EGI-InSPIRE

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Abstract

The EGI-InSPIRE partners in the Asia-Pacific region have continued with their unfunded project activities that vary greatly in scale and scope from country to country: from mature linked HPC facilities to small commodity clusters at just a few universities. The supported user communities are primarily the environmental and life-science communities with growing activity in the computational chemistry domain.

I. COPYRIGHT NOTICE

II. DELIVERY SLIP

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III. DOCUMENT LOG

Issue	Date	Comment	Author/Partner
1	5/4/2013	First draft	Stella Shen, Vicky Huang (ASCG)
2	17/4/2013	Second draft	Steven Newhouse EGI.eu
3	30/4/2013	Third draft	Vicky Huang ASCG

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:

- 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.
- The continued support of researchers within Europe and their international collaborators that are using the current production infrastructure.
- 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.
- Interfaces that expand access to new user communities including new potential heavy users of the infrastructure from the ESFRI projects.
- 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.
- 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.

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1 INTRODUCTION

The Asia Pacific Grid Initiative (APGI) is coordinated by Academia Sinica Grid Computing Centre (ASGC) that aims at ensuring the long-term sustainability of the Asia e-Infrastructure, the continuity and the enhancements of the Asia Virtual Research Communities (VRCs) using it. APGI is devoted to providing international coordination and collaboration within the region. As the lead partner of APGI, ASGC serves as the liaison between EGI-InSPIRE Project Office and APGI. In addition, ASGC on behalf of APGI participates in the EGI-InSPIRE Project Management Board (PMB) representing the unfunded Asia-Pacific partners. At the end of the 3rd Project Year, a MoU was signed by EGI-InSPIRE and ASGC (11April 2013) to define a framework of collaboration between EGI.eu and ASGC, and to bring visible benefits of a wider and longer-term cooperation beyond the EGI-InSPIRE project.

The purpose of the 3rd APGI Annual Report is to present the progress of the activities of the nine Asia-Pacific partners in the EGI-InSPIRE Project, as well as to update the plans for the 4th year. The EGI-InSPIRE partners in the Asia-Pacific region have continued with their unfunded project activities that contribute to the production infrastructure and the user support activities available within EGI.

These activities vary greatly in scale and scope from country to country: from mature linked HPC facilities to small commodity clusters at just a few universities. Many community building events take place at a local and regional level, with high-profile events such as the International Symposium on Grids and Clouds (ISGC) 2013 bringing together the regional and European participants annually in Taipei for a week-long meeting. The supported user communities are primarily the environmental and life-science communities with growing activity in the computational chemistry domain. WP3 (User Community Coordination has been integrated into WP4 in the 2nd project year.

The report describes the major activities that Asia-Pacific partners committed are in WP2 (Community Engagement) and WP4 (Operations) and are described in the rest of this document from each partner in turn

2 ACADEMIA SINICA GRID COMPUTING CENTRE (ASGC)

2.1 WP2 – NA2 Community Engagement

In PY3, ASGC participated in both EGI Technical Forum and Community Forums. In additional to the attendance of all committee meetings / WP meetings, ASGC also gave talks on
GSTAT Status and Plans
(https://indico.egi.eu/indico/contributionDisplay.py?contribId=194&sessionId=39&confId=1019),
Status and Perspectives of Operations in the Asia Pacific Region
(https://indico.egi.eu/indico/contributionDisplay.py?contribId=171&sessionId=45&confId=1019)
iCOMCOT: Real-time Tsunami Simulation Based on Parallelized COMCOT
(https://indico.egi.eu/indico/contributionDisplay.py?sessionId=22&contribId=71&confId=1222).

ASGC also assisted the EGI-InSPIRE Project Office (PO) to promote the EGI Technical Forum's and Community Forum's amongst the partners in the Asia Pacific region, and coordinated with the PO regarding the communication and execution of financial supporting program to Asian Pacific partners. Eight delegates from 4 partners (Australia, Korea, Malaysia and Taiwan) attending the EGI Technical Form in Prague, and 4 partners (AU, KR, MY and TW) attended the EGI Community Forum in Manchester in April 2013.

In addition, ASGC has participated in 12 international events and 2 local events providing a general picture of the EGI-InSPIRE project, the dissemination of advanced e-Science knowledge to the potential user communities and provided training in the skills needed to deploy and use e-Science infrastructures. A detailed list of international/local activities is as follows:

