Computing Coordination in Japan

Takashi Sasaki

Computing Research Center

KEK ,

Inter-University Research Institute Corporation
High Energy Accelerator Research Organization

Government Organization involve the Internet and GRID

- MEXT: (Ministry of Education, Culture, Sports, Science and Technology)
  - NII: National Institute for Informatics
    - Providing SInet and SuperSInet
    - NAREGI: National Research Grid Initiative
  - National Universities and KEK
- METI: Ministry of Economy, Trade and Industry, formerly, MITI: Ministry of International Trade and Industry
  - AIST: National Institute of Advanced Industrial Science and Technology
    - GRID Technology Center
- MIC: Ministry of Internal Affairs and Communication
  - Providing JGN2 (Japan Gigabit Network)
- MAFF: Ministry of Agriculture, Forest and Fishery
  - MAFFIN

Academic institutions

- Private universities are focusing on education not research, especially fundamental science, e.g. HEP are not popular
  - No government funding labs in private universities
- The size of a research group in one university tends to be small except a few universities (former imperial universities+alpha)
  - Mostly, one, two or three faculty positions and no post-docs, no engineers nor no technicians
  - Only research centers at major universities have more positions
    - Still they cannot afford to have their own computing center
- National Labs under MEXT have duties to support universities
- Reorganization of national universities and laboratories
  - independent agency after 2004 JFY
    - National University: National University Corporation
    - National Labs.: Inter-University Research Institute Corporation or Independent Administrative Institution
  - still almost 100% funded by the government, but strong pressure on earning research budget by themselves
    - The government will decreases funding gradually.

Major HENP Facilities and Institutes

- Riken
  - Independent Administrative Institution under MEXT
  - heavy ion accelerator , PHENIX at RHIC
- ICEPP, Univ. of Tokyo
  - OPAL, ATLAS and LC
- ICRR, Univ. of Tokyo
  - SuperKamiokande, K2K and Cosmic Ray
- Neutrino Center, Univ. of Tohoku
  - SK, K2K and KAMLand
- RCNP, Univ. of Osaka
  - Ring Cyclotron
- KEK
  - KEKB, PS, K2K, J-PARC and LC (+photon factory and neutron lab.)
- and others
  - Sorry if I missed any

Computing Resources for HENP

- Riken
  - CCJ PHENIX: PC farms, 33TB RAID and HPSS with 1.2PB STK tape robotics
  - Super computer etc. at the computing center
- ICEPP, Univ. of Tokyo
  - ATLAS tier (1.5? or 2+?) regional center, PC farms and storage
- ICRR, Univ. of Tokyo
  - Kamioka: 200CPU, HPSS with 450TB LTO tapes
  - Kashiwa: SGI IA64 clusters
- Neutrino Center, Univ. of Tohoku
  - IBM SP, storage system
- RCNP, Univ. of Osaka
  - PC farm, IBM SP, TSM
- Nagoya Univ. HEP
  - 250xPC, 100TB disk

Computing Resources for HENP
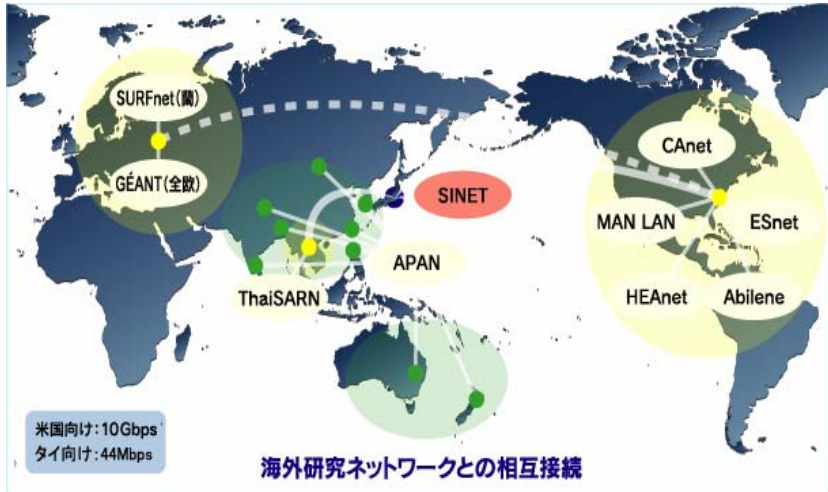
- KEK
  - Computing Research Center
    - Fujitsu SPARC based Solaris systems
      - 500TB tape robots
    - IBM SP
      - HPSS with 120TB tapes
    - Hitachi SR8000
      - 1Tflops Super Computer
    - PC farms

