

2006 AG-Kr Workshop (2006.12.12)

*Yes* KiSTi  
www.yeskisti.net

# Construction and Usage of Access Grid

*Yes* KiSTi  
www.yeskisti.net

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# Access Grid

The Access Grid® is a **collaborative tool**.

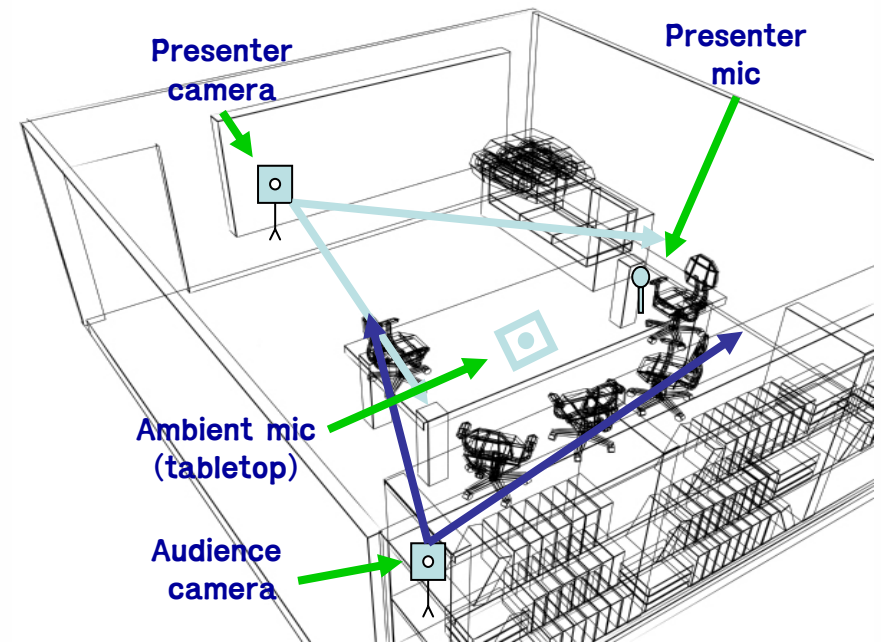
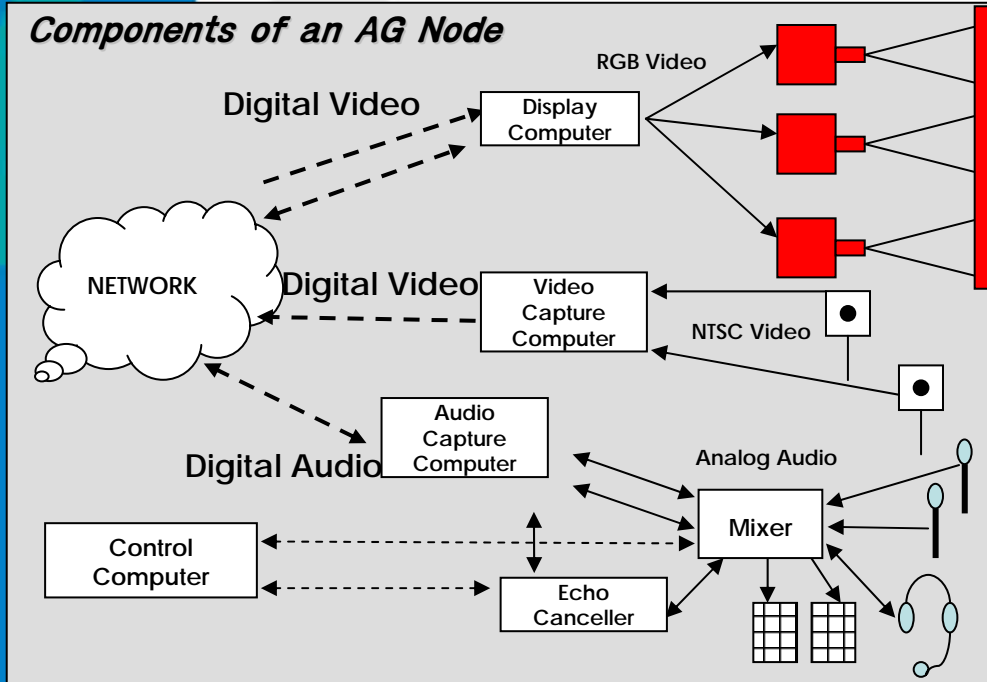
It brings together resources like A/V, presentation applications, and physical room designs. These “nodes” create **interactive environments** that happen to interfaces with everything from Grid middleware to visualization environments.

For examples, Collaborative work sessions, seminars, art performances, lectures, tutorials, and training quickly separate it from a typical desktop-to-desktop tool that focus on individual communication.

*“To support group to group collaboration & communication at a distance”*



# Sample Configuration



Stream Type	Max. latency	Max. Jitter	Min. BW	Max. Loss	Multi cast
Text	100 ms	N/A	64 kbps	0 %	No
Audio	400 ms	60 ms	64 kbps	5 %	Yes
Video	400 ms	30 ms	256 kbps x 4 = 1 Mbps	25 %	Yes

Requires Multicast

## Types of Nodes

- ❖ Laptop
- ❖ Desktop
- ❖ Room
  - One-machine driven (PIG : **P**ersonal **I**nterface of the **A**G)
  - Multi-machine driven
    - Advanced node – Tiled Display, 3D, Multiple video...
    - Standard node – Shared Display, Multiple video...
- ❖ Movable Node – AG in a Box (Mini node)



*“Flexibility”*





# Complex Components

The screenshot displays a complex multi-windowed desktop environment. The central focus is a video conference window titled "Argonne National Laboratory" showing a grid of participants. Overlaid on this is a Microsoft PowerPoint window titled "Requirements for new media tools" with the following content:

- High performance
- Platform support
  - Windows
  - Linux
  - OSX
- Maintain cross-platform codec compatibility
- Good codec support
  - Large installed client base using h261
  - new tools should be able to at least decode h261

