

Asia Pacific Information Infrastructure workshop 2014

Medical area activity progress in Korea

(A Field Trial Research on Global Networked Medical e-Learning
using Domestic ICT Equipment and Systems)

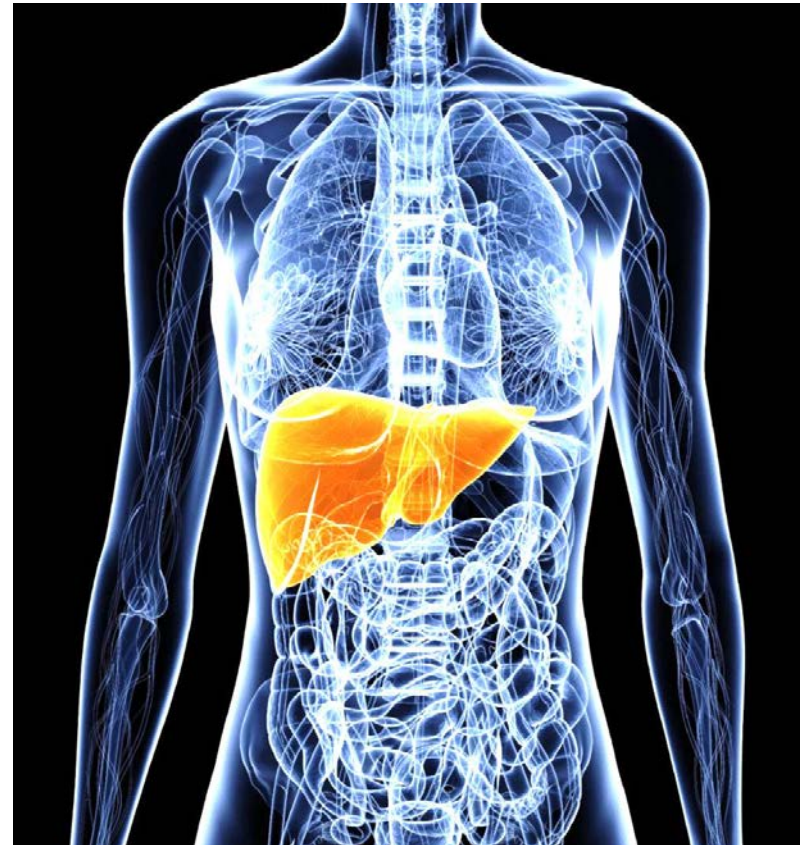


2014. 10. 8

Seoul National University Bundang Hospital
Junghun Lee, Ho-Seong Han,
Mijin Kim, Inho Lee

Agenda

- I. The Challenges
- II. MIS
- III. Share the knowleage
- IV. Digital Convergence