Date	**Place**	**Events**	**Presentation / Dissemination**
April 2013	UK	EGI Community Forum	iCOMCOT: Real-time Tsunami Simulation Based on Parallelized COMCOT
March 2013	Taiwan	ISGC 2013 http://event.twgrid.org/isgc2013/index.html	(1) Computing and data Infrastructures – AP Region (2) E-Science Development in Asia: Past Experiences and Future Perspectives (Keynote Speech) (3) E-Science Development in Taiwan (4) Challenges of Big Data Analytics
February 2013	Thailand	gWRF Workshop in Thailand http://indico3.twgrid.org/indico/conferenceDisplay.py?confId=417)	(1) e-Science and Big Data (2) Data Processing & gWRF Demonstration (3) EMI Middleware & MPI
January 2013	Taiwan	Rotary Club	TW-PH Collaboration on Integrated Monitoring and Mitigation of Geohazards

			from Southern Taiwan to Luzon Island
	USA	35th APAN Meeting	
December 2012	Taiwan	2012 International Forum on Supercomputing, Taiwan	Data Intensive Computing Paradigm and e-Science Evolution
November 2012	Taiwan	Scientific American Symposium	LHC Computing and Beyond
	Philippines	Kick-off Meeting of TW-PH Collaboration on Integrated Monitoring and Mitigation of Geohazards from Southern Taiwan to Luzon Island	(1) E-Science Experiences of ASGC (2) E-Science Infrastructure
October 2012	Taiwan	23rd CODATA	e-Science for the Masses
	China	BICTAM First Workshop on Natural Hazards-Tsunami in conjunction in the 5th SCSTW	Developing a Web-Interfaced Tsunami Simulation Model Based on Parallelized COMCOT
	China	HEPiX Fall Meeting	
August 2012	SriLanka	34th APAN Meeting	
May 2012	USA	CHEP 2012	
	Germany	EUGridPMA / IGTF All-hands Meeting	

In addition to joining the international/local events, ASGC also organised two Application Workshops, an international conference and four Grids/Clouds related Workshops. The two Application Workshops were: the gWRF Workshop in Thailand and the WeNMR Workshop in Taiwan.

The gWRF workshop was held in Bangkok on 5-6 February 2013 through collaboration with HAII and NECTEC partners. The purpose of the workshop was to give an opportunity to WRF researchers and users to learn more about gWRF and also to share each other's experiences, opinion, and knowledge about applying research on WRF. More than 40 participants attended the workshop.

The WeNMR Workshop was held on 18~20 March 2013 in conjunction with ISGC 2013(http://event.twgrid.org/isgc2013/index.html). The workshop provided a general introduction to grid computing and the WeNMR services currently available through the WeNMR virtual research community portal (www.wenmr.eu), and then focused on several topics, including automated NMR data assignment and structure calculation using UNIO/Xplor-NIH, SAXS for bio-molecular complexes, structure refinements and *in silico* docking for protein-small molecule and protein-protein systems. Participants will have the opportunity to know more about the theories behind experimental and computational structural biology and gain experience in the use of the software packages through a guided hands-on tutorials.48 participants from 14 countries registered at the Workshop.

The International Symposium on Grids and Clouds (ISGC 2013)[1] was held at Academia Sinica in Taipei from 17 to 22 March 2013 with other co-located events including: dCache[2] Workshop,

[1] http://event.twgrid.org/isgc2013/program.htm

Security[3] Workshop, WeNMR[4] Workshop, DPM[5] Workshop, CHAIN-REDS[6] Workshop, EMI-3 Tutorial[7] and APGridPMA Meeting[8]. This year there are around 250 attendees from 37 countries participating and the programme is available online[9].

In the PY3, ASGC also contributed to the following three EGI Virtual Teams:

(1) VT-Scientific-Publication Repository[10]
(2) VT-Science Gateway Primer[11]
(3) VT- Environmental & Biodiversity[12].

2.2 WP4 – SA1 Operations

ASGC operates the Asia Pacific Regional Operation Centre (APROC) that extends the EGI's production infrastructure into the Asia Pacific region and maximise the e-Infrastructure reliability to support various e-Science user communities. Currently, there are 25 sites from 10 countries (excluding China) joining 12 VOs in the APROC. Around 19,236 cores, 13.8 PB disk space are collectively available from the Asia Pacific resource centres. There are 452 registered users in total according to APGridPMA statistics collected in February 2013. In terms of normalised CPU time (HEPSPEC06), the monthly average (1 April 2012 to 31 March 2013) resource utilisation in this region is 33.46 M normalised CPU time (in HEPSPEC. hours). The annual growth rate is 41.3%. The daily average number of successfully done jobs greatly increased from 49,408 in PY1 to 62,233 in PY3.

[2] http://event.twgrid.org/isgc2013/dCache.html
[3] http://event.twgrid.org/isgc2013/SecurityWorkshop.html
[4] http://event.twgrid.org/isgc2013/wenmr.html
[5] http://event.twgrid.org/isgc2013/dpm.html
[6] http://event.twgrid.org/isgc2013/chain.html?confId=177418
[7] http://event.twgrid.org/isgc2013/emi.html
[8] http://indico3.twgrid.org/indico/conferenceDisplay.py?confId=444
[9] http://event.twgrid.org/isgc2013/program.html
[10] https://wiki.egi.eu/wiki/VT_Scientific_Publications_Repository
[11] https://wiki.egi.eu/wiki/VT_Science_Gateway_Primer
[12] https://wiki.egi.eu/wiki/VT_E_and_B

