Chapter 5

The 2016 Kumamoto Earthquake and ICT Utilization

This Chapter outlines the status of information and communications at the time of the 2016 Kumamoto Earthquake and explains the roles played by ICT and problems newly revealed, in comparison with the situation at the time of the Great East Japan Earthquake and in light of the progress of ICT and its dissemination as social infrastructure.

Section 1 ICT Utilization at the Time of Disasters

1. ICT Utilization at the Time of the Great East Japan Earthquake

(1) Information Conveyance and ICT at Disaster-stricken Areas

According to an interview survey conducted after the Great East Japan Earthquake, which occurred on March 11, 2011, highly instantaneous broadcasting tools such as radio, TV, and disaster radio were used more frequently than other media for collecting tsunami and other information just after the earthquake's occurrence. Their evaluation concerning information-gathering media just after the earthquake suggest the necessity to secure multiple routes to transmit highly instantaneous information.

At the time of the Great East Japan Earthquake, mobile phones could not be used for a prolonged time due to network congestion, damage to base stations and back-up power fuel shortage, and disaster victims were left stranded. On the other hand, the significance of mobile phones as a lifeline was reaffirmed with their characteristics of being equipped with diverse functions including short-message and One-Seg-receiving functions. Based on such evaluation, the importance of securing multi-layered functions and power sources for mobile phones was pointed out in order to ensure information communication under all circumstances.

During evacuation shelter life, mobile phones were the most needed ICT, followed by TVs and radios. Needs for the ICT environment are thus high in shelters and temporary housing. An environment is called for that enables disaster victims to collect and select necessary information by themselves.

(2) Business Continuation and ICT at the Time of a Disaster

At the time of the Great East Japan Earthquake, communications infrastructure was broadly disrupted and could not be used due to congestion, etc. Such circumstances also hinder activities for recovery and reconstruction, and therefore, it is required to make efforts for building disaster-resilient ICT infrastructure. The survey also revealed the fact that, with regard to business continuation and ICT utilization upon a disaster, there are gaps in awareness and concrete measures among organizations by size and suggested the necessity to develop an environment where anyone can utilize cloud services stably with peace of mind.

2. Changes in ICT Utilization Environment after the Great East Japan Earthquake

(1) Transition to Digital Terrestrial Broadcasting

On March 31, 2012, complete transition to digital terrestrial broadcasting was accomplished nationwide, including three prefectures in Tohoku, which delayed about 8 months due to the Great East Japan Earthquake. Digital terrestrial broadcasting makes it possible to scale down images on the screen and indicate information unrelated to an on-air program in the margin with letters and simple images. This enables universal broadcasting and provision of localized information at the same time.

(2) Dissemination of Smartphones

Widespread use of smartphones is one of the significant changes in the ICT utilization environment. The household ownership rate of smartphones, which was 9.7% at the end of 2010, sharply increased to 72.0% at the end of 2015, showing a rapid dissemination in five years. The utilization rate of social network services (SNS) is also increasing rapidly, from 10.5% at the end of 2011 to 48.9% at the end of 2015.

(3) Commencement of Operation of L-Alert

MIC has been promoting nationwide dissemination of L-Alert, a common base for information communication that local governments who issue evacuation recommendations and instructions, only required to puitthem into the fommon format at the time of a disaster or in the

process of reconstruction. This has enabled people to obtain information using diverse media, including broadcast, mobile phones and portal sites. Public information commons started 24-hour, 365-day operation on June 13, 2011.

Section 2 Results of the Survey on ICT Utilization at the Time of the 2016 Kumamoto Earthquake

1. Outline of the 2016 Kumamoto Earthquake

At 21:26 p.m. on April 14, 2016, a 6.5-magnitude earthquake centered in the Kumamoto area occurred. A quake of seven on the Japanese scale was measured in Mashiki town, Kumamoto prefecture. Then, at 1:25 a.m. on April 16, the largest 7.3-magnitude earthquake occurred and a quake of seven on the Japanese scale was again measured in Mashiki town and Nishihara village. This was the first time on record that a quake as large as seven on the Japanese scale hit the same place twice.

Restoration of lifelines took several months at the time of the Great East Japan Earthquake, while supply of power, water and gas was resumed within several days to several weeks, except for some areas, in the case of the Kumamoto Earthquake. Influence on lifelines was thus minimized generally.

Communications and broadcasting were also suspended due to landslide and blackouts. Services to be provided by damaged mobile phone base stations were covered by neighboring base stations or deployed mobile base stations and the hindrance to communications was only limited. Communications in the government office areas were recovered in the morning of April 18 and communication networks were almost completely recovered by the afternoon of April 27. Broadcasting was also suspended but resumed within 72 hours.

