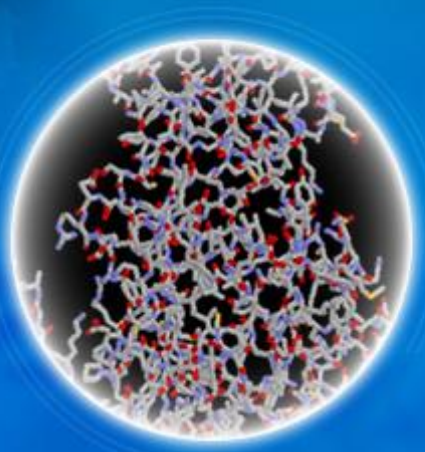
Global Science Gateway
e-Science

Introduction to KISTI



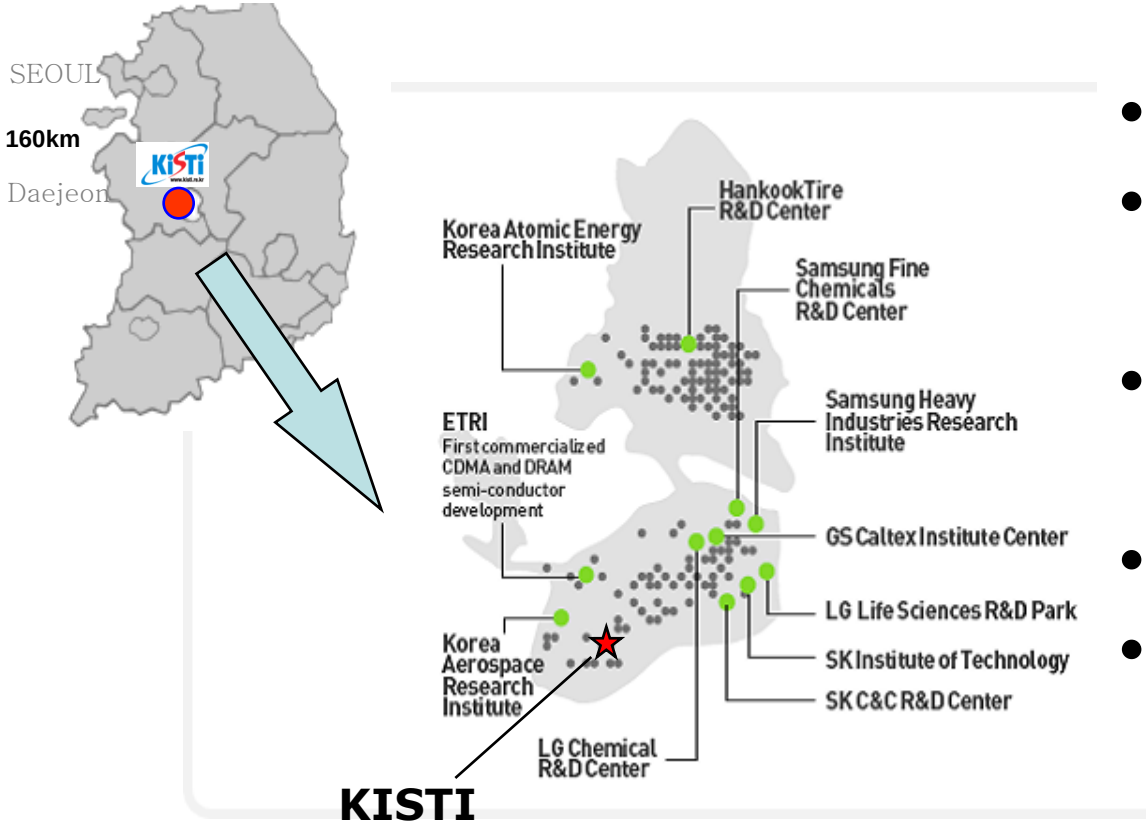
December 11, 2008

Minsun LEE

KiSTi www.kisti.re.kr
Korea Institute of Science and Technology Information

Located in the heart of Science Valley, "Dae-deok" Innopolis

The DAEDEOK INNOPOLIS complex consists of a cluster of firms that represents a cross-section of Korea's cutting-edge industries, including information technology, biotechnology and nanotechnology.



