

Telemedicine in Asia-Pacific

- Possible expansion to Latin America-

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<http://www.apan.net/wg/medical.html>

<http://www.temdec.med.kyushu-u.ac.jp>

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2012.7.3@TICAL2012, Lima, Peru

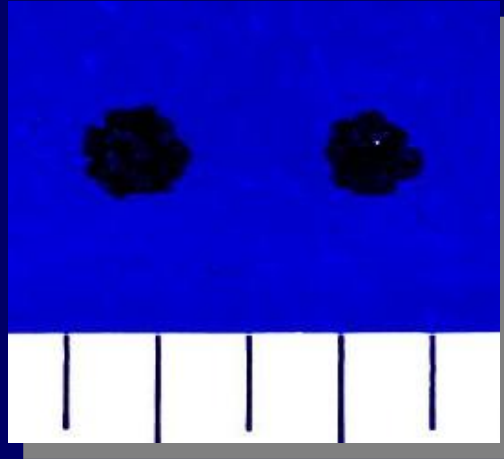
Today's menu

- **Medical situation**
- **Activities**
 - **One-to-one**
 - **Multi-station**
- **Directions to go**



Gallstones

Black
stones



Cholesterol stones

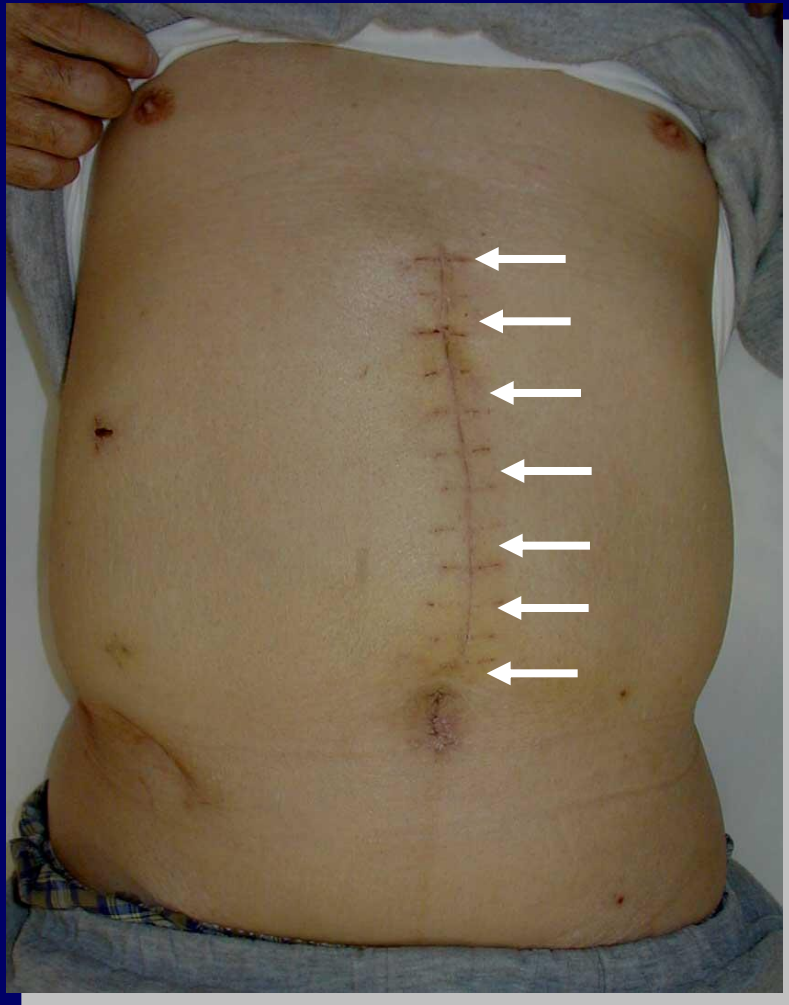
Mixed
stones



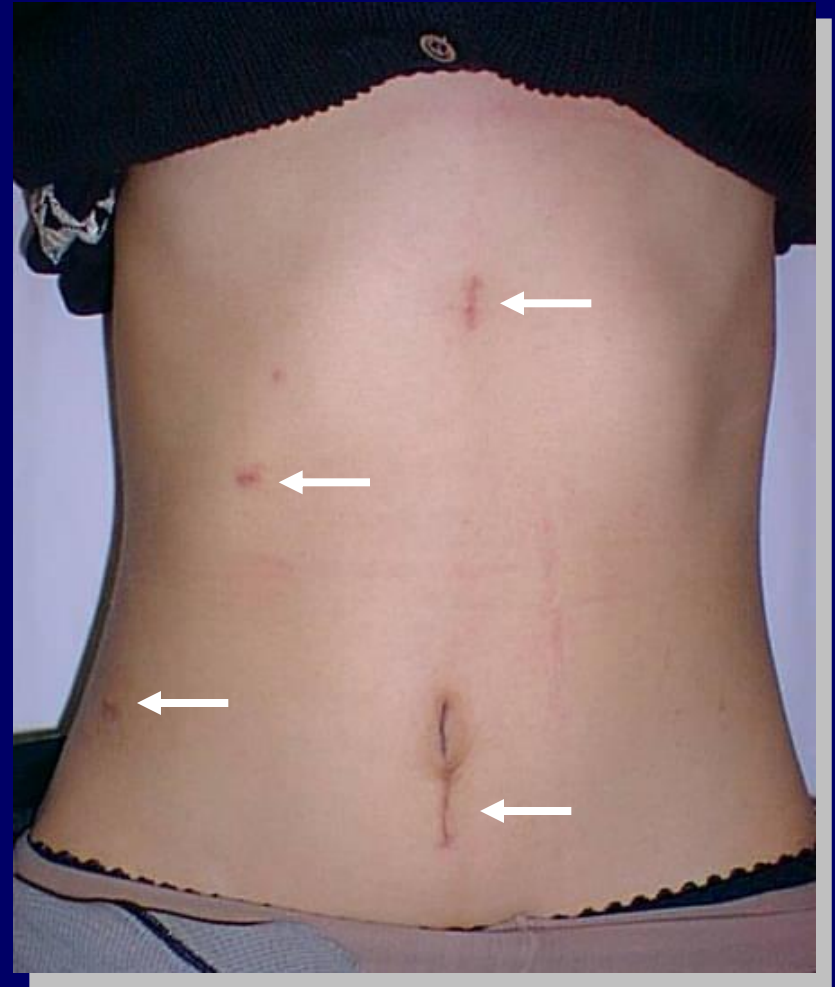
Bilirubin stones

Surgical development: One example

Open

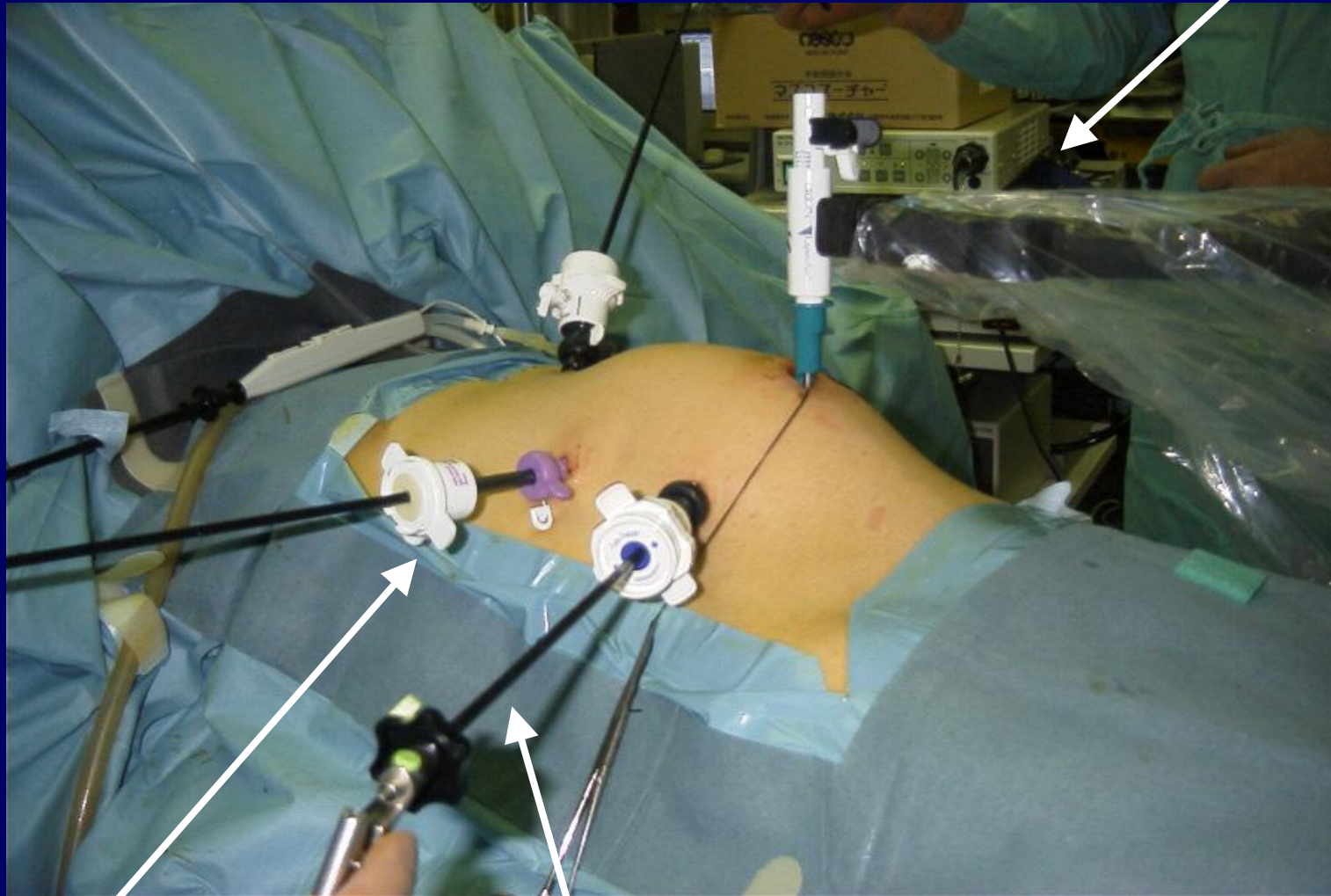


Endoscopic



Surgical view of new surgery

Lift

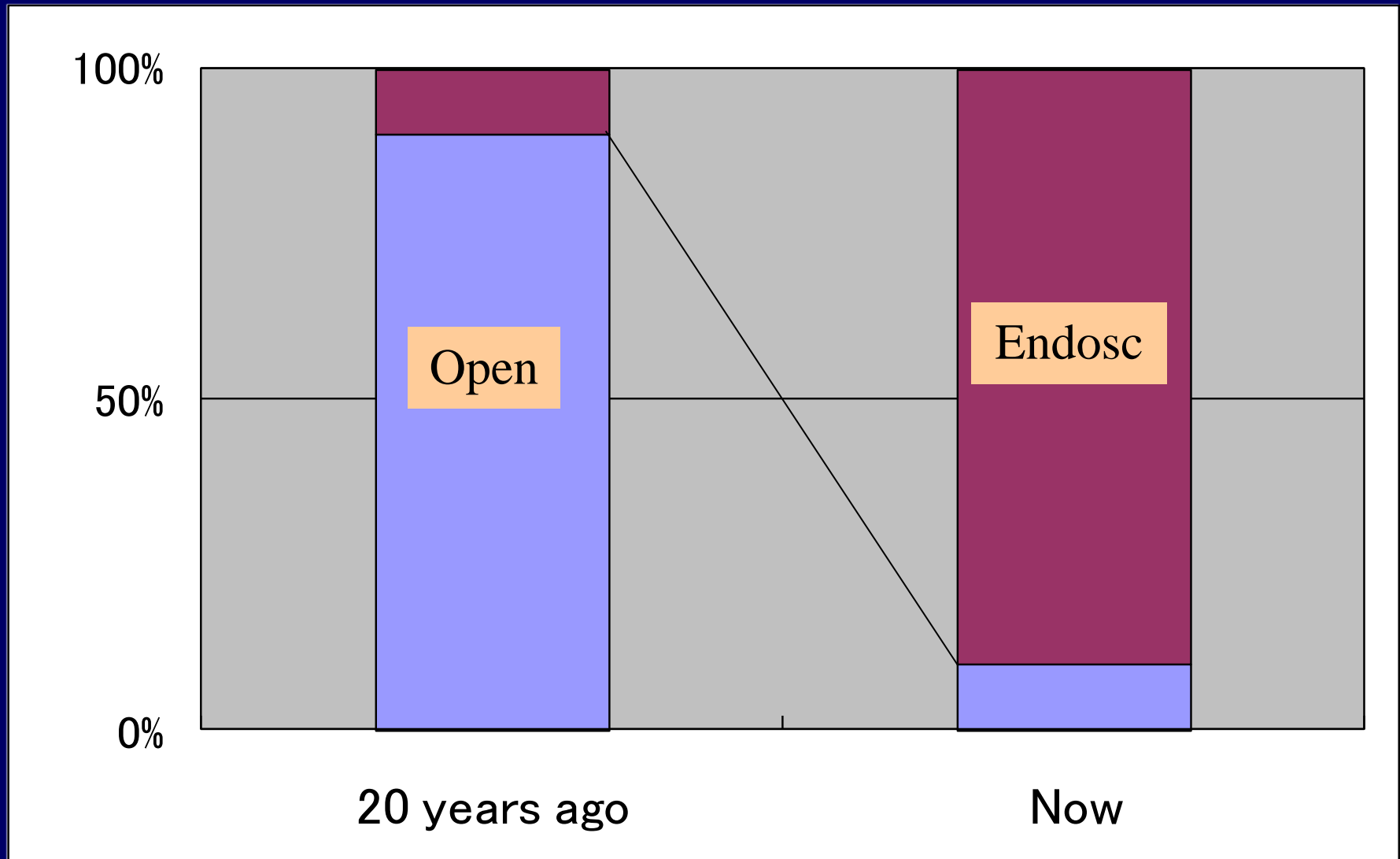


Trocar

Instrument

Surgery I, Kyushu Univ

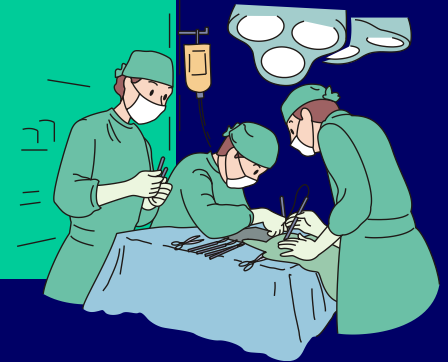
