Professional Design & Engineering Firm

Introduction of "Relay-by-Smartphone®"

A new communication method in the event of a disaster

October 31, 2018
Takahito Inoshita
Kozo Keikaku Engineering, Inc.

What KKE does

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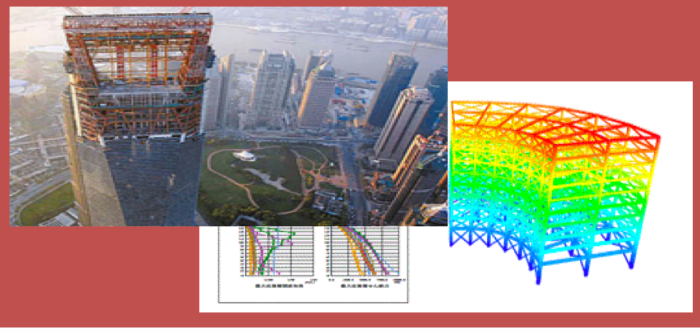
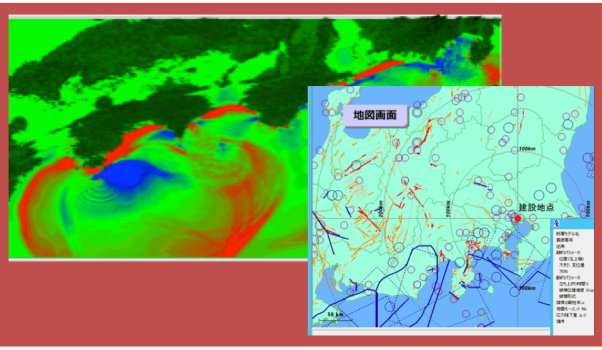
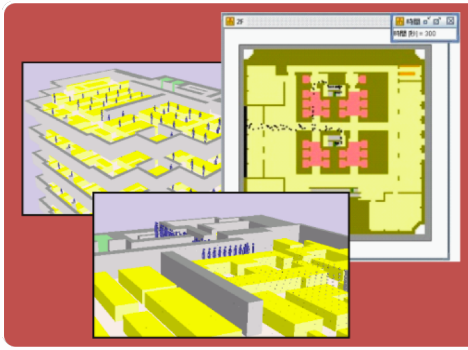