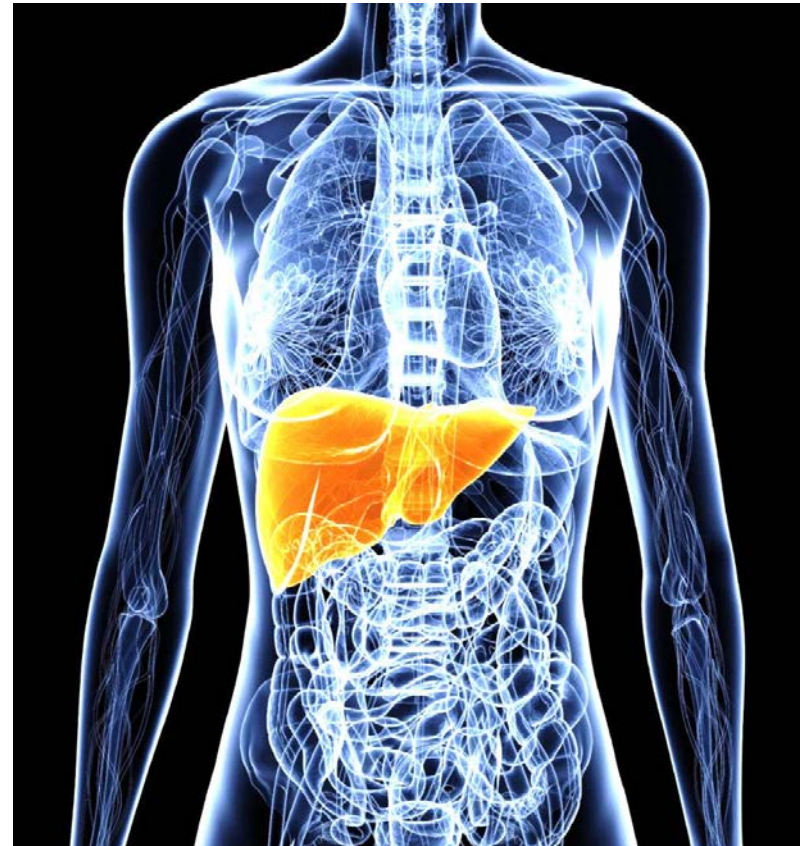
Agenda

I. The Challenges

II. MIS

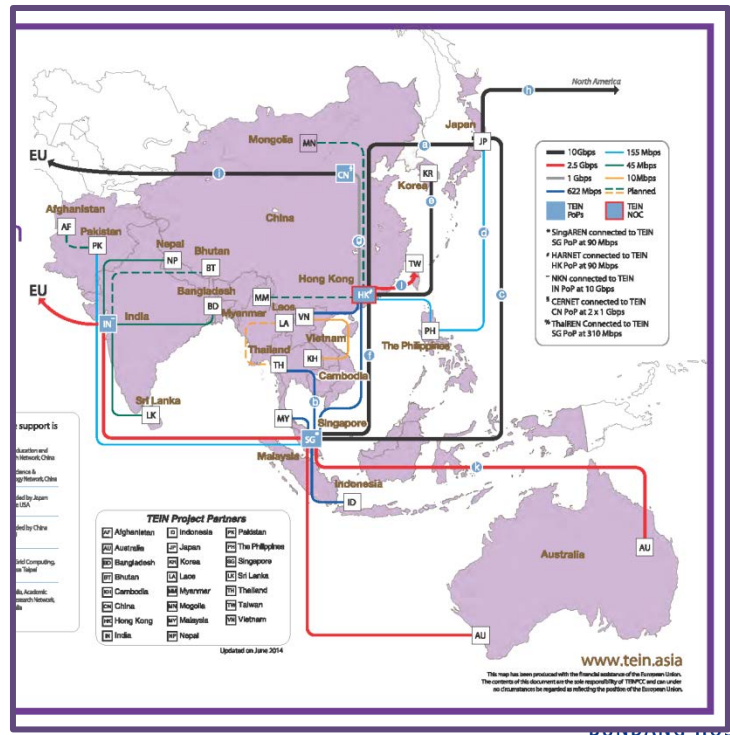
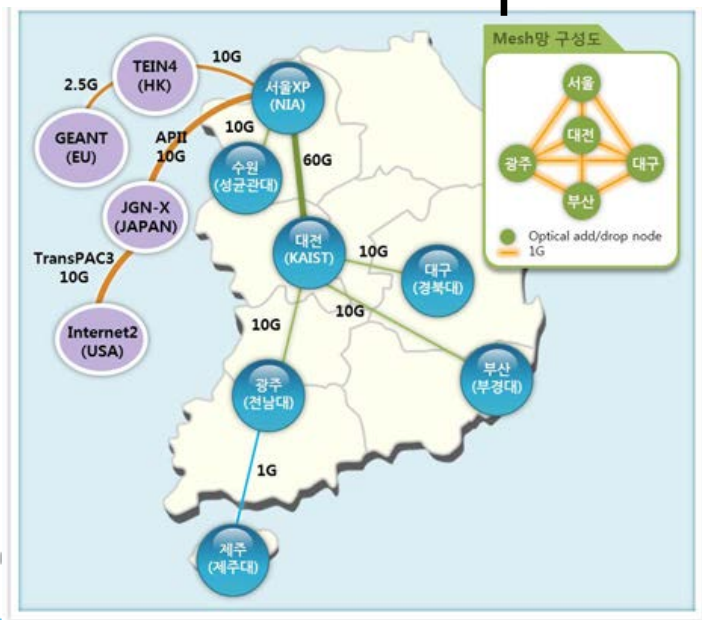
III. Share the knowleage

IV. Digital Convergence



The 10year's challenges for telemedicine

- Traditionally telemedicine has been held back by the bandwidth requirements needed to transmit high-quality images between hospitals.



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MIS

“Our hospital is a pioneer in Minimally Invasive Surgery (MIS), which helps patients recover faster and leaves a much smaller scar than traditional techniques. Through live streaming of operations we have been able to train hundreds of surgeons across Asia, without the need or cost for them to travel to Korea. This MTC activity has widened the benefits MIS brings to a much larger population and undoubtedly helped save lives.”

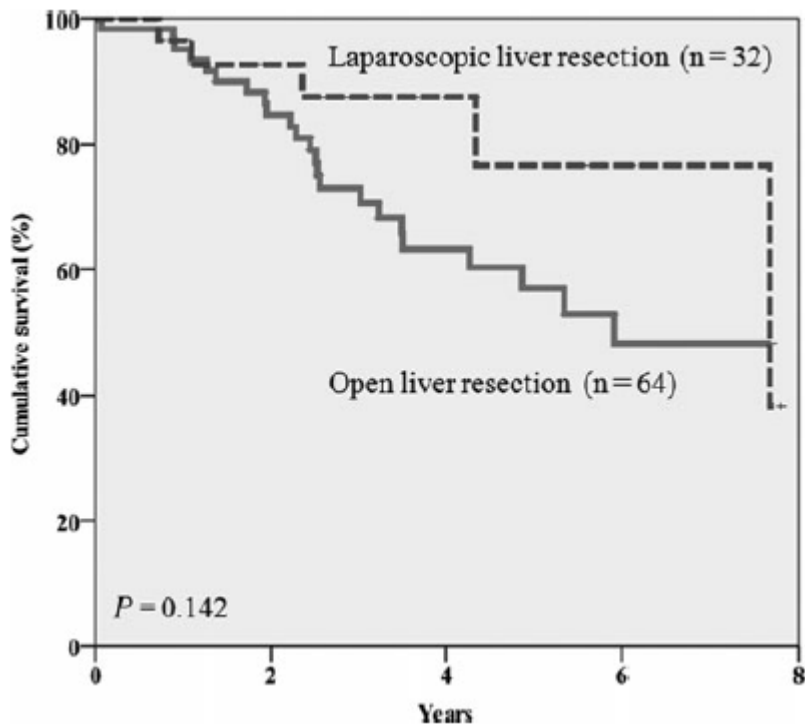
*Prof. Ho-Seong Han,
Vice Director of Seoul National University
2014.8.20, www.tein.com*

Long-Term Survival Analysis of Pure Laparoscopic vs. Open Hepatectomy for HCC in Patients with Cirrhosis

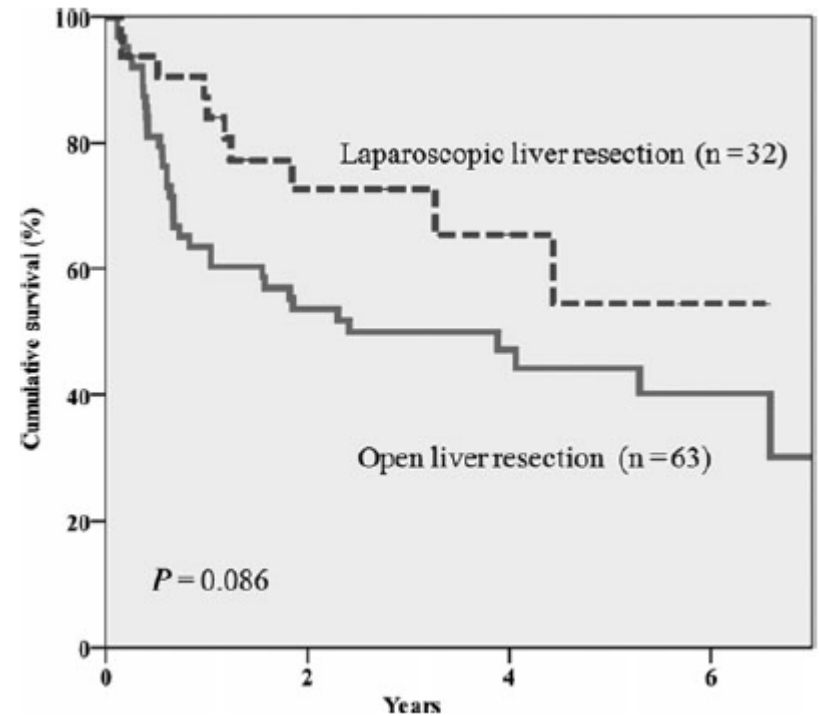
	Open Group (n = 64)	Laparoscopic Group (n = 32)	<i>P</i>
Blood loss (L)	0.3 (0.05–2.7)	0.15 (0.01–1.46)	0.001
Blood transfusion	3 (4.7%)	0 (0%)	0.534
Blood transfusion (L)	0 (0–1.6)	0 (0%)	0.216
Hospital death	1 (1.6%)	0 (0%)	1
Hospital stay (d)	7 (4–42)	4 (2–16)	<0.0001
Operation time (min)	204.5 (67–705)	232.5 (70–450)	0.938
Patients with complication	12 (18.8%)	2 (6.3%)	0.184