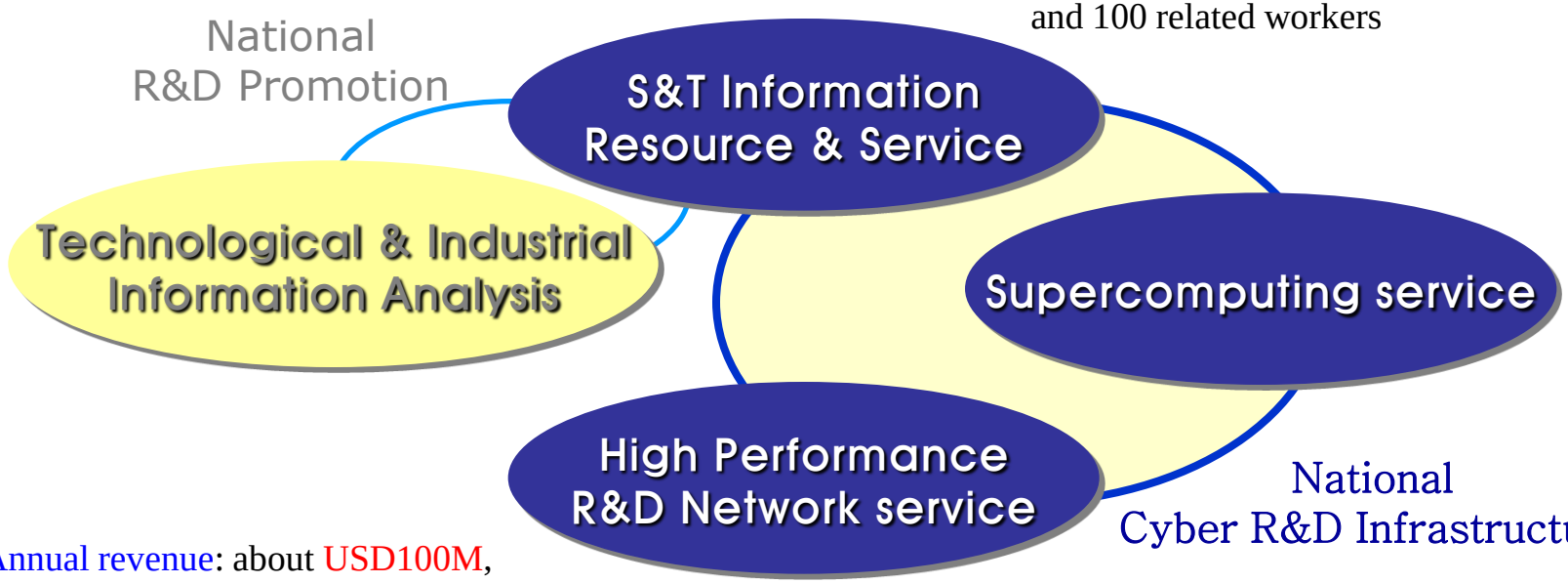
- 6 Universities
- 20 government research institutes
- 10 government-invested institutes
- 33 private R&D labs
- 824 high-tech companies

KiSTi www.kisti.re.kr Korea Institute of Science and Technology Information

We are the pioneer of building Cyber-Infrastructure of Korea!

a Government supported Research Institute
to serve Korea Scientists and Engineers with
Scientific/Industrial Data Bases,
Research Networks & Supercomputing Infrastructure

- Organization:8 divisions, 3 centers, 3 branch offices
- Personnel: about 340 regular staffs, 100 part timers, and 100 related workers



