An Attempt to Apply the AG system to Atmospheric Science Community

- ubiquitous lecture for FAS -

Jai-Ho Oh

Dept. Env. & Atmos. Sci., Pukyong National University

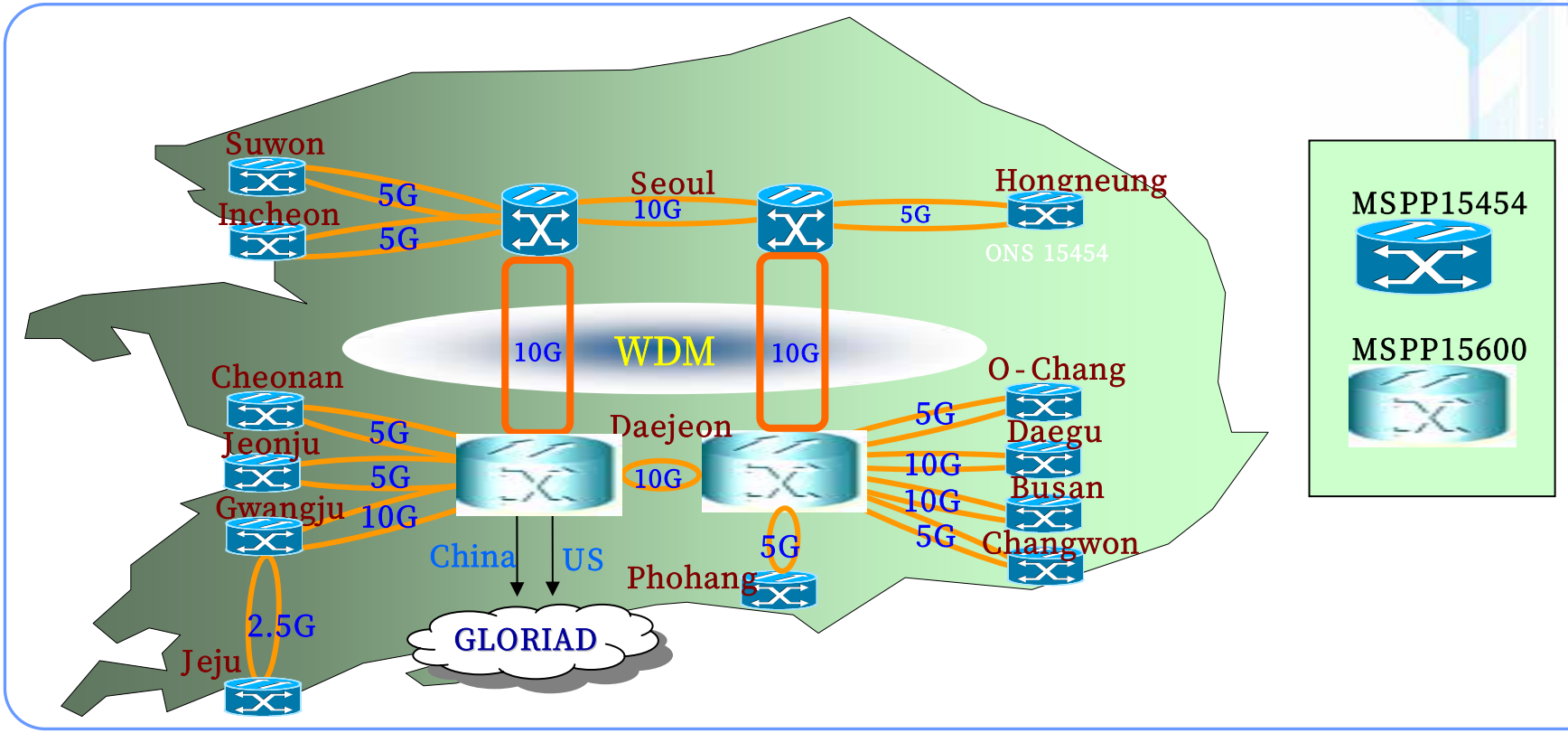
Busan, Korea

jhoh@pknu.ac.kr

Optical KREONET Topology

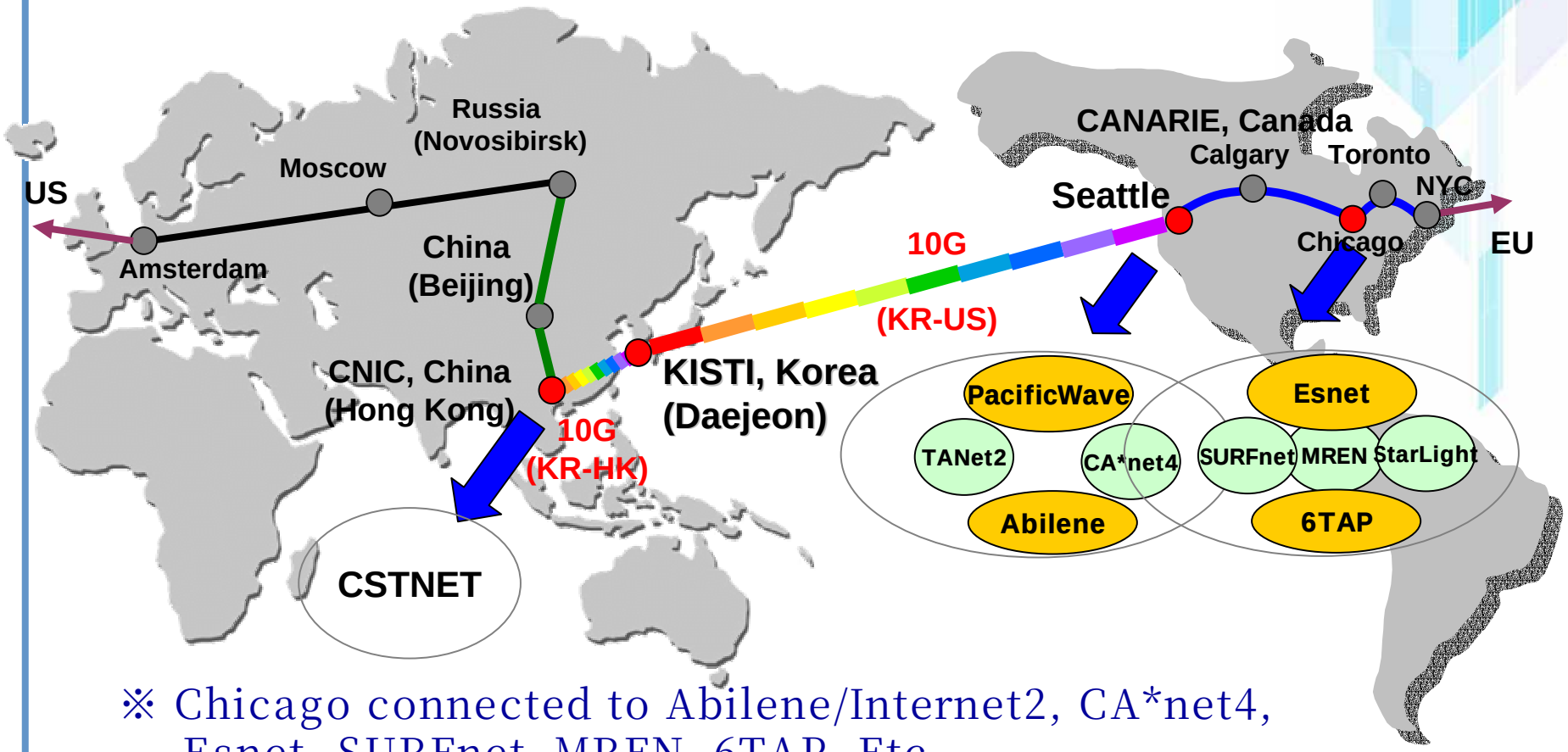
※ Every Regional Center Deployed Based on MSPP 15454/15600