In this manner, restrictions on the use of communication tools were relatively on a small scale even immediately after the disaster.

2. Informational Behavior at the Time of the 2016 Kumamoto Earthquake

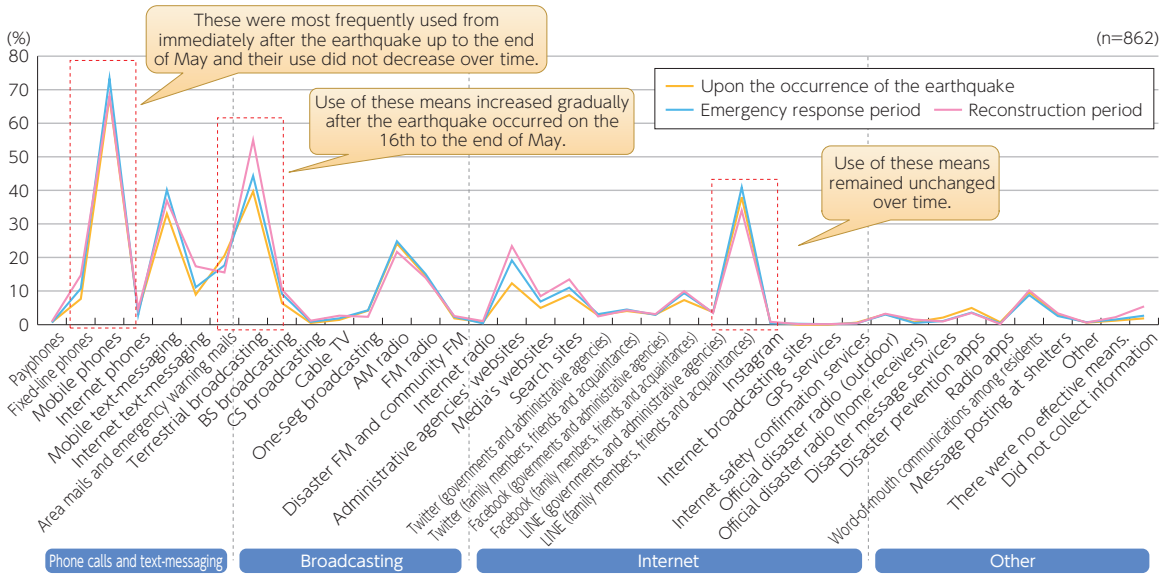
MIC conducted an online questionnaire survey targeting disaster victims in order to analyze informational behavior in the disaster-stricken areas.

(1) Useful Means for Communicating Disaster Information in Disaster-stricken Areas

Looking at means used for information collection in time series, mobile phone calls were most frequently used from immediately after the earthquake to the reconstruction period, followed by terrestrial broadcasting and SNS (LINE (family members, friends and acquaintances)). Use of terrestrial broadcasting and administrative agencies' websites was apt to increase as time passed (Figure 5-2-2-1).

Comparison between information collection means at the time of the Great East Japan Earthquake and those at the time of the 2016 Kumamoto Earthquake revealed that ordinarily used communication means, such as mobile phone calls and text-messaging and SNS, were frequently utilized in Kumamoto constantly from immediately after the earthquake to the reconstruction period. On the other hand, at the time of the Great East Japan Earthquake, used information collection means were fewer and most frequently used means changed over time from the radio immediately after the disaster to official disaster radio and the TV and radio in the emer-

Figure 5-2-2-1 Means Used for Information Collection (in time series)



(Source) "Survey on ICT Utilization at the Time of the 2016 Kumamoto Earthquake" (2016) by MIC

gency response period and then to word-of-mouth communications among residents in the reconstruction period. As a whole, changes with time in means evaluated as being effective were smaller in the case of the 2016 Kumamoto Earthquake as in the case of those means actually used (Figure 5-2-2-2).

Terrestrial broadcasting and administrative agencies' websites were evaluated increasingly, as time passed, to be effective as communication means upon the occurrence of the disaster and in the reconstruction period both at the time of the Great East Japan Earthquake and the 2016 Kumamoto Earthquake. This suggests that these media properly provided information that met users' needs. At the time of the 2016 Kumamoto Earthquake, use of these media did not increase so much despite high prior evaluation, probably because people were able to use ordinary information collection means.

(2) Development of ICT Environment during Evacuation

In order to ensure the ICT environment for evacuees, various types of assistance were offered by telecommunications carriers, vendors and manufacturers, which included free access to public wireless LAN, lending of mobile phone chargers and distribution of radios to disaster victims and shelters.