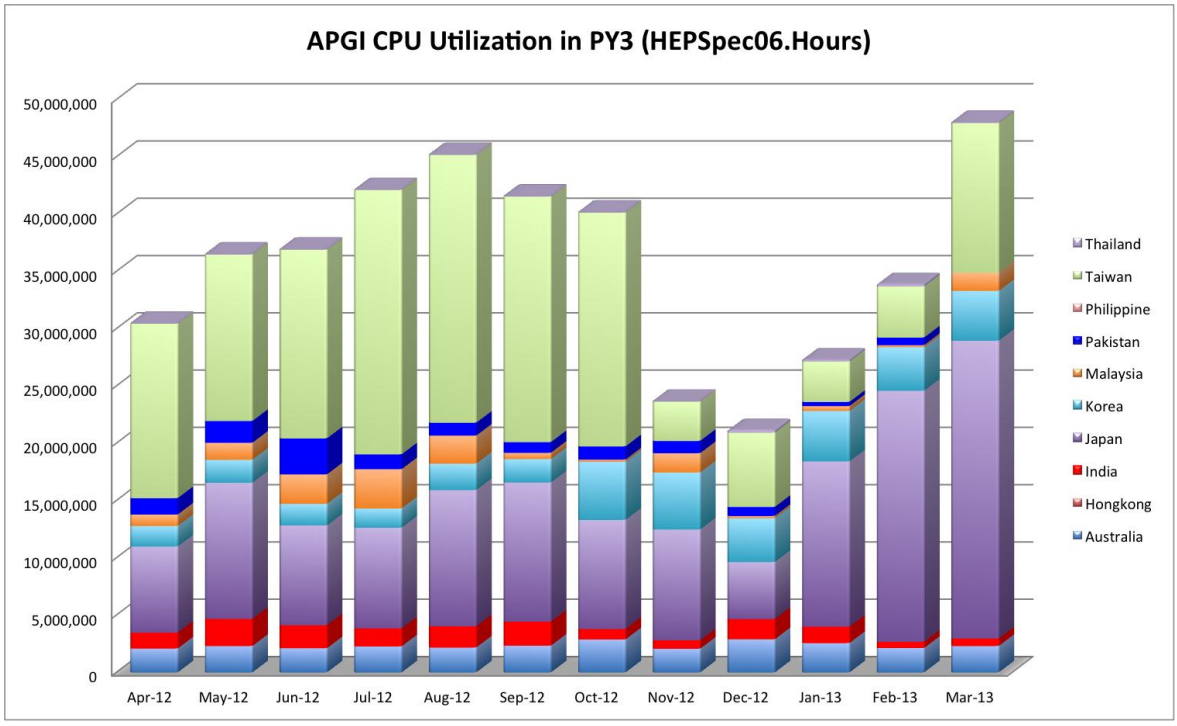

Figure 1: ASGC CPU Usage during PY3

∘ User Support: ASGC provided user support to the following applications:

High Energy Physics (HEP)

ASGC continued supporting ATLAS and CMS experiments which are the largest Grid user communities in terms of the resource consumption. In PY3, for ATLAS the inbound transfer data volume to ASGC reached 3,465TB and outbound transfer volume from ASGC to other T1s/T2s reached 4,500 TB. For CMS, the inbound transfer data size to ASGC reached 689 TB and outbound transfer volume from ASGC to other T1s and T2s reached 777 TB. In PY3 Taiwan WLCG Tier-1 and Tier-2 Centres successfully executed 7.7 M jobs, and provided 151 M normalised CPU time (HEPSPEC06.Hours) with a 37.2% annual growth on figures from PY2.

Bioinformatics and Biomedicine

ASGC continued to support Drug Discovery and WeNMR communities in PY3. A 3-day WeNMR Workshop was organized in conjunction with ISGC 2013. There were over 70 attendees registered in the Workshop. In addition to the WeNMR applications, we also introduced the interactively high throughput virtual screening service, GVSS2, to this workshop.

Natural Disaster Mitigation

Earthquakes: ASGC initiated a new collaboration with the Institute of Earth Science and Philippine Institute of Volcanology & Seismology (PHIVOLCS). The purpose of this collaboration is to:

(1) advance scientific collaboration between Taiwan and the Philippines, particularly in Earth Sciences;

(2) enable and enhance automatic and real-time determination of focal mechanisms and ground motion distributions;
(3) enable the generation of shake movies and shake maps;
(4) improve real-time monitoring and increase the density of the existing seismic network by deploying low-cost sensors based on the QCN and Palert network;
(5) advance understanding of the Manila Trench to facilitate and enhance the evaluation of its potential to generate large earthquakes and hazardous tsunamis;
(6) use the Weather Research Forecasting (WRF) model to estimate and track the dispersion of volcanic emissions;
(7) GPS modelling for motions in the central Luzon and the Manila subduction zone fault systems;
(8) promotion of the e-Science infrastructure for geohazard mitigation in Taiwan and the Philippines

The Kick-off Meeting has been held on 26~27 November 2012 at PHIVOLCS. The procurement of QCN and P-Alert sensors has completed and it is ready to be shipped to Philippine. The installation and training is planned in Q2 of 2013.