- Annual revenue: about USD100M, mostly funded by the government

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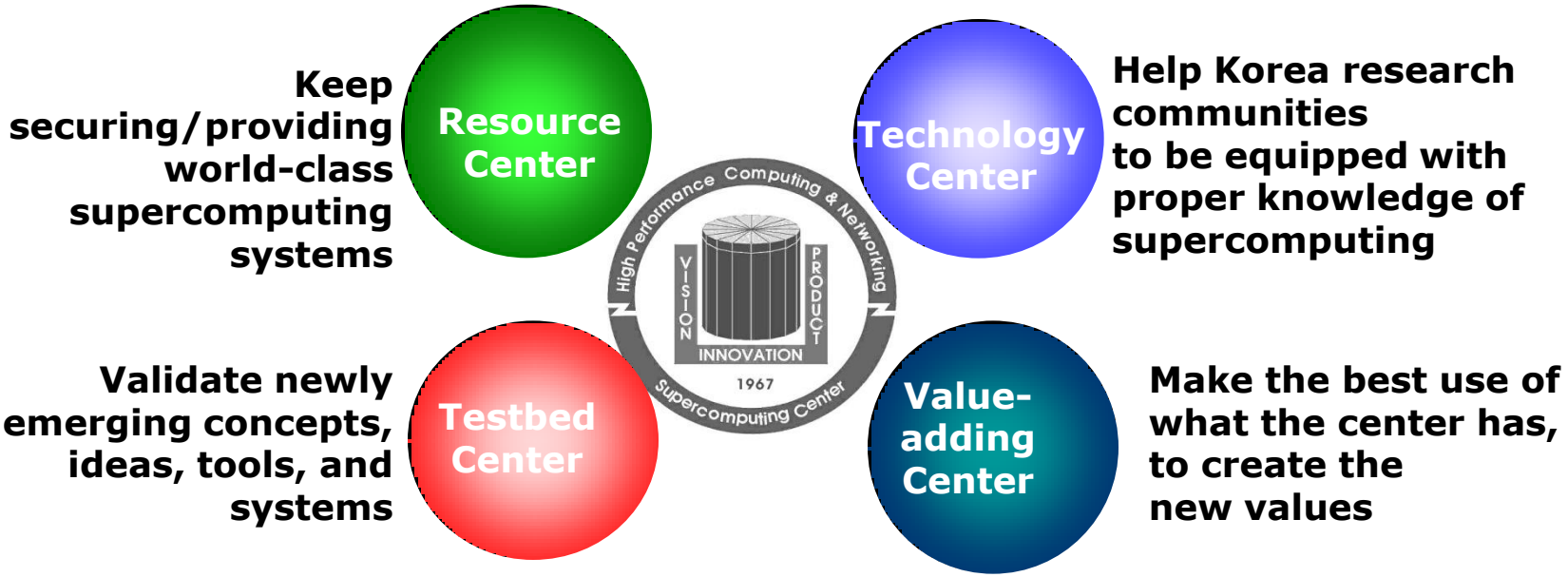
KISTI Supercomputing Center:

Extending the horizon of science and technology

National headquarters of Supercomputing resources, e-Science, Grid and high performance research networks



