

The Role of Social Media in Emergency Response: The Case of the Great East Japan Earthquake*

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Abstract

In the wake of the Great East Japan Earthquake on March 11, 2011, social media was used, for example, for sending information from disaster affected areas, sorting as well as sharing information on relief activities, and disseminating insightful information. The Japan Self-Defense Forces (JSDF) utilized social media albeit on a limited scale. Social media has challenges, such as the risk of transmitting incorrect information, but nevertheless has significant importance and potential. For this reason, the JSDF will need to be able to utilize this form of media more proactively. To this end, the JSDF should keep in mind the development of the “influencer,” who has influence on the dissemination of information, and the “person inside,” who transmits information from within the organization, taking advantage of the organizational characteristic of the JSDF, i.e., it is composed of a wide range of age groups. The introduction of devices, the use of JSDF officers’ personal devices as well as the development of an environment for interacting with volunteers, NGOs and others on social media are imperative. If the JSDF enhances their sensitivity towards social media and utilizes it more actively, then social media can be used as an effective means not only for large-scale disaster responses but also for the collection, exchange and transmission of information in various other crisis situations.

Introduction

The contemporary network society is becoming more individualized. Networks as a tool of communication have long been in the forms of television and radio broadcasting through which broadcasters passed information to viewers or listeners in a unilateral way. Since the characteristics of broadcasters vary from those heavily associated with the state to those with strong independence, there is diversity in the content of the coverage of the same event. However, the direction of the flow of information is still the same, namely from senders to recipients. In addition, coverage through publications such as newspapers and magazines as well as the flow from news media to the general audience is also one-sided. While the transmission of information in the reverse direction such as opinions from audiences and readers through letters and telephone calls is secured, it is rare that such opinions influence the overall coverage and the effect from them is limited.

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In recent years, however, a communication method different from the conventional methods of broadcasting and reporting has emerged with the spread of the Internet. It is called social media. It is the complete opposite of conventional broadcasting and reporting in that it emphasizes interactivity and immediacy. In the case of the conventional mass media, recently the digitalization of broadcasting has led to the creation of programs that involve viewers giving immediate responses. In addition, traditionally, activities emphasizing immediacy such as newsflashes and extra editions have been integrated into the conventional mass media. However, these are forms of interactivities in which audiences answer by selecting limited choices set by broadcasters. Similarly, the case of extra editions also lacks complete immediacy due to the procedures involved such as writing articles, editing, printing, delivery, and distribution.

Social media is a means of transmitting information, which is clearly differentiated from such conventional broadcasting and reporting. In social media, each individual directly joins a network either using their real name or anonymously. Participants post information out of their own will, and read, or are able to view, such information as is. Furthermore, they can immediately make comments and provide additional information on the network. This is a means of communication, which enables the sharing of the same information within a short period of time.

Of course, this does not necessarily mean that social media is an excellent means of communication. With social media, sometimes groundless and false information is disseminated and then becomes a serious problem. At other times, a certain post may generate other participants' antipathy, which generates numerous abusive reactions to the point of no control (a state of affairs known as "*enjo*" or "flaming" in Japanese). Moreover, a participant who had empathy, or antipathy, with certain information can voluntarily identify the anonymous person in the information, which eventually may end up being a serious intrusion of privacy. This is quite a contrast to broadcasting and reporting. Although they sometimes make mistakes, they disclose information upon confirming the validity of information and try to avoid disclosure of personal information as much as possible, considering the privacy of suspects, victims etc., and other people involved. There are no effective means to counter the problems caused by these issues.

Having said this, the communication power that social media has is significant. In particular, the capability of social media in times of disaster is notable. The reasons for this are because, when a large scale disaster occurs, the sending and receiving of broadcasts are often unable to be maintained due to a power outage, destruction and the failure of facilities, and other causes. Thus, a set of functions such as covering the event, writing articles, printing and delivery of news organizations including newspapers comes to a halt. In disrupted information situations such as this, where there is no television and radio broadcasting as well as no newspaper delivery, information transmitted through social media using charged portable terminal and mobile phones, which are referred to as mobile devices, may become the sole information source available. In addition, when the wire telephone system and the coverage network of news organizations are disrupted, and when victims of disasters are unable to transmit information about themselves to other areas, disaster information disseminated on networks from portable devices may serve as effective information for rescue workers.

When the Great East Japan Earthquake occurred on March 11, 2011, transmission of information using social media was carried out, albeit on a limited scale. Activities, which are deemed useful for future disaster responses, such as sending information from disaster affected

areas, providing support from nearby unaffected areas, sorting information, and disseminating insightful information, are being carried out to a considerable degree and also voluntarily. The aim of this paper is to collect actual case studies, analyze the capabilities, risks and possibilities of social media, and explore tips for its effective use in future disaster responses.

Contemporary Network Society—Its Environment and the Characteristic of the Time

New Type and Old Type

The contemporary network society did not suddenly appear from nowhere. The network environment was gradually developed, and the dependency on the network environment has increased through today. People who currently work for private companies and various government offices, including the Japan Self-Defense Forces (JSDF), are in the age group between 15, which is the age of finishing compulsory education, and approximately 60. In short, as of 2013, those who were born between the mid-1950s and the latter half of the 1990s work together with a maximum 45-year age difference among them.

For members of the society belonging to different age groups spread across 45 years, the changes that have occurred in the network environment during this period are of extreme significance. During the childhood of those who are currently around 60 years of age, not even a wire analogue telephone was installed at every household. However, in the case of the younger generation who were born in the 1990s, it was already the era of mobile phones when they were old enough to remember, and owning one mobile phone per person became the standard. As for communication tools other than telephones, the telegram was a fast and reliable means of contact when people aged 60 were youths. However, currently, we are in an era in which NTT no longer provides the telegram service. This is today's world where different generations, who grew up in information environments with enormous differences, live together. Specifically, in the case of the Japan Ground Self-Defense Force (JGSDF), for example, senior commanders under the ranks of Commander General and Division Commander belong to the older generation, while those who belong to the newer generation are composed of JSDF personnel who are in their early 30s or younger, namely those in the ranks from Captain to Major as well as in the position of Company Commander on duties if they are executives. In summary, those who are in the position of Commander or higher are from the generation of people who were forced to get acquainted with the network environment and some of whom do not possess sufficient ability to use social media. On the other hand, those who are in the position of Company Commander or lower belong to the network generation from birth, and social media is naturally integrated as part of their lives. It is an issue as to how we interpret the fact that these different generations simultaneously exist in the same organization and how we deal with it.

(1) Newer generations (New type: Digital generations by birth)

According to Tadamasa Kimura, while the digital generation begins with those who were born around 1980, it is young people who were born after 1991 who have integrated the network into their lives as a natural element.¹ They start using computers in class at elementary school and start

¹ Tadamasa Kimura, "*Dejitaru Neitivu no Keisei to Dotai* [The Formation and Dynamics of Digital Natives]," *Dejitaru Neitivu no Jidai* [The Age of Digital Natives], Heibonsha, 2012, pp. 87-141.

having a mobile phone roughly when they reach the upper grades in elementary school. Many of them own a mobile device when entering junior high school, and they do not hesitate to use the device as the older generations do, in being afraid of the cost going up to a large amount, because the internet connection charge is already based on a flat-rate system. As a result, they freely utilize different types of social media and naturally incorporate this networking into their daily lives. This generation has the ambiguous notion of the border between on (society on the internet) and off (society in reality). Recently, there have even emerged people who have had conversations with a Bot (a program on a virtual space that behaves as if it were a human) without distinguishing it from a real human being. The digital generation, therefore, can be described as a type of people who can integrate the digital internet society into the analogue real life without contradictions. As of 2013, roughly those who are under the age of 30 belong to this new type.

