

# EGI-InSPIRE

## ANNUAL REPORT ON THE WORK OF THE ASIA-PACIFIC REGION

### EU MILESTONE: MS110

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#### Abstract

This document reports on work of the unfunded Asia-Pacific partners within the EGI-InSPIRE project, including ASGC, ASTI, NECTEC/NSTDA, NUS, UNIMELB, UPM and KEK. Together, these partners contribute unfunded effort to provide an operational infrastructure that supports their user communities and their international collaborations.

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## II. DELIVERY SLIP

	Name	Partner/Activity	Date
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2	19/04/2011	Second draft	S Lin / ASGC
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## IV. APPLICATION AREA

This document is a formal deliverable for the European Commission, applicable to all members of the EGI-InSPIRE project, beneficiaries and Joint Research Unit members, as well as its collaborating projects.

## V. DOCUMENT AMENDMENT PROCEDURE

Amendments, comments and suggestions should be sent to the authors. The procedures documented in the EGI-InSPIRE “Document Management Procedure” will be followed:

<https://wiki.egi.eu/wiki/Procedures>

## VI. TERMINOLOGY

A complete project glossary is provided at the following page: <http://www.egi.eu/about/glossary/>.



## VII. PROJECT SUMMARY

To support science and innovation, a lasting operational model for e-Science is needed – both for coordinating the infrastructure and for delivering integrated services that cross national borders. The EGI-InSPIRE project will support the transition from a project-based system to a sustainable pan-European e-Infrastructure, by supporting ‘grids’ of high-performance computing (HPC) and high-throughput computing (HTC) resources. EGI-InSPIRE will also be ideally placed to integrate new Distributed Computing Infrastructures (DCIs) such as clouds, supercomputing networks and desktop grids, to benefit user communities within the European Research Area.

EGI-InSPIRE will collect user requirements and provide support for the current and potential new user communities, for example within the ESFRI projects. Additional support will also be given to the current heavy users of the infrastructure, such as high energy physics, computational chemistry and life sciences, as they move their critical services and tools from a centralised support model to one driven by their own individual communities. The objectives of the project are:

1. The continued operation and expansion of today’s production infrastructure by transitioning to a governance model and operational infrastructure that can be increasingly sustained outside of specific project funding.
2. The continued support of researchers within Europe and their international collaborators that are using the current production infrastructure.
3. The support for current heavy users of the infrastructure in earth science, astronomy and astrophysics, fusion, computational chemistry and materials science technology, life sciences and high energy physics as they move to sustainable support models for their own communities.
4. Interfaces that expand access to new user communities including new potential heavy users of the infrastructure from the ESFRI projects.
5. Mechanisms to integrate existing infrastructure providers in Europe and around the world into the production infrastructure, so as to provide transparent access to all authorised users.
6. Establish processes and procedures to allow the integration of new DCI technologies (e.g. clouds, volunteer desktop grids) and heterogeneous resources (e.g. HTC and HPC) into a seamless production infrastructure as they mature and demonstrate value to the EGI community.

The EGI community is a federation of independent national and community resource providers, whose resources support specific research communities and international collaborators both within Europe and worldwide. EGI.eu, coordinator of EGI-InSPIRE, brings together partner institutions established within the community to provide a set of essential human and technical services that enable secure integrated access to distributed resources on behalf of the community.

The production infrastructure supports Virtual Research Communities (VRCs) – structured international user communities – that are grouped into specific research domains. VRCs are formally represented within EGI at both a technical and strategic level.



## VIII. EXECUTIVE SUMMARY

Partners within EGI-InSPIRE are concentrated in two geographical regions – Europe (mostly funded partners) and the Asia-Pacific (unfunded partners). The work of these unfunded Asia-Pacific partners (represented within the project by ASGC, ASTI, NECTEC/NSTDA, NUS, UNIMELB, UPM and KEK) act as points of contact between the EGI.eu project office and their own national activities.

The partners in the Asia-Pacific region together form a loosely coupled Asia-Pacific Grid Initiative (APGI) that is coordinated by ASGC in Taiwan. Together, these partners cooperate within the region as well as engaging in bi-lateral interactions with partners in Europe (within EGI-InSPIRE) and elsewhere in the world. Their activity, primarily focused on maintaining their operational infrastructure, and providing support and training for their user communities, is aligned to their own national priorities and is documented in this report.

The main collaboration mechanism within the dispersed region is through workshops and conferences. The International Symposium on Grids and Clouds (ISGC) is celebrating its 9<sup>th</sup> year at its meeting in March 2011 (this year co-hosted with the Open Grid Forum) and brings together many of the regional participants with collaborators from Europe. ISGC contains peer-reviewed papers, invited speakers, and hosts a number of workshops.

The workshops that take place regionally (and at ISGC) reflect the regional strengths in HPC applications for Environmental modelling, Natural Disaster Mitigation and the Life Sciences. Notable new regional activity is the work to build grid activities in Vietnam and initiatives in communities new to grid activities, such as the social sciences, alongside the continued support for the High Energy Physics and computational chemistry communities.

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# 1 ACADEMIA SINICA GRID COMPUTING CENTRE (ASGC)

## 1.1 Introduction

As the lead partner of APGI, ASGC served as the liaison between the EGI-InSPIRE Project Office and APGI. ASGC was dedicated to coordinating the administration tasks among the APGI partners on the start-up of the Project especially in PQ1. In addition, ASGC on behalf of APGI participated in the EGI-InSPIRE PMB representing the unfunded Asia-Pacific partners. Besides WP1, ASGC also participated in WP2, WP3 and WP4. In WP2, knowledge and expertise of dissemination from EGI-InSPIRE would be further extended to Asia-Pacific region not covered by the EGI-InSPIRE infrastructure. ASGC participated in 6 national/international events and gave 14 talks. ASGC also organized 3 Applications Workshops, one International Conference and one high-level Collaboration Workshop. Dissemination materials were translated and media releases have been launched. In WP3, ASGC facilitates the communication between domain experts and helps to build communities of e-Science applications (including HEP, Life Science, Earth Science and e-Social Sciences) in the Asia-Pacific region. Two new applications are identified, they are: Tsunami simulation and Social Simulation on Political Science. Moreover, the Grid Application Platform (GAP) technology developed by ASGC becomes a good reference for application integration and accelerates the development process.

In addition, ASGC continues to extend geographical coverage of training events and to enhance training quality with greater flexibility. ASGC takes part in detailed event design, training partner coordination, logistics preparation, and training material preparation, delivery, reporting and analysis. In WP4, an EUAsia Virtual Organization has been established by ASGC to provide access to the Asian-Pacific Distributed Computing Infrastructure (including computational and storage services) for academic researchers from the countries within the region. The EUAsia VO functions as a regional virtual organization employing the catch-all approach. The primary aim of the EUAsia VO is to support research activities through multidisciplinary, generic applications deployed and running within the EUAsia VO environment. Detailed work on the NGI International Tasks is described in the following section.

## 1.2 Activity Summary

### 1.2.1 WP2 – NA2 External Relations (Total PM:12)

#### 1.2.1.1 TNA2.2 Dissemination

In the first year of the Project, both EGI Technical Forum and User Forum were participated in. In the Technical Forum, ASGC participated in all committee meetings / WP meetings as well as gave three talks, they were: (1) Asia Pacific JRU, (2) Application & User Support in Asia-Pacific, and (3) Desktop Grid Applications in Asia. ASGC also assisted the EGI Project Office to promote the EGI Technical Forum (14-17 September, Amsterdam) amongst the partners in the Asia-Pacific region, and coordinated with the PO regarding the communication and execution of a financial supporting program to Asia-Pacific partners. As a result, a total of 10 attendees from University of Melbourne (Australia), KISTI (Korea) and ASGC (Taiwan) attended the EGI Technical Forum.

In addition to organizing related e-Science events, ASGC has participated in 6 international events and gave 14 talks providing a general picture of the EGI-InSPIRE project, disseminated advanced e-Science knowledge to the potential user communities and gave them the skills to deploy and use the e-Science infrastructure. Among them, the most significant ones are:



**International Workshop on Grid Applications for Vietnam:** The objective of the workshop was to identify real needs for Vietnamese supercomputing researchers in the area of Life Sciences and Earth Sciences. At the end of the workshops, at least one working group consisting of foreign experts and researchers in Vietnam must be prepared for each subject with a plan of action, cooperation and funding in the next 2 years (2011-2012). Based on these plans, the Vietnamese researchers started the discussion on models of cooperation to build a National Grid Initiative (NGI).

ASGC was invited to give talks at (1) overview of EUAsia consortium and Applications, (2) experience of development / deployment of bio-medical applications, (3) experience of development / deployment of geophysical applications, (4) experience deploying WRF4G and GWRF in Taiwan, (5) Overview of Asia-Pacific Grid Initiative, as well as joined the panel discussion on the models of cooperation to build a National Grid Initiative (NGI) in Vietnam.

**The 27<sup>th</sup> Taiwan-European Conference:** The Taiwan-European Conference has for many years served as an important platform for interaction among scholars from the Taiwan and European nations. In the 2010 Conference, ASGC was invited to report on “Linking Asia Regional Collaboration with EU e-Infrastructure”. The session reviewer, Dr. Albrecht Rothacher, the Principal Advisor of Asia-Policy, Planning and Coordination to the Directorate-General for External Relations, European Commission, commented on ASGC’s impressive e-Science achievements as well as being pleased to learn that the European Commission has done so much in e-Science Development in Asia. Dr. Rothacher also acknowledged the importance of the “e-Science for the Masses concept” and encouraged ASGC’s continued efforts on facilitating e-Science in the Asia Pacific Region.

In addition to participating in international events, ASGC also presented to visitors from industry (such as ACER and TeliaSonera), R&E Network (for instance, Internet2) and research institutes who are interested in developing e-Science collaborations.

During the first reporting period, ASGC produced an EGI project factsheet in Chinese version for distribution. Two press releases have been launched: One is the online press release on the EU FP National Contact Point in Taiwan (NCP Taiwan) published on December 1, 2010. “ASGC Joined FP7-INFRASTRUCTURES-2010-2 DEGISCO, EMI, and EGI-InSPIRE Projects” ([http://ncp-tw.ntust.edu.tw/front/bin/ptdetail,NCP\\_News\\_20101201,r,15.phtml](http://ncp-tw.ntust.edu.tw/front/bin/ptdetail,NCP_News_20101201,r,15.phtml)) and the other is “Shake Movie” published by e-Science Talk on 25 March, 2011.