- National & International Light Path, Lambda Provisioning Service



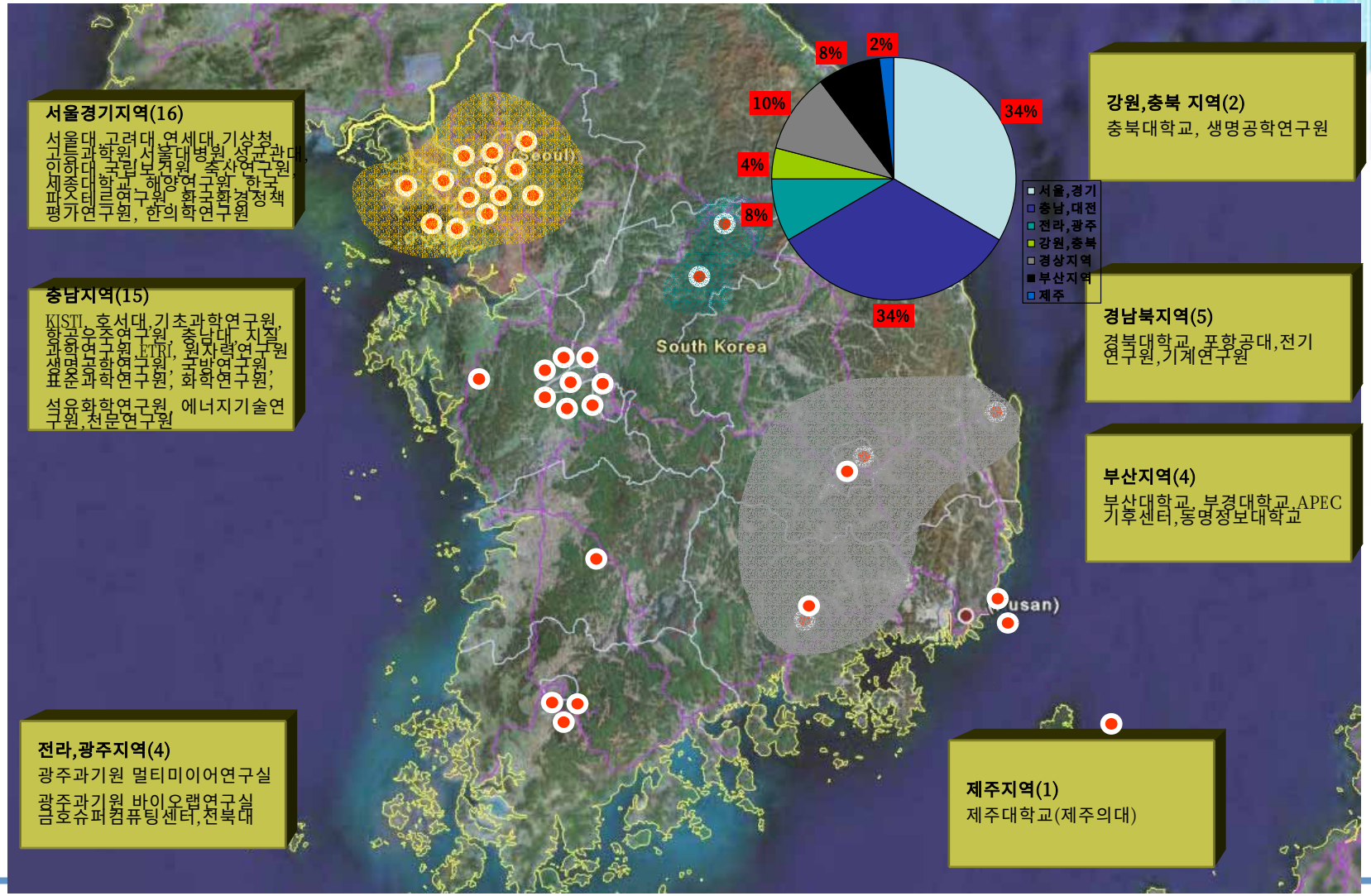
※ UCLP(User Controlled Light Path) Service

KREONET Link and Peers

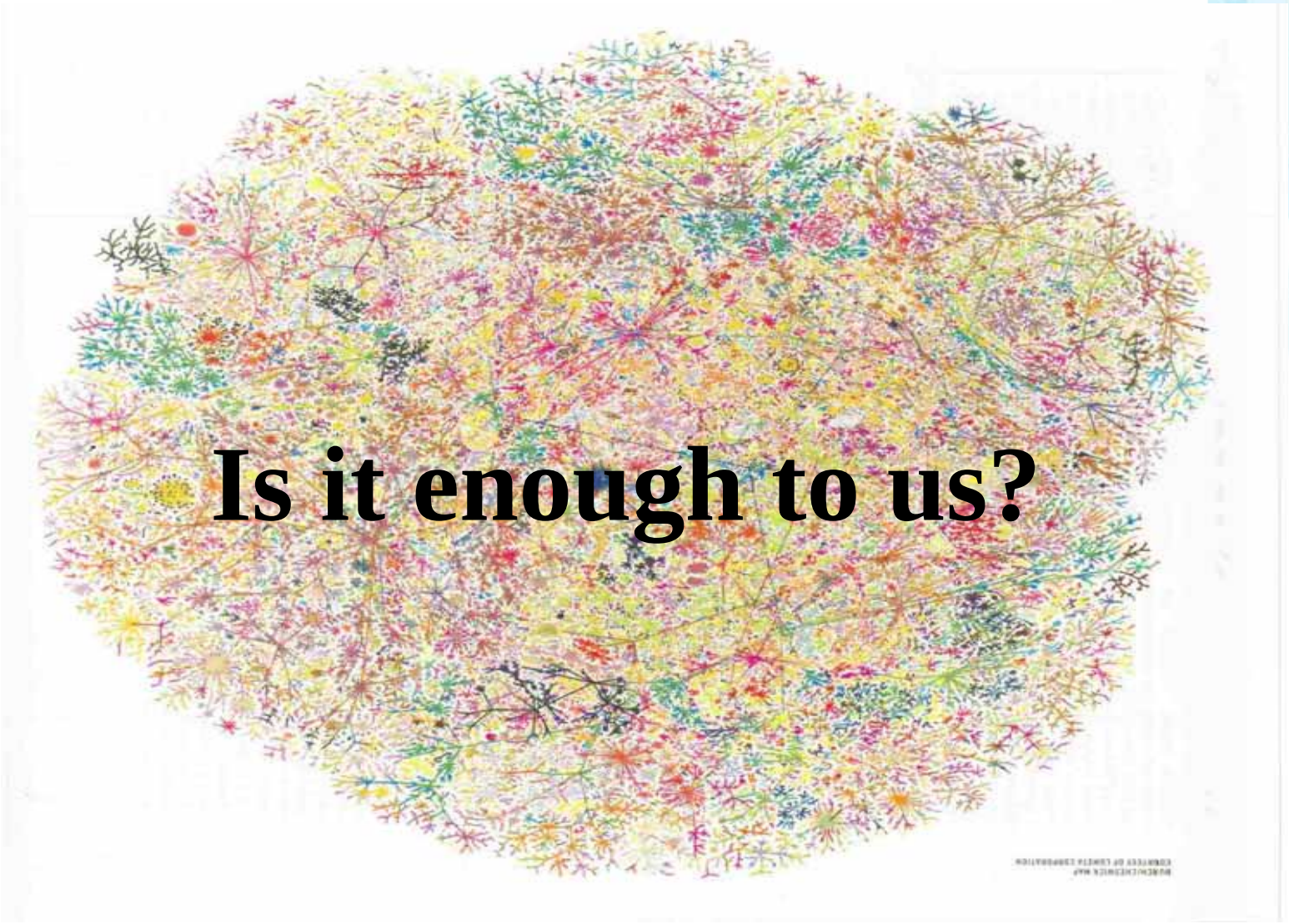


※ Chicago connected to Abilene/Internet2, CA*net4, Esnet, SURFnet, MREN, 6TAP, Etc

Lambda networking among organizations in Korea



What is in the Network?



CATER
for Earth System Study

기상지진기술개발 사업단 운영계획 (2006)

2006 CATER PLAN (http://www.cater.re.kr/)

for “Science 2.0”

기상지진 기술개발 사업단장 발표자 : 오 재 호

CATER : Center for ATmospheric sciences & Earthquake Research

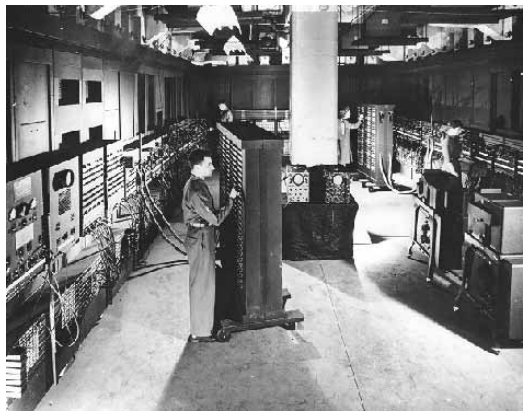
Tech. Development in Web 2.0 (symantic Web) era

Science 1.0 → Science 2.0

Gigabytes → Terabytes
Tarballs → Services
Journals → Wikis
Individuals → Communities
Community codes → Science gateways
Supercomputer centers → TeraGrid, OSG, campus
Makefile → Workflow
Computational science → Science as computation
Physical sciences → All sciences (& humanities)
Computational scientists → All scientists

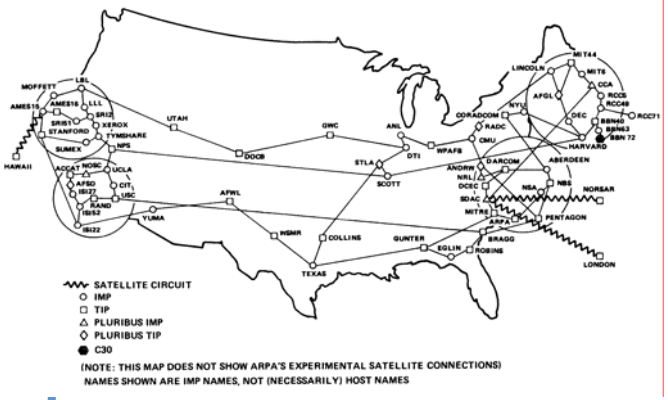
Ian Foster
Computation Institute
Argonne National Lab & University of Chicago

Cyberinfrastructure is Virtually Static



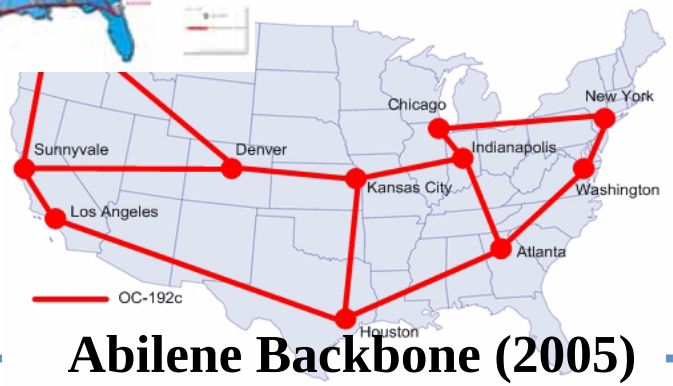
ENIAC (1948)

Earth Simulator (2005)



ARPANET (1980)

National Lambda Rail (2005)