(2) Older generation (Old type: Generations that had to accept digital)

As indicated in the previous section, the newer generation consists of those who were born roughly after 1980, while the older generation refers to the preceding generation. In other words, people who were born before 1980 and are therefore older than their early 30s belong to the older generation in this context. People in this generation hardly had any opportunities for using computers while in elementary and junior high schools, while they were able to experience it at high schools and universities only to a limited degree. In addition, the communication environment was poor in comparison to current conditions, in that digital signals were then sent using a modem connected to an analogue telephone line, and therefore, communication speed was very slow.² Having grown up in such an environment, people from the older generation faced the need to adapt themselves to the large scale internet environment for the first time only after they entered their 30s. Naturally, many of them are not fully able to adapt themselves to this environment, whilst many of them only have limited capability even if they are able to adapt themselves to it.

New and Older Generations at a Time of Disaster

In modern society, the old and newer generations coexist. The newer generation sees the internet environment as a natural phenomenon and uses it as a normal part of their daily life. The older generation, on the other hand, is unable to become familiar with the internet environment despite knowing about its existence, and thus, they are in a situation where they cannot receive direct benefits from it. Of course, many people also fall into a stratum, which should be described as an intermediate generation between the old and new. These people are accustomed to the internet environment to a certain extent but are not capable of using it as those people in the newer generation do.

In an emergency, it is probably the people in the older generation who are likely to fall into the more severe situations such as having an insufficient amount of available information or the disruption of information, particularly communities and groups composed of only the older generation. This is a problem called the “digital divide,” which is coming to be recognized as a problem between developed and developing countries, even in normal conditions, and which is

² The general line speed at that time was 2400bps. Currently, high-speed lines using optic fibre are common, with a communication speed of 100Mbps being standard. The difference in communication speed between these two is over 40,000 times.

also a problem that occurs during major catastrophes within Japan, an internet advanced country. In the event of an emergency, electric power failure will occur, and even if it recovers, what is aired or broadcast will not be the information on the particular region that one wants but mainly general, nationwide information. However, people in the older generation, who struggle to get used to the internet environment will not be able to send and receive information through social networks, putting themselves at risk of being isolated from information.

Use of Networks in the Great East Japan Earthquake

This section focuses on the issue of how various kinds of networks were used immediately after the Great East Japan Earthquake and provides an overview of this issue by looking at both the conventional media and the new social media. This study covers a local municipality, which was very close to the epicenter, and another local municipality, which was slightly further away from the epicenter but was also affected, as well as the situation of network usage by the affected individuals.

Information Gathering and Transmission Situation by Local Municipalities

(1) Iwate Prefecture (disaster area)

In the case of Iwate Prefecture, power and communication failure occurred immediately after the earthquake, making normal information gathering impossible. It was a condition in which no information regarding the damage situation was entering into the prefecture at all. Also, despite the prediction of large-scale tsunamis, the local government was not able to issue a tsunami warning on the prefectural homepage because the computer server was down due to power failure. What they could do at that time was only to create an account on Twitter and Facebook using their private mobile phones and to send information through these social media. Due to its usefulness, the number of followers increased dramatically. There were also replies to these transmissions of information. In particular, people involved in rescue activities found thankful replies from the disaster victims to be encouraging.

Meanwhile, news programs on television, which are the representative of mass media, covered the coastal area exclusively where the most severe disaster occurred within Iwate Prefecture. Thus, there is regret over the fact that the coverage misled many viewers to believing that the entire Iwate Prefecture had been wiped out.³

(2) Ofunato City (coastal affected area)⁴

The first problem Ofunato City faced was power failure. Communication equipment lost all power, except for the power for mobile equipment. However, mobile phones and smartphones were unable to be used in the end due to lack of power supply to the base station.

³ Japan Society for Disaster Information Studies Public Symposium, “*Higashi Nihon Daishinsai to Sosharu Media: 3.11 kara Shuto Chokka e* [The Great East Japan Earthquake and Social Media—From 3.11 to Earthquake that Directly Hits Tokyo],” January 28, 2012 <http://www.jasdis.gr.jp/_userdata/05sympo/120128.pdf>.

⁴ The situations in Ofunato City, Tome City, Tono City and Tsukuba City are based on interviews and other data from *Municipal Government ICT Networking*. Information on the response of Soma City was obtained from an interview with the Deputy Mayor of Soma City conducted by the authors (September 3, 2012) and pp. 34-35 of “Restoration Plan in Soma City Ver. 1.2” created by the Soma City Restoration Meeting (March 2012).

Power was regained on March 14 at the Ofunato City Hall. However, use of the telephone was impossible as there was no power supply for NTT, and mobile phones, which used a disaster prevention administration radio system located between Iwate Prefecture and a satellite, was the only telephone system in use. Therefore, telephone usage was limited. Later, power source cars from Tohoku-Electric Power Co., Inc. entered into Ofunato. As a mobile base station for mobile phones was established in the City Hall, information transmission through Twitter (mini blog) using mobile phones supplied by mobile phone companies began. It was March 18, seven days after the disaster. Following this, communication using satellite internet lines provided by the Japan Aerospace Exploration Agency (JAXA) and other communication methods became possible.⁵

However, this was the response of the City Hall, and progress like this was not seen in other areas. After all, the main means of communication that Ofunato City had was information transmission utilizing a loudspeaker from a fire truck on patrol and posting various types of information on bulletin boards.

Hence, it is considered that power failure and communication disruption were the most serious problems in the case of Ofunato City.

(3) Soma City (coastal affected area and inland affected area)

In the case of Soma City, Fukushima Prefecture, where many lives were lost and extensive housing damage occurred due to the Great East Japan Earthquake, an official of the City Office requested blankets for affected people and bottled water as relief goods using his personal Twitter account. Nevertheless, Soma City did not officially and as an organization use social media for disaster countermeasures. In the same way as other cities that were hit by a tsunami and had direct damages from the earthquake, Soma City collected and transmitted information received from people when power was down, while after the power recovery, they obtained and transmitted information necessary for disaster countermeasures utilizing conventional means of communication.

(4) Tome City (inland affected area)

Tome City is situated in the northern part of Miyagi Prefecture, which was newly created through the so-called Great Heisei Mergers in 2005, and it is an inland municipality without any coastline. To the adjoining east are Ishinomaki City, Minami-Sanriku City and Kesenuma City, which are situated along the coast of the Pacific Ocean.

Tome City, in the same way as other local governments, experienced power failure after the disaster on March 11. Due to this problem, grasping the disaster situation of the City was impossible, and the information available through one-segment television installed on City officials' private mobile phones and other devices was the only dependable information source. In the evening, people learned through one-segment television that the Sanriku coast district was hit by a tsunami, but no further information was available.

As Tome City is a local government covering a wide area created by a merger, there are old town halls (general branch offices) at several places within the City. However, due to the

⁵ Wideband InterNetworking engineering test and Demonstration Satellite "KIZUNA" (WINDS) launched by JAXA in 2008 will be used.

disruption of communication between these town halls, officials physically traveled between them. The disaster prevention administration radio system and satellite phones were also used. For information transmission to residents, a disaster prevention radio system with multi-destination delivery (which is a speaker system used for set time chime and to broadcast photochemical smog warnings in the morning and evening) was initially used, but it became unavailable when the battery ran out after one and a half days.

