GLOBAL CITY TEAMS CHALLENGE

Safe Town of Shirahama

Preparing for Disasters with Resilient Communication Platform "NerveNet"

June 13th, 2016 @ GCTC Expo 2016, Austin

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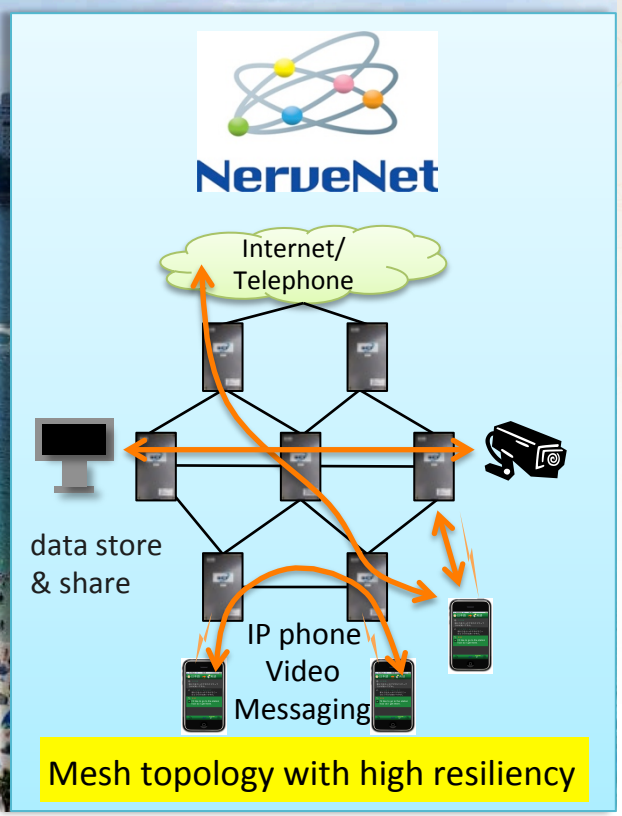

Team Leaders

Kazuhiro Sakamoto, Shirahama Town

Masugi Inoue, National Institute of Information and Communications Technology

Municipal Government

Shirahama Town, Wakayama Prefecture, Japan

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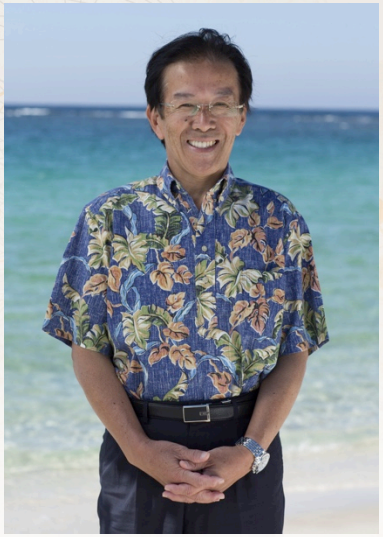
Team Members



Shirahama Town
Makoto ITAMI, Mayor
Kazuhiro SAKAMOTO, Senior Staff

Shirahama Town

NICT
Masugi INOUE, Director
Yasunori OWADA, Senior Researcher

National Institute of
Information and Communications Technology

HIRAKAWA HEWTECH Corporation
Manufacture and sales of cables, electronic, medical, communication, and broadcasting equipment