Tsunami Simulation: The purpose is to establish a real-time tsunami simulation system with inundation map for the countries around the South China Sea. The sophisticated tsunami model, COMCOT (Cornell Multi-grid Coupled Tsunami Model), was chosen as the kernel. In order to meet the requirement of the real-time simulation, COMCOT has been optimized and parallelized. The optimized COMCOT program performs at least 10 times faster than the original version. In addition, a flexible and user-friendly grid-/cloud-based portal service have been implemented. Moreover, it is also made available for mobile devices such as smart phones.

Climate Change: ASGC continued to promote the gLite-based WRF (gWRF) application. A gWRF Workshop has been held at HAII in Bangkok, Thailand. More than 40 scientists attended the workshop to discuss the usage of WRF for various types of simulation: weather forecasting, rain fall, climate change and urban heat island effect. In addition, the user friendly WRF pre-processing system was introduced. An overview of the EMI middleware was given through the porting of an MPI application to the grid environment.

3 ADVANCED SCIENCE AND TECHNOLOGY INSTITUTE (ASTI)

3.1 WP2 – NA2 Community Engagement

ASTI conducted an Orientation and Tutorial on HPC last October 29, 2012. The event was attended by researchers and scientists coming from diverse fields such as Biotechnology, Meteorology, Seismology, and Computer Science. The orientation and training was focused on latest developments in HPC, virtualization and cloud computing. A hands-on tutorial providing information on the cluster environment and on how to run jobs in the cluster was also given.

3.2 WP4 – SA1 Operations

Aside from the HPC orientation and tutorial, no other formal training or capacity-building activities were carried out during PY3. As applications used by researchers and scientists are mostly run on local virtual clusters that are not yet connected to EGI, there was very little to no grid-related activities carried out during PY3 that required user support.

All security updates are applied upon receipt of notification from EGI Broadcast. Server certificates that expired were renewed last August 2012. PH-ASTI-LIKNAYAN service endpoints are all virtual machines running SL 5.6 and are hosted on ASTI's private cloud. The following are the certified production service endpoints of PH-ASTI-LIKNAYAN:

Hostname	Production	Monitored	Visible to EGI
APEL - liknayan.pscigrid.gov.ph	Yes	Yes	Yes
CREAM-CE - liknayan.pscigrid.gov.ph	Yes	Yes	Yes
gLite-APEL - mon.pscigrid.gov.ph	Yes	Yes	Yes
Site-BDII - mon.pscigrid.gov.ph	Yes	Yes	Yes
SRM - se.pscigrid.gov.ph	Yes	Yes	Yes
UI - ui.pscigrid.gov.ph	Yes	Yes	Yes

ASTI's private cloud which hosts all service endpoints of PH-ASTI-LIKNAYAN is managed using OpenNebula's Cloud Operations Centre web GUI. Since PH-ASTI-LIKNAYAN services are virtual machines that sit on ASTI's private cloud, it is very easy to backup or migrate these virtual machines in case hardware failure occurs on the physical hosts. ASTI is looking at the possibility of joining the EGI federated cloud initiative as soon as the newly acquired mobile data centre and additional compute and storage resources become available by mid-June of 2013.

4 INSTITUT TEKNOLOGI BANDUNG (ITB)

4.1 WP2 – NA2 Community Engagement

Community Engagement activity done in PY3 includes providing access for new users to existing Grid Infrastructure. To do dissemination activity, experts or practitioners in grid computing technology are needed. A problem being faced is the lack of sufficient grid expertise in Indonesia. Most researchers in Indonesia are still using cluster computing system. In "Event Management" ITB will mainly spread information about EGI-InSPIRE to local user communities especially displaying event information on local Grid website.

4.2 WP4 – SA1 Operations

During PY3, communication and coordination with local users' community has been done through emails, phone calls, and informal meetings. In order to facilitate user communities in Indonesia, ITB provides a Grid site that is connected to the EUAsiaGrid and is also experimenting with a desktop grid system. However, the unstable electricity corrupted the ID-ITB system and thus the system had to be suspended.

As for desktop grid system, after installing the BOINC server for the desktop grid, there were some problems. One of these problems was the response from the developers of the BOINC, especially if the user or the system managers had a problem with the installation or porting of applications. It was difficult to get a useful answer to these problems. There were some responses but the responses were only normative answers such as follow the instructions in the manual etc. Other desktop grid system such as that from European Desktop Grid Initiative is not yet explored, and will be added to the future plan.

The coordination with user communities that were involved with the EUAsiaGrid Project and other user communities that could benefit from the use of e-Infrastructures has been maintained. The user communities established from previous activities are those from Weather Forecast, Disaster Mitigation, and Computational Chemistry. Coordination with new areas includes Volcanoes and Forestry (Fire watch). Support during PY3 will mainly be for the Weather Forecast and Computational Chemistry research groups. There are no specific activities related to Technical Services performed for local user communities in PY3. However, local user communities that need support can reach user support staff especially through emails.

Some GPU machines dedicated for High Performance Computing Facility are currently being used by Weather Forecast research group to do their work and research. In the future, these GPU machines will be integrated into ITB's Grid Infrastructure.