Following this, the local mini FM radio broadcasting called “H@! FM” took over. This local community FM radio station, which had signed a cooperation agreement with Tome City during normal times regarding the use of the radio station in an emergency, broadcast information utilizing the City’s emergency power source from the initial stage of the disaster. On March 16, five days after the disaster, the Ministry of Internal Affairs and Communication granted the radio station approval to change its name to “Tome Disaster FM” as well as to increase the output, expanding their coverage area to a wider audience. In this case, the pre-arrangement with the local FM radio station and the speedy output improvement following the disaster functioned as a powerful means for information transmission.

Having looked at these cases, the differences between the inland areas and the coastal areas are noticeable. Power failure was a common element between the inland and coastal areas, but while power was restored relatively quickly in the inland areas, it was very slow in the coastal areas. This is because in the case of the coastal areas, it was not a normal power failure caused by an earthquake, followed by the cut off of power supply and then the release of power. All the power transmission lines and substation facilities were lost. In addition, there was also a significant human loss. If personnel for repairing equipment are also lost, what happens is that time elapses with the damage remaining unclear. Naturally, assistance measures for these two cases should be different.

(5) Tono City (inland affected area, logistic support area)

Since Tono City is situated inland, it sustained damage from the earthquake but was not hit by a tsunami at all. Taking into account the geographical feature that many roads heading to the Sanriku coastal area pass through Tono City, it had always been assumed that Tono City would function as a logistic support base if the cities in the coastal area (Kamaishi City, Miyako City, Ofunato City, Rikuzentakata City, Sumida Town, Otsuchi Town and Yamada Town) were affected by disasters.

It is noteworthy that in reality, following the occurrence of the Great East Japan Earthquake, firstly, contact from the coastal area was disrupted, making the damage situation completely unclear. It was a situation in which no logistic support could be offered, even though it was intended, due to the lack of information. In fact, the first information regarding the damage situation in the coastal district, which arrived at the Headquarters for Disaster Countermeasures in Tono City, was brought in by a man who had come on foot from Otsuchi City to the Headquarters to let them know about the situation. Afterwards, in response to the disruption of communication, Tono City started dispatching firefighters and other officials to each city and town in the coastal area to engage in disaster relief activities as well as collect information and bring it back to Tono City.

Also, logistic support activities training conducted in usual conditions was effective, and actually, Tono City functioned as a base for the dispatch of police, fire department and the JSDF.

Points to reflect on in order to fulfill this logistic support function include the following.

First of all, the worst-case scenario, which is complete power failure, should be assumed. In fact, complete power failure occurred in many places after the Great East Japan Earthquake, making it completely impossible to grasp the damage situation and make rescue requests for a considerable numbers of days. In the case of Tono City, as in other cases, information regarding the damage situation in Yamada Town was delivered only on March 16, five days after the disaster. This is an example of a situation in which access to information is completely cut off due to catastrophic damage and disruption of the means of communication due to power failure. A situation in which rescue for the most devastated places is most delayed can also be assumed. Eventually, the primitive method of collecting information manually by humans must be ensured.

In addition, problems continued to occur even after the transmission and collection of information began to be conducted. It is a problem of the consolidation of information and the confirmation of the genuineness of information. In the case of the Great East Japan Earthquake, after the disrupted means of information transmission recovered to some extent, information possessed separately by the police, fire department, JSDF, municipalities, prefectures and private support groups was not unified. In addition, the genuineness of the information was not evident. Therefore, unnecessary work resulted in which groups that were actually engaged in support activities had to once again gather information on their own.⁶ Furthermore, it is also a point of reflection that legal systems regarding logistic support activities in an emergency were also not clear. Tono City ordered food and other necessary items to send to affected areas by making an emergency procurement order. However, budgetary measures for this purpose had not been taken, and therefore, the relief supplies were purchased on credit. Although the payment was eventually completed by governmental subsidy, this is an issue to be reviewed going forward.

(6) Tsukuba City (outside the Tohoku Region, affected area)

Damages caused by the Great East Japan Earthquake also occurred outside Tohoku. The earthquake caused a considerable level of damage in the Kanto Region, particularly in Ibaraki Prefecture and Tochigi Prefecture in northern Kanto. In this section, the response by Tsukuba city will be reviewed.

Tsukuba City is a city, which accommodates many business operators related to advanced sciences with the bases of, for example, University of Tsukuba and JAXA (Japan Aerospace Exploration Agency). The situation here was different to that of the local governments in the Tohoku Region. Tsukuba City had been testing a new form of information transmission, and actually in the beginning of 2011, they conducted a demonstration experiment with the transmission of information using Twitter. The City experienced the Great East Japan Earthquake on March 11 immediately after this experiment.

After the disaster on the afternoon of March 11, the first tweet was posted within 10 minutes. It was quite a simple message stating that, "Tsukuba City Hall seems okay for now." Just one minute after this, Tsukuba City announced the establishment of a disaster prevention office and also requested citizens to provide information. Information provided was transmitted to the citizens one after another, with the notice of "although unconfirmed." In addition, volunteers from the University

⁶ Mihoko Sakurai and Jiro Kokuryo, *Jichitai ICT Nettowaakingu* [Municipal Government ICT Networking], Keio University Press, 2012, p. 32; hearing with Mr. Honda, Mayor of Tono City.

of Tsukuba posted tweets in foreign languages (English, Chinese and Korean).⁷ Subsequently and up to the morning of March 17 when a disaster prevention website was opened on the Internet, 600 tweets had been transmitted. Tsukuba City was able to make use of its information transmission capacity due to no immense damage occurring, and because the test run of Twitter had started just prior to the disaster. This is a case, which has expected future applications.⁸

Situation of Network Usage by Individuals

(1) Disruption of conventional communication and broadcasting means

In the case of fixed-line telephones, in the areas which had damage caused by big tremors and tsunami, they did not function to begin with, as the telephone line itself was disconnected and the transmission line also sustained damage, such as disconnection, and was in a power failure condition. Even if the telephone line was undamaged, use of many of the current fixed line telephones was impossible, as the majority of them are operated by receiving power from the domestic power supply at the time when power failure occurred.⁹ Since mobile phones are based on wireless communication, disconnection of communication lines and other factors do not become an obstacle. However, in practice, many people tried to communicate simultaneously, and congestion occurred, making connections difficult. On the other hand, PHS, albeit being a type of mobile phone, was connected relatively easily. Also, in general, text messages tended to be transmitted more easily in comparison with e-mails.¹⁰ As for television and radio, which are the conventional types of mass media, use of them was not possible, because their broadcasting facilities including broadcasting stations and other facilities were affected by the disaster and the recipients were also affected. On the other hand, albeit being a television, receiving one-segment broadcasting utilizing built-in software on mobile phones, smartphones and similar devices was possible, and thus, it aided in information collection. However, the information obtainable from these means is mostly the current overall situation relating to the earthquake and the developments of the situation. The level of information, which is directly relevant to the operation of the areas where the survivors live in, is not covered sufficiently in the existing mass media. Therefore, various types of conventional broadcast are not convenient for providing detailed information for each area. It can also be said that there was a problem in the means of precise information

⁷ This point is probably very important. If Tonankai Earthquake and earthquakes occurring directly beneath the Tokyo Metropolitan Area occur, the number of foreigners who will be affected will reach a considerable number. Therefore, the question will arise as to how public relations activities normally conducted by local governments can be conducted in an emergency.

