



KISTI SITE REPORT

Global Science Data Center

2010.11.02

Christophe BONNAUD
GSDC / KISTI

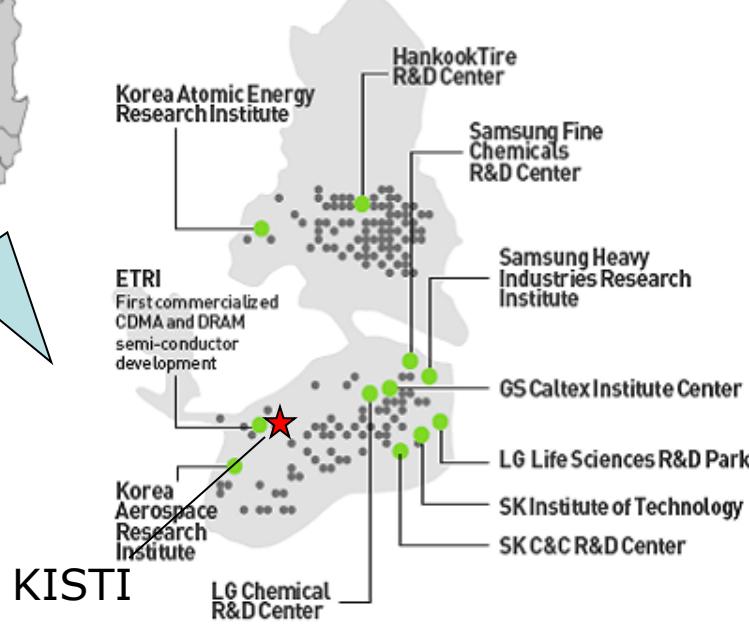
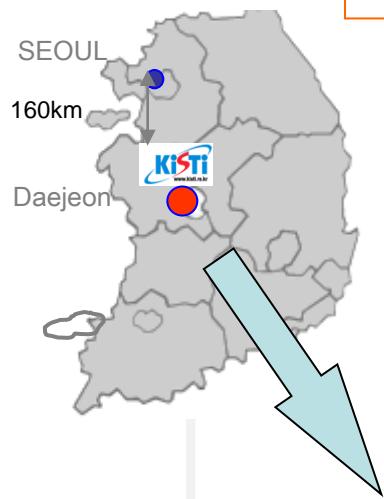
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Introduction to KISTI

Located in the heart of Science Valley, “Daedeok” Innopolis

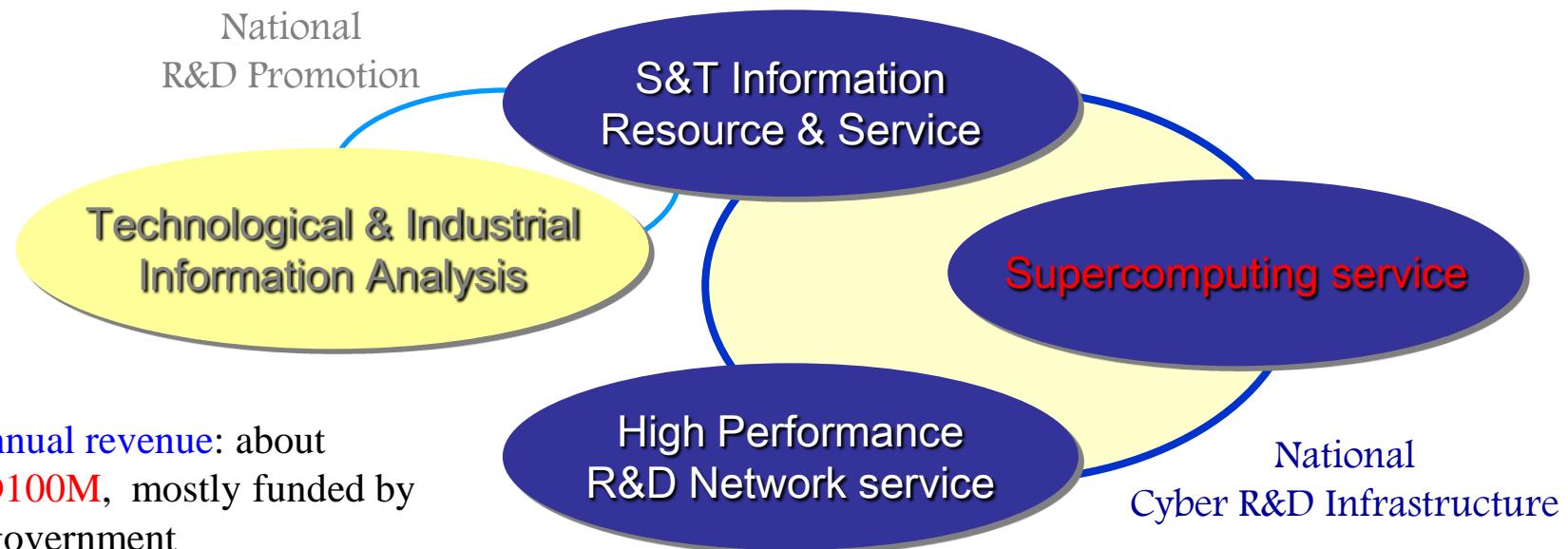
The DAEDEOK INNOPOLIS complex consists of a cluster of firms that represents a cross-section of Korea's cutting-edge industries, including information technology, biotechnology and nanotechnology.