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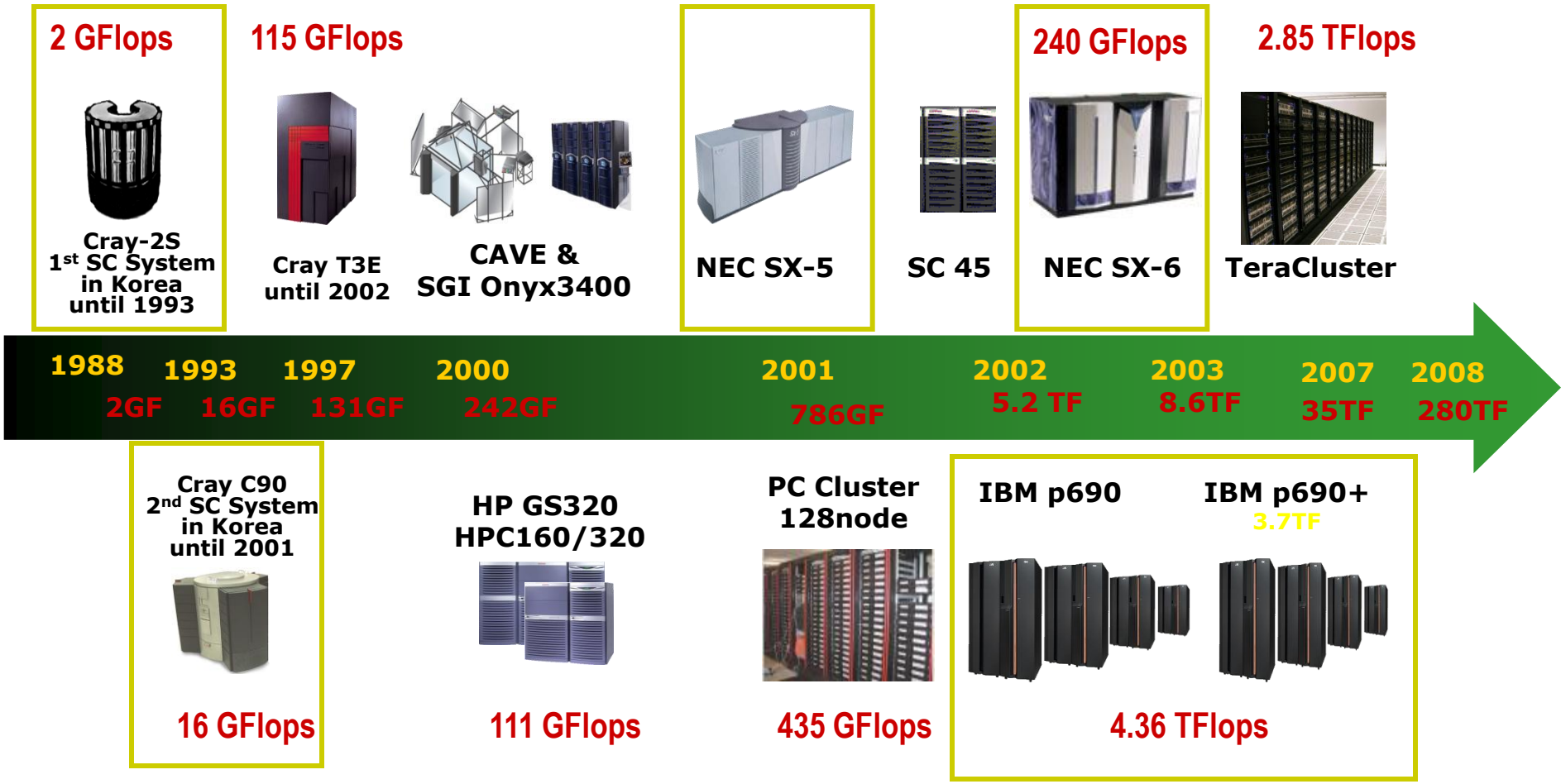
History of KISTI Supercomputers



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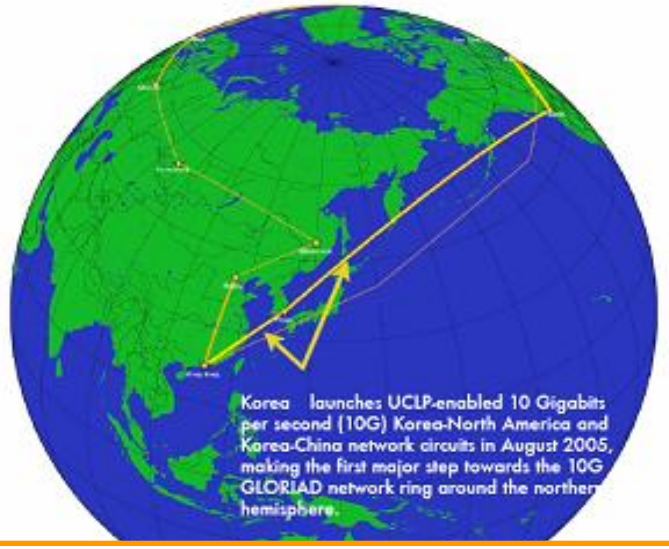
National Research Network