⁸ Based on these experiences, Tsukuba City has created “Tsukuba City Twitter materials” and made it available to the public for viewing.

⁹ This is in contrast to the telephone in the past, which was able to make outgoing calls as well as receive incoming calls as long as a telephone line was connected.

¹⁰ As text messages on mobile phones and other devices transmit data by dividing it in a small packet, communication regulation was either not put in place for this form of communication or it was only temporary if it was the case in the Great East Japan Earthquake. For this reason, the communication for text messages was likely to be connected in comparison with voice calls. In contrast, communication regulation was executed for 80-90% of fixed telephones and 70-95% of mobile phones. However, Emobile (the brand name changed to Y!mobile in August 2014), a provider of PHS, executed no communication regulation at all and received positive evaluation that it was disaster-resistant. Ministry of Internal Affairs and Communications, “*Daikibo Saigai Nado Kinkyu Jitai ni okeru Tsushin Kakuho no Arikata nitsuite* [Methods of Securing the Means of Communication in Emergency Situations such as Large-scale Disasters — Final Report],” December 27, 2011, pp. 2-3 < http://www.soumu.go.jp/main_content/000141084.pdf>.

collection due to the journalists also being affected, making coverage of the situation difficult.

(2) Social media such as Twitter and Facebook

With limited power available, it was necessary to exchange and gather information using the limited remaining amount of a built-in battery of mobile phones, PHS and smartphones. In such a situation, social media was the most effective information collection means in some cases. The following section describes in what way each form of the internet media was actually used by focusing on some of the purposes for collecting information.

1) Confirmation of safety

For example, in a survey research conducted by Weathernews Inc., respondents were asked when they were first able to make a connection with their family and friends after the disaster and by using which means. Responses to this question indicate that, in affected areas, the fastest means was social media such as Twitter, Mixi and Facebook, with the average time of 2 hours 56 minutes. Other means, e-mail and disaster message board all took more than 3 hours. Thus, the results show that contact using the social net was faster than using other means.¹¹

Social media	2 hours 56 minutes
Text message	3 hours 11 minutes
Mobile phone	3 hours 35 minutes
Disaster message board	4 hours 24 minutes
Internet e-mails	4 hours 35 minutes
Fixed line telephone	4 hours 35 minutes
Payphones	5 hours 46 minutes

Of course, many problems are associated with blindly posting personal information on a medium, which can be viewed by third parties. If personal information is disclosed, it will later cause a problem of the violation of privacy. However, it was considered at the initial phase of the disaster that a benefit of being able to confirm safety was greater, and therefore, social media was actively used.

2) Transmission of damage information and collection of support information

On social media, a variety of damage information was disclosed immediately to third parties through “Tweeting,” posting messages and other similar activities, including even minute information regarding the fringes of affected areas, which the conventional mass media were unable to cover. In particular, there was a risk that small-scale private shelters, which are different from the public shelters provided by local governments, are not included in rescue activities. This was due to their omission from the network of information collected by local governments in the areas under their jurisdiction. Therefore, they are excluded from official support routes, and

¹¹ “Zenkoku Hachiman Hassennin no Tsunami-Jishin Haseiji no Kodo-Ishiki wo Bunseki: ‘Higashi Nihon Daishinsai’ Chosa Kekka [Results of Survey Research on ‘Great East Japan Earthquake’—An Analysis of Behaviours and Perceptions of 88,000 Respondents Nationwide at the time the Tsunami and Earthquake Occurred],” April 28, 2011, p. 12 <http://weathernews.com/ja/nc/press/2011/pdf/20110428_2.pdf>.

thus become isolated. On social media where individuals send out information, however, even these minute pieces of information are included in the network, and as a result, the small private shelters were, in some cases, covered by the support network after receiving official recognition. In addition, the transmission of information regarding a large-scale public distribution of aid to the disaster victims staying at small shelters also enabled them to obtain supplies from large-scale public support programs. This is a benefit brought by social media.

3) Request for support

The method of requesting disaster relief directly through social media was taken by some disaster victims and organizations, which were placed outside the normal disaster relief system.¹² Below is an example of this, which actually took place and generated successful results. It is an actual case of a hospital in Iwaki City. Iwaki City gained public attention due to the disaster at Fukushima Daiichi Nuclear Power Plant and the related radiation disaster. On the other hand, it was also a kind of information vacuum zone for a certain period after the disaster in terms of both the information available and the rescue aspects, despite the enormous damage the City sustained. Since Iwaki City is adjacent to the damaged nuclear power plant, there was an excessive report on the risk of exposure to radiation, which made the media and shipping companies hesitant to approach and enter Iwaki City and the surrounding area.

A hospital in Iwaki City was also providing critical care under these circumstances, while the stockpiled medicines were rapidly consumed and the continuation of treatment was about to become difficult. Several pharmaceutical companies maintained their distribution warehouses within the City. Although normally pharmaceuticals were delivered as soon as orders were received, the hospital could barely replenish their pharmaceutical products even though the warehouses were undamaged. This was because the employees of the pharmaceutical companies left their places of work due to fears of exposure to radiation, whilst shipping companies also hesitated to provide their services.

Hospital officials tried various means in order to make this situation known outside of the area; however, normal telephone service was disconnected, or even if the connection was recovered, it was totally insufficient to convey the devastation of the situation. The method used for this purpose was social media, specifically, Ustream. By uploading videos that they had shot using Ustream and requesting medical personnel from outside of the affected area, when they were connected to a limited extent and able to promote the videos and ask people from outside the area to watch them, they finally succeeded in gaining attention from the mass media. Through this method, they were successful in letting other areas know of the hard-pressed situation facing each medical facility in Iwaki City. This led to the prompt responses resulting in outcomes such as the

¹² For example, victims who are swept away by the tsunami are likely to get pneumonia through infection with the bacteria in the seawater. This is called Tsunami Lung or Tsunami-related Pneumonia caused by various kinds of bacteria. However, treatment for this condition is likely to be too late when the cause is identified by examinations. Therefore, a characteristic of this disease is that patients are at high risk for ending up in a critical condition. For this reason, a special treatment, which is not normally conducted, is used for the treatment, which is to administer different kinds of drugs at one time. In this case, drugs will be consumed at a very high pace and could become scarce. Similar examples were seen in Iwaki City.

replenishment of pharmaceutical products and support from medical doctors.¹³

4) Technical verification and assessment of the accident information

When the accident at Fukushima Daiichi Nuclear Power Plant occurred, information from experts, which would help to identify the background of the accident, its verification and assessment, was released on social media and functioned as a supplement to the insufficient information from the government and the Tokyo Electric Power Company (TEPCO).

As it is well known, there were some issues regarding the accident at Fukushima Daiichi Nuclear Power Plant such as the TEPCO, the administrator of the Power Plant, being reluctant to disclose the relevant information and some problems with the communication between the government and TEPCO. Thus, among the people in Japan, an atmosphere in which they wondered as to what truths they could obtain from the limited disclosed information was generated. Conventionally, existing mass media (television, radio, newspaper and magazines, etc.) were supposed to respond to this expectation and, in fact, they actually carried out this function. In parallel to this, relevant information was also actively disclosed and discussed on social media.

