



International Telecommunication Union

# APT second opinion center

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Tokai University Institute of Medical Sciences

Workshop on Standardization in E-health  
Geneva, 23-25 May 2003



# APT Telemedicine Workshop 2002 Jakarta



Core members of ATP Telemedicine Workshop 2002



# Who we are !

## ITU ( International Telecommunication Union)

Tokai University Institute of Medical Sciences is the first Sector Member from health-medical field.

### Our activities in ITU

1. SG-2 Question 14/2 (Telemedicine & E-Health)  
Rapporteur: Prof.L. Androchko( Int. Univ. In Geneva, Prof. of Tokai Univ.)  
Co-Rapporteur: Prof. I. Nakajima (Tokai Univ.)
2. SG-2 Question 10/2 (Rural communications)  
Rapporteur: Mr. Y. Kawasumi (Japan Telecom Co. Ltd., Prof. of Tokai Univ.)
3. Telemedicine Expert Training Course
4. The Second Opinion Center (APT & ITU )



# ITU Telemedicine Expert Training Course Tokai University

The *Telemedicine Expert Training Course*, jointly launched by the ITU/BDT and Tokai University in Japan, offers an excellent opportunity for medical and health care workers from developing countries to understand the current trends and technologies in telemedicine and e-health. It provides the foundation to introduce telemedicine in developing countries.



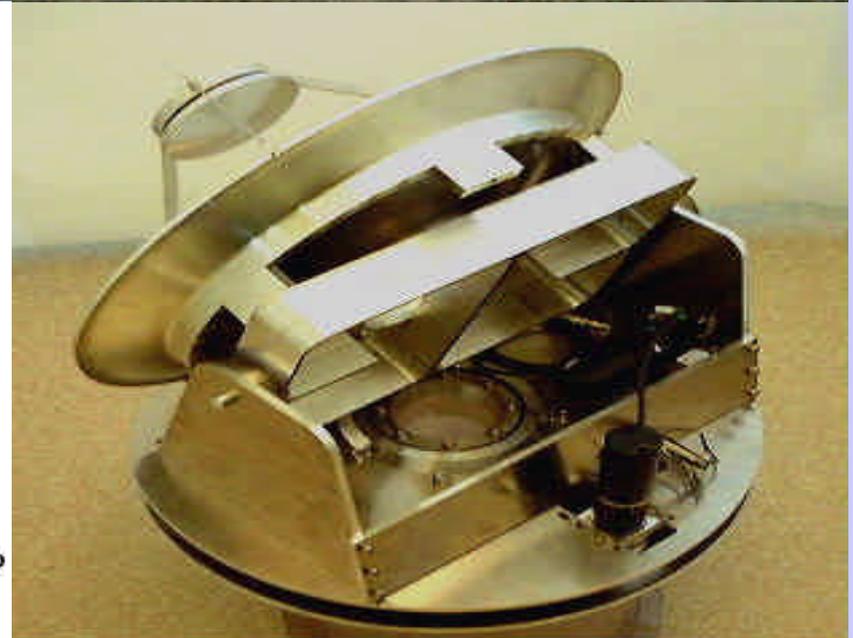
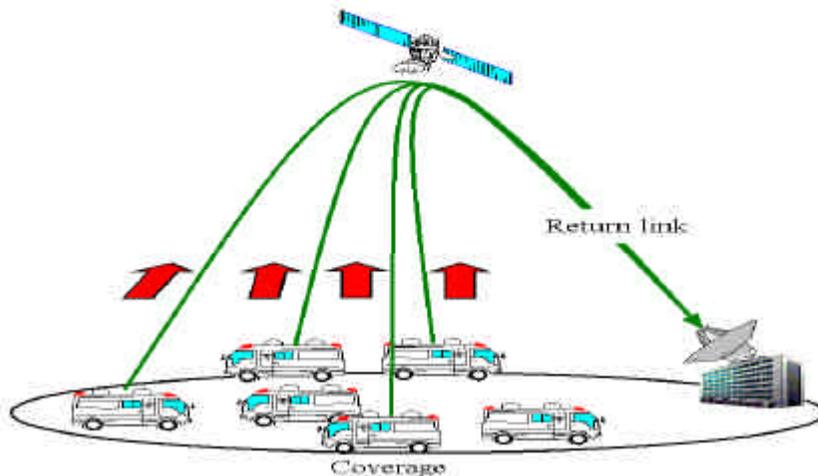
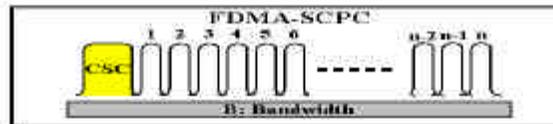
Tokai University Shonan Campus  
Hiratsuka Kanagawa Japan