Dramatic change in surgery



How to learn new surgery

◆ To watch a real surgery is most important.

- Few hospitals have experts in all fields
- Limited chance to visit other hospitals
- Waste of time, waste of money
- Not continuous, not many people



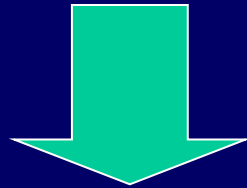
➡ Do you think you can learn it enough?

Theoretically

Remote Education: Convenient and Useful!

Practically

But, NOT popular in our clinical situation



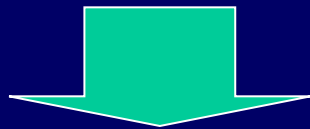
Why not?

Conventional telemedicine...

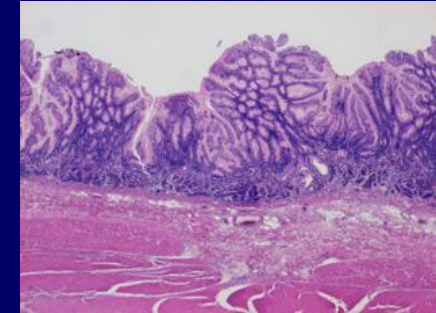
ISDN /Narrow band

~1Mbps

- Still pictures
 - Radiology (CT, MR), Pathology
- Discussion
 - Slide presentation



Surgery: compressed



1. Video transmission was impossible in good quality.
2. Cost for special equipments (even for bad image).

Situations dramatically changed in 2002

We use BIG Internet!