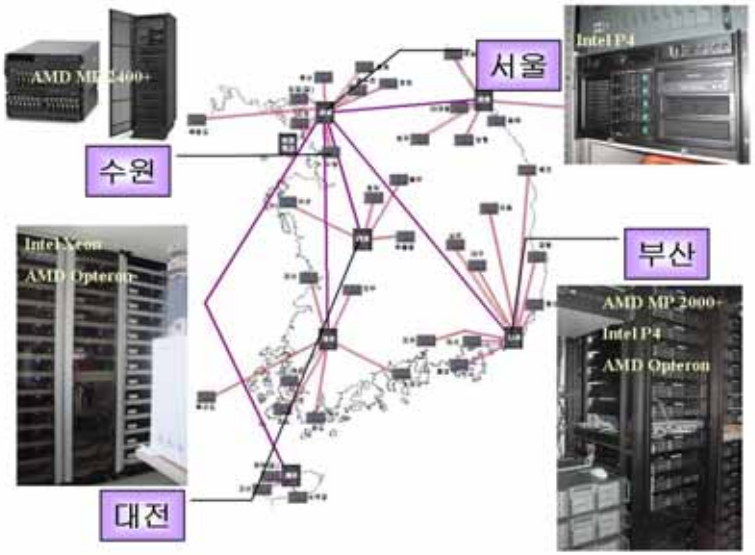


Abilene Backbone (2005)

Application of AG Tech. to Atmospheric Sciences

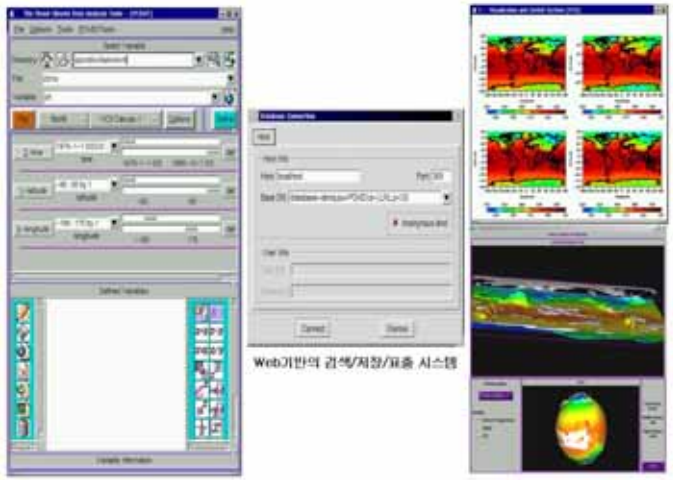
Ubiquitous lecture for FAS with AG

(Web simulator, remote training of FAS)



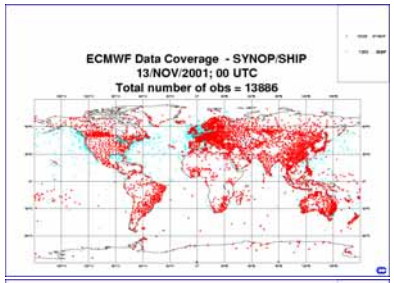
Collaborative research with AG system

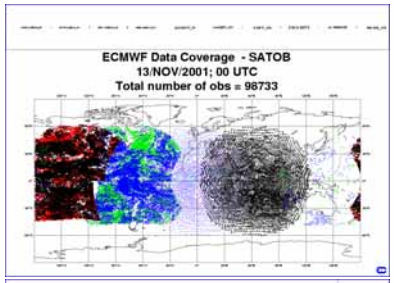
Client oriented interface for inspection/acquisition/display in the CATER data portal

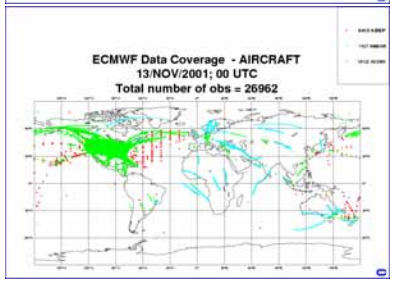


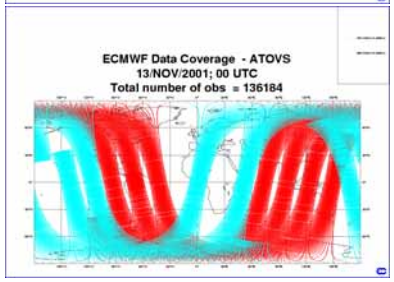
Virtual environment for Meteorological Application

- **Access Grid : virtual collaborative FAS operation among 7 universities**









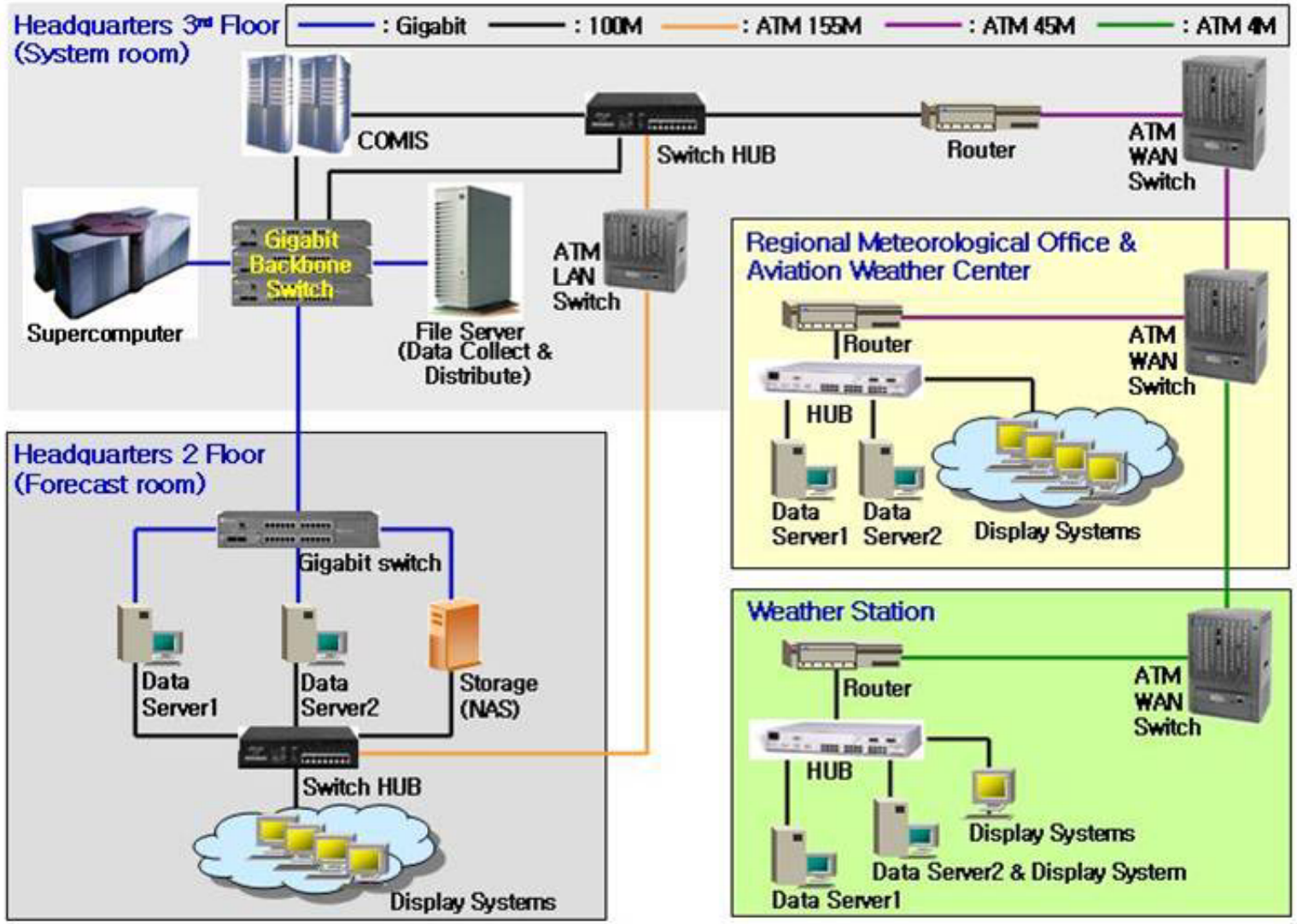
Briefing and Discussion, Education

Phase of FAS Development

- **First phase (2000~2002): Development of weather interactive display and analysis system**
  - **Forecaster's Analysis System (FAS): Two dimensional forecaster workstation with new forecast preparation concepts and interactive display based on the WFO-Advanced system developed to serve National Weather Service at FSL, which is the user interface of Advanced Weather Interactive Processing System (AWIPS)**

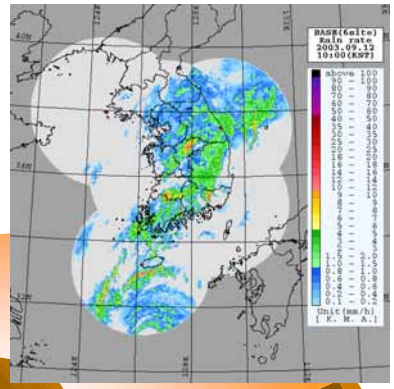
- **Second phase (2003~2005): Development of automated nowcasting tools on FAS**
  - **Development of new short-term forecasting tools and integrated into FAS**
  - **Ingesting preexisting finer grids numerical weather prediction model outputs**
  - **Development of KMA remote sensing data QC system to improve quality of input data of nowcasting system**