#### 1.2.1.2 TNA 2.3 Policy Development

ASGC participated in the Security Policy Group meetings and IGTF activities. We also organized and hosted the IGTF All Hands Meeting on 21-22 March 2011 as well as OGF 31 on 21-25 March 2011 in Taipei. In addition, ASGC (Eric Yen) was invited as one reviewer for the deliverable “D2.6 Integration of Clouds and Virtualisation into the European production Infrastructure”.

Dr. Stephan Pascall, Advisor to the Director, European Commission, DG INFSO, Policy Coordination & Strategy, visited Taiwan on 12 March 2011. ASGC organized the EU-Taiwan FP7 Collaboration Workshop (<http://117.103.105.177/MaKaC/conferenceDisplay.py?confId=9>) on 16 March 2011. In the Workshop, both Dr. Pascall and Mr. Christophe Forax, Counsellor for ICT and audiovisual for Southeast Asia in the EU Delegation in Singapore, presented FP7 projects. In addition, ASGC also presented “Taiwan’s Participation on EU FP7 e-Infrastructure Projects” in the Workshop.

#### 1.2.1.3 TNA 2.4 Event Management

In the first year, ASGC WP4 organized 3 Application Workshops and 1 international conference. Among the three Application Workshops, two of them were focusing on Natural Disaster Mitigation and one on Life Science. EU-Asia Training on Natural Disaster Mitigation, held on 11~12 November 2010, was coordinated by ASGC and the Advanced Science and Technology Institute (ASTI). It aimed to facilitate a grid-based e-Science Infrastructure for hazards mitigation in the Philippines with the collaboration of local domain experts and 25 participants from both ASTI and PHILVOS (Philippine Institute of Volcanology and Seismology) attended the Workshop. Two tutors from ASGC taught how to run the SPECFEM3D and Finite Difference simulation via EUAsia Portal.

The second Natural Mitigation Workshop was held on 19 March 2011 (<http://event.twgrid.org/isgc2011/NaturalDisasterMitigation.html>). Different from the previous workshop which specifically designed for Philippines earthquake experts, the March Workshop focused on more generic e-Science training in Natural Disaster. Hence, two applications, earthquake and climate change, were focused on. The concepts of e-Science, e-Science environment, tools and applications were introduced. Around 15 participants attended the Workshop.

The e-Science Workshop on Life Science (<http://event.twgrid.org/isgc2011/LifeScience.html>) was held on 20 March 2011. This Workshop emphasized the e-Science applications in Life Science including Drug Discovery and Next Generation Sequencing. In total, 15 participants attended the Workshop.

**International Symposium on Grids and Clouds (ISGC):** ISGC is one of the biggest forums among the Asia Pacific e-Science communities to exchange information between European and Asian partners. This annual event attracts middleware developers, end users, project leaders and policy makers from Europe, Asia and the US. Hence, the ISGC becomes one of the key vehicles for communication between the European and Asian user communities, both for disseminating information about the project and for receiving direct feedback from the partners as well as from the wider community. This year, it brought together 250 people from 25 countries.

The International Symposium on Grids and Clouds (ISGC 2011) in conjunction with the Open Grid Forum ([OGF 31](#)) was held at Academia Sinica in Taipei from 21-25 March 2011 with other co-located events from 19-21 March 2011, including: IGTF All-Hands Meeting, IDGF Tutorial, Asia@home Hackfest, and iRODS Workshop. Theme of ISGC 2011 is "Seamless distributed computing infrastructures": The research community is making wide-spread use of distributed computing facilities. Linking together computer centres, production grids, desktop systems or public clouds, many user communities have been able to expand the scope of the research they undertake and the speed at which they can produce results. The focus of ISGC2011 highlighted the opportunities that exist for the research community in better integrated computing infrastructures and the steps necessary to achieve the vision of a seamless global research infrastructure. This year 8 FP7 projects attended, they were: EGI-InSPIRE, EUIndiaGrid-2, GISELA, EMI, DEGISCO, CHAIN, neuGrid and e-ScienceTalk. In total 12 Asia countries gave reports on their current status at the "Grids and Clouds Activities on Asia Pacific" Session. In addition, ASGC delivered six talks, they are: (1) e-Science Development in Taiwan, (2) e-Social Science Development in Taiwan: Scalable Social Simulation Using Commodity Computing, (3) High-density Grid Storage System Optimization at ASGC, (4) Grid Interoperation: SRM-iRODS Interface Development, (5) Structure-based Drug Discovery on Grid, (6) e-Science on Weather Simulation Using WRF Model. Detailed Conference Program could be found at <http://event.twgrid.org/isgc2011/program.html>.

### 1.2.2 WP3 – NA3 User Community Coordination (Total PM: 30)

ASGC coordinates the e-Science infrastructure support and user community engagement with all the APGI partners. With stable infrastructure contributed by distributed resource centres at partner sites, users could access to EUAsia resources and collaborate with partners and e-Science communities easily. With the driver of real user requirements, ASGC focuses on problems that tackle Asia's concerns and demonstrate the value of collaboration through the e-Science paradigm. Main activities are described as followed:

#### 1.2.2.1 TNA3.2 User & Community Support Team

ASGC provided user support to the following applications:

**High Energy Physics (HEP):** CERN's Large Hadron Collider had accelerated its twin beams of protons to an energy of 7 TeV on 30 March 2010. Since then, for ATLAS the inbound transfer data volume to ASGC reached 2,333 TB and outbound transfer volume from ASGC to other T1s/T2s reached 900 TB. For CMS, the inbound transfer data size to ASGC reached 1,895 TB and outbound transfer rate from ASGC to other T1s and T2s reached 1,704 TB. Taiwan Tier-1 and Tier-2 Centres finished 6.67M jobs in the first EGI years, and provided 90.2M normalised CPU time (HEPSPEC06.Hours) for ATLAS and CMS experiments.

#### Bioinformatics and Biomedics:

- (1) Drug Discovery: ASGC helped local researcher from AS Genomics Research Center prepare the docking for HCV and Antibiotics for New Delhi Metallo-beta-lactamase (NDM-1). For HCV, there are 300,000 ligands and one-fifth has finished docking. For NDM-1 Antibiotics, we are currently running 2,000,000 ligand dockings. In addition, ASGC assisted researchers from Korea and Hong Kong to conduct Drug Discovery via GVSS. Dr. Koman Kim from Chonnam National University (CNU), Korea sent three students for a two-week internship in Taiwan. They conducted Dengue Fever drug discovery by using the GVSS. Their targets were selected from ZINC ligand database and ChemBridge database. We also assisted Dr. Dezmond Loh from University of Hong Kong to prepare data to run virtual screening on Windows.
- (2) Compound Profiling: By using the Autodock 4.2, we generated all possible docking poses and evaluated the interactions. Then the docking poses could be arranged in sequence based on their docking energy. We evaluated 5000 complexes from the PDBBind v2010 database and 700 complexes suitable for compound profiling were selected. Currently, we have finished compound profiling for 400 complexes.
- (3) Next Generation Sequencing: BLAST (Basic Local Alignment Search Tool) is used for performing the alignment of genome sequences against reference databases. Each BLAST alignment search is independent. BLAST is a kind of embarrassingly parallel problem which is suitable to be distributed in Grid environment. ASGC developed a Java-based job management framework, based on master-worker pattern, to improve efficiency of job execution in a distributed system (e.g. Grid and BOINC) by using automatic load balancing. With the newly developed framework, it only takes 10 hours with 50 workers to finish 14,000 sequence alignments which originally take about one week. A BLAST Web Portal has been developed for bioinformatics researchers. ASGC is currently discussing with the researcher from the National Yang-min University to improve the robustness of the web portal.

#### Natural Disaster Mitigation:

- (1) Earthquake: From a computational seismology perspective, earthquake hazard mitigation involves two aspects. One is making hazard maps to prepare for future earthquakes and the other is

to make quick simulations of ground shaking immediately after earthquakes. There are two portals in the world for this purpose provided by: Southern California University and Princeton University. They both run Spectral Element Methods (SEM) simulations after earthquakes and make shake movies available several hours after the earthquake. During the reporting period, ASGC has completed 5000 SGTs in Taiwan. By combining our Strain Green Tensor database and the system at Institute of Earth Sciences at Academia Sinica, ASGC makes shake movies automatically and much faster than running actual simulations like the other two portals.

(2) Tsunami Simulation: Tsunami simulation is a new application in the Asia-Pacific region. ASGC coordinated with local researchers from the National Central University on Tsunami simulation. We have managed to obtain global bathymetry data with resolution up to 30 arc seconds. For the moment, we are checking the data quality. Once it is done, the tsunami computation in each South China Sea country will be possible. A useful tsunami hazard map needs to include not only the tsunami arrival time and wave height, but also the inundation map with momentum flux which can be transferred into the force on the structures easily. After inundation, we can use the 90m DTM data from Google Earth for the simulation. A Natural Disaster Mitigation Working Group Meeting was organized during the ISGC 2011. Working Group members include Asian partners from Indonesia (ITB and BMKG), Malaysia (UPM), Philippines (ASTI and AdMU), Taiwan (ASGC, AS Institute of Earth Science, National Taiwan University and National Central University), Vietnam (IFI and Vietnam Earthquake Information and Tsunami Warning Centre), Thailand (HAI), Pakistan as well as US partners including University of California at Riverside and California Institute of Technology.

(5) Climate Change: Over the past 12 months, ASGC focused on maintaining and updating the Grid-enabled Weather Research Forecasting model (GWRF). In addition, new functions such as visualization tool GrADS were investigated. In order to help AP scientists to understand how GWRF works in the EUAsia VO, ASGC have conducted a Natural Mitigation Application Workshop on 19 March 2011.

**e-Social Science:** ASGC focused on two applications.

(1) Population Simulation: SimTaiwan is a collaboration research initiative between NCESS, UK, CSR and ASGC, Academia Sinica, TW for social simulation. This project aims to create a social model with agent-based modelling techniques and the Repast Symphony toolkit. SimTaiwan develops a social simulation model based on the population and household census data of Taiwan. The social model will start from population reconstruction and the first substantive research question will be migration. In the first half of the reporting period, we have tested and evaluated the social simulation model, including stability analysis, memory usages of different number of seeds for population initialization, runtime measurements of different number of threads and partitions. The complete Taiwan Migration Model includes three sub-models. We will run the Preferred Departure Model first. The full dataset, 20 million individual data, of the Taiwan Census dataset has been run since December 2010.

