



Asia-Pacific
Economic Cooperation

Hard Copy Code
Agenda Item:

APGrid Implementation Project

Submitted by: Korea

apectel 34

**34th APEC Telecommunications and Information
Working Group Meeting – DSGI
Auckland, New Zealand
23-27 October 2006**

Progress Report on APEC APGrid Implementation Projects

[] Operational Account [] TILF Special Account [] APEC Support Fund

Project number:		Date received by Secretariat:
Name of Committee/Working Group: ICT Development (D) Steering Group		
Title of Project: APEC TEL APGrid Implementation Projects		
Proposing APEC Economy: Republic of Korea		
Co-sponsoring APEC Economy (ies): Australia, Canada, China, Chinese Taipei, Japan, Singapore		
Project Overseer: Name, Title and Organization (M/F) Jae Suk Lee, Deputy Director of Internet Policy Division, Ministry of Information and Communication (MIC), Republic of Korea		
Postal address: MIC 100 Sejongno, Jongnogu, Seoul, Korea		Tel: +82 2 750 1236 Fax: +82 2 750 1239 Email: leejs@mic.go.kr
Financial Information	Total cost of proposal (US\$): Self funded	Amount being sought from APEC Central Fund (US\$): N/A
Type of Project: <input type="checkbox"/> seminar/symposium <input type="checkbox"/> short-term training course <input type="checkbox"/> <u>survey or analysis and research</u> <input type="checkbox"/> database/website <input type="checkbox"/> others (<i>Please specify</i>)		
Project start date: 2002		Project end date: 2006
Brief description of Project: The purpose of this project is for helping the construction and operation of a Grid in the APEC region. It is a five year self-funded project, which started from 2002 and endorsed during the 24th APEC TEL meeting. There exist high speed networks and R&D resources in the APEC region. This project consists of three main parts. First, R&D resources in the region are connected to create a computational or data Grid. Next, Grid middleware is developed and deployed to make it easier to use the connected Grid resources. Then, Grid applications are executed over the virtual machine. The ultimate goals of this project are to enhance economic competitiveness and to solve the digital divide problem in the APEC region through better use of the distributed resources in this region. The major activities of this project are operating a Web server for dissemination of Grid technologies, hosting Grid workshop for sharing of Grid experiences, and exchanging Grid researchers.		
Signature of Project Overseer: Jae Suk Lee (Separate written confirmation acceptable for email submission) Date: 20 Oct. 2006		

Progress Report on APEC APGrid Implementation Projects

Status/Progress and Problems	
Current status of project: On schedule (<u>Yes</u> /No)	Within budget (<u>Yes</u> /No)
<p>Objectives</p> <p>This project is to enhance economic competitiveness and to solve the digital divide problem in the APEC region through better use of the distributed resources in this region. The objectives for achieving these goals are as follows:</p> <ol style="list-style-type: none"> 1) Support the construction of the APEC high performance computational Grid by connecting the supercomputers and clusters in the APEC region for the researchers who need the large computing resources. 2) Support the implementation of the APEC data Grid for the researches which require the large sized experimental data processing like bioinformatics etc. 3) Support the implementation of the APEC access Grid for carrying out the collaboration effectively among the researchers in the APEC region. 4) Support the development of Grid Applications which are specified in the APEC region through utilizing the implemented APEC computational Grid, data Grid, and access Grid. 	
<p>Linkages, Methodology, Budget</p> <p>This project would benefit government, telecommunication industries, and science and research communities by bringing new information technology and infrastructure. To do this, we have reported the progresses of APGrid implementation project at every TEL meeting since APEC TEL 25. This project is very closely executed along with the Korea national Grid (K*Grid) project. The status and activities of K*Grid project regarding the construction of Grid testbed, development of Grid middleware and Grid applications have been reported as a part of the APGrid project. Most outcomes of K*Grid project can be available to APEC members except commercial use.</p> <p>To bring together government representatives and information and network experts to foster an exchange of information and experiences related to the development of Grid technology, we proposed the APEC-funded APGrid workshop as a part of the APGrid project and it was approved by APEC TEL and APEC BMC (\$20,000). We hosted two APEC TEL APGrid workshops at the 30th APEC TEL meeting (Singapore) and the 32nd APEC TEL meeting (Korea). The purposes of the proposed workshops are to identify the best practice cases of Asia-Pacific information infrastructure (APII) project based on the Grid technology, to increase the scientific and business activities for the development of the Grid technology in APEC economies, to discuss and plan the better deployment of the new information infrastructure (Grid infrastructure) particularly in under served areas, to fast transfer the new Grid technology into the APEC region and prepare the strategies for the global Grid standardization process, to establish the regional service policy of the Grid technology and infrastructure, to share the lessons learned/experienced to date in the development of the Grid technology and infrastructure, and to support the participation of APEC economies in global Grid programs such as EU EGEE-II, TeraGrid.</p>	
<p>Gender Considerations</p> <p>This project would be equally accessible by both women and men. Women will be encouraged to participate in both workshop program and organization committees. The gender criteria are not related with this project because women will have equal access to the workshop programs and resulting materials.</p>	

