

Wireless LAN Access Points guaranteeing communications even during large-scale disasters

Norio Yamagaki and Shunichi Kinoshita
Cloud System Research Laboratories,
NEC Corporation
March 17th, 2015

Disaster Relief Communication System

Requirements in Affected Areas

1. Communication infrastructures are not available
2. Working without power supply (with own battery)
3. BYOD^(*) even in a disaster situation

^(*)BYOD: Bring Your Own Device

Wi-Fi network

- Most recent user devices (smart phone, tablet, etc) have Wi-Fi capability
- **Easy to use BUT unstable**



DTN^() technology over Wi-Fi network**

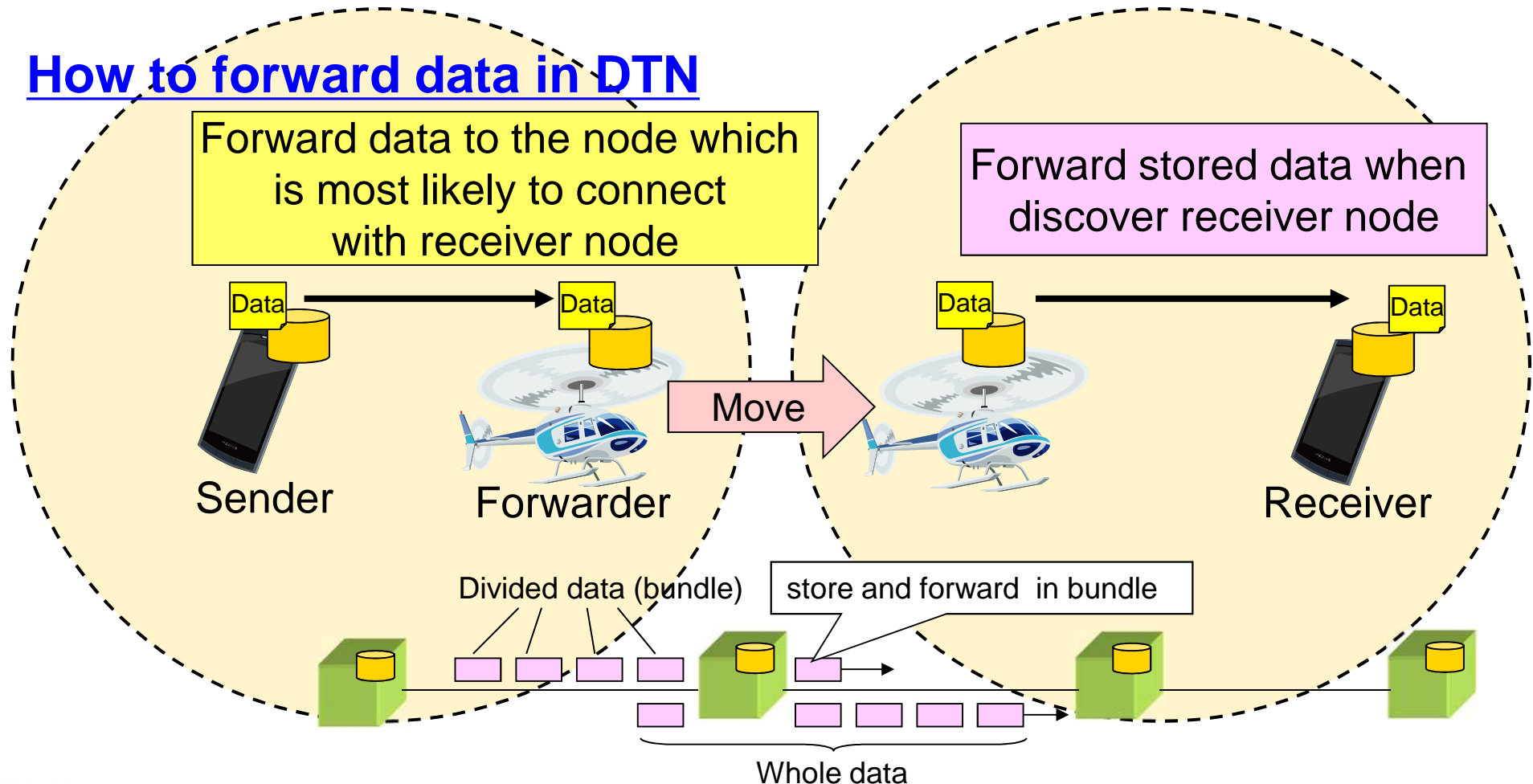
- Making local network with your own device in order for information exchange.