Hanyang U



Seoul

KOREA

Busan

KJCN

Fukuoka

QGPOP

JAPAN



Kyushu Univ



Bandwidth **2G** ⇒ Big Broadband Network

Key technologies

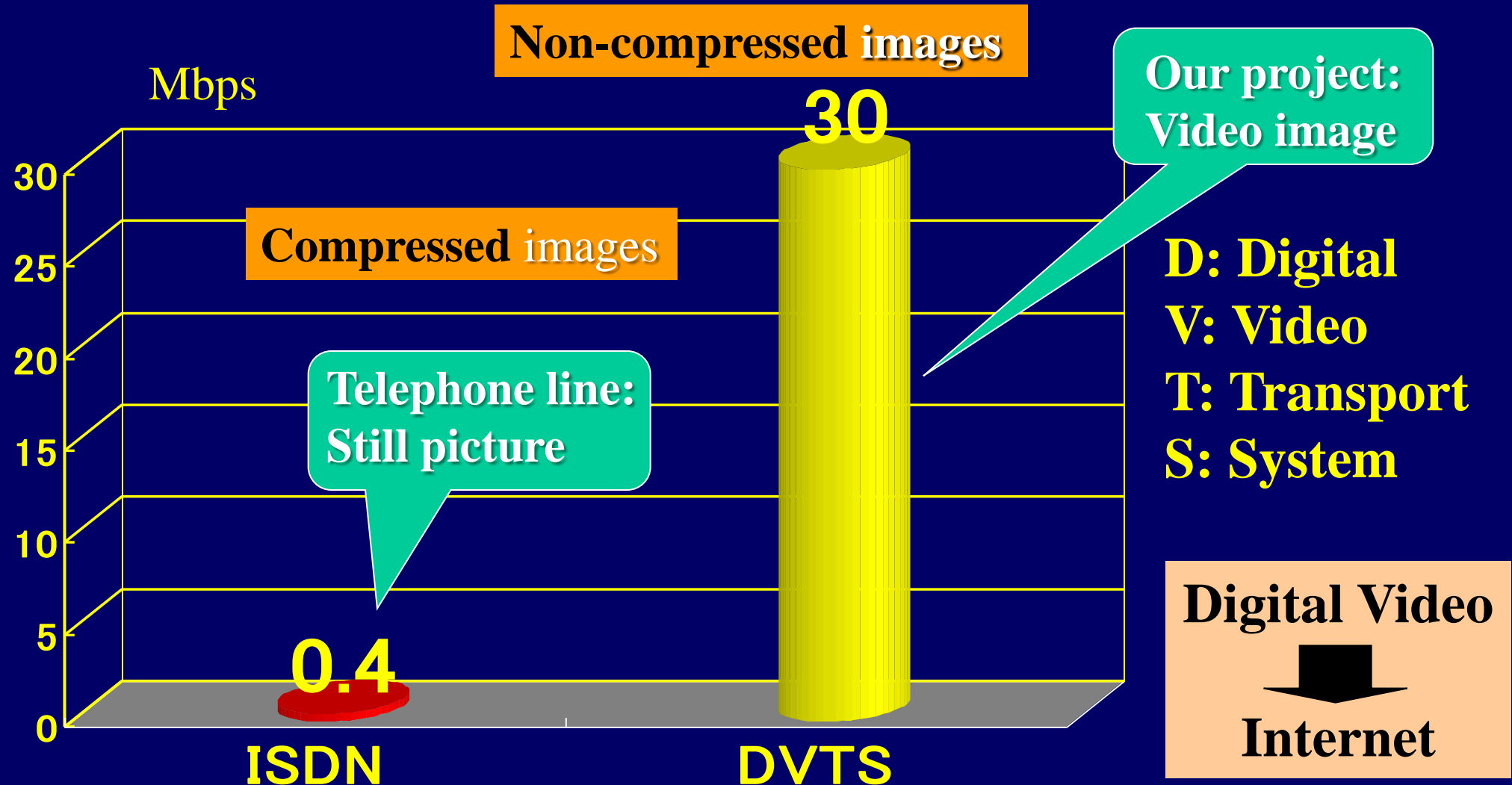
- DVTS

(Digital video transport system)

- Academic network

(Research and education network)

Point 1: Clear & Smooth Transmission



Point 2: Cheap and simple equipment



INFORMATION TECHNOLOGY

Not the Internet You Know

An ambitious experiment could point the way
to tomorrow's academic network

BY VINCENT KIERNAN

**Point 3: Academic Network
for Research and Education**

Latin America: RedClara

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The first live demonstration of surgery

