towards a common federation for academia and research institutes that ensures mutual recognition of the strength and validity of their authorization assertions."

"The e-IRG notes the timely operation of an EGEE/ LCG /OSG group working on a common Acceptable Usage Policy for multidisciplinary Grid infrastructures and it expresses its satisfaction and support for the current draft AUP proposed in the current white paper and would like to encourage the group to consolidate it as soon as possible. It is felt that such an effort would greatly promote pan-European resource sharing for e-Science."

"A forum dedicated to the co-ordination and exchange of technology and policy for disciplinary Grids should be formed. The task of the forum is to minimize duplication of efforts but still recognize and pronounce unique demands from disciplinary user communities."

"The e-IRG stresses the importance of deploying flexibly configurable and reliable end-to-end optical connections for research and education end-users (e.g. e-Science experiments). This provision should coexist with IP-routed services and build upon the European 3-tier hierarchical model consisting of the campus, NRENs and pan-European GEANT networks."

"The e-IRG gives high priority to the visibility of European infrastructures at venues such as the annual Supercomputing Conference organized in the US. The goal is to have an increased and continuous presence at booths, panels, talks, and keynote addresses. e-IRG encourages a co-ordinated European presence at the Super Computing Conference 2005. Europe should also focus on creating greater global visibility of corresponding European venues. This could entail merging of some conferences to create critical mass and reach global impact."

Luxembourg Presidency

"The eIRG would like to promote the idea of the National Grid Initiatives i.e. a governance model to guide Grid infrastructure deployment and operation at country-level in an application-neutral way. The eIRG believes that the adoption of the NGI idea across Europe would be a requirement for the evolution to the next phase of the eInfrastructures that is expected to be implemented in FP7, and encourages all countries to work on this."

"Support the establishment of frameworks able to integrate all the (nation- or community-based) AA federations, in the spirit of the achievements of the EUGridPMA with respect to PKI policies and practices, and promote the necessary steps to compatibilize current authorisation practices and systems with these frameworks. The group acknowledges the steps in this direction taken by the GEANT2 AAI and the Cotswolds Group initiative"

"Legal issues in electronic infrastructures are of vital importance and specific steps should be taken in order to make progress. It is advised that a dialogue between legal and technical experts should be kicked-off preparing an inventory of legal issues that are currently being encountered or foreseen to be relevant taking as a starting point the Luxembourg White Paper. A dialogue could be initiated by means of a workshop, and on the basis thereof when deemed appropriate a more permanent group might be established. A proper analysis and evaluation of the above inventory list would have to follow, on one hand providing priorities and classifying the issues and on the other hand paving the way for the integration of legal issues in the next generation of e-Infrastructures."

"The eIRG would like to stress that global connectivity will never mean global network, but rather inter-domain cooperation and attention for interoperability. This must be taken into account for all planning that strives towards global end-to end connectivity for researchers."

"The eIRG would like to emphasise that network research is imperative to meeting next generation Grid requirements. Integrating advanced optical technologies while advancing e-science applications and Grid middleware is critical. One shall not assume network technology remains static while research is conducted for advancing grid middleware and applications. Thus e-Science networking requirements should be studied carefully, new technologies and control plane solutions should be investigated and possible integrated in the applications/middleware in order to automate the networking requests."

"The eIRG has reviewed the recommendations for grid user support in the key areas of user education, the provision of easily accessible user information, support for applications and the day to day running of the grid and networking infrastructure. The eIRG would like to stress that the planning for such support of the infrastructure should allow for the continuity of support in national structures beyond the end of major grid projects."

"The eIRG considers that Grid middleware will form a fundamental component of e-Infrastructures across the European Research Area. It is thus of key importance to endorse the principle of establishing a federated Middleware Institute to ensure the development of production quality Grid middleware leveraging EC as well as national efforts across Europe."

"The e-IRG invites representatives of European enterprises and other commercial stakeholders to come forward and identify the expectations and needs from the business community and the contributions they expect to be able to make in return considering the long term goals of the European e-Infrastructures. e-IRG specifically also invites SME's to contribute their views and ideas.