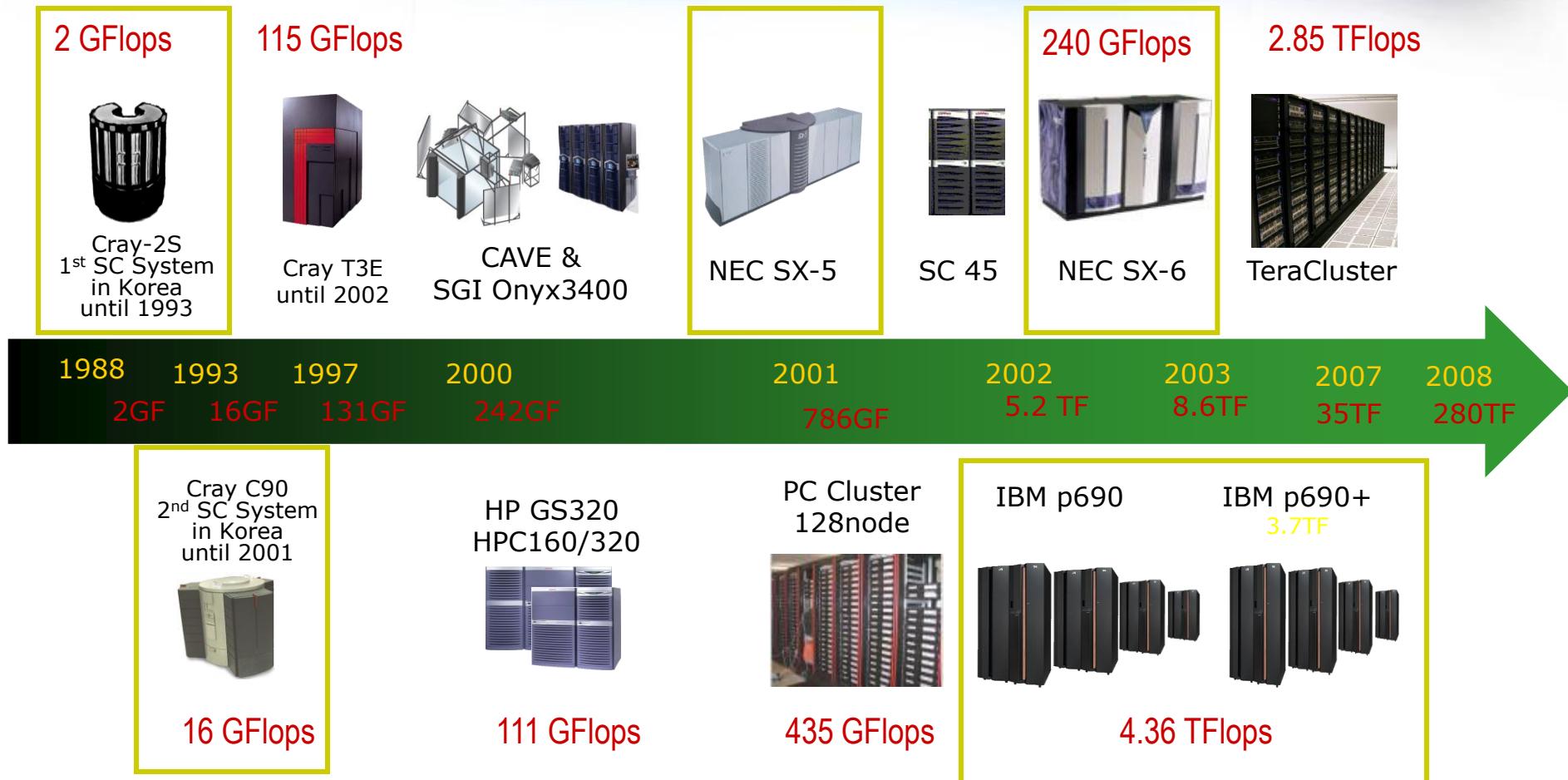
- 6 Universities
- 20 government research institutes
- 10 government-invested institutes
- 33 private R&D labs
- 824 high-tech companies