Aug 1, 2003

OR

Surgical movie



- Lap. distal gastrectomy
- Security software used



Kyushu Univ., Japan

NCC, Korea

TV news reports

Aug 22, 2003



TNC in the evening news



RKB



KBC



NHK



KBC

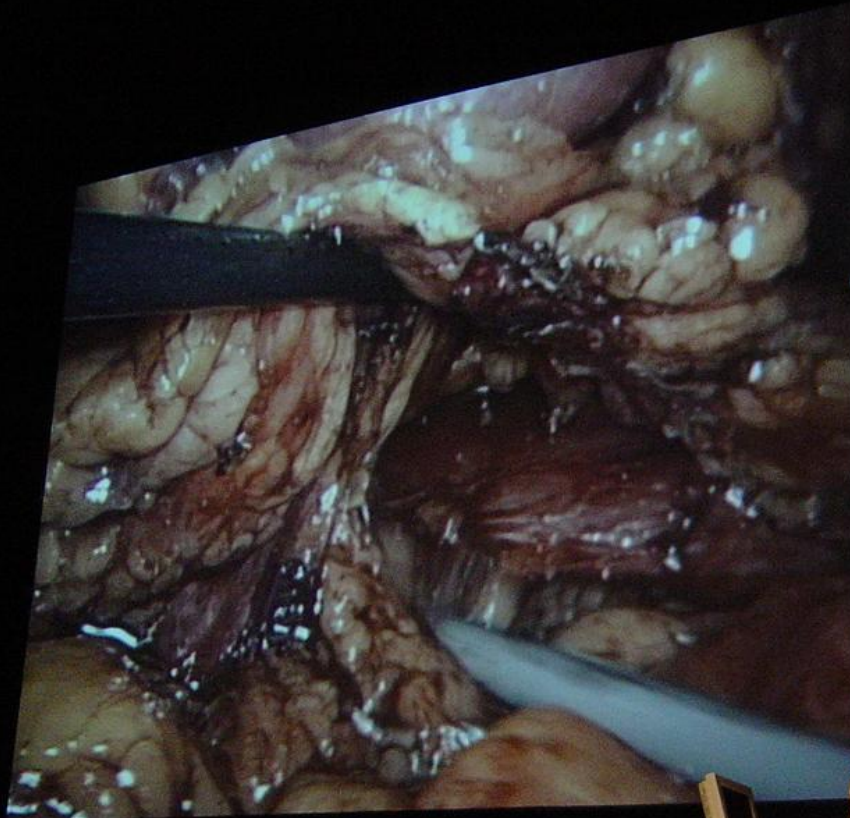
Casual setting to neighbors

New endoscopic procedures

2006.8.21



Live surgery in a big congress



2006.4.13

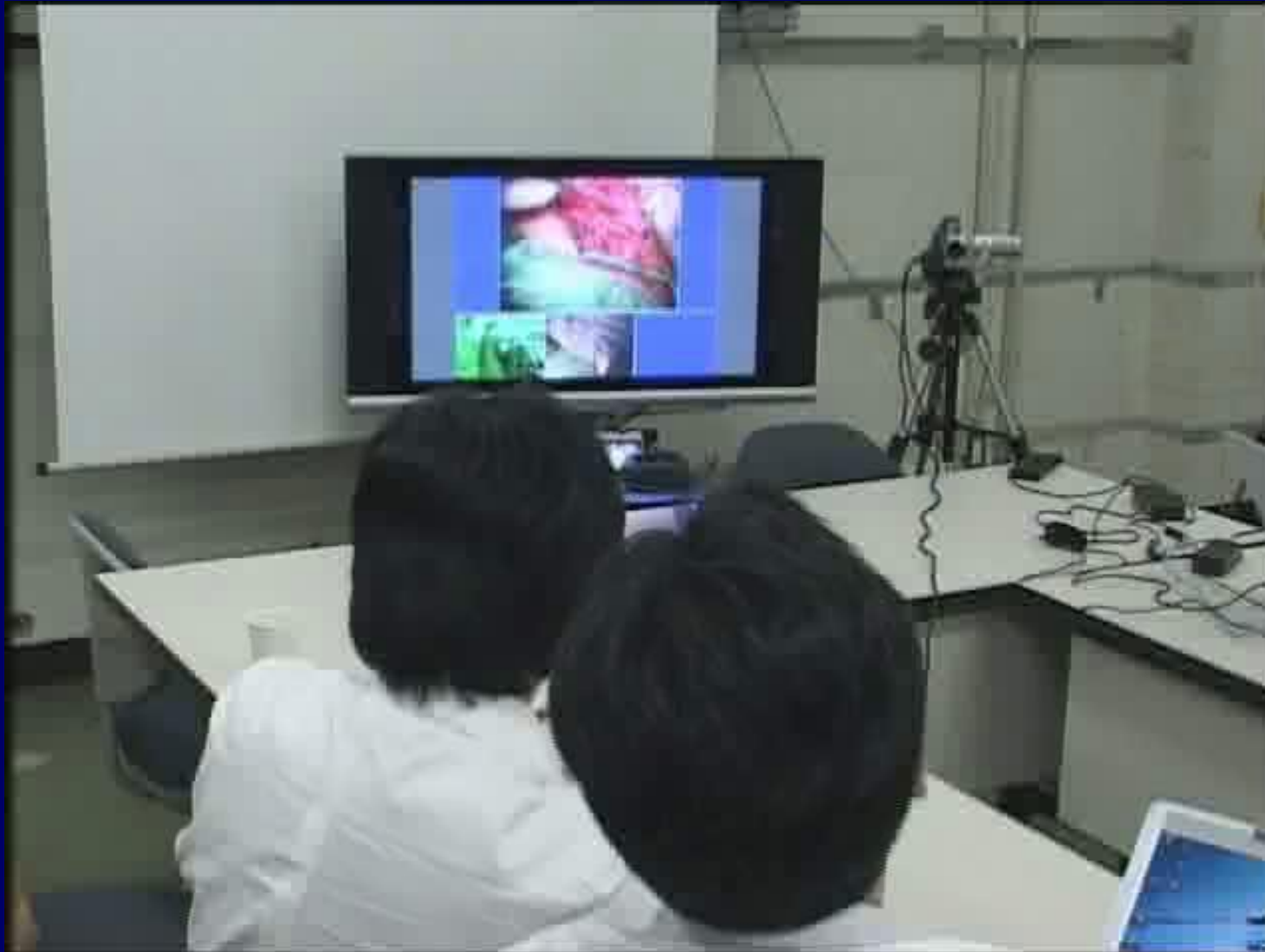


From Korea to Japan



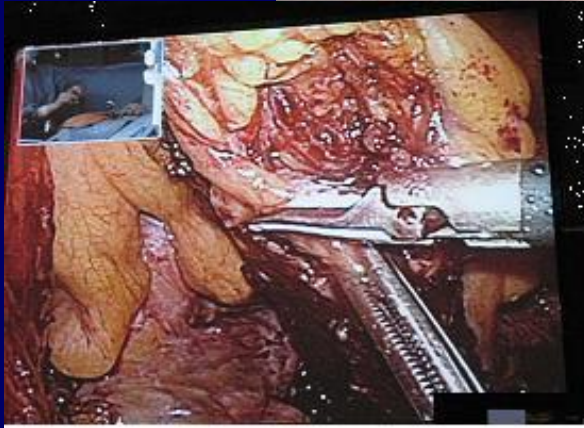
Telementoring for neurosurgery

2003.11.25



Hanyang U ↔ Kyushu U

Live lecture for Medical Students



2008.5

Bundang H/KR



Kyushu U/JP

- Endosc Surg
- Telemedicine
- English

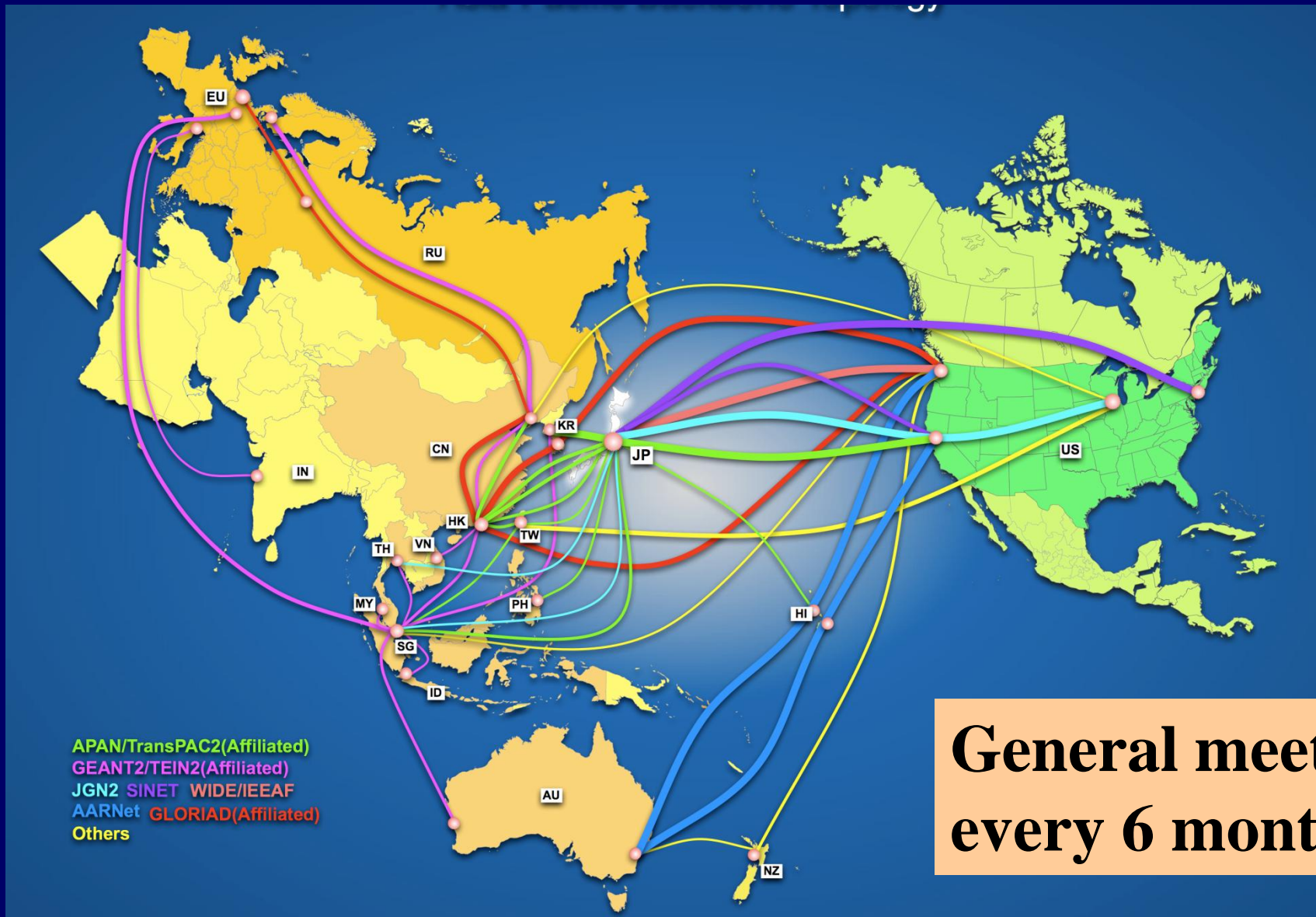
Video

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Asia-Pacific Advanced Network (APAN)



