



The EUAsiaGrid Project

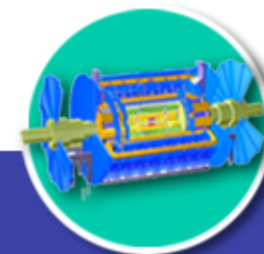
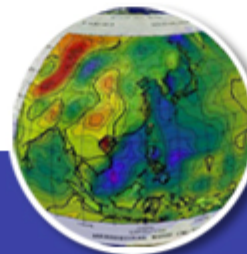
paving the way towards a global e-Science
infrastructure in the Asia-Pacific region

M. Paganoni

for the EUAsiaGrid Consortium

4th EGEE User Forum / OGF 25

Catania, 5/3/2009



Partners of the project



- 1 **Istituto Nazionale di Fisica Nucleare (Italy) (coordinator)**
- 2 **CESNET (Czech Republic)**
- 3 **University of Manchester (United Kingdom)**
- 4 **HealthGrid (France)**
- 5 **Ateneo de Manila University (Philippines)**
- 6 **Australia National University (Australia)**
- 7 **Academia Sinica (Taiwan)**
- 8 **Advanced Science and Technology Institute (Philippines)**
- 9 **Hydro and Agro Informatics Institute (Thailand)**
- 10 **Infocomm Development Authority (Singapore)**
- 11 **Institute of Information Technology (Vietnam)**
- 12 **Institute Teknologi Bandung (Indonesia)**
- 13 **National Electronics and Computing Technology Center (Thailand)**
- 14 **University Putra Malaysia (Malaysia)**
- 15 **MIMOS Berhad (Malaysia)**

