



PRESS RELEASE

OFFICIAL LAUNCH OF NATIONAL GRID PHASE 2

SINGAPORE, 3 May 2005 – The National Grid (Phase 2) is officially launched today by Mr. Lim Hng Kiang, Minister for Trade & Industry at GridAsia 2005. This follows on the successful pilot phase (2003 – 2004) of implementing a national cyber-infrastructure, known as the National Grid Pilot Platform (NGPP), that links up compute resources in Singapore. The National Grid has the vision of transforming Singapore into a nation where computer resources can be interconnected via a next generation cyber-infrastructure. Sharing of resources in a secure, reliable and efficient manner by authenticated users for education, commercial, entertainment, R&D, national security and other purposes will improve the economic and technological competitiveness of Singapore.

The National Grid (Phase 2) is co-funded by the two research councils of the Agency for Science, Technology and Research (A*STAR) – Science & Engineering Research Council and Biomedical Research Council, the Defence Science & Technology Agency (DSTA), the Infocomm Development Authority (IDA) of Singapore, the National University of Singapore (NUS) and the Nanyang Technological University (NTU).

The achievements of Phase 1 include the following:

- NGPP was launched on 1 November 2003 with several 1 Gbps high-speed network connecting over 250 CPUs belonging to A*STAR's research institutes and the two main universities. Today, the technical computing

resources on the NGPP have grown to over 500 CPUs and are expected to reach 1,000 CPUs within the next 12 months.

- Some 15 applications from the R&D community were grid-enabled to run on the NGPP.
- Raising the awareness and skills levels took the form of organizing 19 seminars that reached out to over 620 people and conducting 22 training courses that benefited 400 people.

The successful adoption of Grid Computing by the R&D community in the pilot phase has paved the way for strong industry participation in Phase 2 of the National Grid. It takes a sector-based approach in promoting the adoption by business and industry users. The initial verticals are digital media and manufacturing. Other economic sectors where the benefits of Grid Computing can be harnessed will be identified.

Phase 2 will therefore have the theme of moving from lab to practice. It will leverage on the synergistic working relationships between the various government agencies and industry to realize its objective.

“Grid Computing adopts the concept of applying resources from many individual computers to a single problem. This concept of Grid Computing is getting increasingly important as our economy evolves into one that is highly dependent on high performing network of computers. Phase 1 has been successful in linking up the research institutes, universities and various government agencies. Going forward, we will need to focus on industry’s needs and applications,” says Mr Boon Swan Foo, Managing Director, A*STAR.

While the future vision of Grid Computing as a distributed high-performance ICT resource on tap will take some time to come, grid technologies are already being applied within selected clusters and industry verticals so as to tap on the immediate benefits.

Rear-Admiral (Ret.) Richard Lim, Chairman of the National Grid Steering Committee and Chief Executive of DSTA, says: “We will provide the NGPP as a test-bed for ICT companies to try out Grid Computing solutions and applications. In addition, we will work closely with digital media and manufacturing companies in proof-of-concept projects before proceeding to full-scale implementations. As the number of business and industry applications and users of Grid Computing grows, we hope to see the emergence of Grid service providers that can fulfill such a demand.”

Mr Chan Yeng Kit, CEO of IDA added, “Grid computing brings a paradigm shift from the ownership of computational assets to the buying of compute services. This shift changes business models and opens the door for greater ICT growth opportunities. It impacts immediately the business of ICT outsourcing, and in the longer term, strengthens Singapore as an ICT hub and Digital Exchange,”

Several Grid Computing projects with business and industry users have already commenced in the two target industry sectors. For each sector, a pragmatic step-by-step approach of conducting proof-of-concepts and trials involving early adopters will be undertaken before proceeding to a production stage.

In digital media, the projects include the following:

- Animation Rendering Greenhouse;
- Digital Media Grid;
- Mental Ray Grid Proof-of-Concept;
- Enterprise Grid for Rendering; and
- Adaptive Enterprise @ Singapore Digital Media Initiative.