^(*)DTN: Delay/Disruption-Tolerant Network

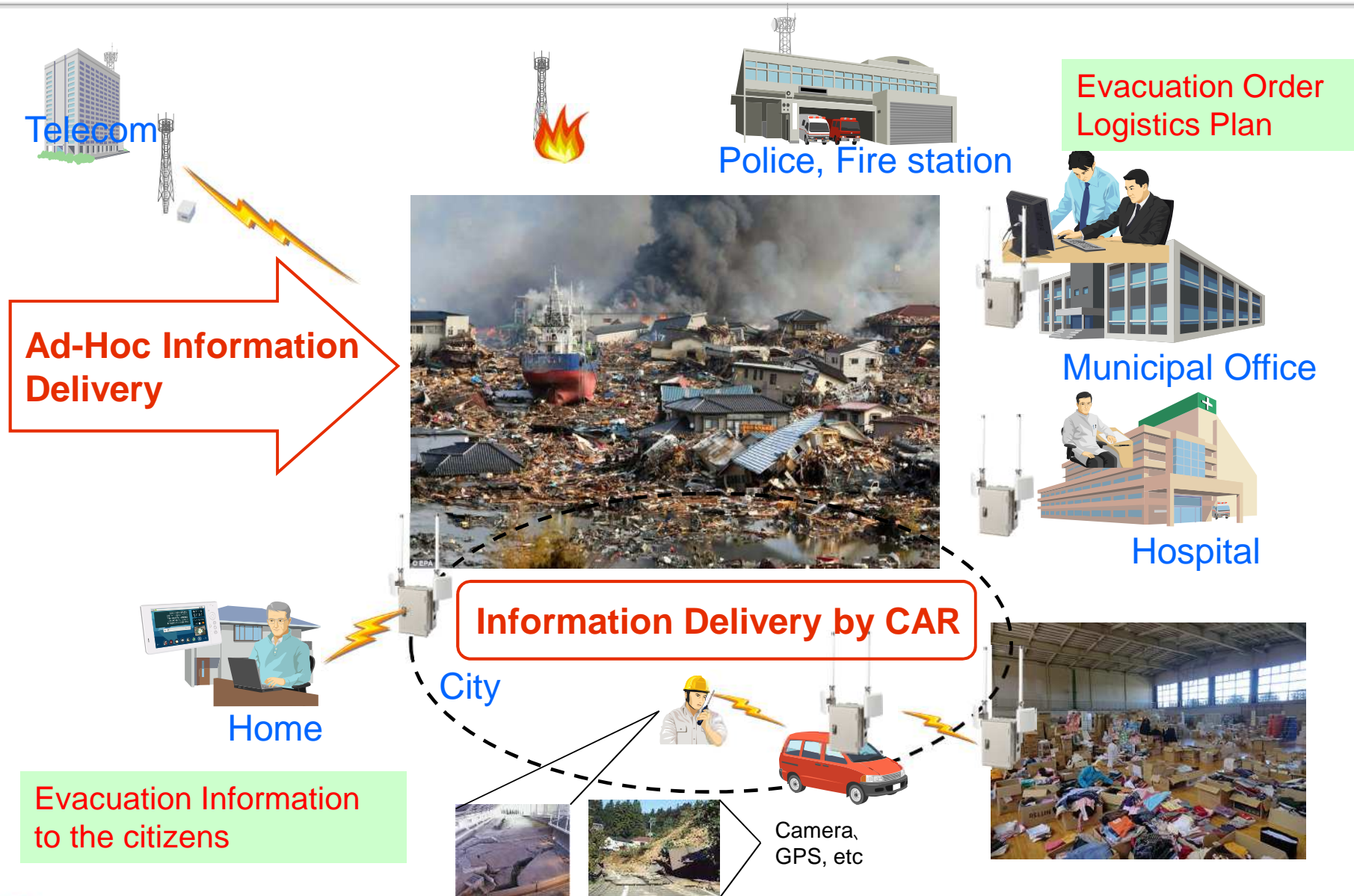
What is DTN (Delay/Disruption Tolerant Network)?

DTN enables data transfer even if end to end connectivity does NOT exist, and links are unstable and unreliable.