KREONET is the national science & research network of Korea, funded by MOST since 1988

20Gbps backbone, 1 ~ 10Gbps access networks



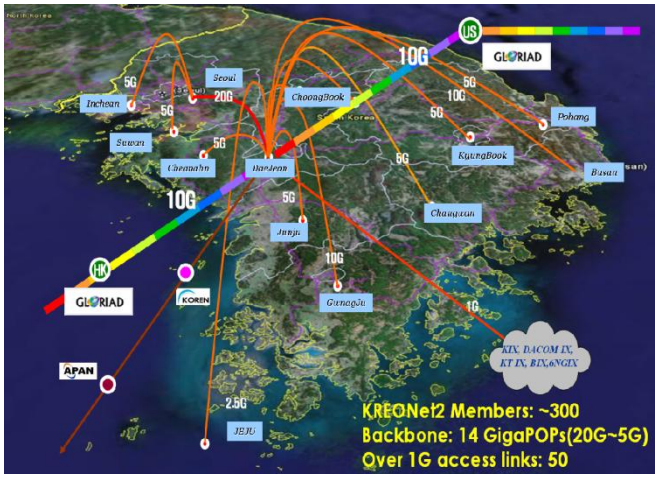
- **GLORIAD (GLObal RIng Network for Advanced Applications Development) with 10/40Gbps Optical lambda networking**
  - Global Ring topology for advanced science applications
  - GLORIAD Consortia : Korea, USA, China, Russia, Canada, the Netherlands and 5 Nordic Countries (11 nations)
- **Essential to support advanced application developments**
  : HEP, ITER, Astronomy, Earth System, Bio-Medical, HDTV etc.
- **National GLORIAD project (funded by MOST of KOREA)**

World-class Facilities at KISTI

KISTI's 4th Supercomputer

- **MPP System** (1st phase)
  - **SUN C48** :188 Nodes
  - Target Performance : **24 Tflops**
  - Internal Disk : 8 GB Flash or Micro Drive
  - Infiniband 4x DDR 20Gbps
  - External Storage : 200TBytes
- 2nd phase
  - **250 TFlops Target performance**
  - About 21,000 cores
  - 1.3 PBytes external storage

- **SMP System**
  - **IBM p595 & p6:** 10 (1st), 24 nodes(2nd)
  - Target Performance:**36TFlops**
  - Internal Disk : 1,17 GB
  - External Storage : 63TB(1st), 273 TB(2nd)
  - HPS(1st) interconnect network & Infiniband 4x DDR (2nd)



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KISTI Top Brand Project (K e-Science)

VO (Community, Applications)	Physics VO	LifeScience VO	Engineering VO	GeoScience VO

CE

Global Science Gateway K e-Science

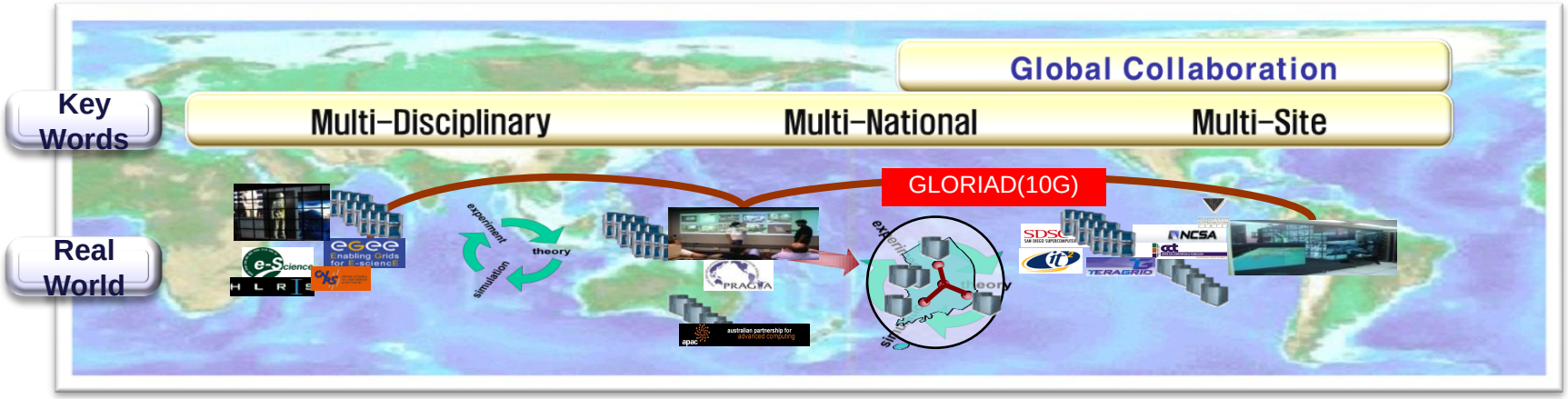
(KISTI Top Brand Project, MEST)