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



History of KISTI Supercomputers



World Class Facilities at KISTI

KISTI's 4th Supercomputer

- **MPP System** (1st phase)

- SUN C48 :188 Nodes

- Target **TFlops**
- Intel Flash Micro Drive

- Infiniband 4x DDR
20Gbps
- External Storage :
200TBytes

- 2nd phase

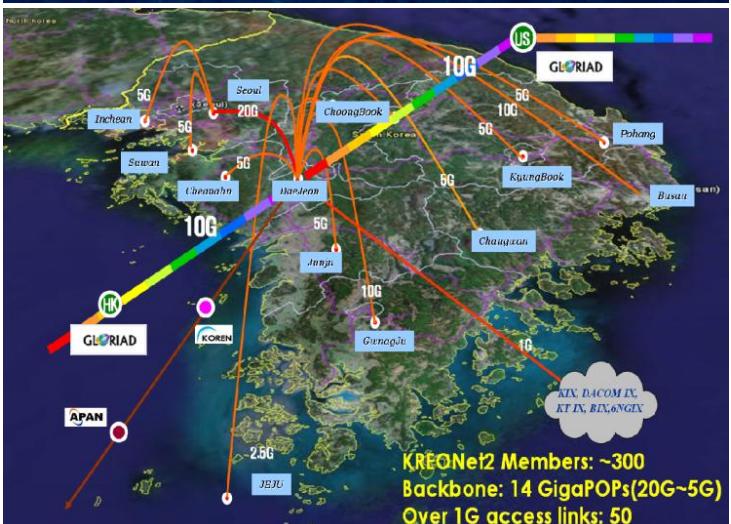
- **300 TFlops Target performance**
- About 25,600 cores
- 3.4 PBytes external storage



