

Medical Applications in GLORIAD Network

(Developing User Community in Medical Area)

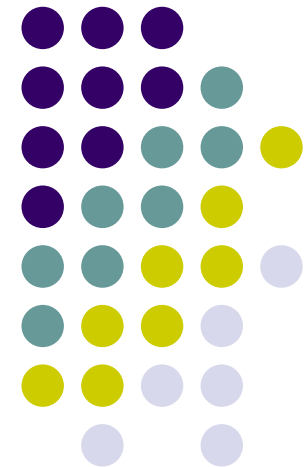
2006 Gloriad-KR Workshop

7th Dec 2006

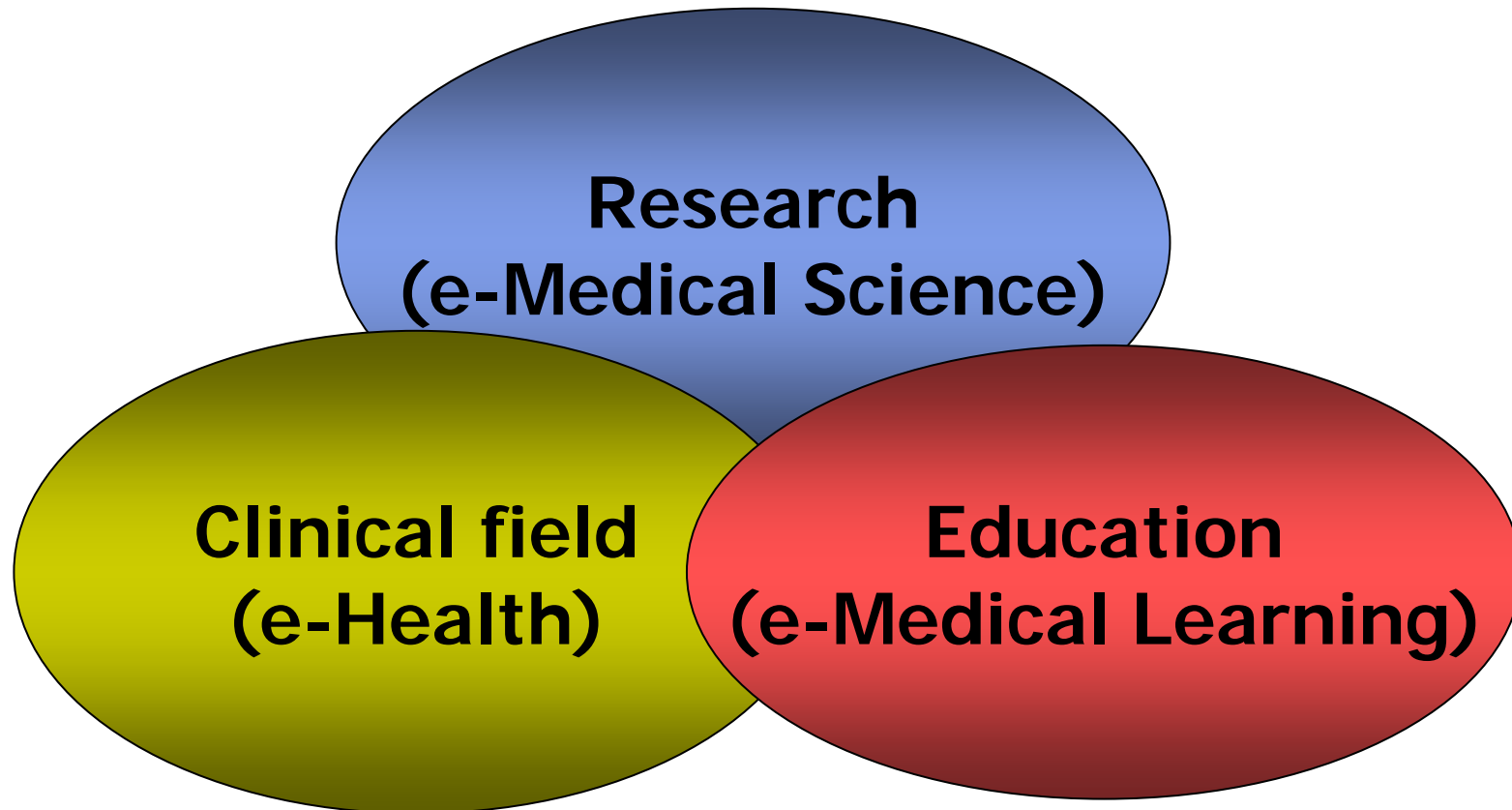
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National Cancer Center

<http://www.ncc.re.kr>



Areas of Application for Medical Field



Clinical Area (e-health)



- Clinical informatics infrastructure to share patients clinical data (Global e-health record)
- Telemedicine – international cyber clinic, global follow-up
- Telesurgery - telerobotic surgery, telementoring, telesurgical conference
- Tele-pathology, tele-radiology, tele- endoscopy etc.