(2) Social Simulation on Political Science: This is also a new application. ASGC coordinated with the local scholar from National Sun Yat-sen University to conduct social simulations on Taiwan voting behaviour.

#### 1.2.2.2 TNA3.3 NGI User Support Team

Besides the user support for the local researchers in the above-mentioned application areas, ASGC provided consultancy and support to:

(1) WeNMR: Local researcher from National Tsing Hua University is involved in the WeNMR which is an *European FP7 e-Infrastructure project* ([www.wenmr.eu](http://www.wenmr.eu)). ASGC worked on porting their applications to the EUAsia VO.

(2) outGrid: outGrid, European FP7 project, intended to set up an Asia Chapter. ASGC worked with outGrid on the setup of the Asia Chapter and coordinated local researchers to join the outGrid project.

#### 1.2.2.3 TNA3.4 Technical Services

To better facilitate e-Science applications in the Asia-Pacific region, ASGC organized three Application Workshops during PY1. Among the three Application Workshops, two of them were focusing on Natural Disaster Mitigation and one on Life Science. EU-Asia Training on Natural Disaster Mitigation, held on 11~12 November 2010, was coordinated by ASGC and the Advanced Science and Technology Institute (ASTI). It aimed to facilitate a grid-based e-Science Infrastructure for hazards mitigation in the Philippines with the collaboration of local domain experts. Twenty-five participants from both ASTI and PHILVOS (Philippine Institute of Volcanology and Seismology) attended the Workshop. Two tutors from ASGC taught how to run the SPECFEM3D and Finite Difference simulation via the EUAsia Portal.

The second Natural Mitigation Workshop was held on 19 March 2011. In contrast to the previous workshop, which was specifically designed for Philippines earthquake experts, the March Workshop focused on more generic e-Science training on Natural Disaster. Hence, two applications, earthquake and climate change, were focused on. The concept of e-Science, e-Science environment, tools and applications were introduced to the 15 participants that attended the Workshop.

The e-Science Workshop on Life Science was held on 20 March 2011. This Workshop emphasized e-Science applications on Life Science including Drug Discovery and Next Generation Sequencing. In total 15 participants attended the Workshop.

### 1.2.3 WP4 – SA1 Operations (Total PM:48)

ASGC is operating the Asia Pacific Regional Operation Centre (APROC) to integrate regional resources in the Asia Pacific region with EGI's and to maximise the e-Infrastructure's reliability to support various e-Science user communities. At this moment, there are 31 sites from 12 countries joining 16 VOs in the EGI Asia Pacific regional infrastructure. Five new sites (AU-PPS, NZ-UOA, MY-UTM-GRID, TW\_NTU-HEP, and TW-eScience) were certified by APROC during PY1. Two more new sites (TW-NYMU-Grid and Singapore) are under certification. Around 8,000 cores, 6.5 PB disk space are available from the Asia Pacific resource centres. Currently, there are 1,722 registered users in total according to APGridPMA statistics in March 2011. In terms of normalised CPU time (HEPSPEC06), the resource utilisation in this region grows rapidly from a 12,520K monthly average in the first 6 month to 24,420K in PQ3 and PQ4 of EGI-InSPIRE's first year. The changes in normalised CPU time can be found in Figure 1. The daily average number of jobs running also increases a lot from 44,636 in the first two quarters to 54,179 in the second half of the project year.

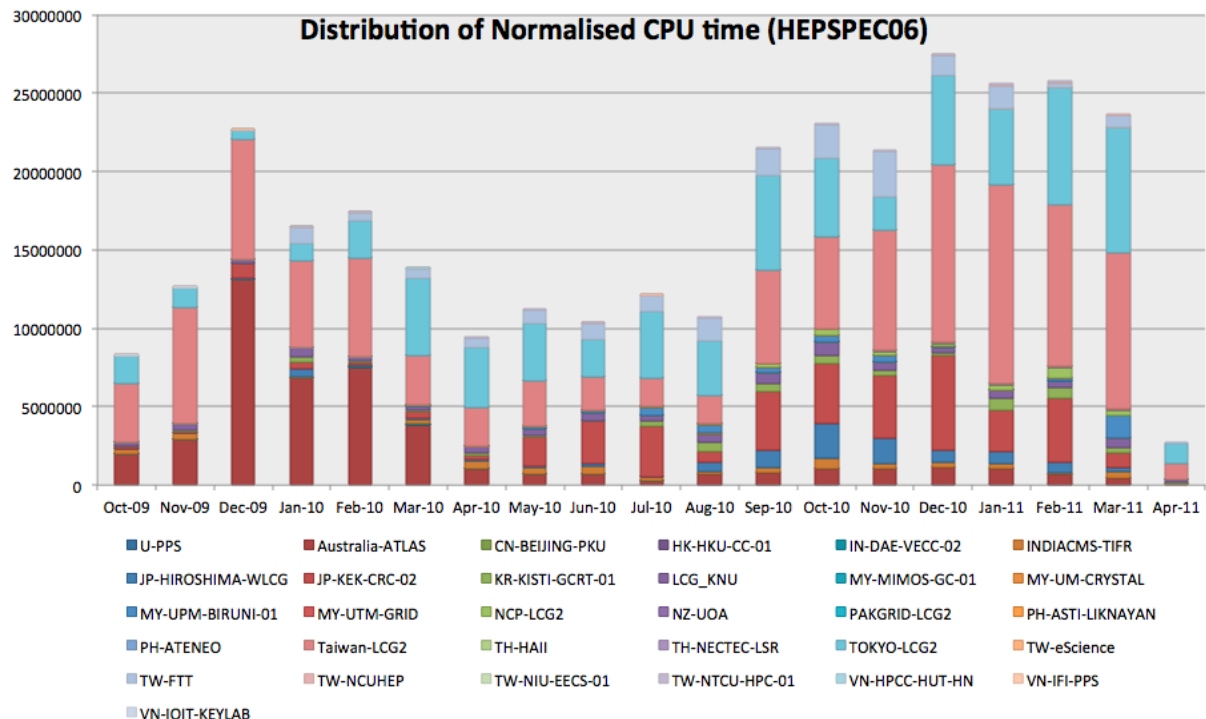


Figure 1: Variation of Normalised CPU time with site in the Asia Pacific region.

#### 1.2.3.1 TSA1.2 A Secure Infrastructure

APROC coordinates and supports the infrastructure security issues in the Asia Pacific region by aligning with both the EGI-CSIRT and EGI SPG teams as a member. APROC serves as a consultant and follows up every security event in all partners, including operating system and middleware vulnerability patching. Once there is any incident or action required on security issues, APROC tracks the status every day until the remedy is complete. During the report period, APROC had assisted 28 sites to resolve serious Linux kernel patches (CVE-2009-3547, CVE-2010-4170) and DPM 3.1/SLC4 (memory leakage issue). Besides, APROC also enforces the accomplishment of security service challenges conducted by EGI-CSIRT.

Regarding (site level) authentication and authorization, ASGCCA acts as regional 'catch-all' certificate authority (CA) to support any country without any domestic production CA and to help establish a new CA. The Registration Authority of ASGCCA will be setup at a new user site if there is no available IGTF CA in the country. Eric Yen from ASGC is now the chairman of Asia Pacific Grid Policy Management Authority (APGridPMA), and an annual self-audit report is conducted by APGridPMA for every member CA using a peer review model to enforce the trust framework in this region.

#### 1.2.3.2 TSA1.3 Service Deployment Validation

APROC is in charge of site certification and also application environment verification to maintain a consistent APGI regional collaboration framework as a whole. gLite is the primary middleware of APGI. ASGC provides resources serving as pre-production environment and shared with APGI members for testing, evaluation and training purposes. ASGC also tracks and helps member sites on middleware updates from EGI. In addition, APROC also coordinates and supports middleware layer interoperation among partner sites and user communities, such as VDT, Globus and Condor, etc.

In the application level, core services such as MPI environment, compiler, and regional e-Science collaboration specific application programs and packages, are all deployed and supported by APROC.



Currently, APGI uses the EUAsia VO for regional collaborations. Once an individual domain application scales out, a linkage with the corresponding EGI VO will be made or a new VO will be created.

#### 1.2.3.3 TSA1.4 Infrastructure for Grid Management

To help regional sites understand service quality, ASGC provides regional Nagios services for production sites in this region. The service was in operation from February 2011. GStat2 is also installed at ASGC as regional Grid information system sanity check services for both the Asia Pacific region and the whole EGI NGIs. GStat provides a complete solution for visualising grid infrastructure information and ensuring that the information content is accurate, and making sure that the infrastructure information system is healthy.

#### 1.2.3.4 TSA1.5 Accounting

APROC checks the correctness and completeness of accounting information at all APGI sites on a monthly basis. Services such as providing a stable accounting data publishing proxy are provided by APROC when a site is not able to take care of accounting data processing in time. A regional accounting portal and an accounting repository will be established at ASGC in the PY2.

#### 1.2.3.5 TSA1.6 Helpdesk Infrastructure

APGI regional helpdesk is shared with APROC (<http://aproc.twgrid.org/>). Services are categorized by roles of user, site, and VO. ASGCCA services are also anchored at the site for certificate related services. Technical information is compiled at the APROC Wiki, <http://wiki.twgrid.org/apwiki/>. Information from site and middleware deployment procedures, site operation procedures and documents, site administrator how-to, trouble-shooting knowledge sharing, monitoring tools, and VO specific operation and support information are all organized and updated. In the future, timely updates and routine reports on APGI status will be published at APROC site. The GGUS framework is also used as regional ticketing system.

ASGC is also in charge of the new FAQ from GGUS tickets repository. We are now working with SA1 to move all useful FAQs from GOCwiki to EGIwiki.

#### 1.2.3.6 TSA1.7 Support Teams

ASGC provides first-line and second-line support to APGI member sites by the APROC framework. The first-line support works directly with a site administrator until the problem is solved. In the first project year, over 340 tickets from 28 regional sites were resolved by APROC support. Sites with monthly availability lower than 70% will be followed up by APROC every other day.

Not only does ASGC support the nationwide e-Science networking infrastructure but also assists the Asia Pacific academic network backbone by constructing the broadband network to Japan and Hong Kong. Routing optimisation, latency monitoring, linkage quality between APGI sites are all investigated day by day by the ASGCNet operation group.