Tokai University Hospital  
Isehara Kanagawa Japan



# Ambulance communications via Quasi Zenith Satellite





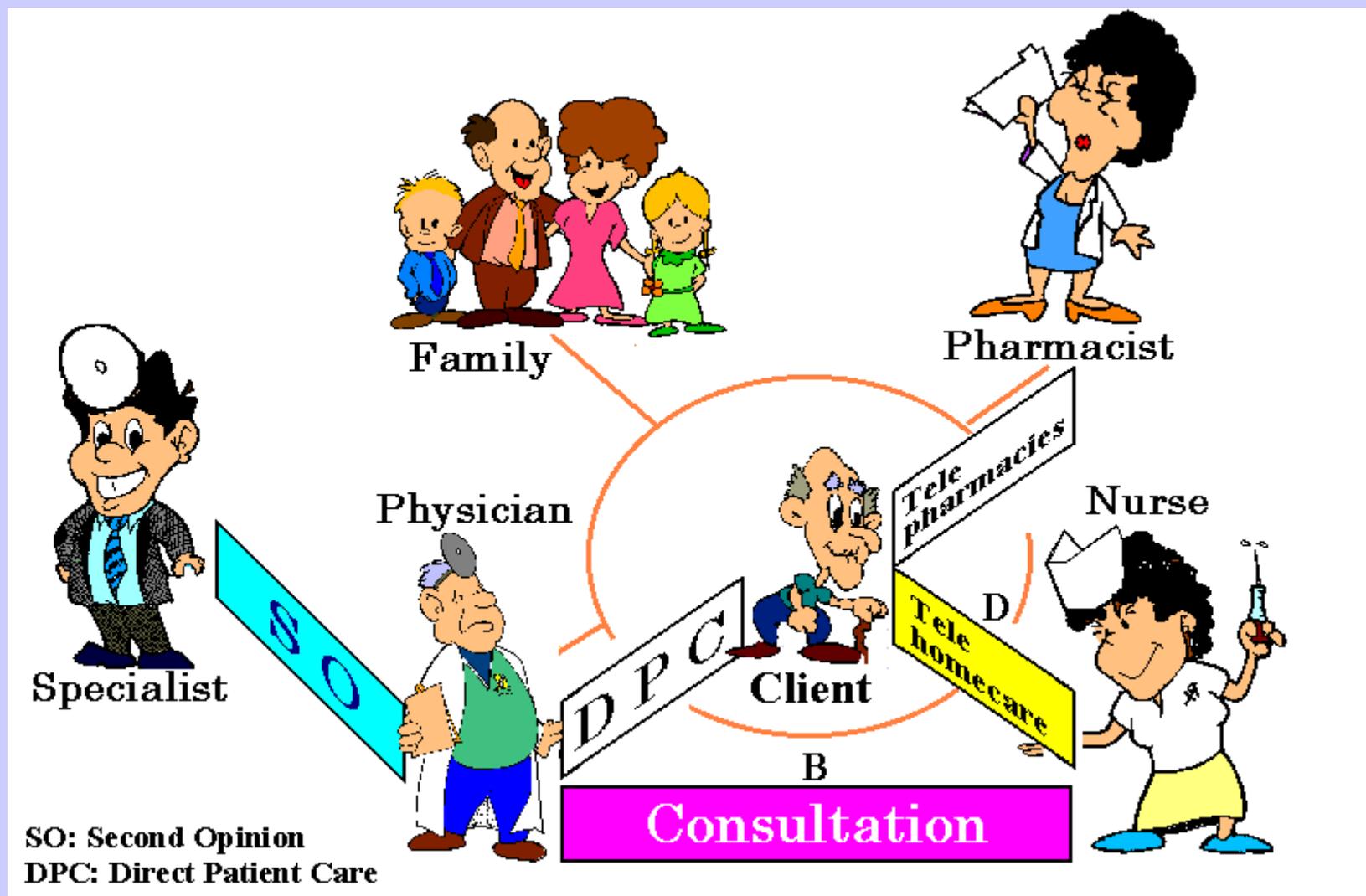
# E-Health components

## Four essential components make the e-health

- Medical knowledge that lends itself to being stored in computer files (digital format);
- People who are willing to share, apply and use this knowledge;
- Data processing equipment to record, store and process this data;
- Telecommunication facilities to transfer (exchange) this data electronically between remote locations.