FAS architecture

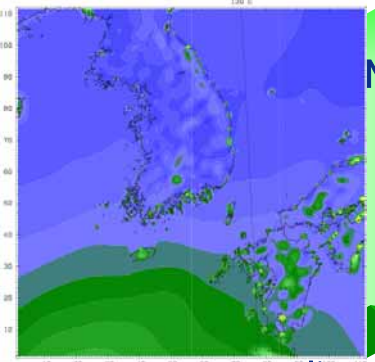


Operation FAS with AG system

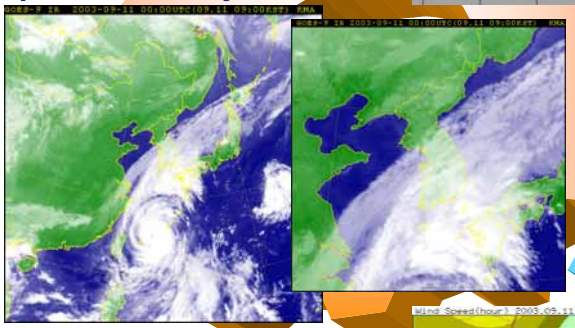
Radar echo



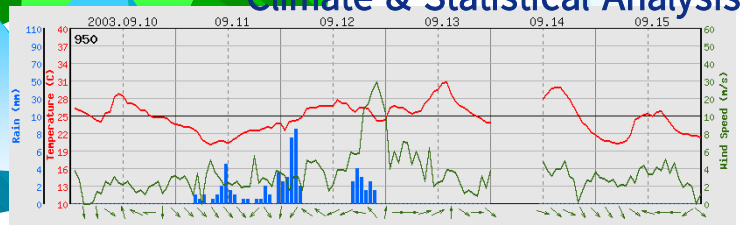
Numerical Simulation

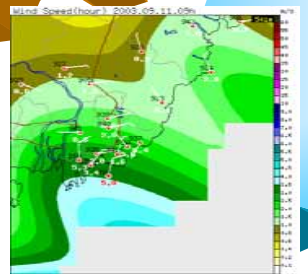


Satellite picture Analysis

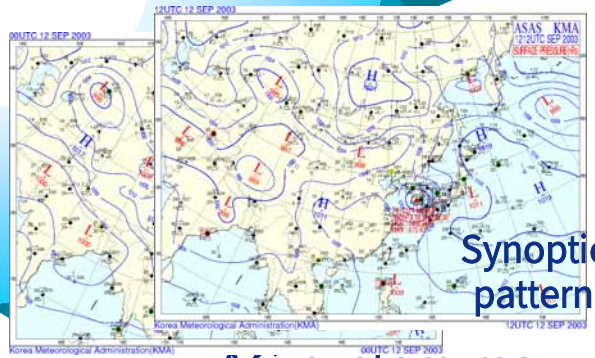


Climate & Statistical Analysis





Regional weather map pattern analysis

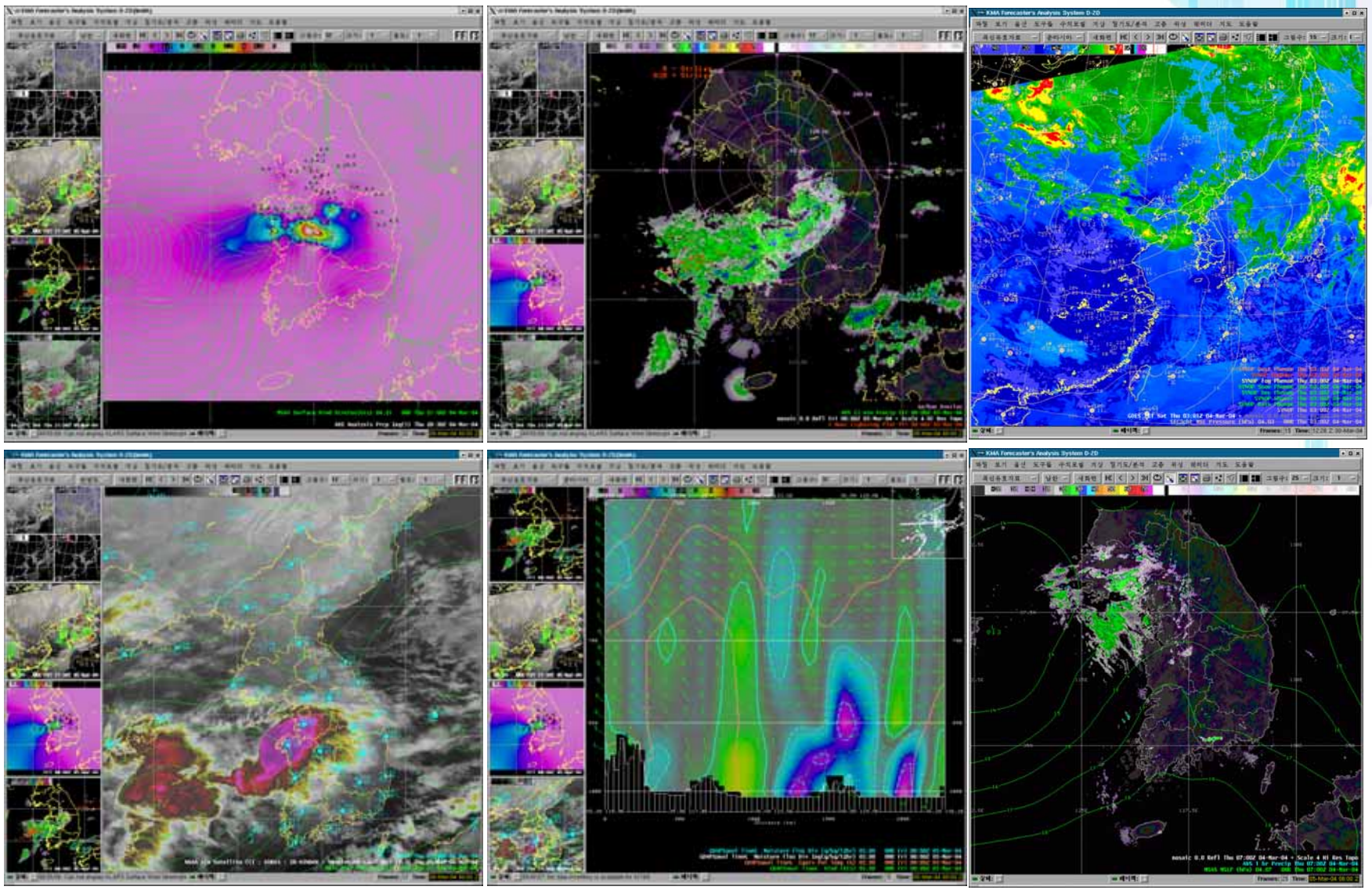


Synoptic weather pattern analysis

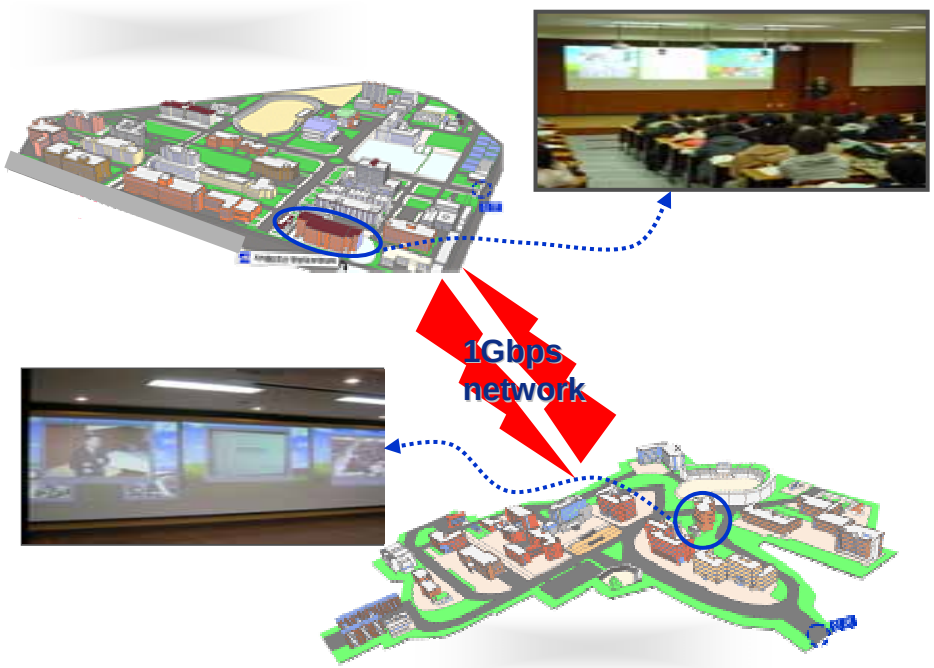
FAS → Objective forecast based on discussion among specialists → AG system may resolve the difficulties due to the massive size of data