Long-Term Survival Analysis of Pure Laparoscopic vs. Open Hepatectomy for HCC in Patients with Cirrhosis

Overall survival



Disease Free Survival



Cheung TT, et al. *Ann Surg* 2013

International Training Program (2006~2014)

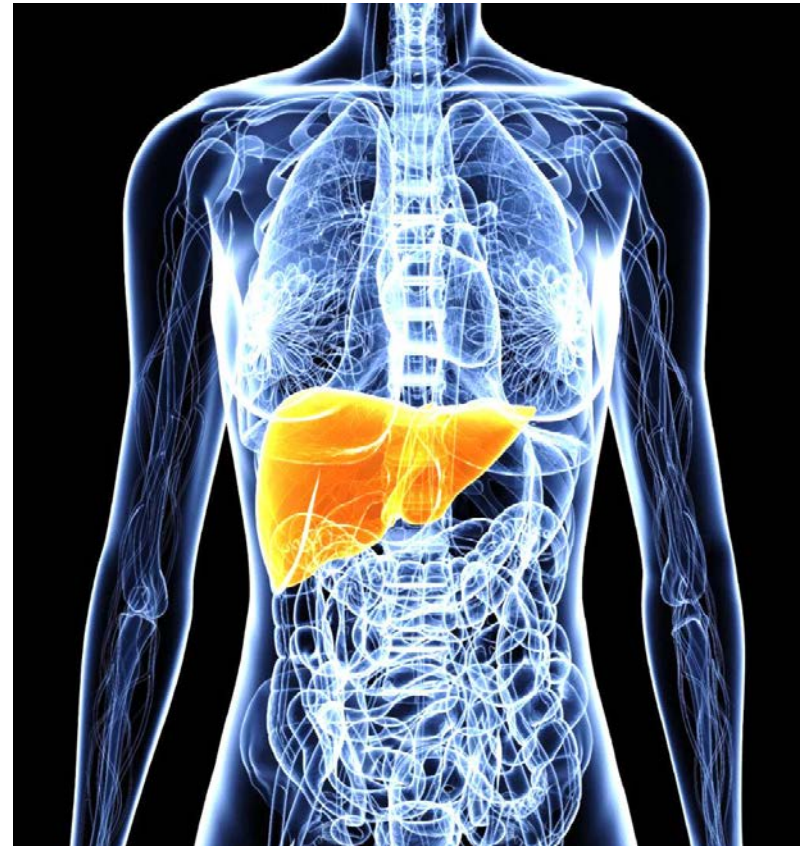
The Total Number of doctors

160

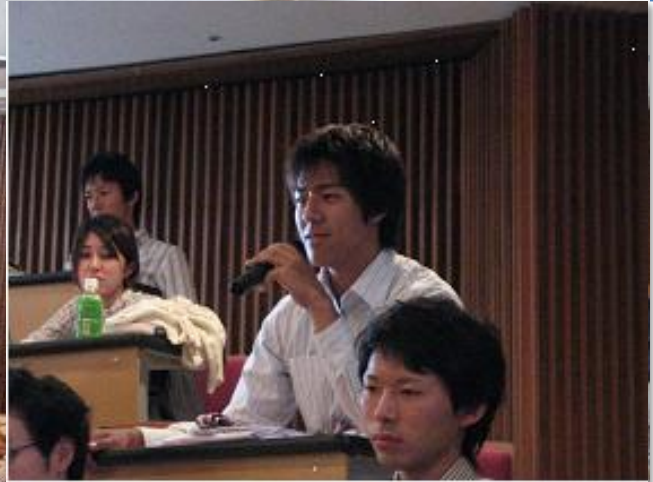
International Doctors who participated in SNUBH training programs :
Japan(39), China(27), France(1), Italy(1), UK(3), USA(7), Russia(13), Germany(2),
Sweden(5), HongKong(1), Singapore(8), Taiwan(5), India(8), Uzbekistan(5),
Kazakhstan(7), Ukraine(2) Thailand(14), Malaysia(1), Philippines(5), Vietnam(1),
Nepal(2), Ecuador(1), Bosnia(2)

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Share Knowledge and promote standardization in Medical field