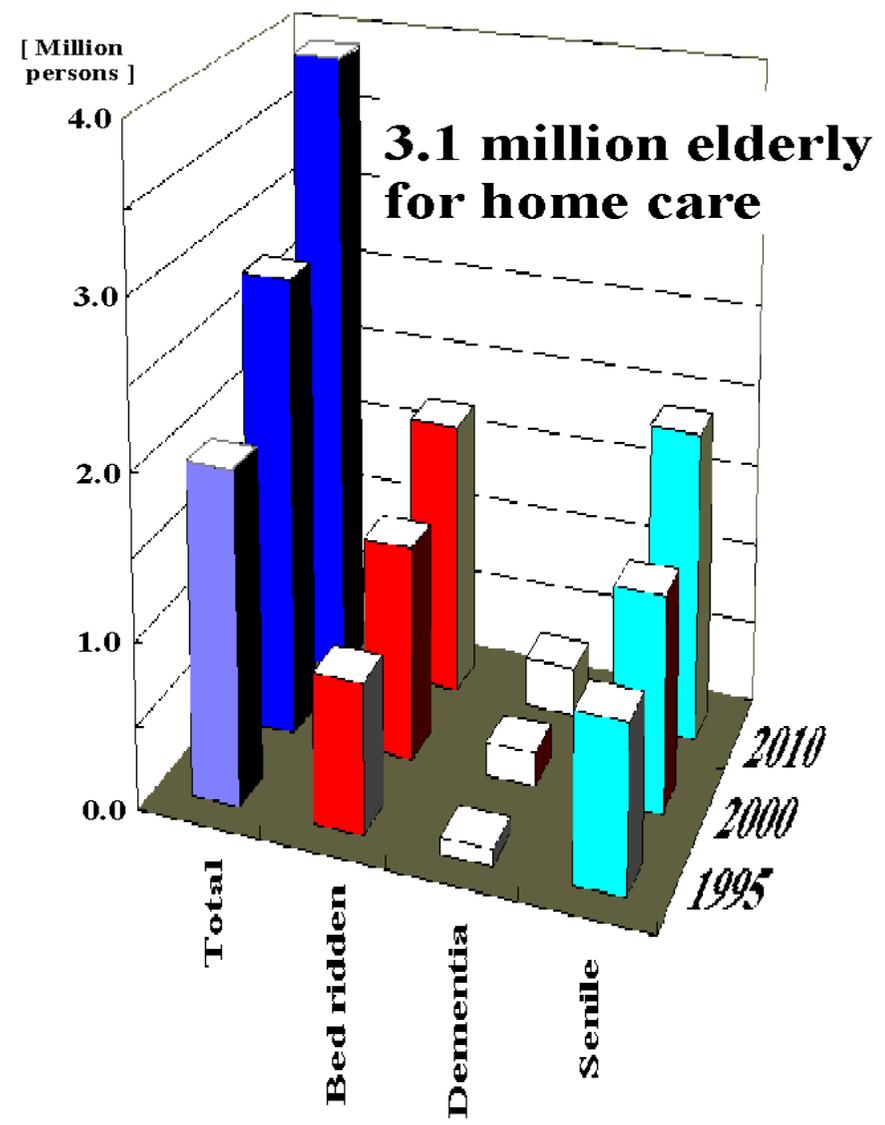
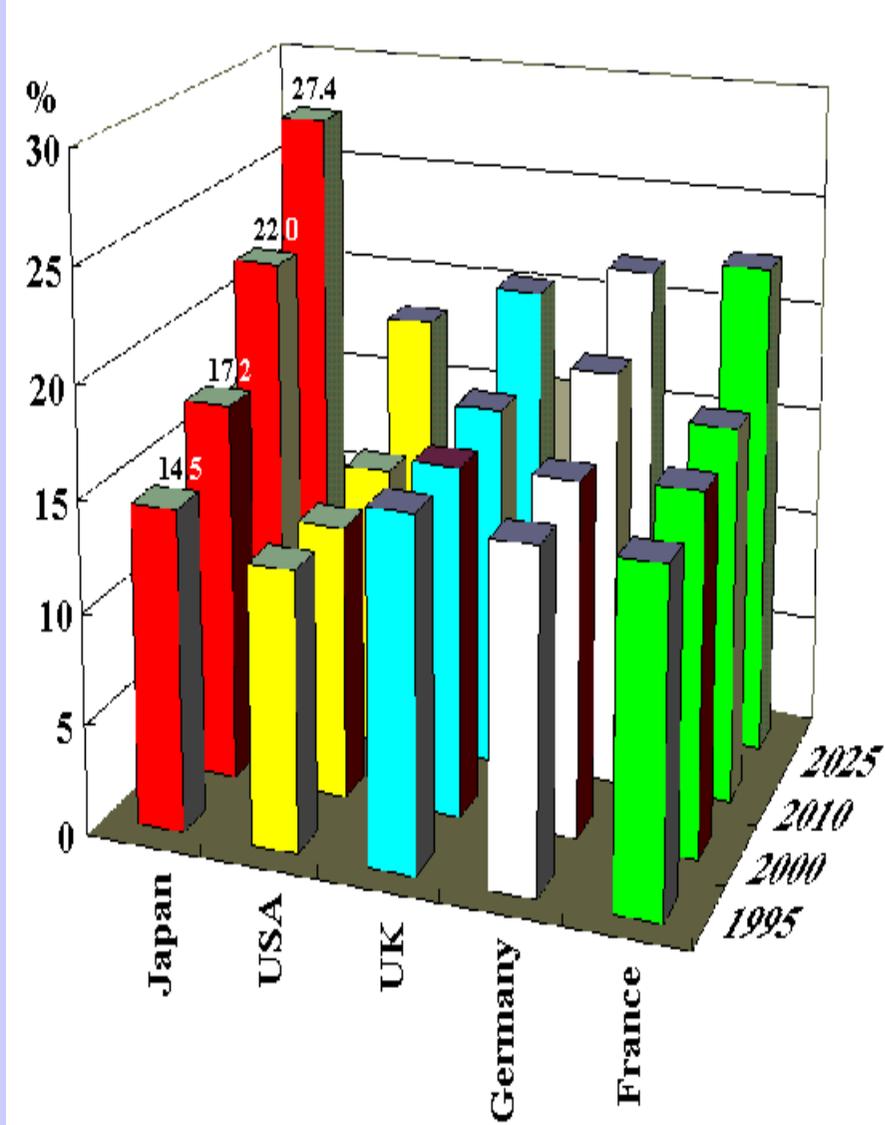


