総務省
Ministry of Internal Affairs and Communications

MIC's International Cooperation in the field of ICT for Disaster Management

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ITU Asia Pacific Regional Development Forum 2016: ICTs for Smart Sustainable Asia-Pacific

Basic Facts and Concepts

MIC’s approach

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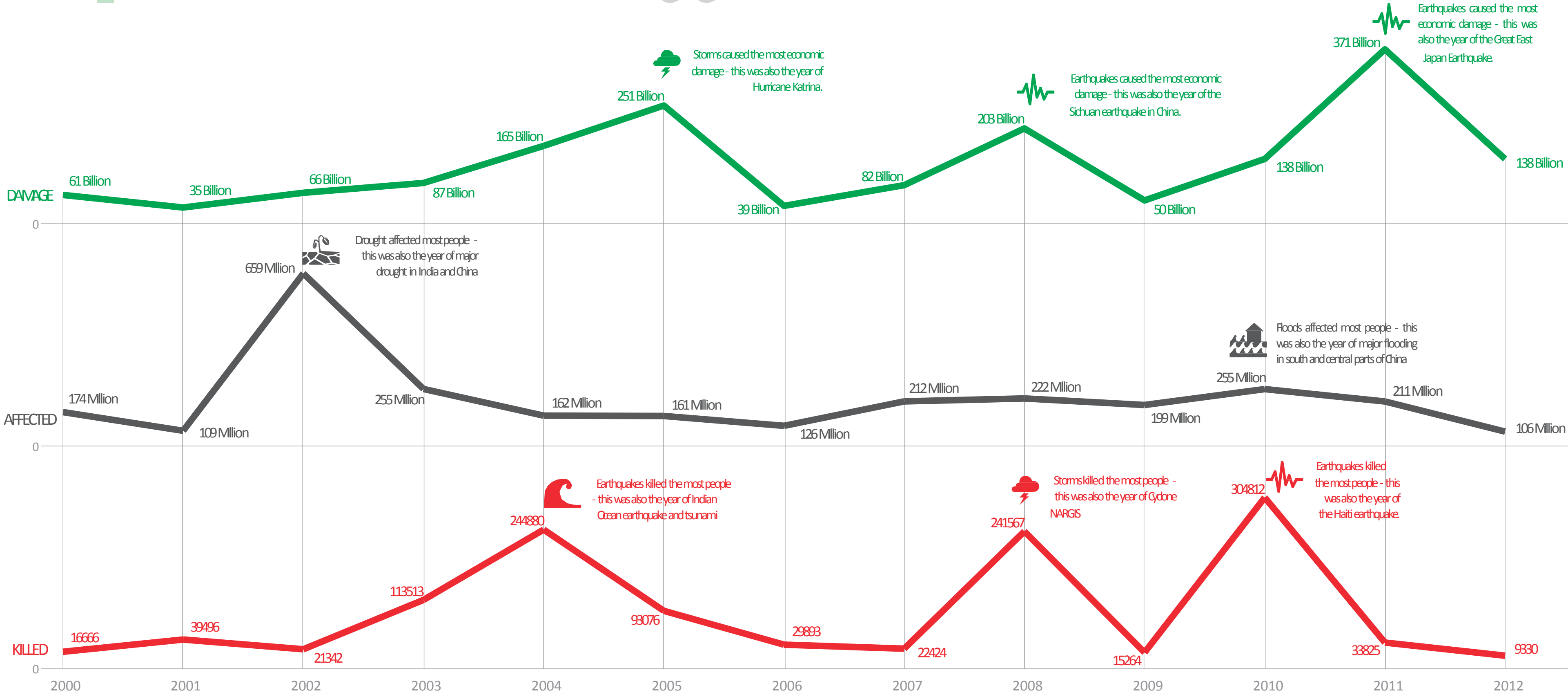
Damage by disasters all over the world since 2000

Source : UNISDR

1.7 TRILLION DAMAGE (USD)

2.9 BILLION AFFECTED

1.2 MILLION KILLED



Storms caused the most economic damage - this was also the year of Hurricane Katrina.

Earthquakes caused the most economic damage - this was also the year of the Sichuan earthquake in China.

Earthquakes caused the most economic damage - this was also the year of the Great East Japan Earthquake.

Drought affected most people - this was also the year of major drought in India and China

Floods affected most people - this was also the year of major flooding in south and central parts of China

Earthquakes killed the most people - this was also the year of Indian Ocean earthquake and tsunami

Storms killed the most people - this was also the year of Cyclone NARGIS

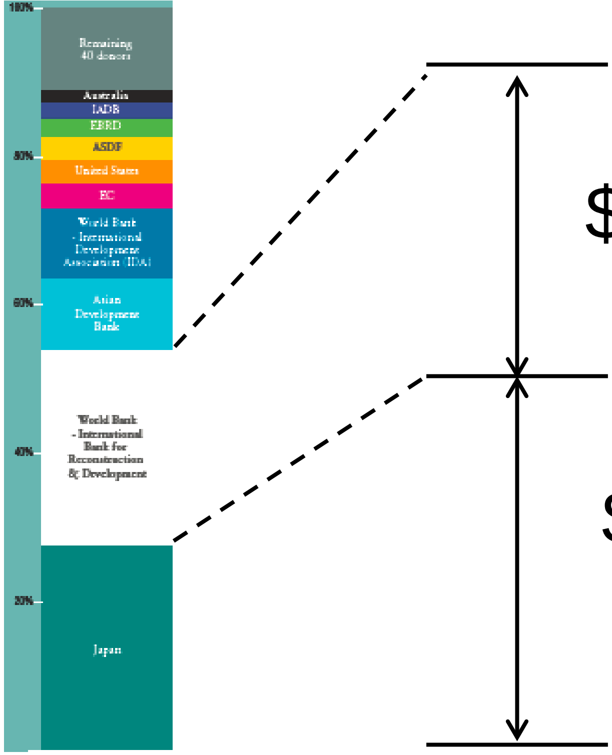
Earthquakes killed the most people - this was also the year of the Haiti earthquake.

International Financing of DRR

- Japan contributes to “mainstreaming of disaster risk reduction” in the international society.
- “Mainstreaming of disaster risk reduction” is to make disaster risk reduction (DRR) the most preferential subject and to introduce disaster preparedness in all development policies and projects.

International financing of disaster risk reduction (DRR) in 1991-2010

(Bilateral and multilateral donors: Total $13.5 billion)



World Bank

$ 3.57 billion = 25.7%

Japan

$ 3.75 billion = 27.6%

(Among bilateral donors, Japan’s share is 64%.)

Source: Financing Disaster Risk Reduction (2013)

The Third UN World Conference on Disaster Risk Reduction

UN World Conference on
Disaster Risk Reduction
2015 Sendai Japan

- Date: 14-18 March 2015
- Venue: Sendai City, JAPAN
- More than 6,500 participants including heads of states government, ministers and representatives from 187 Member States, and 150,000 visitors
- Adoption of:
  - Sendai Framework for Disaster Risk Reduction 2015-2030
  - Sendai Declaration
- Sendai DRR Cooperative Initiative (by Japan)

International Agenda

Sendai Framework

◆Seven Global Targets

- Reduce mortality, disaster economic loss, etc.
- Increase countries with DRR strategy, etc.

◆New Perspectives

- Investment in DRR
- Build Back Better
- Focus on Stakeholders

International Agenda

◆The 2030 Agenda for Sustainable Development

- Adopted at the UN GA in September 2015
- Clearly include DRR in their targets

◆COP21

- Conference in Paris in November 30th to December 11th, 2015
- Prioritize DRR as an important element of adaptation to the impact of climate change

Mainstreaming Disaster Risk Reduction

Disaster risk reduction is mainstreamed when countries define DRR as a priority issue and include DRR in all development policies and plans.

By mainstreaming DRR, investment in DRR is enhanced and lead to disaster resilient country.

ITU's Initiative on Disaster Management and ICT

Smart Sustainable Development Model (SSDM)

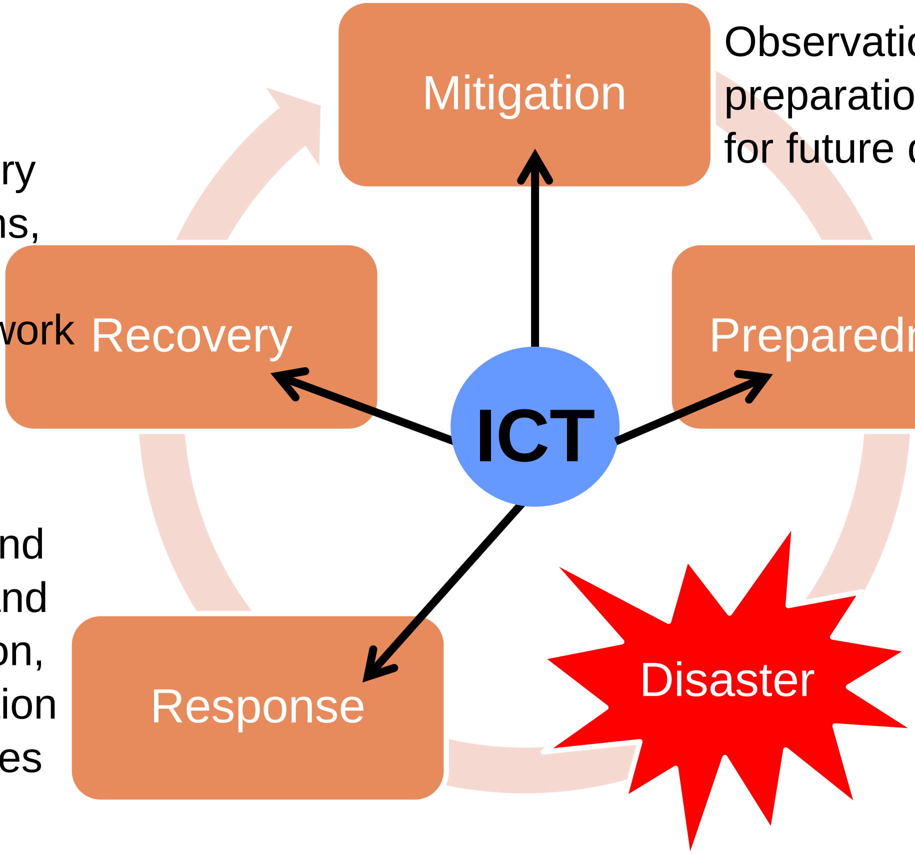
- The ITU's SSDM initiative pursue constructing a framework to utilize ICT by associating ICT for development (ICT4D) and ICT for disaster management (ICD4DM).
- This initiative aims at both the "development" to bridge the digital divide and the "utilization" of ICT for disaster management.

Target areas of SSDM

Policies, regulations, and enlightenment	Finance, partnerships, and business models	Infrastructure and new technology
Rapid response for the minimization of disaster damage Roles of government: • Development of risk analysis and countermeasures in disaster preparation • Flexible operation of the radio licensing system in times of disaster	Funding and cooperation of parties concerned • A funding mechanism for infrastructure development with consideration of disaster response • Partnerships such as those between the government, the private sector, and civil society	ICT for development (ICT4D) associated with ICT for disaster management (ICT4DM) To link ICT4D and ICT4DM for the effective use of resources: • ICT utilization in response to each phase of disaster • A connection between the government's disaster response plan and utilization of ICT Ensuring communications infrastructure in times of disaster: • Relaxation of communication congestion, early recovery of communication, the utilization of satellite communication, and response to a power shortage

Role of ICT for Disaster Reduction Activities

- Information transmission in each stage is an important element to realize more effective disaster reduction activities.
- It is important to implement information transmission within and between parties concerned, that is, public organizations as well as residents and mass media; and effective and efficient disaster management through ICT based on such information transmission.
- Major potential use of ICT in each stage is shown in the figure below.