Video

- New surgery
- Telemedicine
- English

Demostration

Bundang H

Kyushu U

Tele-Education for Medical Student in Kyushu University

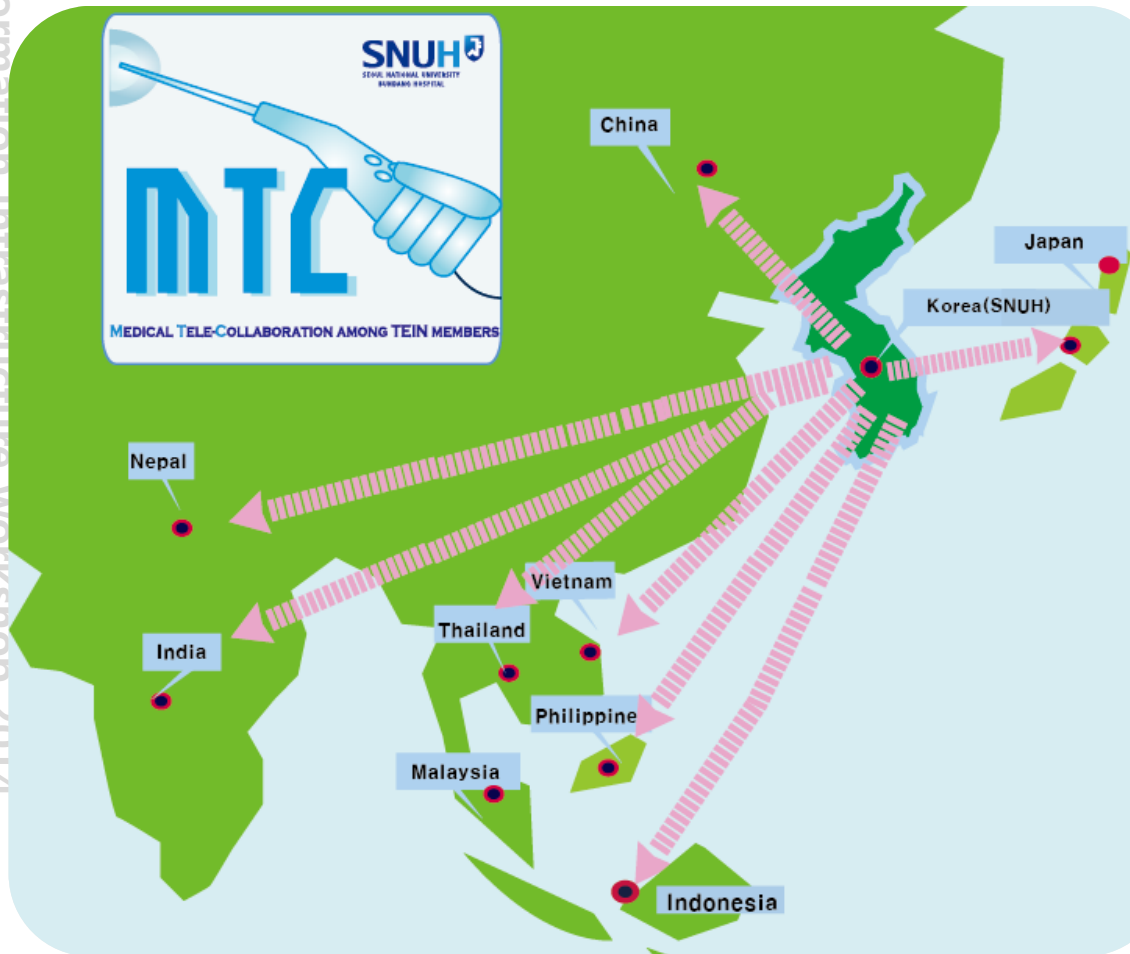


May 13 2009

Spreading best practice

- Streaming of examinations using endoscopic techniques (which involves a small camera being inserted into the patient) in order to diagnose and treat gastric cancers at an early stage - without full surgery, thus reducing patient risk and cost, as well as saving lives across the region.
- The technique of minimally invasive endoscopic surgery, which is being pioneered by SNUBH, is being taught through telesurgery, helping spread best practice in a scalable manner.

MTC Project (with 9 countries)



MTC = SHARE + COLLABORATION + INNOVATION

MEDICAL TELE-COLLABORATION AMONG TEIN MEMBERS
2012.7.05 ~ 2012.12.31
SEOUL NATIONAL UNIVERSITY BUNDANG HOSPITAL

MTC PROJECT

9 ASIAN TEIN COUNTRIES

LIVE SURGERY
TELE-EDUCATION
TELE-COMMUNICATION

CHINA
INDIA
INDONESIA
JAPAN
MALAYSIA
NEPAL
PHILIPPINES
THAILAND
VIETNAM

- 1) HEPATO PANCREATO BILIARY SURGERY
- 2) STOMACH CANCER
- 3) COLORECTAL CANCER
- 4) BLOOD VESSEL SURGERY
- 5) BREAST CANCER SURGERY
- 6) PEDIATRIC SURGERY
- 7) THYROID SURGERY
- 8) ROBOTIC SURGERY
- 9) OBESITY

What is MTC Project!

- Our project name is MTC. The MTC's mean is Medical Tele-Collaboration among members.
- We are going to connect our hospital to member of countries and have regular Live Surgery, Tele-education and Tele-communication.

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Project's Goal

- Construct adequate environment for advanced researched network and accomplish Tele-medical education by ICT equipment (Made in Korea).
 - Produce Tele-medical education contents about Minimal Invasive Surgery(Laparoscope and endoscope)
 - Co-work in field of related with cooperated hospitals
 - Sign for MOU (Memorandum Of Understanding) for fluent process.

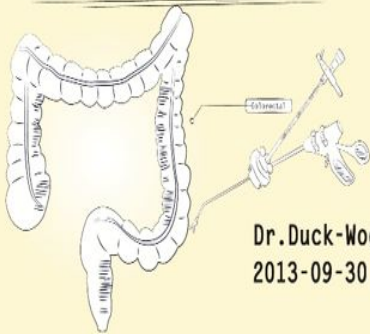
Detailed Promotion Table

Mile stone's name	Main contents
Sign MOU for global collaboration	Provide medical education contents about Live surgery and Tele-lecture.
Check Test-best construction between global cooperated institutions with Korean ICT equipment.	Contract of adequate equipment for international cooperated institutions for the project and study.
	Complete setting up and testing Korean ICT equipment
Medical education network interlock and test with NREN and TEIN network	Complete interlock test with cooperated institution.
Produce and transmit HD Medical education contents	Produce video contents of MIS
	Transmit test of real time live surgery video contents
Tele-medical education program with Diagram Test Network	Start transmitting produced contents between cooperated hospitals.
Verify, figure out advantage & disadvantage and improvement of Korean ICT equipment.	Assessment of Korean ICT equipment.
Prepare bridgehead of Korean ICT equipment's exportation.	Continuous cooperation between hospitals, countries, NREN and etc