Nassua Solutions Corporation
Software and system solutions

NSC
ナシュア・ソリューションズ
株式会社

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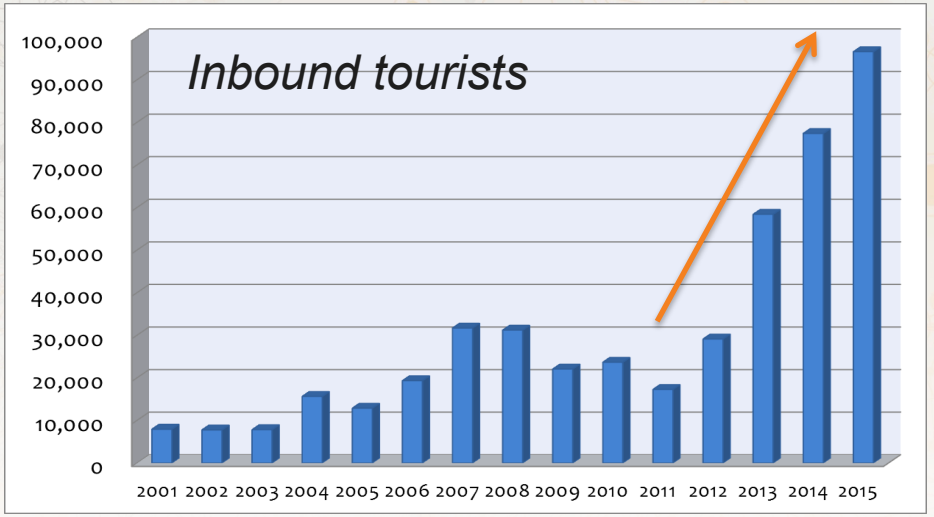
Shirahama Town



The Best Resort Of Japan

- Located on the Pacific coast
- Main businesses: tourism and agriculture
- About twenty thousand residents
- More than three million tourists a year
- Nearly 10% are inbound
- Inbound tourists are increasing, demanding free Wi-Fi Internet service.

Attractions

- Most beautiful, cleanest beach in Japan
- Seven Pandas
- World Heritage “Kumano-Kodo” (Ancient Roads)
- One of the three oldest famous hot spring towns since ancient times
- Fresh fish and vegetables, pure water, sweet fruit

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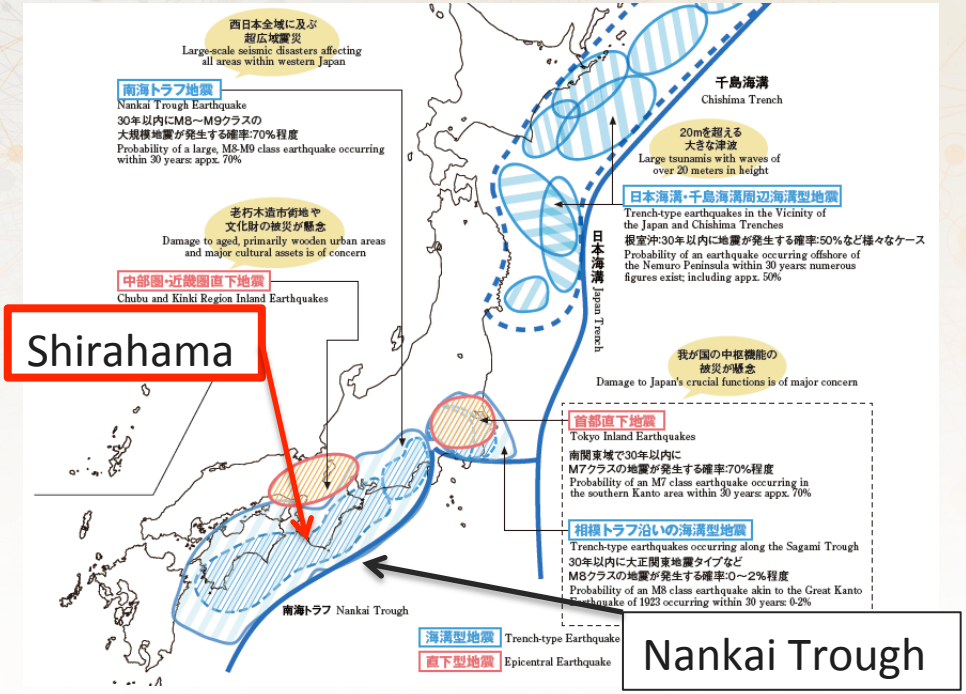
Future Risks

Source: "Disaster Management in Japan" by Cabinet Office, Government of Japan.