# Classification of Telemedicine





# Ratio of the elderly > 65 y.o.





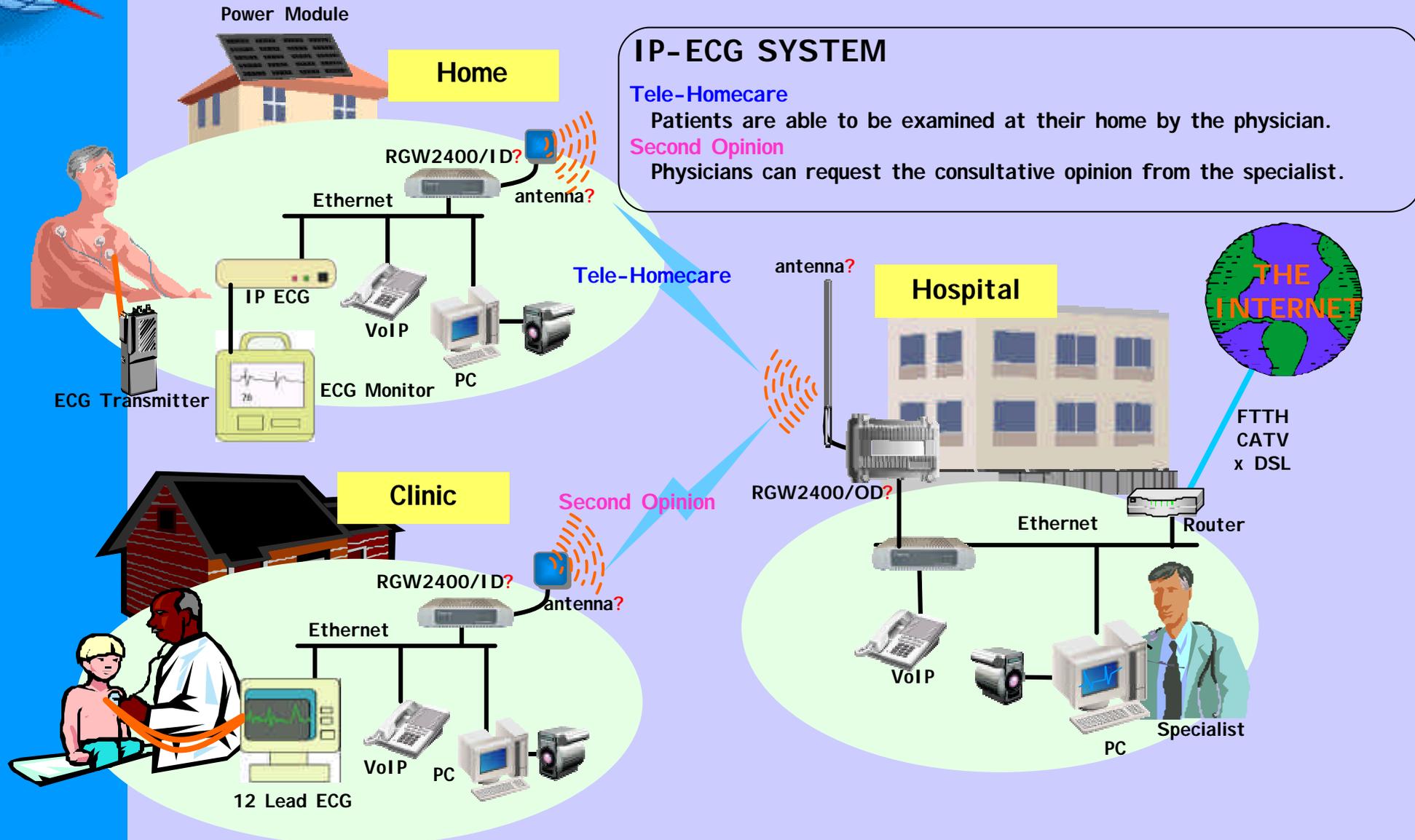
# TeleHomecare

We have developed an inexpensive ECG data-transmission system to ease the provision of homecare.