Specifically, the Citizens' Nuclear Information Center (CNIC) attracted many people's interest. At the CNIC, actual engineers who had been involved in nuclear reactor-related work conducted an analysis of the accident information. For this reason, audiences who were unsatisfied with the information provided by the general mass media as well as people who were feeling anxious and were dissatisfied were able to attempt to gain a deeper knowledge by watching the videos made available on these websites.¹⁴

In addition to these, comments by Kenichi Ohmae, who is known as a management consultant, were published on YouTube and gained a number of views. Mr. Ohmae is a former engineer who majored in nuclear engineering during his university years and was involved in the designing of the fast breeder reactor sodium-cooled fast reactor "Monju" as well as other reactors at Hitachi Ltd.

The peak of social media occurred after the Great East Japan Earthquake

The different forms of social media usage in each field were touched on in the previous section. The following presents an outline of the use of these networks along a time scale.

What were transmitted in large quantities at first were feelings related towards the earthquake disaster itself on Twitter and other similar forms of social media. Twitter and blogs are excellent for expressing feelings in short sentences so that the feelings of surprise and sorrow were honestly expressed. Following this, information regarding the situations in the affected areas and the current situation of transportation started to be sent using Twitter. These messages were originated from people on site, and they are superior to the conventional media such as television, which involve a time lag from collecting news to broadcasting, and any other media in terms of their live feature, enabling us to gain fast and accurate information.

Next, videos were transmitted. Mass media such as television stations started the relay of

¹³ An interview was conducted (May 24, 2012) with MD Hiroshi Futamura who was actually engaged in medical services in Iwaki City at that time.

¹⁴ NPO called Citizen's Nuclear Information Center (CNIC) <<http://www.cnic.jp/>>. On their webpage, commentary videos, which were aired immediately after the Great East Japan Earthquake, are still available for viewing. For example, <<http://www.cnic.jp/library/moviesidx/page/9>>.

videos using Ustream. In addition, some people broadcast live without permission, and therefore, these videos on the internet were successful in conveying the damage situation caused by the Great East Japan Earthquake to many people. Furthermore, due to the sense of distrust towards the information provided by the mass media such as television, Ustream videos broadcast by NPOs such as CNIC, as mentioned earlier, gathered large audiences.

The next peak was YouTube. As stream broadcast represented by Ustream and Niconico is a type of internet broadcast, which takes a form of simultaneous replay, videos that have been missed cannot be watched unless they are re-broadcast. In contrast, the characteristic of YouTube is that it stores videos on its server so that those who wish to view a particular video are able to watch it by bringing it up on the screen anytime they wish (on-demand). Utilizing this advantage, various videos regarding the Great East Japan Earthquake were uploaded on YouTube. These videos gradually began to respond to not only the interests of victims and other people involved but also to international interests. There were a number of cases in which a live video that was broadcast only once on Ustream was recorded and then uploaded onto YouTube at a later time.

The last social media that came to be used frequently were Facebook and internet games. When the earthquake disaster settled and the disaster support was implemented on a full-scale basis, calls for fundraising and other activities took place proactively on Facebook by taking advantage of its real-name system that facilitates the creation of groups. In the world of internet games, which are beginning to dominate the gaming industry today, game companies created and published a special item to support the victims of the Great East Japan Earthquake. It is a unique mechanism in that the money paid to purchase the special item by game participants would directly go towards the aid money for the victims of the Great East Japan Earthquake.¹⁵

Roles played by social media

As we have seen in this section, the Great East Japan Earthquake was an unprecedented major disaster in which, during this unanticipated situation, the conventional network itself became unavailable due to the damage from the disaster, which had occurred over a wide area. With this point, coupled with the recent rapid development of social media as a new network, the biggest characteristic that became apparent was the function of the new social media network, which substitutes and complements the failure and dysfunction of the conventional network.

While the social media system played an important role as such, this network had created a unique presence, as that of an “influencer” and a “person inside,” because, unlike the conventional mass media, the source of information for this network is not from television stations, radio stations, newspaper companies and publishers.

(1) Influencer

Influencer means a person who has influence and refers to specific internet users whose posts on Twitter and blogs have a significant social influence.¹⁶ When people called followers in the case of Twitter and readers in the case of blogs receive information posted by influencers, they pass

¹⁵ Kazuyoshi Tachiiri, *Kensho Higashi Nihon Daishinsai Sonotoki Sooshiaru Media wa Nani wo Tsutaetaka?* [An Examination of the Great East Japan Earthquake: What did Social Media Report?], Discover 21 Inc., 2011, pp. 20-44.

¹⁶ In the case of blogs, they may be called a “power blogger” meaning they are powerful blog authors.

this information along to their acquaintances on the network as well as in the real world, by which the information diffuses at an extremely fast speed. For example, in the case of Twitter within Japan, Hiroiki Ariyoshi, an entertainer who is known for dry comments, and Masayoshi Son, CEO of SoftBank, have approximately 2,000,000 and 1,850,000 followers, respectively. However, not only the tweets from these individuals but also “Earthquake prompt report” Twitter, which automatically tweets the earthquake prompt reports published by the National Research Institute for Earth Science and Disaster Prevention and Japan Meteorological Agency, has attracted over 1,000,000 followers and ranks in roughly 10th by the total number of followers in Japan.¹⁷ The government’s Prime Minister of Japan and His Cabinet also tweets disaster information, which has attracted 650,000 followers (ranked around 25th).¹⁸ When these followers obtain information that they feel empathy towards and want to diffuse, they will also “re-tweet” the information they have received, so that the information will be transmitted again. Overseas bloggers were also influential in the relief of the recent Great East Japan Earthquake. Lady Gaga, a world famous musician, called for the donation of relief money and charity activities on her own fan-site and Twitter, resulting in the collection of a large amount of donations of over 100 million yen. Gaga’s activities have spread internationally, making us realize the magnitude of the influence of internationally famous artists on social media.¹⁹

(2) Person inside

In the world of social media, a person who is part of an organization, is involved in social media, publishes information from the organization’s perspective, and speaks from the standpoint of the organization is called the “person inside.” They may speak in the organization’s defense, while they may sometimes, on their own individual responsibility, make a sort of decisive judgment, which will likely surprise the residents in the network society. In such a case, feelings of an overall togetherness and empathy are sometimes generated in cyber space among people who have little opportunity to meet up in real society.

For example, the decisive judgment taken by a “person inside” at the Japan Broadcasting Corporation (NHK) when the Great East Japan Earthquake occurred not only evoked the empathy of the internet society but also led to the official recognition of the decision made by the “person inside.”

Firstly, immediately after the disaster occurred, a junior high school student in Hiroshima Prefecture, far from the disaster affected areas, started relaying television broadcasting by NHK on Ustream without permission. As television broadcasting is protected by copyright, broadcasting by relay without the permission of copyright holders is an illegal act. However, this sending of useful information by relay in an emergency attracted an audience of 40,000. One audience member who watched this Ustream relay let NHK know about it on their Twitter and also requested that NHK tweet that NHK’s television broadcast was shown by relay (without permission) on Ustream. This was an insane request asking NHK to approve the illegal act of broadcasting by relay and also to recommend that people view it. However, the “person inside” of NHK judged in

¹⁷ This is an activity by software called Bot, which conducts automated information collection and transmission.

¹⁸ <http://meyou.jp/ranking/follower_allcat> (based on the ranking as of February 20, 2013).