Middleware

Global Science Gateway K e-Science

the globus toolkit

gLite



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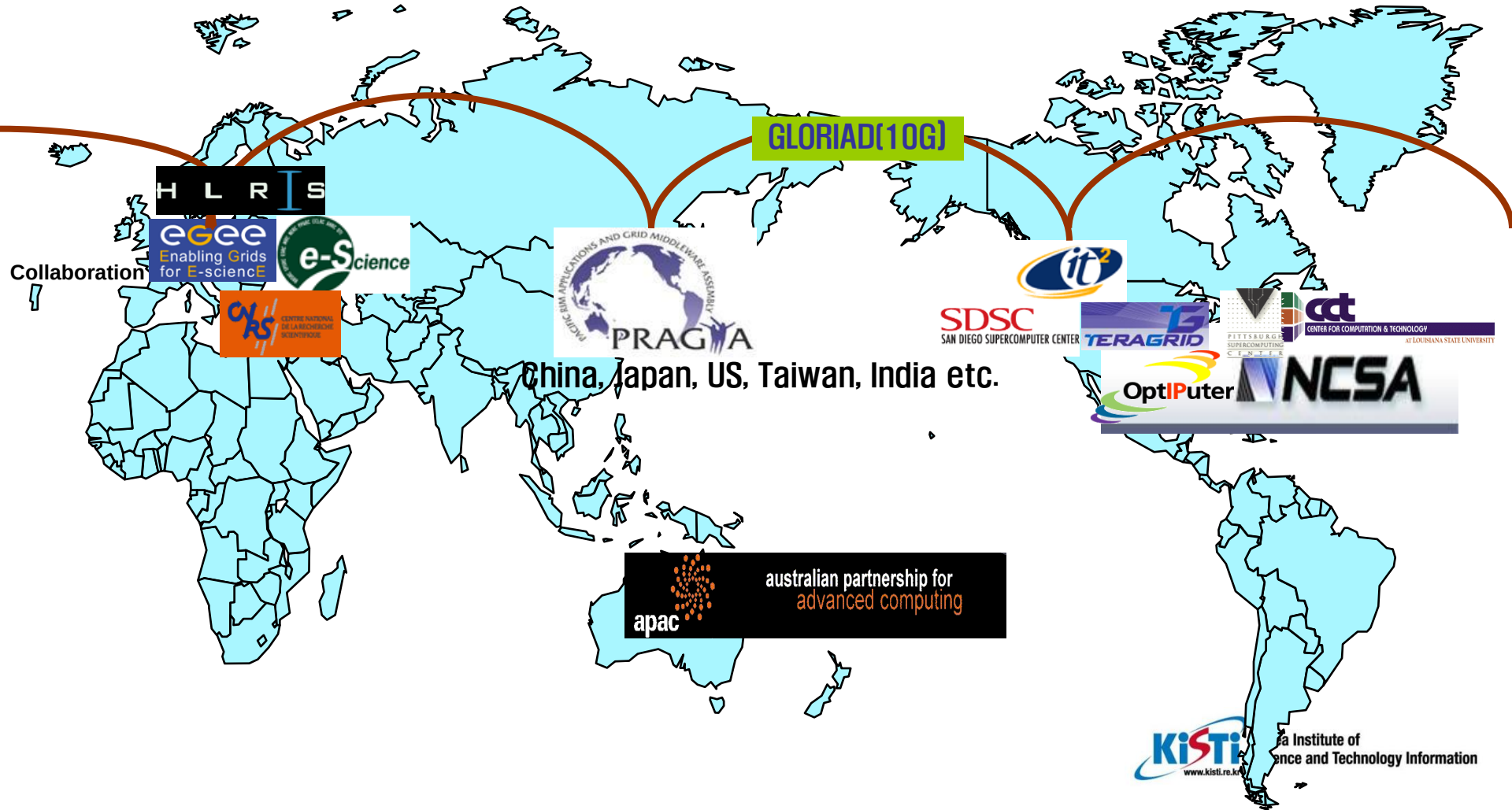
Global Partnership