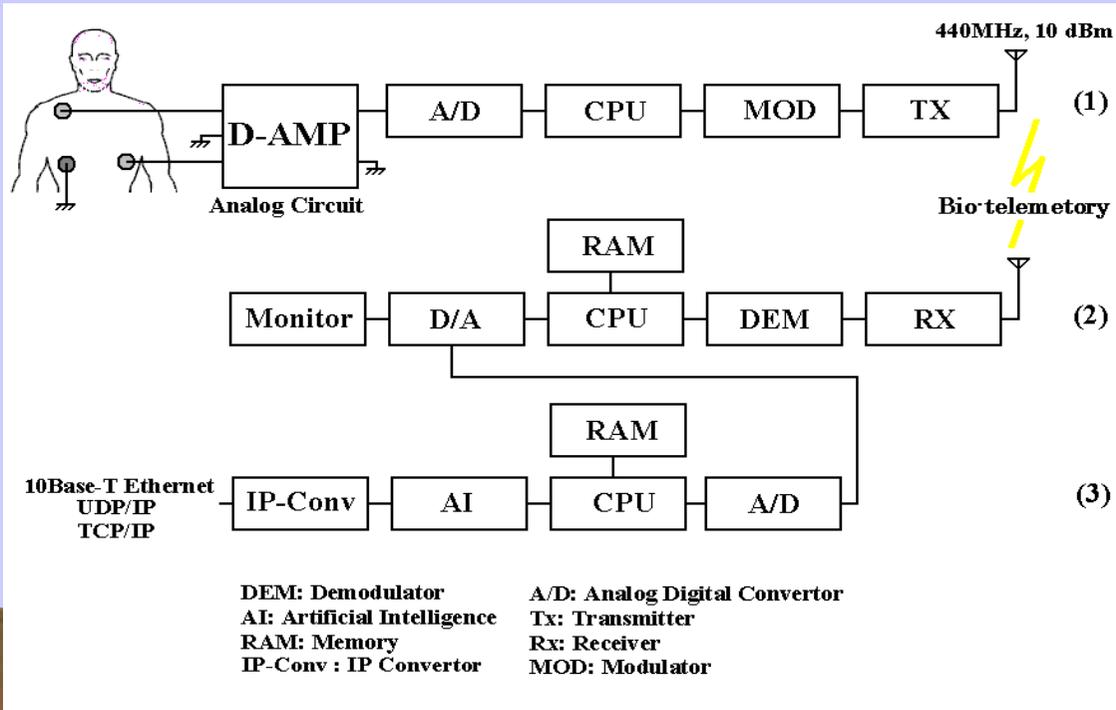
Connected to an IP-based wireless WAN for operation, this system is capable of automatically detecting arrhythmia in a patient residing at home and automatically sending the ECG data to the homecare service center.



# Wireless IP Network for Telehomecare



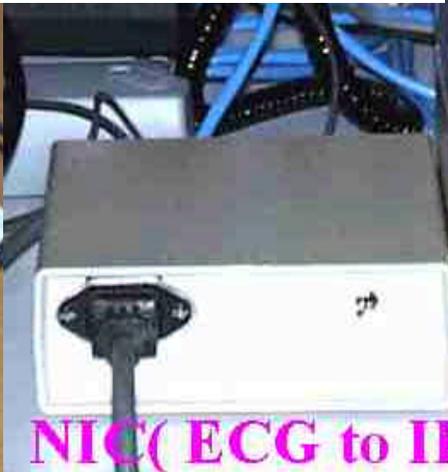
# Block Diagram



ECG transmitter ( 420 MHz )