“The Media Development Authority (MDA) is pleased to participate in Phase 2 of the National Grid. Digital Media is one of the key initiatives for the Media Industry, and the Grid enables MDA and our media industry players to exploit the

computing resources available on the Grid as we test out new ideas to grow Digital Media." says Dr Christopher Chia, CEO of MDA.

In manufacturing, the projects include the following:

- The Collaborative Engineering Programme (CEP), involving IDA, NUS, Sun Microsystems and SES Systems, aims to develop grid-based collaborative engineering tools.
- The NGO, IHPC and i-Math are conducting a proof-of-concept to provision a multi-physics simulation software on the NGPP.

(Please refer to Annex 3 for detailed information on these applications.)

Phase 2 will also exploit the benefits of Grid Computing to generate ICT growth opportunities. To this end, efforts will also focus on encouraging the commercial use and development of local capability in Grid Computing through collaborations with MNCs, as well as encouraging the innovative use of Grid Computing in the target industry sectors. Collaborations such as the Adaptive Enterprise @ Singapore with HP, the On Demand @ Singapore with IBM, Enterprise-g @ Singapore with Oracle, and the Managed Computing Competency Centre with Sun Microsystems will be further enhanced.

Besides working on business and industry related Grid applications, the National Grid (Phase 2) will also emphasize international collaborations. Under a collaboration agreement between IDA and HP, the NGPP is now a participant of a global operational grid that provides computational and storage resources to the Large Hadron Collider (LHC) project at CERN. Such an involvement allows us to tap on the expertise and experience in deploying large-scale grids.

The National Grid (Phase 2) continues to receive strong support from the ICT vendors. HP, Platform Computing, PTC Systems, Singapore Computer Systems and mental images GmbH have contributed equipment, software and services worth several million dollars.

The National Grid adopts a consultative and partnership approach in working with stakeholders, ICT vendors and users to realize its vision of Grid-enabled economy in Singapore.

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Annex 1: About National Grid Office

Annex 2: National Grid Steering Committee members

Annex 3: Information on existing grid projects

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Annex 1: About the National Grid Office

The NGO was established by the Agency for Science, Technology and Research in January 2003 to promote Grid Computing and to develop a cyber-infrastructure that steers Singapore towards a Grid-enabled economy where computing resources, services and intellectual property can be provisioned securely on a high-speed network.

The roles of the National Grid are:

1. To develop a cyber-infrastructure for science and engineering research and education; and
2. To promote the use of Grid Computing for research, academic, commerce and industry.

The NGO strives to achieve the vision for the National Grid by the following means:

- Formulate the framework & policies;
- Plan & develop a secure platform;
- Adopt common open standards;
- Encourage the adoption of Grid Computing;
- Demonstrate the commercial viability of compute-resource-on-tap; and
- Lay the foundation for a vibrant Grid Computing economy.

The NGO reports to the National Grid Steering Committee (see Annex 2). Advising the committee on technical matters are the Working Groups (WGs), Virtual Grid Communities (VGCs) and Special Interest Groups (SIGs).

- The WGs comprise industry practitioners, academics and researchers who volunteer their time and expertise to provide technical advice. The current WGs focus on Grid Networks, Grid Middleware, Grid Security, Grid Applications and Governance.
- The VGCs are distributed collaborations centered on a Grid-enabled environment. The current VGCs focus on Life Sciences, Physical Sciences, Digital Media and Manufacturing.
- The SIGs provide a forum where individuals involved in the “nuts-and-bolts” aspects of specific Grid implementations. The current SIGs focus on Grid System Administration, Access Grid and PC Grid Computing.