Structures



Nature, Environment



Society, Business, Community

Communication Network Failure

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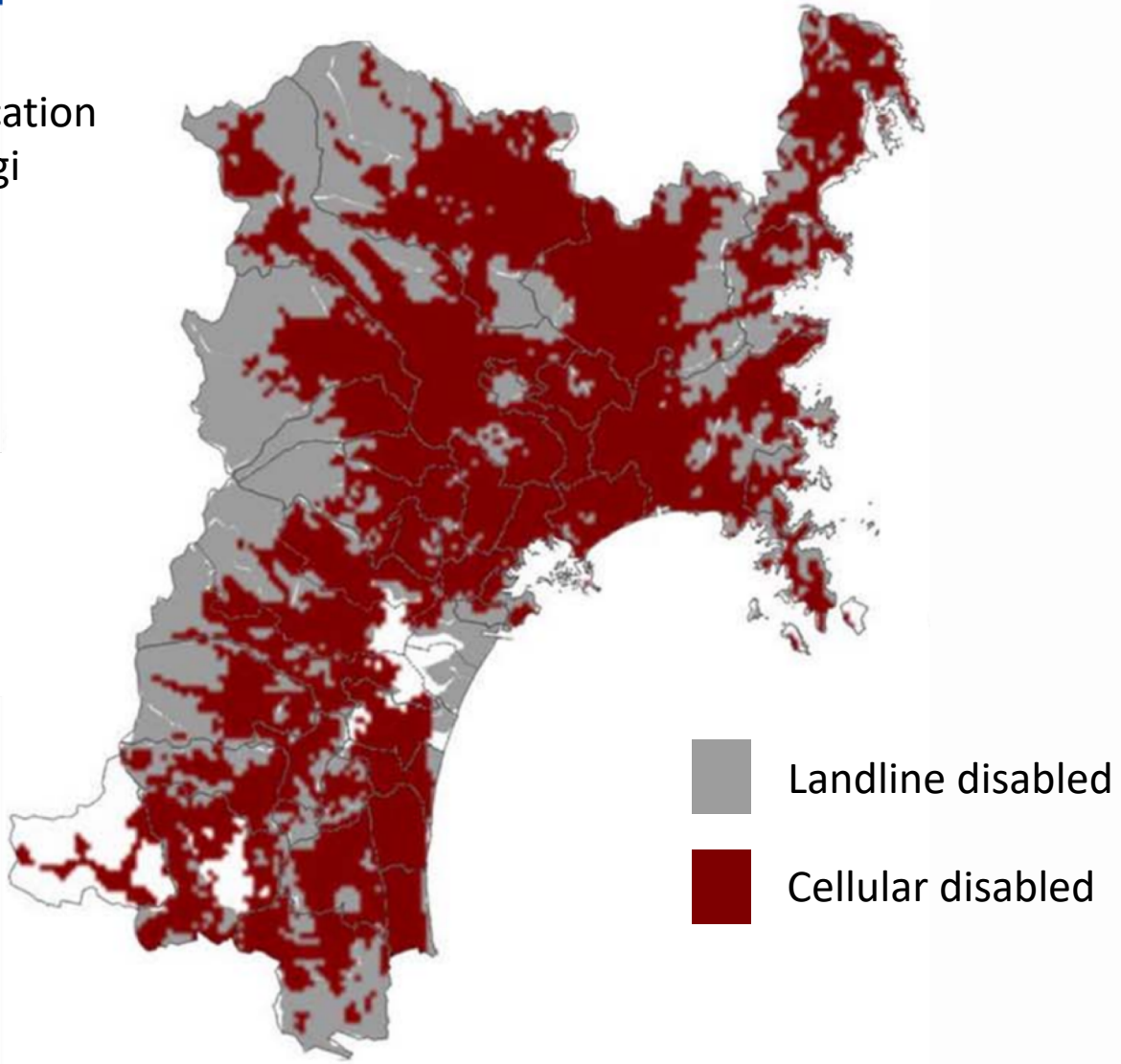
The status of communication network failure in Miyagi Prefecture 2 days later



Source: http://www.bousai.go.jp/oukyu/higashinihon/4/pdf/soumu.pdf

What Happens due to Communication Failure

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You can’t understand

- how bad the damage is
- where the victims are
- what the victims need

The aftermath gets worse and lasts longer.

How Relay-by-Smartphone® works

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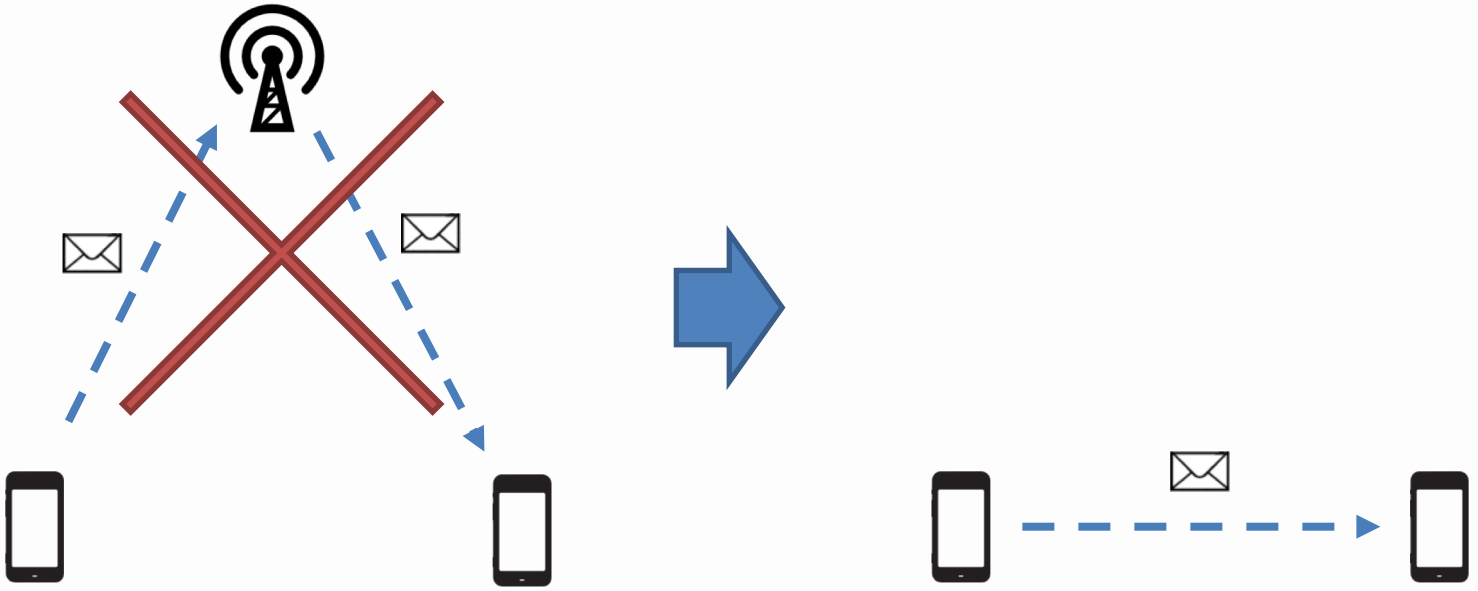