NIC( ECG to IP ) ECG monitor





# Arrhythmia detection

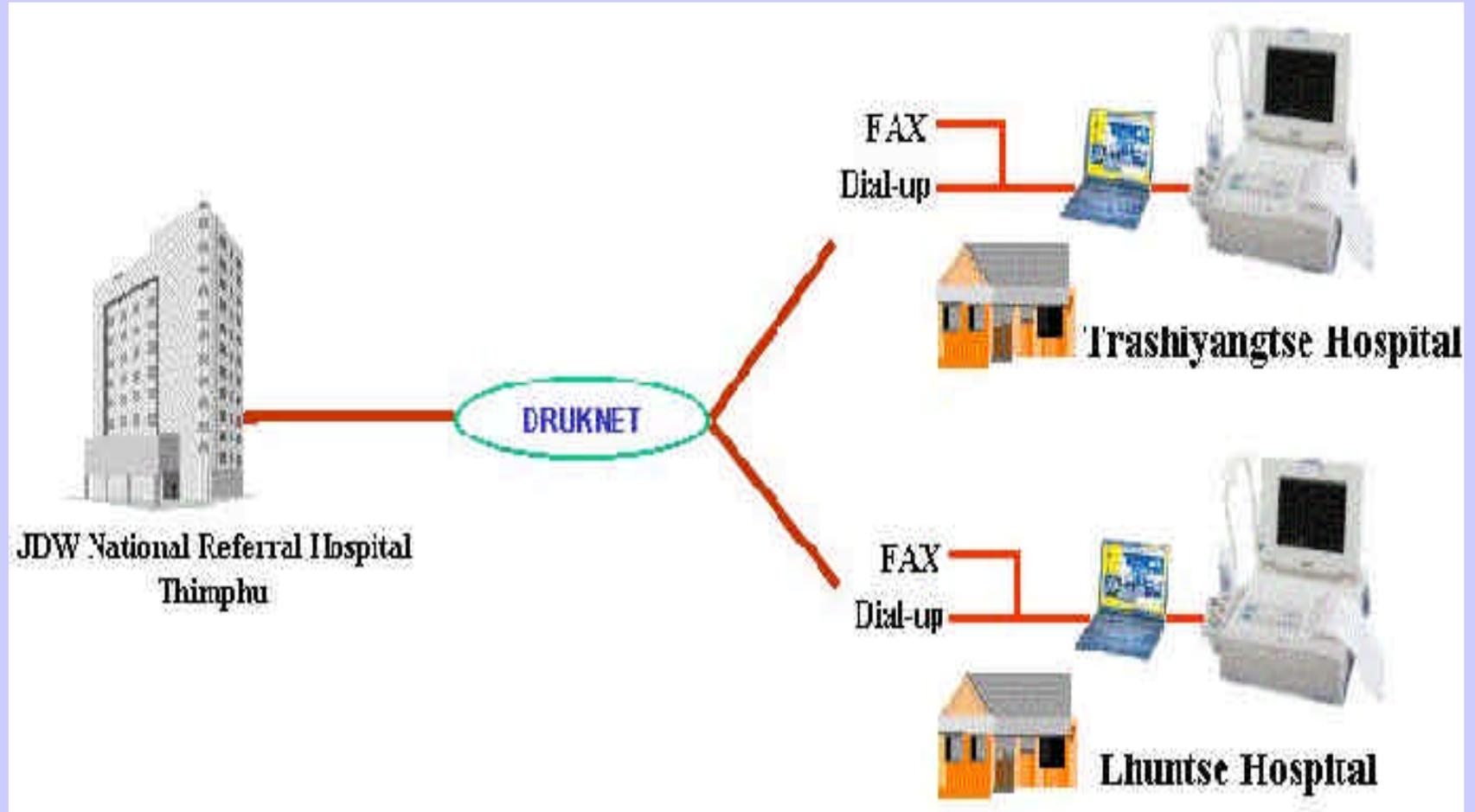
## IP-ECG with DFT

1. SPVC; Supraventricular Premature Contraction
2. VPC; Ventricular Premature Contraction
3. Multifocal VPC
4. Short-run type VPC
5. R on T VPC





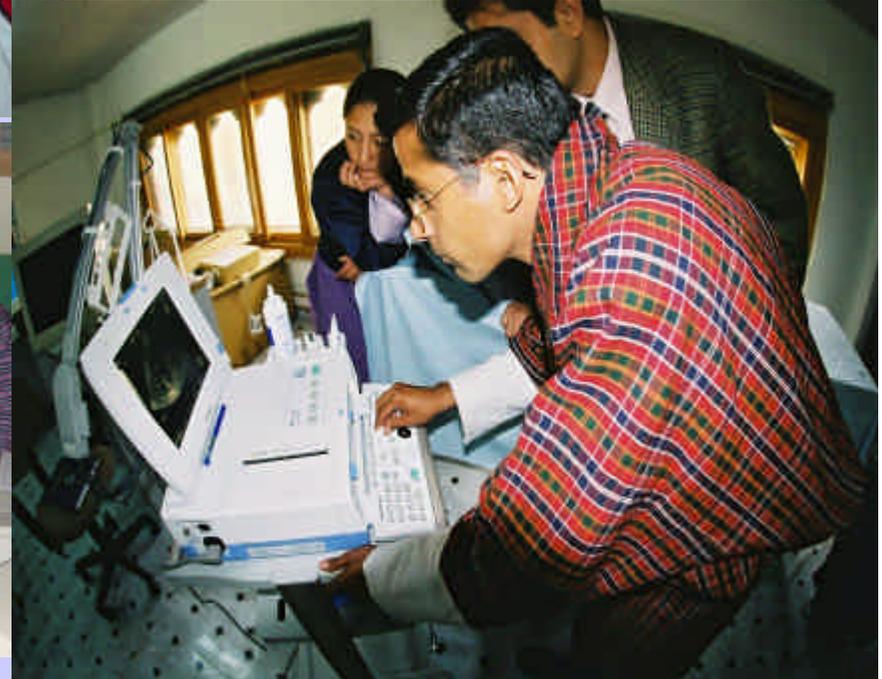
# Outline of the East Bhutan Tele-ECG Project