- *CSA funding scheme*

- *1/4/2008 – 31/3/2010*

- *Collaboration with:*

EGEE-III

EU-IndiaGrid,

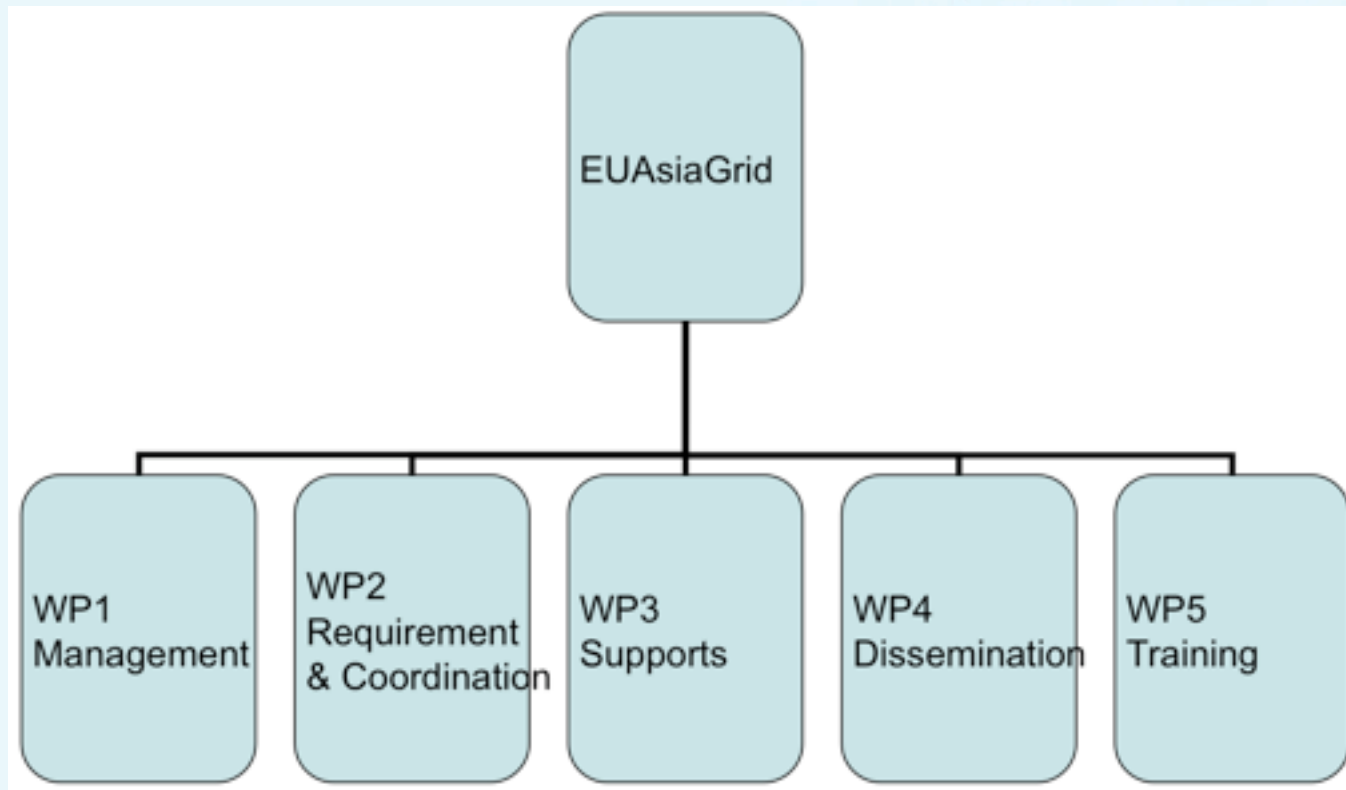
EU-ChinaGrid


EGI_DS

- *It is expected to run on Asia-Pacific EGEE infrastructure, but is not building or operating it*

- *Its main actions will be to spread dissemination, provide training, support scientific applications and monitor the results.*

Breakdown in work packages





EUAsiaGrid Objectives



Promote awareness in the Asian countries of the EGEE infrastructures, middleware and services by means of specific dissemination activities, such as workshops, training events, conferences, and hands-on demonstrations;

Capture local e-Science user **requirements** in terms of resources needed, Grid services, application software, and training needs, building on results of the EGI_DS project;

Build a EuroAsian Grid community by identifying and aggregating new and existing user communities into a virtual Grid-based research space;

Assist regional integration with the wider Grid infrastructure in collaboration with the EGEE III Asian Federation and the EUChinaGrid and EU-IndiaGrid projects, thus significantly contributing to the creation of a human network in the area of Grids, e-Science and e-Infrastructures between Europe and Asia;

Promote common e-Science applications in Asia and Europe, by supporting the early user communities already engaged in Grid applications (Life Science, Particle Physics), and engaging new ones by coordinating common actions of dissemination and training;

Provide specific **training** materials and events targeted to the needs of users in the Asian countries as established in part in Objective 2, and in part building on the experience gained from the EUChinaGrid and EU-IndiaGrid projects.

Foster **international cooperation** by working in synergy with members of the EGEE II Asian Federation, and the EU-IndiaGrid and EUChinaGRID projects.

- **Gathering information from the partners**
 - General information about state of adoption of grids
 - More specific and short-term, than roadmaps
- **Topics**
 - What is the state of grid adoption in your country?
 - What is your role in this?
 - What are your plans - what do you want to do and achieve through EUAsiaGrid?
 - What are the requirements for achieving your goals?

WP2 - Survey (NCeSS)



- Aimed at application researchers (early adopters, not the unengaged)
- English language master copy and translations to Chinese and Thai (Bahasa in preparation)
- Online and paper versions
- Dissemination and administration through appointed local survey coordinators
 - Disseminated to 400+ researchers in Thailand, expect results in late spring
- Important to follow up contacts through WP3
- Topics:
 - Welcome, General Information
 - Data Resources, Compute Resources
 - Visualisation, Teleconference, Remote Instrumentation
 - Network Connectivity
 - Applications and Usage
 - Support and User-Designer Relations
 - Training
 - Future Plans

WP3: Application Support (CESNET)