In the same context the e-IRG wishes to be more proactive in the future in exposing its work to industry and to business."

8.2. LIST OF RELATED EUROPEAN PROJECTS

Project	Aim and relation to EGEE-II
DILIGENT (A Digital Library Infrastructure on Grid Enabled Technology)	Aim: To integrate Grid and Digital Library technologies to create an advanced test bed to allow secure and coordinated sharing of knowledge. The overall strategy of interaction between EGEE-II and DILIGENT consists of establishing contacts with representatives of EGEE-II activities and exploiting the official channels already put in place by the EGEE project for dissemination and user support. At the same time an attentive study of the project organisation, documentation and functioning is also necessary. Finally, whenever possible, establishing direct exchanges with EGEE representatives to improve inter-project collaborations (i.e. organisation of joint events) and creating opportunities for exchanges especially at the technical level. This last approach is needed particularly in the case of DILIGENT, being an early adopter of EGEE gLite Grid middleware. Considering the obvious timing necessary for a large collaboration like EGEE to collect, organise and disseminate the information related to the most recent release of its middleware (which was not yet available when the DILIGENT project started), a close interaction between the two projects demonstrated to be extremely helpful to minimise the project's risks, especially in the design phase of DILIGENT, when the DILIGENT solution is conceived. Coordinator: CNR-ISTI Start Date and duration: April 2005, 36 months
SEE-GRID (South Eastern European Grid-enabled e-Infrastructure Development)	Aim: To provide Specific Support Actions to assist the participation of South Eastern European states to the pan-European Grid initiatives. Leveraging EGEE middleware has allowed SEE-GRID to rapidly plan and deploy a regional Grid infrastructure. The determination of EGEE to achieve interoperation with other Grids such as OSG and NorduGrid is another important reason for SEE-GRID to use EGEE middleware. As SEE-GRID sites mature in stability, it is planned that SEE-GRID sites will join the EGEE production infrastructure while still maintaining membership in SEE-GRID. In association with CERN, a subset of SEE-GRID partners is directly involved in EGEE activities and act as a conduit for technology transfer from EGEE to SEE-GRID. Coordinator: GRNET Start Date and duration May 2004, 24 months

DEISA (Distributed European Infrastructure for Supercomputing Applications)	Aim: DEISA (http://www.deisa.org/) is a Consortium of leading national supercomputing centres that deploys and operates a persistent, production quality, distributed supercomputing environment with continental scope. The purpose of this FP6 funded research infrastructure is to enable scientific discovery across a broad spectrum of science and technology, by enhancing and reinforcing European capabilities in the area of high performance computing. This becomes possible through a deep integration of existing national high-end platforms, tightly coupled to a dedicated network and supported by innovative system and Grid software (UNICORE). While EGEE attracts resources that are typically clusters of commodity PCs, there are a number of user communities and application domains that can make use of super-computer facilities as coordinated by the DEISA project. Together EGEE and DEISA provide the foundations of the European e-Infrastructure and as such their close collaboration is a benefit to European science and technology. The GATE (Geant4 application for Tomographic emission) Monte-Carlo simulation platform was selected as a pilot application to understand the inter-operability issues between EGEE and DEISA. Work has been undertaken to port the application to DEISA super-computers thereby identifying a number of issues that will be addressed as part of the programme of work in EGEE-II. The UNICORE software support group at FZJ will support these interoperability studies in EGEE-II. Coordinator: IRIS Start Date and duration: May 2004, 36 months
BalticGrid	Aim: To develop and integrate the research and education computing and communication infrastructure in the Baltic States into the emerging European Grid infrastructure. The EGEE infrastructure will be expanded through collaboration with associated projects (EELA, EUMedGrid, EUChinaGrid, and BalticGrid) in the way that has already happened with the SEE-GRID project. The model for interaction with these projects will be similar to that used with SEE-GRID: funds for staff within the CERN ROC (48PM funded between the 4 projects) will provide dedicated assistance, support, and liaison for these projects within SA1. Coordinator: KTH Start Date and duration: November 2005, 30 months
EUMedGrid (Empowering eScience Across the Mediterranean)	Aim: To provide Specific Support Actions to assist in the participation of the states of the Mediterranean region in the pan-European and worldwide Grid initiatives. See BalticGrid. Coordinator: INFN Start Date and duration: January 2006, 24 months
EELA (E-Infrastructure Shared between Europe and Latin America)	Aim: To build a bridge between consolidated e-Infrastructure initiatives in Europe and emerging ones in Latin America. See BalticGrid. Coordinator: CIEMAT Start date and duration: January 2006, 24 months
EUChinaGrid (Interconnection and nteroperability of Grids between Europe and China)	Aim: To interconnect the Grid infrastructure in Europe and China for the benefit of eScience applications. See BalticGrid. Coordinator: INFN Start date and duration: January 2006, 24 months