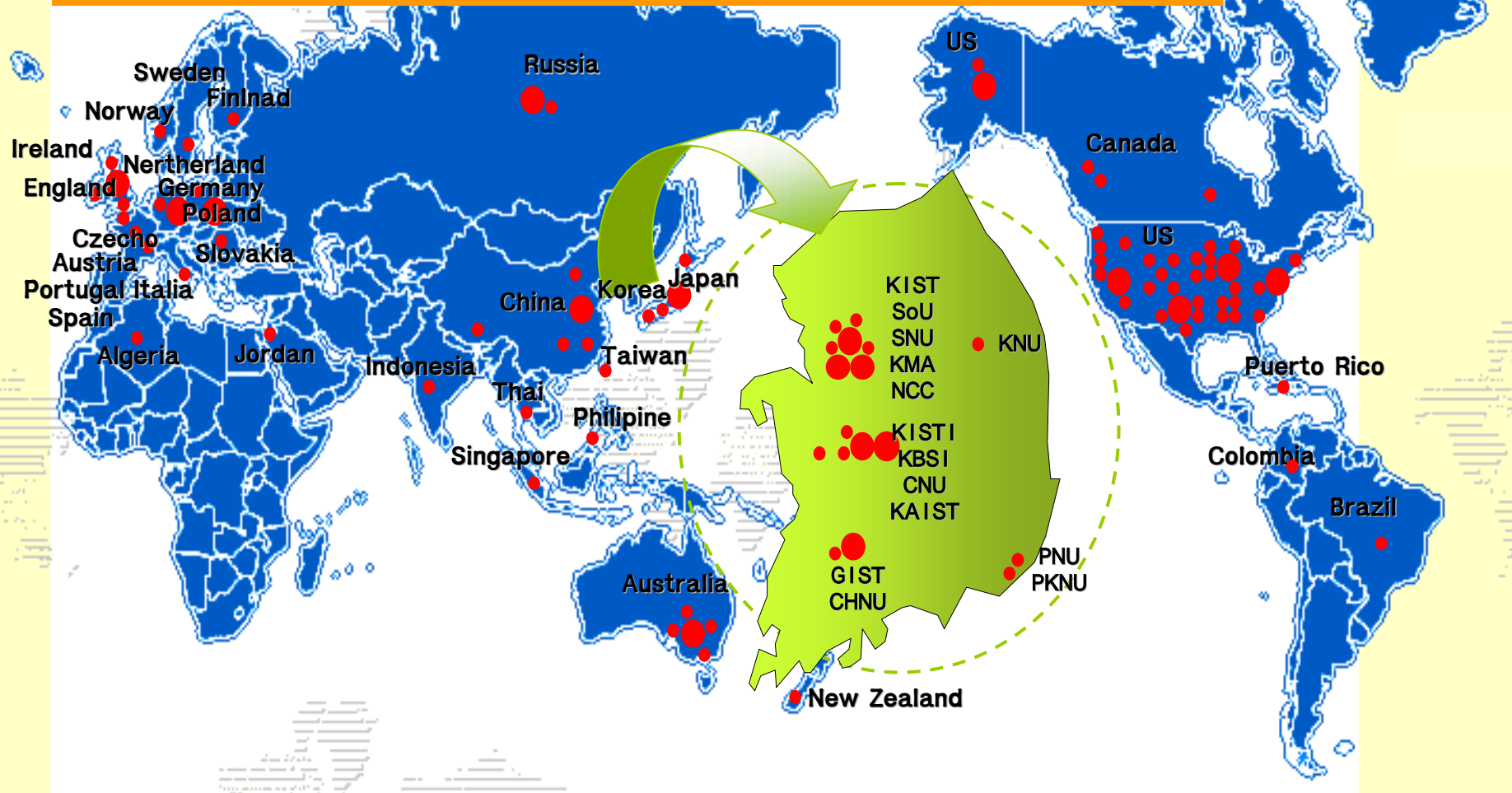
Other visible windows include a "New Client" window with a URL, a "Shared Presentation Controller" window with slide navigation, and a "RAT v4.2.22" window with audio controls. The desktop background features the "ACCESSGRID" logo.

# Performance Comparison of VTC

구분		AG(Access Grid)	VTC(Polycom ViewStation)	Netmeeting	VRVS
User		★ Grid, 과학기술응용 연구자 범용연구자	범용연구자 일반인	일반인	★ HEP, ITER 연구자
사용자수		★ ~ 50(제한 없음)	4	-	★ ~ 50(제한 없음)
최대화면분할 수		★ 제한 없음	4	1	★ 제한 없음
노드당 전송화면		★ 4~8	2	1	1
코덱		★ ★ H.261(ISDN), H.263(일반전화 망, 28.8Kbps이하), MPEG-4(SD)	H.263	H.261	H.261
공유 도구	그림	★ Shared Image	★ Imageshare2	프로그램공유	불가능
	문서	★ DPPT, RPPT, Shared Presentation	T.120	프로그램공유	★ Synchronized Web Browsing
	채트	★ 가능	불가능	★ 가능	★ 가능
	기타	★ ★ Shared Browser, Shared Movie, Media Lecture Board, Shared Desktop	불가능	화이트보드	★ Shared Desktop
운영체제		★ WindowsXP, Linux, Mac OSX, FreeBSD 등	Windows2000	Windows2000, XP	★ Windows9x/Me/NT/ 2000.XP, Linux, Mac OSX, PPC
네트워크		★ 멀티캐스트/유니캐스트	유니캐스트	유니캐스트	유니캐스트

# Status of AG Sites

- Over 50 countries and over 4,000 users in the world
- Over 30 AG sites constructed as Universities, National Institutes, Hospitals
- Jan 06 ~ Nov 06, Venue Server hitting number : 5,032+ hits (2006)





# AG Global Community



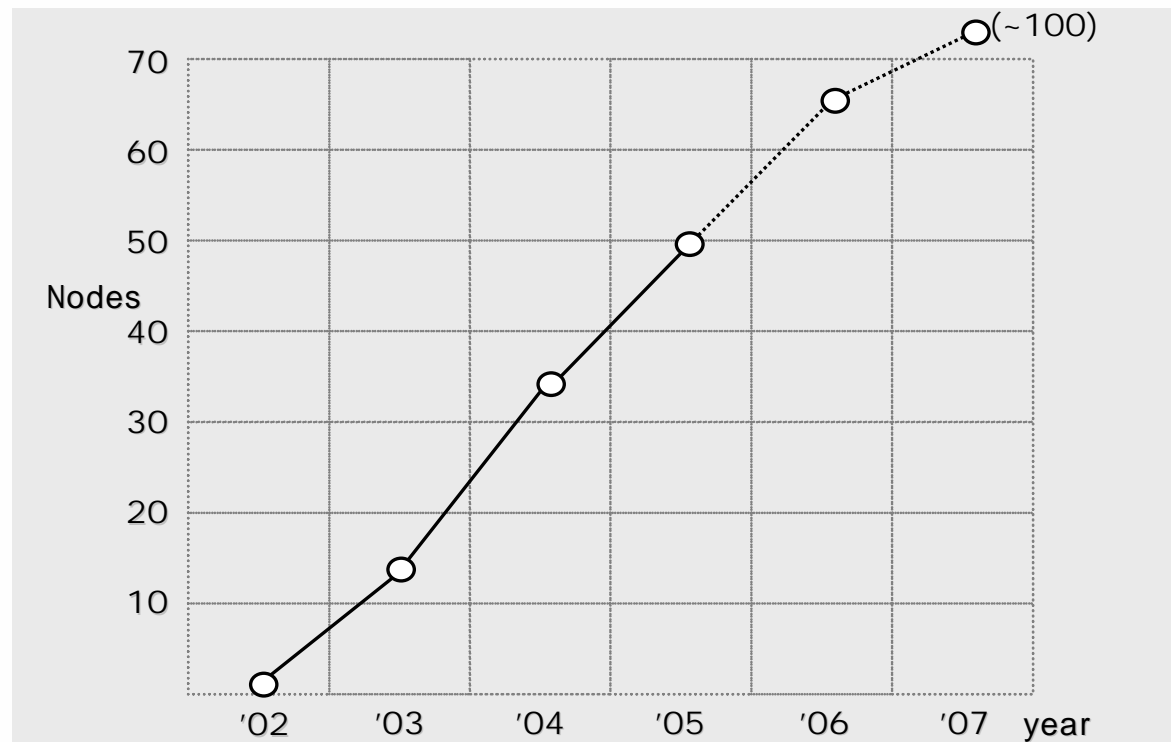
Australia	Denmark	Israel	Norway	Spain
Austria	Finland	Italy	Oman	Sweden
Belize	France	Japan	Philippines	Switzerland
Brazil	Germany	Korea (South)	Poland	Taiwan
Canada	Greece	Malaysia	Portugal	Thailand
Chile	Hong Kong	Mexico	Romania	United Kingdom
China	Hungary	Namibia	Russia	United States
Christmas Island	Iceland	Netherlands	Samoa	Venezuela
Colombia	India	New Zealand	Singapore	
Czech Republic	Ireland	(Aotearoa)	Slovenia	