- **Objectives**
 - Attract user communities through explicit support of applications
 - Start with a set of applications already running on the EGEE
 - Search for new user communities that can benefit from the access to a Grid infrastructure
 - Establish appropriate Virtual Organizations (VOs)
- **First runners**
 - HEP, Biomedical & Bioinformatics
 - Computational Chemistry, Social Science
 - Disaster Mitigation
 - Cultural heritage
- **Potential adopters**
 - Biodiversity, Financial
 - Mathematics, Operational research
 - Natural language processing

WP3 - EUAsiaGrid VO (CESNET, ASGC)

- Generic, application neutral, regional VO for Asia Pacific region
- Based on "catch-all" approach established in EGEE
- Current state:
 - Technical set-up finished
 - VO registered in EGEE CIC portal
 - Start of end users/communities registration
 - Start of deployment high-level application tools
 - Start of resource contribution
 - All partners have set up RA/CA services
 - Certification process on-going
(3 out of 9 sites have been certified production ones,
4 sites are under the certification process)
 - Up to now 24 users from partners have joined VO
(ASGC, ASTI, UPM, MIMOS, NECTEC, UK, CZ)
 - 5 partners have available UI to access resources

WP3 - Issues and Challenges



- **Identified problematic areas**
 - Already existing Grids within AP region are mostly built on Globus based solutions, interest in Desktop Grids is raising
 - No mature use of gLite Grid outside ASGC
 - Not hierarchically strictly monitored model of involved communities (except the HEP community)
- **Challenges to be tackled**
 - All partners have CA or ASGCCA RA at their Institutes
 - Specific user support webpage provided and first line help from EGEE APROC for daily usage and site operation support
 - User space will be extended soon when pilot user groups of each partners joined those identified applications
 - Training, online information and helpdesk services, and simplified workflow are all necessary to lower the barrier to new Grid users
 - Application-driven approach most effective to get users on board
 - Interest in Desktop Grids in Asia-Pacific region, need for integration

WP3 - Computational Chemistry (CESNET)

- Charon system (high-level middleware layer) being installed at primary EUAsiaGRID VO UI
- Plans to support a set of freely available computational chemistry packages through Charon
- AutoDock <http://autodock.scripps.edu/>
- Gromacs <http://www.gromacs.org/>
- Abinit <http://www.abinit.org/>
- Dalton <http://www.kjemi.uio.no/software/dalton/dalton.html>

WP3 - Social Simulation (NCeSS)



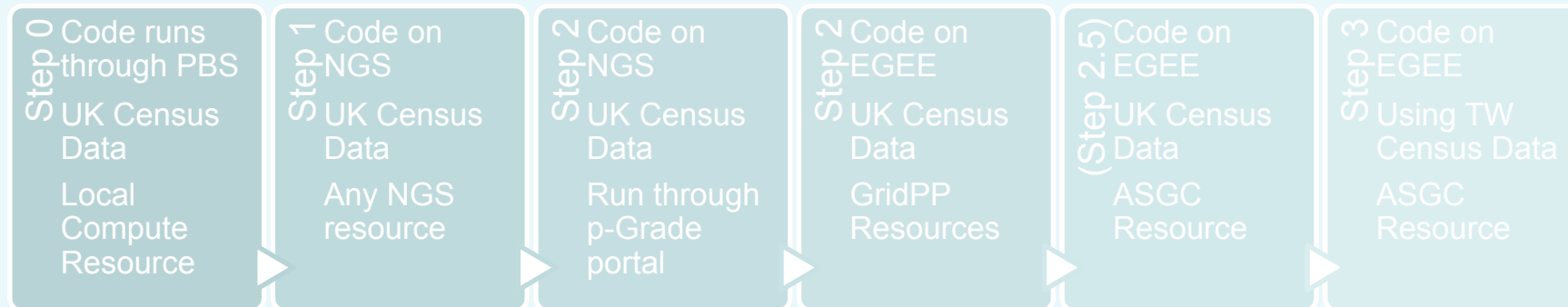
- Social scientists are not traditional users of advanced ICTs
- However:
 - Increased availability of data about social phenomena
 - Issues with data integration
 - Challenges from commercial sector
 - New analytical methods
- Social simulation developed as part of MoSeS node of NCeSS
- Using agent-based simulation to project population forward in time by 25 years
- Simulate the impact of distinct demographic processes such as mortality, fertility, health status, household formation, migration
- E.g., to inform policy making - what impact do policy decisions have
- Requirements include computation, data integration and visualisation