**General meeting
every 6 months**

APAN-Medical WG @ Taipei

2005. 8.25



Asia-Pacific Advanced Network

The first multi-station teleconference by DVTS

Pancreatic Transplantation Meeting **New technical breakthrough**

2005.3.18

Fukuoka

Seoul

Taipei

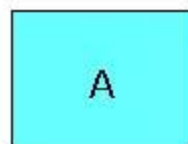
Beijing



Quatro system

Hospital A

A	B
C	D



DVTS

30Mbps

Hospital B

A	B
C	D



DVTS

30Mbps

Hospital C

A	B
C	D

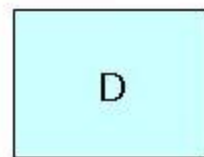


DVTS

30Mbps

Hospital D

A	B
C	D



DVTS

30Mbps

**Multi-station
Server**

at Kyushu University
Computer Center

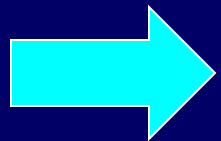
Quatre: MCU for DVTS



- Only equipment for multi-point connection of DVTS
- Very powerful, stable and useful



- Support only NTSC, but not PAL
- Available only in Japan (&Korea)
- Connection < 8 stations



DVTS-Plus: New version from China

Live Demonstration @ APAN-Tokyo

First multi-
station live
demonstration
with security

2006. 1

- Kyushu
- Tokyo
- Seoul
- Taipei



Current security system

- Essential to protect patient privacy
- Used for live demonstration
- IPsec
- Used to be C4-VPN
- About US\$ 1000-2000



Healthcare

2006.7.20



Kyushu Univ.

Bangkok

Singapore

Bandung

Singapore

Japan

First connection to
Indonesia@
APAN-Singapore



Thailand

Indonesia

Bird flu teleconference @ APAN-Manila



- Manila venue
- Peking U
- Australia National U
- Stanford U
- Nagasaki U
- Chulalongkorn U
- National Hosp. of Pediatrics / Hanoi
- Indonesia U

2006.1.24

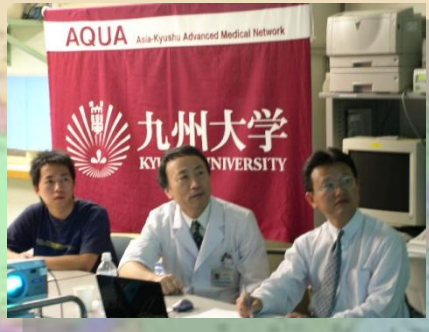
First connection to Europe @ APAN-Xian

2007.8



VIDEO

HD-Med Joint Demo @ APAN-NZ



Tokyo

Seattle
Science
Foundation



Neurosurgery by Dr
Newell

HD-JPG2000 & DVTS



Venue at Queenstown

2008.8

First to Cape Town in South Africa

Kyushu U, JP



U Cape Town, ZA



Cho Ray, VN

2011.9.21



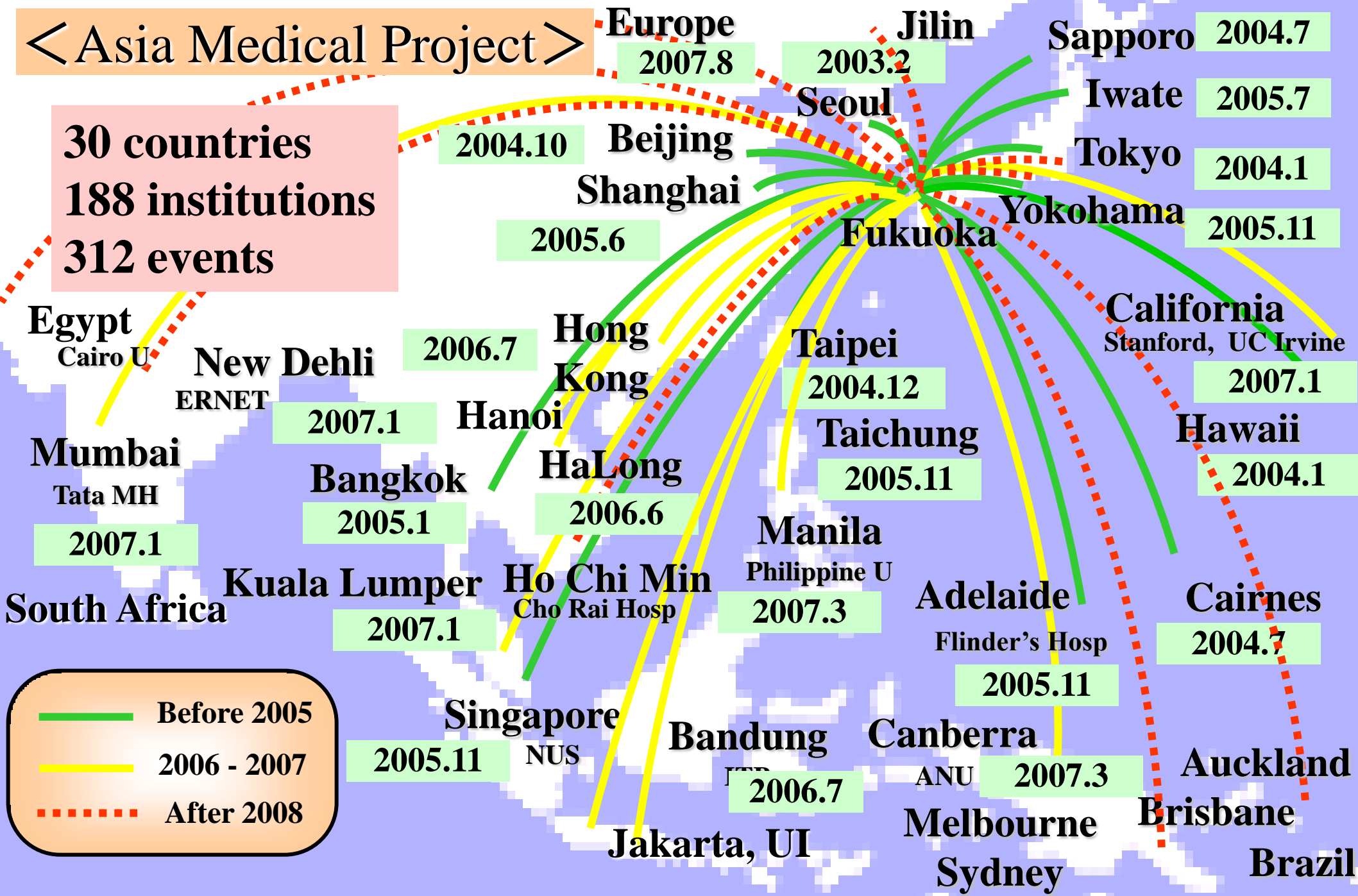
2011.3

VIDEO



<Asia Medical Project>

30 countries
188 institutions
312 events



Before 2005

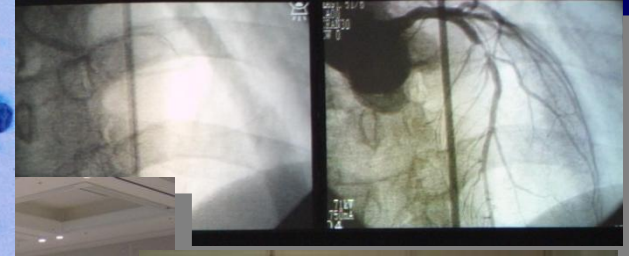
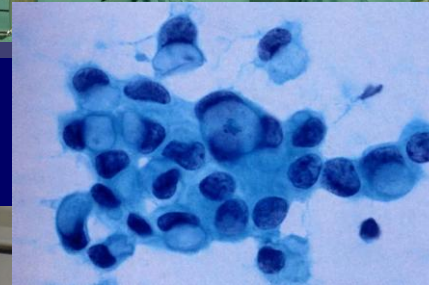
2006 - 2007

After 2008

Whole variety of new medical contents

- Surgery
- Endoscopy
- Medical informatics
- Basic Science
- Interventional radiology
- Nursing, Healthcare
- Bird flu, SARS, HIV
- Medical students, etc.