- **SMP System**

- TRM n595 & n6

Ranked 15th in TOP500, 2010



Hepix Run 2010

National Research Network

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

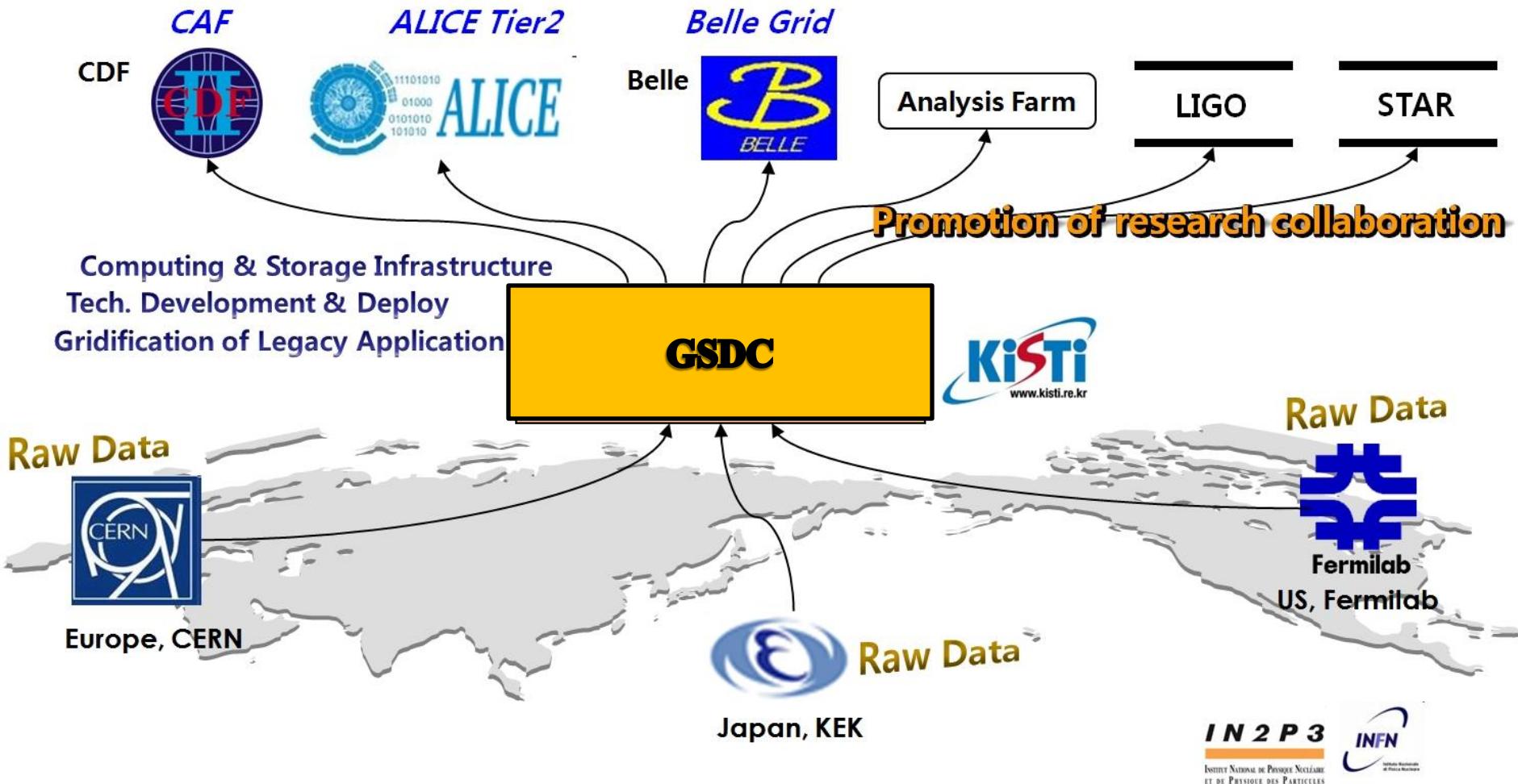
20Gbps backbone, 1 ~ 20Gbps access networks