Observation and forecast in preparation
for future disaster

Providing knowledge and sharing methods for disaster management

Promptly collecting and transmitting rescue and evacuation information, and transmitting caution and warning messages

Transmitting recovery information to victims, and recovering communication network

Basic Facts and Concepts

MIC’s approach

MIC’s Cooperation in the field of ICT for Disaster Management

CONCEPT “3S”: Features of ICT for DM

1 Seamless

Seamless in Time

- Information Sharing among Systems in Each Phase of Prevention, Emergency Response, Recovery/Reconstruction
- Utilizing Past Disaster Information for Future Disaster Prediction
- Prompt Information Sharing When Disaster Occurs

Seamless in Space

- Cross-regional and cross-border Information sharing
- ICT as Social Infrastructure
- Resolving Digital Divide to Realize Disaster Information Transmission not Restricted by Geological Conditions
- Providing appropriate disaster information based on local ICT infrastructure

Seamless between Organizations Responsible for DRR

- Mutual Information Sharing among National Government, Local Governments and Communities
- Information Sharing within Respective Organizations
- Information Transmission to Residents and Communities through Various Media

2 Strengthen

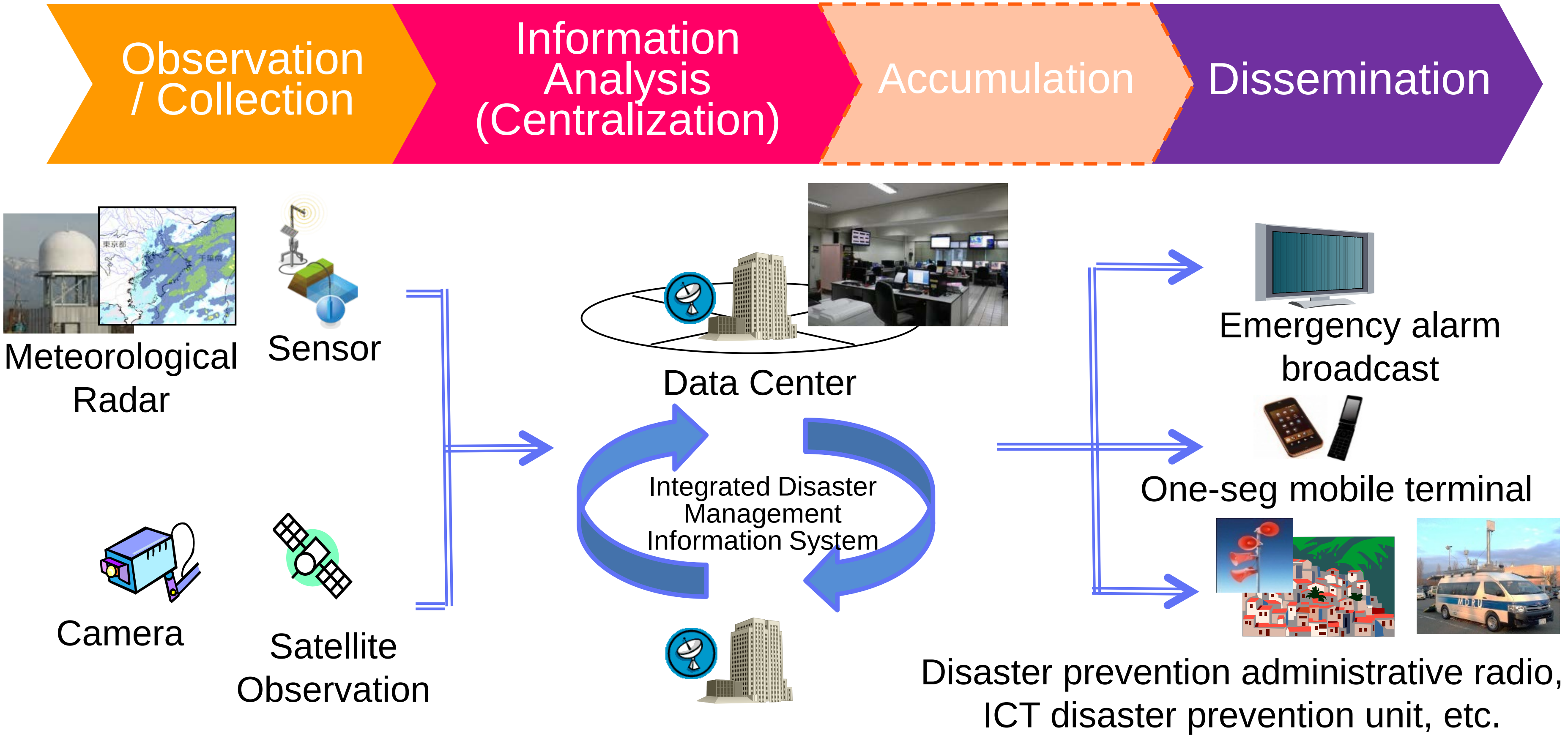
- To make communication networks resilient
- To enhance information security
- To utilize ICT to make social infrastructure resilient

3 Smart

- ICT utilization when disaster occurs to visualize disaster situation
- Sensor networks to collect big data
- Big data utilization to predict disaster with high precision

ICT for Disaster Management

- ➢Information distribution is an important factor for disaster management.
- ➢Effective and efficient disaster management is made possible by ICT.
- ➢ICT for disaster management can be classified into 4 stages.



Observation / Collection

Information Analysis (Centralization)

Accumulation

Dissemination

Meteorological Radar

Sensor

Camera

Satellite Observation

Data Center

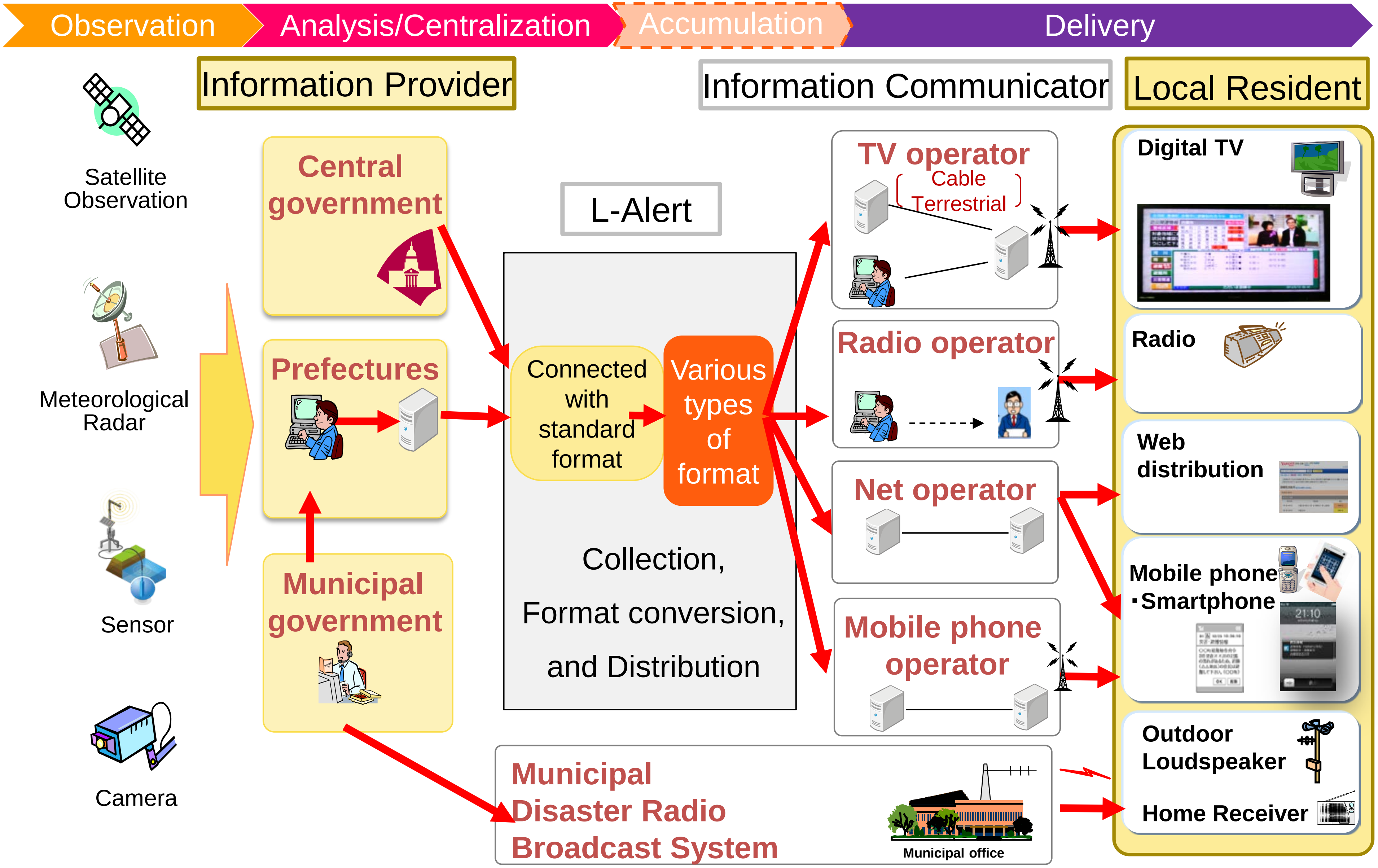
Integrated Disaster Management Information System

Emergency alarm broadcast

One-seg mobile terminal

Disaster prevention administrative radio, ICT disaster prevention unit, etc.

Disaster Information Delivery to Residents (L-Alert)



Observation → Analysis/Centralization → Accumulation → Delivery

Information Provider

Information Communicator

Local Resident

Satellite Observation

Meteorological Radar

Sensor

Camera

Central government

Prefectures

Municipal government

L-Alert

Connected with standard format

Various types of format

Collection, Format conversion, and Distribution

TV operator

(Cable / Terrestrial)

Radio operator

Net operator

Mobile phone operator

Municipal Disaster Radio Broadcast System

Municipal office

Digital TV

Radio

Web distribution

Mobile phone ･Smartphone

Outdoor Loudspeaker

Home Receiver

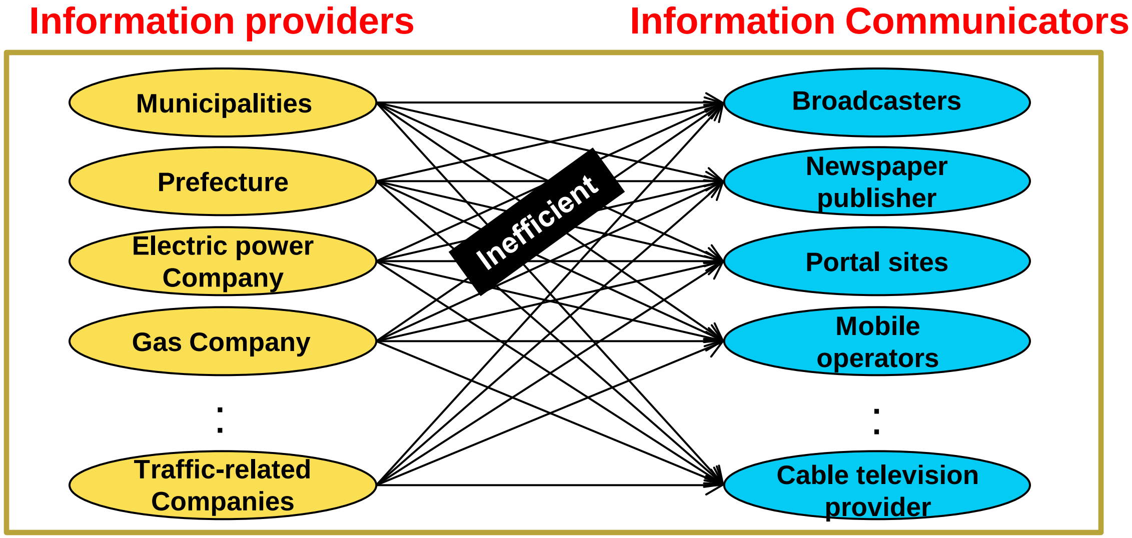
※L-Alert : 832 groups including 47 prefectures are participating. (33 out of 47 prefectures distributes information in practice)
Direct information distribution without L-Alert from information provider also existed.

