



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

30 Jan. 2004

SAINT2004 Workshop

Internet to Support Social Welfare

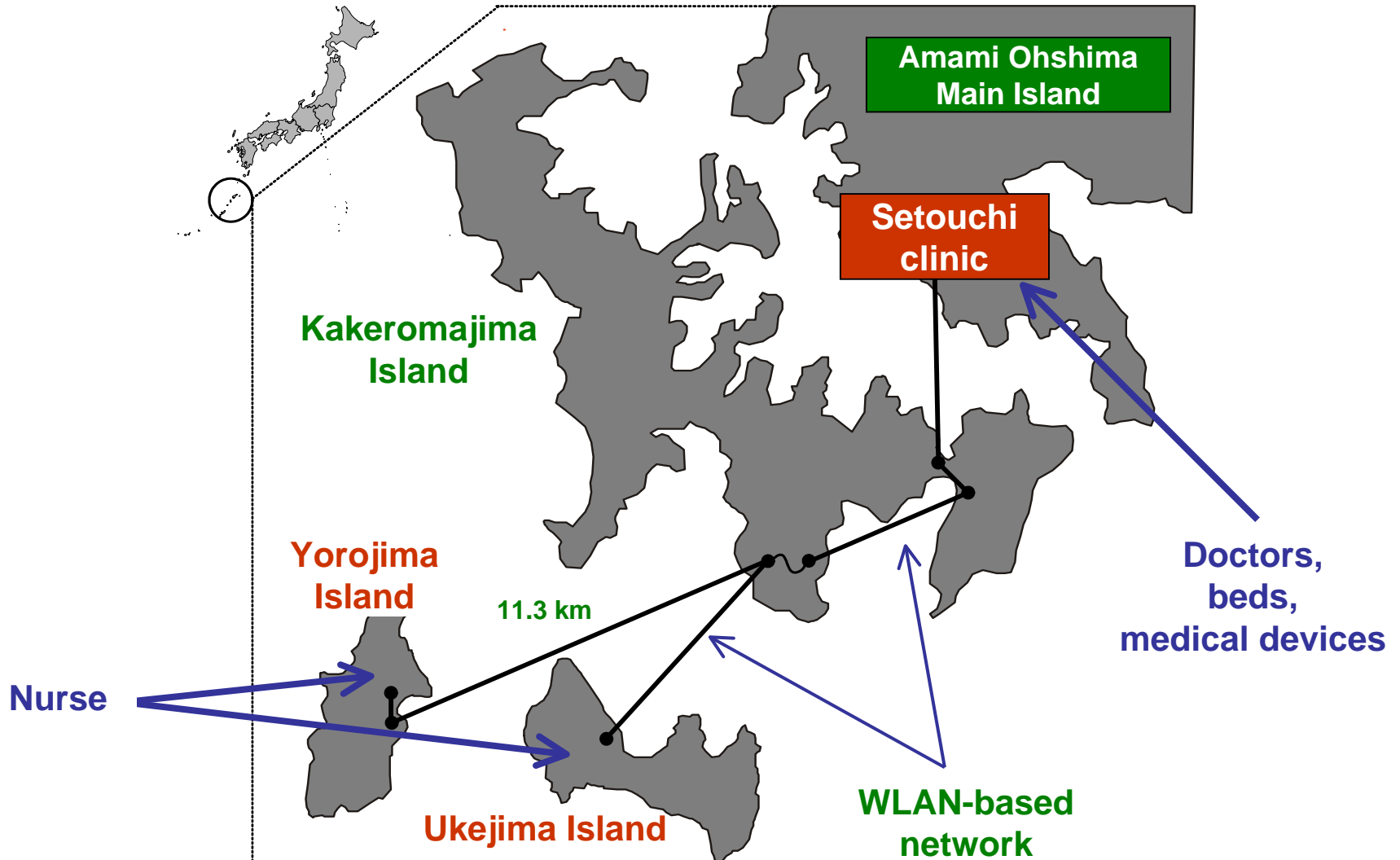
Atsushi Isechi, Chiyomi Oda (*Amami Ohshima Setouchi Clinic*)

Reiko Shinkura, Suminori Akiba

(*Faculty of Medicine, Kagoshima University*)