Progress since last report :

- Summary of Major Contributions to APEC Economies

Building Grid Infra for Solving Large-Scaled Problems

- Provision of Grid R&D Infra for Activating Grid Technology and Grid Application R&D
- Connection of sizable supercomputing resources (KISTI, Seoul National Univ., Busan National Univ.) to build a tera-scale computing Grid infrastructure
- Development of web-based Grid service platform and providing services
- Operation of Grid Certification Authority (CA) and participation of Grid PMA (Policy Management Authority)

APGrid Tools for Building Grid Infrastructure

- Web-based Grid Portal System: Grid user workspace system, Grid monitoring system, Grid accounting system, Job submission/execution and management system
- Web-based Grid CA System: Grid security system is based on the PKI(Public Key Infrastructure) to meet some requirements in Grid computing environments
- Web-based user interface for MDS (Monitoring and Discovery Service) for K*Grid portal system
- K*Grid Replica Manager: Replica Manager provides various replica management services and supports a web-based interface

Development of Grid middleware package (KMI-R1) for constructing the next generation IT infra

- Support Grid communities through KMI-R1 release
- International collaboration with Globus, PRAGMA, EGEE, etc.
- Construction of testbed on five sites in Korea with KMI-R1
- KMI-R1 (K*Grid Middleware Initiative – Release 1) contains MoreDream and other open softwares for helping to construct Grid infrastructure
- Dissemination of Grid Middleware Service Package KMI-R1 (About 300 times to more than 80 organizations over the world)

Development of Grid Applications for Activating Grid Technology in Scientific Applications

- Discovery and Implementation of Grid based Pilot Applications (Genomic and proteomic Grid, Drug design in Grid environment, Brain science on Grid, HEP(High Energy Physics) Data Grid, Telescience Grid, Grid based CFD)

Development of Grid Applications for Activating Grid Technology in IT Applications

- Discovery and implementation of prototypes with industries (On-line game service, Telematics service, Rendering service)
- Creation of business Grid market in IT

Deployment of Gigabit Network for Grid

- Provision of Gigabit-access on research networks to 17 member sites
- Service for various Grid application researches (22 Grid researches)

Enhancement of Access Grid Infrastructure

- Development of HDTV video transmission over the access Grid and release for service version (construction of 50 access Grid sites using venue server)
- Extension of access Grid infrastructure for Medical, Bioinformatics, Education (100% increasing in every year)

Driving to Initiate National Scale Grid Projects In APEC

- China (China National Grid, Scientific Data Grid, CROWN ...)
- Chinese Taipei (KING: Knowledge Innovation National Grid)
- Canada(Grid Canada, West Grid, Music Grid ...)
- Singapore(National Grid Office, National Grid Pilot Platform)
- Japan(NAREGI, ApGrid Initiative, Business Grid Consortium ...)

- Korea(K*Grid, e-Science, KoCED ...)
- Malaysia(National Grid Research Center ...)

Working together with international Grid projects to make the opportunities for Grid business activities and supporting international collaboration

- Participation as a formal partner to EGEE-II project
- Collaboration with PRAGMA (Building testbed and supporting the research applications)
- Participation to Multi-Grid Interoperation project (Connection with 15 projects including TeraGrid)

APGrid Workshop

- Goal : Proliferate Grid technology in APEC region to build APEC Grid
- Approved at APEC BMC (Budget and Management Committee)
 - . Total budget : US \$40,000 for two workshops (APEC \$20,000; Self \$20,000)
- The 1st workshop at the 30th TEL meeting
 - . Singapore, Sept 20, 2004
 - . Self funding of \$20,000 for the workshop
 - . One-day program focused on technical presentations on Grid technologies and network issues
 - . Activation of established Grid testbed and applications
- The 2nd workshop at the 32nd TEL meeting
 - . Seoul, Sept 6, 2005
 - . AEPC funding of \$20,000 for the workshop
 - . One-day program focused on technical presentations on Grid business and applications
 - . Increase of the general awareness of the Grid technology and applications

Grid Showcase

- Goal : Increase the publicity of Grid technology through showing the real Grid application demo
- Grid Showcase at the 33rd TEL meeting
 - . Calgary/Canada, Apr. 25 ~ 27, 2006
- Demo List:
 - . ECOGRID; Real Time Observational Multiple Data Streaming and Machine Learning for Environmental Research using Lightpath – Chinese Taipei
 - . K*Grid Project - Korea
 - . GridASP : Business Framework for Utility Computing – AIST, Japan
 - . Malaria TV – Lab of Collaborative Diagnostics, University of Toronto, Canada
 - . Virtual Machine Turntable, Nortel – Canada
 - . User Controlled Lightpath Provisioning (UCLPv2) - Canada
 - . Animation Rendering on a Grid - Singapore

Appendix: Presentation Slides