¹⁹ The fan site of Lady Gaga called for a disaster relief charity <<http://www.ladygagajapan.com/2011/03/12/lady-gaga-japan-4793>>.

a personal capacity that they would accept it and tweeted in response to the request that “There are many people who are unable to watch television due to power failure. Please spread the tsunami information as much as possible,” along with the unauthorized relay address by the junior high school student. This judgment and tweet raised the question as to whether it is acceptable to give such permission. However, the “person inside” of NHK answered that, “It is my arbitrary decision and I will take full responsibility for it.” He once again tweeted that, “This involves human lives, so if you have any means by which even a little bit of information can be delivered, please use it. (Please note that this is my arbitrary judgment, and therefore I intend to take full responsibility for it).” Afterwards, Ustream Asia Inc., the media, which conducts the relay, revealed that they were redelivering the television program with permission from NHK. In addition, a few hours later, NHK officially declared that they themselves would broadcast television by relay on Ustream. The internet relay broadcasting officially commenced in this way and eventually attracted an audience of over 1,000,000 including disaster victims who were in the situation of having no television reception available, as well as Japanese nationals living abroad and foreign nationals. This is a good example in which the individual judgment and behavior of the “person inside” worked as an opportunity to facilitate the wider transmission of information.²⁰

(3) Advantages and weaknesses of social media

1) Advantages

Social media is, as we have seen from the examples in the previous sections, is a new network with the potential for a highly significant effect in an emergency situation. Unlike the conventional type of mass media, social media is capable of directly reflecting, so to speak, the raw sense of people who are at the margins of society. For this reason, it can be described as a means of information transmission, which attracts a large amount of empathy from audiences and participants, and has the potential to eventually generate concrete behaviors in the real world. As seen in the example of the broadcast by relay on Ustream taken by NHK immediately after the Great East Japan Earthquake, it is possible that the conventional types of network accept the potential of social media and actively integrate it into their systems. In the Great East Japan Earthquake, the role played by portable internet devices such as smartphone were also prominent due to the large-scale power failure which occurred, and it is in a way a natural result that social media, which was born and expanded in the internet environment, played an active role. Social media had not been established at the time of the Great Hanshin-Awaji Earthquake in 1995, and therefore, conventional networks were the only available means of information transmission. In contrast, the current situation makes us realize the changes of the times and technologies as well as a great potential for the future.

2) Weaknesses

Nevertheless, it is not true that social media only has advantages. In fact, it also has many problems.

For example, one of the problems is breach of privacy. In an emergency, we might self-disclose some characteristics such as our name, address and other information with which an individual can be identified in the form of our voice, images and letters. The information is

²⁰ While this story has been reported by several media, this paper summarized it based on *An Examination of the Great East Japan Earthquake* (pp. 27-35) and some information on the internet.

disclosed in order to confirm the safety of family and friends, or to broadly spread information about ourselves when we require aid from a rescue operation. This is useful information in an emergency, but once such a period has passed, it becomes personal information that essentially should not be transmitted carelessly. Personal emotions are often posted on blogs, Twitter and other similar forums. Since the readers of these posts do not actually exist in front of the authors, they sometimes forget that there are third parties watching them and they can be inclined to write their personal information thoughtlessly. In today's society, these careless behaviors could lead to stalking incidents and eventually lead to potential crisis and bodily harm.

Another concern is that panic amongst people can be caused by the spread of incorrect information, which has not been confirmed. There is an example from the Great East Japan Earthquake — when fire caused by the earthquake occurred at the refinery of Cosmo Oil Co. Ltd. in Chiba City, a message containing a strong warning regarding the anticipated diffusion of harmful substances to a wide area was posted on Twitter by a person claiming to be an insider²¹ and was quickly spread by well-intended followers. This was soon confirmed as a totally unfounded rumor, and Cosmo Oil Ltd. and Chiba Prefecture also officially announced this. However, when re-tweeting, a few people also tweeted the original information (called “official re-tweet”), which caused the situation in which only the second hand information would continue to be diffused, even though the original information was deleted. There is another incident which occurred on the day of the earthquake — deliberately mischievous information claiming that an employee of an internet game related company called Dwango Co. Ltd., was trapped under a fallen server rack and needed help was posted on Twitter and this information was spread by people with good intentions. Despite the fact that the person who posted this information revealed that it was a practical joke, this information, like the one in the previous example, was also transmitted again because many readers re-tweeted in an unofficial form, causing a situation in which energy for disaster rescue was wasted and lost due to incorrect information.²² A situation exactly the same as the proverb, “Anyone can start a rumor, but none can stop one,” occurred. In this case, if it is an official re-tweet, all the related re-tweets are supposed to be deleted by deleting the original tweet. However, many users do not know, or do not care about these internet manners, indicating the actual condition where, in a sense, literacy does not exist easily and this is fraught with major risk.

As these downsides show, information transmission utilizing social media, which does not take procedures such as the collection of news, confirmation and editing naturally involved in the previous type of mass media including newspaper, radio and television, specifically work to “organize information,” which needs to be conducted as required. If it is in a disorderly condition, there is a risk that incorrect information is discharged, and the incorrect information, which remains without disappearing, generates further incorrect judgment and behavior. Many of the occurrences within this type of situation, which should be called a chain of malfunction, are often based on good faith, rather than on bad intentions, in an emergency. For this could generate a sense of distrust towards the information itself and a sense of futility in people who were involved in transmitting information without knowing that it was incorrect, as well as even a sense of guilt in

²¹ The source of information gradually changed to, for example, according to a Chiba Prefectural worker, according to my acquaintance, and so on.

²² One example of the websites that summarized part of the diffusion of incorrect information is <<http://twitter-dema.etc64.com/>>.

some cases, appropriate consideration and countermeasures are required.

Use of Social Media by the Japan Self-Defense Forces in Response to the Great East Japan Earthquake

In this section, the roles played by social media during the time that the JSDF conducted their activities will be considered by verifying the activities of the JSDF in the Great East Japan Earthquake. Other points relating to the use of social media by the JSDF will also be examined.

Activities Undertaken by the JSDF in Response to the Great East Japan Earthquake

The Great East Japan Earthquake, which was the largest-scale earthquake in recorded Japanese history, was also a complex disaster caused by a combination of the earthquake itself as well as tsunamis and a nuclear power plant accident. The emergency response measures implemented by the government included the collection/ transmission of information, rescue, disaster medicine, emergency transportation, shipment/procurement of supplies, operation /management of shelters, construction of a cooperation system covering a wide area, public relations, support from abroad, and a consideration towards women and people who required extra assistance.²³ The agencies responsible for the implementation of these are primarily the administrative agencies such as state and local governments.²⁴ However, in the unprecedented response to the earthquake and associated disaster, the Ministry of Defense and the JSDF took various and central roles in the responses.²⁵ One of the characteristics of the response was that, unlike a conventional disaster dispatch, the JSDF had to play a central role.²⁶ A number of lessons²⁷ were drawn from these experiences, which will contribute to strengthening not only the future disaster response to earthquakes and other disasters but also the ability to respond to different kinds of situations including national emergencies.

According to Eiji Kimizuka, then Commanding General of the Northeastern Army of JGSDF, who supervised the Joint Task Force Tohoku (JTF-TH) composed of the Ground, Maritime and Air Self-Defense Forces during this major earthquake, “What we had trouble with (in the initial phase of the disaster) was to collect accurate information,”²⁸ and “Information from the JSDF’s radio from the places where (the unit) managed to reach as well as the information coming from helicopters that have flown away in the snow, wading through the clouds, was the only information

²³ Cabinet Office, Government of Japan (disaster prevention), “*Higashi Nihon Daishinsai ni okeru Saigai Okyu Taisaku nado ni tsuite* [Disaster Emergency Measures in the Great East Japan Earthquake, etc.],” November 28, 2011 < http://www.bousai.go.jp/chubou/29/29_siryō_5-1.pdf>

²⁴ Article 50, Paragraph 2 of the Disaster Countermeasures Basic Act states, “the heads of designated administrative organs and the heads of designated local administrative organs, the heads of local governments and other executive organs, designated public institutions and designated local public institutions, and other parties responsible for the implementation of disaster emergency response measures pursuant to the provisions of laws and regulations.”