Hiromitsu Fujikawa, Katsuyuki Yamazaki (*KDDI R&D Labs*)

Backgrounds and Area of the Experiment



Backgrounds and Area of the Experiment



**Yorojima Island
with Japan's most beautiful
Coral Reef**

Yorojima :

89 families

159 people

49% of senior citizens ^{*1}

(citizens of more than 65 years old)

Ukejima :

110 families

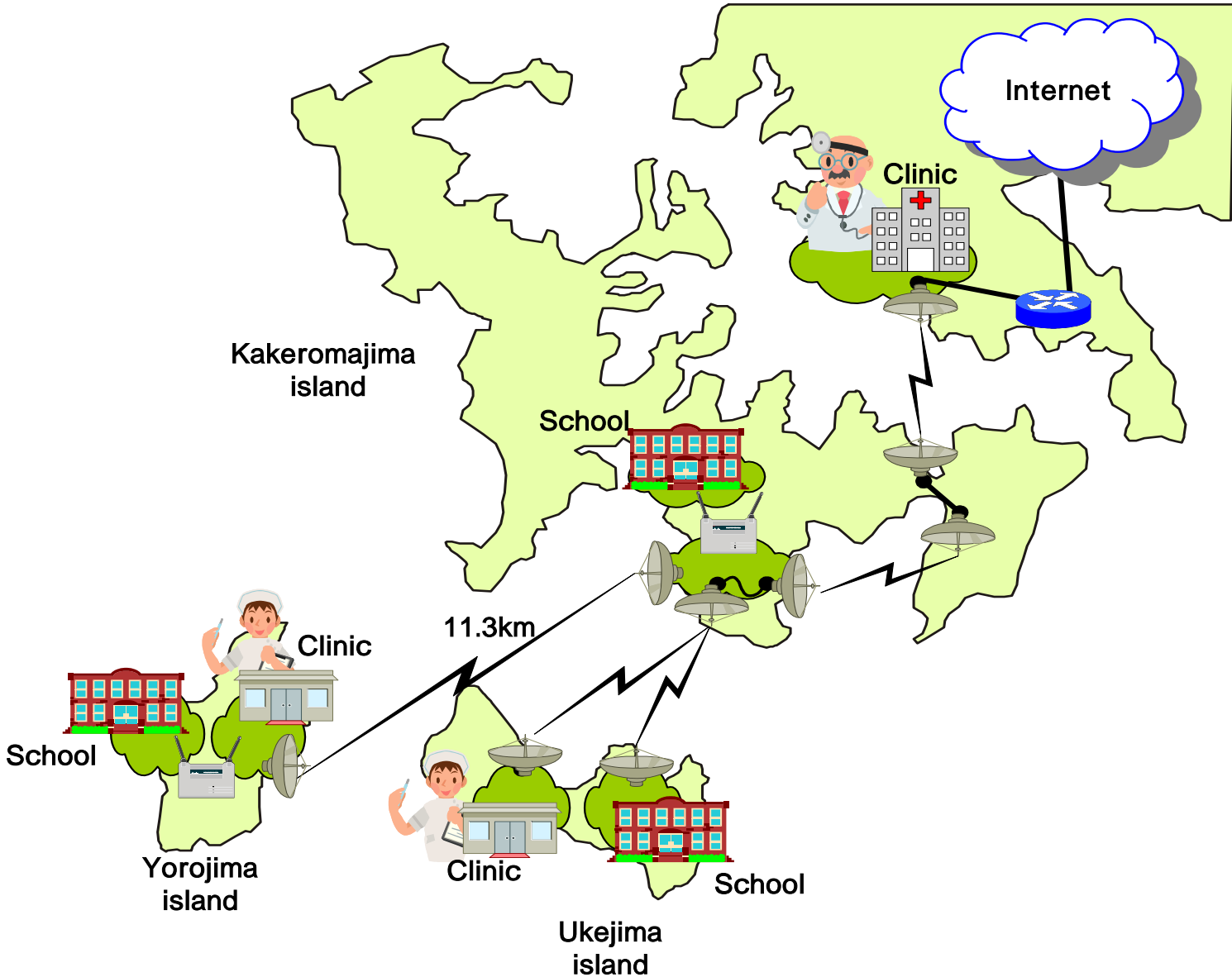
208 people

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