Education Contents

SNUH SEOUL NATIONAL UNIVERSITY BUNDANG HOSPITAL

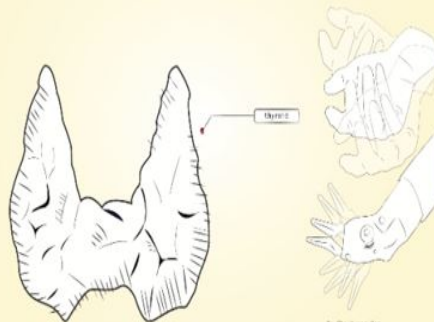
Laparoscopic colorectal resection



Dr. Duck-Woo Kim
2013-09-30 10:00am

SNUH SEOUL NATIONAL UNIVERSITY BUNDANG HOSPITAL

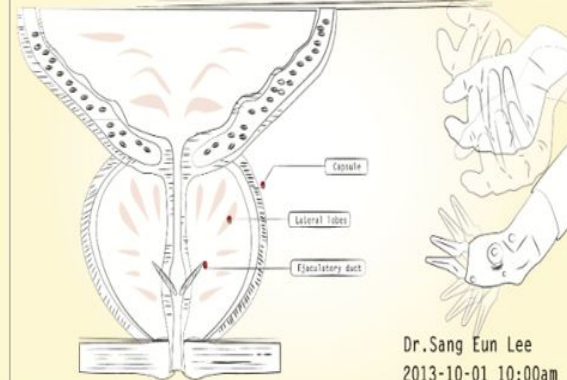
Robot Thyroidectomy



Dr. Ohn Kyung Yim
2013-09-28 12:30pm

SNUH SEOUL NATIONAL UNIVERSITY BUNDANG HOSPITAL

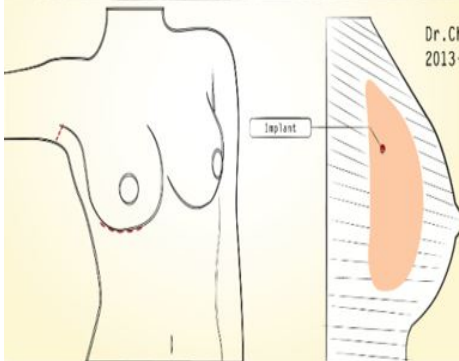
Robot Prostatectomy



Dr. Sang Eun Lee
2013-10-01 10:00am

SNUH SEOUL NATIONAL UNIVERSITY BUNDANG HOSPITAL

Breast augmentation



Dr. Chan Yeong Heo
2013-10-02 3:00pm

SNUH SEOUL NATIONAL UNIVERSITY BUNDANG HOSPITAL

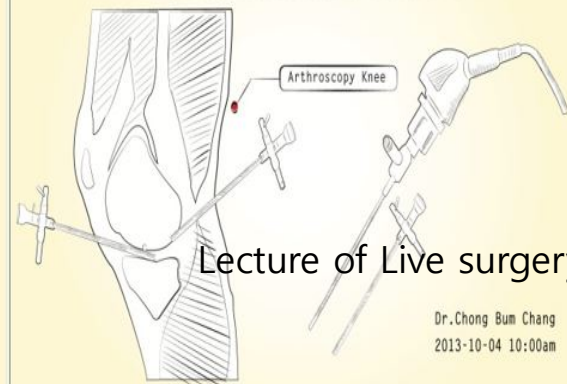
Laparoscopy Hysterectomy



Dr. Yong Beom Kim
2013-10-02 3:00pm

SNUH SEOUL NATIONAL UNIVERSITY BUNDANG HOSPITAL

Arthroscopy Knee



Lecture of Live surgery

Dr. Chong Bum Chang
2013-10-04 10:00am

Laparoscopic Anatomical S5 Segmentectomy by the Glissonian Approach

Keun Soo Ahn, MD, Ho-Seong Han, MD, PhD, Yoo-Seok Yoon, MD, PhD,
Jai Young Cho, MD, PhD, and Ji Hoon Kim, MD

- **Totally laparoscopic mono-segmentectomy of S5 is possible with Glissonian approach.**