Regarding public wireless LAN, mobile carriers offered "00000JAPAN," allowed access to area owners' Wi-Fi routers, and installed Wi-Fi routers at shelters, thereby striving to ensure a communication environment for disaster victims.

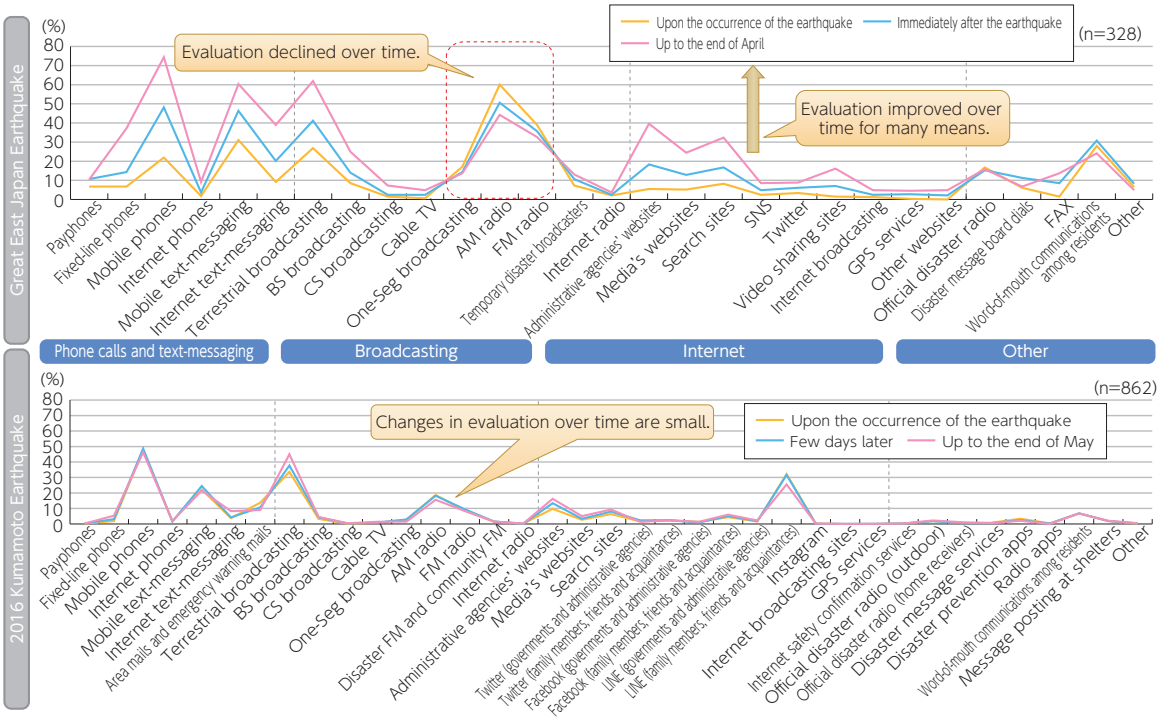
"00000JAPAN" is the unified SSID for providing public wireless LAN services in the event of a large-scale disaster so that Wi-Fi services ordinarily provided by each carrier can be utilized uniformly as a means for disaster victims' communication connections. This initiative was commenced based on lessons learned from the Great East Japan Earthquake. A demonstration test was carried out in September 2013 at Kamaishi city, Iwate prefecture, which was one of the severely damaged areas, and 00000JAPAN started to operate officially in May 2014 but was put into practice for the first time at the time of the 2016 Kumamoto Earthquake.

Respondents who answered that they actually used 00000JAPAN accounted for only 23%, while those who knew of 00000JAPAN but did not use it accounted for 37%, and 40% of the respondents answered that they did not know this service. It is considered that the fact that mobile phones or other alternative means could be used without any difficulty contributed to this low utilization rate. However, in order to enhance the usefulness of Wi-Fi services in the event of any larger communication failure, more Wi-Fi routers need to be installed and 00000JAPAN should be made more widely recognized.

In the meantime, users highly evaluated the effectiveness of 00000JAPAN and other public wireless LAN services that can be easily accessed irrespective of contracted carriers. These services were fully utilized by government officials or backup personnel from other local governments in the disaster-stricken areas as means for internet access to collect necessary information. Disaster victims who use smartphones for internet access also requested further development of the public wireless LAN environment.