Annex 2: National Grid Steering Committee members

Chairman Rear-Admiral (Ret.) Richard Lim
Chief Executive, Defense Science & Technology Agency

Deputy Chairman Nobel Laureate Sydney Brenner
Chairman, Biomedical Research Council, A*STAR

Members

- Mr. Boon Swan Foo, Managing Director, Agency for Science, Technology & Research
- Mr. Chan Yeng Kit, CEO, Infocomm Development Authority
- Dr. Christopher Chia, CEO, Media Development Authority
- Mr. Tan Peng Yam, Deputy CE (Technology), Defence Science & Technology Agency
- Mr. Png Cheong Boon, Deputy CEO, SPRING
- Mr. Quek Swee Kuan, Director (Infocomm & Media), Economic Development Board
- A/Prof. Chew Suok Kai, Deputy DMS (Epidemiology & Disease Control) / Director (Communicable Disease), Ministry of Health
- Prof. Chew Yong Tian, Deputy Director (Research), National University of Singapore
- Prof. Robert Gay, Director (IT Research Infrastructure), Nanyang Technological University
- Mr. Nickson Fong, CEO, Egg Story Creative Production
- Mr. Timothy Cooley, IT Director, Lilly Systems Biology
- Mr. Chue Fook Chee, SVP, CPG Consultants
- Mr. Stephen Lim, Chair, Singapore IT Federation (& CEO, SQL View)
- Mr. Robert Chew, Chair, IT Standards Committee (& Partner, Accenture)
- Prof. Chong Tow Chong, Executive Director, Science & Engineering Research Council
- A/Prof. Lam Kong-Peng, Acting Executive Director, Biomedical Research Council
- Dr. Santosh Mishra, Executive Director, Bioinformatics Institute
- A/Prof. Lee Heow Pheow, Executive Director (Acting), Institute of High Performance Computing

Annex 3: Information on Grid projects

1. Animation Rendering Greenhouse

The IDA, together with Managed Computing Competency Centre (MC3), the Digital Media Chapter of the Singapore Infocomm Federation (SITF), as well as local and international companies completed a concept prototype for a virtual remote rendering facility. As next steps, it will be linked up with NGPP2's Digital Media Grid to extend collective resources for an Animation Rendering Greenhouse environment to encourage more local and international users to use Singapore as a test-bed to pilot and trial Grid technologies.

Contact: Ho Hwei Ling, IDA (ho_hwei_ling@ida.gov.sg)

2. Digital Media Grid

A subset of NGPP has been installed with POV-Ray (<http://www.povray.org/>) and Cel-Animation (from NTU) to form a digital media grid that is open to interested parties to experience running animation rendering jobs.

Contact: Choo Thong Tiong, NGO (thongtiong@ngp.org.sg)

3. Mental Ray Grid Proof-of-Concept

The Media Development Authority (MDA), in conjunction with NGO and Germany-based mental images GmbH, is presently conducting a proof-of-concept with several local digital media SMEs (one of which is VHQ Post) to run animation rendering jobs over a grid of two clusters of 150 CPUs.

Contact: Choo Thong Tiong, NGO (thongtiong@ngp.org.sg)

4. Enterprise Grid for Rendering

The MDA and NGO have embarked upon a joint scheme to help local digital media SMEs to build enterprise grids as a stepping stone to tap on compute resources on the NGPP.

Contact: Yeo Chun Cheng, MDA (YEO_Chun_Cheng@mda.gov.sg)

5. Adaptive Enterprise @ Singapore (AE@SG)

As an activity under the IDA-HP AE@SG collaboration, NTU, Singapore Management University (SMU), IHPC and HP Labs Palo Alto, are co-developing a suite of solutions that would ease the use of Grid Computing by animators. A user council comprising representatives from digital media SMEs and ICT companies has been established to provide requirements and ensure that solutions will be usable.

Contact: Ho Hwei Ling, IDA (ho_hwei_ling@ida.gov.sg)

6. Collaborative Engineering Programme (CEP)

The programme leverages on emerging grid-enabled technologies to develop new collaborative engineering tools such as construction analysis, design management, production planning and scheduling. These tools aim to facilitate timely sharing information and knowledge among construction and manufacturing companies so that they become more synchronized, productive and responsive to market changes. This will help companies achieve potential savings of between 4 to 7% of project costs. In addition, it also enables these companies to more effectively compete in the regional construction market, estimated to be worth US\$360 billion.