- **Access Grid** (<http://www.accessgrid.org>) **main homepage**
- Access Grid portal (<http://portal.accessgrid.org>)
- Asia Pacific Access Grid (<http://www.ap-accessgrid.org>)
- Access Grid Korea (<http://www.accessgrid.or.kr>)
- Access Grid Canada (<http://www.accessgrid.ca>)
- European Access Grid (<http://euroag.accessgrid.org>)

About 50 Countries, over 300 AG nodes all over the world (as of Jun. 2005)

# Deployment of AG system

- ❖ 2002 : First construction AG in Korea
- ❖ 2003 : PIG nodes construction
- ❖ 2004 : Supply AGtk2.0 and stablization
- ❖ 2005 : Development HDV transmission technology and Diversification of shared SW
- ❖ 2006 : Beyond IT area to Medical and e-Learning



# Korea

## ❖ Room type sites

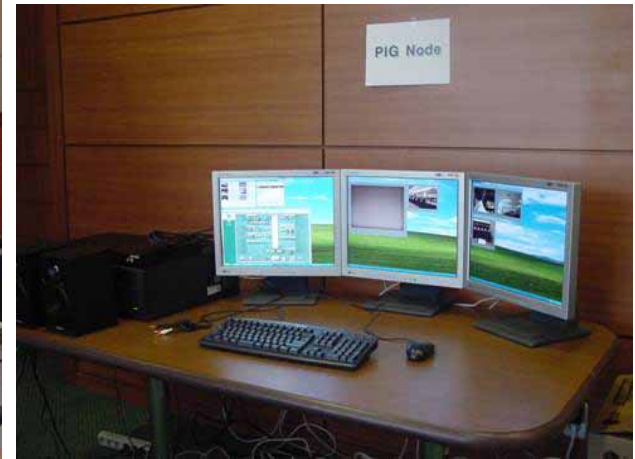
- KISTI (Korea Institute of Science and Technology Information)
  - KREONET/KREONET2, GLORIAD...
- GIST (Gwangju Institute of Science and Technology)
- KBSI (Korea Basic Science Institute)
- UOS (University of Seoul)
- SNU (eIMBL)

## ❖ And about 30 sites constructed (PIG node type)

- National Institute, University, Hospital, ...

## ❖ For more information, refer to <http://agcentral.org/nodes>

# AG@KISTI





# KISTI's Tiled Display



# Status of AG nodes in Korea

## ❖ Room type sites

- KISTI (Korea Institute of Science and Technology Information)
  - KREONET/KREONET2, GLORIAD...
- GIST (Gwangju Institute of Science and Technology)
- KBSI (Korea Basic Science Institute)
- UoS (University of Seoul), PKNU
- SNU (eIMBL: Electronic International Molecular Biology Lab),  
SNU Hospital, Boramae Hospital, Bundang SNU Hospital
- NCC (National Cancer Center)



NCC

## ❖ And about 30 sites constructed (PIG node type)

- National Institute, University, Hospital, ...



## ❖ For more information, refer to

<http://agcentral.org/nodes>  
<http://www.accessgrid.or.kr>



eIMBL





# Representative AG Usages

## ❖ Activities examples

- GGF13 Life e-Science session using AG
  - 3.13-15, Medical Chicago Univ., Singapore, Louisiana Univ., presentation through AG
- Between NCSA-KISTI Application of Supercomputing meeting
- Korea Medical Association e-Learning seminar (4.15)
- Korea Medical Association Conference using domestic 5 remote sites attended (5.13-14, Seoul, Taejeon, Busan, Gwangju, Chungju)
- Singapore NGO Grid lecture series about GT4, EGEE (9.22,23), BioInfo2005 Busan Bexco(9.22~24, Taiwan, Busan, Taejeon)
- Between KISTI-LSU e-Science seminar and meeting for collaboration (10.11)



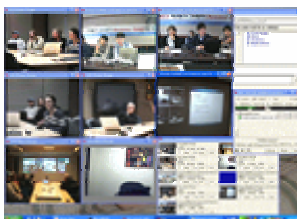
## ❖ Medical, Weather, Bioinformatics, Grid Researchers using AG and AG Technique

## ❖ Activities of Industrial area

- Prudential, Samsung, VTV

## ❖ Rate of growth : Every year increasing 100%

- 6건('02)→12건('03)→20건('04)→40건('05)→80건('06)



# Examples of AG Activities



Remote Education (Domestic)



SC Conference



Korea Medical Association Conference



Workshop (Singapore-KISTi)



Group meeting (LSU-KISTi)



Seminar



# Activities and Support of AG Korea

## ❖ AG @ Korea Community

### - User Community

- User groups : Grid, Supercomputing, IT, Medical, Bioinformatics, Weather, Education...
- Service for domestic AG community through AG technical center and Venue/Bridge service
- Annual Workshop and Tutorial since 2002
- 100% increase using AG in every year in Korea
- Cooperation with industrial area : VTV, Novanos, Silicon Studio

### - Developer Community

- University, Institute, Industrial
- Development for High technology  
(For especially HDV transmission over AG, Bridging Technology...)

## ❖ Since 2005, Beyond Non-IT areas

- Medical, Bioinformatics, Weather, Education and so on...

# Useful Software over AG

<http://www.mcs.anl.gov/fl/research/accessgrid/wiki/moin.cgi/ContributedSoftware>

Shared Desktop  
Shared VizServer  
Venue VNC Server  
Venue Customizer  
Shared Movie player  
Shared PDF, Shared PPT  
Shared Rasmol  
ImmersaView Launcher  
Basic Image  
Shared Question Tool