Demonstration of FAS operation with AG system

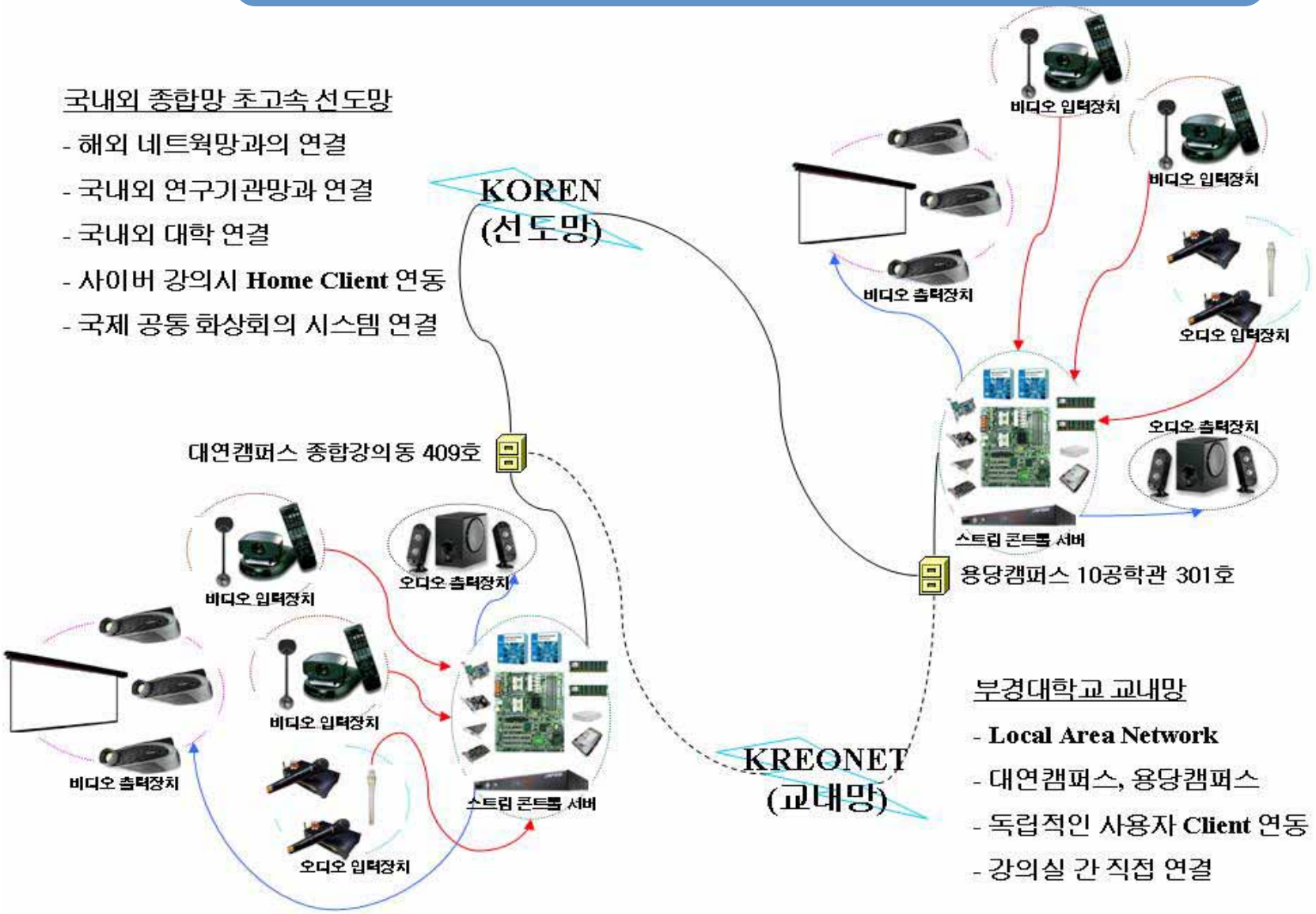
Case study of FAS Application (Heavy snowfall at Deajon , 2004. 3. 4)



PKNU AG classroom between Deayeon campus and Yongdang campus



Layout of PKNU AG Network



Layout at Deayeon Campus

Layout at Yongdang Campus

Specification of Access Grid Server

System	
Process & memory	Dual Intel Xeon 3.0 GHz /2GB DDR /40 GB SCSI HDD / Giga Bit Ethernet
Video Card	
	Quadro 4 400 2-LHU 64M, 4 dividing display
Audio Capture Card	
	SoundBlaster Live 24 bit
Video Capture Card	
	Osprey 230 PCI + Osprey 110 PCI
Speaker-Microphone	
Speaker-Mic. Speaker Echo-cancellator	SECO X-4000 VHF (Wireless MIC and Receiver) JBL XAP-400
Camera	
Analog Camera USB Camera	Sony EVI-D70 Logitech Quickcam Sphere
Display Device	
Project LCD Monitor	Sanyo LCD Digital X-50 Samsung SyncMaster 177X
기타	
S/W Rack Projector Screen 삼각대	MS WindowsXP Professional MS Office2003 Standard Rack Cabinet 8U + 40U Rack

System in Deayeon Campus

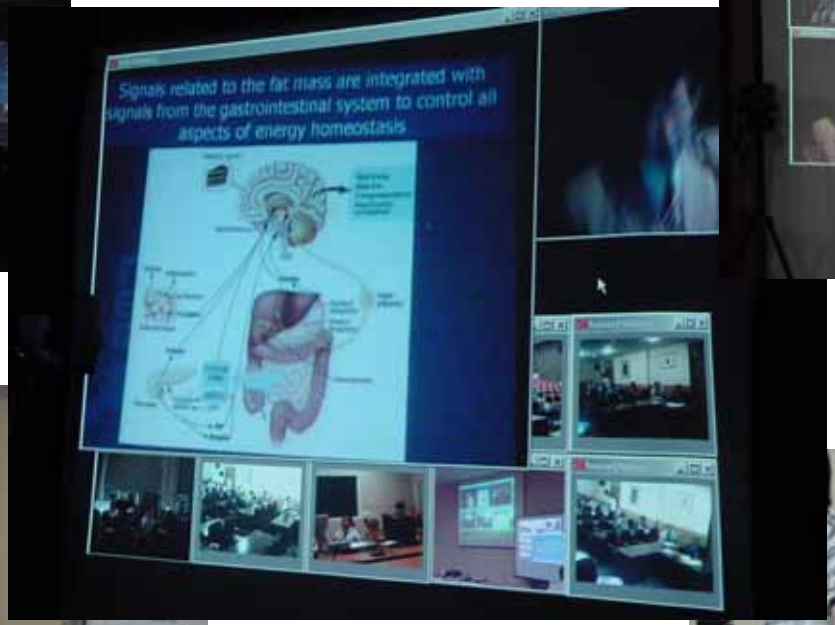
System in Yongdang Campus

2004. 11. 09~12 APCN

Asian & Pacific Climate Network Meeting, 2004. 11. 9 ~ 12

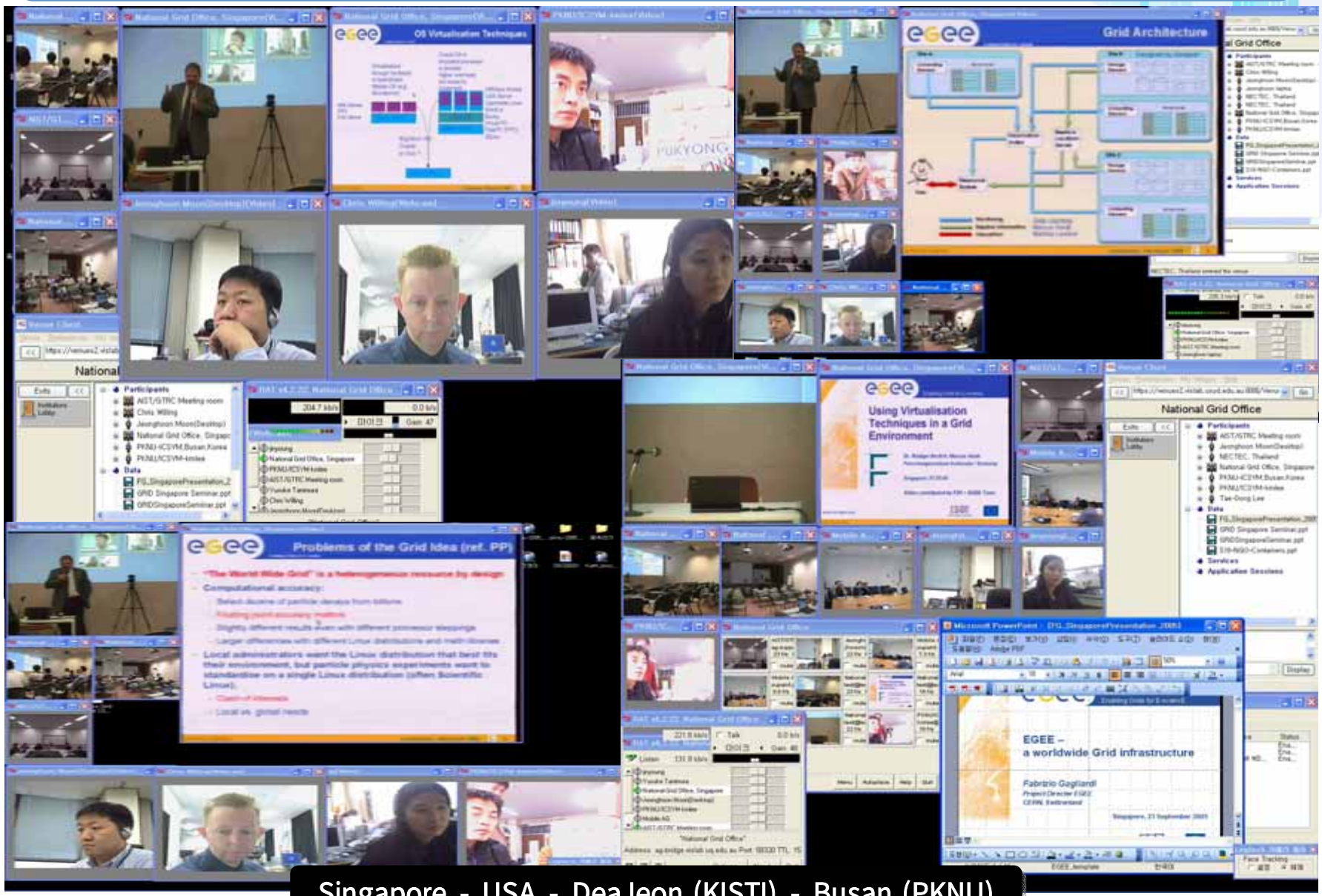
Special lecture on “Head Hunting” by Samsung Group 2005. 3. 17