About 30 institutions from 20 countries



Data Farm Activities in KISTI

History of KISTI ALICE Tier2 Centre

- Feb. 2007 : Official ALICE-LCG Site
- Jun. 2007 : First Attendance at EGEE Tutorial & Asia Federation Meeting
- Oct. 2007 : KICOS – CERN MoU
- May. 2008 : CCRC'08 May

- 2008 International Summer School on e-Science and Grid Computing

- Participation for Global Collaboration of ALICE Computing
  - Online Conferences for AP (from Feb. '08 ~)
  - 3 EGEE Tutorial (Sep. 07, Oct. 07, Apr. 08)
  - 4 Asia-Federation Meeting (Sep. 07, Oct. 07, Apr. 08)

Status of KISTI ALICE Tier2 Centre

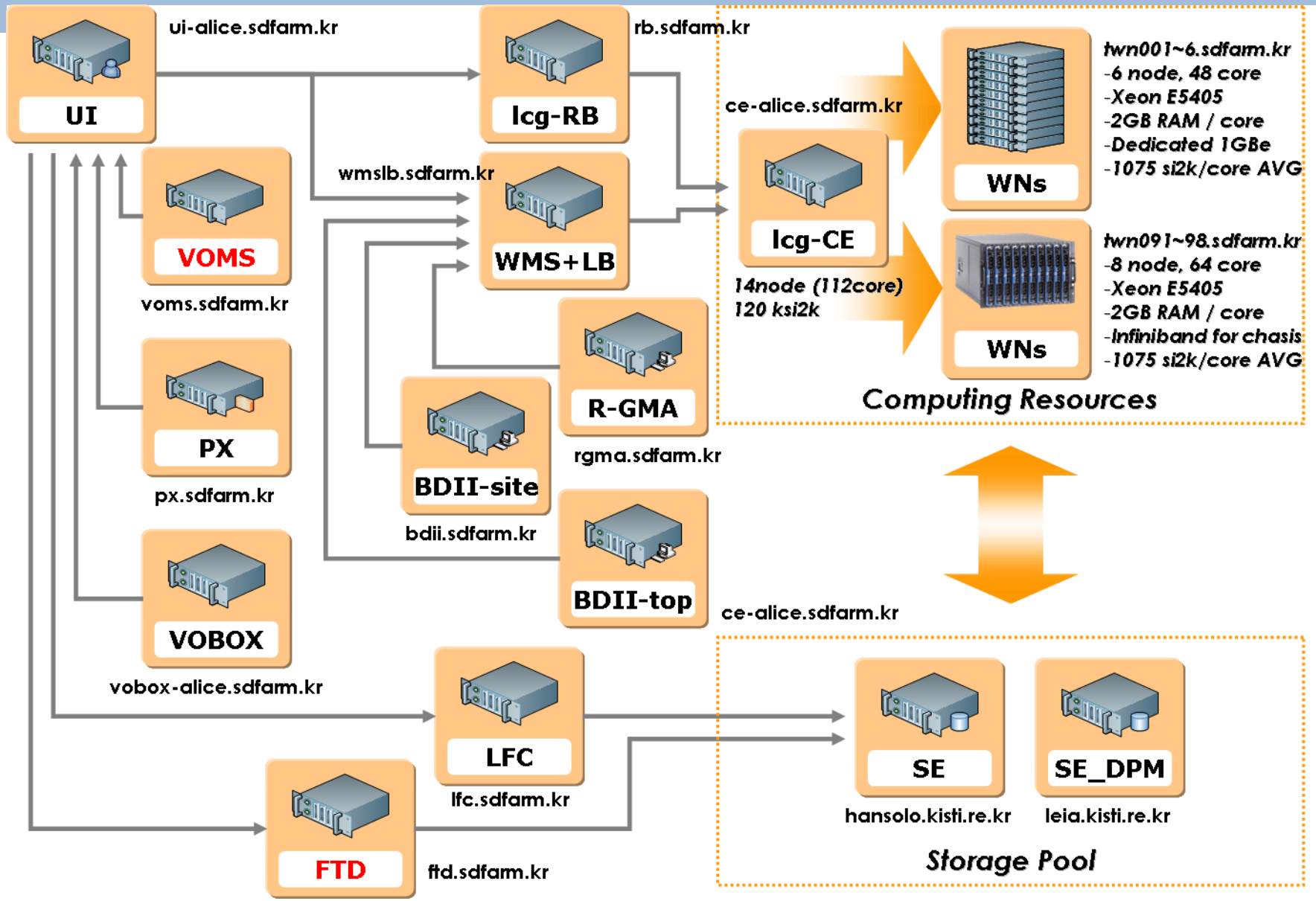
- 2007. Oct., KICOS-CERN MoU
  - Signing Party
    - CERN : Dr. Jos Engelen (CSO of CERN)
    - KICOS : Chun Il Eom (KICOS)