It was thus found that the effectiveness of public wireless LAN services at the time of a disaster is highly evaluated to some extent. For ensuring more prompt and efficient responses upon a disaster, such as enabling carriers to go around shelters to install routers, informa-

Figure 5-2-2-2 Means Effective for Information Collection (in time series)



(Source) "Survey on ICT Utilization at the Time of the 2016 Kumamoto Earthquake" (2016) by MIC

tion on evacuees' needs and locations to install routers should preferably be shared among relevant parties.

(3) Problems Concerning the Handling of Personal Information

The results of the survey targeting disaster victims and that targeting government officials and shelter staff revealed problems of complicated procedures for providing personal information and difficulty in information sharing, although respondents showed little concern about providing content of the personal information from the perspective of the necessity to protect people's lives and property upon a disaster. In the procedures for information provision, use of individual number cards is required to be considered as an efficient means for local governments and shelters to ascertain the evacuation status.

3. The 2016 Kumamoto Earthquake and Business Continuation

At the time of the Great East Japan Earthquake, business also suffered significant damage due to data loss and business system failure. This experience prompted companies to reconsider their measures for business continuation in the event of a large-scale disaster. On the other hand, some complain of difficulty in taking concrete measures due to required cost and security-related problems and companies' efforts cannot be evaluated as sufficient even at present, after more than five years from the Great East Japan earthquake.

Therefore, an interview survey was conducted as to what measures had been taken for business continuation, whether envisaged damage could be avoided, and what problems occurred at the time of the 2016 Kumamoto Earthquake. The survey targeted local governments, companies, hospitals, nursing care facilities, agriculture and fisheries cooperatives, and commerce and industry associations mainly in the disaster-stricken areas. Based on the survey results, the changes from the Great East Japan Earthquake and effects brought about through the use of cloud services.

(1) Telecommunications Carriers' Efforts for Making ICT Infrastructure Disaster Resilient

As explained above, telecommunications carriers' efforts contributed to minimizing damage to communication infrastructure at the time of the 2016 Kumamoto Earthquake. Carriers have strengthened measures against blackouts and interruption of transmission channels as well as measures for covering the relevant areas in the event of radio suspension based on lessons from the Great East Japan Earthquake, when causes of radio suspension at mobile phone base stations were mostly blackouts and interruption of transmission channels.

As measures against blackouts, mobile power source cars and generators have been increased and deployed and battery capacity at base stations has been increased. As measures against interruption of transmission channels, multiplication of channels has been expanded and emergency recovery measures using satellite entrance lines and micro entrance lines have been developed. As measures for covering the damaged areas, mobile and in-vehicle base stations have been deployed and large-zone base stations have been installed.

In this manner, efforts have been made after the Great East Japan Earthquake to strengthen emergency recovery measures for coping with radio suspension due to blackouts and interruption of transmission channels and covering areas of base stations affected by radio suspension and these efforts worked to save many base stations at the time of the 2016 Kumamoto Earthquake.

(2) Efforts for Business Continuation by Local Governments and Companies

More than half of the local governments have worked to make their core business systems redundant but those working for network redundancy remained to be around 30%.

In the meantime, around 40% of the companies have taken measures to make their systems redundant and more than half of them have been making efforts for network redundancy.

Both local governments and companies generally recognize the significance of creating redundant core business systems and take certain measures. In particular, some local governments that are not taking any measures at present answered that they consider introducing some measures at the time of the next system renewal. There was also an answer that they had taken network redundancy measures based on lessons learned from past disasters.

The significance of data backup has been increasingly recognized and all local governments and companies that provided answers are taking measures for data backup. Organizations utilizing cloud services were 60% of the local governments and 30% of the companies. Companies that have business bases at multiple locations are positively utilizing cloud services and remotely conducting data backup, but some answered that they have no plan to introduce a cloud system due to concern over economic efficiency and security.

Hospitals and nursing care facilities characteristically handle electronic health records or other highly confidential information that are indispensable for continuing business. Therefore, there is an obstacle for them to introduce cloud systems, such as due to the need to establish a backup system using paper documents, etc. in the event of a disaster.

Thanks to these measures and lessons from past disasters, the earthquake on the 14th did not cause significant damage, but the following earthquake on the 16th physically damaged business systems and disrupted networks. However, data damage was very small compared to the damage to business systems and networks and some organizations that suffered damage to their servers answered that they could recover data easily thanks to a backup system.

Among organizations that have introduced a cloud

system, some answered that the cloud system was useful for efficiently obtaining information for restoring lifelines, while others answered that cost is the problem for introducing systems. There were also needs for considering the use of information from residents via the internet. For communicating information for reconstruction, the necessity to utilize multiple media is pointed out. Furthermore, how to ensure accurate and prompt responses to the content of the information to be delivered is pointed out as a problem to be discussed.