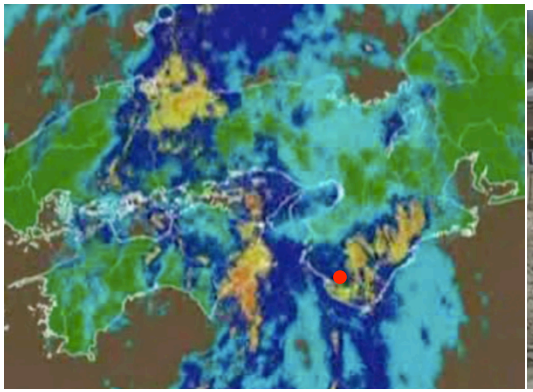


Earthquakes and Tsunamis

- Shirahama has to prepare for earthquakes and tsunamis because it is officially stated that there is an approximately 70% probability of a large, M8-M10 class earthquake occurring within 30 years.

Typhoons

- It also has to prepare for typhoons. In September 2011, a major typhoon caused severe damage and people could not grasp situations in the town since communications were temporarily unavailable.



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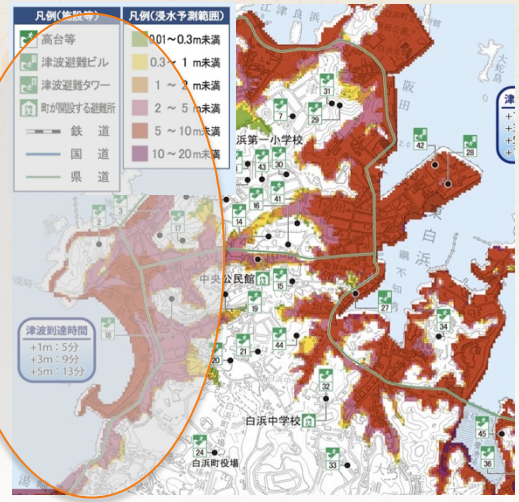
Challenges and Solutions

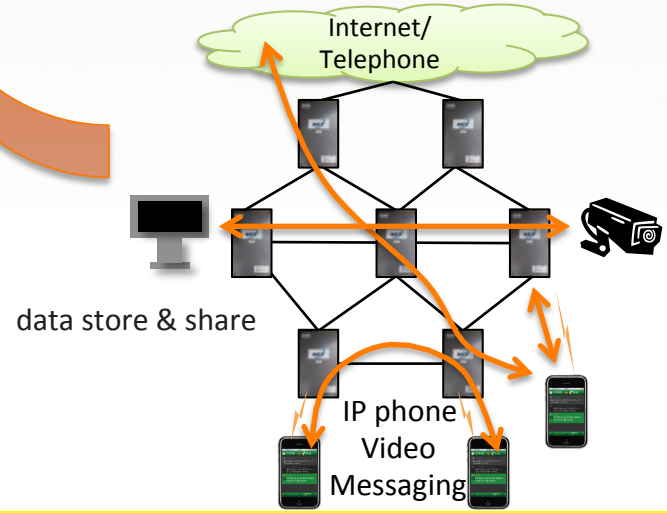
Anticipated Flooding from Tsunami at Shirahama



Challenges and Solutions

- Introducing “NerveNet”, a resilient communication platform, to ensure communications and information sharing among residents and tourists even if public networks and the Internet become unavailable due to disasters.
- NerveNet, developed by NICT, provides resilient local communication as well as connectivity to the Internet.