#### 1.2.3.7 TSA1.8 Providing a Reliable Grid Infrastructure

The reliable APGI infrastructure is enforced by Service Level Agreements with each site and APROC services. In terms of Asia Pacific average site reliability, this region has maintained a high value from 89.6% in the first project quarter, to 83.3% in 2nd project quarter, 86.6% in PQ3 and 92% in PQ4. From May 2010, plenty of sites exceeded the reliability target in the SLA. A few sites failed the target because of domestic networking problems or not declaring scheduled downtime properly.



In supporting a reliable regional e-Science infrastructure, ASGC provides top-BDII, FTS, WMS, LFC and also VOMS services for regional e-Science applications. In the meantime, ASGC operates both the national CA and catch-all CA of the Asia Pacific region to ensure the trust framework in this region.

## 2 ADVANCED SCIENCE AND TECHNOLOGY INSTITUTE (ASTI)

### 2.1 Introduction

It has been a full year for the ASTI in the Philippines in terms of its initiatives in Grid Computing. The research area is relatively new in the country, with the first national initiative on grid computing starting only in 2008. We continued with our collaborations, both with local research institutions and regional/international communities such as EUAsiaGrid, PRAGMA, and EGI-InSPIRE. For the research and operational aspects, we have started with our efforts to virtualize the ASTI HPC facility. This will hopefully lead to opportunities to explore cloud computing and eventually offer it as a service to our local scientific community.

The highlights and major achievements for this reporting period include: (1) Conclusion of the EUAsiaGrid Project; (2) Commencement of the EGI-InSPIRE project; (3) Interoperability of HPCs to form the Philippine e-Science Grid (PSciGrid), the main national grid initiative for e-science; (4) User training events

Moreover, additional full time research staff were hired as part of the Grid Operations Group. There are now a total of four (4) full-time technical staff, and three (3) management personnel handling the Philippine e-Science Grid (PSciGrid) Program and activities pertaining to collaborations including EGI-InSPIRE.

### 2.2 Activity Summary

#### 2.2.1 WP2 – NA2 External Relations (Total PM: 5)

##### 2.2.1.1 TNA2.2 Dissemination

In terms of dissemination events, ASTI was able to carry out the launching activity for the Philippine e-Science Grid (PSciGrid) on July 2, 2010, with around 37 attendees from various scientific disciplines. During the launching event, the team provided demonstrations of different applications running on PSciGrid, including an application for earthquake simulation, SPEC-FEM3D Globe, which is targeted to be used by the Philippine Institute of Volcanology and Seismology (PHIVOLCS). Another application that was demonstrated was AutoDock Vina, which is used for drug discovery, molecular docking, and virtual screening. The event also showcased ASTI's new Stereoscopic 3D Visualization Facility that brings scientific visualization, such as molecular interaction, into a whole new level.

The following activities were also continued: (1) Maintenance of PSciGrid website <http://www.pscigrid.gov.ph/index.php>; (2) Reproduction and dissemination of brochures.

#### 2.2.2 WP3 – NA3 User Community Coordination (Total PM: 36.40)

##### 2.2.2.1 TNA3.2 User & Community Support Team

ASTI was able to conduct the following trainings for the research communities we support locally:

Title/ Date/ Location	Number of participants	Outcome (Short report & Indico URL)
Workshop-Training for the Philippine Genome Center/	22	The Phil. Genome Center is a multi-disciplinary institution operated by the University of the

Title/ Date/ Location	Number of participants	Outcome (Short report & Indico URL)
March 3, 2011/ ASTI		<p>Philippines (UP) that aims to consolidate all the related efforts of researchers and scientists to boost the promotion and education of genomics in the country. It also aims to be a world-class centre to lead genome research. ASTI conducted a one-day training for member institutions under the PGC to introduce them to the bioinformatics tools and applications installed in the ASTI HPC facility, that are relevant to their work and that are available for them to use/ access.</p> <p>The training provided discussions and demonstrations on the software and applications. Among the software and applications presented, the participants were particularly interested to use Glimmer, GenBank, BLAST, MrBayes, BioRoll, and BioBoost.</p>
<b>Training for the University of the Philippines at LosBanos (UPLB)-BIOTECH on the Data Warehouse Portal/</b> February 18, 2011/ ASTI	15	<p>The training was conducted for researchers of the UPLB National Institute of Molecular Biology and Biotechnology (BIOTECH). This training on the BIOTECH Data Warehouse portal is one of the outputs of the collaborative project between ASTI and BIOTECH entitled "Integrative Bioinformatics: Data Warehousing of Microbial Information".</p> <p>The training primarily focused on the features and functions of the BIOTECH Data Warehouse portal. The data warehouse is a single database management system which enables BIOTECH researchers to easily access databases like GenBank, UniProt, BioCyc, and other databases that are necessary and useful in their work.</p> <p>The training gave an overview on BioWarehouse, an Open Source toolkit used for constructing bioinformatics databases. Also, discussion about databases loaders needed so researchers can access the databases through the portal. Moreover, included in the training were guide discussions on how to access the portal such as account registration, module administration, and data download. A hands-on exercise on data mining, a process on analysing data from different sources and summarising it into useful information, was conducted.</p>
<b>Training on SPECFEM_3D GLOBE Application for Local Seismologists/</b> Nov. 10-12, 2010/ ASTI	9 2 trainers from ASGC	<p>The workshop primarily focused on how to use SPECFEM3D_GLOBE, which was installed on the ASTI HPC's Liknayan Cluster. This cluster had been certified as a production machine, and was connected to EGI. The resource speakers for the</p>

Title/ Date/ Location	Number of participants	Outcome (Short report & Indico URL)
		workshop were Jim Ho and Jinny Chien of ASGC. The first day of the workshop included discussions about the EuAsiaGrid Project, and gLite security and services. It also had hands-on activities on Information System, and Job and Data Management System. The second day involved introduction on Message Passing Interface (MPI) Programming and Seismic Simulation Gateway, and demonstrations of SPECfEM3D_GLOBE. The last day was the continuation of the demonstrations and allotted for further discussions on the topics presented.
<b>Technical Training on Installing and Running SPECfEM_3D GLOBE/</b> July 13, 2010/ ASTI	4	The ASTI team provided a technical training, primarily on installing and running the SPECfEM_3D Globe application on the HPC facility. The main participants were seismologists from the Philippine Volcanology and Seismology Institute.

#### 2.2.2.2 TNA3.3 NGI User Support Team

During PY1, ASTI's HPC facility saw a significant increase in the number of users. The users come from different application areas: Bio-informatics, Meteorology, Seismology, Marine Science, Physics, and Computational Science, with Physics and Computational Science identified as new application areas.

The following are the summary of activities that were assisted by ASTI:

- The Marine Science Institute used the Lagrangian particle dispersal installed in Banyuhay Cluster for the modelling of the dispersal of reef fish larvae to resolve population connectivity between reef populations in the Bohol Sea, central Philippines. As for data visualization, SeaDAS was used.
- A researcher from PAGASA (Philippines' weather bureau) was also given assistance in the installation and use of PSU/NCAR mesoscale model, known as MM5, for his research on the onset of rainy season over Central Luzon island.
- Senior seismologists from the Philippine Institute of Volcanology and Seismology were introduced to SPECfEM3D\_GLOBE, an application which allows for the simulation of seismic wave propagation of any earthquake.
- In the area of bio-informatics, assistance is being extended to researchers of the UP Institute of Biology in their DNA Barcoding and Phylogenetic Analysis study, and to UPLB Biotechnology on their study on Biowarehousing.
- In the area of Physics, user support was given to graduate and undergraduate students from the National Institute of Physics who are using Enthought Python Distribution. Research topics include Transport Systems in Cells, 3D Numerical Model for Photopolymerization Dynamics, and Evolution of an Erdo-Renyi Network Driven by Agent Diversity among others.
- As for Computational Science, a whole class enrolled in a Parallel Computing course at the UP College of Computer Science was given accounts in the facility to allow them to develop, test, and run their parallel machine applications.

As for porting of applications to the grid, the PSU-NCAR Mesoscale Model, known as MM5, has been ported by the PSciGrid user support team and is now interfaced with the gLite Middleware. The system which is composed of several serial auxiliary programs and a parallel main program has been tested to run on PH-ASTI-LIKNAYAN, the production cluster registered with the EGI.

#### 2.2.2.3 Other Activities

Ongoing technical consultancy services are being provided to the Energy Development Corporation, a private company in the Philippines focusing on renewable energy doing reservoir modelling, and interested in setting up their own HPC facility. ASTI is currently testing and evaluating the software they are using for their modelling, called iTOUGH2, on ASTI's sandbox cluster.

### 2.2.3 WP4 – SA1 Operations (Total PM: 36)

#### 2.2.3.1 TSA1.2 A Secure Infrastructure

All security updates issued by EGI Broadcast that affects PSciGrid have been installed, including the update of lcg-CA to EGI Trust Anchors.

Host certificates of servers running the gLite services have been updated on August 2010.

#### 2.2.3.2 TSA1.3 Service Deployment Validation

Two sites from two different institutions were added to the Philippine e-Science Grid last June 2010. Ateneo de Manila University has a cluster of four dual-core nodes contributed to PSciGrid. The other institution is the University of the Philippines - Computational Science Research Center, also offering four dual-core nodes. These two sites plus the Liknayan Cluster in ASTI initially comprise the Philippine e-Science Grid.

The table below shows a list of the gLite services running on PSciGrid, their respective version, and the target date of upgrade:

gLite Service	Current Version	Date of Upgrade
APEL	glite-APEL-3.2.5-0	February 2, 2011
Storage Element	glite-SE_dpm_mysql-1.8.0-1	March 21, 2011
User Interface	glite-UI-version-3.2.8-0	March 22, 2011
Compute Element	lcg-CE-3.1.40-0	scheduled to be upgraded by April 2011
Working Nodes	glite-WN-version-3.2.10-0	n/a
BDII	glite-BDII-3.1.23-2	scheduled to be upgraded by April 2011
VOMS	glite-VOMS_mysql-3.1.25-0	scheduled to be upgraded by April 2011

gLite Service	Current Version	Date of Upgrade
WMS	glite-WMS-3.1.27-0	scheduled to be upgraded by April 2011
LFC	glite-LFC_mysql-3.1.37-2	scheduled to be upgraded by April 2011

#### 2.2.3.3 TSA1.4 Infrastructure for Grid Management

The virtualization of the Philippine e-Science Grid (PSciGrid) is currently being done, in order to: address the limitations of a physical cluster and maximize the availability of nodes when simultaneous jobs are run; accommodate user-specific customisation of system configurations and to maximise resource utilisation; and fully cater to multiple Grid collaborations with many virtual clusters.