Korean Medical Society Annual Meeting 2005. 05. 14.
Chosun Hotel (Seoul) – Medical school, PNU (Busan)



2006. 01. 22.~26. 21th APAN meeting (Tokyo)

2006. 02. 07. Singapore National Grid Workshop



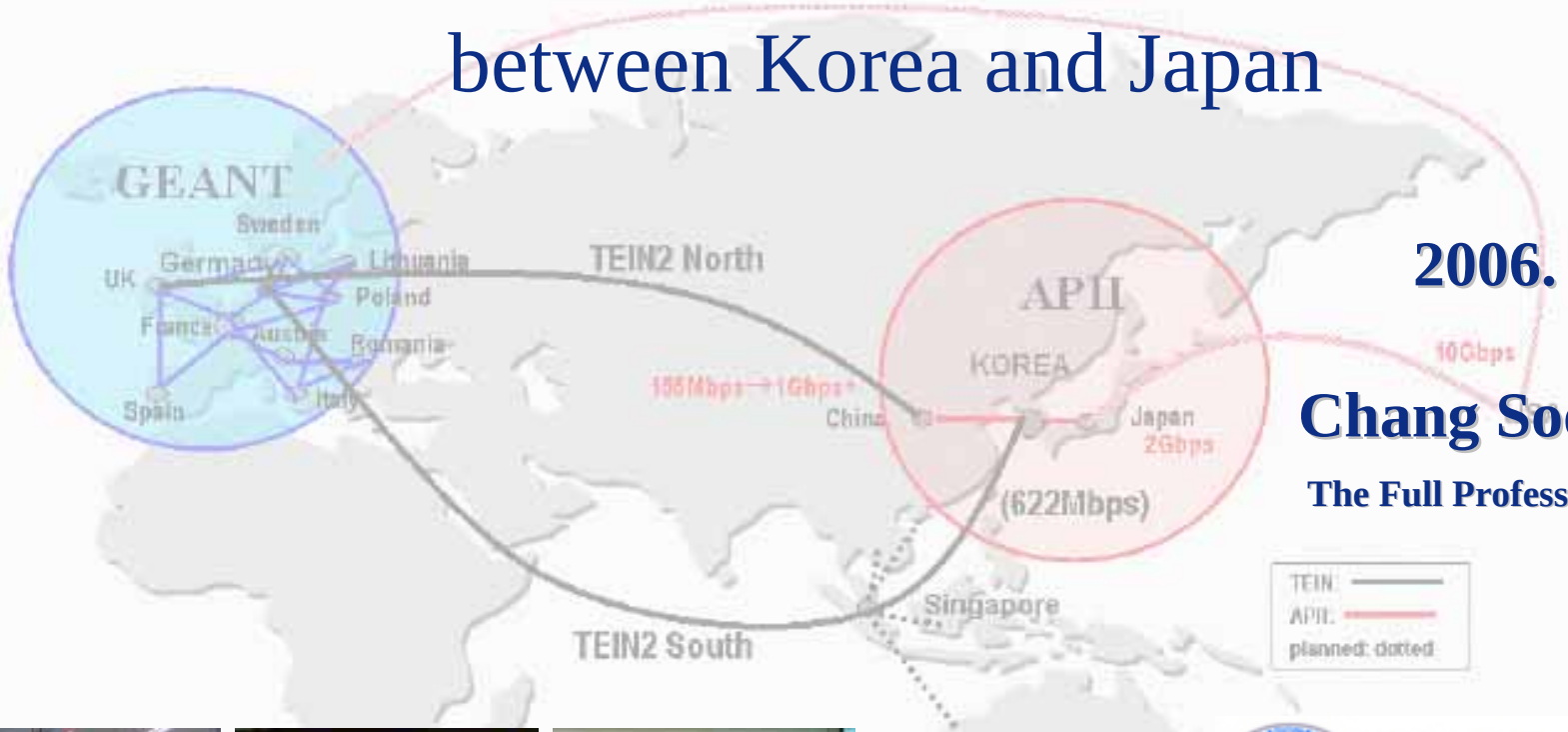
Singapore - USA - DeaJeon (KISTI) - Busan (PKNU)

2006. 02. 16. CATER Meeting on Research Proposal

Seattle (United States) – Busan (Korea)

2006. 03. 30~31. Evaluation of Proposal by CATER

A Research on the Construction of a Test-bed for Fostering International Experts between Korea and Japan



2006. 11. 16.

Chang Soo Kim

The Full Professor, PKNU

Access Grid

Video Conference System

Remote Education by Real-time

부경대학교 PUKYONG NATIONAL UNIVERSITY

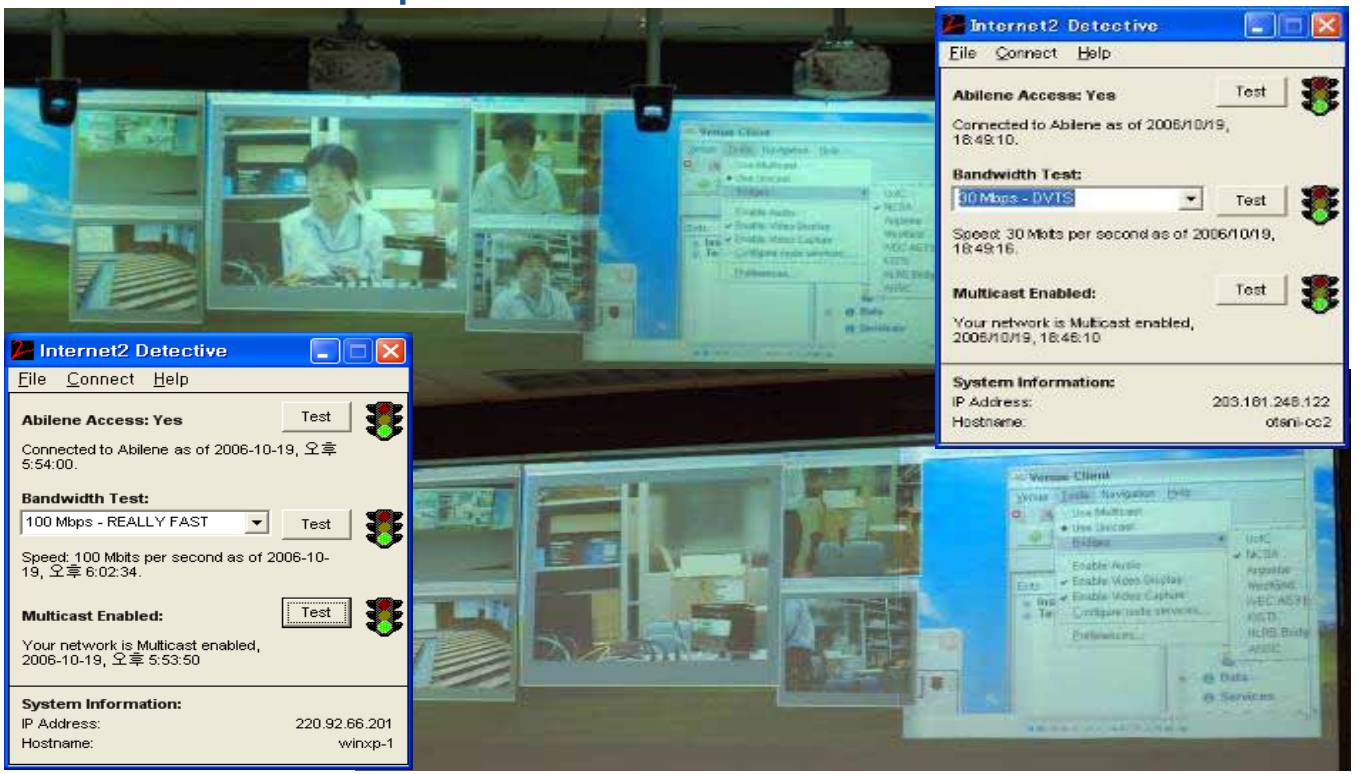
Saga University

KISDI 정보통신정책연구원 KOREA INFORMATION STRATEGY DEVELOPMENT INSTITUTE

III. Implementation and Testing (Cont'd)

- Remote Video Conference in Education between Korea & Japan

5th Attempt



- **Date : October 19, 2006**
- **Room : International Conference room in 4th Building in PKNU**
  International Conference room in Saga Univ.
- **Goal : Multicast Test**