NerveNet



Mesh topology network with high resiliency

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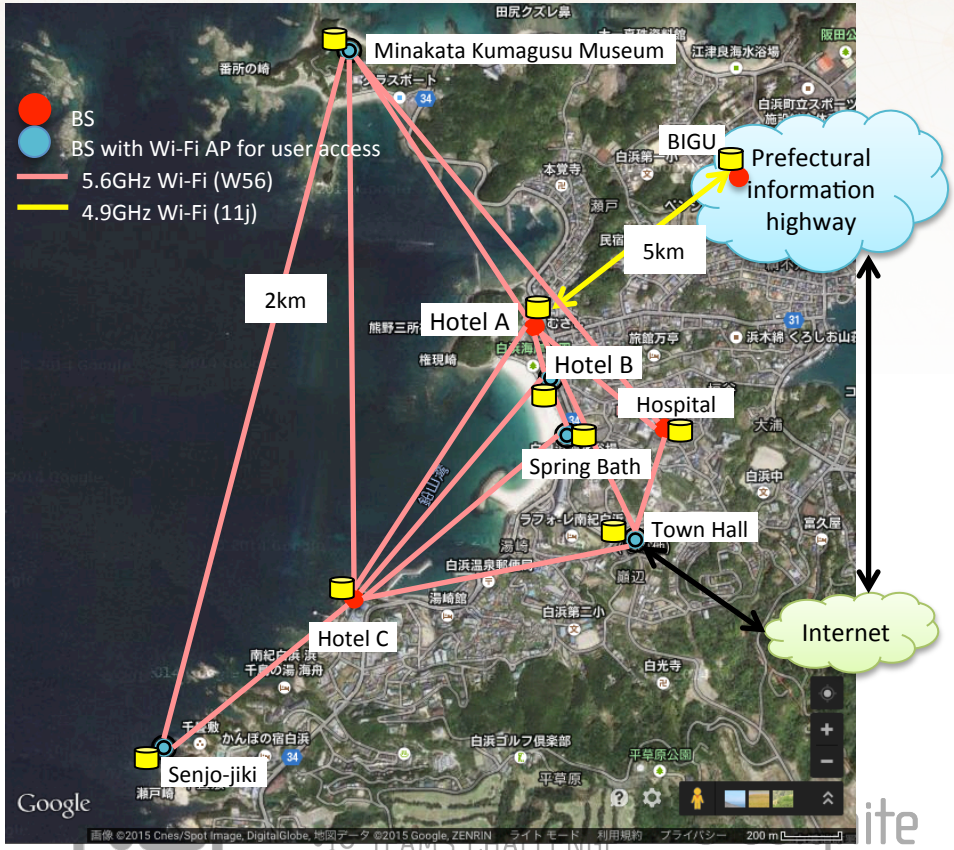
Project Approach

Major Steps

1. Achieving a consensus among the project team, local authorities, organizations, and residents on the necessity of doing the pilot test for preparing for disasters and the anticipated economic benefits connected to tourism
2. Designing the pilot test such as the configuration of the network, the applications running on it, and the locations of devices to be installed.

Mayor Itami (right) signed an MoU with NICT.



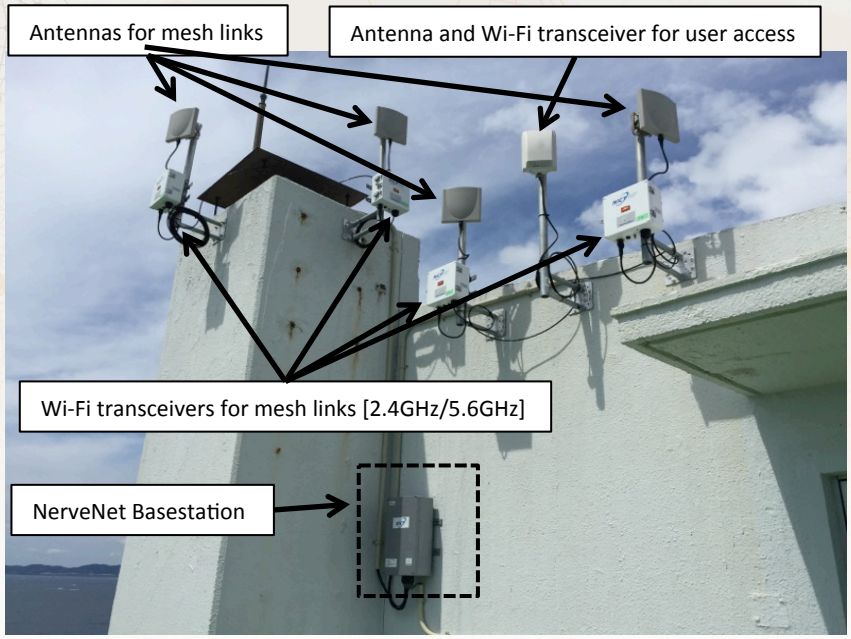
Nine base stations of NerveNet cover the beach and some sightseeing spots.