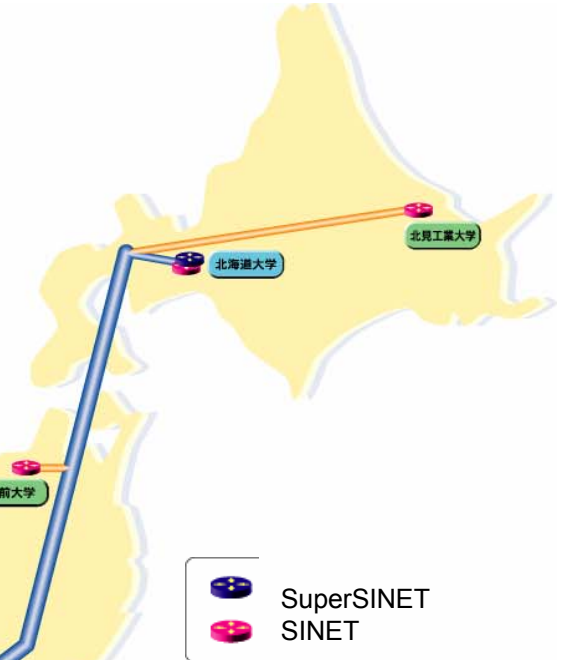   *Will be replaced in early 2006*

  - Experimental group
    - Large PC farms + 1.3PB SONY AIT in Belle
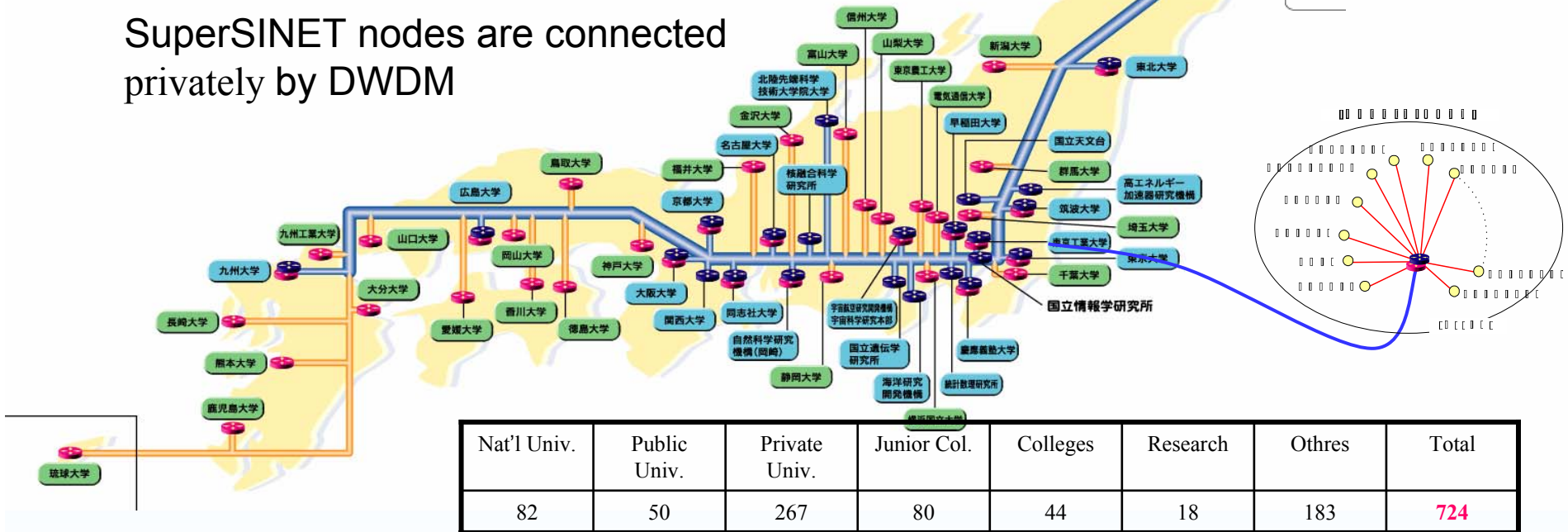   - mid-small size PC farms

SINET/SuperSINET

Connection

SINET (44points)	100M〜1GMps
SuperSINET	10Gbps
International	US,EU : 10Gbps CERN=1Gbps Taiwan= 1Gbps Korea= 1Gbps AU= 622Mbps