²⁵ Ministry of Defense, ed., *Defense of Japan 2012*, pp. 206-221.

²⁶ Ryoichi Oriki, “The Role of Self-Defense Forces (SDF) in Responding to the Great East Japan Earthquake,” The 14th Symposium (FY 2011)—The Role of the Military in Disaster Relief Operations, The National Institute for Defense Studies, 2011, p. 10.

²⁷ Ministry of Defense, ed., *Defense of Japan 2012*, p. 209.

²⁸ Eiji Kimizuka, “*Higashi Nihon Daishinsai to Jieitai* [The Great East Japan Earthquake and the Japan Self-Defense Force],” *The Journal of Military History*, Vol. 48, No. 1, 2012, p. 4.

available to us.”²⁹ How they accurately grasped the needs of the affected areas, the situation of which changed successively as time passed, and how they modified the formation and operation of the units according to the changing needs were crucial.³⁰

Then, in collecting, analyzing, and responding to these constantly changing needs, how did social media as a contemporary information tool play its role, and what will the outlook for the future be?

In the analysis of lessons learnt from the response to the Great East Japan Earthquake by the Ministry of Defense and the JSDF, under the perception that the strengthening of “information transmission” is necessary, its improvement and the future direction focus on the strengthening of the foundation of the hard side, such as the introduction and enhancement of equipment including the improvement of communication equipment and system.³¹ Social media is covered not in the analysis of “information transmission” but rather as a function of “PR.”

Regarding the point above, the way in which the JTF-TH actually managed information and operated within the situation using different means and methods including the contents of a hearing from the units and other relevant parties will be examined. For this purpose, (1) Lifesaving in the initial phase of disaster, (2) Transport of relief supplies, (3) Livelihood support, the types of information that were constantly changing as time passed, are separated by the following timeframes: First stage (time of lifesaving in the initial phase of disaster), second stage (time of the transport of relief supplies), and third stage (time of livelihood support).

Social media in different stages

(1) First stage: time of lifesaving in the initial phase of disaster

Activities of units in the initial phase of disaster usually begin under the environment in which there is an unclear situation immediately after the disaster has occurred as well as an unknown communication situation. After the commencement of the activities, a difficulty in information sharing due to the fluidity of the situation, the intricacy of information, an increase in the number of units, and other reasons are considered the premise of the activities. For the collection and transmission of information during a large-scale disaster, it is expected that, essentially, there will be information provided by the local government involved.³² However, under the circumstance in which the function of local governments has declined as well as there being disruption to information and communication systems, information sent from all sources is valuable, and therefore, it is important that a system to actively gather information is established, including the

²⁹ Ibid., pp. 4-5

³⁰ According to General Kimizuka (then), “We also had difficulty in grasping the needs of the affected areas and the victims,” and “As time passes, needs keep changing. The first is lifesaving, followed by the commencement of livelihood support for the survivors. Then, rubble must be cleaned up. Recovery and transportation of dead bodies, as well as a search for missing persons were also conducted. Then, the needs continuously change, for example, it was like, “next, we want you to create a space for building temporary housing, we want you to level the ground, and also water supply, food services, and a bath. We changed the formation of units responding to these needs.” Ibid.

³¹ Ministry of Defense, “*Higashi Nihon Daishinsai heno Taio ni kansuru Kyochō Jiko (Saishu Torimatome)* [Lessons Learned regarding the Response to the Great East Japan Earthquake (Final Report)],” November 2012, pp. 23-26 <<http://www.mod.go.jp/j/approach/defense/saigai/pdf/kyoukun.pdf>>.

³² Cabinet Office, Government of Japan (disaster prevention), “Disaster Emergency Measures in the Great East Japan Earthquake, etc.,” p. 2.

effective utilization of information from civilians.³³

Disaster dispatch units conducted lifesaving work in conditions where the situation was unclear, communication was disrupted, and information was entangled. In some cases, there was little information about the area as most residents were evacuated right after the disaster, and therefore, the units collected information from residents who returned a few weeks later. There was also an example in which iPad,³⁴ which was provided from the Miyagi Prefectural Office to the JTF-TH free of charge, was effectively used in some cases in identifying the location when a missing person was found and in determining an advance/exit route when the unit was making a move. In practice, however, whilst the internet for each unit was very important as a means of maintaining contact (e-mail) outside of the area and in terms of collecting topographical and other relevant information, there was a problem that the collection of information by carrying the device was difficult due to the insufficient amount of devices available.

These realities indicate the necessity of verifying the effectiveness of introducing and using mobile phones, smartphones and tablet devices in the future development of communication infrastructure by the JSDF. It is also suggested here that the possibility of the JSDF directly communicating with local residents and other agencies from outside the JSDF to collect, transmit and share information utilizing commercially available consumer products should be considered.

(2) Second stage: time of the transport of relief supplies

Relief supplies, which arrived at each airport, were brought into the area in large quantities in an unknown condition, with their specific destination being unknown and with miscellaneous goods all mixed up together. For the smooth transportation of these goods, preparation such as sorting them according to their destinations and contents was important. As for the sorting personnel, considering the necessity in responding to other tasks such as lifesaving, making use of volunteers as well as personnel involved in other labour and services, securing these sorting personnel was not easy.

What serves as a useful reference here is the case of Google Person Finder, which is a registration and search service of an individual's safety information provided by Google. The service of Google Person Finder had started by two hours following the occurrence of the Great East Japan Earthquake. Although it was initially anticipated that it would be used by individuals, victim information provided by volunteers, police, local governments and the media was registered all at once, and over 670,000 pieces of safety information was eventually registered and used.³⁵ According to Google, the work of transforming photos into text necessary for making

³³ Cabinet Office, Government of Japan (disaster prevention), "*Higashi Nihon Daishinsai ni okeru Saigai Okyu Taisaku ni kansuru Kentokai: Chukan Torimatome* [Review Meeting regarding Disaster Emergency Measures in the Response to the Great East Japan Earthquake — Interim Report]," November 28, 2011, p. 5 <http://www.bousai.go.jp/oukyu/higashinihon/pdf/cyukan_torimatome.pdf>.

³⁴ There is an example in which SoftBank Corp. and Masayoshi Son, Chairman and CEO of SoftBank Corp., provided the public organizations in the affected areas with mobile phones for the purpose of contacting shelters, and iPhones as well as iPads for those in the affected areas who required support, all free of charge <<http://www.softbank.co.jp/donations/>>.

³⁵ Ministry of Internal Affairs and Communications, "*Daigibo Saigaiji ni okeru Intaanetto no Yuko Katsuyo Jirei Kaisetsushu (Heisei 23 Nendo Ban)* [Collection of Cases and Commentaries on the Effective Use of the Internet in Responding to Major Disasters (2011 version)]," 2011, p. 12 <http://www.soumu.go.jp/main_content/000173746.pdf>.

a list of shelters as a form of digital data required more time and effort than anticipated. Volunteers outside the company were recruited through social media such as blogs, Mixi, Twitter and others. Volunteers gathered through this recruitment method worked whilst consulting with each other and exchanging information at the collaboration service and communication desk on social media.³⁶ While the JSDF itself hardly used social media during this period, this is a matter to be noted when considering future responses.