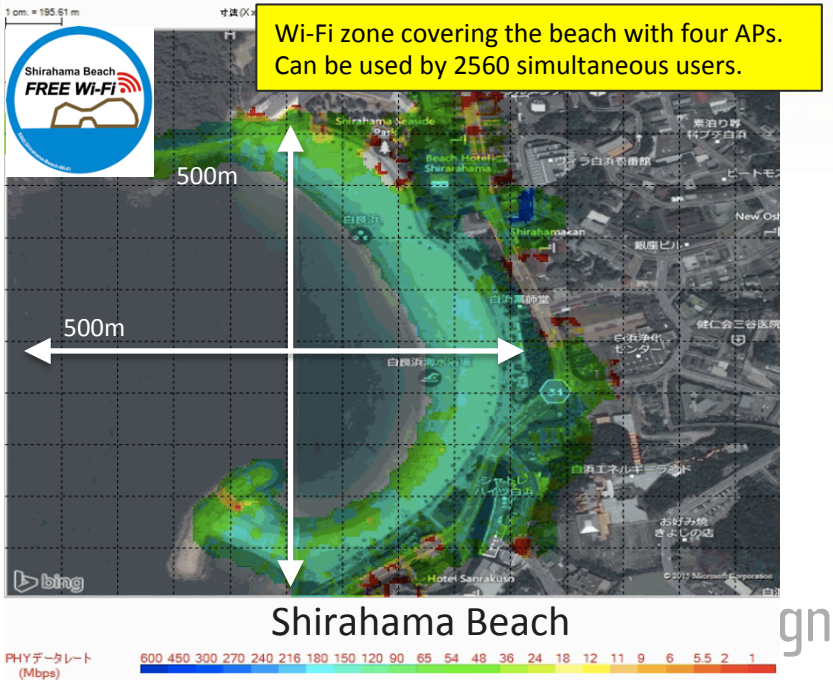
Project Approach

Major Steps

3. Developing the system (devices and applications), installing it (many devices must be installed outdoors), and testing it.
4. Operating it and measuring data
5. Achieving a consensus on the benefits of the system
6. Sustainable operation of the system by the town

Members of the town assembly listening to instructions from NICT.