Section 3 The 2016 Kumamoto Earthquake and New Means of Sharing Disaster Information

At the time of the 2016 Kumamoto Earthquake, power supply was resumed soon and prior measures taken by carriers and broadcasters worked to limit congestion and enabled use of ordinary communication means even immediately after the disaster in some areas. Accordingly, disaster information was shared using diverse means that were not available in the past.

1. Information Transmission by Local Governments

(1) Means Used for Information Transmission

At the time of the 2016 Kumamoto Earthquake, local governments used not only official disaster radio and disaster mails but also internet tools such as their official websites and SNS. Additionally, for elderly people who are apt to have difficulties in access to information, indirect publication using TVs and radios was actively employed. In this manner, more diverse means were effectively utilized for information transmission than at the time of the Great East Japan Earthquake.

(2) Input of Information for Indirect Public Notices to the L-Alert System, etc.

Information transmission using L-Alert is roughly divided into information on (emergency) evacuation instructions or evacuation recommendations and notices including daily living information and administrative information. Looking at the trend in the use of L-Alert, it is found that local governments in Kumamoto prefecture frequently issued evacuation instructions or recommendations using L-Alert up to the end of April, but that notices released in May onward were only limited to those input by Mashiki town. Local governments complain that it is troublesome to input information into the L-Alert system, while information recipients say that they confirmed the latest information at one time using other information collection means because all local governments' information was not necessarily available. Therefore, it is necessary to increase information input by local governments and the amount of available information on the L-Alert system.

2. Information Transmission by Residents (SNS)

The fact that disaster victims themselves transmitted information using Twitter or other tools is one of the characteristics of the 2016 Kumamoto Earthquake. Therefore, tweets posted after the earthquake that were processed using the DISAANA (DISAster-information ANAlyzer) developed by NICT were tabulated and analyzed. The DISAANA is a system that analyzes and organizes disaster-related tweets posted on Twitter to help people ascertain the situation and make proper judgment. The number of tweets posted on April 16, which was counted by predetermined category, was found to have increased each time an earthquake occurred.

3. Complementary Use of Diverse Information Transmission and Information Sharing Means

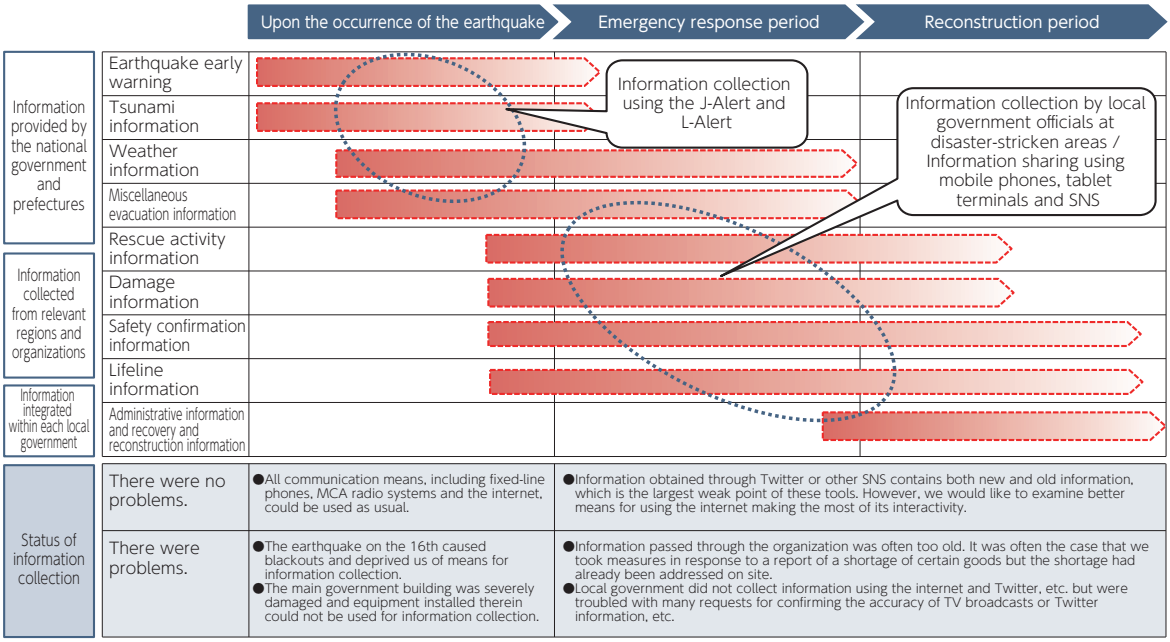
The 2016 Kumamoto Earthquake is characterized by the fact that information was collected from dispersed places using multiple ICT tools. Collected and utilized information was not limited to that universally broadcast using J-Alert, etc., which had already been put into practice. Local government officials themselves independently collected information and used tablet terminals for information integration and sharing. Additionally, SNS information sent by disaster victims was also used for ascertaining their needs.