Background of Development of L-Alert in Japan

- **Communication path**

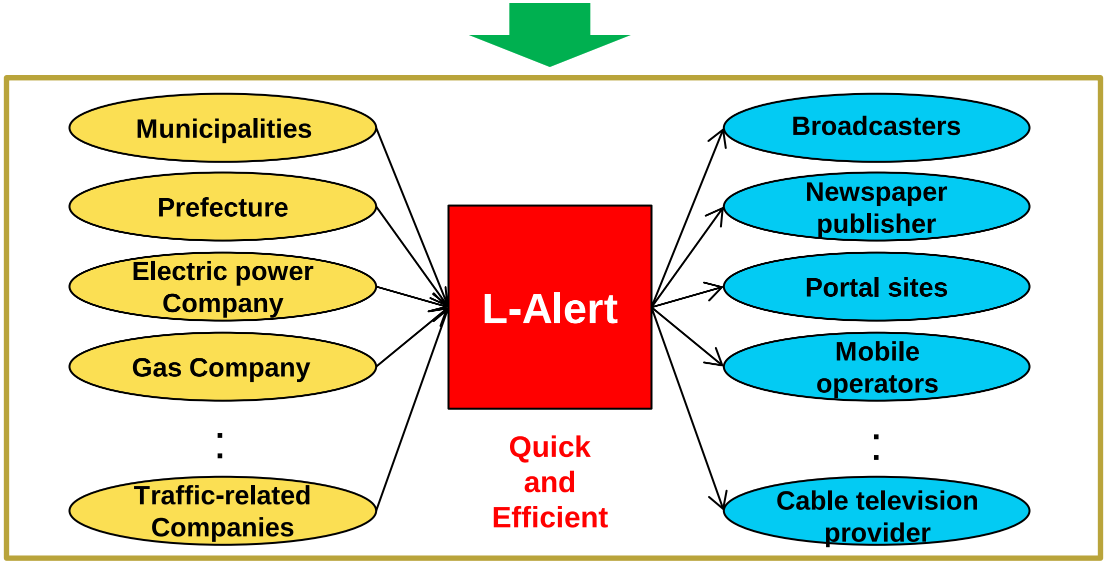
<Before>

N to N model


Information providers
Information Communicators
Municipalities
Prefecture
Electric power Company
Gas Company
:
Traffic-related Companies
Broadcasters
Newspaper publisher
Portal sites
Mobile operators
:
Cable television provider
Inefficient

<After>

L-Alert model


Municipalities
Prefecture
Electric power Company
Gas Company
:
Traffic-related Companies
L-Alert
Quick and Efficient
Broadcasters
Newspaper publisher
Portal sites
Mobile operators
:
Cable television provider

ICT Solution Map for Disaster Management

		Observation/Collection	Information analysis (Centralization)	Accumulation	Delivery
Terminal (on-site equipment)		･Sensor (earthquake, water level, rainfall amount, wind speed, landslide, etc.) ･Meteorological radar ･Camera (fixed, mobile, helicopter) ･Satellite observation (image, position information)			･Broadcast reception terminal (IP announcement terminal, PC, etc.) ･One segment terminal ･Speaker ･Mini satellite earth station
Application		･Meteorological observation information collection system ･Damage information collection system ･Safety/evacuation information collection system ･Image monitoring/analysis system	･Meteorological analysis system ･Geographical information system ･Shelters/evacuees management system ･Supplies management system ･Administrative operation system	･Damage forecasting system	･Emergency information transmission system ･Evacuation information / announcement management system
		･ J-ALERT	･ J-ALERT	･ J-ALERT	･ J-ALERT
			･ L-ALERT	･ L-ALERT	･ L-ALERT
Platform		･Sensor information collection/control infrastructure	･Comprehensive disaster prevention information system ･Risk management information management system ･Space data platform system ･Infrastructure management system ･Police/fire prevention command and control system	･Cloud platform/big data analysis	･Emergency alarm broadcast ･Cell broadcast
Communication infrastructure	Disaster prevention use	･Disaster prevention administrative radio network（mobile） ･Satellite communications			･Disaster prevention administrative radio（broadcast reception, mobile） ･Satellite communications ･ICT Disaster Management Unit
	General use	･Satellite communications ･Radio communications networks（FWA, WiFi, microwave, TV White Space, etc.）			･Submarine cable

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Japan’s Cooperation to ASEAN region: AHA Centre

The AHA Centre handles communication and coordination activities among disaster management agencies of ASEAN countries.
(AHA Centre: ASEAN co-ordinating centre for Humanitarian Assistance on disaster management)

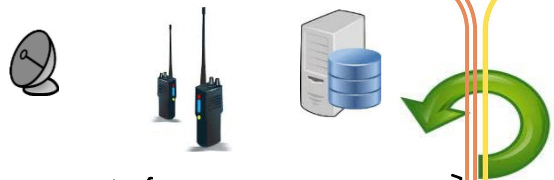
➢ Roles of the AHA Centre

- At ordinary times:
  Monitoring, Supporting training and Holding workshops
- At the time of disaster:
  Sharing disaster information and coordinating emergency activities

➢ MIC’s Support:

MIC provides ICT facilities through the Japan-ASEAN Integration Fund (JAIF)

Phase 3
(Jan 2016- July 2017)

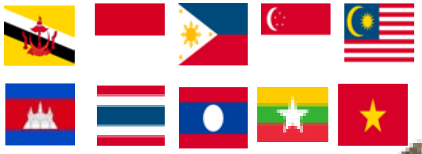


〔Improvement of emergency response〕
･Emergency communication equipment
･Establishment of backup,etc.

Phase 1:
Nov 2011 – Mar 2013

〔Install ICT Facilities〕

Phase 2:
April 2013 – Mar 2015



･Establishment of communication networks
･Introduction of information sharing system

Disaster Management Agency

Phase 1-3

･ Dispatch a Japanese ICT specialist to the AHA Centre.
･ Capacity building for AHA center staff, disaster response agencies.

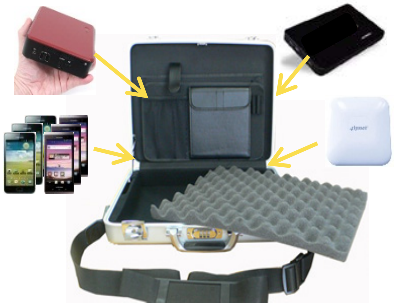
Example(Delivery):ICT Disaster Management Unit

- ICT disaster management unit are radio communications equipment mainly transported to areas stricken by disasters for the emergency restoration of communications functions. Three types of ICT disaster management units are available; units of car type and attaché case type, both of which are referred to as MDRU(Movable and Deployable ICT Resource Unit), as well as units of container.
- The ICT disaster management unit incorporates functions to provide disaster management officials and disaster-affected residents of means of information and communication, such as compact portable base stations and disaster-dedicate IP phone.

Container type

Car type

Attaché case type



Characterized with high-quality infrastructure technology

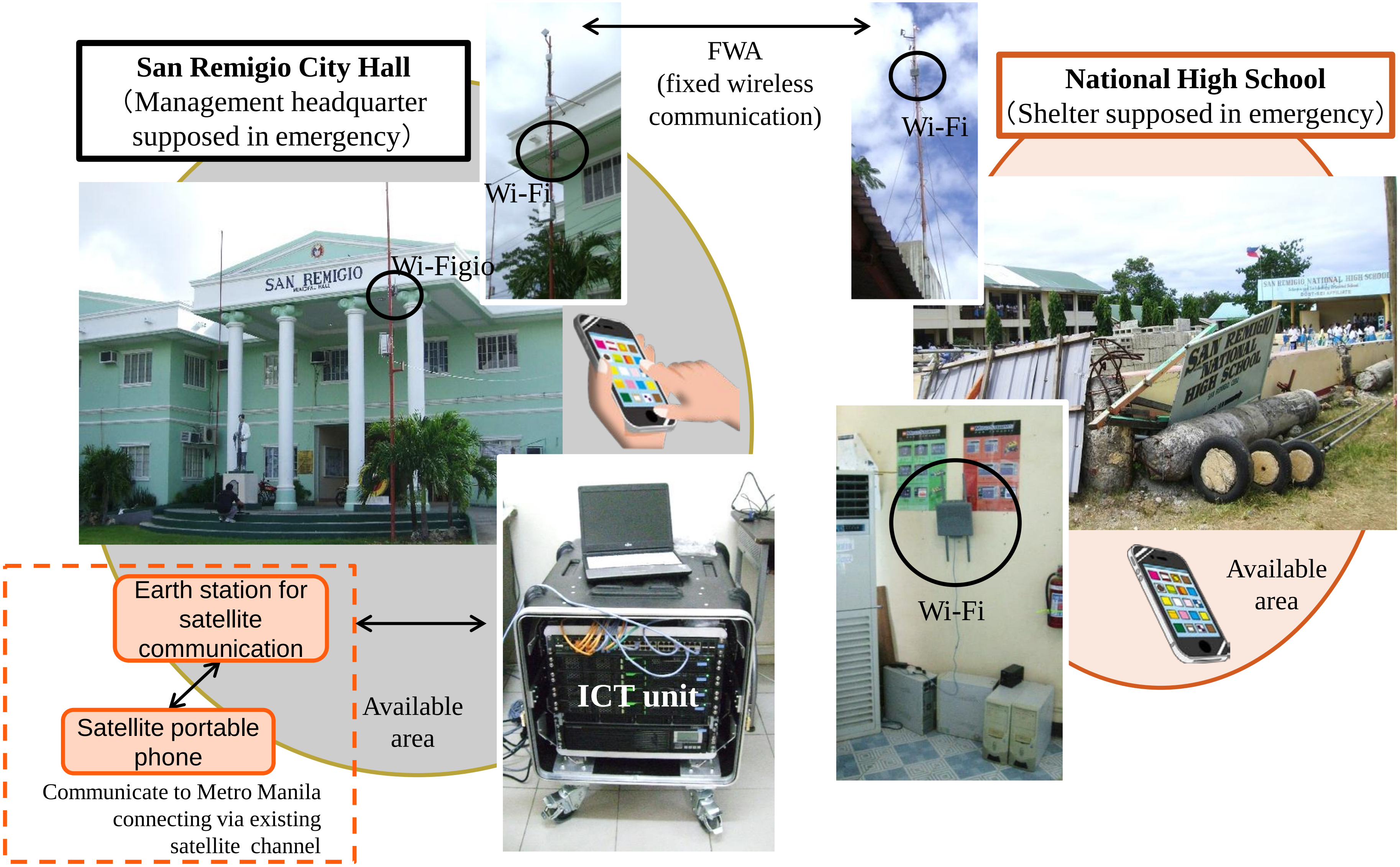
- Possible to provide a minimum-required ICT environment (incorporating a compact portable base station, Wi-Fi network, and information processing server) immediately in case of disaster.
- Possible to transport easily because units of container type, car type, and attaché case type are miniaturized (and its contents are exchangeable according to needs).
- Possible to contribute to bridging the digital divide in villages not provided with electric power even in ordinary times by using solar panels.

Foreign case examples

- ITU, Ministry of Internal Affairs and Communications of Japan (MIC) and Department of Science and Technology of Philippines signed a cooperation agreement for the joint project. Following this, the feasibility study using MDRU in Philippines was deployed from December 2014 to March 2016. As a result, a municipality in Philippines (San Remigio) decided to introduce this unit.
- MIC continuously disseminate information on achievements of this study, and have been working on the introduction of ICT disaster management units all over the world including Philippines.

Feasibility study in the Philippines (Joint Project with ITU)

From Emergency management headquarters to shelter (about 500 meters),
feasibility study about telephone and data communication utilizing Wi-Fi networks was deployed


SAN REMIGIO
MUNICIPAL HALL
SAN REMIGIO NATIONAL HIGH SCHOOL
SAN REMIGIO NATIONAL HIGH SCHOOL

San Remigio City Hall
(Management headquarter supposed in emergency)

Wi-Fi

Wi-Figio

FWA
(fixed wireless communication)

Wi-Fi

National High School
(Shelter supposed in emergency)

Earth station for satellite communication

Satellite portable phone

Communicate to Metro Manila connecting via existing satellite channel

Available area

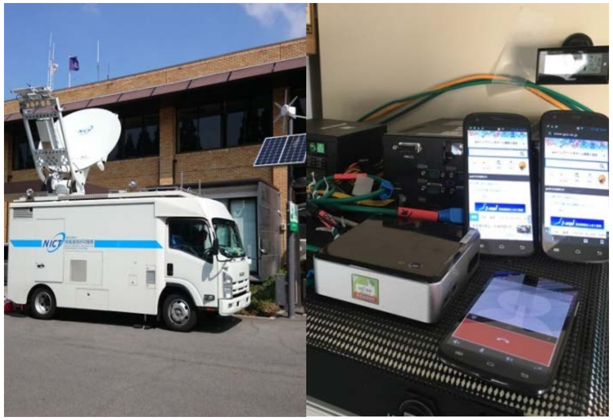
ICT unit

Wi-Fi

Available area

MDRU-employed Support Activities for Kumamoto Earthquake Disaster (Immediately after Disaster through Recovery Phase)

In response to the huge earthquakes that hit Kumamoto Prefecture, we transported MDRUs to Takamori Town in the Prefecture and provided an Internet-access service and a voice call service at the town office and a shelter. A branch of MIC Japan there is still ready to offer some MDRUs by requests from local governments and other organizations.



MDRU with NICT's vehicle-mounted satellite base station

Internet-access service

充電は10分以内で
the most beautiful villages in japan
高森町
熊本県

Residents using the Internet to collect information in a shared space

MDRU with Docomo's satellite-based mobile phones

Voice call service

Staff member using his smartphone to make a call via satellite at his desk

MIC's Measures for international cooperation

Issues	Measures
Promoting mutual understanding with partner countries	Government-level Dialogue
Deepening understanding of ICT solutions	Tsunami Warning F/S, Pilot Project
Capacity building	Workshops for Capacity Building
Expansion into the whole field of disaster prevention	Collaboration with Relevant Agencies

Thank You!