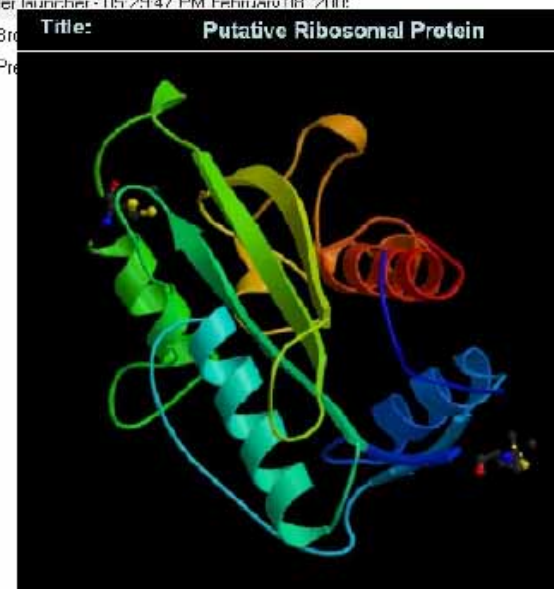
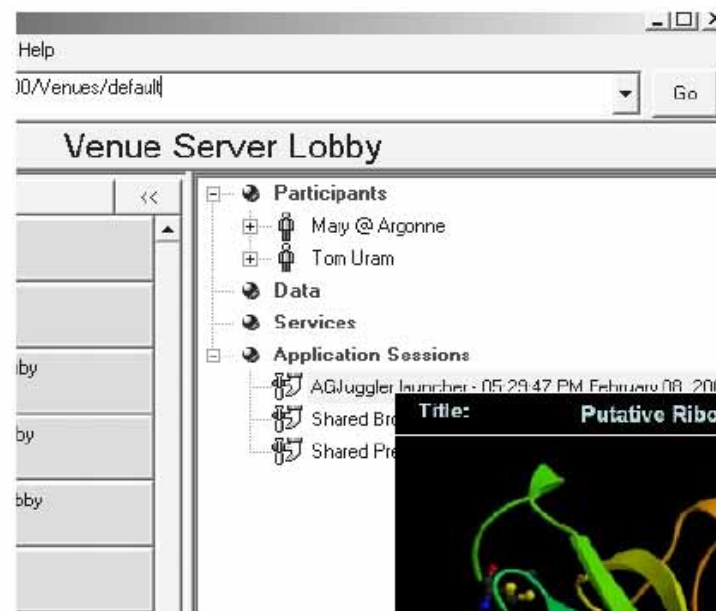
Shared  
Applications

JPEG Video Services  
Media Lecture Board Service  
MPEG4 Video Service

Node  
Services

AGPager

Helper  
Application



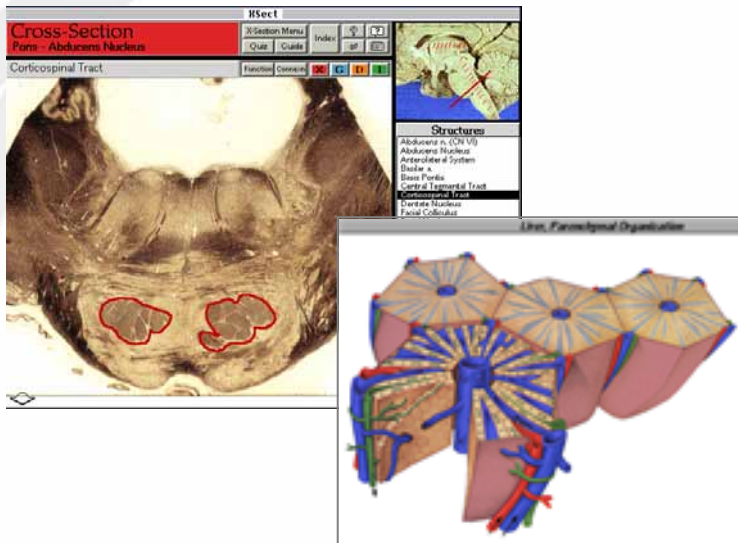
# Digital Anatomy Workshop

- ❖ Wisconsin Univ. ~ Stanford Univ. ~ KISTI (2006/11/28@KISTI)
- ❖ Overviews of Digital Anatomy from Dr. Parvati Dev (Director of SUMMIT at Stanford Univ.)
- ❖ 3D Anatomy Images shared and controlled from Prof. Steve Senger (Wisconsin Univ.)
- ❖ Over 15 Korean doctors and Engineers attended this workshop