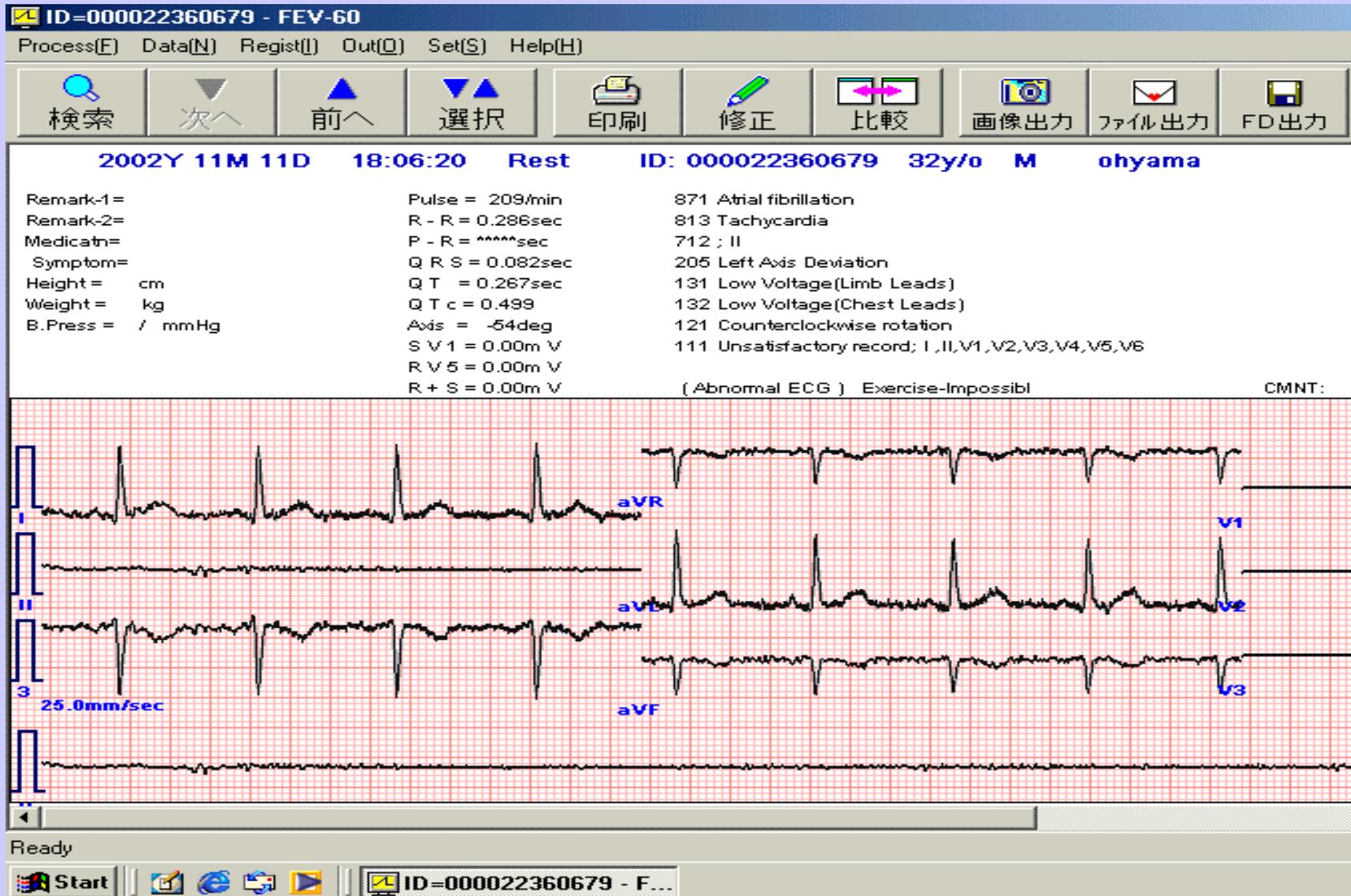


## Training to doctors and nurses in Bhutan how to use ECG, cardio echo-graphy, and telemedicine system via Internet.





# ECG display on Computer





# **APT Second Opinion Center**

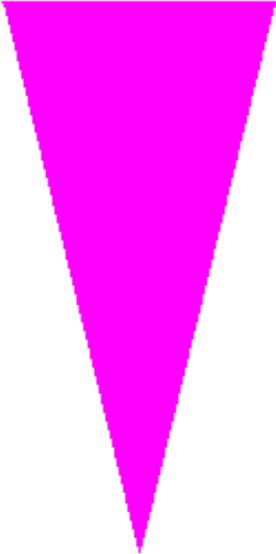
**hosted at Tokai Univ.**

**( expected Indonesia, India near future)**

- 1. Web based consultation**
- 2. Free of consultation charge**
- 3. Open for APT Member State**
- 4. Design of a standard model**