5 INTER-UNIVERSITY RESEARCH INSTITUTE CORPORATION HIGH ENERGY ACCELERATOR RESEARCH ORGANIZATION (KEK)

5.1 WP4 – SA1 Operations

KEK, High Energy Accelerator Research Organization, is the government funded multidisciplinary laboratory covering particles physics, material science, bio-chemistry, etc. KEK has large scale accelerators used by many users across the world. EMI-1 was deployed as a part of the Central Computer System there and mostly used by researchers in particle physics, especially, Belle/BelleII and International Linear Collider (ILC). Belle is the experiment exploring CP-violation that has already completed data acquisition. However, the data analysis is on-going and still need large scale computing resources. Now the KEK B-Factory is being upgraded, more than 50 times more data is expected at BelleII. BelleII is utilizing the Grid computing infrastructure mainly composed of EMI for designing their detector and preparing the data analysis. While BelleII is an on-going project, the Japanese HEP society has been willing to host the ILC in Japan. The computing resources used by ILC to design their detector were accessed through the EMI environment. Their Technical Design Report in 2012 consumed a lot of computing resources.

The figure 1 shows monthly CPU consumption normalized by HEPSPEC (in HEPSPEC x hours) in PY3. An extraordinary peak was observed in August 2012 due to the unfortunate failure of the test jobs.

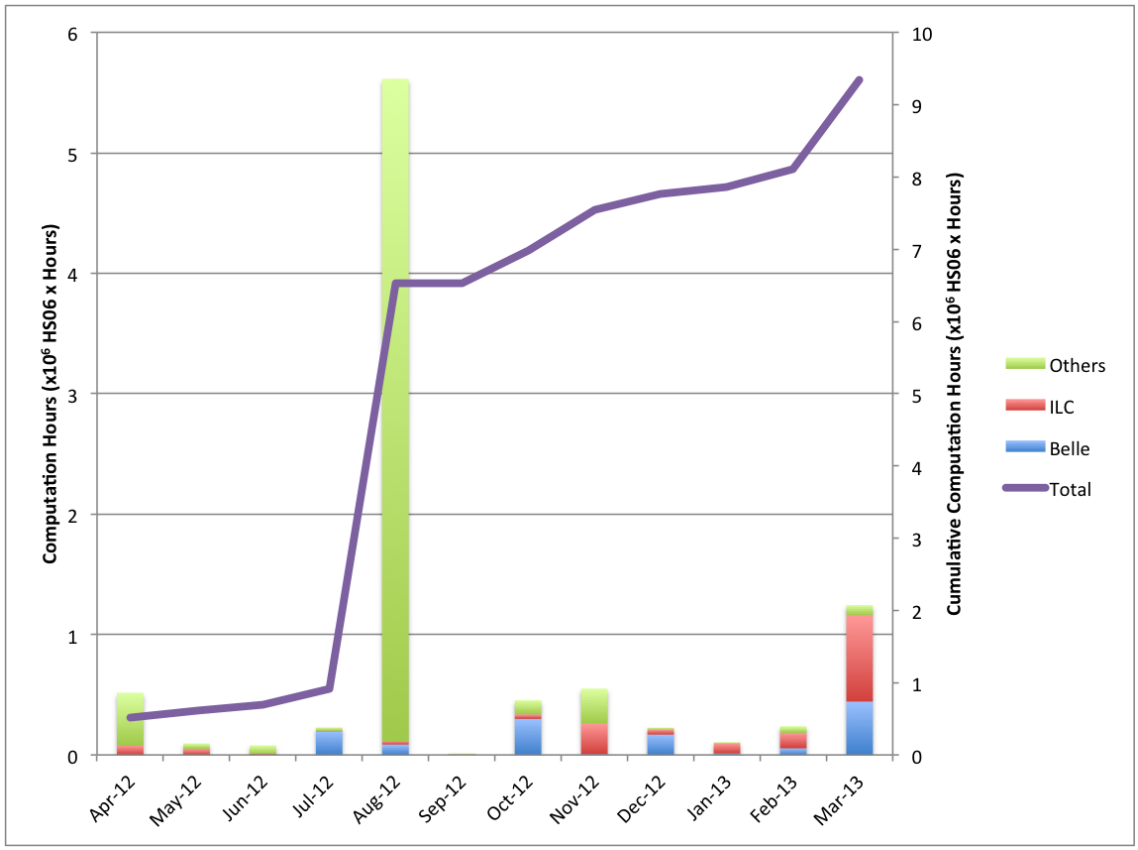

Figure 2: KEK CPU Usage during PY3

Even excluding the strange peak, it can be seen that the EMI environment was used a lot for research in Belle (including BelleII) and ILC.

Currently, BelleII is planning to start its data acquisition in the end of 2016. Towards the commissioning of BelleII, it is expect that the EMI environment will be more heavily used in the coming years. BelleII has chosen EMI as their Distributed Computing Infrastructure and the support by EGI is necessary to operate the environment. The future of EMI and EGI is therefore critical to KEK.