Laparoscopic S4 segmentectomy

Laparoscopic Extended S4 Segmentectomy



Ho-Seong Han, Yoo-Seok Yoon, Jai Young Cho, Keun Soo Ahn, Ji Hoon Kim

Department of Surgery

Seoul National University Bundang hospital, Korea

Domestic ICT Equipment and Systems


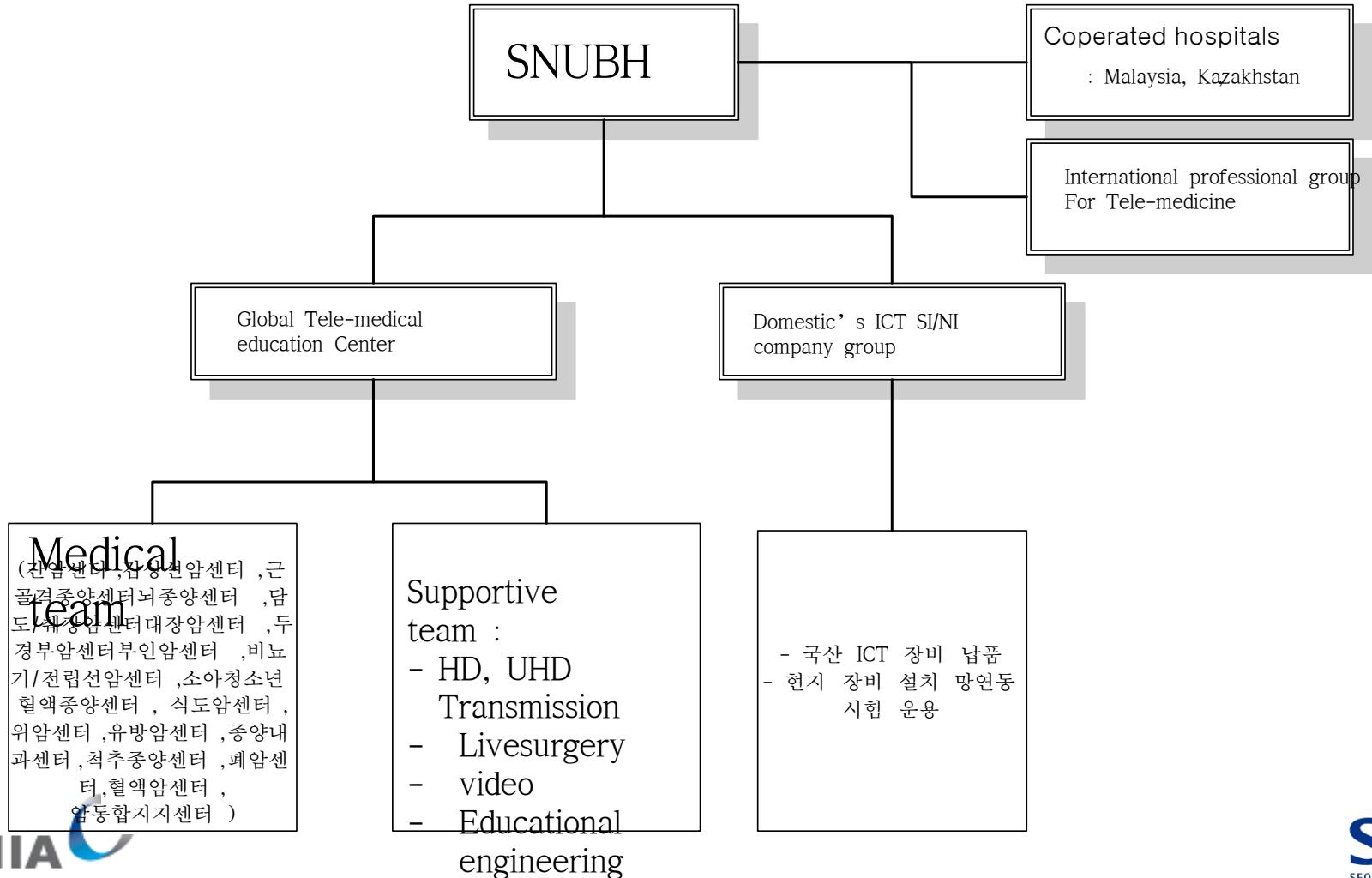
구분	V7502(Bancbone)	V2624G(Workgroup)	H160N(wifiAP)	M300(SSLVPN)
Image				
Switching Fabric	• 192Gbps	• 56Gbps	상 세 기 능	<ul style="list-style-type: none"> • Memory : 4GB • HDD : 500GB • Interface : 1000B-TX *4Port • DRAM Memory : 512MB • Power : AC100~240V (Single) • 최대동시접속사용자 : 300User • 최대CCTV망 : 30EA • Diminsions : 438 x 292 x 44 • 암호알고리즘 선택 기능(AES256, ARIA, SEED) • 웹 서버 인증서 등록 및 생성 기능 • 사용자 원격 지원 • 가속 기능(FTP, Web) • Site-To-Site 기능 • 서버별/그룹별/사용자별 감사 기록 • 다양한 사용자 운영체제 지원 • Mobile 지원(Smartphone, CCTV, ATM, POS 등) • Dual WAN(Multi WAN) 기능
Switching Throughput	• 144 Mpps	• 41.6Mpps		
Flash Memory	• 64MB	• 32MB		
DRAM Memory	• 512MB	• 128MB		
Interface	• 2 slot 제공(10/100/1000Base-TX or 100/1000Base-X or 10G)	• 10/100/1000BASE-T(RJ-45) : 24 Port(service) • 1000Base-X SFP : 4 Port(uplink)		
MAC Address	• 최대 512K	• 16K		
VLAN	• 4K 지원	• 4K		
Dimensions (W x H x D)	• 432mm x 43mm x 340mm (19인치 랙 타입)	• 440mm x 44mm x 326mm (19인치 랙 타입)		

Table of Cisco vs Dasan

제조사	DASAN V2624G	Cisco 2960-24TC-L	alcatel OS6300
Switching Fabric	56Gbps	32Gbps	48Gbps
Throughput	41.6Mpps	35.7Mpps	35.7Mpps
Flash Memory	32MB	32MB	16MB
MAC Address	16K	8K	16K
VLAN	4K	255	255
IGMP Snooping	V1/v2/v3	V1/v2/v3	V1/v2/v3
QoS	SP/WRR/DRR	SP/WRR	SP/WRR
SNMP	V1/v2/v3	V1/v2/v3	V1/v2/v3
CLI/콘솔 포트	지원	지원	지원
포트 미러링	지원	지원	지원

제조사	DASAN H160N	Cisco AIR-SAP1602E-K-K9
무선랜 규격	802.11a/b/g/n	802.11a/b/g/n
업링크 포트	10/100/1000Bast-T (PoE 지원)	10/100/1000Bast-T (PoE 지원)
RF	2.4GHz & 5Hz	2.4GHz & 5Hz
소비전력	23W	12.9W
안테나	2*2 MIMO 내장형 안테나, 2.4GHz * 2 5GHz * 2	2*2 MIMO, 안테나 별매
콘솔포트	RS-232	RJ-45

Composition



MOU

Country	Hospital
Malaysia	<ol style="list-style-type: none">1. University Malaya Medical Centre with MYREN2. Sunway Medical Centre
Kazakhstan	Medical Center of the President's Affairs Administration of the Republic of Kazakhstan with CAREN

MOU

Memorandum of Understanding for Improvement of healthcare and ICT areas between Sunway Medical Centre of Malaysia and Seoul National University Bundang Hospital of Republic of Korea.

Sunway Medical Centre of Malaysia and Seoul National University Bundang Hospital of the Republic of Korea, Gyeonggi Provincial Government represented by Sunway Medical Centre of Malaysia (hereinafter referred to as the "Party") have agreed to work together for the development of healthcare and ICT areas in both regions on the basis of mutual trust and cooperation.

1. Parties will cooperate on the basis of mutual interest in the field of health as the basis for development of the two territories.

2. The Party shall strive to realize the following schemes for efficient cooperation in the areas of healthcare and medical treatment:

- Personal exchanges of specialists related to healthcare and medical treatment and the training of medical personnel.
- Seek for practicable solution to provide the opportunity for specialists from Sunway Medical Centre for doctoral studies in order to obtain MIS certification:
- Produce and participate educational video contents for development of MIS area
- Exchange of academic information and conduction of joint research and
- Attendance in staging mutual events such as medical research, conferences, symposiums and exhibitions about MIS and tele-medicine
- Development of a telemedicine system between two institutions.

[상호협력합의각서 작성 영문 예]

상호협력합의각서

말레이시아 Sunway병원과 분당서울대학교 병원 간 보건 및 ICT 분야에 대하여

말레이시아 Sunway병원과 분당서울대학교병원(이하 "양측") 은 상호 존중과 신뢰를 바탕으로 보건 및 ICT 분야에서 '양측'간 관계발전을 위해 다음과 같이 합의 하였다

1. 상호 이해를 바탕으로 '양측'은 양국의 발전의 바탕이 된 같은 공동 노력을 할 것이다.
2. 효율적인 협력을 위해 당사자들은 다음과 같은 분야에서 협력을 한다.