SuperSINET nodes are connected privately by DWDM

- SuperSINET
- SINET

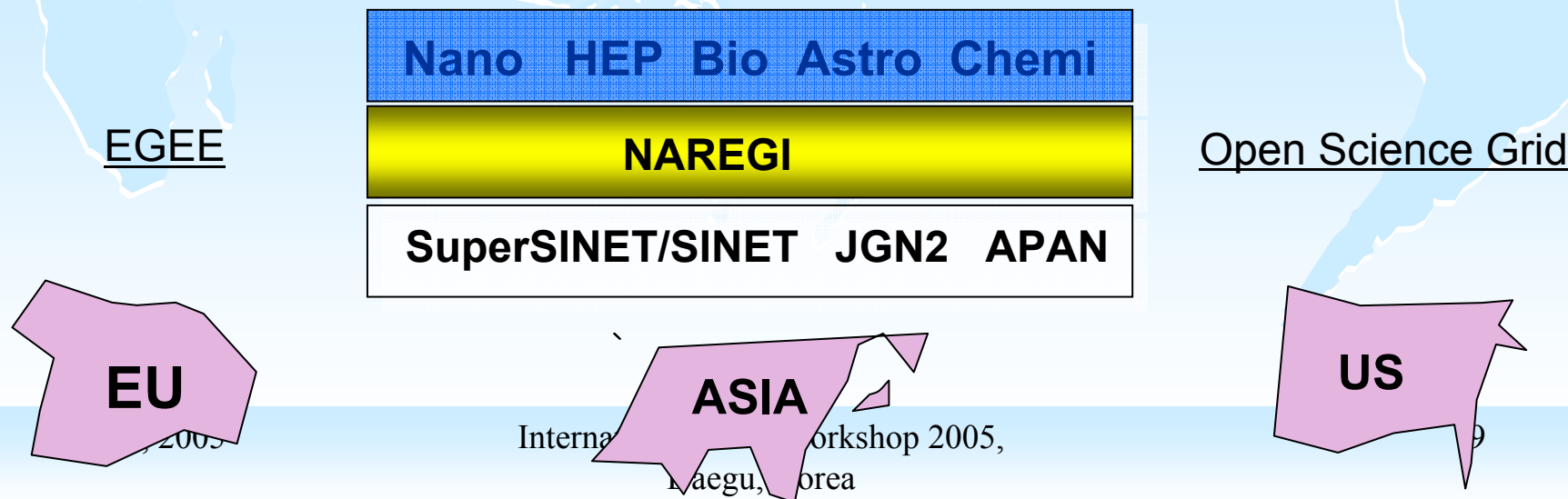| Nat'l Univ.	Public Univ.	Private Univ.	Junior Col.	Colleges	Research	Othres	Total
82	50	267	80	44	18	183	**724**

Nation Wide Computing Coordination

- Security working group has been established among laboratories under MEXT and has regular meetings
- National CA is under discussion
  - "Cyber Science Infrastructure"
  - GRID computing + ID
- No other official nation wide activities among institution are observed

- **NAREGI** (National Research Grid Initiative)
  Funding: 2003 – 2007 100M$

  Aim: R&D of Grid environment for a key

  application of nano tech simulation

- **Cyber Science Infrastructure** is new plan lead by National Institute of Informatics(NII) and is the future direction of Japanese e-Science based on the NAREGI products and collaboration with EU, US, Asian projects.

Nano HEP Bio Astro Chemi
NAREGI
SuperSINET/SINET   JGN2   APAN

EGEE

Open Science Grid

EU

ASIA

US

HEP computing around KEK

- ATLAS Regional Center
  - ICEPP, U. of Tokyo hosts tier 1.5 or 2+ center in cooperation with KEK
    - LCG deployment
    - Networking
  - Any other tier X centers are not planned
- BELLE
  - 1TB/a day data rate in maximum
  - Data sharing using SRB + Globus
  - LCG and gLite are under investigation by KEK Computing Research Center for them

HEP computing around KEK

- HEPNET-J
  - KEK related HEP programs
  - Private DWDM connection among major universities and KEK
- KEK Super Computer PAC
  - Lattice QCD
  - Data sharing over SuperSInet
- Software development
  - Geant4
    - 5 Japanese category coordinators among 14
    - Maintenance and development are still continuing
    - Application in medical and space fields
  - GRACE
    - Event generator

Collaboration in Asia Pacific

- SRB federation for Belle data
  - Experts from U. of Melbourne, ANU/APAC (for Melbourne) , IHEP(China), KNU, Krakow(Poland), Academia Sinica(for universities in Taiwan) and KEK met at KEK in last December
  - With help of Michael Wan from SDSC, zone federation has been established from the scratch
  - Any opeople are welcome to join us
- LCG and gLite deployment
  - LHC regional centers
  - SRB and LCG integration with gMCat
  - gLite for inside and outside of HEP
    - KEK supports not only HENP, but also bio and material science
- Meeting for people really working on computing issues in this region will be helpful and should be organized

Summary

- Coordination of computing among institutions are not well established yet
    - "Cyber Science Infrastructure" is planned by NII

- Inside HEP, KEK is organizing the users and their institutions

- We (KEK) always seek better collaboration in Asia Pacific region in not only HENP but also in wider fields