6 KOREA INSTITUTE OF SCIENCE AND TECHNOLOGY INFORMATION (KISTI)

6.1 WP4 – SA1 Operations

Overall, PY3 has been a good year for KISTI especially in terms of providing a relatively stable and reliable Grid service and operation. In 2007, KISTI signed a WLCG MoU Agreement with CERN to become an official Tier-2 for the ALICE experiment, pledging to provide a 150 KSI2K, which is equivalent to 600 HS, in CPUs and 50TB of disk storage dedicated to ALICE computing. According to the T2 accounting and T2 availability & reliability reports announced by WLCG office for every month, in terms of the CPU delivery, for the last one year, even with a big drop in November 2012 caused due to the migration to EMI2, KISTI has managed to provide an average of 119% of what we pledged to deliver in the WLCG MoU (See the top blue line in Figure 3**: KISTI Tier2 Accounting and Reliability/Availability in 2012**). KISTI maintained an average of 93% in the service availability and reliability for the past year (See the red line in Figure 3**: KISTI Tier2 Accounting and Reliability/Availability in 2012**). There were some drops encountered in the reliability number, for example, 61% in June caused by some unanticipated DNS update problem and BDII memory leak and 73% in December linked to some network issues.

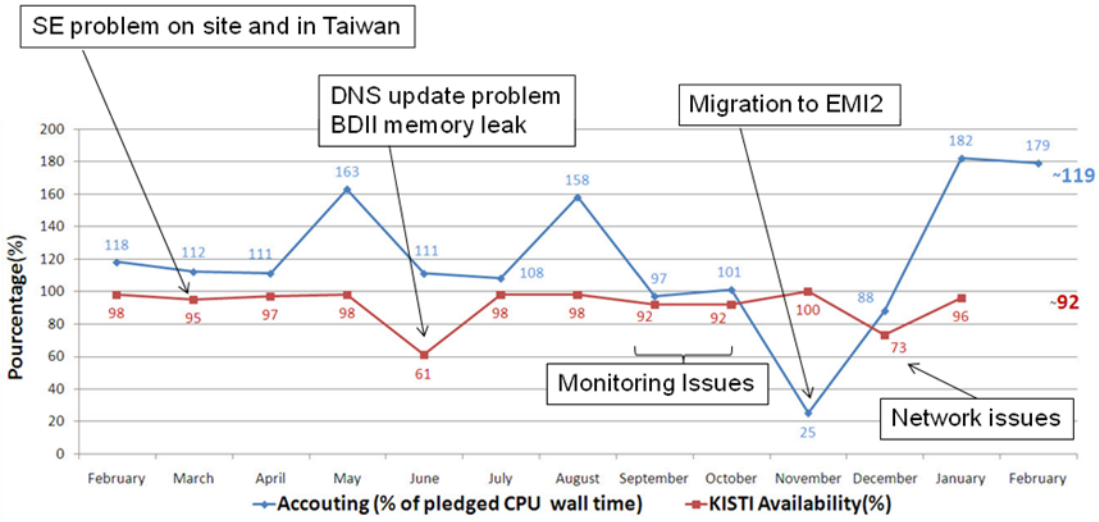

Figure 3: KISTI Tier2 Accounting and Reliability/Availability in 2012

The France-Asia VO is now up and running and integrated into EGI spanning four sites including KISTI in Korea, KEK in Japan, IHEP in China and CC-IN2P3 in France, providing a computing and data infrastructure including more than 55,000 CPU cores and 100 TBytes of disk to researchers and scientists affiliated with the France and Asia Particle Physics Laboratories (FxPPL). The majority of the computing resources are provided by CC-IN2P3 and the other sites contribute their resources and efforts by hosting and operating central services for the virtual organization, such as replicas of the membership service and alternative storage services. The work performed during this year has allowed us to lay out clean foundations of the virtual organization central infrastructure and will allow us to focus on extending both its usage by many other scientific experiments and the number of computing sites joining the effort.

The IHEP computing centre in China has set up a grid site serving as part of the France-Asia Virtual Organization (VO). A CREAM CE service was configured and is now fully operational, contributing over 1,000 CPU cores to the France-Asia VO communities. In addition, the TREND scientific project has started to evaluate this platform for their daily work: TREND experiment performs some phases of its data processing on the grid, in addition to what is currently performed in a conventional way using the compute farm at CC-IN2P3.

DIRAC is a software system for operating highly distributed computing infrastructures. Several international scientific experiments have built their computing infrastructure on top of DIRAC and used it in production for their data processing needs, including LHCb, BES-III, PERMI, etc. A consortium of laboratories in Europe coordinated by CPPM develops and supports DIRAC, which serves 50 registered individuals affiliated to 16 virtual organizations (VO) including in particular the users of the France-Asia VO.