Prerequisite for Users

- Network Infrastructure
 - Available advanced network – difficult
 - Intra-institutional network configuration
 - Engineer
 - Administrative support
- Enthusiasm
- Team organization for steering project
- Idea and Fund

Interesting Contents



- Tele-conference, Tele-lecture
 - Live surgery, live endoscopy, live procedure for anything
- Tele-pathology
 - Remote diagnosis and conference
- Tele-radiology
 - Web PACS remote reading

Interesting Contents



- Medical Conference
- Standardization of Surgical technique
- Haptic VR over network: Surgical Simulation, Laparoscopic surgery training system, Robotic surgery
- Virtual laboratory
- Multicenter clinical trial information infrastructure
- Biomedical information infrastructure

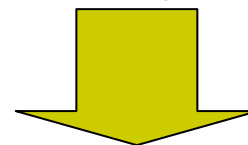


Telerobotic Surgery



Marescaux J, et al
Transatlantic robot-assisted
telesurgery 2001

155 M bps ATM
Simple Cholecystectomy (30 min)



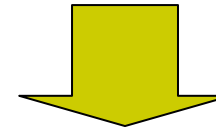
10 G Light path
More secure, stable
network
? What kind of operation

Telesurgical Conference

Laparoscopic surgery



KOREN-KJCN-JGN
DVTS
SD Quality Source



GLORIAD
AG
Real time uncompressed HD
HD Quality Source

NCC (Korea Univ. NIR) \leftrightarrow Kyushu Univ. (Computing & Communication Center, Kyushu Univ.) 2003 Nov

Telesurgical Conference



- 1 Aug. 2003 Live laparoscopic gastrectomy
- 23 Aug. 2003 Live laparoscopic gastrectomy
- 5 Nov. 2003 Live laparoscopic colectomy
- 30 Jul. 2004 Live laparoscopic colectomy
- 22 Oct. 2004 Live laparoscopic gastrectomy

NCC, auditorium
NCC, Operating room



Kyushu University,
Conference room
Operating room



Telepathology Seminar 2004.8.27-28



Kyushu University --NCC



Tele-demonstration for New Procedure

Endoscopic Ultrasound Guided Biopsy



Kyushu University --NCC

Access Grid 이용 국제 화상 세미나



1)일시: 2005년 11월 9일

2)장소: 국립암센터, KISTI, 대만, 싱가포르

4)방식: **Access Grid**

5)강의내용

-Title: Grid-based Virtual By-pass Surgery

-Speaker: Professor Peter Slood (University
of Amsterdam)

Research Collaboration infra



- Scientist to scientist or Group to Group interaction
- Mentor to student interaction in distributed working environment