- **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)**

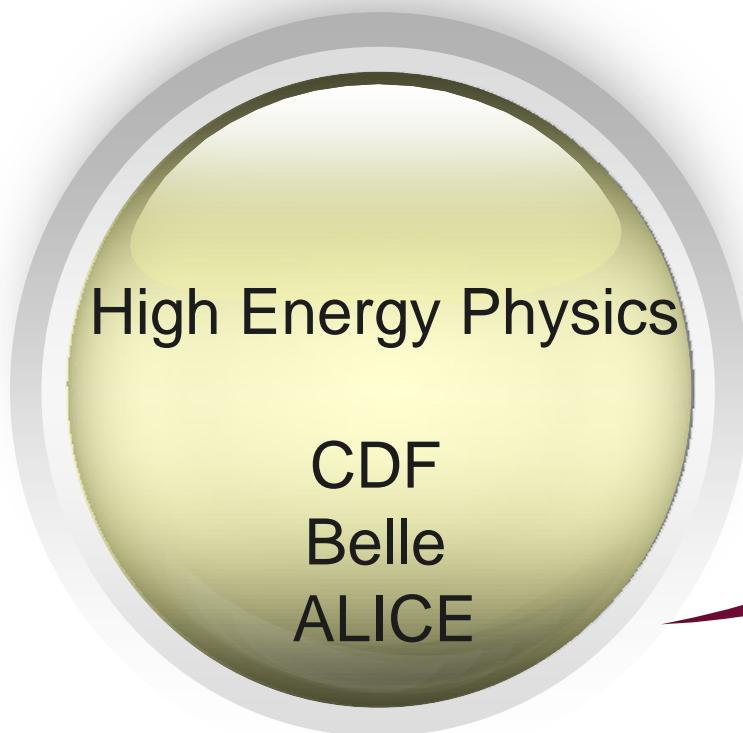
Introduction to GSDC project

Introduction



Introduction

2009 ~



Next ~

Data Intensive Researches

Bio-informatics
Astrophysics
Earth Science

History

- Planned by Government

- A project to build a strategic plan and a model of GSAC
 - MEST (Ministry of Education, Science and Technology)
 - 2008. 02 ~ 2008. 05
 - “사이버 R&D 인프라 구축 · 활용방안 기획연구”

This project is a part of

**GOVERNMENT'S MASTER PLAN
FOR SCIENCE AND TECHNOLOGY DEVELOPMENT**
(과학기술기본계획, 2009~)

- Most important things for this project is:

- The contribution to Korean researchers' study

Human resources



Actual status

- 14 Members but only 9 for IT.
- Only one System administrator!
- Network, power management and air-cooling managed by other teams



Future

- 1 more person with strong experience in Tier-1 management will be recruited from any other country.

Activities in 2009/2010

ALICE Tier2 Center

Belle

CDF

DMRC & Neuroimaging

ALICE Tier2



Resources

- 10 services for ALICE
(WMS+LB, PX, RGMA, BDII, VOMS, LFC, VOBOX, CREAMCE, UI)
- 120 core, 218.88 kSI2k
 - HP Blade (2.5GHz Quad * 2) x 15 set

	2008	2009	Provided	Comments
CPU (kSI2K)	100	150	219	CREAM-CE
Storage (TB)	30 TB	50 TB	30	56TB Physical
Network (Gbps)	10	10	10	