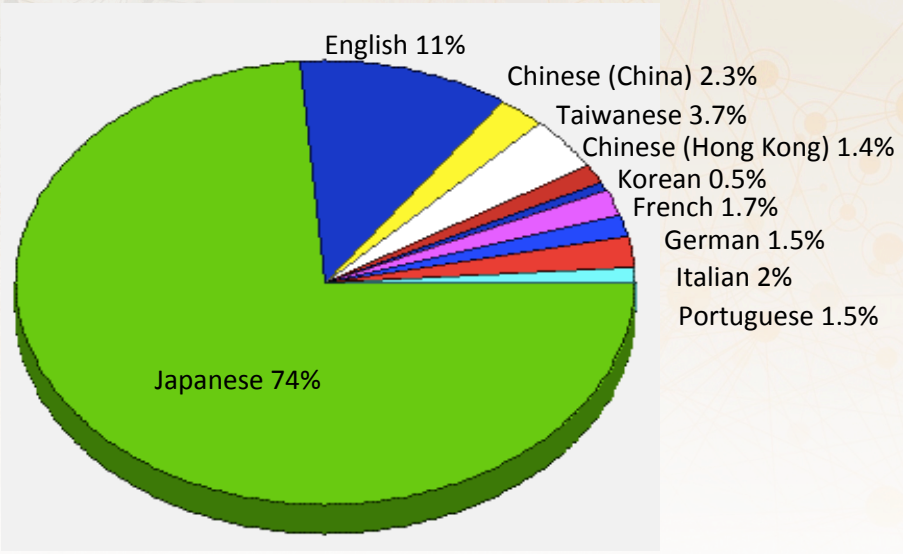
Project Approach

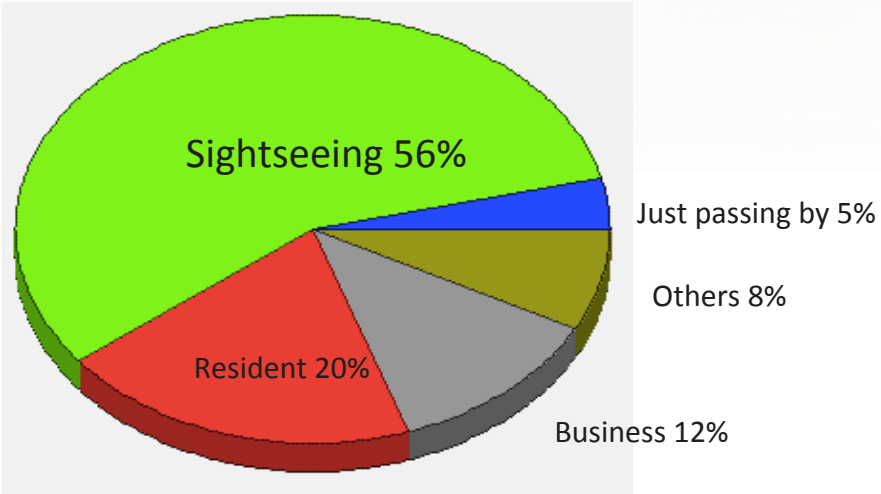
Performance Targets

- Inbound tourists comprising 10% of network users (effectiveness of the network to inbound tourists who demand connectivity to the Internet)
- In-town communications and information sharing without the use of the Internet assuming loss of Internet connectivity due to disasters
- Identifying characteristics of tourist users