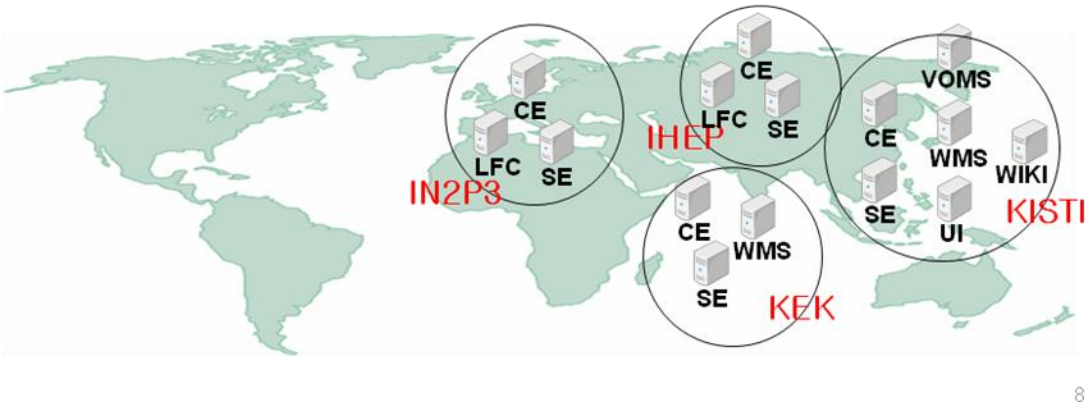

Figure 4: France-Asia VO Grid Infrastructure

7 NATIONAL SCIENCE AND TECHNOLOGY DEVELOPMENT AGENCY (NSTDA)

7.1 WP2 – NA2 Community Engagement

During PY3, NECTEC/NSTDA continued to participate in both international and local events. The detailed activities are listed as follows:

- International activities:
  - ALICE: Connection and Production Tier2 in March 2012, NSTDA/SUT (Suranaree University of Technology)
  - CMS: Testing in May 2012, NSTDA/CU (Chulalongkorn University)
  - EGI-InSPIRE VT_Scientific_Publications_Repository_Best_Practices Survey, August 2012
  - ASGC-HAII-NECTEC's gWRF Workshop in Thailand, 5-6 February 2013, Bangkok
- Local Exhibitions:
  - NSTDA Annual Conference 2012, 23-28 March 2012, Thailand Science Park, Pathumthani
  - NanoThailand, 9-11 April 2012, Khonkaen
  - Siam Physics Congress 2012, 9-12 May 2012, Ayuthya
  - 16th ANnual Symposium on Computational Science and Engineering, 23-25 May 2012, Chiangmai
  - eHPC 2012 and JCSSE 2012, 30 May – 1 June, 2012, Bangkok
- Local User Training:
  - Cluster and HPC system, 14 March 2012, @NECTEC, Pathumthani
  - Introduction to Molecular Modelling : Gromacs Package, 23 May 2012, @Chiangmai University, Chiangmai
  - Resource Utilization and Management using Virtualization Technology: Case Study of National e-Science Infrastructure Consortium project, 11 September 2012, @CAE Center, MTEC, Pathumthani
- Local Workshop and Public Relations activities:
  - 7th PANDA Grid Workshop, 8-10 May 2012, @Suranaree University of Technology
  - Workshop on "e-Science and High Performance Computing", 1 June 2012, @UTCC
  - Faculty of Science @ Ubonratchathani University, 21 June 2012
  - Faculty of Material Science and Engineering @ Mahidol University, 21 August 2012
  - School of Bio-resources and Technology @ KMUTT, 28 August 2012
  - Department of Physics @Prince of Songkhla University, 31 August 2012
  - Department of Chemistry @Kasetsart University, 13 September 2012

7.2 WP4– SA1 Operations

During PY3 in EGI-InSPIRE, the key actions of NECTEC/NSTDA in WP4 were running its part in the "Thailand National e-Science Infrastructure Consortium" project. The start-up activities and continuing progresses was presented in ISGC 2012 in "e-Science Activities in Asia-Pacific" session on 29 February 2012 and at ISGC 2013 in the "e-Science Activities in Asia-Pacific" session on 19 March 2012.

The active resources and services in PY3 were:

- Total computing cores: 360
- Total storage: 350TB
- FY 2013 resource utilization: 2.5 million CPU-hr, which is about 70% of our target for the FY (1 OCT 2012- 30 April 2013)

As of March 2013 (as the document is preparing), the currently active projects were:

- Particle Physics: 5 projects
- Climate Change: 5 projects
- Water Resource, Energy, and Environment Management: 5 projects
- Computational science and engineering: 26 projects
- Computer science and engineering: 22 projects

In addition, NECTEC/NSTDA also provided GOC CA services (as members of APGrid-PMA) and technical assistance in configuration ALICE and CMS Tier-2 production and testing with SUT and CU.

8 NATIONAL UNIVERSITY OF SINGAPORE (NUS)

8.1 WP4 – SA1 Operations

During PY3, the work has been focussed on participating in developing a proposal for a distributed supercomputing facility to be built in Singapore nationally to complement computing infrastructure including the existing institutional computing resources as the grid. The current teragrid resources at the National University of Singapore are still continuing but the focus has shifted to cloud instances on the campus. The integration of this resource into EGI to support grids and clouds will be explored once it has been commissioned.

The implementation of the grid on our cloud instances has been delayed with the overdue release of Slax, which has resulted in delayed release of BioSlax, the platform which was supposed to have been used to run the EGI grid resources. Meanwhile, the National Grid office continues to rope in commercial operators to run various cloud computing testbeds for heavy users in the research communities. The national advanced network SINGAREN has embarked on building better connectivity between institutional resources via the SLIX project which interconnects NUS which other institutions at 10 GE.