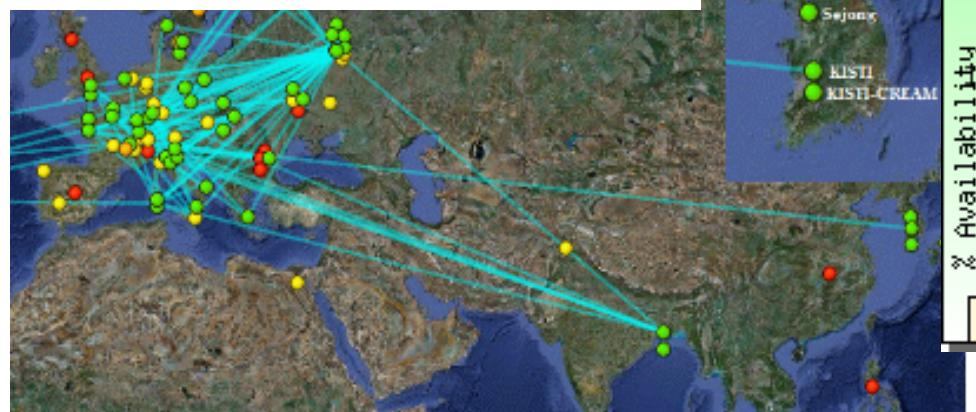
ALICE Tier2

CREAM-CE STATUS FOR ALICE: 18/02/09

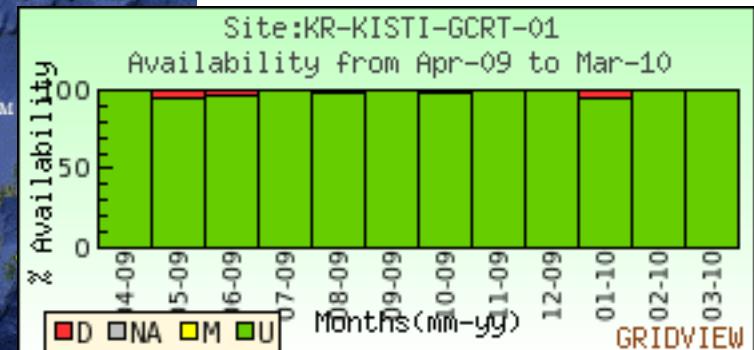
Site	queues	Status of the queues	2 nd VOBOX	VOBOX with clients	General Status
FZK	4	OK	YES	YES	READY
KOLKATA	2	OK	YES	YES	READY
ATHENS	1	OK	NO	NO	NOT READY
KISTI	1	OK	YES	YES	READY
GSI	1	OK	NO	YES	READY*
IHEP	1	NOT OK	NO	NO	NOT READY
RAL	1	NOT OK	NO	YES	NOT READY
CNAF	1	NOT OK	YES**	NO	NOT READY

* ONLY 1 VOBOX IS NOT THE REQUIRED SITUATION, ALTHOUGH THE SITE IS READY FOR CREAM PRODUCTION

** VOBOX PROVIDED BUT STILL SUFERRING OF SOME CONFIG ISSUES



- Site Availability to EGEE
98.3% (Feb.2009~)
- CREAM-CE support



Tier 1 Testbed



Timeline

- Set in last July
- In production now
- Resources will be increase next year



Computing

- 12 nodes, IBM blades HS22, Intel Xeon X5650 x2 (2.66GHz), 24GB



Storage

- Disk: 100TB
 - Managed by Xrootd
- Tape: 100TB (Tape emulation on disk)
 - Managed by Xrootd

KIAF (Kisti Analysis Farm)



Timeline

- Set in last August
- Mainly dedicated to Korean researcher
- Resources will be increased next year



Computing

- 11 IBM Blades HS22 servers, Intel Xeon X5650 x2 (2.66GHz), 24GB



Storage

- Local disks managed by xrootd (~1TB)

GSDC system architecture

Hardware
Grid Middleware Deployment

Hardware Resources (2008)

- 6 WNs Dell 1U
- 12 WNs Dell Blade servers
- 14 services machines
- No storage!



