Experiment of internet-based Tele-medicine in Amami Rural Islands

30 Jan. 2004
SAINT2004 Workshop
Internet to Support Social Welfare

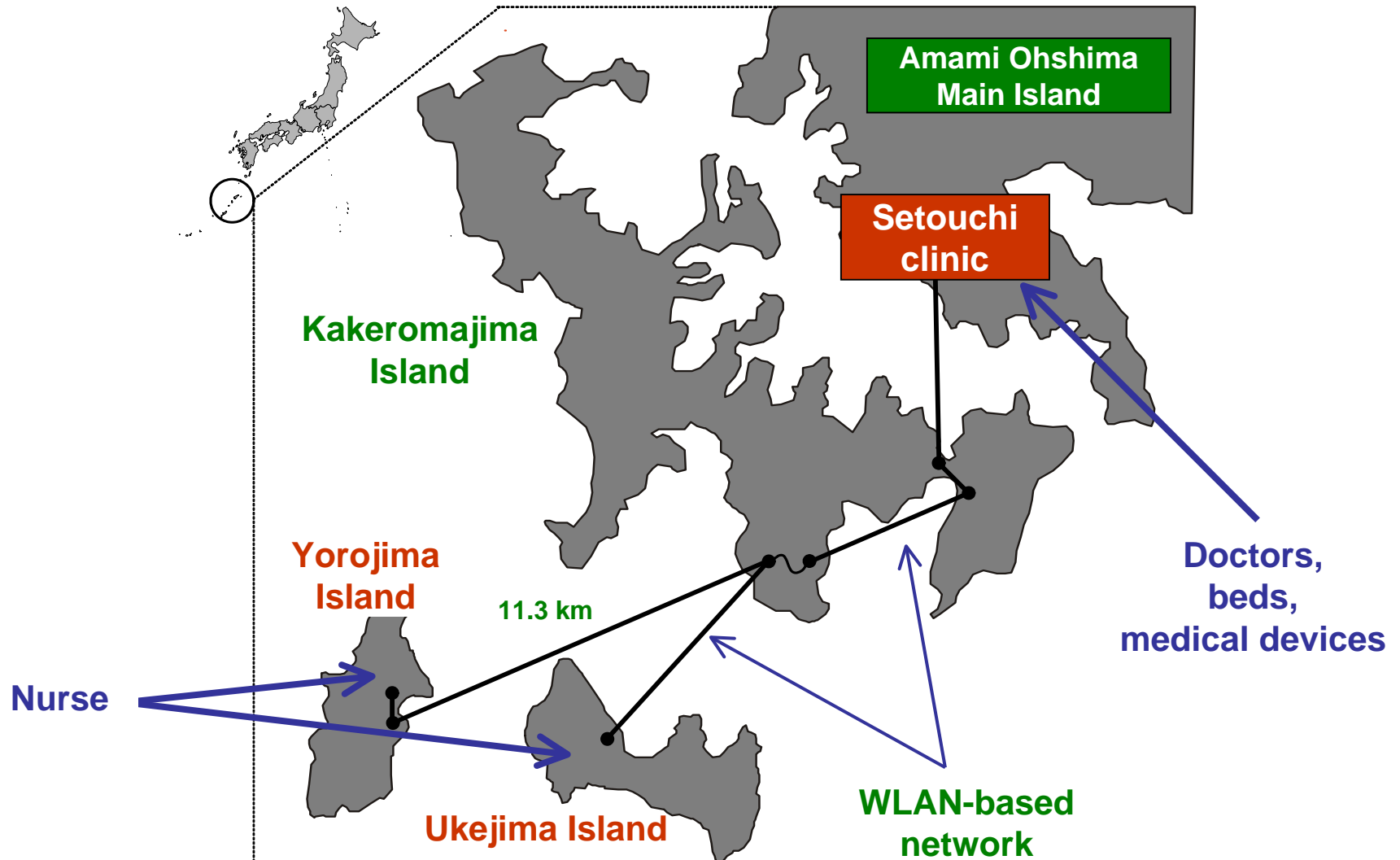**Atsushi Isechi, Chiyomi Oda (*Amami Ohshima Setouchi Clinic*)**
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Backgrounds and
Area of the Experiment

Amami Ohshima Main Island

Setouchi clinic

Kakeromajima Island

Yorojima Island

11.3 km

Nurse

Ukejima Island

Doctors, beds, medical devices

WLAN-based network

Backgrounds and
Area of the Experiment

Yorojima Island
with Japan's most beautiful
Coral Leaf

Yorojima :
   89 families
   159 people
   49% of senior citizens [1]
   (citizens of more than 65 yeas old)