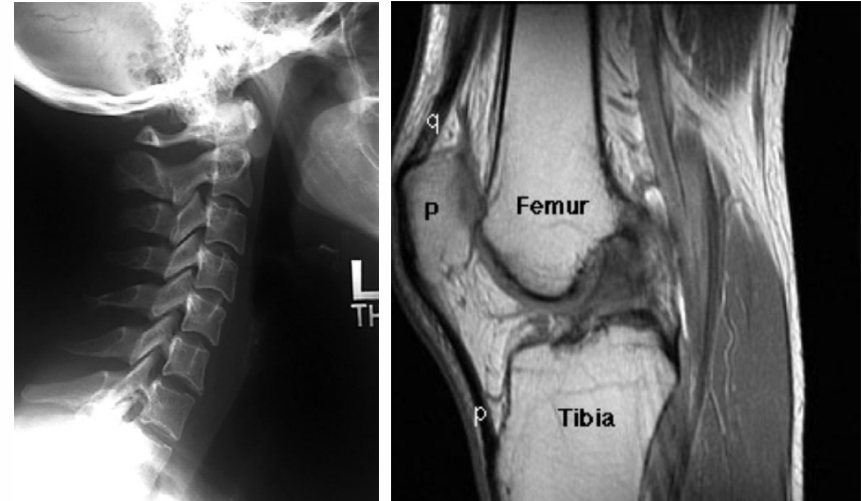


# Introduce Digital Anatomy

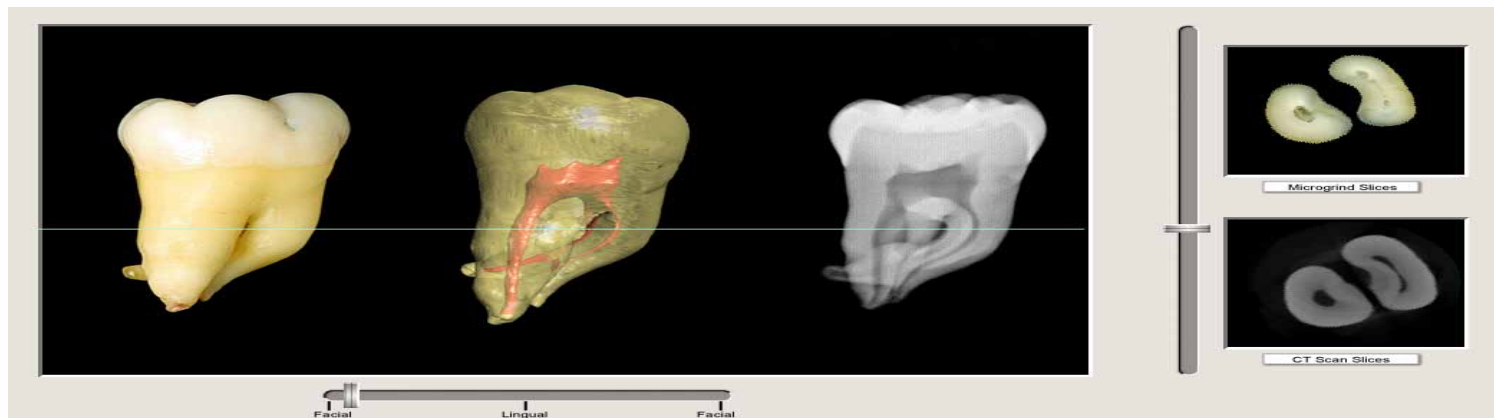
## ❖ Digital Image Collection



## ❖ Radiology departments generate many gigabytes of clinical images every day

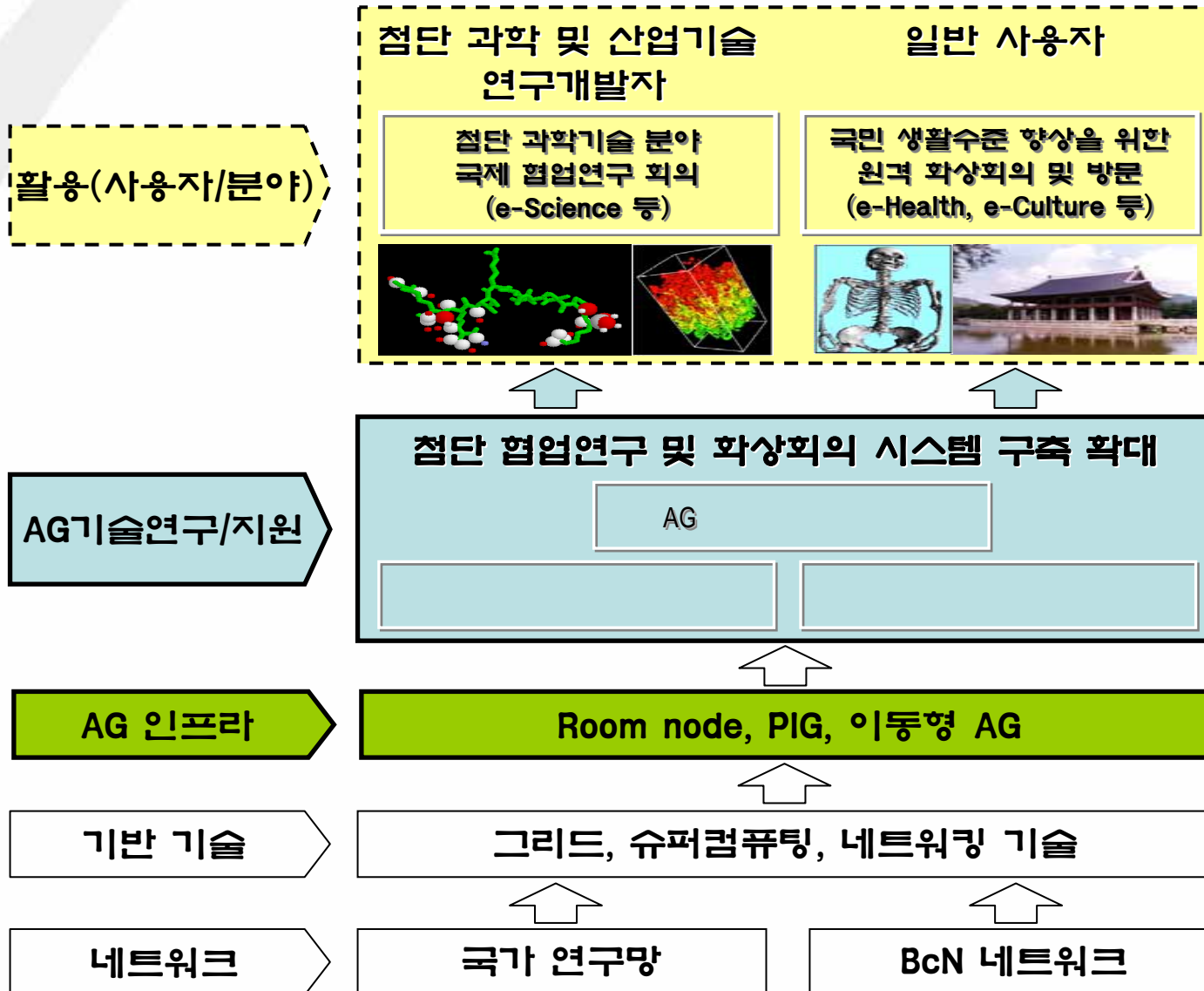


## ❖ Photographic micro cross-sections



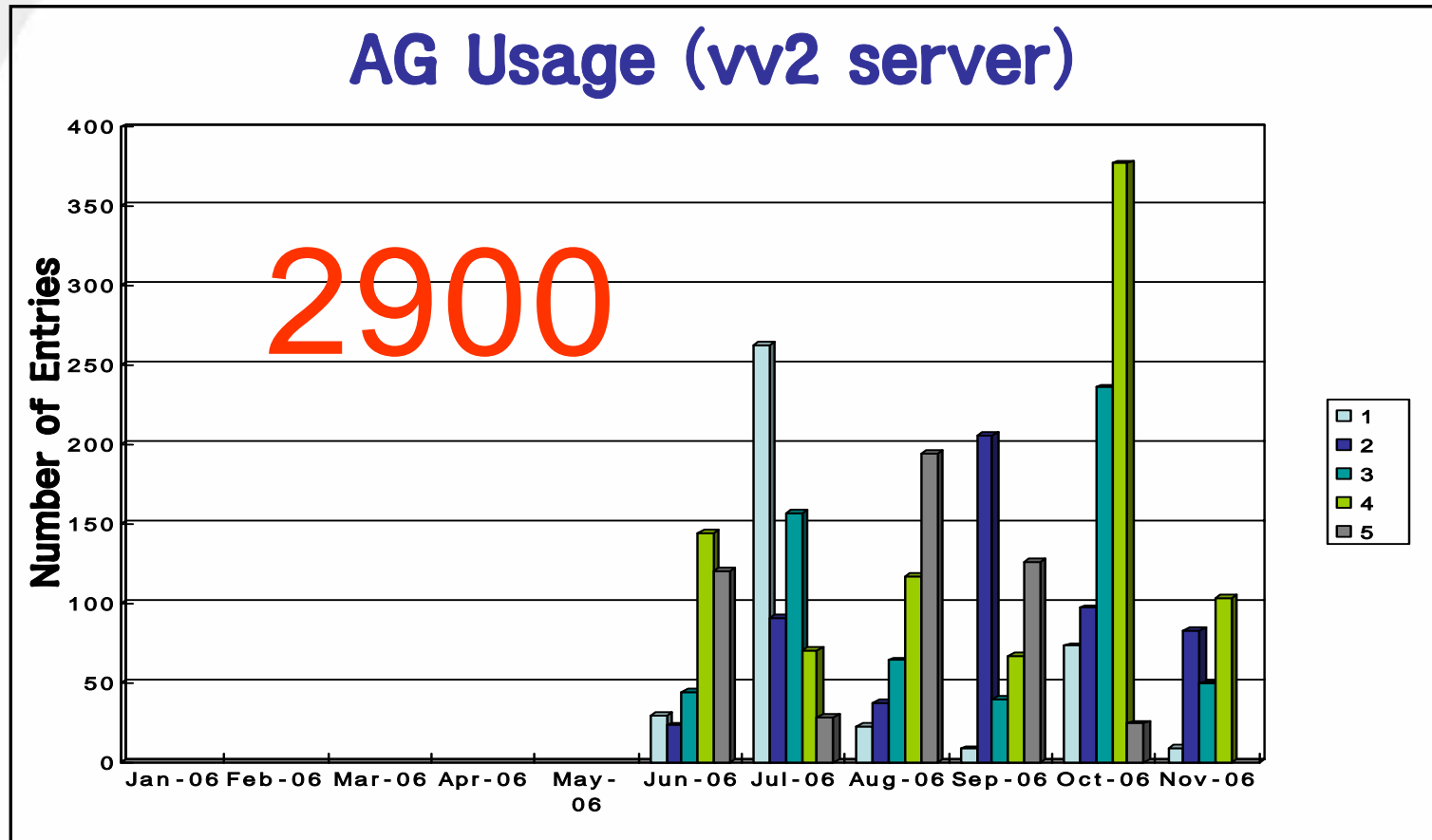