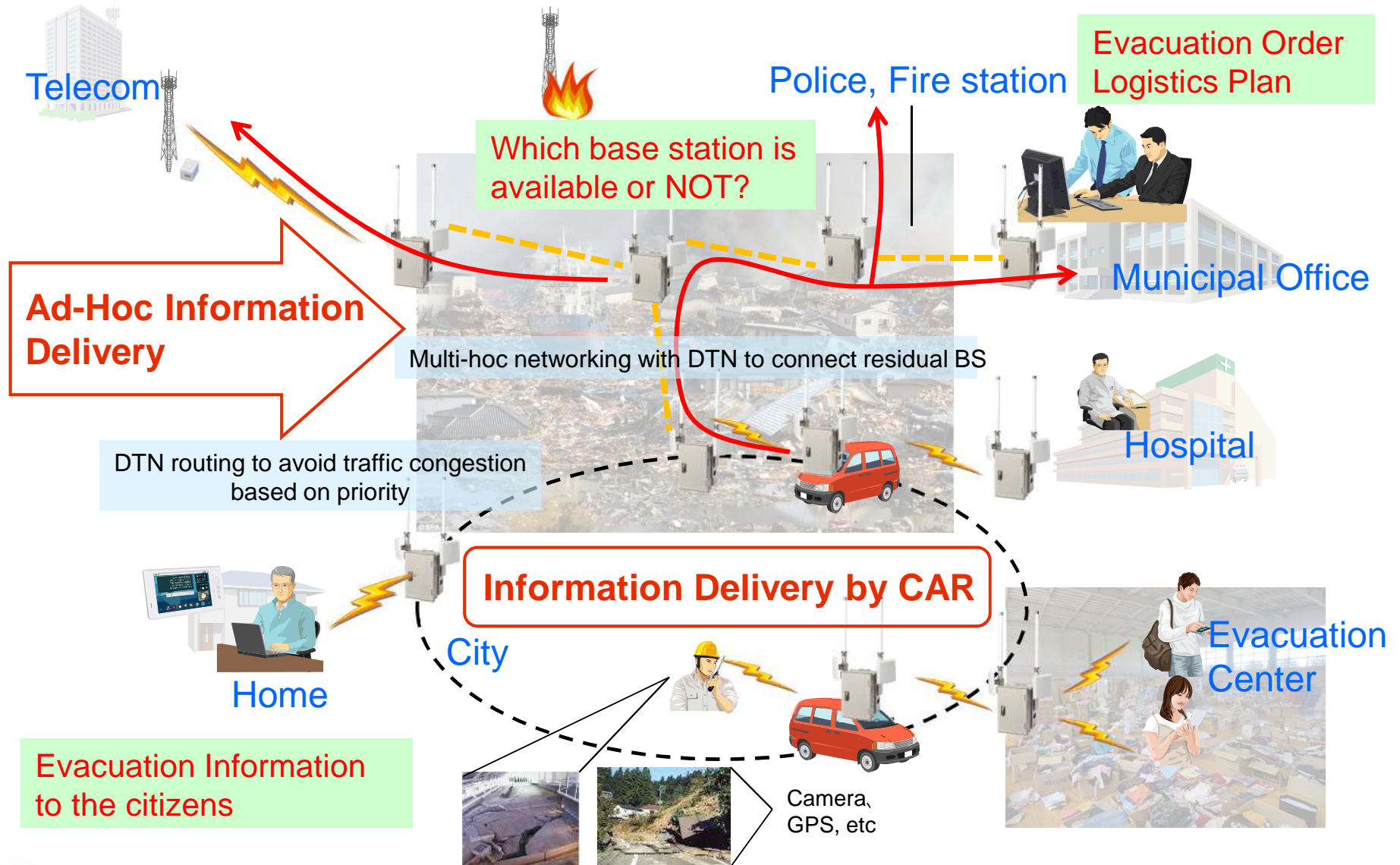
How to forward data in DTN



Disaster Area Communications with DTN Technology



Disaster Area Communications with DTN Technology



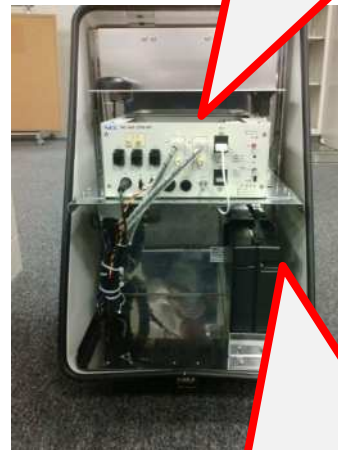
Wi-Fi DTN AP with Solar Panel and Battery

Regular Use: Wi-Fi spot

In Case of Disaster: ad-hoc network



Portable Wi-Fi DTN AP



Wi-Fi transceiver
on Android

Battery (200Wh)
8-10Hrs operation available

PV Panel (Max: 190W)
+ Battery (200Wh x 3unit)



Fixed Wi-Fi DTN AP

Conclusion

DTN (Delay/Disruption Tolerant Network) as a disaster relief communication technology

- Enable to establish ad-hoc network in an affected area with **Wi-Fi DTN APs**
- Display an **Portable Wi-Fi DTN AP** in our booth

This work was partly supported by Ministry of Internal Affairs and Communications (MIC) of the Japanese Government

Orchestrating a brighter world

NEC brings together and integrates technology and expertise to create the ICT-enabled society of tomorrow.

We collaborate closely with partners and customers around the world, orchestrating each project to ensure all its parts are fine-tuned to local needs.

Every day, our innovative solutions for society contribute to greater safety, security, efficiency and equality, and enable people to live brighter lives.



Empowered by Innovation

NEC