Ukejima :
   110 families
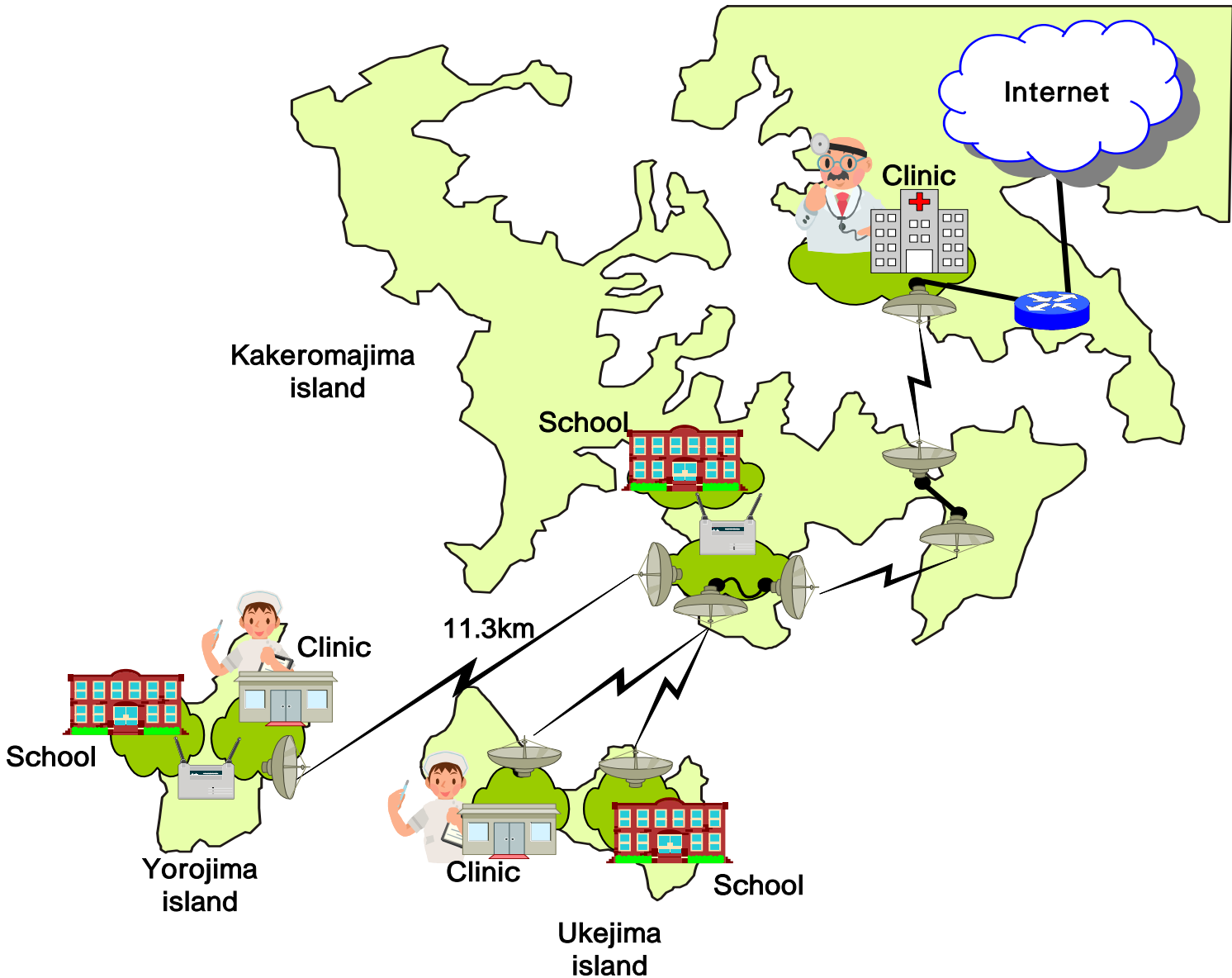   208 people
   53% of senior citizens [1]

   [1] : Japan's average is 14 %.

A combined elementary and junior high school with about 10 pupils.