Ministry of Internal Affairs and Communications,
JAPAN

Please feel free to contact us: ict4drr-japan@ml.soumu.go.jp

HP(English):
http://www.soumu.go.jp/main_sosiki/joho_tsusin/eng/index.html

Information Slides

1. Activities of Kumamoto Earthquake (MDRU)

2. Sendai Framework and Sendai Cooperation Initiatives (relating 3rd UN World Conference on DRR)

3. Examples of Japan’s International Contribution and Japan’s ICT solutions

Information Slides

1. Activities on Kumamoto Earthquake (utilizing MDRU)

2. Sendai Framework and Sendai Cooperation Initiatives (relating 3rd UN World Conference on DRR)

3. Examples of Japan’s International Contribution and Japan’s ICT solutions

MDRU-employed Support Activities for Kumamoto Earthquake Disaster (Immediately after Disaster through Recovery Phase)

1. Background

- An earthquake (with a maximum seismic intensity of 7 on the Japanese seven-stage seismic scale) in Kumamoto Prefecture in early hours of Saturday, April 16, disabled fixed telephone and mobile phone services in a disaster-affected area due to the influence of power outages and the disruption of transmission paths.
- With consideration of the situation, the Telecommunication Systems Division of the Ministry of Internal Affairs and Communications (MIC) made a request on Sunday, April 17, for the transportation of an MDRU to the disaster-affected area and support to the local government of the area in order to ensure emergency communications means for the area.
- NTT employees in response to the request carried an MDRU and visited Takamorimachi, Aso-gun, Kumamoto Prefecture, on Monday, April 18, and conducted support activities until Thursday, April 21. (NTT employees confirmed the restoration of communications and power supply conditions and left the area, but the MDRU has been still in Kumamoto for further use, if required.)

2. Contents of support activities

- **For emergency communication means utilizing the MDRU, the following usage environment was constructed on the first floor of the Takamori Town Hall (staff office) and a common space (used by evacuated townspeople as well).** Furthermore, smartphones and tablets were loaned for contact and information collection purposes.
  - (1) Internet (free Wi-Fi) connections and voice calls by the MDRU in linking with NICT on-vehicle satellite earth stations (for ultra-high-speed Internet satellite WINDS).
  - (2) Voice calls for staff members by the MDRU in linking with satellite mobile phones (two DoCoMo WIDESTAR II units that the Kyushu Bureau of Telecommunications provided to Kakamori-cho) for a double backup and improvements in the convenience of satellite mobile phone users.
  - (3) The MDRU in linking with the above satellite mobile phones constructed an environment allowing smartphone-to-smartphone calls (enabling outgoing and incoming outside line calls) between the Takamori Town Hall and a remote base (Minamiaso Village Office).

3. Results of support activities

(1) The peak throughput rates at the Wi-Fi access points installed on the first floor of the Town Office and the common space were both approximately 18 Mbps. It was estimated that there were approximately 30 users during peak hours, and the system contributed to the establishment of the communications environment of the Town Office and people in the shelter.

(2) Usual fixed phone call and mobile phone call (voice and data communications) services were recovered comparatively early, until when the system as an emergency communications means gained a good reputation from Takamori Town officials. (A better situation would have been expected if the MDRU had been deployed in Kyushu.)

MDRU-employed Support Activities for Kumamoto Earthquake Disaster (Immediately after Disaster through Recovery Phase)

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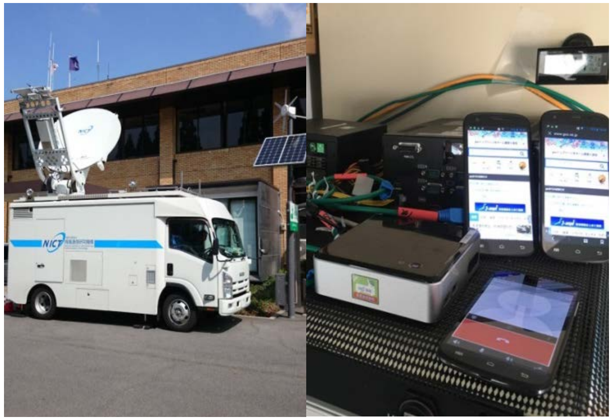

MDRU with NICT’s vehicle-mounted satellite base station

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Residents using the Internet to collect information in a shared space

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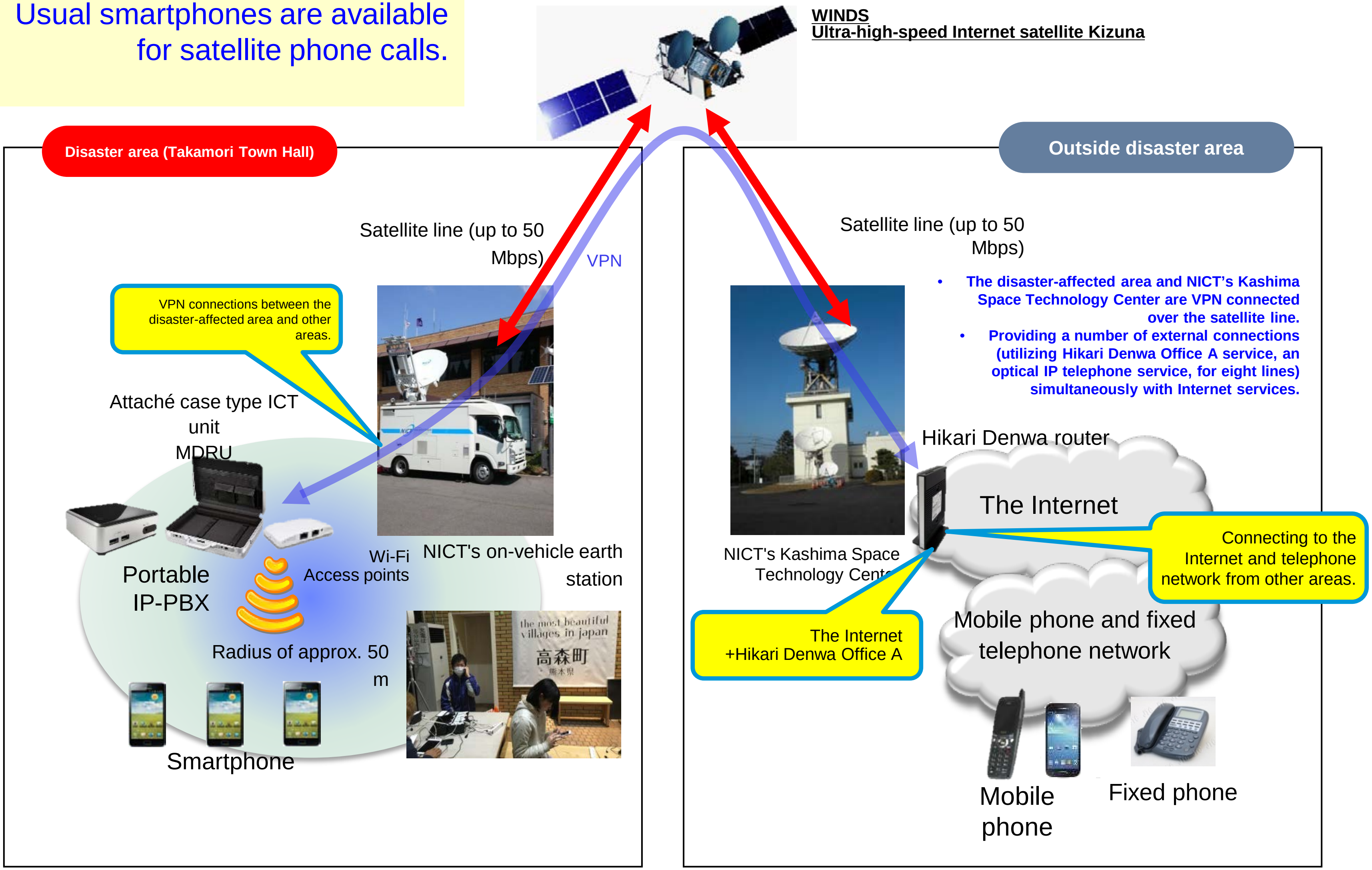
Voice call service

Staff member using his smartphone to make a call via satellite at his desk

Support (1) MDRU × NICT Vehicle Earth Stations

Usual smartphones are available for satellite phone calls.



WINDS
Ultra-high-speed Internet satellite Kizuna

Disaster area (Takamori Town Hall)

Satellite line (up to 50 Mbps)

VPN

VPN connections between the disaster-affected area and other areas.

Attaché case type ICT unit
MDRU

Portable IP-PBX

Wi-Fi Access points

NICT's on-vehicle earth station

Radius of approx. 50 m

Smartphone

Outside disaster area

Satellite line (up to 50 Mbps)

- **The disaster-affected area and NICT's Kashima Space Technology Center are VPN connected over the satellite line.**
- **Providing a number of external connections (utilizing Hikari Denwa Office A service, an optical IP telephone service, for eight lines) simultaneously with Internet services.**

NICT's Kashima Space Technology Cent

Hikari Denwa router

The Internet

Connecting to the Internet and telephone network from other areas.

The Internet
+Hikari Denwa Office A

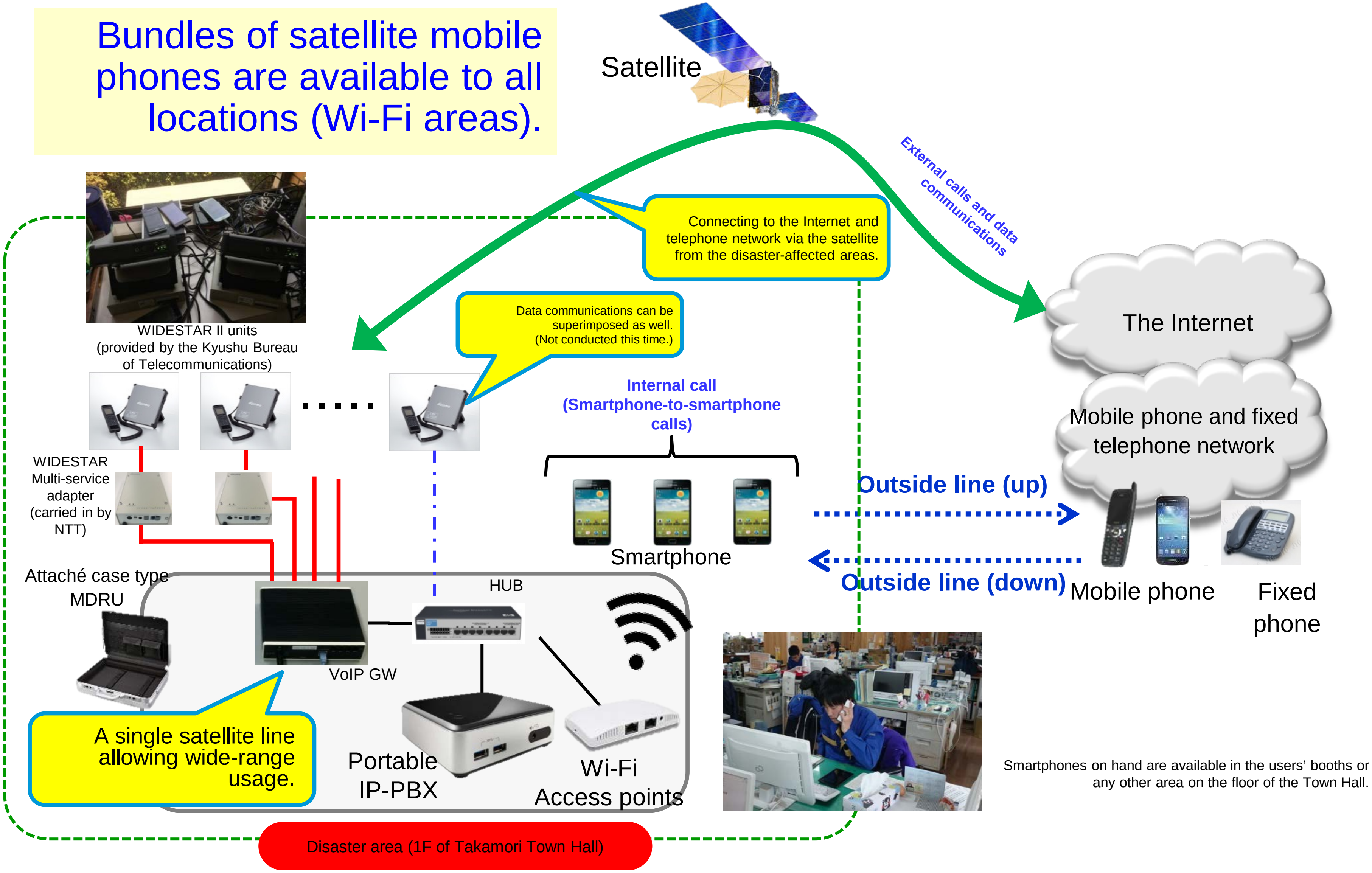
Mobile phone and fixed telephone network

Mobile phone

Fixed phone

Support (2) MDRU × DoCoMo Satellite Mobile Phones

Bundles of satellite mobile phones are available to all locations (Wi-Fi areas).