Contact: Ho Hwei Ling, IDA (ho_hwei_ling@ida.gov.sg)

7. Simulation Software Provisioning Proof-of-Concept

This proof-of-concept is undertaken jointly by IHPC, i-Math and NGO to ascertain whether the application provisioning works technically with FEMLAB, a multi-physics simulation software, and also to gauge the level of end-user demand for this service from industry users. The likely beneficiaries are the SMEs that need the software but the infrequency of use and the huge computation resources necessary prevent them from acquiring the packages.

Contact: Dr. Terence Hung, IHPC (Terence@ihpc.a-star.edu.sg)

Annex 4: About GridAsia 2005

The National Grid Office is launching the inaugural GridAsia event on 2 – 6 May 2005 in conjunction with Agency for Science, Technology & Research, Infocomm Development Authority, National University of Singapore, and Nanyang Technological University.

This new series with the Grid Computing theme caters to everyone, from the interested individuals, practitioners and user organizations in industry to the research and development community. Grid Asia promises to be an exciting major annual event for the region. It will bring together researchers and practitioners in Grid Computing as well as related technologies and applications.

GridAsia will be an important platform to enable attendees and participants to share experiences, discuss their research findings, network and explore opportunities for collaboration. Delegates are expected to come from local and overseas academia, research institutes and laboratories, both in the public and industry sectors (such as biomedical, digital media, physical sciences and manufacturing).

Preparation for GridAsia 2006 has already commenced. Next year, Singapore will host the 6th International Symposium on Cluster Computing & the Grid (CCGrid 2006) and the 3rd International Workshop on Grid Economics & Business Models (GECON 2006), as part of the international research track. The other tracks on technical, industry and exhibition will continue. We will be holding GridAsia 2006 on the new premises of the Singapore Management University in the downtown area.

GridAsia 2005, to be held in Biopolis will comprise 4 tracks of activities, namely:

- International academic & research track
 - Pacific Rim Applications & Grid Middleware Assembly 2005 (PRAGMA 8)
 - Life Sciences Grid Workshop (LSGRID 2005)
- Technical track
 - Computing 101
 - Project Mega Grid Workshop (by Oracle)
 - GELATO Grid Focus Group Bird-of-a-Feather
 - Physical Sciences VGC Symposium
 - Digital Media VGC Symposium
 - Manufacturing VGC Symposium
 - 2nd Workshop on Grid Computing & Applications
- Industry track
 - AE@SG Workshop (by IDA and HP)
 - Collaborative Engineering Program Workshop (by IDA, NUS, SES Systems and Sun Microsystems)
 - Presentations
 - Panel discussions
- Exhibition for both research & commercial offerings
 - Vendors: HP, IBM, Intel, Sun, Oracle, Platform Computing, SGI
 - Projects: NG, Digital Media, Manufacturing, AE@SG

- Technical/Research: BII, IHPC, NTU, NUS, Gelato, PRAGMA

We expect a total turnout of more than 350 delegates to participate in conference, symposia, workshops, tutorials, presentations and special session discussions, fostering active interchange of research ideas and sharing of experience. The program and social events lined up will provide an invigorating brew of networking opportunities.

The keynote speaker is Dr. Ian Foster, the Father of Grid Computing, who will be speaking on the topic "Grid: From Lab to Practice". He is an Associate Division Director at the Argonne National Lab & Professor at the University of Chicago. Dr. Foster will not be physically in Singapore but will be giving the keynote address from his office in Chicago via the Access Grid, a form of grid computing that supports collaboration and is best summarized as 'video conferencing on steroids'. The use of Access Grid will hopefully give the audience one possible application of grid computing.