More tomorrow...



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World Gastroenterology Organization:

- Endoscopic training centers -

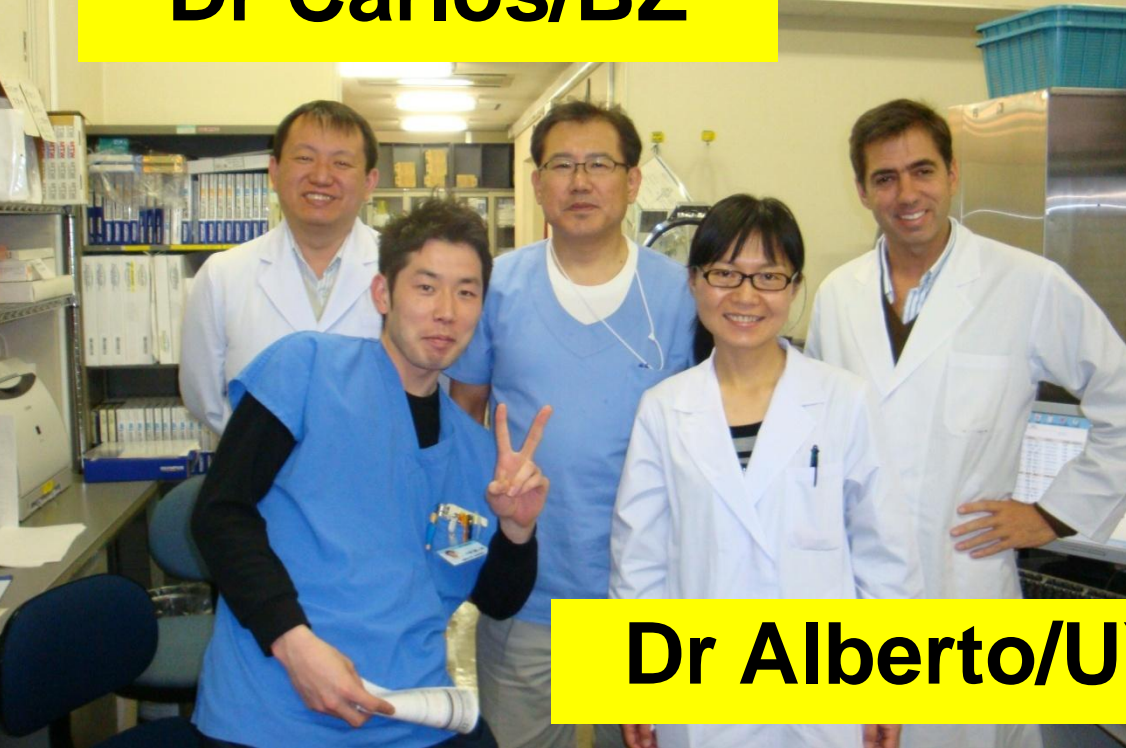


Training Centers



Training Center	Training Center Director	Country	Launch Date as WGO Center
Soweto Training Center	Professor Reid Ally	South Africa	June 23, 2000
Rabat Training Center	Professor Naima Amrani	Morocco	January 2003
Karachi Training Center	Professor Wasim Jafri	Pakistan	May 2003
Cairo Training Center	Professor Ibrahim Mostafa	Egypt	March 01, 2004
Santiago Training Center	Dr. Claudio Navarrete Dr. Roque Saenz	Chile	July 23, 2004
La Paz Training Center	Dr. Guido Villa-Gomez	Bolivia	March 14, 2005
Bangkok Training Center	Dr. Sathaporn Manatsathit	Thailand	March 20, 2006
Rome Training Center	Professor Guido Costamagna	Italy	May 11, 2006
La Plata Training Center	Dr. Nestor Chopita Dr. Nestor Landoni Dr. Juan Carlos Gomez	Argentina	March 21, 2007
Mexico City Training Center	Dr. Miguel Valdovinos	Mexico	July 28, 2008
Bogotá Training Center	Dr. Luis Carlos Sabbagh	Colombia	August 6, 2008
Ribeirão Preto Training Center	Dr. Roberto Oliveira Dantas	Brazil	August 8, 2008
Suva Training Center	Dr. Joji Malani, Dr. Thein Htut Dr. Finlay Macrae, Dr. Chris Hair	Fiji	October 26, 2008
San José Training Center	Dr. Herbert Burgos	Costa Rica	March 5, 2010

Dr Carlos/BZ



Dr Alberto/UY

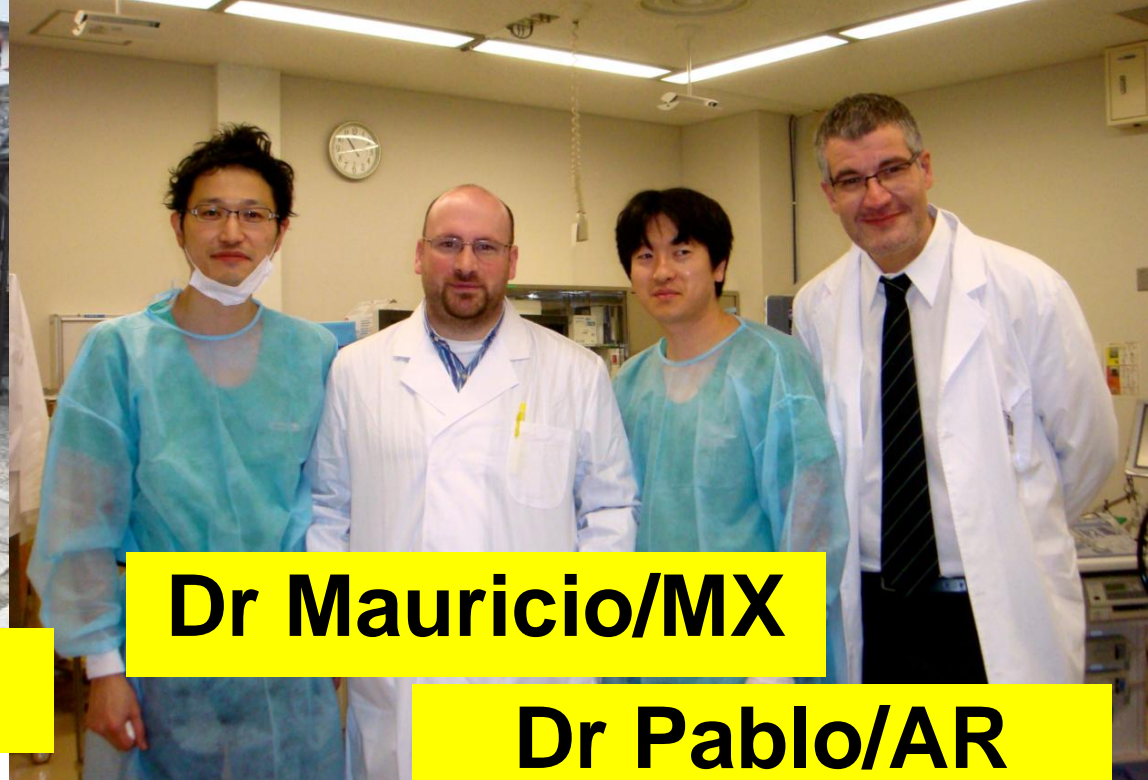


Dr Franco/CL





Dr Nicolas/CO



Dr Mauricio/MX

Dr Pablo/AR



Dr Miguel/BO



Preliminary connections

Not so good...