Wireless LAN Network
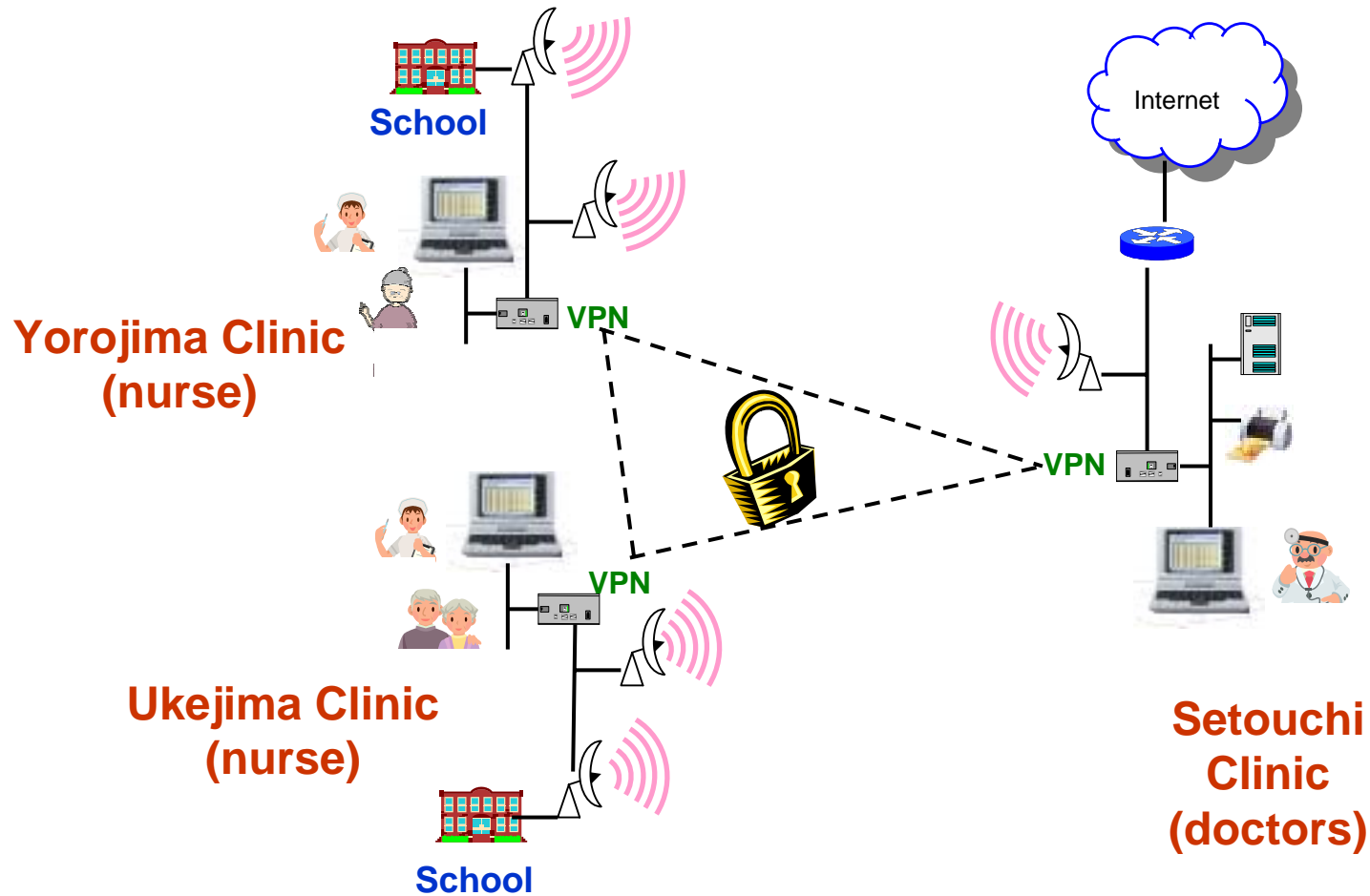
Wireless LAN at Clinics

Wireless LAN antennas

Yorojima Clinic (nurse)

Setouchi Clinic (doctors, bed, etc.)