Korea, KISTI, Daejeon	Pledged	Planned to be pledged				Comments
	2007	2008	2009	2010	2011	2012	
CPU (kSI2K)	50	100	150	150	150	150	
Disk (Tbyte)	15	30	50	50	50	50	
Nominal WAN (Mbits/sec)	10000	10000	10000	10000	10000	10000	

- Status
  - More than 96.7% availability, more than 22500 jobs done (small but **very stable)**

	2008	2009	Provided	Comments
CPU (kSI2K)	100	150	109 ~ 120	128 cores will be added in this year
Storage (TB)	30 TB	50 TB	30 (56)	on test, now
Network (Gbps)	10	10	10	on test, now

Structure of ALICE Tier2 Centre



Current works in KISTI ALICE Tier2 Center

- Data Transfer Test
  - SE + DPM (dCache will be used in next year)
    - EMC FAS2050 (56TB physically) with 10Gbps connectivity
  - Data transfer test between CERN-KISTI and ASGC-KISTI
- Test for KISTI Supercomputer
  - We're under **Software stack test**
  - Move to gLite Function Test on CentOS4.6 & CentOS5.1 (x86_64)
    - Tests are successfully finished on CentOS4.6 & CentOS5.1 VMs
  - Some issues on
    - Firewall (ports, DNS, …)
      - KISTI's Supercomputer is protected by very strong firewall policy
    - Software stack / Queue
- The farm will be extended in next year

Data Center Project in Next Year (2009)

- Center to support scientists who use mass experimental data
- Fund
  - from Korea Government,

	2009	2010	2011	Comments
# of CPU	300	300	400	
Storage (TB)	200	500	500	
Fund	$ 10M	$ 14M	$ 15M	Variable by current exchange market crisis

  - From KISTI
    - ~300 cores
    - Several hundreds of cores from Supercomputer nodes (now testing its functionality)

Data Center Project in Next Year (2009)

- Mission
  - Construction of Computing Infrastructure to support mass experimental data processing
  - Support of getting & using of data from large facilities
  - Development of data farm related technologies

- Experiments that are planned to be support by this project
  - ALICE (LHC/CERN) : Tier2 & Tier3
  - CDF (Fermilab/US) : CGCC
  - **Belle (KEK/Japan) : Belle Grid (??)**
  - From 2010, supporting experiments will be extended

Thank you !!