# Realtime comm. or store and forward data comm. for the SOC

Style of Comm.	Applications	Tools	Cost	Scheduling
Real time	Tele-surgery Tele-psychiatry	Video Telephone		
Store and Forward	Tele-cardiology Tele-radiology Tele-pathology	Computer & IP terminal		



# Problem of Real time communications for the SOC

## 1) Running cost

High costs, difficult to keep self-sustainable operation

## 2) Scheduling

Inconvenience of use for both providers



# Store and forward data communications

## 1) Data collection

On line, Off line

## 2) Systems

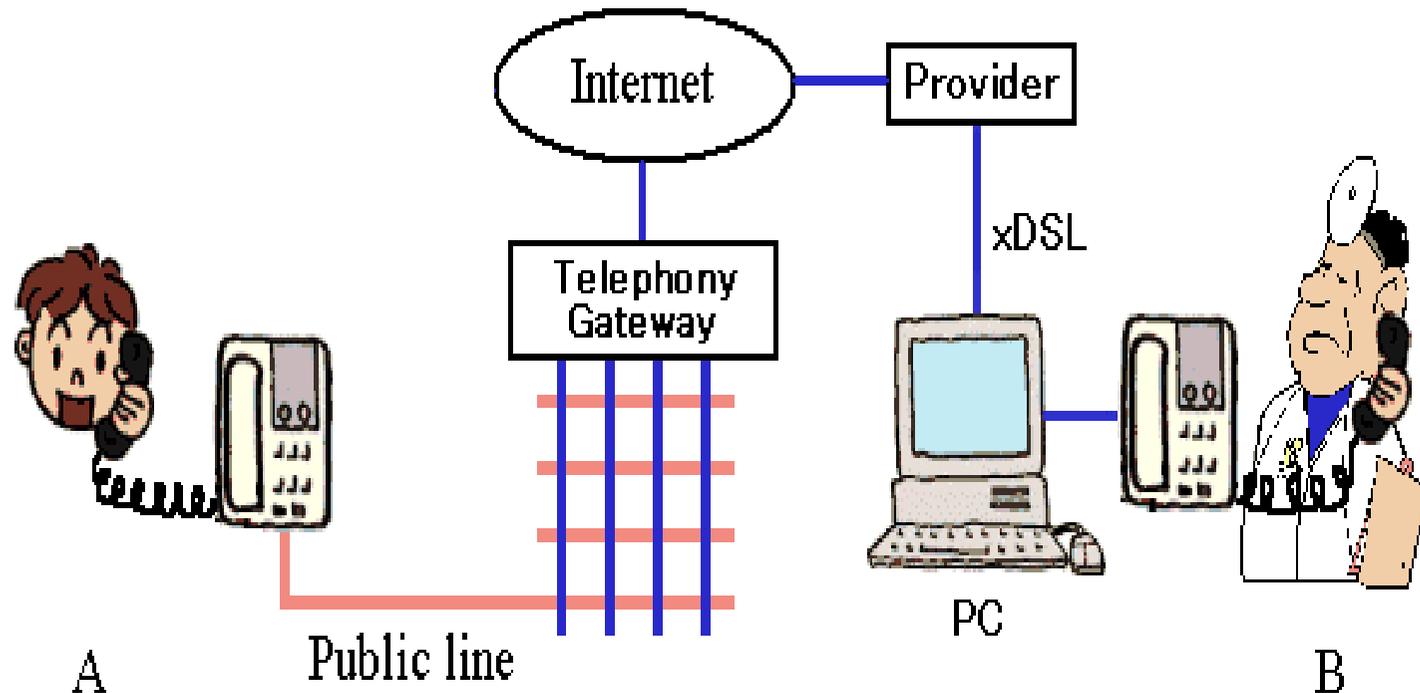
Web based, E-mail style

## 3) Reporting



# IP-Telephony

One of a solution to reduce running cost





## Conclusion

- 1. APT Second Opinion Center(SOC) hosted at Tokai University has been started linking with Internet.**
- 2. A standard model for the SOC is recommended to perform smooth operation to cover all Member States, and shall install another standard SOC in developing countries to obtain self-sustainable operation.**



# Thank you !



**Prof. Kiyoshi Kurokawa, MD, MACP**

**The president of APT Telemedicine Workshop**

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