#### 2.2.3.4 TSA1.8 Providing a Reliable Grid Infrastructure

To monitor the status of gLite services and PSciGrid clusters, the operations team rely on the Ganglia Monitoring System (<http://monitor.pscigrid.gov.ph>) and the Asia Pacific ROC Nagios Monitoring Tool (<https://rocnagios.grid.sinica.edu.tw/nagios>).



### 3 INSTITUT TEKNOLOGI BANDUNG (ITB)

#### 3.1 Introduction

In EGI-InSPIRE ITB will provide external relations and user community support within Indonesia. ITB's relevant experience in Grid activities includes as a partner organization in INHERENT (Indonesia Higher Education Research Network) Indonesia-Grid (IN-Grid) training and dissemination activities in 2005. And in 2008-2010 ITB took part as an Asia-Pacific partner in the EUAsiaGrid Project.

Although no major activities were done during the past year, some approaches have been made to several user communities to open the possibilities to collaborate between local and European user communities. User communities involved in EGI-InSPIRE includes those who are also involved in the EUAsiaGrid Project in research areas such as Weather Forecasting, Disaster Mitigation, and Computational Chemistry. However, in the last year approaches have also been made to new research areas that may be able to benefit from the use of e-Infrastructure such as Volcanoes, Firewatch (Forestry), and Digital Libraries.

Volcanoes and Firewatch are in line with the Hazard Map Development that is developed for Disaster Mitigation purposes. Meanwhile, the Digital Library is an entirely new area. It is an application used in libraries in some Universities in Indonesia that are connected using INHERENT. The connection among Digital Library application is called DLN (Digital Library Network). Since the DLN involves other Universities in Indonesia, it will also increase the opportunities for local communities to collaborate with European user communities.

Support for local user communities will mainly be provided by USDI – ITB as the local coordinator for EGI-InSPIRE activities. A website to provide sufficient information about EGI-InSPIRE and Grid-related activities is currently being developed and expected to be released in the first quarter of the second year.

In summary, the main activities in the first year in Indonesia are maintaining coordination with local user communities who were already involved in the EUAsiaGrid Project by providing the support they need, and also some discussion on future plans and development possibilities. We also made approaches to some new user communities from new areas such as volcanoes, firewatch (forestry), and Digital Library Network (DLN).

Plans for the future will encompass dissemination for a wider range of user communities and continue the application porting experiment for both ongoing and new application. A website will be released, for displaying Grid-related information, grid support information for users in Indonesia, Grid-related Activities, and also for documentation that can be accessed by the public.

#### 3.2 Activity Summary

##### 3.2.1 WP2 – NA2 External Relations (Total PM: 0.75)

External Relations activities done in the first year are only some minor activities to disseminate information about EGI-InSPIRE to user communities in Indonesia that could potentially collaborate in developing the e-Infrastructure.



#### 3.2.1.1 TNA2.2 Dissemination

During the first year, dissemination activities have been done only in small scale and only for the closest user communities, especially those who are already involved in the EUAsiaGrid Project. Dissemination activities will be developed along with the EGI activities development.

Most of the user communities who have been involved in the EUAsiaGrid Project have been informed of EGI. Moreover, some new users and researchers have also been added to the groups that have been informed about EGI.

Dissemination to a wider range of user communities will be performed in the following years in the form of conferences and training. In addition to socialising the use of e-infrastructure, dissemination activities also aim to promote collaboration between local and European user communities.

#### 3.2.1.2 TNA 2.4 Event Management

In Event Management ITB will mainly spread the information about the event to local user communities, for instance displaying event information on the local Grid website. And at the end of the first year, the website is still under development.

### 3.2.2 WP3 – NA3 User Community Coordination (Total PM: 2.5)

For EGI-InSPIRE, beside continuing the coordination with user communities that have been involved with the EUAsiaGrid Project, ITB also seeks other user communities that can have benefit from the use of the e-Infrastructure. User communities from previous activities are those from Weather Forecast, Disaster Mitigation, and Computational Chemistry. Meanwhile, coordination has also been done with new areas such as Volcanoes and Forestry (Firewatch). The new areas can be coordinated with the Hazard Map development activity for Disaster Mitigation.

Coordination with user communities includes discussing about the applications they currently use, and also about existing Grid application that might be useful for them. Moreover, the discussion is mostly about how e-Infrastructure can be more useful for their research.

Support services for users are available from the EUAsiaGrid Project such as the ID-ITB site, website and wiki site that display some informations in Bahasa Indonesia, and open communication channel such as e-mail and mailing list for grid users.

#### 3.2.2.1 TNA3.2 User & Community Support Team

During PY1, communication and coordination with local user communities has been done through emails, phone calls, and informal meetings. To have a more organised communication channel ITB provides a Grid Site that is connected to the EUAsiaGrid Infrastructure and this site can be accessed by all registered users. However, the previously running Grid Site is currently under maintenance for redesign and upgrades, so the site is currently unavailable for the users. The ITB Grid site is mainly provided for users, in this case the researchers, to experiment porting their application so it can be run on the Grid Infrastructure.

Information on Grid Applications that are available from EUAsiaGrid Application has been delivered to the users, and most of them are interested to try those applications.

User communities that were involved in the EUAsiaGrid Project are still in coordination for EGI-InSPIRE activities in Indonesia. As for Weather Forecast, we currently testing the WRF application on a GPU cluster. This experiment is an on going process so the result is not yet available.



During the first year, no training events have been arranged yet. We are still analysing training materials that are going to be presented. This is related to the different level of understanding and needs from user communities that are already identified. Moreover, the training must also accommodate users from local communities whose needs are not yet identified.

#### 3.2.2.2 TNA3.3 NGI User Support Team

Support during the first year is mainly for the Weather Forecast team to port the WRF4G application. However, the Weather Forecast team is currently experimenting on a GPU cluster.

#### 3.2.2.3 TNA3.4 Technical Services

Last year there are no specific activities related to Technical Services performed for local user communities. However, local user communities that needed support can reach user support staff especially through emails.

#### 3.2.2.4 Other Activities

In order to support e-Infrastructure, ITB is currently preparing infrastructure for cloud computing. It is expected that in the next year the infrastructure can be used to provide high performance services for users in ITB, and then expanded to collaborate with larger communities' infrastructure so it can be used especially by users in Indonesia.

## **4 INTER-UNIVERSITY RESEARCH INSTITUTE CORPORATION HIGH ENERGY ACCELERATOR RESEARCH ORGANISATION (KEK)**

### ***4.1 Introduction***

On March 11, 2011, a very large scale earthquake happened in Japan. More than 20,000 people have been killed mainly by tsunami and the country is facing many difficulties. The biggest impact on the research activities are lack of an electric power supply. Japan has two independent power Grid systems and they are not compatible because of the difference of frequencies of AC.

KEK has not been supplied with enough electric power to fully operate the computer systems. Essential services such as CA, VOMS, VOMRS, and LFC are under operation. We expect that this situation will not improve for at least a year. Grid technologies will be essential to access computer resources in the different regions of Japan or world-wide. We will discuss the solution with the collaborating institutes to find a solution.

### ***4.2 Activity Summary***

#### **4.2.1 WP4 – SA1 Operations**

Before the earthquake, two gLite sites were operated at KEK, one for the production and the other for R&D. The production site was the second largest in Asia and used by Belle/Belle II and ILC collaborations mainly. Unfortunately, we could not retrieve any operation parameters, statistics nor accounting information at this moment. We hope for an early recovery of the electric power situation around KEK.

## 5 KOREA INSTITUTE OF SCIENCE AND TECHNOLOGY INFORMATION (KISTI)

### 5.1 Introduction

The last year of EGI-InSPIRE has been a good year for KISTI especially in terms of providing a reliable Grid Infrastructure. KISTI signed a WLCG MoU Agreement with CERN in 2007 to serve as an official Tier-2 for the ALICE experiment, pledging to provide a 150KSI2K in CPUs and 50TB of disk storage dedicated to ALICE computing. Regarding the CPU provision, for the last six months, KISTI has provided an average of 161% of what it was supposed to deliver in the WLCG MoU in (See the top blue line in Figure 1). Regarding the disk storage delivery, we installed 20 TBytes more for the KISTI ALICE Tier-2 so that we have finally fulfilled our pledge of 50 TB of disk storage dedicated to ALICE. In general, last year, KISTI has served as a stable and reliable site. For example, as can be seen in the red line in Figure1, KISTI has been providing an average of 96% in the service availability and reliability for the past six months. (See the red line in Figure 2).

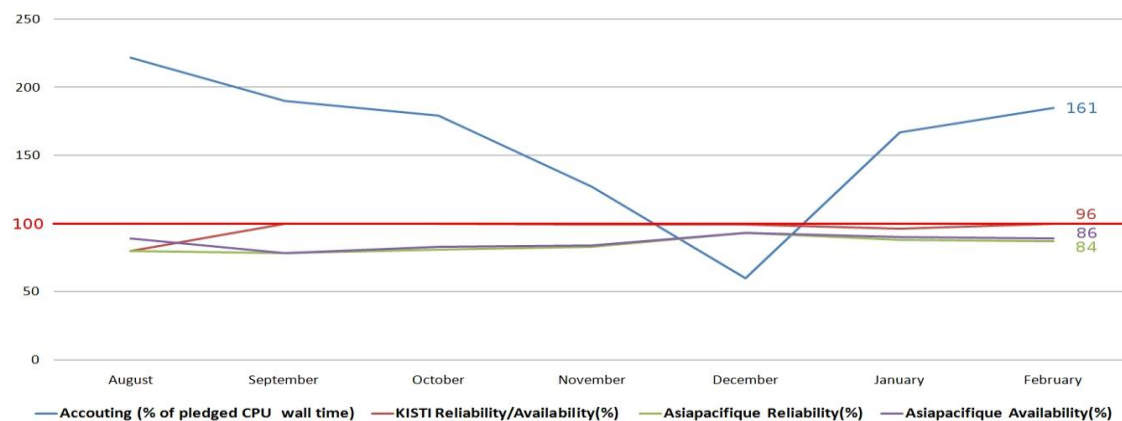


Figure 2: KISTI Accounting/Reliability/Availability (From Aug. 2010 to Feb. 2011).