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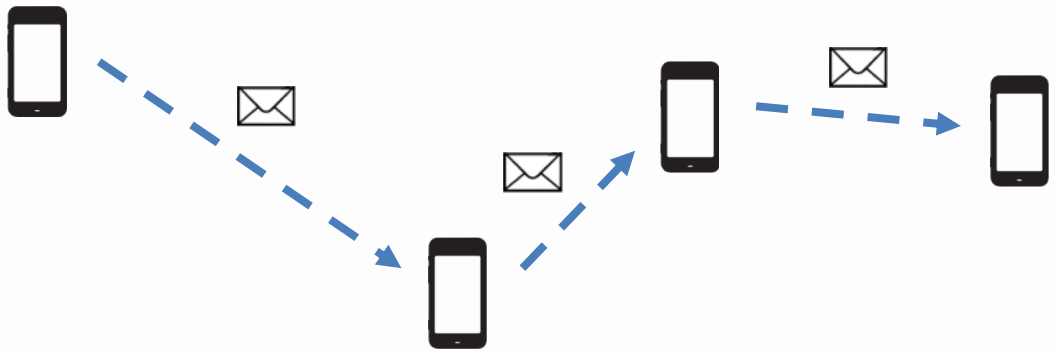

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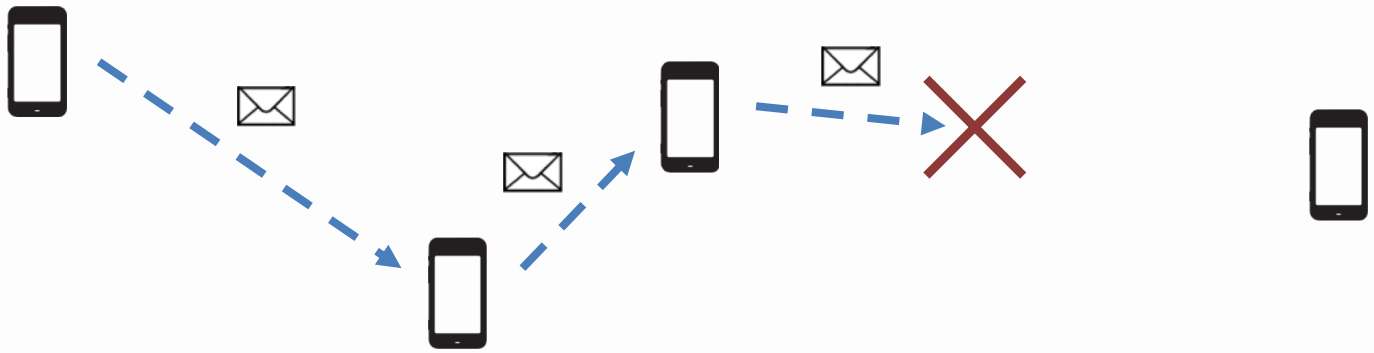