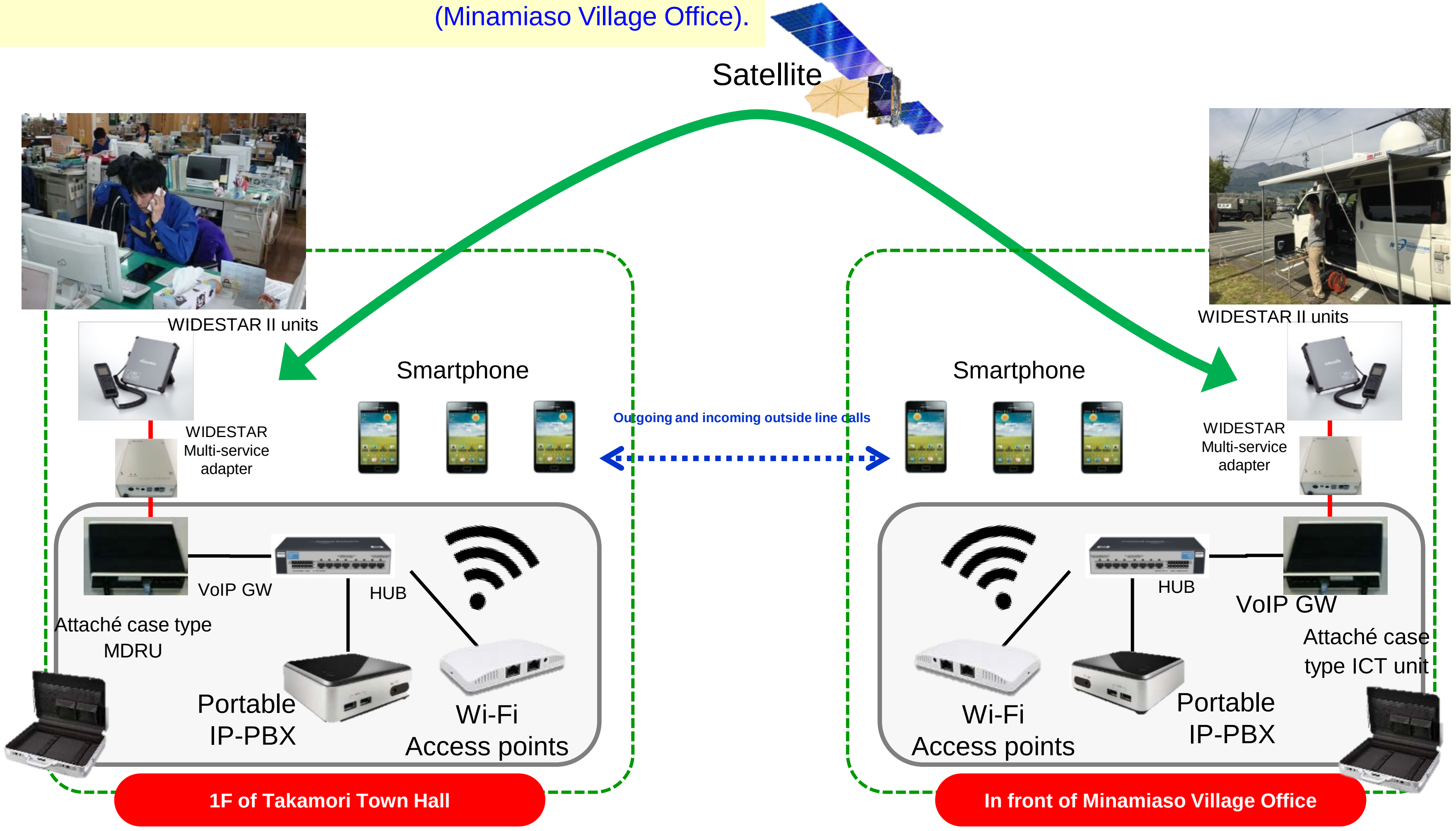


Satellite
External calls and data communications
Connecting to the Internet and telephone network via the satellite from the disaster-affected areas.
Data communications can be superimposed as well. (Not conducted this time.)
The Internet
Mobile phone and fixed telephone network
WIDESTAR II units (provided by the Kyushu Bureau of Telecommunications)
WIDESTAR Multi-service adapter (carried in by NTT)
Internal call (Smartphone-to-smartphone calls)
Smartphone
Outside line (up)
Outside line (down)
Mobile phone
Fixed phone
Attaché case type MDRU
HUB
VoIP GW
Portable IP-PBX
Wi-Fi Access points
A single satellite line allowing wide-range usage.
Disaster area (1F of Takamori Town Hall)

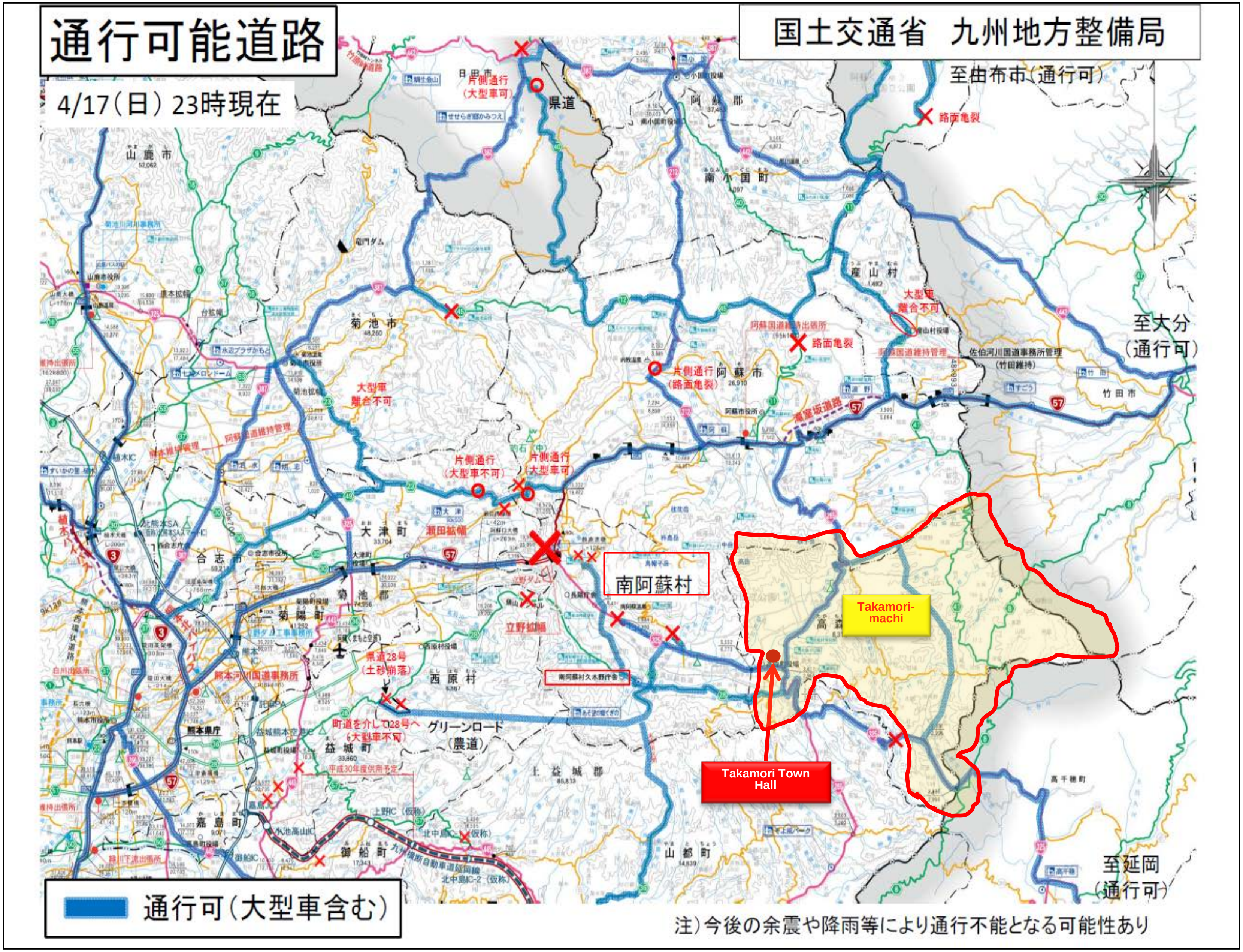
Smartphones on hand are available in the users' booths or any other area on the floor of the Town Hall.

Support (3) MDRU ✕ DoCoMo Satellite Mobile Phones (Base-to-base Communications)

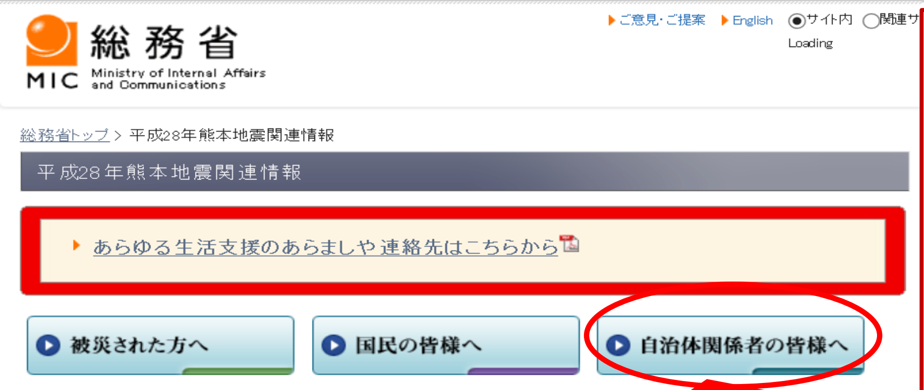
Constructed an environment allowing smartphone-to-smartphone calls (enabling outgoing and incoming outside line calls) between the Takamori Town Hall and a remote base (Minamiaso Village Office).


Satellite
WIDESTAR II units
WIDESTAR Multi-service adapter
Smartphone
VoIP GW
HUB
Attaché case type MDRU
Portable IP-PBX
Wi-Fi Access points
1F of Takamori Town Hall
Outgoing and incoming outside line calls
WIDESTAR II units
Smartphone
WIDESTAR Multi-service adapter
HUB
VoIP GW
Attaché case type ICT unit
Wi-Fi Access points
Portable IP-PBX
In front of Minamiaso Village Office

<Reference> Situation of Passable Roads around Takamorimachi, Kumamoto Prefecture


通行可能道路
4/17(日)23時現在
国土交通省　九州地方整備局
至由布市(通行可)
路面亀裂
県道
片側通行(大型車可)
日田市
阿蘇郡
南小国町
産山村
大型車離合不可
阿蘇市
片側通行(路面亀裂)
至大分(通行可)
竹田市
菊池市
大型車離合不可
山鹿市
片側通行(大型車不可)
片側通行(大型車可)
大津町
瀬田拡幅
南阿蘇村
Takamori-machi
立野拡幅
菊陽町
合志市
西原村
県道28号(土砂崩落)
町道を介して28号へ(大型車不可)
グリーンロード(農道)
益城町
上益城郡
Takamori Town Hall
嘉島町
御船町
山都町
高千穂町
至延岡(通行可)
通行可(大型車含む)
注)今後の余震や降雨等により通行不能となる可能性あり

MDRU-employed Support Activities for Kumamoto Earthquake Disaster (Immediately after Disaster through Recovery Phase)