In the meantime, during the emergency response period and reconstruction period, information on rescue activities, damages, and safety confirmation was collected to understand the overall damage and consider measures to take. In order to integrate and share such information collected by local government officials, mobile phones and tablet terminals were fully utilized.

In addition, during these periods, needs to collect information using SNS emerged for the purpose of grasping citizens' needs on a timely basis and collecting information necessary for pursuing duties in an efficient manner. However, when using SNS for information collection, there is a need to check the accuracy of information and properly select what is necessary from among a massive amount of information. Therefore, a tool to extract truly useful information or only necessary information from all information posted on SNS is required.

Use of SNS and dedicated disaster-response applica-

Figure 5-3-3-1 Changes over Time in Information Collection Means Used by Local Governments



(Source) "Survey on ICT Utilization at the Time of the 2016 Kumamoto Earthquake" (2016) by MIC

tion programs is being promoted in administrative agencies' information collection and transmission, but the problems concerning the accuracy and freshness of information and the need to properly integrate only necessary information have been recognized. As a solution for such problems, use of the D-SUMM (Disaster-information SUMMarizer) is being discussed. The D-SUMM is a system developed for the purpose of analyzing disaster-related tweets on a real-time basis and compiling them for each local government so that local government officials can ascertain the circumstances at a glance and make judgment. Even if there is a flood of damage reports, this system makes it possible to ascertain the entirety of the disaster damage in a short period of time and to compile disaster damage at each location easily.

Use of these tools is expected to enhance the efficiency of local governments' information collection and sharing and help them understand the needs of a larger number of disaster victims (Figure 5-3-3-1).

Section 4 Lessons from the 2016 Kumamoto Earthquake and ICT

Based on the results of the examination so far, identified major problems and ICT utilization at the time of the 2016 Kumamoto Earthquake are outlined below.

1. Information Communication and Sharing in Disaster-stricken Areas and Roles of ICT

(1) Ensuring Safety and Relief through Strengthening Communication and Broadcasting Infrastructure

At the time of the Great East Japan Earthquake, the earthquake and the tsunami caused damage to base stations and interruption of transmission channels, and radio suspension occurred at many locations due to blackouts. Based on this experience, carriers and broadcasters actively promoted efforts to build disaster-resilient ICT infrastructure. Such efforts bore fruit and hindrance to communications was only limited at the time of the 2016 Kumamoto Earthquake.

Even considering the fact that the scale of the earthquake was smaller and the damage was relatively localized, it can be said that lessons learned from the Great Hanshin-Awaji Earthquake and subsequent disasters were effectively reflected in the information and communications field. Related efforts should be continued and preparedness needs to be further enhanced in consideration of possible disasters of the same scale that may hit the Tokyo metropolitan area or possible large-scale blackouts (Figure 5-4-1-1).

(2) Improvement of Environment for Utilizing ICT during Evacuation, etc.

Tablets equipped with a shelter operation application made it possible to smoothly integrate and transmit evacuees' needs between shelters and local governments. On the other hand, officials and staff who used the app for the first time complained about the operability thereof and the inability to meticulously transmit information on unexpected matter was cited as a problem. The application needs to be improved to enable more intuitive operations.

Figure 5-4-1-1 Characteristics of Past Disasters and Comparison of ICT Utilization[34]