Another major achievement that KISTI has made last year was to see a possibility to expand the existing production grid infrastructure called FKPPL VO towards a France-Asia VO by integrating the computing and disk resources of KEK in Japan. The FKPPL VO was built based on gLite middleware between two computing centers, IN2P3 in France and KISTI in Korea at the end of 2009, offering about 8,000 CPU cores and 3 TB disk storage to scientists and researchers in the two countries. Last December, KEK joined the FKPPL VO, providing additional 1,600 CPU cores and 27 TBytes of disk. With the contribution of KEK, the FKPPL VO is, as of now, equipped with a total of 10,000 CPU cores and 30 TBytes of disk storage.

For the long-standing operation and management of production grid infrastructures like FKPPL VO, it is crucial to have applications that could fully leverage the underlying infrastructures. Last year, we carried out some important application porting activities and successfully deployed to the FKPPL VO Geant4 applications and QCD (QuantumChromo Dynamics) simulations from the disciplines from Bio-medical and theoretical Physics, respectively. Especially, KISTI has taken on a large-scale deployment of QCD simulations on the FKPPL VO in collaboration with the QCD research group of Sejong University in Korea. Table 1 shows how active the FKPPL VO was at the end of last year. KISTI ranked 16th out of hundreds of existing VOs around the world in terms of CPU consumption for the three months from September 2010 to November 2010.

Table 1: Distribution of normalized CPU time (HEPSPEC06)

	VO	Sep 2010	Oct 2010	Nov 2010	Total
1	atlas	196,073,904	274,240,936	242,671,204	712,986,044
2	cms	71,093,916	79,708,748	77,396,660	228,199,324
3	alice	61,897,556	78,409,636	64,368,804	204,675,996
4	lhcb	30,480,592	24,099,528	25,236,356	79,816,476
5	theophys	6,169,892	3,428,224	44,804,096	54,402,212
6	dzero	5,879,836	6,349,708	5,703,740	17,933,284
7	compchem	4,822,700	2,490,136	6,902,316	14,215,152
8	ilc	5,480,616	4,474,772	4,211,848	14,167,236
9	vo.cta.in2p3.fr	1,815,380	2,537,676	2,618,184	6,971,240
10	biomed	756,340	3,152,524	2,775,664	6,684,528
11	superbvo.org	4,676,060	699,836	0	5,375,896
12	auger	873,468	2,098,376	2,386,588	5,358,432
13	hone	750,552	3,118,336	1,268,064	5,136,952
14	pheno	1,312,896	1,708,028	1,845,340	4,866,264
15	icecube	1,287,804	1,897,840	1,177,468	4,363,112
16	fkppl.kisti.re.kr	918,352	2,022,848	1,209,720	4,150,920
17	see	1,044,224	1,033,832	2,008,676	4,086,732
18	cosmo	216,112	1,735,068	1,911,252	3,862,432
19	vo.lal.in2p3.fr	2,807,252	258,608	29,204	3,095,064
20	enmr.eu	980,180	807,260	1,011,816	2,799,256
	<b>Total</b>	<b>411,611,532</b>	<b>506,320,224</b>	<b>502,216,812</b>	<b>1,420,148,568</b>

Training is an integral part of Grid infrastructure projects like FKPPL VO. In order to promote the adoption of Grid technology and infrastructure, we organized Grid tutorials targeting the bio-medical community in Korea twice last year. In February, we held a Geant4 and Grid tutorial 2010 for medical physics communities in Korea, where we had about 35 participants from major hospitals in Korea and about 20 new users joined the FKPPL VO membership. In July, we organized the 2010 summer training course on Geant4, GATE and Grid computing where there were about 50 attendees from about 20 institutes in Korea (See Figure 3).



Figure 3: 2010 Summer Training Course on Geant4, GATE, and Grid Computing

## 5.2 Activity Summary

### 5.2.1 WP3 – NA3 User Community Coordination (Total PM: 12)

#### 5.2.1.1 TNA3.3 NGI User Support Team

By the request of scientists in Chonnan National University, we conducted a large-scale deployment of in-silico docking on the Biomed VO to find potential drugs against SARS (Severe Acute Respiratory Syndrome). They came to us with a total of 1,100,000 chemical compounds (300,000 from Chambridge chemical database and 800,000 from ZINC database). We managed to mobilise up to 2,500 computers on the Biomed VO to screen the 1,100,000 compounds using Autodock, which took about three weeks to complete.

Researchers in Sejong University requested us to help execute their two-color QCD simulation code with 1,647 different parameters, of which computation is roughly about 75 CPU years. With access to a maximum of 1,600 CPUs simultaneously on the FKPPL VO, we completed the whole simulation and it took about three and half months starting from the end of August until the 8<sup>th</sup> of December last year. Now, it is under analysis by the researchers in Sejong University.

### 5.2.2 WP4 – SA1 Operations (Total PM: 24)

#### 5.2.2.1 TSA1.8 Providing a Reliable Grid Infrastructure

Since the signing of the WLCG MoU with CERN in 2007, KISTI has been part of the ALICE distributed computing grid as an official Tier-2, providing a reliable and stable node. With the additional 20 TB of disk put in place last year, KISTI has finally fulfilled what was pledged in the WLCG MoU.

KISTI has been operating the FKPPL VO built on the gLite Middleware in collaboration with CC-IN2P3 in France. Last December, KEK has joined the FKPPL VO, contributing an additional 1,600 CPU cores and 27 TBytes of disk storage. We are now under discussion about moving towards the establishment of a France-Asia VO by linking other Asian countries. Figure 2 demonstrates that the Grid services that KISTI provided last year were quite stable and reliable.

## 6 NATIONAL SCIENCE AND TECHNOLOGY DEVELOPMENT AGENCY (NSTDA)

### 6.1 Introduction

During PY1 in EGI-InSPIRE, the major achievement of NECTEC/NSTDA has been coordinating and developing the “Thailand e-Science Infrastructure Consortium” Project proposal which had been agreed upon from 6 founding member partners. The brief summary of the project was presented in ISGC 2011.

Thailand e-Science Infrastructure Consortium project descriptions are

- Five-year project to provide national infrastructure for e-Science in Thailand
- Run as a consortium
- All members manage with their own budget
- The project will be managed by the Steering Committee where heads of all institutes are committees under the consortium operating principles
- The Consortium resources will use Virtual Organization (VO) to manage application areas
- Resources are shared through Grid middleware ie gLite.

The project will widely support 5 identified user application areas:

- Particle Physics Consortium
- Climate Change Consortium
- Water Resource, Energy and Environment Management Consortium
- Computational Science and Engineering Consortium
- Computer Science and Engineering Consortium

This effort started in early 2010 towards the end of EUAsiaGrid. This has been a lengthy continuation of discussions, communications, and series of meetings of individuals and multiple parties. These efforts were carried out consuming partial but significant amount of time of 3 staff members of NECTEC/NSTDA for coordination, proposal drafting, meeting arrangement, legal document process, not including the time of user communities and high level executives of project partners in joining the discussions and documentation.

Referring to the EGI-InSPIRE work package description and planned PM for AP partners, the described actions are identified as contribution to WP3:NA3 – User Community Coordination.

The consumed PM of NECTEC/NSTDA staffs alone are more than previously anticipated in the 1<sup>st</sup> year planned period of EGI-InSPIRE.

In summary, the 1<sup>st</sup> year was almost entirely dedicated to (1) the development of the Thailand e-Science Infrastructure project to sustain the local grid resources for the scientific research community in focused areas; (2) continuing Operation service of Grid CA, as a member of APGridPMA; and (3) participating and presenting in ISGC 2011.

Plans for the future include:

- (1) Thailand e-Science Consortium Project awaits its formal inauguration by the founding members MoU signing.

(2) The continuing activities are carrying out its 5-year action plan.

- Management procedures
- Procuring and configuring the computing and storage infrastructure of the consortium.
- VO setup for application
- Users services (wider than the founding members)
- Expanding Consortium members
- Expanding toward international collaboration

(3) Report progress annually in ISGC

## **6.2 Activity Summary**

### **6.2.1 WP2 – NA2 External Relations (Total PM: 0.2)**

#### 6.2.1.1 TNA2.2 Dissemination

Participating and presenting in the ISGC 2011, “Grids and Clouds in Asia Pacific (I)”.

### **6.2.2 WP3 – NA3 User Community Coordination (Total PM: 8.5)**

#### 6.2.2.1 TNA3.1 Activity Management

Forming Thailand e-Science Infrastructure Consortium project – Thai project partners group and executives discussion and documentation review among parties (at least 6 parties are involved).

#### 6.2.2.2 TNA3.4 Technical Services

Providing NECTEC GOC CA services.

## 7 NATIONAL UNIVERSITY OF SINGAPORE (NUS)

### 7.1 Introduction

During PY1 of EGI-InSPIRE, we have managed to handle numerous challenges within NUS and within Singapore. NUS has had a history of pioneering the Internet and key Internet technologies. These include building the first WAIS, Gopher and Website in Singapore from 1990 to 1993, and setting up the research network, SINGAREN, which founded as a \$28M project in 1997, as the first NREN in the world outside North America to interconnect with Internet2 grid computing, grid computing such our NUS TeraCampus Grid of desktops and contributed servers through our campus network, as well as Cloud Computing.

However, due to policy changes, over the past half a decade, inward institutional focus predominated. This was due in part to powerful external pressures, for example, for the past ten years, the Singapore government has not focused on funding research network or computing infrastructure as much as basic research, particularly in the life sciences, where billions have been poured into various initiatives.

As a result, Technet was commercialised as Pacific Internet (NASDAQ: PCTNF) in 1995; SINGAREN was no longer funded by the government directly by 2004, and currently exists as a membership-based NGO; the ASEAN Science and Technology Research and Education Network Alliance (ASTRENA) proposed in 1998 and enshrined in the ASEAN Plan of Action in Science and Technology (APAST) is still mired in bureaucratic delays despite agreement to set up Secretariat operations in Singapore. ASTRENA was to have propelled ASEAN nations into the forefront of advanced networking, a role currently filled over by TEIN3 and APAN, and to create the basis for ASEAN countries to take over the ownership of its regional network. Policy changes therefore are required and we are working hard at getting the mindshare of the policy makers.