Hardware Resources

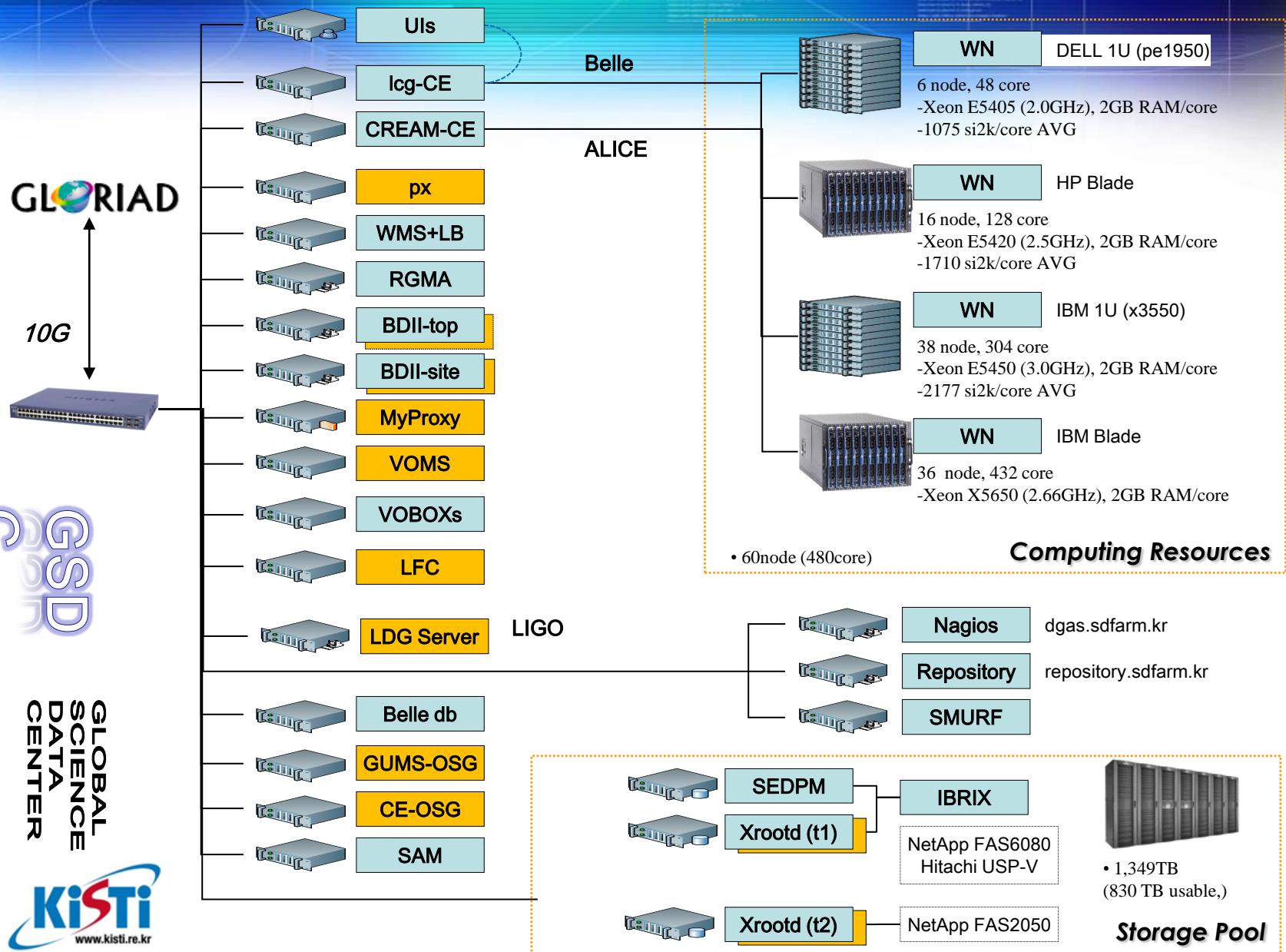
Cluster

Cluster	Spec. / node	# nodes	# cores	kSI2k
ce-alice	Dell, Intel Xeon E5405 x2 (2.0GHz Quad), 16GB	6	48	48
ce01	HP, Intel Xeon E5420 x2 (2.5Ghz Quad), 16GB	15	128	219
ce02	IBM, Intel Xeon E5450 x2 (3.0GHz Quad), 16GB	38	304	650
***	Intel Xeon X5650 x2 (2.66GHz Hex), 24GB	36	432	--
Total		114	976	--

Storage

Model	Capacity Physically	Capacity Usable
NetApp FAS2050 (SAN only, RAID6, HA)	48TB	30TB
NetApp FAS6080 (SAN & NAS, RAID6, HA)	334TB	200TB
Hitachi (SAN only) + IBRIX	950TB	600TB
Total	1.3PB	830TB

Service nodes for Grid & Application : ~20 nodes (including VM)



Softwares



Monitoring

- Nagios for real time
- SMURF for graph
- phpsyslog
- No accounting!
 - Monalisa?
 - Gratia?