*원격의료 및 교육분야의 전문가 교환 및 의료인 연수 가능성 모색

*최소침습수술에 대한 원격 교육 과정 개설 가능성 모색

*최소침습수술분야 발전을 위한 교육 영상자료 제작 및 지원

*보건분야 의료서비스 수준 향상을 위한 의료기술 및 정보 교류

*ICT 분야 발전을 위한 한국장비 보급과 기술 정보 교류

*원격의료 분야 장비 보급과 기술 정보 교류

*양기관간 원격의료시스템 연구

*공동 국제학회 개최 가능성 모색

*상호지원을 하여 최소침습수술 및 원격의료관련 학회 개최 및 당사자들이 주최하는 심포지엄, 전시회 등 참석

3. 양측이 작성한 이 협약서는 법적 구속은 없다.

4. 말레이시아 Sunway병원과 에서 한국어, 영어로 된 각 2개의 원본에 말레이시아 Sunway병원과, 분당서울대학교 병원 양측이 서명하고 보관한다.

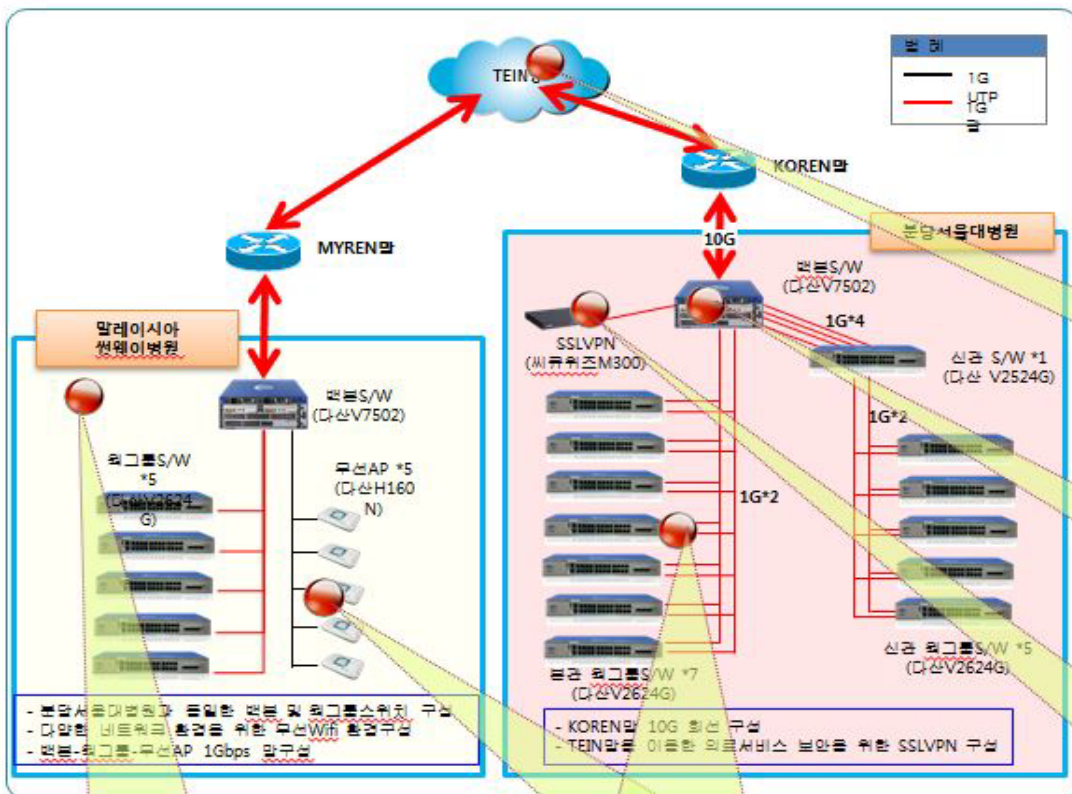
5. 양측 동의 하에만 MOU 문안을 변경할 수 있다.

말레이시아 Sunway 병원장

분당서울대학교병원 병원장

[상호협력합의각서 작성 국문 예]

Support



구성 품목 및 수량		
품목	수량	대상장비
백본스위치	2	다산 V7502
유클러스스위치	17	다산 V2624G
유클러스광스위치	1	다산 V2524G
무선AP	5	다산 H160N
SSLPVPN	1	시큐위즈 M300

TEIN망

- 국제의료정보망을 통한 국가간 안정적 회선 사용
- Public 망과 별도의 회선사용을 통한 안정적 의료서비스망 구성

10G KOREN망

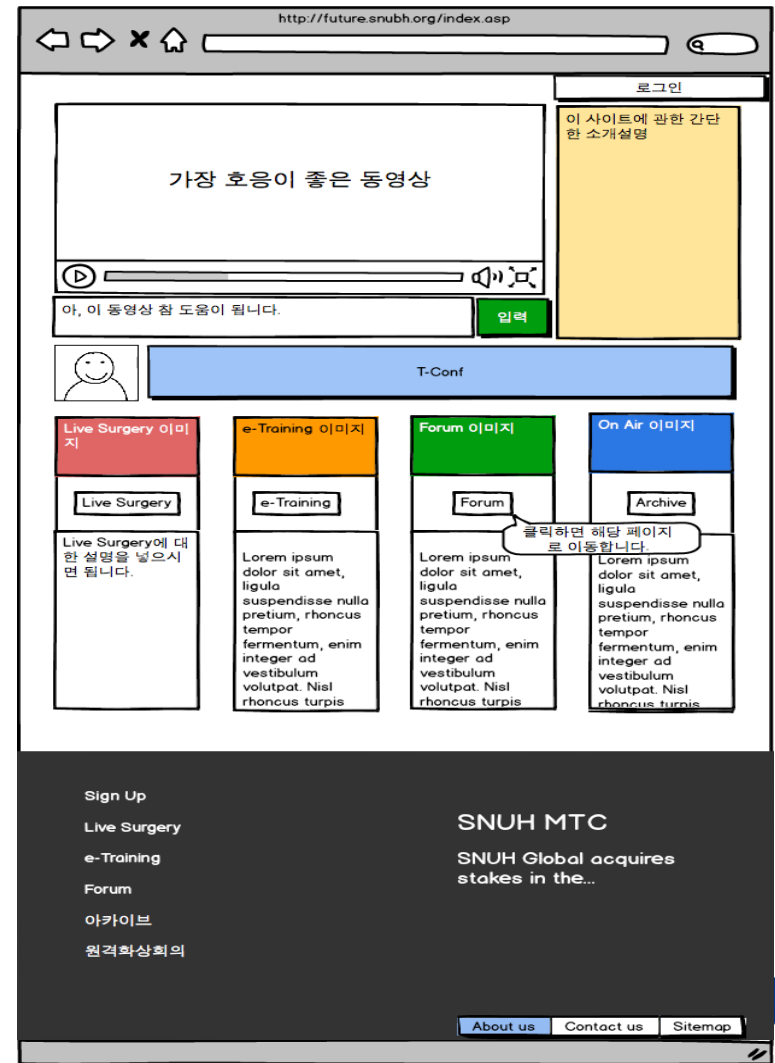
- 현재 1Gbps의 KOREN망을 10Gbps의 회선으로 증설
- 10Gbps 회선에 맞는 백본S/W 구성