Grid computing initiatives previously sponsored by the Infocomm Development Authority (IDA) in the mid-2000s, taking over from failed national initiatives by the Bioinformatics Institute of A\*STAR in the early 2000s, has ceased to allow our National Grid Office (NGO) since 2009 to do R&D projects. Instead, IDA in taking over the NGO, has progressed downstream and focused on promotional activities and coordination of grid implementations in government, academia and industry rather than funding research in e-Science, which is outside their remit. Unlike more developed countries in Asia, or in ASEAN, our contrarian approach is to treat Grid or Cloud Technologies as implementation and adoption phases by commercial entities, rather than to fund R&D and application development going forward.

Thus our background of 20 years of rapid translational research and accelerated commercialization for Internet and Internet-related technologies means that to participate in international eScience research projects such as EUAsiaGrid and EGI-InSPIRE, we have had to leverage on institutional ingenuity rather than funding. Although crystal clear to many academics, that the motivation for participation in international projects is simply that our R&D community must be fully plugged into the global R&D engine, it is not entirely clear to funding agencies and policy makers how Singapore can benefit economically. Though there is a still a residual desire in the R&D community to promote regional solidarity and scientific relevance in this area, our early pioneering spirit is all but lost in the past decade, and the focus shifted to Interactive Digital Media, technology commercialisation and gaming technologies with an industry emphasis, where there is still funding. Singapore does not have a government e-Science initiative unlike many other countries. In addition to contributing to the

explicitly stated work packages and deliverables, our efforts have largely focused on decelerating this trend. Therefore participation in EGI-InSPIRE has a critical role in avoiding total exit of Singaporean activities in this regard.

As such, the highlights of the year are modest, as follows:

- Regaining former contacts amongst the networking and grid computing community through active participation in ISGC2010, and preparation for ISGC2011 and making new contacts that will support EGI-InSPIRE deliverables through participation in EUAsiaGrid events
- Conducting a MasterClass for life scientists and bioinformaticians in gLITE-EGI Grid Applications for the Life Sciences community held in Singapore for internal as well as external participants, with the help of Italian, Czech, Taiwan and Malaysia partners.
- Keeping alive Grid and Cloud computing R&D activities in Singapore academia despite rapid commercialisation to prevent hollowing out of such expertise and arresting decline in innovation through colleagues
- Establishing hardware infrastructure as a prelude to gLITE-enabling our cluster of computers and testing cloud instances of gLITE-EGI servers with Taiwan
- Setting up the framework for supporting Bioinformatics applications at the Secretariat of the Asia Pacific Bioinformatics Network.

No new staff were recruited but existing staff and students were recruited for their voluntary participation to maintain the PMs and EGI-InSPIRE deliverables

Our plans for the future include

- a. Getting an operational gLITE node up and running on our cloud server
- b. Interoperating with MYREN grid nodes and with TWGrid using web interfaces to simplify the usage process by end-users
- c. Implementation of the BioDB100 Prototype with grid and cloud backends through a simple web accessible portal for our user community.
- d. Proposal to extend BioDB100 to BioSW software and BioWS webservice at InCoB 2011 in Malaysia in Nov/Dec 2011.
- e. Plans for outreach to InCoB and ISB conferences in the form of training workshops

## **7.2 Activity Summary**

### **7.2.1 WP2 – NA2 External Relations (Total PM: 5)**

#### **7.2.1.1 TNA2.2 Dissemination**

Outreach was carried out by influencing the opinions of managers and leaders of:

- a. NUS Computer Centre
- b. Life Science Institute, NUS
- c. Department of Biochemistry, NUS
- d. Asia Pacific Bioinformatics Network (APBioNet) ExCo
- e. ASEAN Subcommittee on Biotechnology (SCB)
- f. ASEAN Subcommittee on Infrastructure for Research Development (SCIRD)
- g. International Society of Computational Biology (ISCB) Board

h. International Society for Biocuration (ISB) Board members

Grid and cloud computing was introduced to the above and resulted in the formation of the following initiatives:

- a. Extension of the use of grid and cloud services in life science teaching at the National University of Singapore
- b. Continuation of the Minimum information about a bioinformatics investigation (MIABi) in the APBioNet for the Asian bioinformatics community
- c. Launch of the APBioNet BioDB100 initiative, 100 bioinformatics interoperable and MIABi-compliant databases which will use the Grid and Cloud infrastructure, at the International Conference on Bioinformatics (InCoB 2010) in Tokyo, Sep 2010, for the Asia Pacific bioinformatics community
- d. Presence and profile at CloudAsia 2010, Singapore, to ensure that the eScience initiatives are not lost to commercialisation and technology transfer

#### 7.2.1.2 TNA2.3 Policy Development

We were not able to penetrate this layer of bureaucratic policy development despite the fact that Ministers and CEOs are personally known to us. Most of our initiatives are bottom-up. Nevertheless, in future years, we will have to create a mechanism for educating policy makers in refining their scientific policy on infrastructure.

#### 7.2.1.3 TNA2.4 Event Management

The MasterClass Workshop was organised in conjunction with CloudAsia 2010 as a satellite event and the publicity was inserted in the brochures of CloudAsia collaterals.

### 7.2.2 WP3 – NA3 User Community Coordination (Total PM: 6)

#### 7.2.2.1 TNA3.2 User & Community Support Team

Leveraging on the publicity of the MasterClass for Life Science Grid Applications development held in May 2010, where EUAsiaGrid colleagues participated from Czech Republic, Italy, Taiwan, Malaysia (remotely) for participants in Singapore and Indonesia, we were able to manage their keen interest in grid computing and generate possible projects with European colleagues. Planning for this activity was coordinated with EGI-InSPIRE's objectives as well in mind. The Grid-enabled applications in a wide range of bioinformatics software were applied to a wide range of biological and biomedical problems from Dengue/Chikungunya Phylogeography to vaccine design and basic research. More than 20 persons attended this Workshop, from at least five different countries.

#### 7.2.2.2 TNA3.3 NGI User Support Team

The NGI grid was not set up in Singapore yet. Nevertheless, a team of staff and students are training to be proficient in the use of the services so that they can form the user support team when the services come up.

### 7.2.3 WP4 – SA1 Operations (Total PM: 4)

#### 7.2.3.1 TSA1.4 Infrastructure for Grid Management

gLITE node and replication of the TWGrid node was carried out. The implementation of the gLITE services were found to require new hardware. We have procured more hardware, and have set them



up towards the end of 2010. As a result we have migrated to a Cloud platform using Xen Hypervisor. With this new framework, work is in progress to run the four-server basic configuration for setting up NUS as a VO and a Grid service node to participate in EGI with TWGrid and MYREN.



## 8 UNIVERSITY OF MELBOURNE (UNIMELB)

### 8.1 Introduction

PY1 of EGI-InSPIRE has been a period of upheaval in the Australian eResearch landscape. The Federal government has remodelled its funding of eResearch, leading to the emergence of new eResearch initiatives and the retirement of previous national programmes. This upheaval, combined with a new funding allocation has opened up new opportunities and capacities for the Australian EGI-InSPIRE group.

Australian Research Collaboration Services (ARCS) has acted from 2007 to provide national eResearch support services for the Australian research community, including an Australian grid infrastructure; this program is now winding down. In its place new initiatives like National eResearch Collaboration Tools and Resources (NeCTAR<sup>1</sup>) are aiming to support researchers, via programs which will not only build national infrastructures, but also fund research communities to develop the tools and resources necessary to exploit them.

The Particle Physics community in Australia has received a boost via a 25.2 million dollar funding injection over 7 years; funding a Centre of Excellence for Particle Physics at the Tera-Scale<sup>2</sup>, with the lead institute based at Melbourne, encompassing the grid computing group. The Centre will for the first time in history coordinate tera-scale high energy physics research across Australia, creating new research groups at the Universities of Adelaide and Sydney and augmenting groups at Melbourne and Monash. It will greatly enhance international linkages. Through it, the Australian Government will liaise with key scientific organisations active in high energy physics, advanced computing and accelerator science. The Centre will also equate to increased manpower for the grid computing site, with two positions at Melbourne and another in Sydney.

As both EGI-InSPIRE partners and a research community, the group has moved to capitalise on these shifts in the eResearch outlook. The group at Melbourne has been actively engaged and coupled with the NeCTAR program since its instantiation, providing input into the consultation process and maintaining continuous dialogue with the program directors. As a research community, Particle Physics in Australia will seek support under NeCTAR for not only the continuation of grid in Australia, but also its enhancement; better supporting international linkage by deploying gLite/EMI middleware into Australian grid computing facilities. The group is also active in supporting the middleware itself, especially in testing and better understanding how the middleware will play at high latency sites such as those based in Australia.

In the development space the group has tracked the emergence of cloud computing technologies in Australia, and worked to shape the computing model for the new Belle2 experiment. Tom Fifield, a developer from the Melbourne group has emerged as a national expert on cloud computing; having authored several papers on cloud computing, specialising in its interface to grid. Tom continues to play a key role in the formation of the NeCTAR Australian Researcher Cloud.

In summary, the first year of EGI-InSPIRE was a successful year for the Australian EGI-InSPIRE group. Operationally the group has maintained a reliable grid site, and established a second site to foster

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1 <http://nectar.org.au/>

2 [http://www.arc.gov.au/ncgp/ce/particle\\_physics.htm](http://www.arc.gov.au/ncgp/ce/particle_physics.htm)

new research communities. Strategically, there has been a dramatic shift in the Australian eResearch environment, and new funding flowing into the HEP research community; placing the group well to continue to drive forward Australian grid computing via its engagement in dissemination and outreach activities. The group is under-way toward deploying gLite/EMI compatible resources within the existing Australian national grid infrastructure, and are continuing development work in both grid and cloud computing.

In the coming year the Australian EGI-InSPIRE group is seeking support under NeCTAR for the continuation and enhancement of grid in Australia. With an aim to establishing an entity capable of acting as a National Grid Initiative, expanding Australia's presence in EGI to better facilitate international linkage for all research disciplines in Australia.