2009.10.7



U San Polo, BZ

2009.7.1



CL



TX

Internet2 (US)



BR

University of São Paulo (BR)



MX

Universidad Nacional Autónoma



Seattle

Seattle Science Foundation

Visiting Latin America

USP/BR



Alemana Hosp/CL



Univ. of La Plata/AR

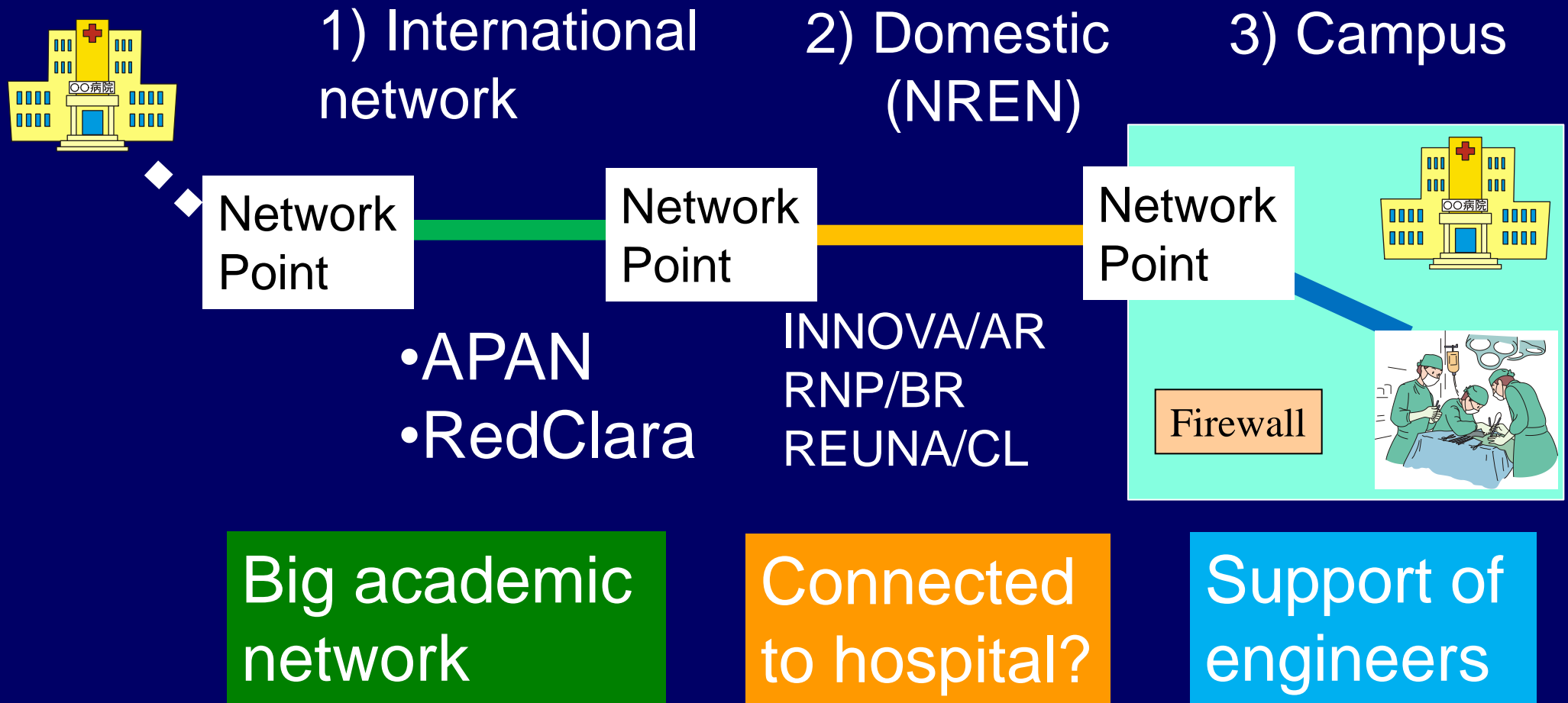
2012.1.18-24

Necessary information

1. How big network is there in each country?
2. Who are the contact points?---I would like to meet them all.
3. How big are networks for these hospitals?
4. Who is the network manager in each university/hospital?
5. Do they have adequate instrument?
6. Do they have other solutions like H.323 (HD) unless there is enough network?
7. Is there any way to establish a new network for other hospitals?