		Great Hanshin-Awaji Earthquake	Niigata Prefecture Chuetsu Earthquake	Great East Japan Earthquake	2016 Kumamoto Earthquake
Date		Jan. 17, 1995	Oct. 23, 2004	Mar. 11, 2011	Apr. 16, 2016
Magnitude		M7.3	M6.8	M9.0	M7.3
Number of killed or missing people		6,437	68	22,118	228
Number of evacuees (maximum)		Approx. 320,000	Approx. 12,000	Approx. 470,000	Approx. 180,000
Number of damaged buildings		249,180	16,985	400,326	42,734
Economic damage (direct)		Approx. 10 trillion yen	Approx. 30 trillion yen	Approx. 17 trillion yen	Approx. 2.4 trillion to 4.6 trillion yen
ICT utilization	Fixed-line phones	[Subscribed telephones] Difficult to use due to blackouts and damage to houses	[Subscribed telephones/ISDN] Difficult to use due to blackouts and congestion	[Subscribed telephones/IP phones] Difficult to use to blackouts, congestion and damage to houses due to the tsunami	[IP phones] Usable except for areas hit by blackouts; Low utilization rate
	Mobile communications	[2G mobile phones] Disseminating: More connectable and effective than fixed-line phones	[3G mobile phones] Penetration rate: 63.9%; Difficult to use due to blackouts and congestion	[3G mobile phones] Penetration rate: 87.8%; Penetration rate for smartphones: Approx. 10%; Difficult to use due to blackouts, congestion and damage to base stations	[LTE, smartphones, mobile phones] Penetration rate: 123.1%; Penetration rate for smartphones: over. 50%; Usable almost without any difficulty; SNS, etc. were highly evaluated.
	Internet	[Dial-up connection] Started to disseminate; Effective in transmitting information in disaster-stricken areas	[ADSL/Optical communication] Individual penetration rate 64.3%; The prefecture transmitted information on its website but there was only limited use.	[ADSL/Optical communication] Individual penetration rate 78.2%; Fixed-line equipment was not usable due to blackouts, etc; Pioneering used SNS, etc.	[Optical communication] Individual penetration rate 83.0%; Usable almost without any difficulty; 00000JAPAN was offered free of charge.
	TV	[Terrestrial broadcasting] Difficult to use due to blackouts and damage to TV stations	[Terrestrial broadcasting] Difficult to use due to blackouts; Broadcast of safety confirmation information eas evaluted as helpful.	[Terrestrial broadcasting/One-Seg services] Conventional broadcasts were not usable due to blackouts. etc: Pioneering users used One-Seg services for collecting information on the tsunami.	[Terrestrial broadcasting/Data broadcasting] Usable almost without any difficulty, except for some areas; Daily living information using data broadcasting was highly evaluated.
	Radio	[Temporary disaster radio stations] Transmitted detailed disaster information to disaster victims	[Temporary disaster radio stations] Contributed to information communication by installing temporary relay stations and distributing terminals	[AM and FM radio and temporary disaster radio stations] AM and FM radio were highly evaluated as means for information collection immediately after the disaster. Temporary disaster radio stations contabuted to providing administrative information and safety confirmation information during the reconstruction period	[AM and FM radios and temporary disaster radio stations] Low utilization rate as other information collection means were available

(Source) "Survey on ICT Utilization at the Time of the 2016 Kumamoto Earthquake" (2016) by MIC

[34] The number of killed or missing people is as of March 2017; "2011 Great East Japan Earthquake" by Headquarters for Emergency Disaster Control (March 8, 2017) (Reference) http://www.bousai.go.jp/2011daishinsai/pdf/torimatome20170308.pdf

2. Active Utilization of New ICT Tools and Expected Effects

(1) Active Utilization SNS Information and Big Data (DISAANA/D-SUMM)

At the time of the 2016 Kumamoto Earthquake, disaster victims actively transmitted information by themselves using SNS and other tools. However, too much information was diffused and difficulty in checking the freshness and accuracy of each piece of information hindered positive utilization thereof. In order to improve such circumstances and ensure direct collection of fresh information on disaster victims' needs, use of the DISAANA and D-SUMM in information collection is recommendable.

(2) Indirect Public Notices Using L-Alert, as well as L-shaped News Tickers and Data Broadcasting

The results of the questionnaire survey constantly showed high evaluation for terrestrial broadcasting as means for information collection. This may be because community-based information, such as daily living information and administrative information, was provided in a news ticker or by the use of data broadcasting. While improving the information input function and information transmission system of L-Alert, it is necessary to enhance the effectiveness of indirect public notices utilizing L-Alert in order to improve convenience and ensure efficient and effective information communication.

(3) Identity Verification Using Individual Number Cards at the Time of a Disaster

Cited problems concerning the handling of personal information at the time of a disaster include cumbersome procedures for providing personal information and negative effects of information collection in handwriting. Identity verification using individual number cards is one option for solving these problems and achieving simpler information management.

3. Business Continuation at the Time of a Disaster and ICT

Even after this disaster, some organizations are negative about the introduction of cloud systems or efforts for system redundancy due to required cost and concern over security. Each organization needs to properly ascertain measures individually required and develop a system to take those measures. In addition, although the importance of ensuring business continuation in the event of a disaster has come to be broadly recognized, concrete efforts for measures vary depending on the size of the organization. Proper administrative measures need to be taken for eliminating those gaps in order to strengthen the disaster resilience of society as a whole.