# Domestic AG Project



# Access Grid Usage in Korea (1)

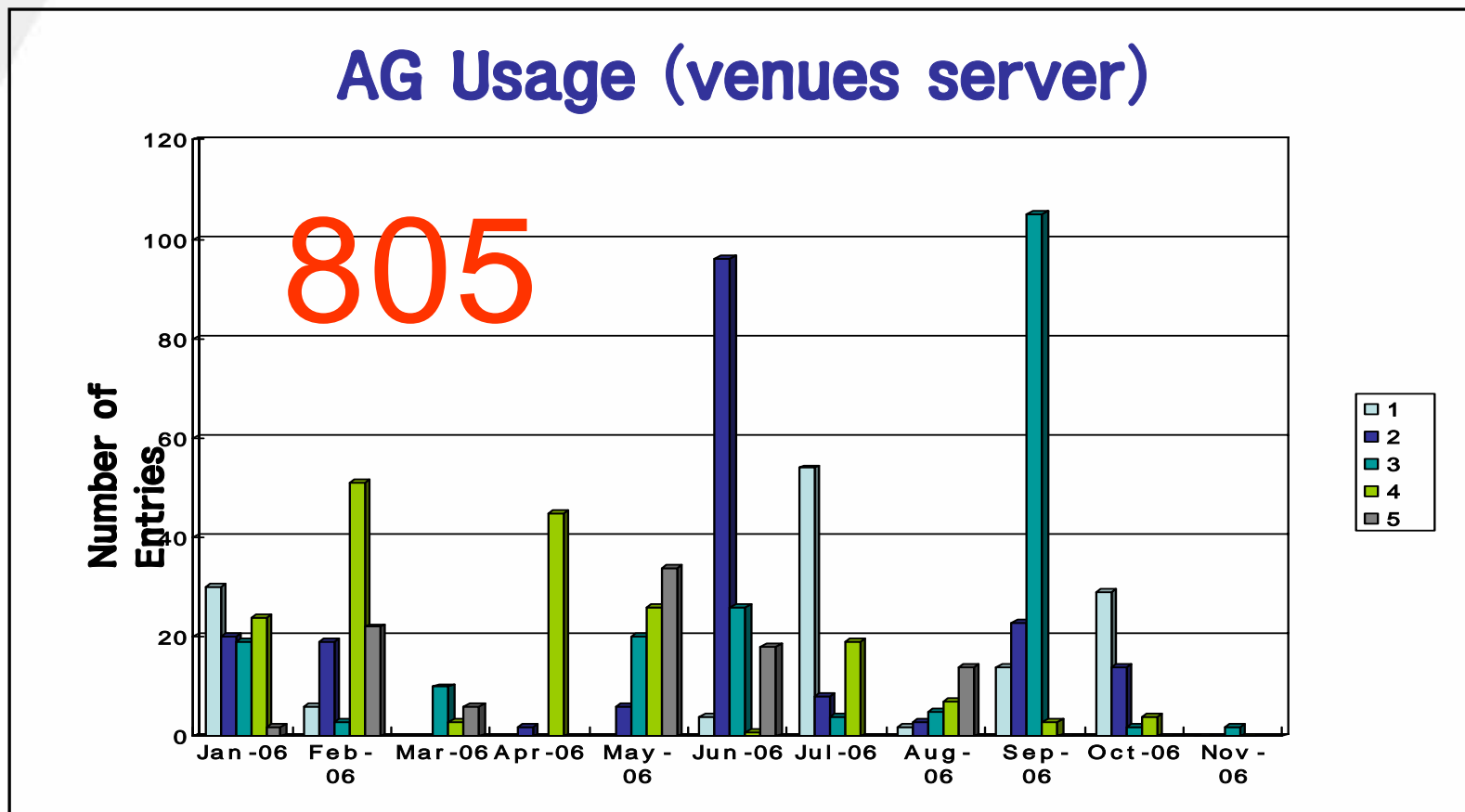
- Entries into virtual spaces (Jun 06 – Nov 06)



11-21-2006 (2900 hits)

# Access Grid Usage in Korea (2)

- Entries into virtual spaces (Jan 06 – Nov 06)

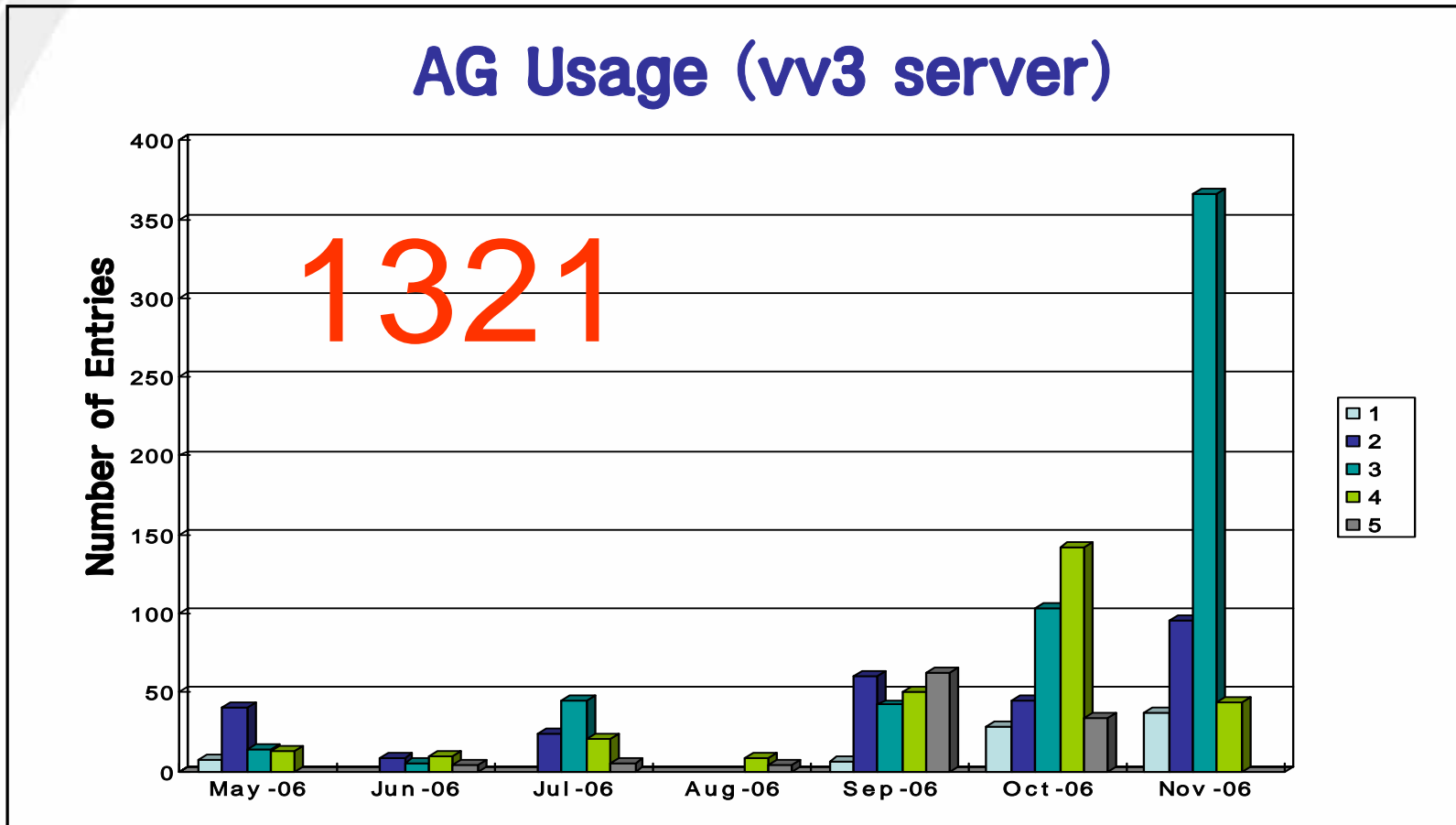


11-21-2006 (805 hits)