## **8.2 Activity Summary**

### **8.2.1 WP2 – NA2 External Relations (Total PM: 2)**

#### **8.2.1.1 TNA2.2 Dissemination**

Dissemination and outreach during the reporting period has focused around ensuring that the transition processes from existing to new eResearch programs in Australia are informed and equipped to capitalise on our existing international linkages through initiatives such as EGI-InSPIRE. The group is aiming for the augmentation of Australia's existing grid to provide gLite/EMI compatibility, and thus enable all Australian researchers to interact at the scale that the Particle Physics community enjoys.

This is an ongoing process, involving many levels of engagement, including input in the NeCTAR consultation process<sup>3</sup>, as well as working with existing grid facilities to establish test instances of gLite/EMI middleware components, and migration of the existing grid from the MDS to BDII information system.

#### **Media exposure**

- [AWS Case Study: University of Melbourne / University of Barcelona](#) (Amazon Web Services Case Studies – 2010)
- Design and Implementation of Distributed Computing System (3rd Belle II Computing Workshop, November 2010)
- The Belle II Distributed Computing System (7th Open Meeting of the Belle II Collaboration, November 2010)
- [The 10th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing](#) (Melbourne 2010)

### **8.2.2 WP4 – SA1 Operations (Total PM: 14)**

As one of the most geographically isolated and thus higher network latency sites in the EGI grid, Australia continues to be involved with testing and developing the middleware. At current Australia is an EA site for;

- BDII
- gLite-APEL

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3

[http://www.nectar.unimelb.edu.au/talk\\_to\\_us/consultation\\_and\\_roadshows/consultation\\_and\\_roadshows](http://www.nectar.unimelb.edu.au/talk_to_us/consultation_and_roadshows/consultation_and_roadshows)



- AMGA

Australia-ATLAS completed its migration to gLite 3.2 last year (2010), neglecting the LCG-CE which is kept online for the purposes of reliability and availability calculations, as these have not been rewritten to use the cream-CE.

A second grid site has been established at Melbourne, AU-PPS. This site aimed at fostering new research communities within Australia, and is currently connecting Australian Synchrotron resources to the grid. This site also provides a test-bed and pre-production environment for Australia-ATLAS and ARCS BDII migration.

Australia-ATLAS has maintained excellent reliability and availability throughout the reporting period. June-July 2010 saw poor reliability and availability statistics reported for the site, but these are in error, and resulted from a SAM Nagios bug not accommodating Australia's large network latency. This issue has since been resolved.

### **8.3 Development Activities**

The group is leading the design of the distributed computing solution for the Belle II experiment in Melbourne, under Martin Sevier. Through this, the group has contributed significantly to the extension of AMGA's replication and synchronisation features, and the framework of LHCb fame, DIRAC, in a number of areas. One major project was the addition of cloud interoperability with the DIRAC framework, which even garnered note in the Australian, Spanish and Japanese media – in addition to being selected as a case study for Amazon Web Services.

## 9 UNIVERSITI PUTRA MALAYSIA (UPM)

### 9.1 Introduction

The development of Grid computing in Malaysia has steadily continued progressively in the EGI-InSPIRE Project over the past year. The project has provided Malaysia with an important link to the EU and Asian partners necessary for continued and sustained development for the next several years. The EGI-InSPIRE Project presence is timely in view of the fact that the EUAsiaGrid Project has ended and there is a concern that the success and momentum of that project cannot be sustained.

Perhaps the greatest achievement for Malaysia's Grid computing development is the change of direction from High Performance Computing (HPC)-centric implementation to a Distributed Computing approach. This change of direction was a result of UPM's involvement in liaison, encouragement and recommendation with the ICT division of the Ministry of Science, Technology and Innovation (MOSTI), the custodian ministry for Grid computing development, through a consultative Grid Technology Committee comprised of prominent grid academics and researchers from many universities and representatives from various stake-holders.

Involvement of UPM in the EUAsiaGrid project followed by the EGI-InSPIRE project has, to a great extent, provided the necessary influence and backing to the success of the recommendation. The recommendation states that 1) the development of distributed grid computing facilities is to be promoted based on UPM's BIRUNI Grid Centre's proposed distributed computing model using the EGI-gLite Middleware, and 2) the development of Malaysia's National Certification Authority (CA) is to be based on APGrid PMA and UPM's Malaysian Identity Federation and Access Management (MyIFAM) will take the lead. A letter from the ICT division of MOSTI has been sent out to all public universities together with information on the basic set-up to build a cluster in the respective campuses (see attachments). The committee also recommended that the terms of reference, certification policy and roadmap for grid computing should be revised and also to include cloud computing. Furthermore, Universiti Tenaga Nasional (UNITEN) has been designated as the Secretariat for National Grid Computing Initiative while UPM as the lead organisation for training, awareness and widespread adoption of grid and cloud computing.

As for the maintenance, operation, upgrade and further expansion of the current EU-certified sites, the UPM grid team has been tirelessly working to maintain and upgrade UPM's BIRUNI GRID Centre facility and also provide support to other EU-certified sites in Malaysia. Several universities and research organisations have enquired and sought help from the UPM Grid Team to set up their own cluster. There are also enquiries from research communities in high energy physics/nuclear physics and mathematical science and engineering and further discussion is currently ongoing.

In summary, UPM Grid Team has successfully carried out the following activities:

1. Upgrade and maintain Grid resources
2. Site recertification
3. Support users in bioinformatics, computational chemistry and computer science
4. Actively participate at national level in the development of policy and governance for NGCI
5. Organise awareness seminar and meetings for greater adoption of grid computing technology

Future plans include a series of awareness seminars and conferences to be held every quarter in collaboration with local universities and also partners in the EU and Asia Pacific region, increasing the number of distributed grid sites and the realization of National Certification Authority.

## **9.2 Activity Summary**

### **9.2.1 WP2 – NA2 External Relations (Total PM: 6)**

#### **9.2.1.1 TNA2.2 Dissemination**

Together with UNITEN, UPM has been involved in ensuring all public institutions of higher learning in Malaysia are well aware of grid computing development and was directly involved in the awareness campaign to individual universities well in the events organised in conjunction with the Malaysian Research and Education Network.

#### **9.2.1.2 TNA2.3 Policy Development**

At the onset of UPM's involvement in EGI-InSPIRE Project, our main objective was to emulate EGI as a model in which Malaysia has to follow for the development of NGI. Since the ICT Division of MOSTI is the lead division for National Grid Computing Initiative (NCGI) it is important for UPM to build strong and strategic relationship with them. As such, UPM has been heavily involved in several important meetings with the Under Secretary of ICT Division of MOSTI especially on the ratification of the changes in the Terms of Reference for NCGI as well as the governing structure of the NCGI. The change of direction from HPC-centric to a distributed computing was the direct result of the recommendation. UPM has proposed to represent NCGI as a single point of contact for EGI; however, the proposal is still under discussion.

Apart from involvement in the overall development of distributed computing facility among public institutions of higher learning, UPM is also involved in the development of National Certification Authority with the formation of Malaysian Identity Federation and Access Management (MyIFAM) which has been agreed upon by the committee at ministry level to be used as National Certification Authority. UPM has single-handedly come up with the CP/CPS document and underwent a series of reviews and revision by colleagues in the APGrid PMA. The process is still on-going and during the last F2F meeting held on 22 March, 2011, many members of APGridPMA as well as IGTF came forth to volunteer to help UPM with the documents.

#### **9.2.1.3 TNA2.4 Event Management**

Culminating the dissemination activity is a one-day seminar on Grid Awareness 2011 on 9 March, 2011 organised by UPM with over 150 attendees from various universities, research institutes and government agencies. ([http://idec.upm.edu.my/grid\\_awareness](http://idec.upm.edu.my/grid_awareness)). UPM will organise and participate in more events to promote grid computing and at the same time promote EGI-Inspire Project.

### **9.2.2 WP3 – NA3 User Community Coordination (Total PM: 4)**

#### **9.2.2.1 TNA3.2 User & Community Support Team**

UPM coordinates the community engagement through open and direct enquiries for user communities as well as resource providers that have benefitted from earlier activities by establishing and contributing resources to EUAsiaGrid VO. Each site will inform UPM of any problem with their respective grid resources and seek assistance should there be problems that have arisen during the operation and provisioning of the resources.

One of the most daunting tasks for UPM Grid Team is on dealing with application domain users and so far we have been very successful in supporting bioinformatics and computational and structural chemistry groups. UPM used Genius Portal which so far has had a lot of success in facilitating the access to UPM grid computing facilities. Meanwhile, the BIRUNI Grid Centre also supports many other applications and received jobs from CERN and ASGC for HEP, disaster mitigation, and drug discovery.

#### 9.2.2.2 TNA3.3 NGI User Support Team

UPM Grid Team has been involved in a major task of upgrading from gLite 3.1 to gLite 3.2 for three EGI certified sites namely our very own BIRUNI GRID Centre facility (MY-UPM-BIRUNI-01), followed by University of Malaya's grid resource at CRYSTAL (MY-UM-CRYSTAL) and Universiti Teknologi Malaysia (MY-UTM-GRID). During the course of the past year, two local sites within University of Malaya underwent site re-certification (MY-UM-CRYSTAL and MY-UM-PANG5). UPM Grid Team worked together with the site administrators for the respective universities in an effort to ensure transfer of technology and self-supporting. The hands-on transfer of technology from UPM Grid Team and university's site administrators and their teams is part of UPM's bigger plan to encourage more and more technical persons to be well-versed in administering a Certified Grid Site. In turn, these trained technical staff are able to help UPM Grid Team for further engagement and promotion of grid development in many other local institutions of higher learning. UPM Grid Team is very much short-handed and was not able to put in more human resource to the present team due to budget constraints. It is hoped that since UPM has been designated to lead the training and awareness for Malaysia's NGCI, there will be funds available to support activities such as Training of Trainers, skills upgrades of present trainers, and others. So far, funding is not available for the year 2011.

#### 9.2.2.3 TNA3.4 Technical Services

UPM continued to support the grid sites that it has helped to set up and certified and ensured that all challenges and obstacles are overcome. One of the sites was deregistered for failure to sustain the 80% availability and UPM has helped solved the problem associated with it; all along carrying the banner of EGI-Inspire Project.

Through BIRUNI GRID Centre Genius Portal, a list of supported applications are displayed and users can easily interact using the portal. Apart from that, UPM Grid Team has a mailing list of local grid community and the communication channel is always open for users both old and yet to be engaged for enquiries relating to technical help and also to provide inputs and need requirements necessary for future development focus.