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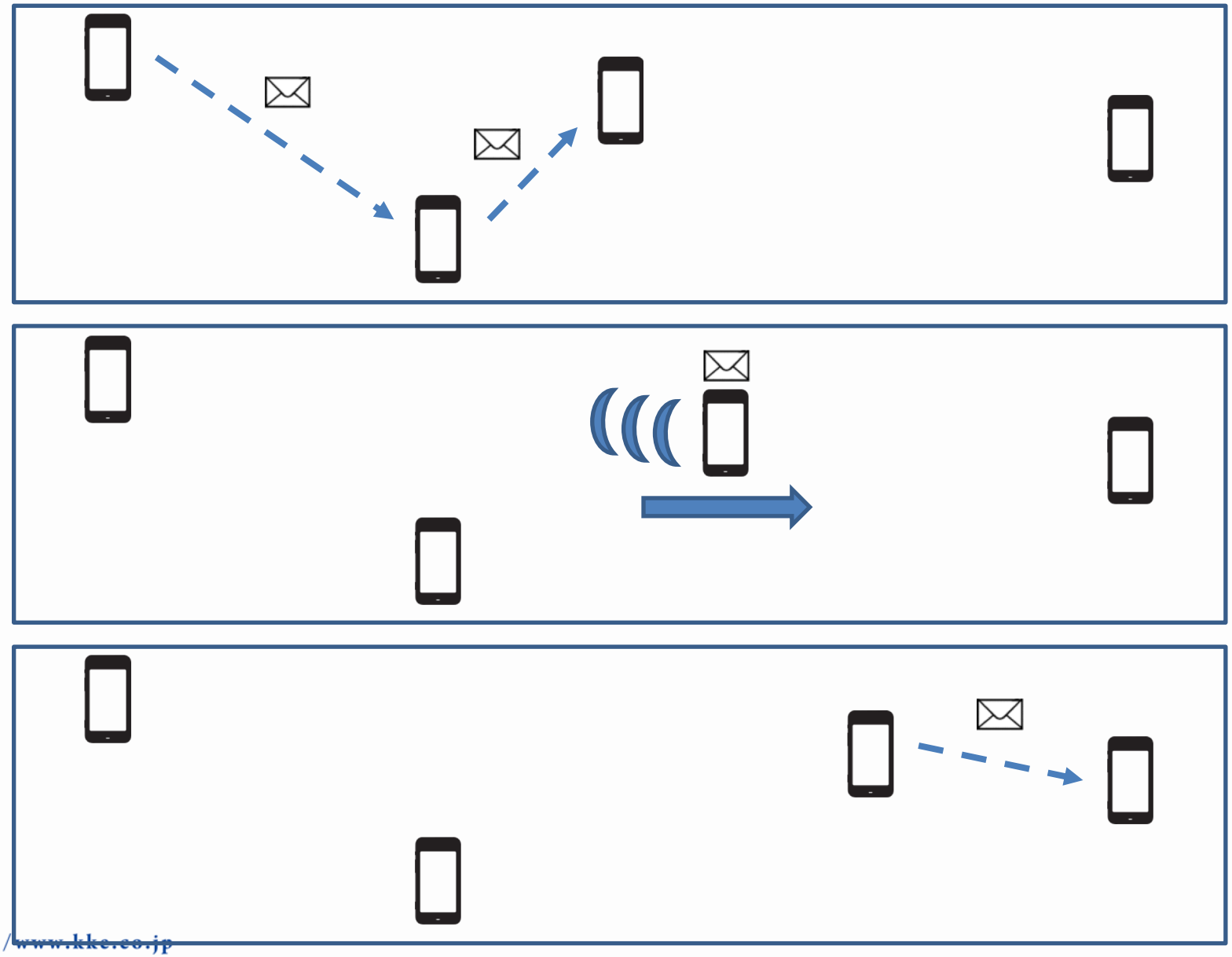