# Access Grid Usage in Korea (3)

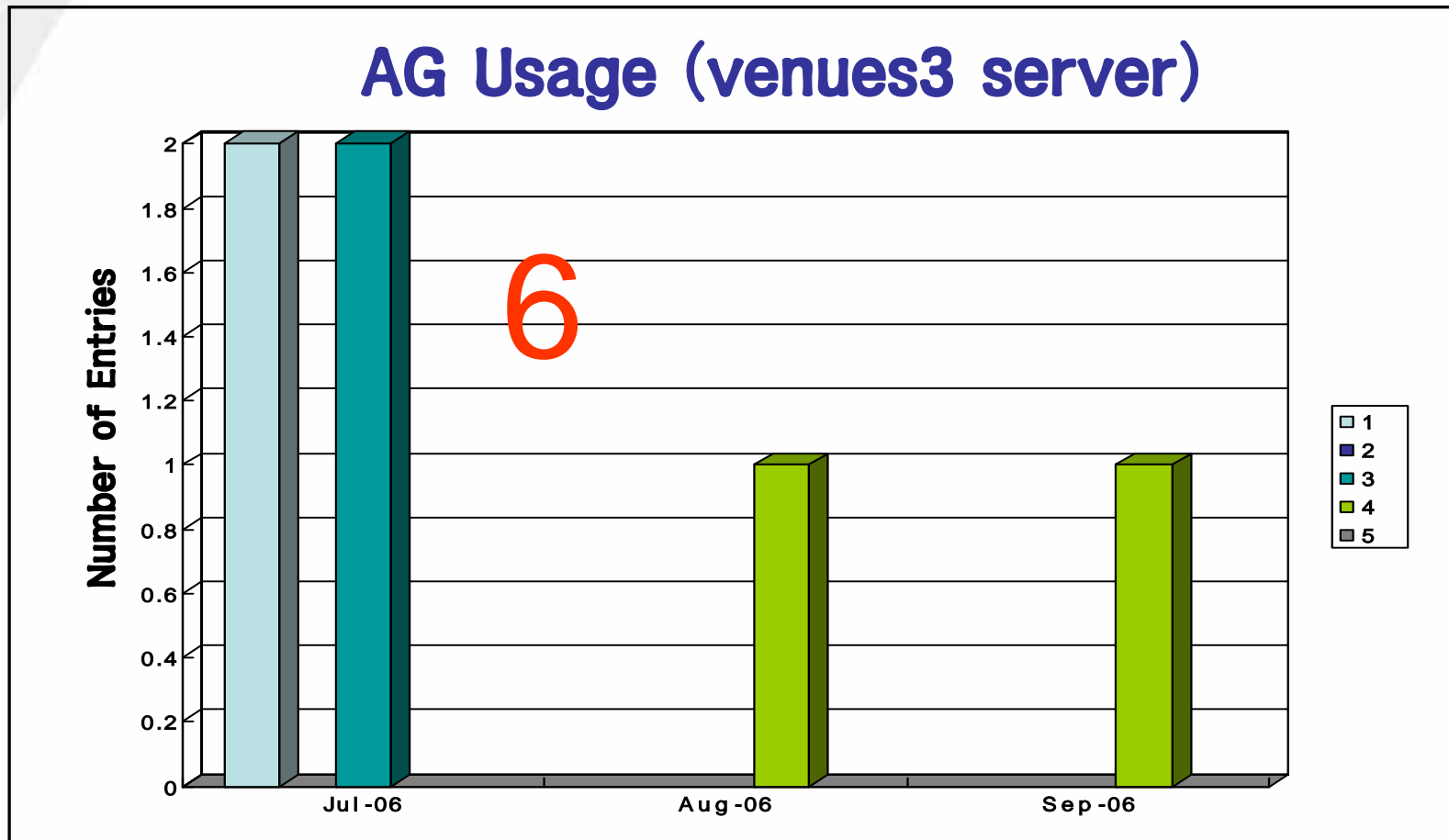
- Entries into virtual spaces (May 06 – Nov 06)



11-21-2006 (1321 hits)

# Access Grid Usage in Korea (4)

- Entries into virtual spaces (Jul 06 – Nov 06)



11-21-2006 (6 hits)

# Venue Server Access list

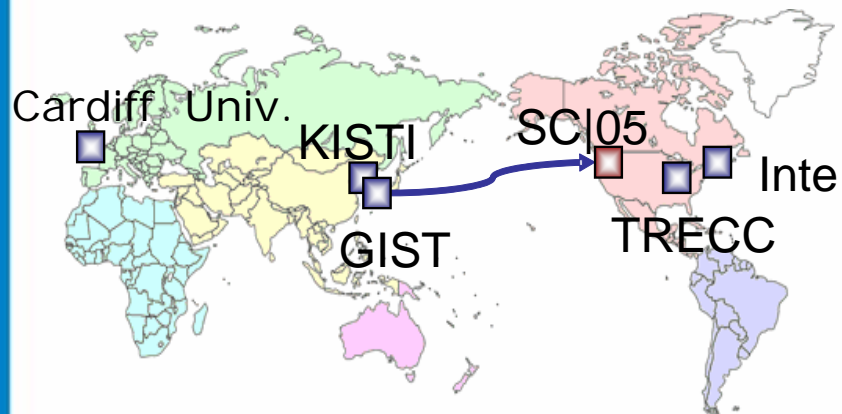
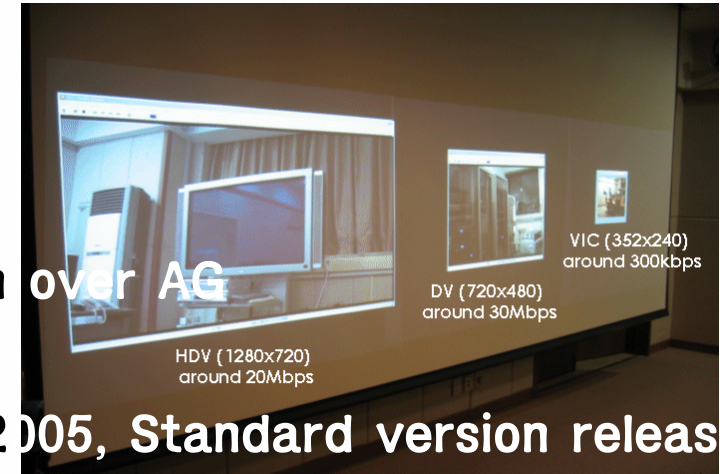
- UChicago.edu
- Pusan.ac.kr
- Korea.ac.kr
- Knfp.net
- Kribb.re.kr
- kaist.ac.kr
- Gist.ac.kr
- Kisti.re.kr
- Pknu.ac.kr
- Siliconstudio.co.kr
- Icu.ac.kr
- Kma.go.kr
- Lsu.edu
- Kist.re.kr
- Kt.co.kr
- Kbsi.re.kr
- Nchc.org.tw
- Skku.ac.kr
- Canarie.ca
- Ngp.org.sg
- Snu.ac.kr
- Sinica.edu.tw
- Stanford.edu
- Sookmyung.ac.kr
- Knu.ac.kr
- hku.hk
- Ap-accessgrid.org