WP3: Social Simulation (NCeSS)



- **Generation of a synthetic model of the target population**
 - Based on real census and survey data
 - Works with 'public release' versions of census that are restricted, e.g., to 1% of population (anonymisation)
 - Reconstructed model has same attributes as real population and same number of individuals but is still anonymised
 - Can use geographic segmentation to run in parallel
 - Uses genetic algorithms to generate synthetic model
 - Attributes of the model population need to match attributes of the real one, e.g.,
 - overall demographic structure
 - number of students in university areas,
 - number of multi-car households in suburban areas etc.

WP3 - Social Simulation (NCeSS)



Currently porting population reconstruction code to EGEE, investigating Taiwan data assets and exploring other links, e.g., with healthcare research

Setting up e-Social Science VO

WP3 - Application Support at ASGC



- **High Energy Physics**
 - ATLAS and CMS Tier1 Center and APROC Services
- **Life Science Application**
 - Support of gLite-enabled Virtual Screening Service
 - Improve autodocking drug discovery performance & scalability with the DIANE2
- **Support for gLite adoption and integration**
 - Grid Application Platform (GAP) support to reduce application development cost
- **New application Development**
 - General virtual screening service for drug discovery, Earthquake wave simulation, Carbon Flux & Ecological surveillance, Global Earth Observation Grid (GEOGrid)
 - Application porting, integration and development
 - Integration Grid Enabled Workflow system with gLite

WP3 – HEP (ASGC in WLCG)



- One of the Most Reliable Tier1 sites in the world (98.85% reliability in 2008)
- Worldwide Grid Asia Pacific Regional Operation Center
- Most significant networking performance (7.3 Gb/s) between Asia and the rest of the world
- Tier1 of WLCG, ATLAS and CMS



Canada - Triumf (Vancouver)
France - IN2P3 (Lyon)
Germany - Forschungszentrum Karlsruhe
Italy - CNAF (Bologna)
Netherlands - NIKHEF/SARA (Amsterdam)
Nordic countries - distributed Tier-1
Spain - PIC (Barcelona)
Taiwan - Academia SINica (Taipei)
UK - CLRC (Oxford)
US - FermiLab (Illinois) - Brookhaven (NY)



WP3 – BioMed (HealthGrid)



- From the Consortium:
 - UPM, AdMU, ASTI, ITB, ASGC, ANU, IAMI, MIMOS, NECTEC and HealthGrid
- From outside the Consortium
 - CNRS
 - ChonNam National University (South Korea)
- Present applications
 - GATE
 - WISDOM
 - CREED

WP3 – BioMed (GATE)



- **Geant4 Application for Emission Tomography (GATE)**
 - Simulation toolkit adapted to nuclear medicine
 - Innovative feature: inclusion of time-dependent effects
- **Grid used to improve and speed up simulations.**
 - Requires Geant4: large, complex package
 - Individual simulations not easily divisible
- **It is a well known application deployed in EGEE since years**
- **Collaboration with Vietnam**

WP3 – BioMed (WISDOM)



- WISDOM aims at developing new drugs for neglected and emerging diseases, with a special focus on malaria
- It is deployed on EGEE since 2005 and had three massive campaigns (WiSDOM-I, Avian Flu, WISDOM-II)
- Calculations used FlexX from BioSolveIT (3-6k free, floating licenses) in addition to Autodock
- Several data challenges have been produced and target for Malaria are being patented.
- Evolution of WISDOM to a pan Europe-Asia-Pacific Network of surveillance for emerging diseases being setup
- Collaboration of most partners in EUAsiaGrid led by CNRS
- External partners from South Korea, Malaysia/Singapore