III. Implementation and Testing (Cont'd)

➲ Remote Video Conference in Educationbetween Korea & Japan

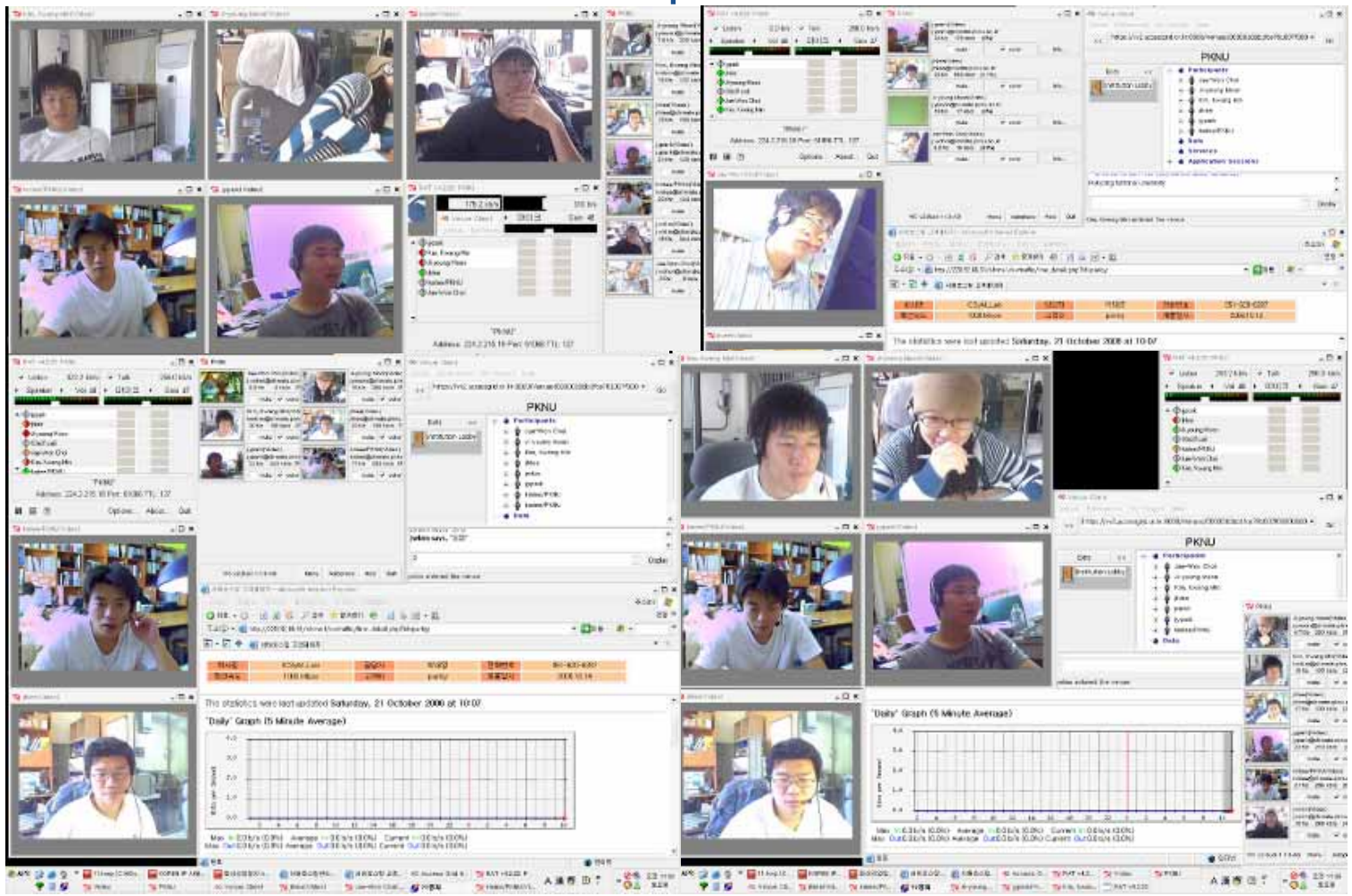
6th Attempt

- **DATE : October 23, 2006**
- **ROOM: International Conference room in 4th Building in PKNU**
  International Conference room in Saga Univ.
- **Goal : Measuring the traffic data by MRTG**

III. Implementation and Testing (Cont'd)

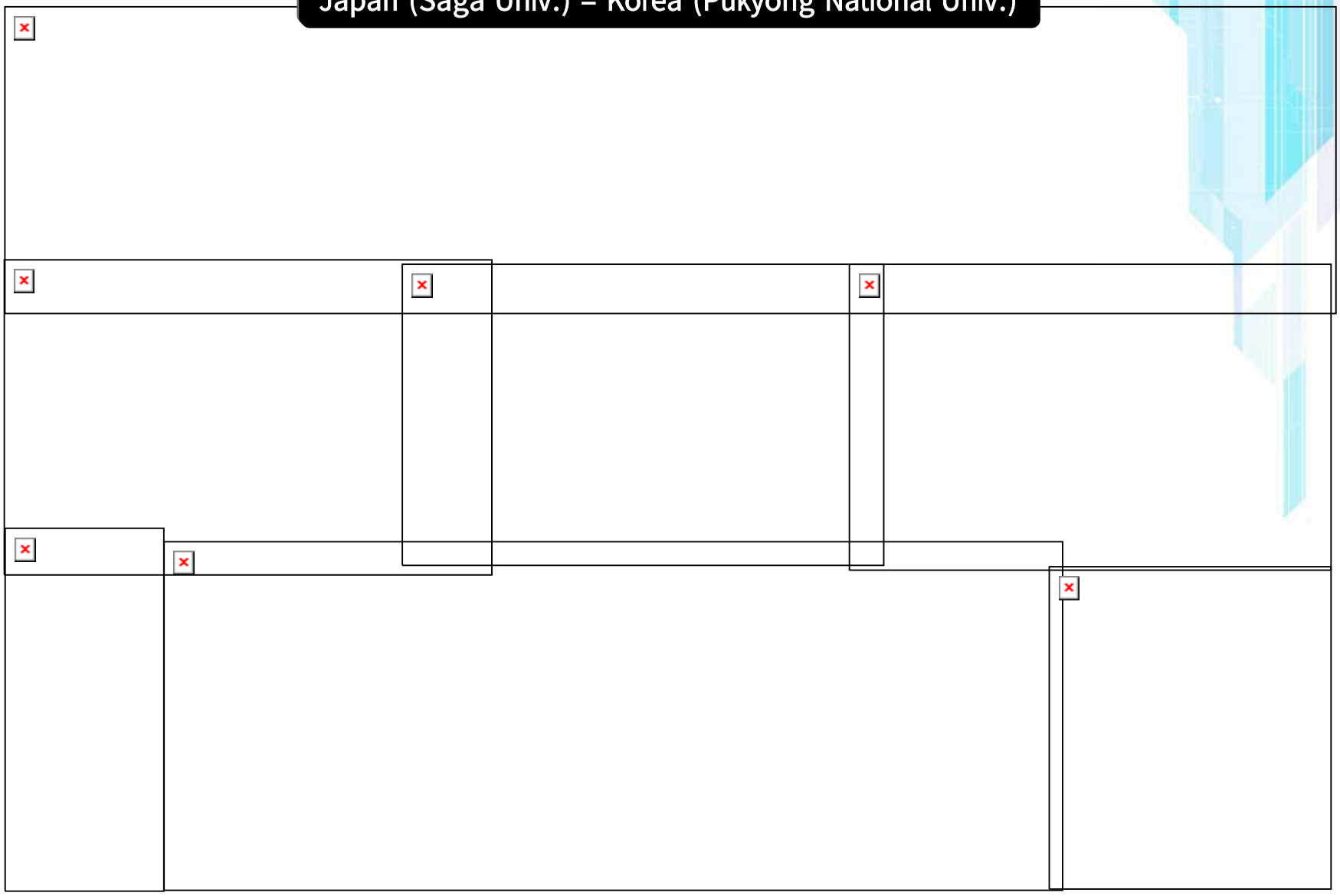
- Remote Video Conference in Educationbetween Korea & Japan

7th Attempt [10/21]

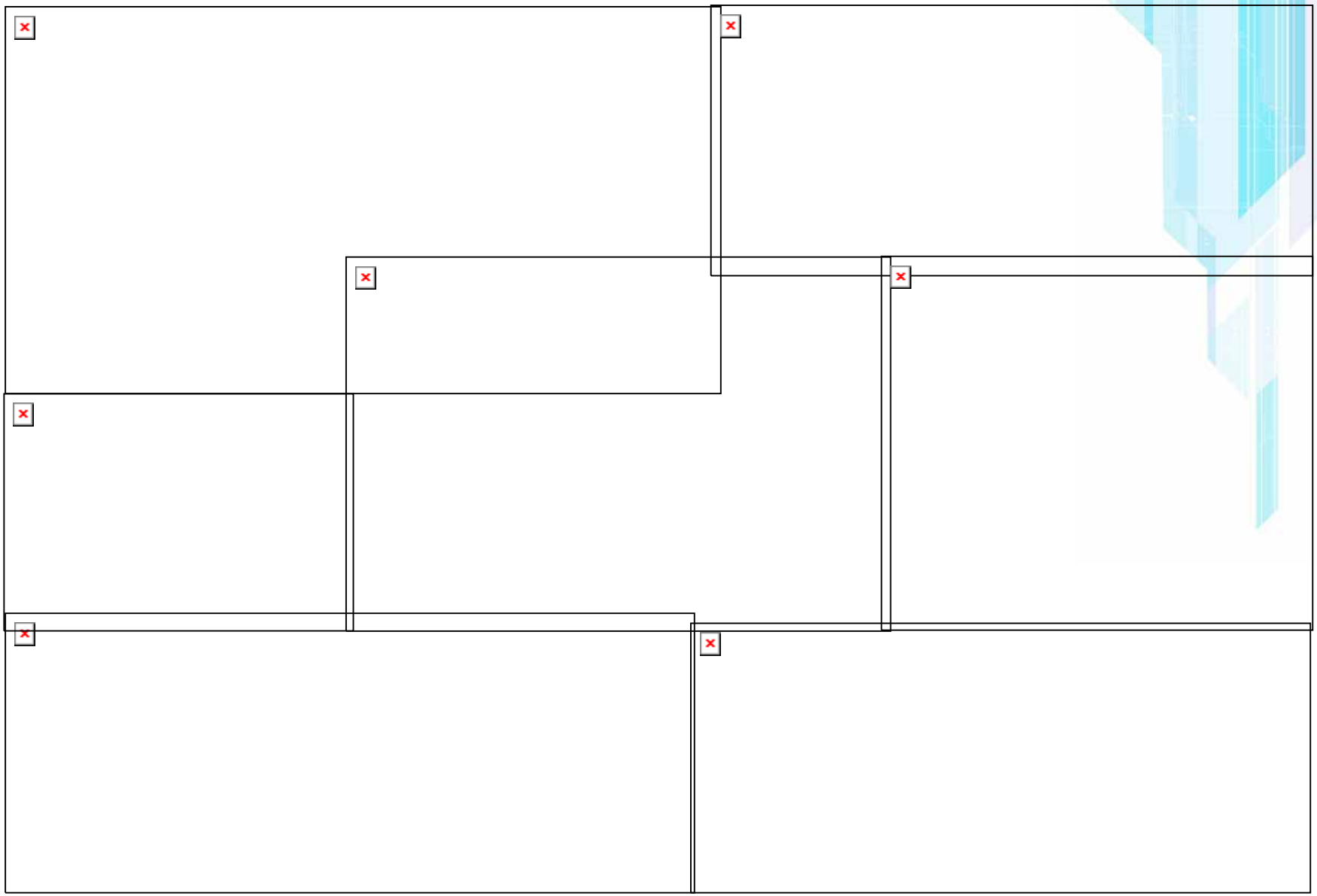


2006. 10. 25. Virtual Lecture by Japanese Chief Consulate at Busan

Japan (Saga Univ.) – Korea (Pukyong National Univ.)