Section 5 Promotion of Computerization in Disaster Prevention Field

1. Compilation of "the Report of the Project to Eliminate People with Inadequate Access to Information"

At the end of December 2016, MIC compiled the Report of the Project to Eliminate People with Inadequate Access to Information, which includes an action plan up to 2020. The project aims to develop an environment necessary for providing required information in the event of a disaster to foreign nationals and elderly people, who are generally considered to have inadequate access to information, and for offering firefighting services properly to foreign nationals.

2. Initiatives in Relation to Foreign Nationals

(1) Promoting Fire and Disaster Prevention Measures at Terminal Facilities Giving Due Consideration to Foreign Nationals, etc.

Envisaging the occurrence of a disaster in public spaces such as stations, airports, stadiums, hotels, etc., MIC will examine means to be employed by facility staff to provide facility users including foreign visitors with disaster information and evacuation guidance using smartphone apps and digital signage, etc. Based on the examination results, MIC will formulate related guidelines.

(2) Visualization of Information Provided Using the L-Alert

MIC will conduct a demonstration test for multiplication and diversification of means to transmit disaster information provided via the L-Alert system, such as making data into maps (visualization), and will develop an environment to facilitate use of such visualized information by local governments.

(3) Research and Development of Multilingual Voice-based Translation Systems for Emergencies

In order to promptly provide emergency care to injured foreign nationals in the event of a disaster, MIC completed a multilingual speech translation app for emergency, "Kyūkyū VoiceTra," which is equipped with the function of VoiceTra (multilingual speech translation app) developed by NICT, and started its provision to firefighting head offices nationwide for the use by rescue teams.

3. Initiatives in Relation to Elderly People

(1) Sophistication of Disaster Information Transmission Means

MIC will conduct a demonstration test in seven local communities to verify the effectiveness of information delivery systems to be developed in accordance with the characteristics of information recipients using such tools as TVs and tablet terminals.

(2) Stable Operation of J-Alert

The Fire and Disaster Management Agency, MIC, has developed the nationwide instantaneous alarm system, "J-Alert." This system sends emergency information on urgent circumstances provided by the national government, such as earthquake early warning or other natural disaster information and civil protection information like the one concerning ballistic missile launch, by the use of satellite lines and terrestrial lines. The system automatically activates municipal disaster radio systems to universally provide emergency information, and also sends civil protection information as an emergency warning mail to individuals' mobile phones and smartphones.

4. Major Initiatives for Infrastructure Development that Enables Information Transmission upon a Disaster

(1) Development of Resilient Fire and Disaster Prevention Communication Networks

As major fire and disaster prevention communication networks, there are (i) the central disaster prevention wireless network for information collection and transmission within the national government, (ii) the fire and disaster prevention radio system linking the Fire and Disaster Management Agency and prefectures, (iii) the prefectural disaster prevention radio system linking prefectures and municipalities, (iv) the municipal disaster prevention radio system linking municipalities and residents, and (v) the satellite communication network linking the national government and local governments or linking local governments together.

(2) Dissemination and Promotion of Auto Start Radios Using Community Broadcasting and Multiplication of Disaster Prevention Information and Disaster Information

In order to ensure community-based information transmission to elderly people upon a disaster, MIC will consider new support measures to financially assist local governments' efforts to disseminate auto start radios.

(3) Deployment of Transmitters and Other Equipment for Temporary Disaster Broadcast Stations

Temporary disaster broadcast stations are temporarily established in the event of an earthquake or other disaster with the aim of contributing to mitigating damage. MIC deploys transmitters and other equipment to Regional Bureaus of Telecommunications, which are used for drills and training in normal times and are lent out to local governments upon a disaster. This helps prompt establishment of temporary disaster broadcast stations when a disaster occurs.

(4) Lending of Mobile Communication Devices in Preparation for Disasters

MIC lends out mobile communication devices in preparation for disasters to local governments so that communications can be secured in the event of a disaster even if mobile phone communications are disrupted.

(5) Ensuring Emergency Communication Means at the Time of a Disaster

In preparation for such cases as where telecom services via public communication networks are suspended upon a disaster, MIC has developed a system to lend out originally developed ICT units (in an attache case form) to local governments' disaster prevention organizations as requested to help them secure necessary communication means. In May 2017, the International Telecommunication Union (ITU) decided to introduce the ICT units (in an attache case form) as emergency communication means to be provided to disaster-stricken areas worldwide.

5. Other Initiatives: Promotion of G-Space Information Use

MIC has promoted the use of geospatial information (G-space information) using ICT and conducted demonstration projects such as the "G-space City Construction Project." Through these efforts, MIC has established an advanced disaster prevention system.