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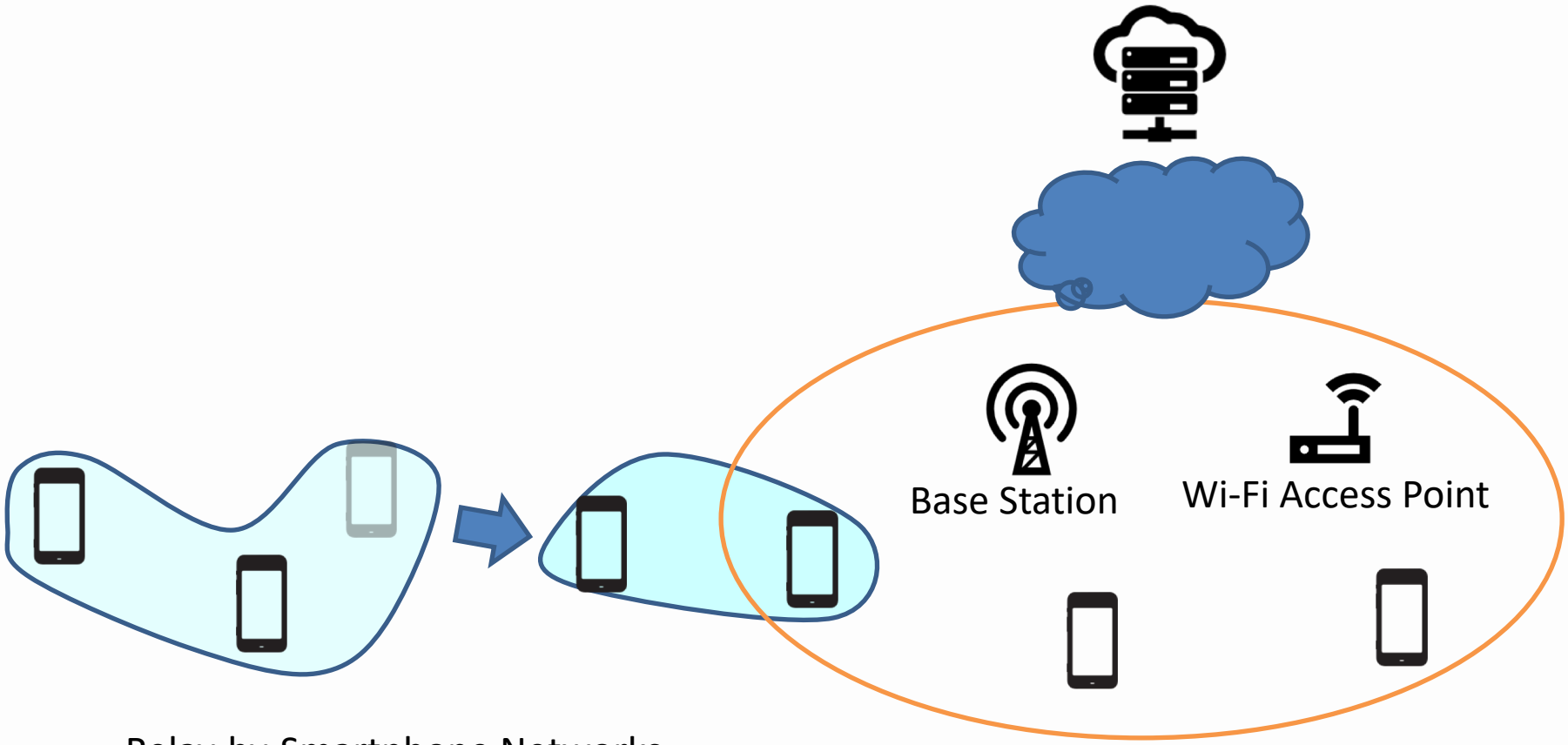

Features

- Contained in smartphone application
- Handles various types of data (Text, Voice, Video)
- Works by message forwarding between two smartphones
- Creates *ad hoc* networks
- Handles delayed communication

Jointly developed with Tohoku University
(Invented by Dr. Nishiyama)