PC-based video-telephony

QualityMeeting

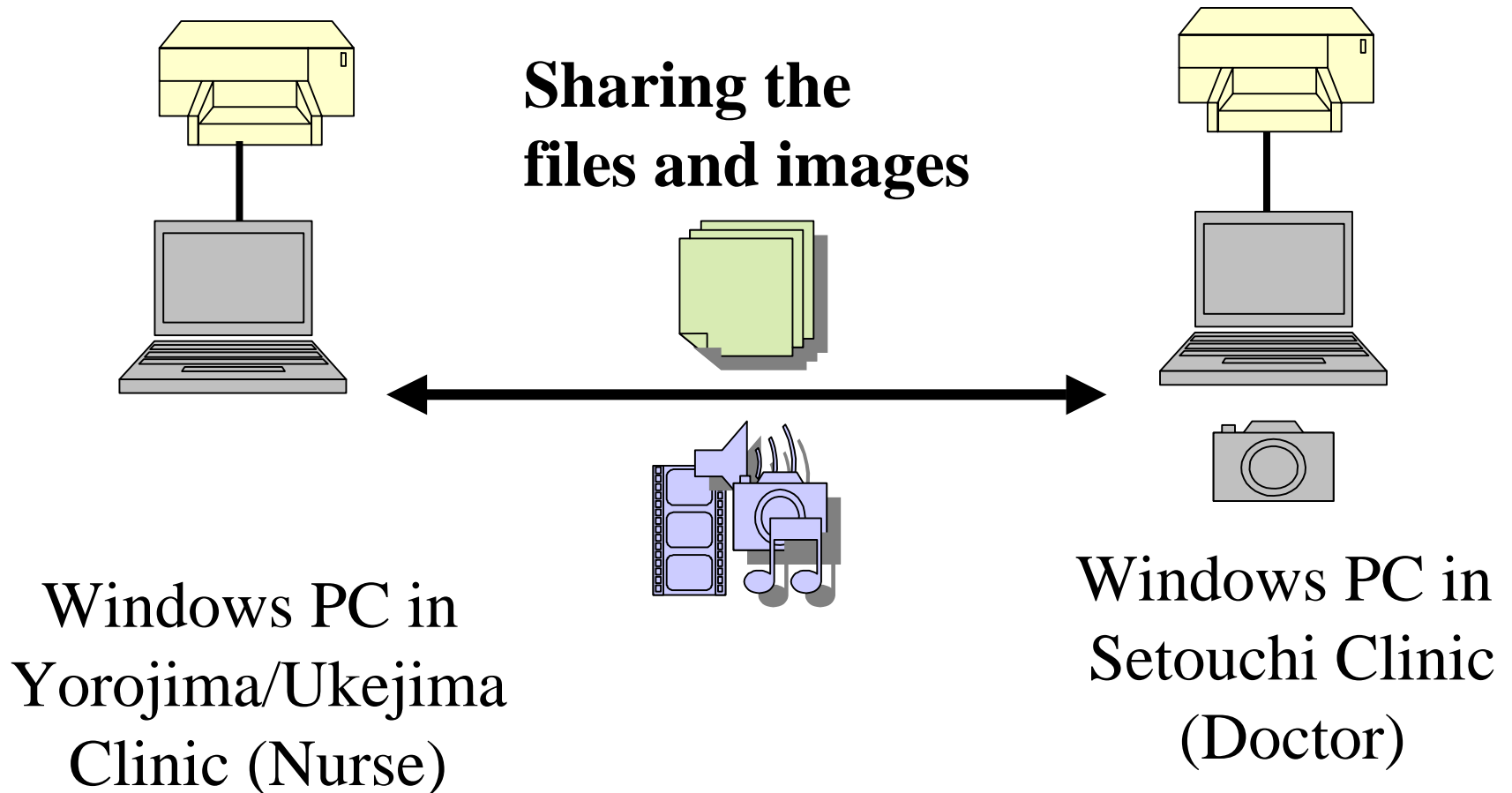- MPEG4-based coding
- Resilience for errors specific to wireless LANs, e.g., miss order of packets, duplication of packets
- Flexible rates from ISDN dial-up to LANs, i.e., 16-4096 kbps of video,
  up to 30 frames/sec,
  up to 640x480 pixels/picture,
  and 16-256 kbps of audio.
- Capturing a still image at the remote end

Doctors and nurses use PCs for their routine work everyday, and can simply initiate video-telephony software when it is needed.

This project aims to evaluate how common products and technologies of the Internet, rather than specific medical equipment, can be utilized in tele-medicine applications.

Considerations on tele-medicine

1.Ethernet LAN is very useful

Sharing the files and images

Windows PC in Yorojima/Ukejima Clinic (Nurse)

Windows PC in Setouchi Clinic (Doctor)

Considerations on tele-medicine

2.Video-telephony over Windows PC is useful

A doctor using video-telephony over Windows PC for medical care, between Setouchi clinic and Yorojima clinic.

A nurse taking a still image with QualityMeeting during care.

Considerations on tele-medicine

3.Digital camera pictures are useful

Digital camera picture

Still picture by QM remote control

1.pierced the insect

2.Tinea of left axillary's skin

Considerations on tele-medicine

4.Preventive medicine is more important
rather than clinical medicine

Dental clinic in Kagoshima

Yorojima clinic

Senior citizens hearing a lecture from Kagoshima on dental care.

Considerations on tele-medicine
5.Portability is important in tele-medicine

A nurse (left) visiting a patient (right) who communicates with a doctor via portable video-telephony.

An important task for a nurse in Yorojima/Ukejima is making home visits to senior patients.

Summary on tele-medicine

1. Ethernet LAN is useful than a router network.

2. Video-telephony over Windows PC is useful.

3. Even digital camera pictures can be used.

4. Preventive medicine is more important rather than clinical medicine.

5. Portability is important in tele-medicine.

Conclusions

Internet technologies, instead of professional medical equipment, are useful and effective for supporting medical care in rural islands.

In Japan, there are more than 200 islands:
- about 80 islands have less than 300 people.
- about 60 islands have no clinic.

It is hoped that the result of this experiment will help advance medical and healthcare in rural islands.