**US, Australia, Canada,  
Taiwan, Singapore, Korea,  
AP-Accessgrid**



# AG R&D - HDV

- ❖ **Research for HDV video transmission over AG**
  - History : DV('03), HDV('04~'05)
  - Service model release (12<sup>th</sup> Oct 2005, Standard version releases the world, and leading of standardization for AG Mpeg2 field)
  - Apply for the remote medical examination and treatment, HDV surgery video transmission over AG
  - Demonstration at SC2005 SCGlobal
    - UK, US, Korea (GIST, KISTI), Seattle : 6 places connection through HDV



# AG R&D – AG Connector, MEET

- ❖ Development of AG Connector : Solution for Firewall, NAT, Unicast problem and extension of activities for a restriction network area
  - Release ver1.0
- ❖ Development MEET system and construction of domestic testbed
  - Diagnosis of International multicast connectivity and measure for its performance

Monitoring Information  
Multicast IP/Port 233.5.10.10 / 10010 , Server IP/Port meet.kreonet.net / 10016

address	name	public	translation	enable	target
203.237.53.183	m-agent.gist.ac.kr	0	0	0	<input type="checkbox"/>
150.183.253.8	m-agent.kisti.re.kr	0	0	1	<input type="checkbox"/>

Select a Debugging Type  
 Ping Test  Burst Test  Trace t

Additional data is required if you select 'Trace To'  
Target  Group

Results...

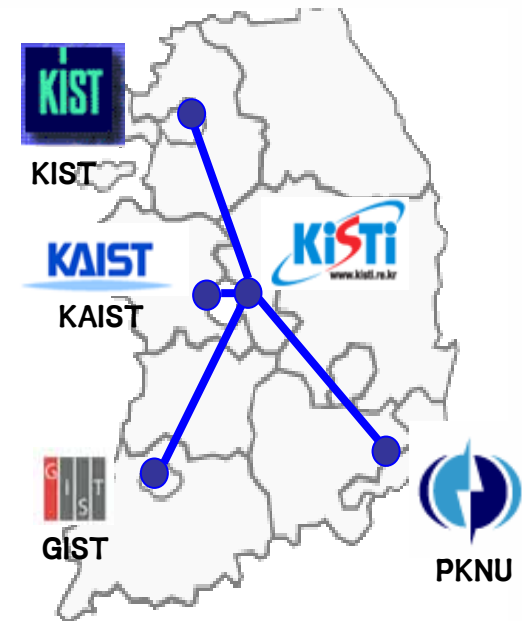
Debugging Information  
Debugging Type: trace ts, Participants: 203.237.53.183/150.183.253.8

Round trip time 35 ms, total # of 1 request

Waiting to accumulate statistics...Results after 10 seconds

Source	Response	Dest	Overall	Packet Statistics For Traffic From
203.237.53.183	224.0.0.22	Partner	203.237.53.183 To 233.5.10.10	
	17 ms	Rate	LossDest= Pct Rate	
203.237.53.183	134.75.95.54	Reached RPYCore		
	2	3 pps	00	0 pps
150.183.253.8	150.183.253.8	Reached RPYCore		
	2	3 pps	100	0 pps
		Receiver	Query Source	

Close # 0



# AG technology Support

❖ **Goal : Construction of collaboration environments and enhanced usability intend SWOF (Scientific Workspace of the Future)**

❖ **Contents**

- Virtual Venue Server
- Multicast-Unicast Bridges
- Shared Appls. Serv.
- Voyager(AG Recorder) Serv
- Quality Assurance Testing
- On-line/off-line Training
- AG Workshop every year
- Additional Support & Advice
- homepage & Scheduler Service

The Access Grid Support Centre (AGSC) is managed by UKERNA and run JISC's Committee for the Support of Research.

Our aim is to improve the user experience of Access Grid for academic use line and workshop training, a programme of Quality Assurance tests, and g

We currently offer the following services:

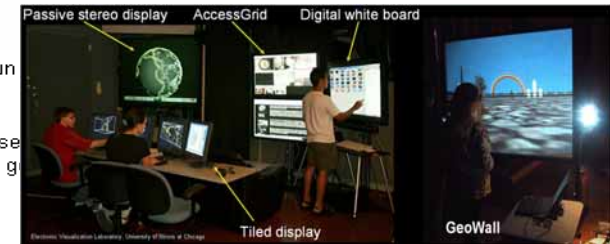
- A **Virtual Venue Server** as a robust navigation point to standard Access Grid and UK-specific virtual venues
- **Multicast-Unicast Bridges** for sites in the process of establishing multicast connectivity and/or for sites with temporary ,multicast problems
- An **inSORS IG Pix Server** to enable sites to share Microsoft PowerPoint presentations with remote sites via easily configurable software that only has to be installed at the node making the presentation, dramatically simplifying the process of sharing slides
- **inSORS IG Recorder** for recording Access Grid sessions
- An experimental **H.323 - Access Grid Bridge Server**

More services are likely to be added later.

A programme of **Quality Assurance testing** is designed to ensure a high quality of Access Grid facilities at participating sites to overcome problems of poor audio, camera placement, etc. that can detrimentally affect the user experience.

As well as providing access to our own and others' **on-line training** and documentation, we also run a series of **workshops** every six months that cover issues such as an introduction to the Access Grid; services offered by the AGSC; raising awareness of existing documentation; the wider Access Grid community; debugging and fault finding techniques, especially in the areas of audio and video. We also provide tips for administering Access Grid nodes.

Additionally, we offer **support and advice** by e-mail and telephone on all aspects of Access Grid, such as procurement, running events, operating nodes and so on. In some circumstances, we are prepared to visit sites (at their expense) to provide more in-depth consultancy. These are arranged on request.





# Conclusion

- ❖ **Construction of extended AG infrastructure**
  - Extension of enhanced AG infrastructure for non-IT area
  - Medical, e-Learning, Bioinformatics and industrial areas
- ❖ **Enhancement AGTC (Access Grid Technical Center)**
  - Support specialized area like as medical, e-learning through AG Portal Service
  - Management of Venues server and Bridge Server, AG Connector
  - Provide Package solution
    - Network, AG, Application...
      - Most of AG users want to be one-stop solution !!
- ❖ **Research for AG technology**
  - Enhanced HDV stream transmission over AG based on mpeg4
  - Integration for specialized shared application
- ❖ **Beyond IT area and extend of AG usability through AG Community**

Q & A

# Thank you

For more information  
[jhmoon@kisti.re.kr](mailto:jhmoon@kisti.re.kr)  
[www.accessgrid.or.kr](http://www.accessgrid.or.kr)