ICEAGE (International Collaboration to Extend and Advance Grid Education)	Aim: To establish a world-wide initiative to inspire innovative and effective Grid education. ICEAGE will use the momentum, materials, resources and experience already built up in EGEE to develop and broaden the Training and Induction Activity and transfer the pedagogical methods, knowledge and services into university education. Coordinator: UEDIN Start date and duration: March 2006, 24 months
ETICS (e-Infrastructure for Testing, Integration and Configuration of Software)	Aim: To establish an international and well managed capability for software configuration, integration, testing and benchmarking for the scientific community. With the ETICS project starting in January 2006, the intention of SA3 is to make use of the ETICS services to provide the basic build systems, integration, testing infrastructure, and repositories. This will require some investment of effort to migrate parts of the current deployed system, presently maintained by SA1, and the JRA1 developed components into this framework. However the result should be advantageous to the project. In addition, the partnership of the US NMI project in ETICS will mean that the base components from the Virtual Data Toolkit will also be part of the integrated system. This will hopefully provide a foundation from which to more easily migrate the software to new platforms, and to manage the complex dependencies within the software. JRA1 will also make use of the ETICS infrastructure for their software development, building, and testing requirements. There is also a potential that SA3 could use the same infrastructure and services to manage the full certification process. However, since that involves a very complex infrastructure and testing set up, it remains to be seen how much automation of that process ETICS can provide. Coordinator: CERN Start date and duration: January 2006, 24 months
ISSeG (Integrated Site Security for Grids)	Aim: To contribute to the consolidation of the European Grid infrastructure in the field of computer security. The ISSeG vision is that Grid Security, which focuses on inter-site security, middleware, and authentication, needs to be complemented by a comprehensive Integrated Site Security (ISS) strategy at every centre. The ISSeG project intends to help build the ISS strategy at Grid sites, including those in EGEE-II. The operational security teams within SA1 focus on security issues between sites and rely upon sites having the strong internal security that is provided by the complementary focus of ISSeG. Not only does ISSeG promote an integrated approach for Site Security, but it will also put in place the necessary mechanisms for coordinating Site Security with Grid Security. Another area where ISSeG is relevant to EGEE-II is that of middleware. ISSeG intends to develop educational material and will design training plans for several categories of Grid players including software developers. It is anticipated that the JRA1 (and other) developers will benefit from such training material. Coordinator: CERN Start date and duration: January 2006, 24 months
Health e-child	Aim: To provide an integrated healthcare platform for European pediatrics. EGEE-II will provide the Grid connectivity on which the integrated platform will be based on. Health-e-Child will provide feedback to EGEE on new medical requirements, security issues, and resource sharing and allocation, and will closely collaborate with the biomedicine group of NA4. Coordinator: Siemens Start Date and duration: To be confirmed, 48 months