Measurement Methods

- Analyzing access logs and users' answers to a questionnaire conducted by us





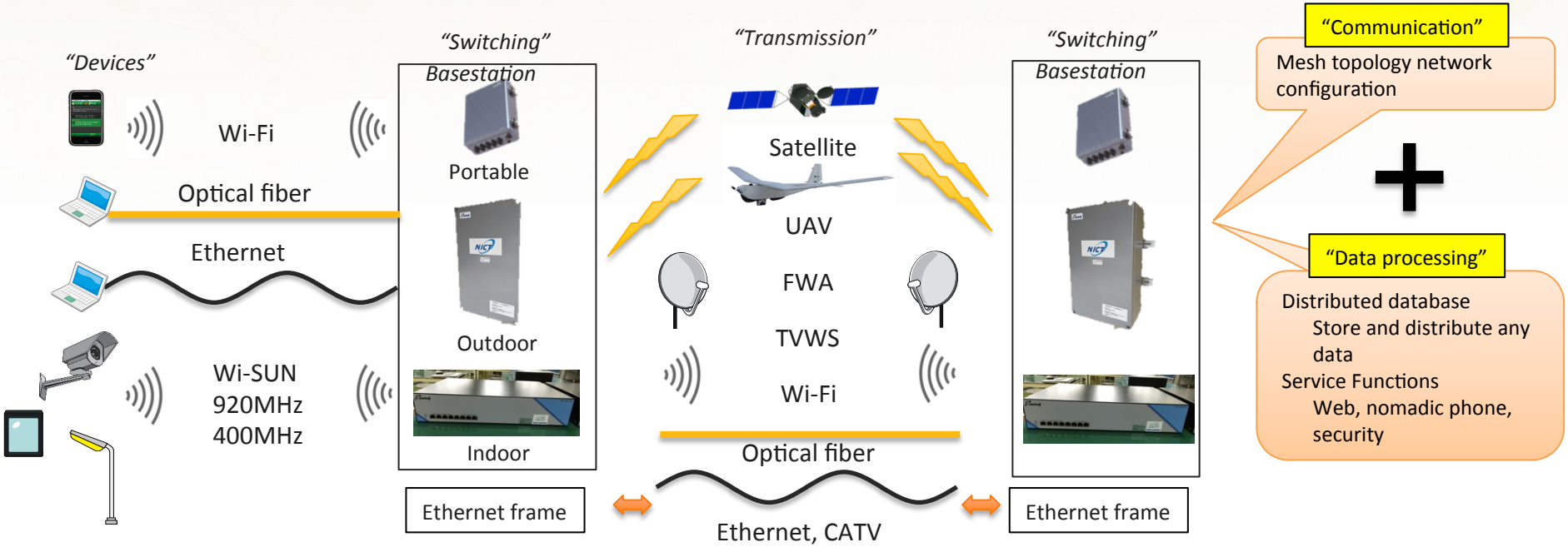
Project Approach

Standards/Interoperability

- NerveNet utilizes standard LAN and IP protocols and systems. Any network appliances with Wi-Fi or LAN interfaces can be connected to it. It provides transparent connection to the Internet.

Replicability, Scalability, and Sustainability

- NerveNet is ready for commercial use and industrial members of the team are ready for business partnership.



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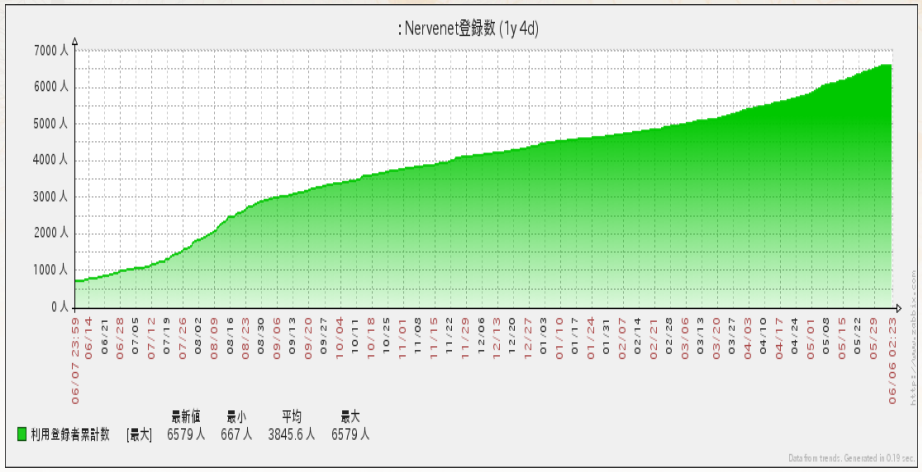
Impact and Benefit

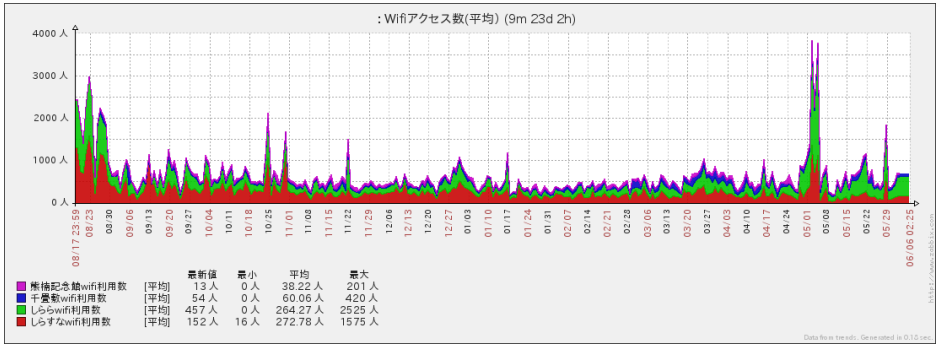
Impact and Benefit

- Economic growth by increased number of tourists visiting the town in safety
- New jobs by increased number of companies moving into the town because of the resilient town network
  - Five companies set up their offices in the town including Salesforce.com Japan.

Registered users: 6579 as of June 5th



Daily users: avg. 600, max. 4000



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Current Status and Future Plan

Phase I Pilot/Demo June 2016:

The pilot system was installed in May 2015 and has been in operation. Since over six thousand tourists and residents have used the network, the town office recognized it to be necessary and decided to allocate the budget to maintain and expand it.

Phase II Deployment June 2017:

Increasing the capability of information sharing in emergency situations. Realizing expansion and enhancement such as connecting sensors and surveillance cameras.

Images from the surveillance camera

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