Installation/Configuration

- OS installation: home made solution
- Puppet



Storage

- IBRIX from HP

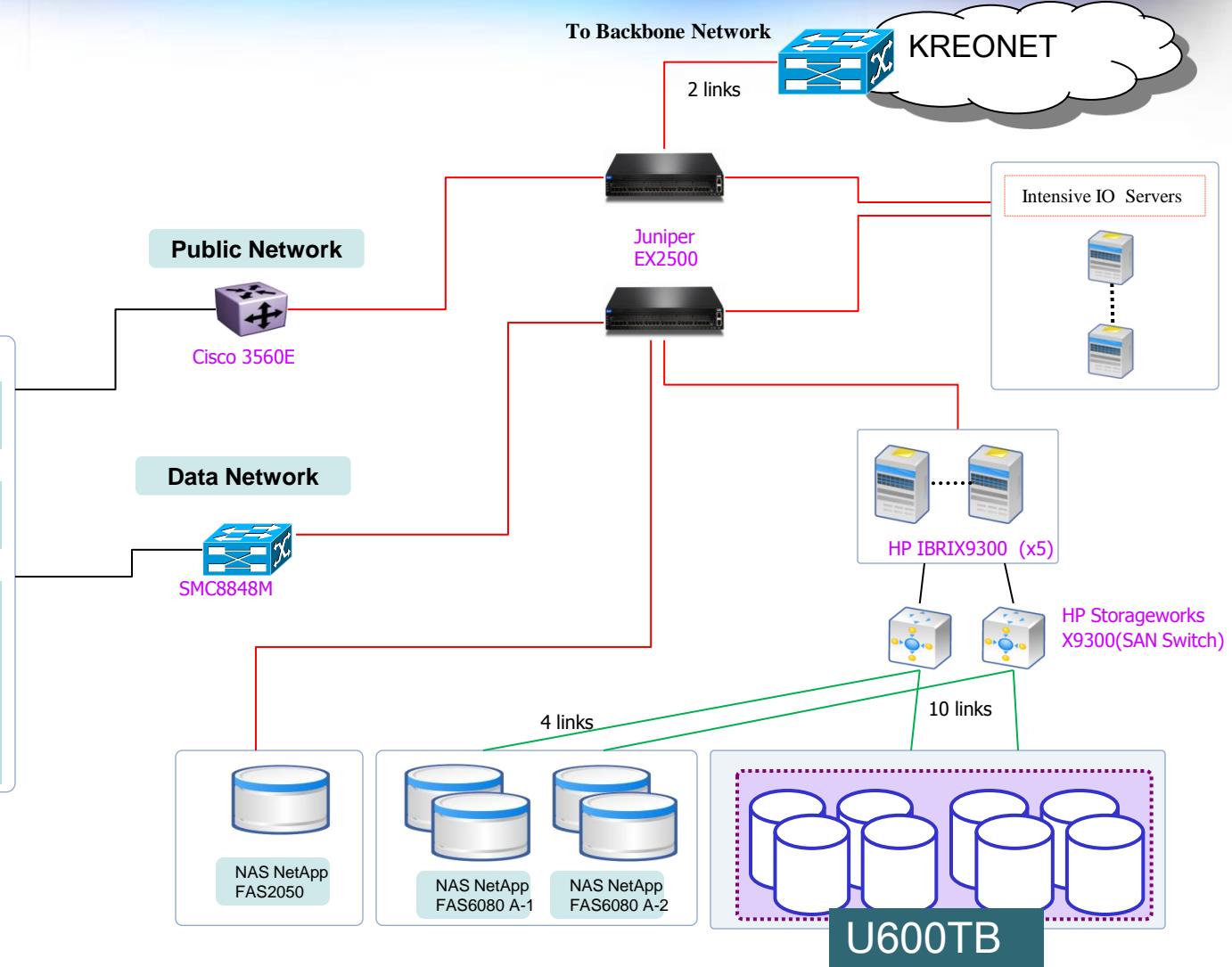


Virtualization

- VMware/ VMware Center

Network

————— 1Gb
 ———— 10Gb
 ———— 8Gb FC SAN



Resource Plan in 2011



Storage

- Disk: 500TB ~ 800TB
- Tape (necessary for Alice Tier1)
 - At least 200TB
 - HPSS far too expensive
 - Tivoli + xrootd?
 - Discussion with IBM
 - Visit other centers in Nov./Dec.



Computing

- WNs: ~1000 cores
- Services: 200 cores

Thank you !

General Contact : nsdc@nsdc.kr

Speaker : cbonnaud@kisti.re.kr

Project Leader : Haengjin JANG, hjiang@kisti.re.kr

<http://gsdc.kr> , will be available in soon