9 UNIVERSITY OF MELBOURNE (UNIMELB)

9.1 WP2 – NA2 Community Engagement

Outreach activities by the Research Computing team of CoEPP have included a lecture at the 2012 ICHEP teacher education program, a seminar at Victorian HPC forum, assistance with ICHEP google hangout event and technical support for the video streaming of ICHEP from Melbourne back to CERN. The last year was a big year for the Centre of Excellence for Particle Physics at the Terascale (CoEPP) in Australia. Melbourne was host of the successful ICHEP 2012 conference during which the Higgs Boson discovery announcement was made via a live video link to CERN. There was incredible media attention and interest in particle physics and the grid computing infrastructure used by the researchers to make their discovery.

9.2 WP4 – SA1 Operations

The CoEPP Cloud Project, funded by the Australian Federal Government's NeCTAR project, was initiated and development staff was appointed during 2012. The project is focussed on getting substantial Tier 2 and Tier 3 facilities running in the Australian Research Cloud. Progress has been good and prototype grid infrastructure for both tiers is now up and running in the Research Cloud.

CoEPP has three full time staff responsible for the delivery of the Australian Tier 2 and Tier 3 WLCG facilities. There are also three developers working on the CoEPP cloud project to integrate the Australian Research Cloud and the WLCG.

The computing resources available to the Australian ATLAS Tier 2 WLCG site also grew significantly during 2012 with the addition of 2500 HEPSPECs of compute and 240 TB of storage resources. There were however issues in getting the required performance out of the new high density multi-core CPUs as well as presenting the full storage to our DPM grid storage system which led to Australia-ATLAS not meeting its pledged capability. These issues are now resolved and 2013 will see a return to the pledged values.

10 UNIVERSITI PUTRA MALAYSIA (UPM)

10.1 WP2 – NA2 Community Engagement

Several training and dissemination activities have been organised in PY3:

1. Grid User Training for Engineering 19/6/2012 (Tuesday) - 21/6/2012 (Thursday)
2. Grid User Training for Mathematics and Science 26/6/2012 (Tuesday) –28/6/2012 (Thursday)
3. Workshop on Desktop Grid in collaboration with IDGF 9/10/2012

In line with the need for making better user experience and ease of use by users, significant progress has been made with the development of Academic Grid Scientific Gateway (http://scibus.cict.utm.my/liferay-portal-6.1.0/) in collaboration with a private company, NVG Scientific Sdn Bhd and SCI-BUS Project and EC Project partner, MTA SZTAKI, Hungary.

10.2 WP4 – SA1 Operations

The past year has been an exciting as well as a sad year for Academic Grid Malaysia. Apart from the regular resource contributors of BIRUNI GRID Centre at Universiti Putra Malaysia (UPM) with other Malaysian universities namely University of Malaya (UM), University of Science, Malaysia (USM), and Northern University of Malaysia (UUM), University of Technology Malaysia (UTM) has contributed additional resources which bring the total cores to 600. Unfortunately, grid computing development in Malaysia suffered a blow with the decommissioning of Knowledge Grid Facility at MIMOS leaving regular users of that facility having to search for alternative resources. Academic Grid Malaysia swiftly stepped in to fill the gap left by MIMOS and started to receive service requests from users in new research domains.

Activities on development, supports, training and dissemination are as usual coordinated by the National Grid Computing Initiative Secretariat located at Universiti Tenaga National (UNITEN) where funding for the activities mentioned was generously provided by Malaysian Science Technology and Innovation.

Another success of Academic Grid Malaysia is on the configuration of production site to support WeNMR, where the work was completed within one day thus showing the strong collaboration between Malaysia and WeNMR team headed by Dr. Alexandre M.J.J Bonvin, Professor of Computational Structural Biology, Faculty of Science, and Utrecht University. Such collaboration is a testimony of the great assistance and support as a direct consequence of EGI-InSPIRE Project.

Academic Grid Malaysia is entering into collaboration with the newly formed National Centre for Particle Physics and in direct involvement of the development of the grid computing facility of the centre which is supporting the Complex Muon Solenoid (CMS) Project at CERN. The development of a CMS Tier-2 facility for Malaysia is underway with the planned increased capacity of both compute and storage to satisfy the minimum requirement set by the project. Additionally, Academic Grid Malaysia is also working on project aiming for the development of e-Infrastructure for Malaysia, called Project I5, which stands for Innovative, Integrated, Inclusive e-Infrastructure Initiative.

11 CONCLUSIONS

The EGI-InSPIRE partners in the Asia Pacific region contributed to the development of the local individual distributed computing infrastructures within the context of regional collaborations taking place between the Resource Providers in the region and user communities across many countries. The collaboration activities between Europe and the Asia-Pacific region have continued with regular attendance at each other's major meetings - the EGI Forums and International Symposium on Grids and Clouds – and through the daily interaction and support outside of these events. Collaborative applied research links continue to develop between researchers in Europe and the Asia Pacific region.

The collaboration of EGI.eu with partners of the Asia Pacific region is now defined in the framework of a Memorandum of Understanding[13] which was finalized in April 2013.

[13] https://documents.egi.eu/document/1754