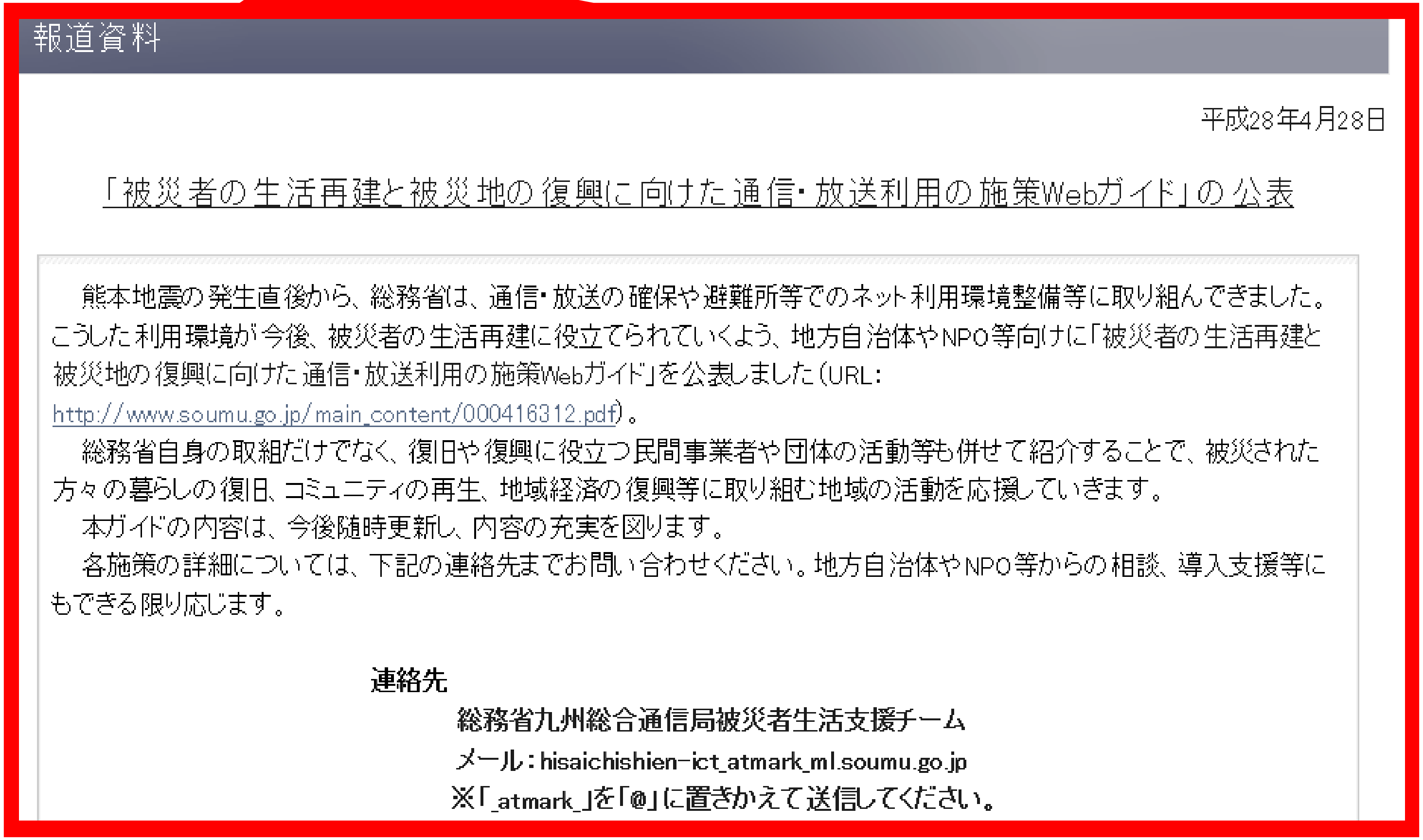
総務省
MIC Ministry of Internal Affairs and Communications

総務省トップ > 平成28年熊本地震関連情報

平成28年熊本地震関連情報

あらゆる生活支援のあらましや連絡先はこちらから

- A web guide of measures for communications and broadcasting usage was released for local government and NPO use for the purpose of disaster victims' life reconstruction and the restoration of the disaster-affected area, in response to the needs of the disaster-affected area that were changing from moment to moment immediately after the earthquake disaster.
- The web guide has been updated regularly to incorporate new contents in real time.



報道資料

平成28年4月28日

「被災者の生活再建と被災地の復興に向けた通信･放送利用の施策Webガイド」の公表

熊本地震の発生直後から、総務省は、通信･放送の確保や避難所等でのネット利用環境整備等に取り組んできました。こうした利用環境が今後、被災者の生活再建に役立てられていくよう、地方自治体やNPO等向けに「被災者の生活再建と被災地の復興に向けた通信･放送利用の施策Webガイド」を公表しました（URL：http://www.soumu.go.jp/main_content/000416312.pdf）。

総務省自身の取組だけでなく、復旧や復興に役立つ民間事業者や団体の活動等も併せて紹介することで、被災された方々の暮らしの復旧、コミュニティの再生、地域経済の復興等に取り組む地域の活動を応援していきます。

本ガイドの内容は、今後随時更新し、内容の充実を図ります。

各施策の詳細については、下記の連絡先までお問い合わせください。地方自治体やNPO等からの相談、導入支援等にもできる限り応じます。

連絡先

総務省九州総合通信局被災者生活支援チーム
メール：hisaichishien-ict_atmark_ml.soumu.go.jp
※「_atmark_」を「@」に置きかえて送信してください。

(5) MDRU-support to recovery of local government office work

* Movable and Deployable ICT Resource Unit (MDRU): A suitcase-sized set of equipment to maintain a wireless LAN communications environment regardless of the disruption of usual means of communications in times of large-scale disaster. The MDRU contributed to the communications environment of the local government office and shelter immediately after the earthquake disaster. Currently, mobile phones are widely used stably. Therefore, the MDRU is in the Kyushu Bureau of Telecommunications for further use, if required.

- MDRUs can be utilized to substitute extension telephone networks in temporary government buildings. Therefore, MIC will support the introduction and utilization of MDRUs at the request of local governments in disaster-affected areas.
  Reference URL:http://www.soumu.go.jp/main_content/000416391.pdf
- In response to the Kumamoto earthquake disaster this time, the MDRU was transported to Takamorimachi, Aso-gun, Kumamoto Prefecture, to provide Internet connection and voice call services at the Town Hall and shelter. In the future, MDRUs can be utilized for the prompt construction of extension telephone networks associated with the relocation of government office buildings, for example. Presently, the MDRU is standing by at the Kyushu Bureau of Telecommunications. Contact MIC, if necessary.

Reference: MDRU in use in Takamorimachi in Kumamoto

充電は10分以内で
the most beautiful villages in japan
高森町
熊本県

Information Slides

1. Activities of Kumamoto Earthquake (utilizing MDRU)

2. Sendai Framework and Sendai Cooperation Initiatives (relating 3rd UN World Conference on DRR)

3. Examples of Japan's International Contribution and Japan's ICT solutions

Sendai Framework for Disaster Risk Reduction 2015-2030

Expected Outcome

The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries

Goal

Prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience

Global Targets

① Mortality
② Affected people
③ Direct economic loss
④ Damage to medical and educational facilities
⑤ DRR strategies
⑥ Support to developing countries
⑦ Access to early warning

Priorities for Action

Focused action at national and local level and global and regional levels

Priority 1

Understanding disaster risk

Priority 2

Strengthening disaster risk governance to manage disaster risk

Priority 3

Investing in disaster risk reduction for resilience

Priority 4

Enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation and reconstruction

Roles of Stakeholders

- Civil society, volunteers, community (women, children and youth, persons with disabilities, etc.)
- Academia, scientific and research entities and network
- Business, professional associations and financial institutions
- Media

International Cooperation and Global Partnership

- General considerations
- Means of implementation
- Support from international organization
- Follow-up actions

Sendai Cooperation Initiative for Disaster Risk Reduction

- In plenary session of The Third UN WCDRR, Prime Minister Abe announced “Sendai Cooperation Initiative for Disaster Risk Reduction”.
- Japan will provide 4 billion US dollars in total to the area related to disaster risk reduction and train 40 thousand government officials.

- **Descriptions related to ICT**

1 Basic Policies

③Utilizing Japan’s knowledge and technology

…Japan can make a distinctive contribution to the international community by utilizing its knowledge and technology in a manner that local communities can introduce for themselves, not only by introducing the achievements of cutting-edge science and technology, such as disaster observation, analysis and prediction that utilize innovative earth and information and communication technology, …

2 Concrete measures

(1)non-material assistance

Technologies for disaster observation, prediction and warning (including information and communication technology, earth observation…

(2)material assistance

Development of satellites necessary for disaster observation, prediction and warning and of information and communication infrastructure.

Development of …, and of information and communication facilities relating to disaster risk reduction

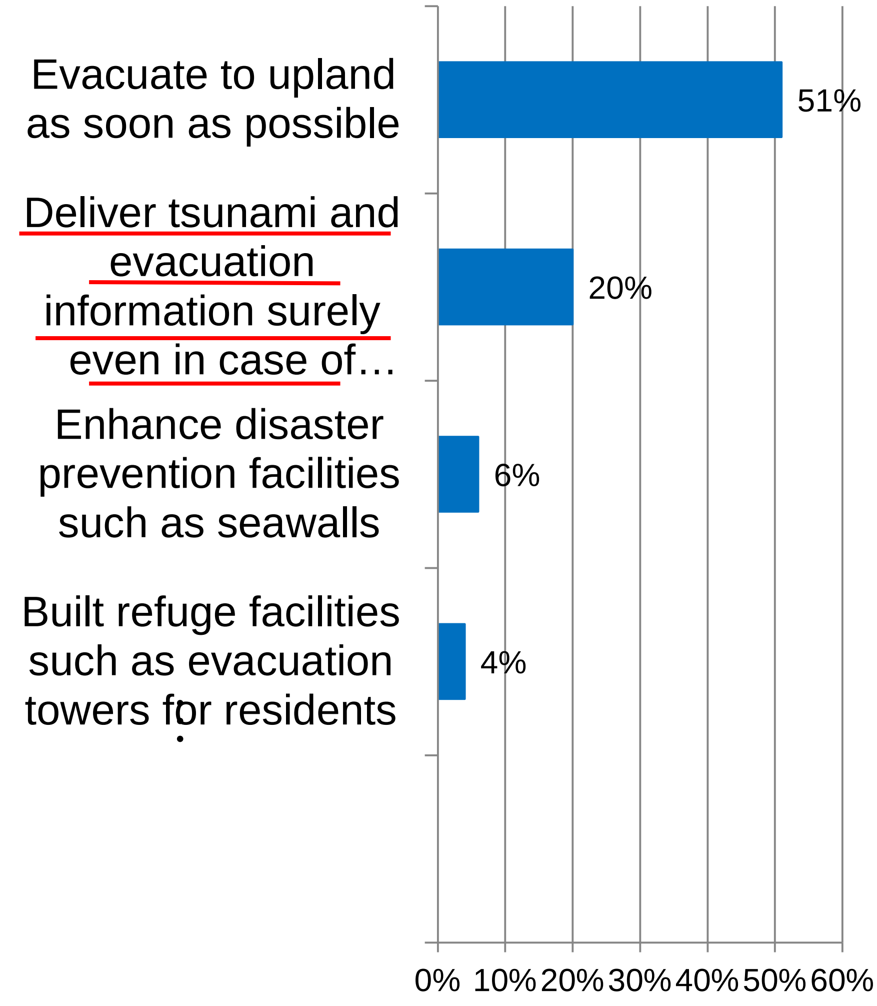
(3)Global and region-wide cooperation

Assistance for efforts to build region-wide institutions and systems (Sentinel Asia, Asian Disaster Reduction Center, ASEAN Coordinating Centre for Humanitarian Assistance on Disaster Management (AHA Centre))

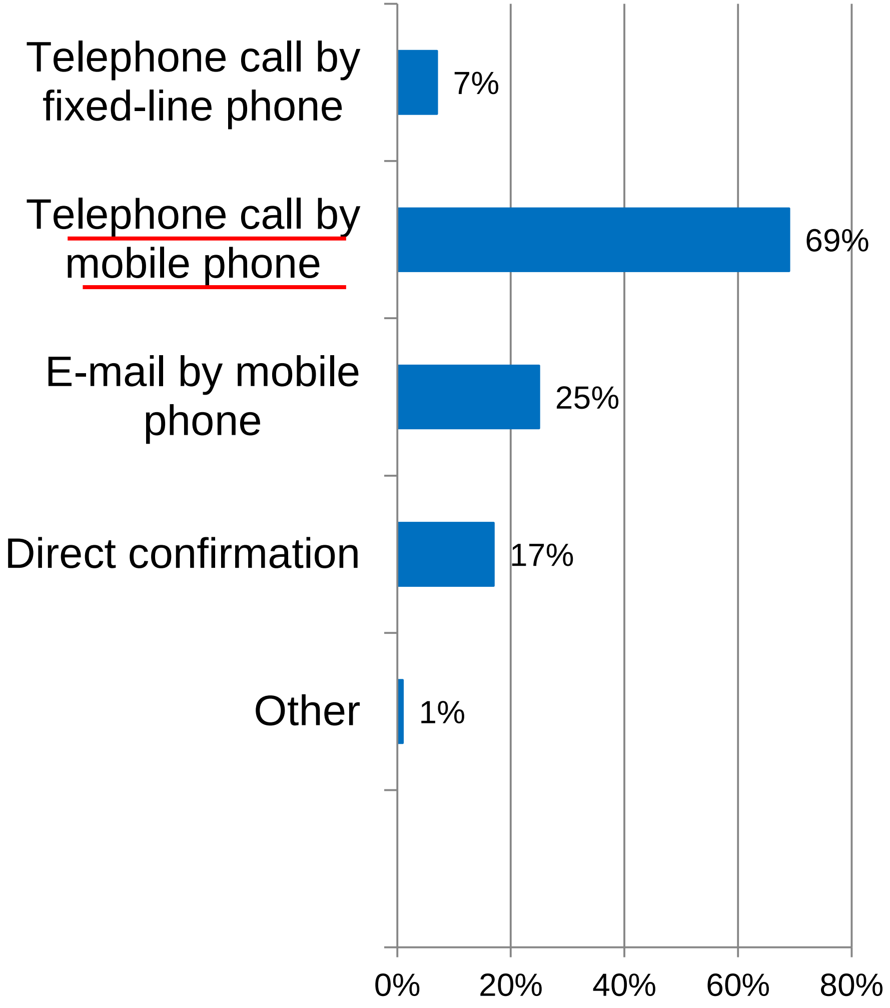
URL: http://www.mofa.go.jp/mofaj/files/000070664.pdf