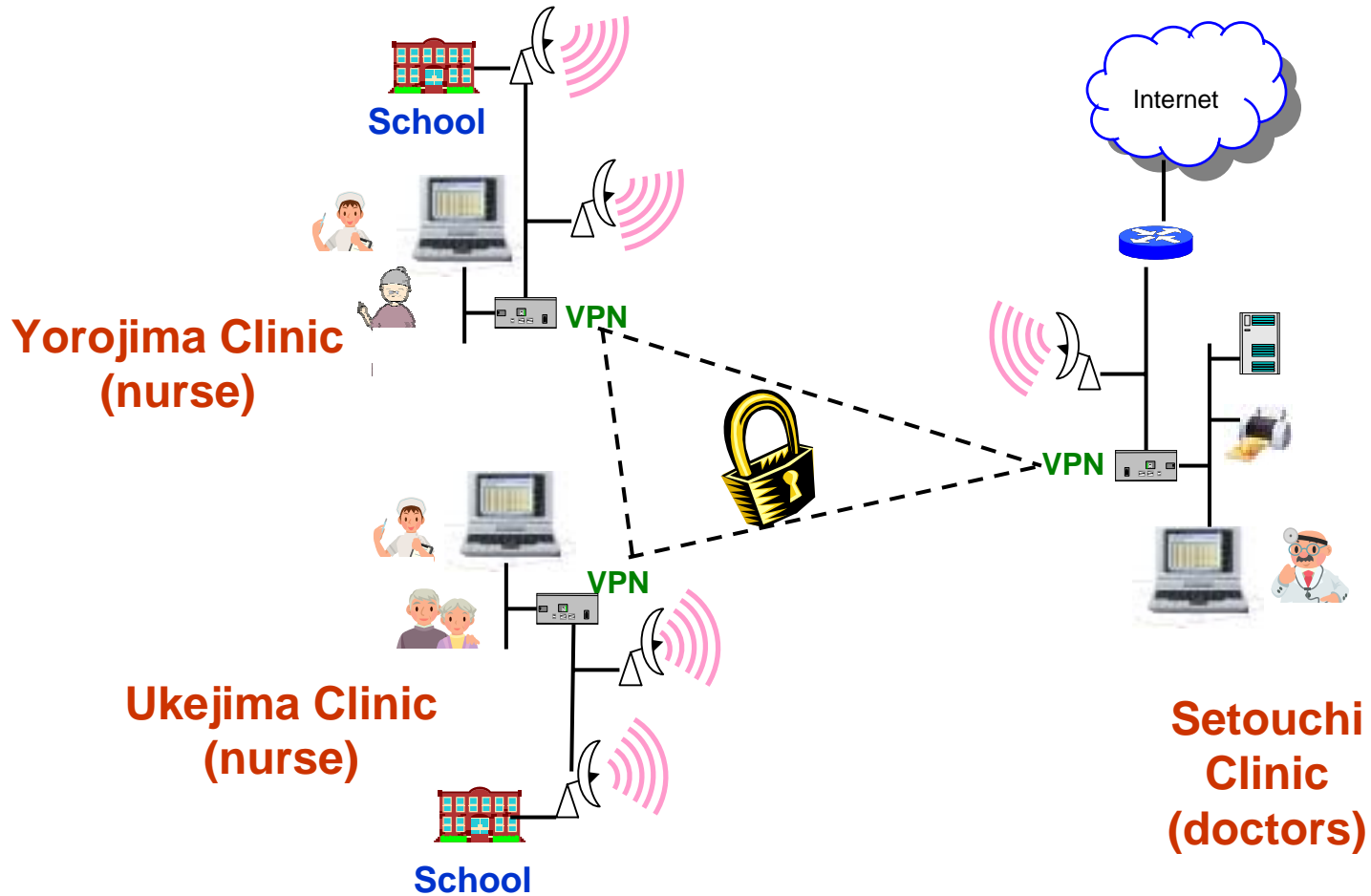


**Yorojima
Clinic (nurse)**



**Setouchi Clinic
(doctors, bed, etc.)**

VPN for Clinic Network



PC-based video-telephony



QualityMeeting

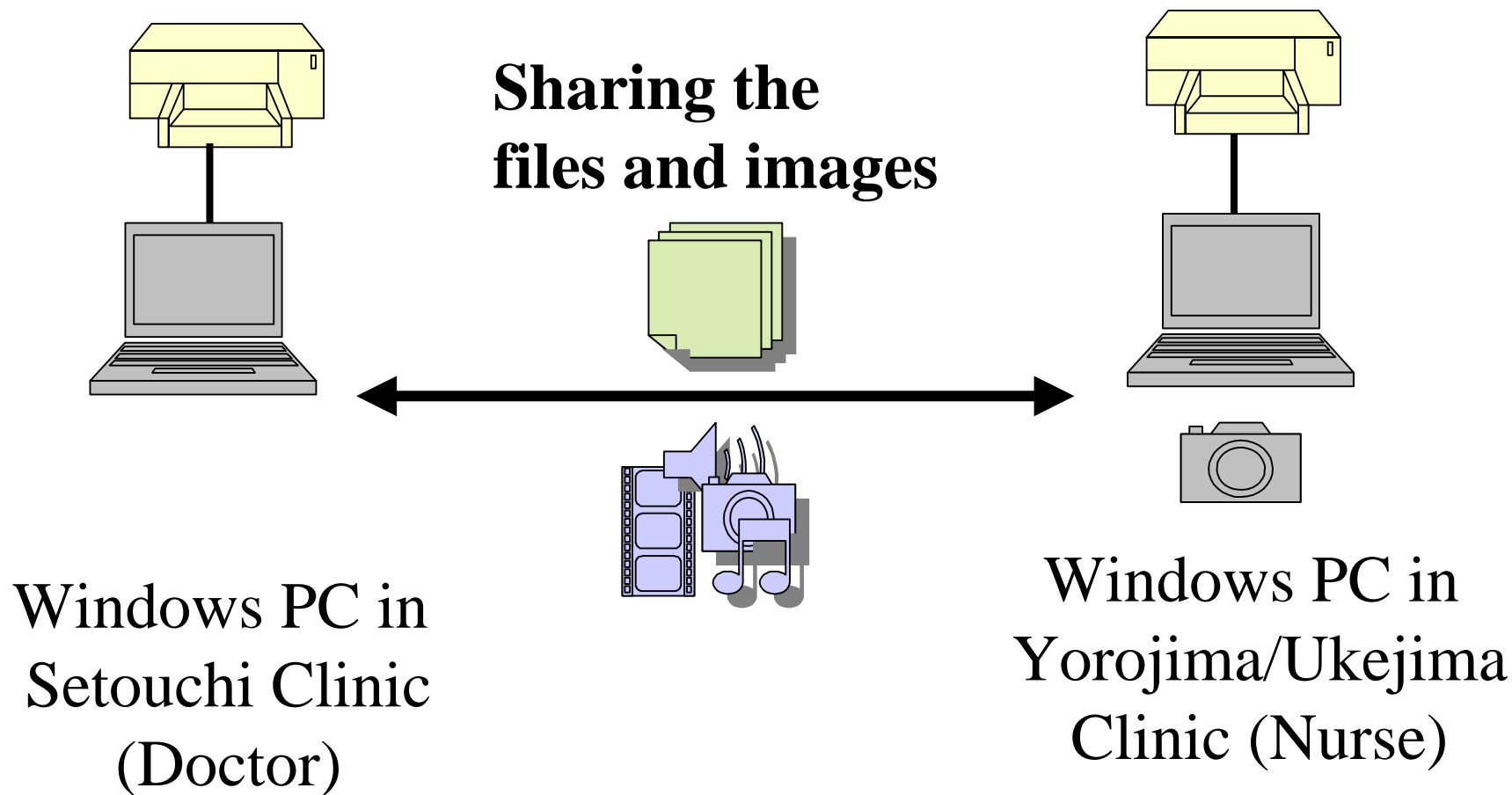
- MPEG4-based coding
- **Resilience for errors specific to wireless LANs**, e.g., miss order of packets, duplication of packets
- **Flexible rates from ISDN dial-up to LANs**, i.e., 16-4096 kbps of video, up to 30 frames/sec, up to 640x480 pixels/picture, and 16-256 kbps of audio.
- **Capturing a still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



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



1. pierced the insect

Still picture by QM remote control



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



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

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



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.