Information Collection

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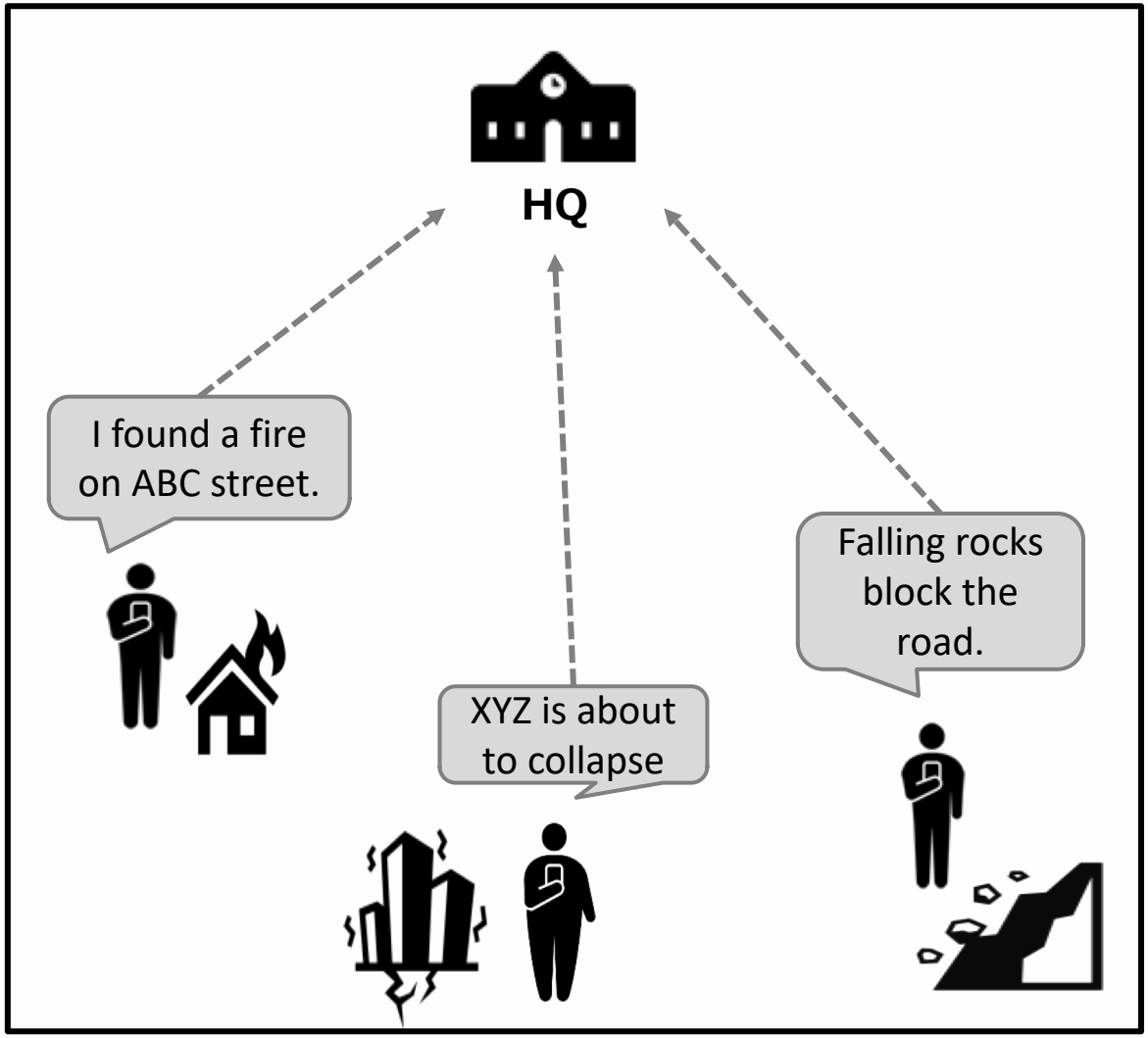
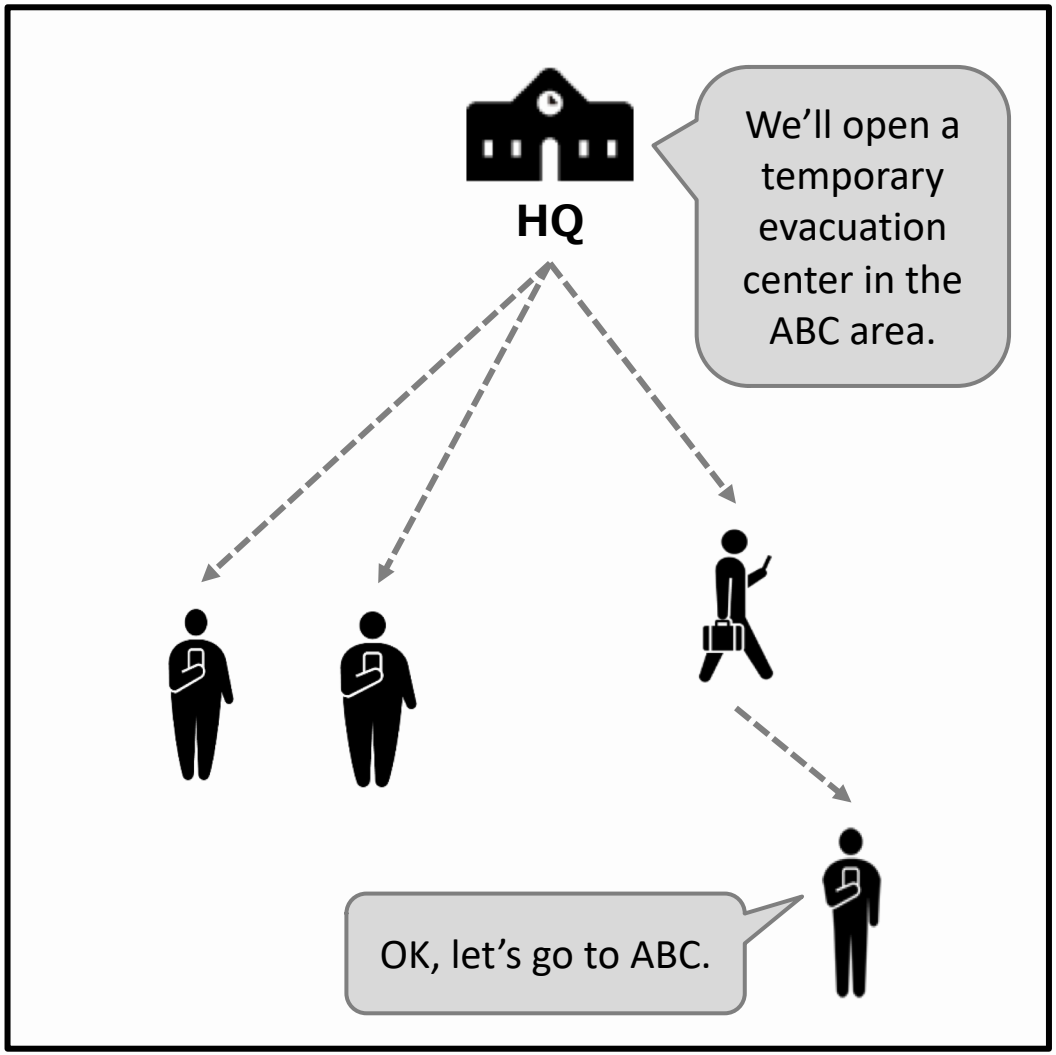