Lessons from the Great East Japan Earthquake

Most important counter measures to protect community from tsunami



Method to confirm safety of family members living together



Source: Special Working Group of the Cabinet Office

Information Slides

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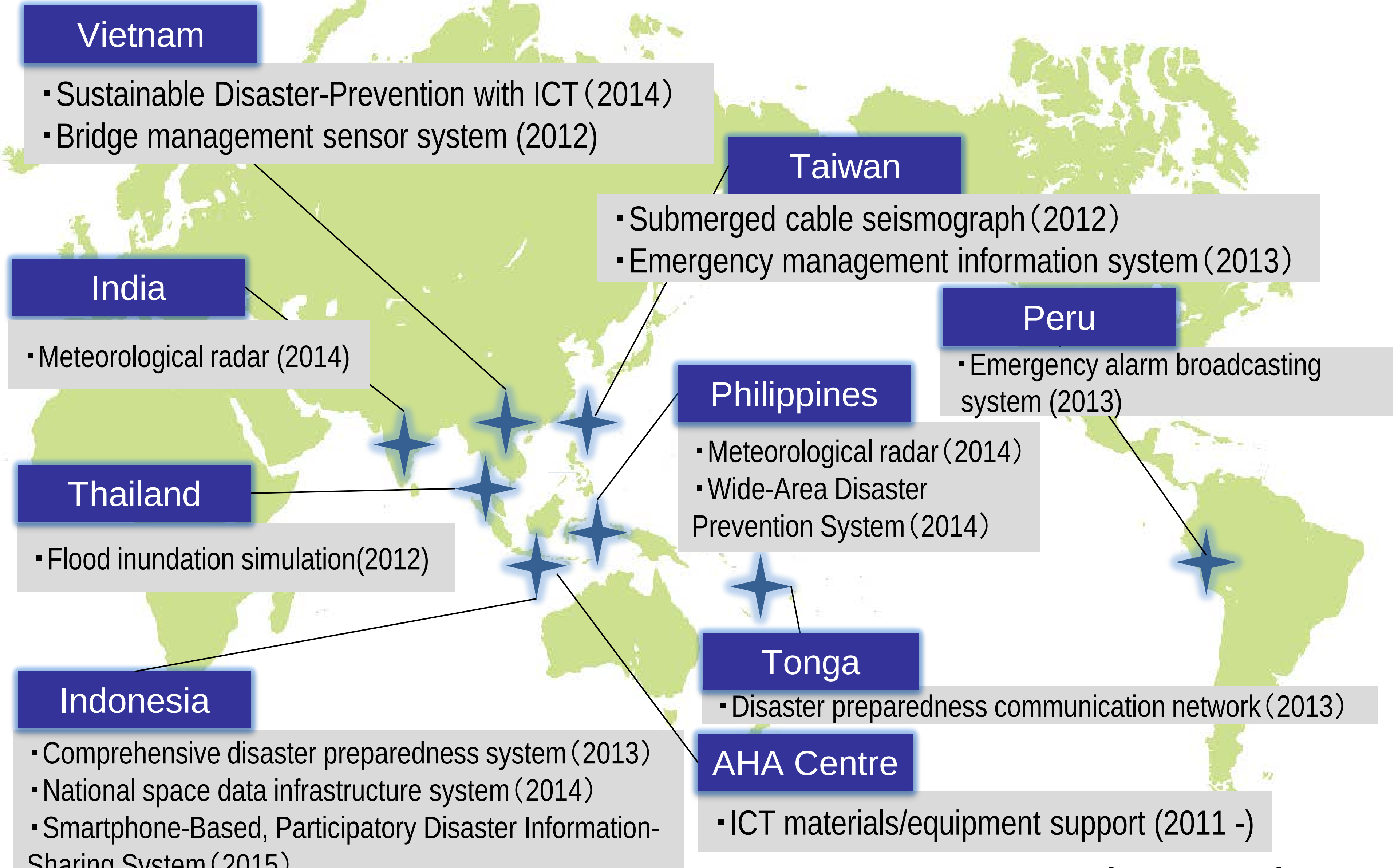
International Contribution in Disaster Management

* Projects which the orders were received or supports were determined in and after FY2010. Pilot projects are not included.



Vietnam

- Sustainable Disaster-Prevention with ICT（2014）
- Bridge management sensor system (2012)

Taiwan

- Submerged cable seismograph（2012）
- Emergency management information system（2013）

India

- Meteorological radar (2014)

Peru

- Emergency alarm broadcasting system (2013)

Philippines

- Meteorological radar（2014）
- Wide-Area Disaster Prevention System（2014）

Thailand

- Flood inundation simulation(2012)

Tonga

- Disaster preparedness communication network（2013）

Indonesia

- Comprehensive disaster preparedness system（2013）
- National space data infrastructure system（2014）
- Smartphone-Based, Participatory Disaster Information-Sharing System（2015）

AHA Centre

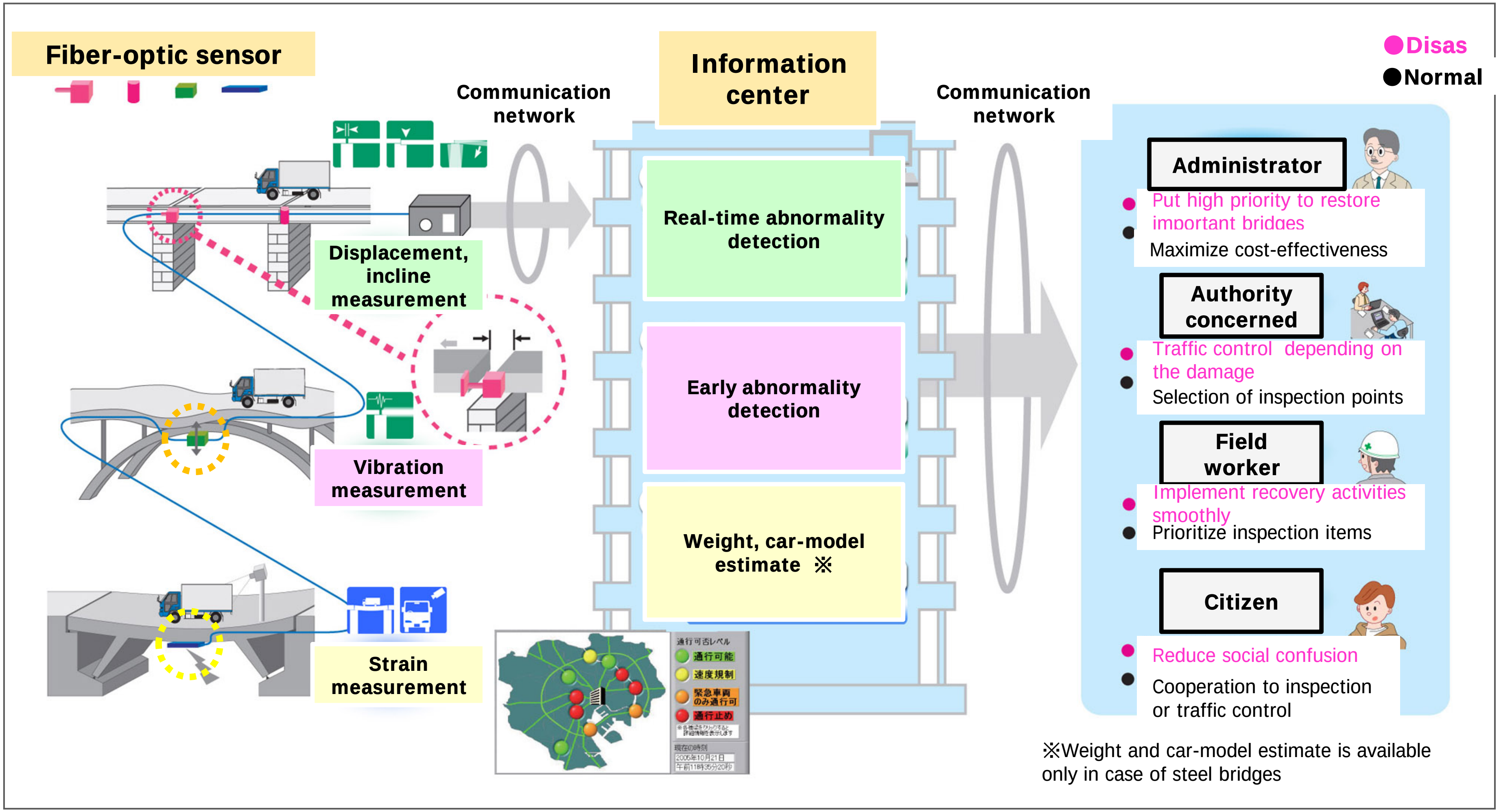
- ICT materials/equipment support (2011 -)

Source: industry survey by MIC

Example(Observation/Collection):Bridge Monitoring Sensor

A bridge management sensor:

- collect information on bridge conditions in real time to understand bridge deterioration.



Fiber-optic sensor

Displacement, incline measurement

Vibration measurement

Strain measurement

Communication network

Information center

Real-time abnormality detection

Early abnormality detection

Weight, car-model estimate ※

Communication network

●Disas
●Normal

Administrator

● Put high priority to restore important bridges
● Maximize cost-effectiveness

Authority concerned

● Traffic control depending on the damage
● Selection of inspection points

Field worker

● Implement recovery activities smoothly
● Prioritize inspection items

Citizen

● Reduce social confusion
● Cooperation to inspection or traffic control

※Weight and car-model estimate is available only in case of steel bridges

Example(Observation):Solid-state Meteorological Radars

Solid-state (semiconductor) meteorological radars:

➢ realize high-accurate observation, reduction of life cycle cost, stable operation, and effective frequency use.

Comparison of meteorological radars

Electron tube (vacuum tube) meteorological radars

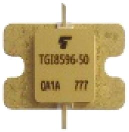
- Radar waves are generated by applying a high voltage to an electron tube.
- High-output radio waves can be easily obtained.

- It is necessary to collect and process a large volume of received data to obtain sufficient accurate rainfall data.
- A big load by high-voltage causes short life span (about two years).
- Running cost is high. etc.

Solid-state (semiconductor) meteorological radars

- It is possible to produce necessary radar waves without applying high voltage.
- It is possible to obtain high output by combining a number of elements, though the output of each individual element is low.