신규망구축

다산네트웍스 제품구축

Donate to partner hospital , Korea ICT Equipment and Systems for Education and training to network engineer

Design of homepage



Activity-I

CAREN Conference in Almaty in Kazakhstan (2014.10.1)





Activity-II

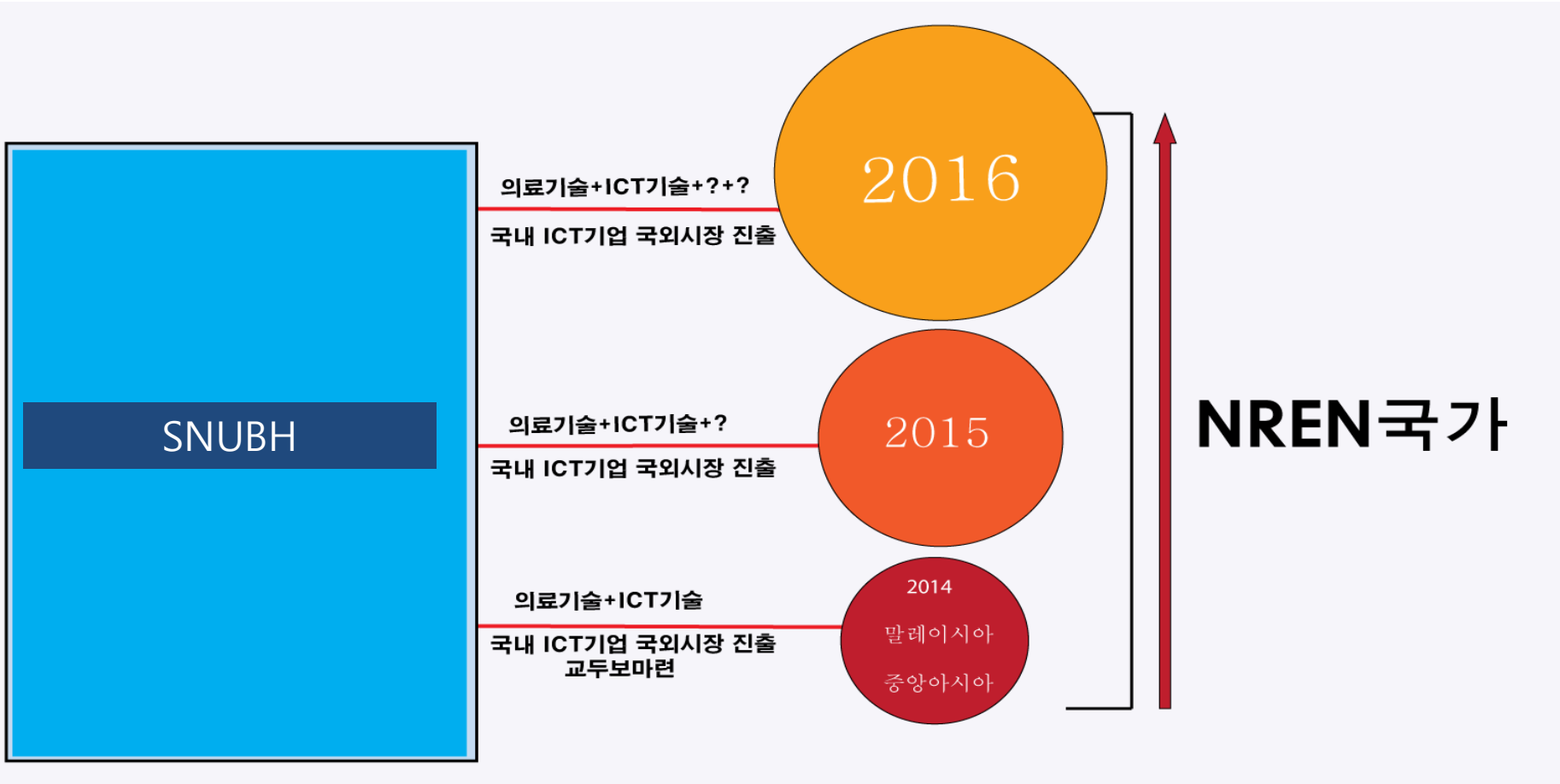
e-PANC KR1-JP8
(2014.9.11)

- (P)Seoul National University Bundang Hospital : Prof. Ho-Seong Han
 - (P)Hokkaido University : Prof. Satoshi Hirano
 - Tohoku University : Prof. Shinichi Egawa
 - (P)Kanazawa University, Prof. Tetsuo Ohta, Prof. Hirohisa Kitagawa,
 - Teikyo University (Tokyo, JJDI), Prof. Keita Wada
- (P)Nippon Medical School (Tokyo, JJDI), Prof. Eiji Uchida, prof. Yoshiharu Nakamura
 - Kyoto University, Prof. Kyoichi Takaori
 - Kyushu University, Prof. Shunichi Takahata, Prof. Takao Otsuka
- Kawasaki Medical School, Prof. Masafumi Nakamura, Prof. Hiroshi Nakashima

Plan

- To activate NREN network by Tele-education between collaborated hospitals on regular basis.
- To share medical knowledge with NREN countries so we can decrease the gap of knowledge in medical field and it can promote medical standardization.
- Collaboration to improve medical standard in their own countries.
- Q&A data from the conference about post laparoscopic Live surgery will be produced as medical educational contents.
- Medical educational contents from lecture and conference will be uploaded on web site and members from other countries can receive them as educational service.

Plan X.



Thank you very much !