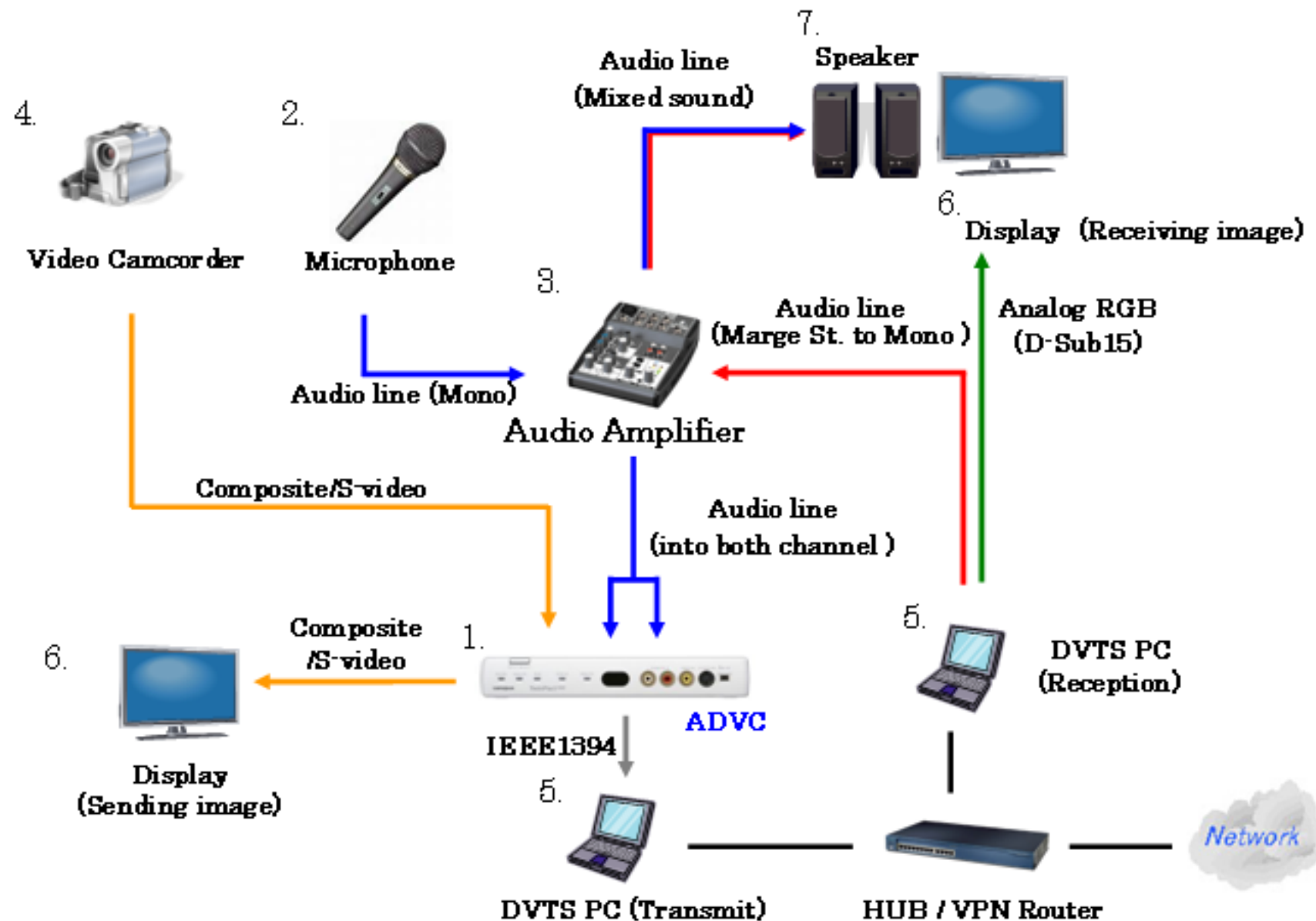


Check 1. Network to the very end

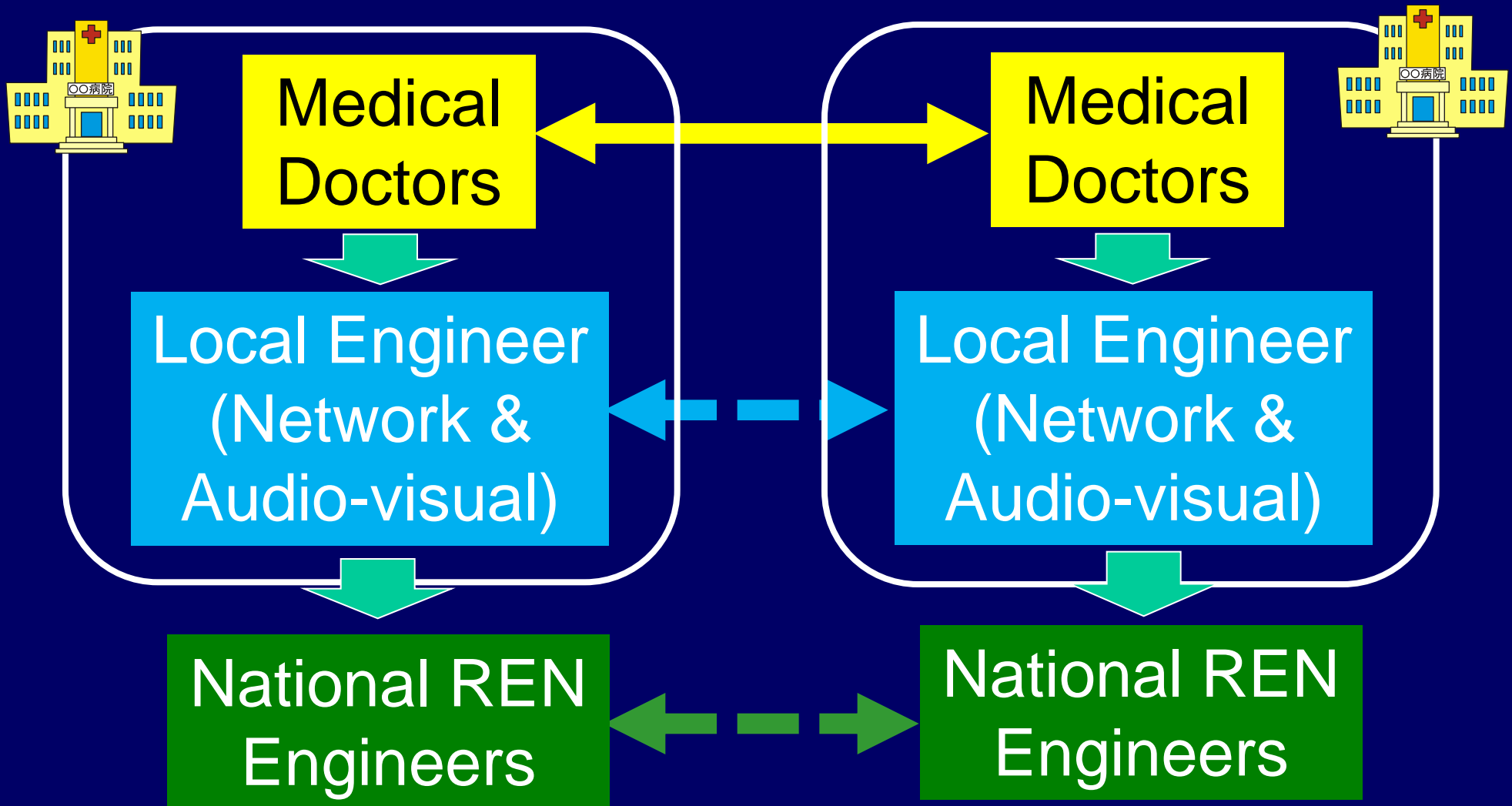


Big enough and stable network at all steps

Check 2. Instruments



Check 3: Team buildup



The success depends on how good team you can make.

First Goal for Our Collaborations

APAN-HW

- Jan 13-20, 2013
- Internet2 Joint
- Univ. of Hawaii
- Endosc. session

Hawaii
/-10(+14)

Seattle/-7



Fiji?/+12

Brazil/-3

Chile/-4

UR/-3

AR/-3

List of the hospitals to be connected

- Argentina Medical School of La Plata
- Brazil University of São Paulo Medical School
- Brazil USP Ribeirão Preto
- Brazil U State of Rio de Janeiro
- Brazil U of Rio de Janeiro
- Chile Universidad de Chile (Clínica Alemana?)
- Uruguay Universidad de la República
- *Mexico Instituto Nacional de Ciencias Med. y Nutr.*
- *Bolivia Hospital de Clinicas*
- *Columbia Clinica Universitaria Colombia*
- *Costa Rica U Autonoma de Centroamerica*

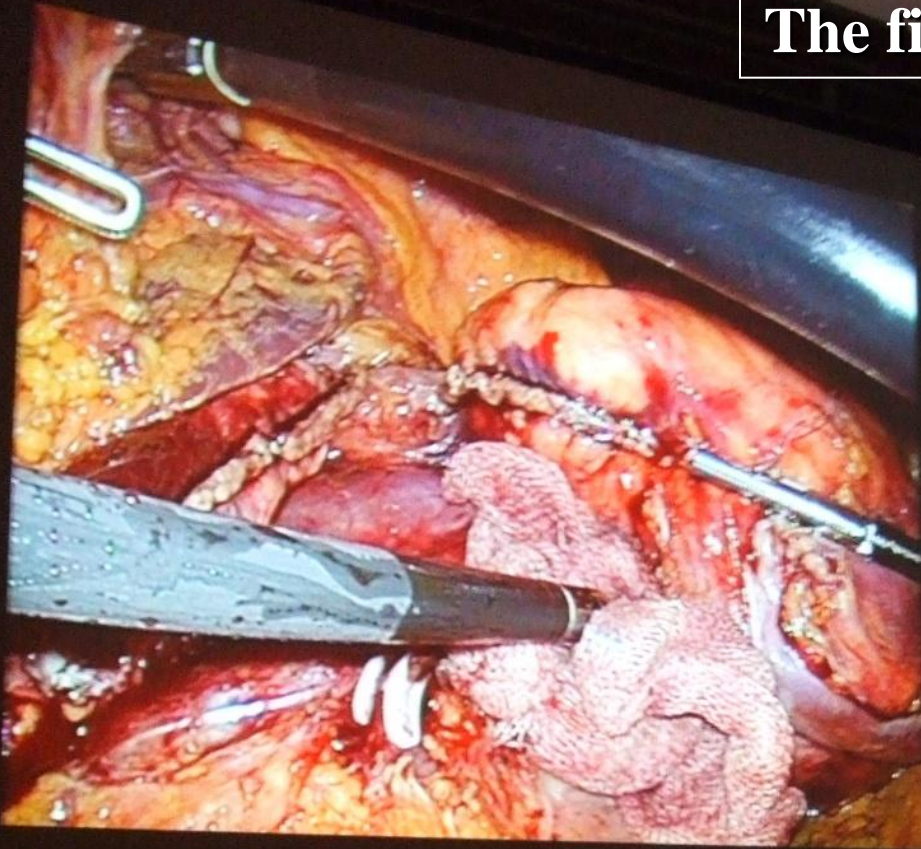


Future Challenge-1: Un-compressed HD

The first APHPBA Congress

2007.3.23

1.6G



Surgery/HD



Operating room/
DVTS

Chairman

Future Challenge-2: 3D transmission

Robotic Surgery



2005 Korea Med
2012 Robot surg





Conclusions



1. Image quality, especially for moving images, and its quality control is a key in telemedicine.
2. R&E network has made the clear and smooth medical streaming possible with low cost.
3. We hope that we can have collaborations for better medical education in Latin America.

Let us work together!