Asia Pacific Grid

Grid Technology Research Center, AIST
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ApGrid: Asia Pacific Partnership for Grid Computing

- ApGrid focuses on
  - Sharing resources, knowledge, technologies
  - Developing Grid technologies
  - Helping the use of our technologies in create new applications
  - Collaboration on each others work

Possible Applications on the Grid

·Bio Informatics
  Rice Genome, etc..
·Earth Science
  Weather forecast, Fluid prediction, Earthquake prediction, etc..

History and Future Plan

Kick-off meeting
Yokohama, Japan

Presentation @ GF5
Boston, USA

Demo @ HPCAsia
Gold Coast, Australia

1st ApGrid Workshop
Tokyo, Japan

presentation @ SC2001
SC Global Event

1st Core Meeting
Phuket, Thailand

1st PRAGMA Workshop
San Diego, USA

2nd ApGid Workshop/Core Meeting
Taipei, Taiwan

demo @ SC2002
Baltimore, USA
(50cpu)

demo @ iGrid2002
Amsterdam, Netherland

ApGrid PRAGMA Presentation @ APAN
Shanghai, China

2nd PRAGMA Workshop
Seoul, Korea

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Asia-Pacific Grid

PRAGMA

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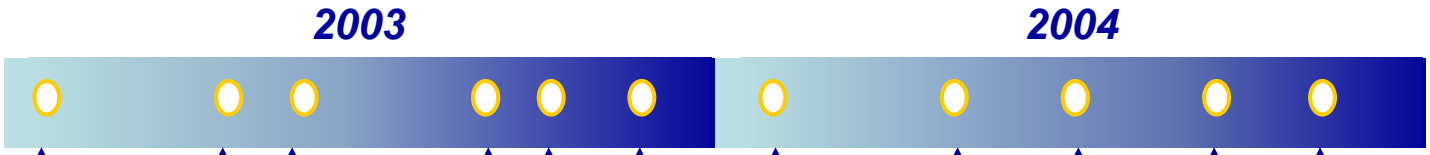
History and Future Plan (cont'd)



3rd PRAGMA Workshop Fukuoka, Japan

demo @ CCGrid Tokyo, Japan (100cpu)

4th PRAGMA Workshop Melbourne, Australia (200cpu)

demo & ApGrid Informal Meeting @ APAC'03 Gold Coast, Australia (250cpu)

presentation @ APAN Hawaii, USA

6th PRAGMA Workshop Beijing, China

demo @ SC2003 Joing Demo with TeraGrid Phoenix, USA (853CPU)

5th PRAGMA Workshop Hsinchu, Taiwan (300cpu)

demo @ SC2004 Pittsburgh, USA

7th PRAGMA Workshop San Diego, USA

Asia Grid Workshop (HPC Asia) Oomiya, Japan

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Asia-Pacific Grid

PRAGMA

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ApGrid/PRAGMA Testbed

- Architecture, technology
  - Based on GT2
    - Allow multiple CAs
    - Build MDS Tree
  - Grid middleware/tools from Asia Pacific
    - Ninf-G (GridRPC programming)
    - Nimrod-G (parametric modeling system)
    - SCMSWeb (resource monitoring)
    - Grid Data Farm (Grid File System), etc.
- Status
  - 27 organizations (10 countries)
  - 27 clusters (1674 CPUs)

Users, Applications and Experiences

- **Users**
  - Participants of both/either ApGrid and/or PRAGMA
- **Applications**
  - Scientific Computing
    - Quantum Chemistry, Molecular Energy Calculations, Astronomy, Climate Simulation, Molecular Biology, Structural Biology, Ecology and Environment, SARS Grid, Neuroscience, Tele Science, ...
- **Experiences**
  - Successful resource sharing between more than 20 sites in the application level.
  - Lessons Learned
    - We have to pay much efforts for initiation
      - Installation of GT2/JobManager, CA, firewall, etc.
    - Difficulties caused by the bottom-up approach
      - Resources are not dedicated
      - Incompatibility between different version of software
    - Performance problems
      - MDS, etc.
    - Instability of resources
    - Key issue is sociological rather than technical

Summary of current status

- **Difficulties are caused by not technical problems but sociological/political problems**
- **Each site has its own policy**
  - account management
  - firewalls
  - trusted CAs
  - ...
- **Differences in interests**
  - Application, middleware, networking, etc.
- **Differences in culture, language, etc.**
  - Human interaction is very important

Summary of current status (cont'd)

- **Activities at the GGF**
  - Production Grid Management RG
    - Draft a Case Study Document (ApGrid Testbed)
  - Groups in the Security Area
    - Policy Management Authority RG (not yet approved)
      - Discuss with representatives from DOE Science Grid, NASA IPG, EUDG, etc.
    - Federation/publishing of CAs (will kick off)
      - I'll be one of co-chairs

Summary of current status (cont'd)

- **What has been done?**
  - Resource sharing between more than 20 sites (1673cpus)
  - Use GT2 as a common software
- **What hasn't?**
  - Formalize "how to use the Grid Testbed"
    - I could use, but it is difficult for others
      - I was given an account at each site by personal communication
    - Provide documentation
  - Keep the testbed stable
  - Develop management tools
    - Browse information
    - CA/Cert. management

Future Direction (proposal)

- **Draft "Asia Pacific Grid Middleware Deployment Guide", which is a recommendation document for deployment of Grid middleware**
  - Minimum requirements
  - Configuration
- **Draft "Instruction of Grid Operation in the Asia Pacific Region", which guides how to run Grid Operation Center to support management of stable Grid testbed.**
- **Launch Asia Pacific Grid Policy Management Authority**
  - Coordinate security level in Asia
  - Interact with outside of Asia (DOEGrids PMA, EUGrid PMA)

Other issues (technical)

- **Should think about GT3/GT4-based Grid Testbed**
- **Going to be a production Grid**
  - Production-level CA
  - Establish procedures for resource sharing
- **International Collaboration**
  - TeraGrid, UK eScience, EUDG, etc.
- **Run more applications to evaluate feasibility of Grid**
  - large-scale cluster + fat link
  - many small cluster + thin link