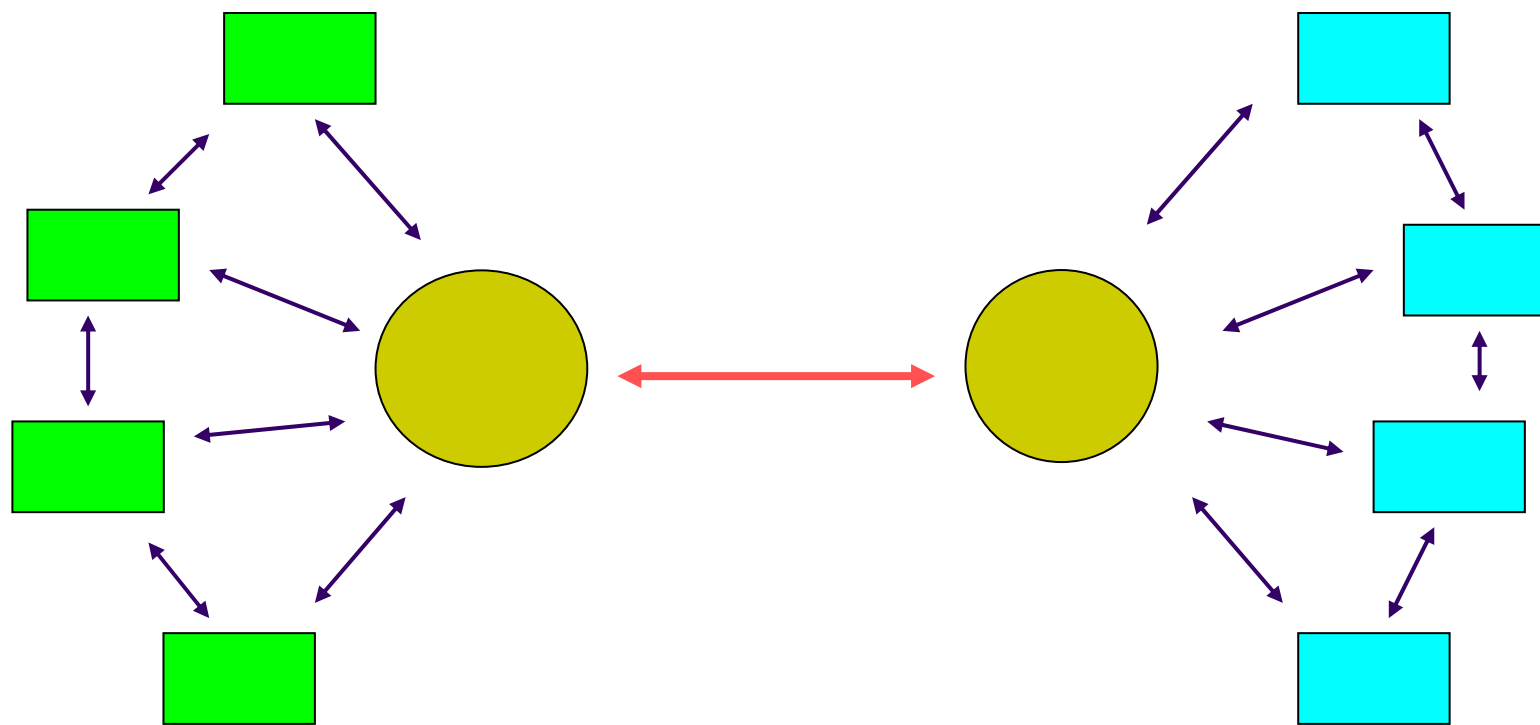
Major Bottle-necks for e-Collaboration



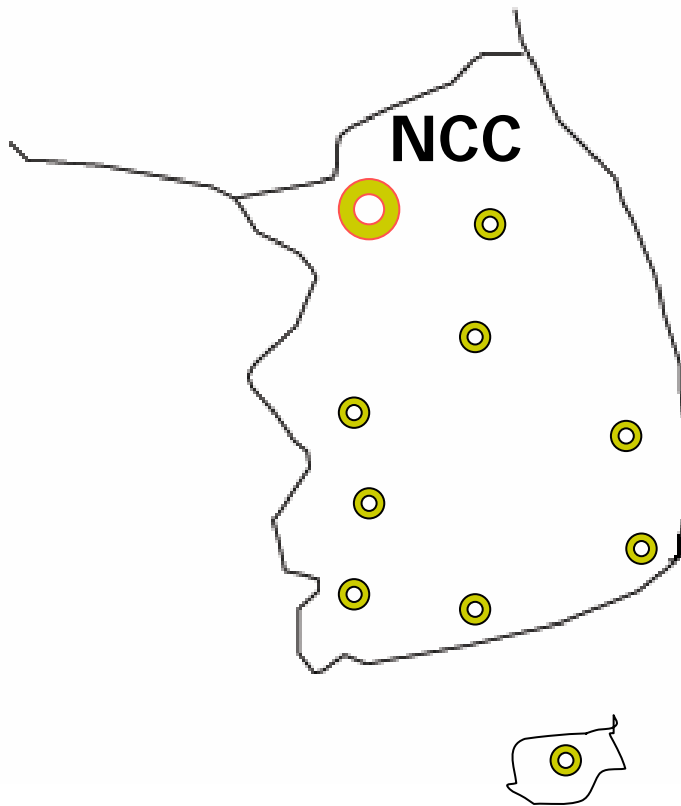
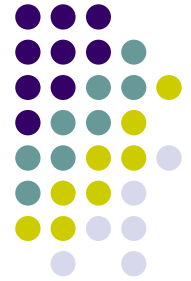
- Widening Network infrastructure
we need to change of way of thinking!
- Video conferencing infrastructure
Access Grid, less expensive and convenient
- System for collaboration & sharing resources
Strategic drive, activation of expert groups



The Core Should Be a Core



National Cancer Center Information Network



9 Regional Cancer Centers

- Clinical
- Education
- Research
- National Strategy for prevention

Candidate Network Groups



- National Cancer Center Network
- Seoul National University Hospital Network

Seoul National University Hospital Information Network (SNUHIN)



- Network Infrastructure
 - Just completed connection
 - KOREN & KREONET
- Task Force Team was organized
 - Jul 2006, the 1st meeting
- Roadmap is now under designing



Composition of TFT (SNUHIN)

- **Leader:** Director, SNUH Division of Education and Research
- **Facilitator:** advisor, Division of education of Training ,NCC (YW Kim)
- **Members:** Doctors, administrative staff, network engineer, multimedia engineer, director of NCA, KOREN and KREONET NOC operating engineer



Draft Plan of SNUHIN

1. Upgrading current Polycom teleconference to DVTS and AG system
2. Live surgery conference system development
DVTS and HD later
3. Research Collaboration environment development
AG rooms



Conclusion

- GLORIAD could be a huge playground for the ideas in diverse medical field
- Developing good model might be important to ignite diverse utilization
- Strategic long-term far-sighted support for human-oriented project (not a commercial, politics, or nationalism oriented) is needed
- Network infrastructure should be enlarged to support needs of user groups
- Organized administrative, engineering support for international experts should be developed
- Core University Program should expand to make visible active groups in each side