Information Diffusion



Example: Kochi City

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- Background
  - Various disasters
    - Rain, typhoon, Nankai Trough Earthquake
      - Easily isolated
      - Subsidence by Tsunami

- Evacuation Drill
  - Conscious of disaster reduction
  - Cooperation project by the city, the residents and KKE
  - Check the function to collect the information of the evacuees

Source: Google Maps

Example: Kochi City

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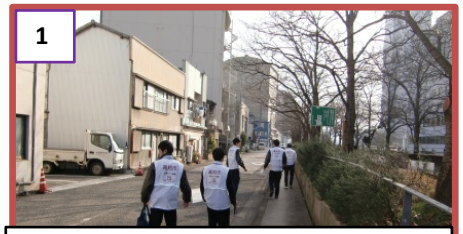
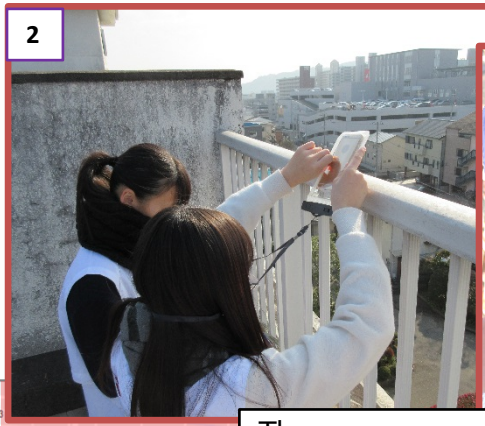
1



The evacuees go to the buildings specified as evacuation sites

2



The evacuees send their “SOS” message by the Relay-by-Smartphone app.

4

The patrol team returns to the HQ and sends the collected information to the server via Wi-fi.

3

The patrol team goes around the affected area and collects all the messages sent by the evacuees.