WP3 – BioMed (CREED)



- **Clinical Repository for Ethical E-infrastructure & Data sharing**
- **New activity based on a partnership between**
 - 5 Taiwanese hospitals
 - 4 French hospitals
 - 1 French SME (Maat France)
 - *ASGC*
 - HealthGrid

WP3 - Asian Flu Data Challenge II



Biology goals

- ✓ Refine 20,000 high-score compounds with 8 target Avian Flu virus
- ✓ Enable user select compounds and targets for virtual screening research on different diseases

Grid goal

- ✓ Provide a flexible and production virtual screening Grid application service integrating the gLite middleware to EUAsiaGrid partners
- ✓ Study on Grid Virtual Screening the deployment in EUAsiaGrid

Partners

- ✓ ASGC, Genomic Research Center (AS), All EUAsiaGrid Partners

Schedule

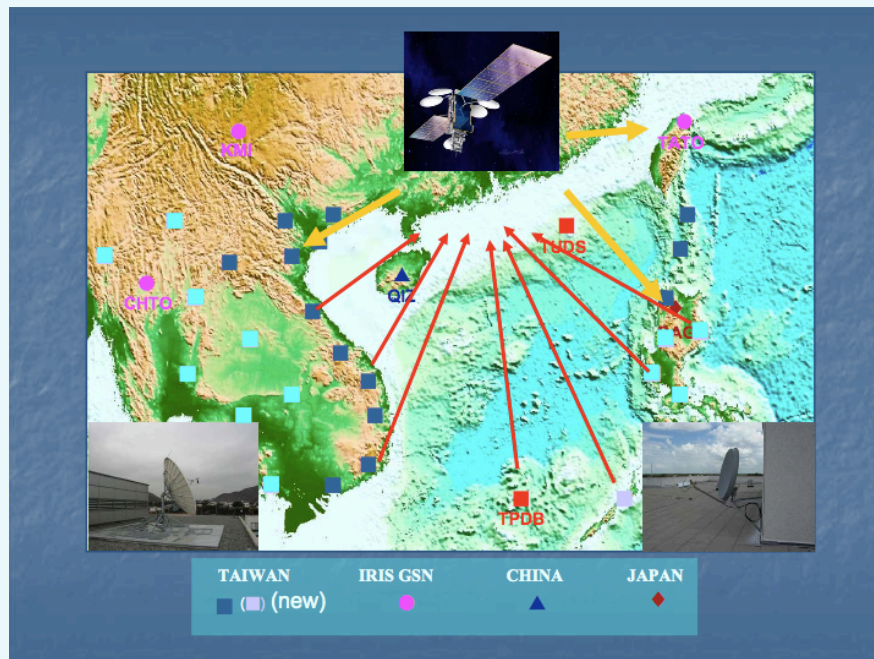
- ✓ Prepare the Avian Flu DC2 refined 20,000 compounds before 28 Feb.
- ✓ Scientific data analysis before 20 April, to present at ISGC 2009
- ✓ Avian Flu Drug Discovery Project has been awarded as Best Demo & Runner-up Award in EGEE'07 and EGEE'08