eIRGSP	Aim: The e-Infrastructure Reflection Group Support Programme (eIRGSP) project will provide a basis for the work of the e-Infrastructure Reflection Group (eIRG) and increase its impact. The e-IRG was founded in 2003 under the Greek EU chairmanship to coordinate and support the creation of a framework – political, technological and administrative – for the easy and cost-effective shared use of distributed electronic resources across Europe. The eIRG consists of official government delegates from all 25 EU countries, accession countries and associated countries and provides a neutral platform to filter, transfer and upgrade (technical, economic and other) knowledge and visions to a shared policy level. eIRGPSP will deliver the necessary support and continuity for the coordinating work of the e-IRG, through operational support (a secretariat), an editorial team for its white papers and helping e-IRG gather structured information about the current state of affairs in a Knowledge Base. The eIRGSP is expected to lead the editorial efforts for the eIRG White Papers and Roadmaps, by a small team of editors and support persons, hosting the eIRG "Virtual Office". The virtual office will also coordinate the preparation of corresponding e-Infrastructure workshops and meetings. EGEE-II NA5 activity will coordinate EGEE-II contributions to the White Papers, Roadmaps and Workshop, engaging EGEE-II's variety of experts from Middleware and Applications, Operations, User Support, Training and Security. Any further support can be given in agreement between the two projects. As far as standardisation efforts, EGEE-II through its dominating position in the area of Grid Research Infrastructures, is expected to influence and contribute to standardisation efforts in many related areas. EGEE-II NA5 will monitor its standardisation impact, keeping track of its efforts and contributions in a corresponding inventory.
BELIEF	Aim: BELIEF proposes to achieve international outreach through developing & supporting a well-informed Trans-European Community with a commitment to understand the adoption of e-Infrastructure developments and to forge alliances between the scientific, research and industrial communities through a communication network platform, a Digital Library and Networking initiatives organised and planned across the globe throughout the 24 month period. BELIEF will leverage on the documentation produced within EGEE-II and allow EGEE-II members and pertinent users access to material via the BELIEF Digital Library. Moreover, BELIEF's specific scientific & industrial user communities will be accessible to EGEE-II project for further knowledge exchange and networking. Coordinator: Metaware SpA Start date and duration: 1st November 2005, 24 months

BIOINFOGRID

Aim: to combine biomedicine services and applications for molecular biology with the Grid Infrastructure created by the EGEE Project to provide ubiquitous and seamless access throughout Europe for the biomedicine community. The BIOINFOGRID initiative will support genomics, trascriptomics, proteomics and molecular dynamics applications studies based on GRID technology.

The BIOINFOGRID SSA intends to establish a common ground for collaboration between the European Grid Infrastructure providers and the biomedicine research user community in various fields of biomedicine applications (biology, computational chemistry, Medicine and Biotechnology). This will be achieved through specific feasibility studies for each reference application in the Grid domain that will make it possible to implement meta-laboratories in which experts of various disciplines can collaborate on the solution of highly complex problems.

By leveraging on the production Grid-based analysis service in Europe, established by the FP6 Integrated Infrastructure Initiatives, in particular by the EGEE project, BIOINFOGRID will include applications for distributed laboratory management systems for micro-array technology for gene expression studies and biomedicine technology for data mining, gene discovery, sequence similarity searching of DNA and protein on the Grid.

The relations between BIOINFOGRID and EGEE-II will concern several aspects. In particular:

- The set up and management of a BIOINFOGRID Virtual Organization and the possible integration of the BIOINFOGRID computing and storage resources into the EGEE infrastructure.
- The use of the EGEE infrastructure for
  - The evaluation studies of biomedicine applications in a Grid environment.
  - The execution of limited number of Challenges to single out the added values of the Grid technologies to the biomedicine research.
- The set up of a channel of communication to exchange information on the improvements, upgrades and adds-on introduced in the Grid infrastructure, as well as to report back, to the infrastructure provider, feedbacks and suggestions coming from the day by day use of the Grid infrastructure by the biomedicine community. CNRS and INFN will play a major role in establishing such direct link.
- The organisation of common “dissemination of knowledge” events.

Coordinator : CNR-ITB

Start date and duration: 1 January 2006, 24 months