Use of Satellites

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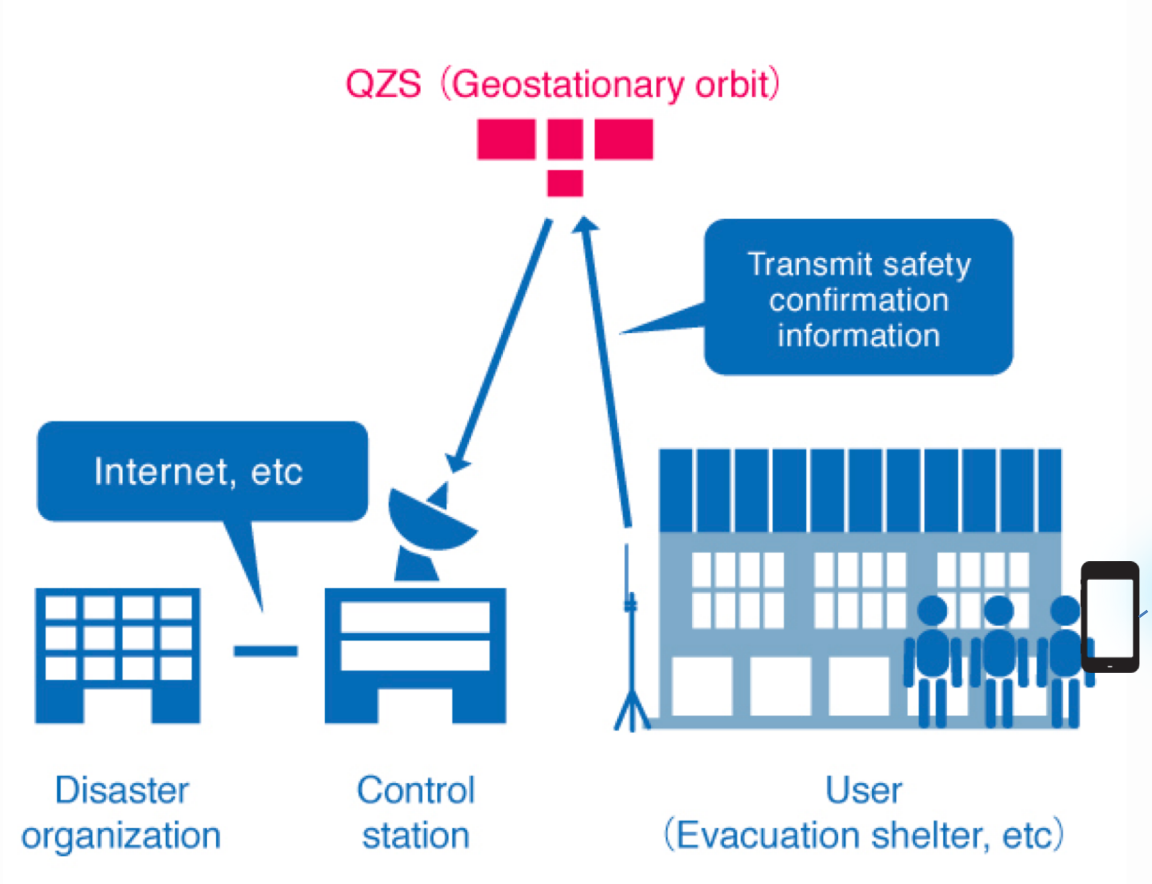
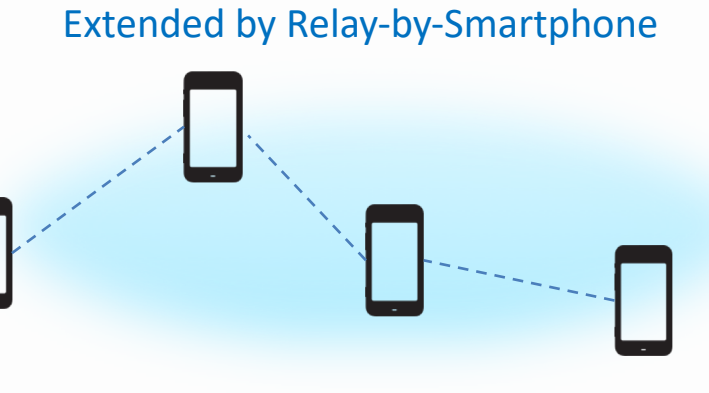
Q-ANPI + Relay-by-Smartphone®





Source: http://qzss.go.jp/en/overview/services/sv09_q-anpi.html

Summary

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- It’s necessary to have means of communication which work even in the case of network infrastructure failure.
- A smartphone is common enough to be used as a tool to establish the network like this.
- Some demonstration projects have been carried out.
- It can be one of last-one-mile communication means working with other types of networks including a satellite system.

Thank you for your attention.