WP3 - Earthquake and Tsunami monitoring

www.euasiasgrid.org

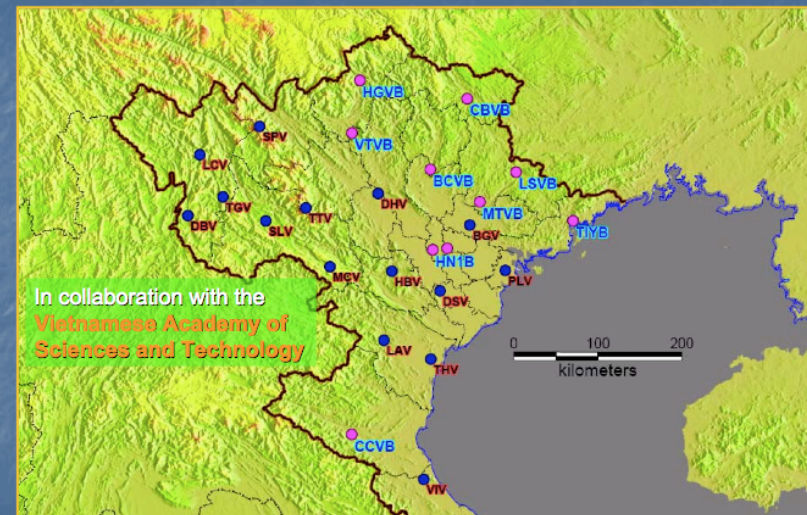


- Philippine Institute of Volcanology and Seismology (PHIVOLCS)
- Vietnamese Academy of Science and Technology
- The Incorporated Research Institutions for Seismology (IRIS), Global Seismic Network (GSN)
- Institute of Earth Science & National Central University, Taiwan



FP7-INFRA-223791

CREATE-IES2007



M. Paganoni, EUAsiaGrid, 5/3/2009

WP4: Dissemination (AS)



- **EUAsiaGrid Website**
www.euasiagrid.eu

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EUAsiaGrid

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Main News

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Events Calendar

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News Links

- SGTW
- EGEE

News

- 2008-08-27 Link of the week - Virtual reconstitution of a prairie
- 2008-08-27 Feature - OSG 1.0: Stable, Secure, Reliable
- 2008-08-27 Feature - Tevatron brings Higgs one step closer
- 2008-08-27 Feature - People behind the LHC: Mariusz Sapinski
- 2008-08-27 Announcement - Grid camp and HEPIX fall 2008 meeting, Taipei

+ more

Grid Camp and HEPIX Fall 2008 at ASGC, Oct 18-24, 2008, Academia Sinica, Taipei, Taiwan.

It is our pleasure to announce that Grid Camp 2008 and HEPIX 2008 Fall at ASGC is now opened for registration.

The program setting of Grid Camp 2008 (18th -19th of October) will be focused on grid applications and in conjunction with HEPIX 2008 Fall Meeting (20th-24th of October).

Please Click [HERE](#) for Program
Please Click [HERE](#) for Registration

Contact:
wgl@wgl.org

Introduction

The EUAsiaGrid proposal contributes to the aims of the EU Research Infrastructures FP7 Programme by "promoting international interoperability between similar infrastructures with the aim of reinforcing the global relevance and impact of European e-Infrastructures".

The project's main goal will be to pave the way towards an Asian e-Science Grid Infrastructure, in synergy with the other European Grid initiatives in Asia, namely EGEE-III via its Asia Federation, and both the EUChinaGRID and EU-IndiaGRID projects and their eventual follow on efforts.

Taking advantage of the existing global Grid technologies, with the specific emphasis on the European experience with the glite middleware and applications running on top of it, the project plans to encourage federating approaches across scientific disciplines and communities. EUAsiaGrid will act as a support action, aiming to define and implement a policy to promote the glite middleware developed within the EU EGEE project across Asian countries.

- **EUAsiaGrid Wiki Page**

article | discussion | view source | history

Main Page

Welcome EUAsiaGrid Wiki Page

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- 2 Main objectives
- 3 Participants
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Introduction

The EUAsiaGrid aims to the EU Research Infrastructures FP7 Programme by "promoting international interoperability between similar infrastructures with the aim of reinforcing the global relevance and impact of European e-Infrastructures".

The project's main goal will be to pave the way towards an Asian e-Science Grid Infrastructure, in synergy with the other European Grid initiatives in Asia, namely EGEE-III via its Asia Federation, and both the EUChinaGRID and EU-IndiaGRID projects and their eventual follow on efforts.