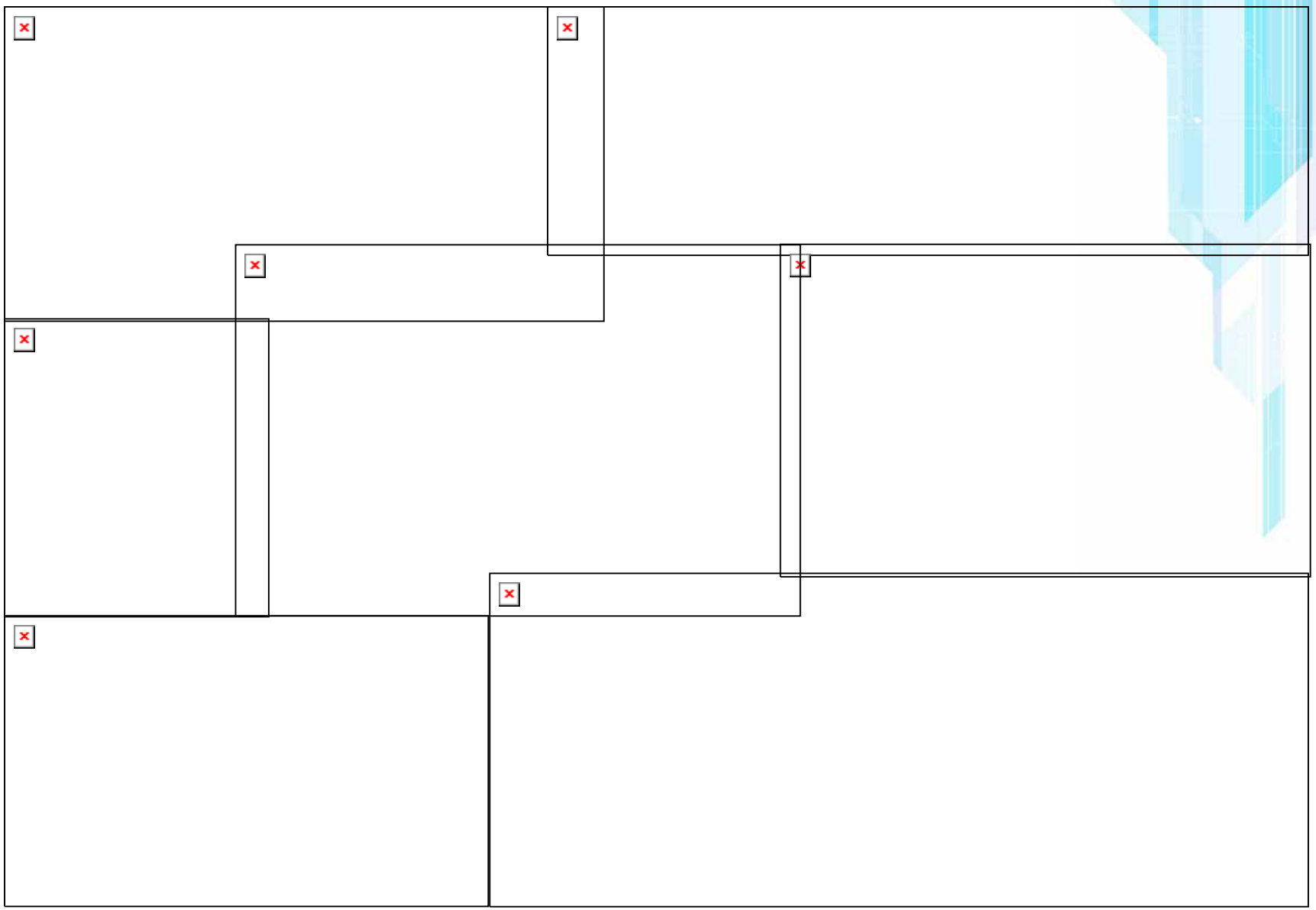


2006. 11. 15. 12th ANW

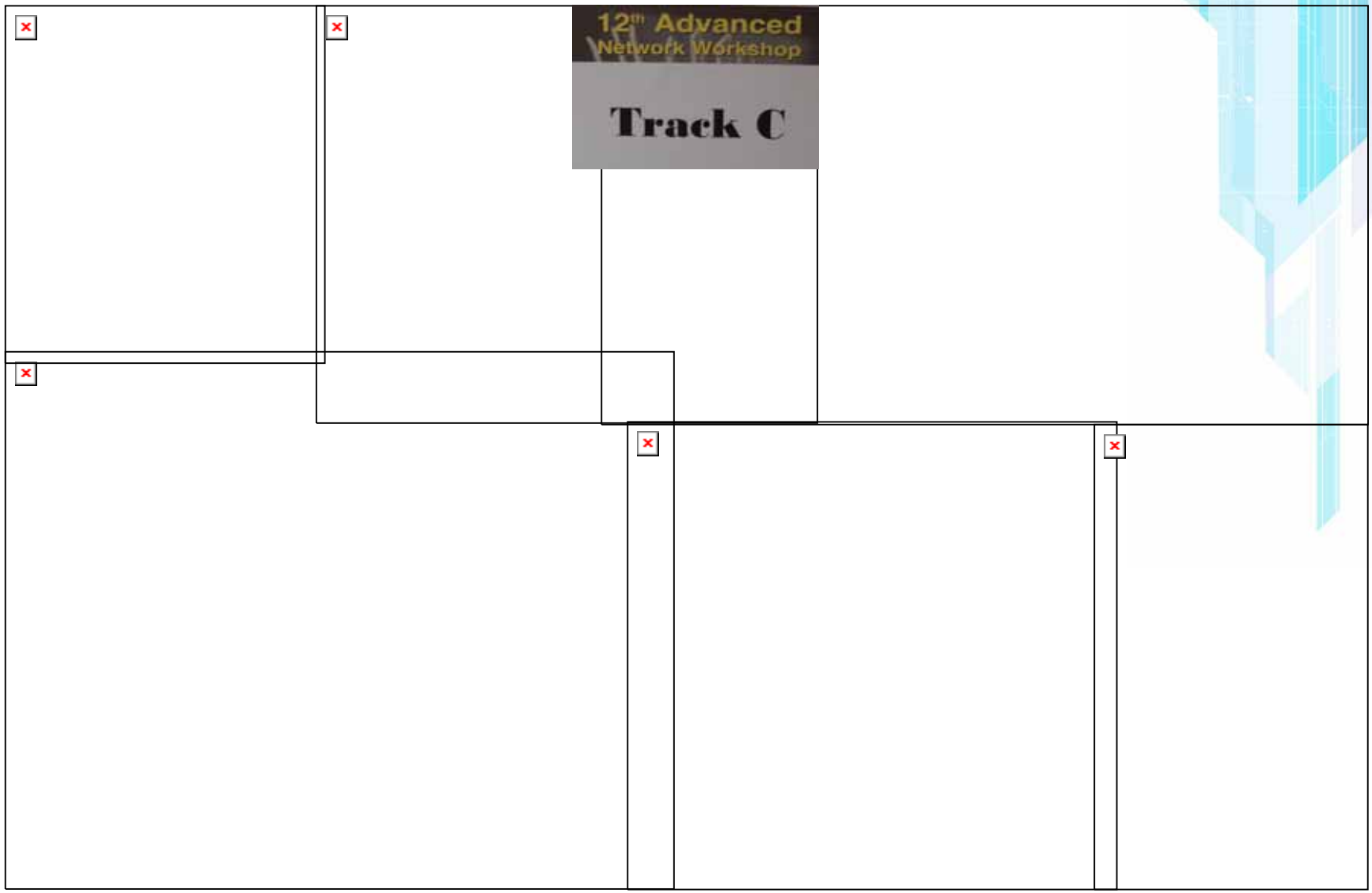


2006. 11. 16. 12th ANW

2006. 11. 17. KOQUA Annual Meeting, Ansan, Korea



2006. 11. 15. Implementation Plan of AG System at ANW



CATER's AG Application Plan

1. Enhancement of AG system among major univercities

- **Technical Support to open "virtual Lab"**
- **Provide "Polycom"**
- Encourage presentation with the use of AG system
- On-line evaluation of proposal & result by CATER

2. Open an ubiquitous lecture for FAS

- **AG System, Web Operating System, FAS**
- **Committee for collaborative lecture among universities**
- **CATER Data Grid Portal**

3. Set-up cyber-infrastructure for Earth system study

- **IT Tech. to Atmospheric Sciences**
- Science 2.0 environment for Atmospheric Sciences
- Set-up cyber-infra for Earth System Science

감사합니다!