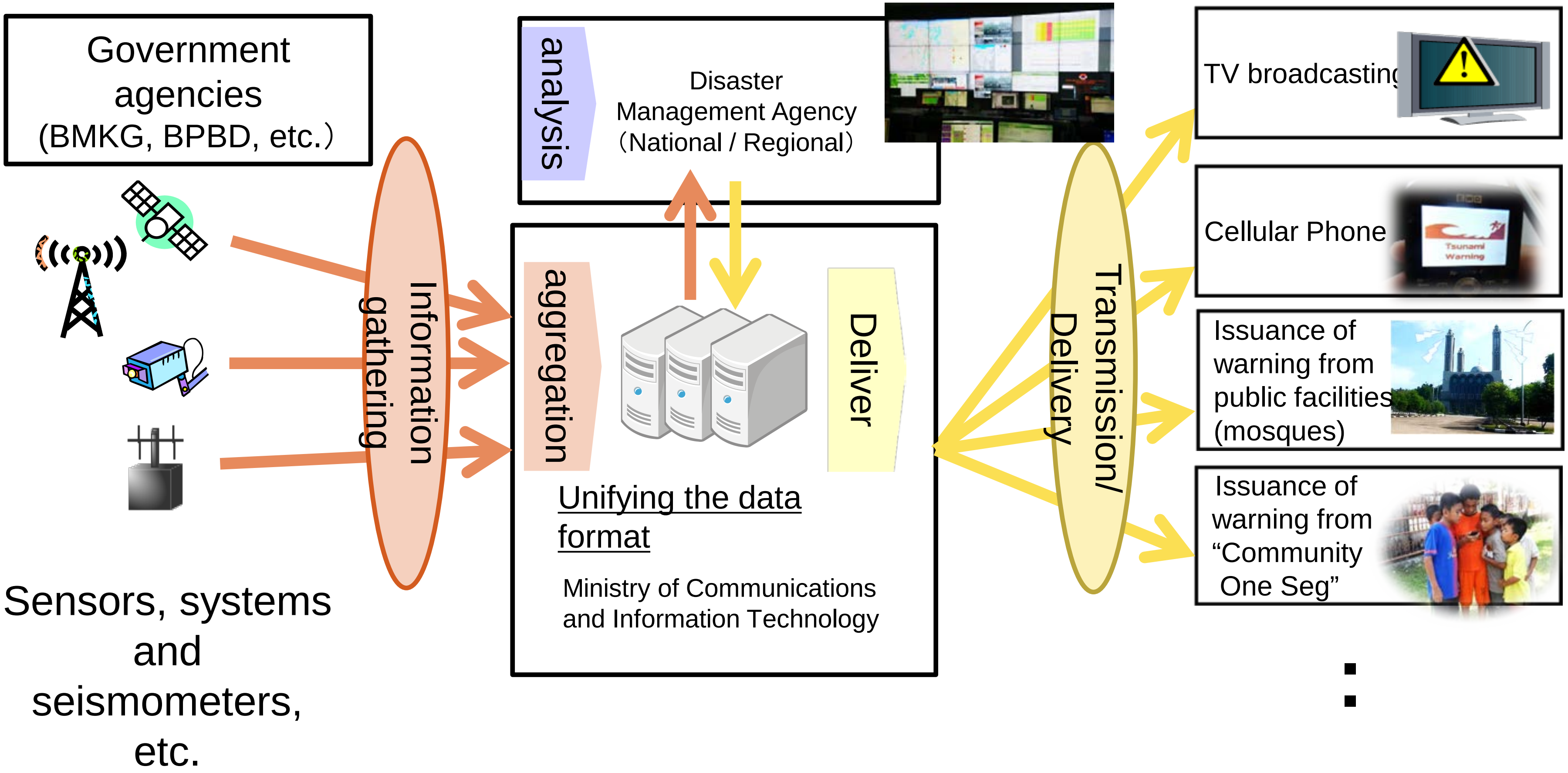
- Narrow variability of wave form and observation based on a small volume of received data is possible.
- The service life is for at least 10 years.
- Running cost is low. etc.



Example（Analysis）：ICT system for Disaster Management

ICT System for Disaster Management:

- conduct collection, analysis and delivery of disaster information
- transfer disaster information to residents promptly and securely



Government agencies
(BMKG, BPBD, etc.）

Sensors, systems and seismometers, etc.

Information gathering

aggregation

Unifying the data format

Ministry of Communications and Information Technology

analysis

Disaster Management Agency
（National / Regional）

Deliver

Transmission/ Delivery

TV broadcasting

Cellular Phone

Issuance of warning from public facilities (mosques)

Issuance of warning from “Community One Seg”

:

Example(Analysis):Flooding Simulator

A flooding simulator:

- predict river flooding and inundation
- It enables intuitive and straight forward control offers, flexible condition settings ,and allows high-speed and high-accuracy simulation.

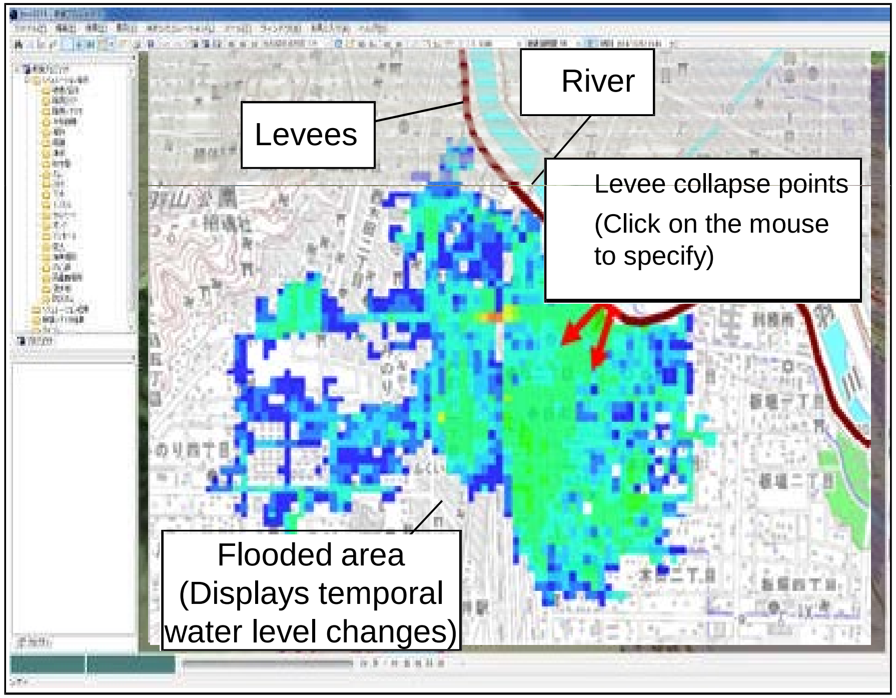
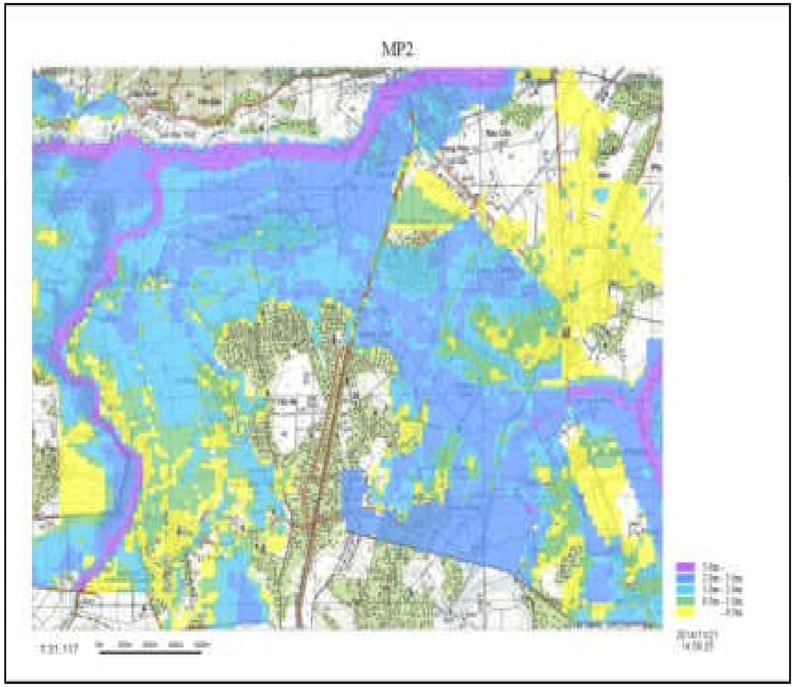
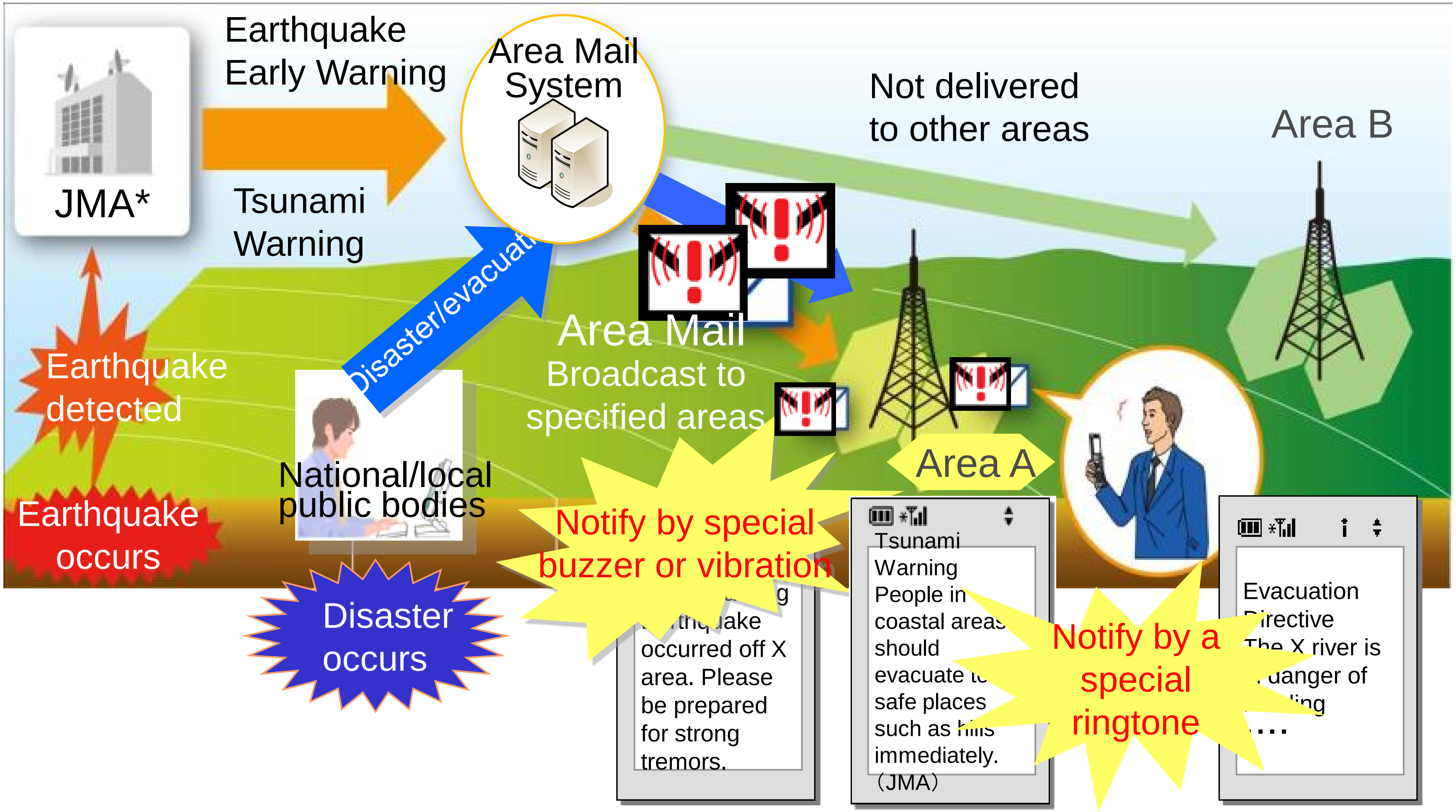

River
Levees
Levee collapse points
(Click on the mouse to specify)
Flooded area
(Displays temporal water level changes)

Image of flooding simulation



Output of simulation

Example(Delivery):Area Mail


JMA*
Earthquake Early Warning
Tsunami Warning
Area Mail System
Not delivered to other areas
Area B
Earthquake detected
Earthquake occurs
Disaster/evacuati
National/local public bodies
Area Mail
Broadcast to specified areas
Area A
Disaster occurs
Notify by special buzzer or vibration
g
thquake occurred off X area. Please be prepared for strong tremors.
Tsunami Warning
People in coastal areas should evacuate to safe places such as hills immediately. （JMA）
Notify by a special ringtone
Evacuation Directive
The X river is danger of ling
・・・

Earthquake Early Warning**

Tsunami Warnings**

Disaster/evacuation information

Popup display image

* Japan Meteorological Agency

** Japanese Only

Workshops for Capacity Building

- Covering ICT for disaster management and related areas
- Developing human resources in cooperation with international organizations

Workshop on Sensor Networks

May 2014, supported by the ASEAN-Japan ICT Fund @Tokyo, Japan

Outline: Lectures and site visits on Japanese technologies for sensor networks

Participants: ASEAN member countries' ICT ministries (18 officials in total).

Workshop on Disaster Management and Communications

June 2014, supported by the Asia-Pacific Telecommunity (APT) Voluntary Contribution @Tokyo, Japan

Outline: Lectures and site visits on Japanese technologies for emergency communication and emergency warning systems

Participants: APT member countries' ICT/DM ministries (93 officials in total)

Workshop on ICT for Disaster Management

Dec. 2014, supported by the ASEAN-Japan ICT Fund) @Tokyo, Japan

Outline: Lectures and site visits on Japanese ICT for disaster management

Participants: ASEAN member countries' ICT ministries (13 officials in total)

Workshop on Disaster Management and Communications

July 2015, supported by the Asia-Pacific Telecommunity (APT) Voluntary Contribution @Nadi, Fiji

Outline: Lectures on Japanese ICT policy and systems for disaster management

Participants: APT member countries' ICT/DM ministries (63 officials in total)