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EUAsiaGrid main actions will be to spread dissemination, provide training, support scientific applications and monitor the results.

The planned results of the project will be to:

- Offer an effective proposal to fulfill the demanding computing and storage needs of several common EU-Asia research projects;
- Foster the induction of new user communities to the e-Science Grid infrastructure;
- Enhance the scientific communities and applications running the glite middleware;
- Build partnerships between European and Asian scientific communities, to contribute to the scientific achievements from a global perspective and at a world class level;
- Coordinate a common policy towards a common e-Science infrastructure with the other European Grid initiatives in Asia, namely EGEE-III via its Asia Federation and both EUChinaGRID and EU-IndiaGRID, drawing on the experience of the EU EGI_OS project.

Main objectives

- Promote awareness in the Asian countries of the EGEE infrastructures, middleware and services by means of specific dissemination activities, such as workshops, training events, conferences and hands-on demonstrations;

- **GILDA** is a **INFN Laboratory for Dissemination Activities**
- It is a "de facto" standard **t-Infrastructure** adopted both by **EGEE** and several **EU-FP6** and **FP7** projects
- It is a complete suite of **grid elements** and applications fully dedicated to dissemination purposes and pre-porting of new applications to **EGEE Infrastructure**
- It runs the latest production (stable) version of **LCG** and **gLite Grid** middleware
- Easy entry point for new users/communities without disruption of production systems of **Grid** projects

WP5: Training - GILDA



https://gilda.ct.infn.it

- Posters
- Video Tutorials
- User Interface PnP
- Virtual Services
- Instructions for Users
- Instructions for Sites
- Training Material (wiki)
- GILDA Forge ^{NEW}
- Support System
- Useful Links

- Sponsors

is a virtual laboratory to demonstrate/disseminate the strong capabilities of grid computing.

GILDA consists of the following elements:

- [the GILDA Testbed](#): a series of sites and services (Resource Broker, Information Index, Data Managers, Monitoring tool, Computing Elements, and Storage Elements) spread all over Italy and the rest of the world on which the latest version of the [INFN Grid](#) middle-ware (fully compatible with [gLite](#)) is installed;
- [the Grid Demonstrator](#): a customized version of the full [GENIUS web portal](#), jointly developed by INFN and [NICE](#), from where **everybody** can submit a pre-defined set of applications to the GILDA Testbed;
- [the GILDA Certification Authority](#): a fully functional Certification Authority which issues

Concluído

gilda.ct.infn.it

WP5: Training events (INFN & AS)



- **Training events Organized in 2008**

- 28 - 31 Jul 2008 *EUAsiaGrid Tutorial, Kuala Lumpur, MY (14 People)*
<http://www.mimos.my/EUAsiaGrid>


- (Operation/Application focus)

- »

- 18 - 19 Oct 2008 *Grid Camp, Taipei, Taiwan (30 People)*
<http://indico.twgrid.org/conferenceTimeTable.py?confId=471>

- (Application focus)

- **Training events Planned for 2009**
 - *18-19 April 2009 EGEE tutorial, Taipei, Taiwan
co-located with ISGC 2009 & EUAsiaGrid Meeting*
 - *27 Jul-7 Aug 2009 EUAsiaGrid Summer School, Kuala Lumpur, MY*
 - *1 event in Vietnam (in cooperation with CNRS)*
 - *1 event in Philippines*
 - *1 event in Indonesia*



Conclusions



- EUAsiaGrid is now entering a more mature phase
- After the SPR and with the data from the survey a roadmap to pave the way towards a global e-Science infrastructure in Asia Pacific region is being defined
- The extension of EGEE is not only geographical but also to other scientific domains
- In addition to HEP, Computational Chemistry and Biomed & Bioinformatics also Social Sciences, Disaster Mitigation and Cultural Heritage are involved in the project
- Many training and dissemination events have taken place in 2008 and a richer programme is being implemented for 2009
- Any group interested in collaboration, any proposal for new activities are very welcome