(3) Third stage: time of livelihood support

During the third stage for livelihood support, a person in charge of the disaster response contacted the unit stating that refueling support would be unnecessary. However, there was a mismatch of needs between the administration, which asserted the demand for continuation at shelters, and the actual site, as well as between dispatched supplies from the central government and the needs on site. As a result, there were some cases where a large amount of cargo remained at prefectural or municipal depots.

Generally speaking, a large amount of relief supplies such as food, drinking water, pharmaceuticals, etc., are required in affected areas, while the situations in which the affected areas are placed are not always the same and therefore the support needs also vary. In addition, there was a mismatch³⁷ in the support. For example, while necessary goods are not delivered due to the changes in needs over time, a large amount of unnecessary goods arrives and their disposal causes trouble.³⁸ In order to prevent this mismatch, it is important to obtain, provide and share detailed information as well as give consideration to the residents' emotions and feelings. At the JTF-TH, however, utilizing the matching software between goods and the needs of victims created by the JGSDF Ground Research & Development Command, they asked about demand during the transportation of daily goods, entered the information in the software, and made a timely delivery of the goods required by the victims, which matched the goods available in each warehouse.³⁹

Examples of social media that were effective in terms of "matching" the needs of victims and available relief supplies through the use of services include the "Wish list" (Amazon.co.jp)

³⁶ Google, "*Higashi Nihon Daishinsai to Joho, Intaanetto, Google* [The Great East Japan Earthquake and Information, Internet, and Google]," 2011 <<http://www.google.org/crisisresponse/kiroku311/>>.

³⁷ For example, Asahi Shimbun on March 24, 2011, reported an occurrence of a case of a mismatch that goods wanted did not get delivered to those who wanted them, and conversely, that goods, which there were too much of, continued to be delivered. The following cases were also reported: a case of an activity in which the Tohoku Regional Bureau, Ministry of Land, Infrastructure and Transport dispatched satellite communication vehicles in order to resolve the condition above and posted a list of required goods compiled by municipalities on a temporary bulletin board on the Internet; and a case in which the JTF-TH instructed their personnel to give priority to grasping the request of the victims.

³⁸ Ministry of Internal Affairs and Communications, "Collection of Cases and Commentaries on the Effective Use of the Internet in Responding to Major Disasters (2011 version)," 2011, p. 38.

³⁹ General Kimizuka (then) reflects on the situation and remarks, "However, this involved a great deal of difficulty. It was like we were building one project by making many improvements every day. [Abridged] As we responded to all the various needs carefully in this way, I think that this has resulted in the high evaluation score of 98% regarding the JSDF's response to the recent disaster." Kimizuka, "The Great East Japan Earthquake and the Japan Self-Defense Force," p. 5.

and “Fukkoichiba (reconstruction market)” (fukkoichiba.com).⁴⁰

So far, the JSDF’s activities during the Great East Japan Earthquake have been outlined in a chronological order from the viewpoint of information. In this overview, only a few active cases were found in which the JSDF conducted intelligence activities, operations and other tasks, using social media with a plan or unified intention. On the other hand, cases in which social media were actually used and which have the potential for practical use by the JSDF can be identified in each stage from the first to the third stages.

Future Possibilities of Social Media—How the JSDF Can Utilize It

After the Great East Japan Earthquake, participation in social media continued to increase rapidly. This is probably because its usefulness was recognized particularly by people in the newer generation and others who are closer in age to the newer generation. This recognition is not a phenomenon, which has been seen only in Japan in relation to the Great East Japan Earthquake. The same recognition has also been seen in recent disasters, which have occurred abroad. Spencer Green indicates that, based on the response to the case of Hurricane Katrina which occurred in 2005, social media has established its role as a reliable media for disaster victims, news organizations and aid organizations, and it was confirmed to be an essential information tool in the cases of Iceland, Haiti, and the Great East Japan Earthquake. He also says that, in an emergency, while the existing media can become lost, social media does not only report but it also connects people. The role of social media is now widely known across the world.⁴¹

In contemporary society where a new trend such as this can clearly appear, in what way should the JSDF, whilst undertaking the task of crisis management, make full use of social media? Some discussions on this point will be included in the following sections.

Potential of social media

(1) As a means of information collection

Social media is a new means through which an ordinary person, who is not a professional reporter, can collect and transmit raw information from the actual affected location prior to the conventional media coverage. There is a possibility of misunderstandings arising due to the characteristic of the raw information based on the personal experiences of an ordinary person and the possibility of incorrect information associated with hearsay. However, its potential as new media, which has not existed before, is significant in the sense that we can avoid the worst scenario of information disruption, and thus, we should never ignore social media. We, the people, who experienced the Great East Japan Earthquake should not become overly fond of social media as an almighty information tool, or conversely, we should not unilaterally eliminate it as alien media due to its

⁴⁰ As for an example of “Wish list,” Amazon, an online shopping site, offers a function, which registers products that one wants to purchase and create a list of a “Wish list.” By utilizing this function, victims, volunteers and other people involved register types and numbers of goods required at the shelters in the “Wish list.” By watching this, people who are willing to support can grasp in detail the contents, places, numbers, etc. of required goods on site. Also, goods already shipped are labelled as “purchased,” so that a mismatch will be avoided. Ministry of Internal Affairs and Communications, “Collection of Cases and Commentaries on the Effective Use of the Internet in Responding to Major Disasters (2011 version),” pp. 39-42.

⁴¹ Spencer D. Green, “Japan, and the Critical Three Ways Social Media Plays during a Crisis,” March 24, 2011 <<http://www.istrategyconference.com/blog/?category=Social-Media&title=Japan-and-the-Critical-Three-Ways-Social-Media-Plays-during-a-Crisis&pid=324>>.

individualistic character. We will have to position it as part of an information cycle involving collection, transmission and sharing, treating it in the same way as other media, and make an effort to create an optimum information environment in an emergency.

This point is also mentioned in the lessons learned report “Strengthening of Information Communication Functions” analyzed by the Ministry of Defense and the JSDF which shows that maintaining and strengthening cooperation with private communication operators is necessary. In June 2011, an agreement between the Ministry of Defense and each company belonging to the NTT Group was concluded, which stipulates the laying of temporary lines for use by the JSDF, lending out mobile phones and satellite phones, transport support for materials and equipment as well as manpower, which will become necessary in the recovery of telecommunications. Going forward, in order to construct similar cooperation framework with other private communication operators, coordination will be facilitated.⁴² Prompt efforts will be required.⁴³

(2) As a means of information transmission, sharing and coordination

Precise transmission, sharing and coordination of information are directly connected to increasing the survival rate of victims. In the case of disasters of extreme severity such as the recent Great East Japan Earthquake, it is clear especially from the damage caused by the tsunami in the Sanriku coast area that communication methods such as fixed phones, which have been constructed over a long period of time, and coverage methods used by the traditional media are at a high risk of becoming completely lost. Considering that scenarios in which no information is available should be avoided as much as possible, the importance of social media is substantial, even when taking into account the risk of transmitting incorrect information. It is thought to be highly useful as an information tool for the implementation of the JSDF’s disaster support activities.⁴⁴

Moreover, soon after the disaster has occurred, it can be expected that social media will work as one of the few communication tools for connecting support teams with victims, and that providing information through social media will contribute to reducing the stress faced by victims. This will enable the victims of a disaster in an extreme condition to have a sense of security and allow them to know that they are not abandoned as well as provide a sense of unity that they are

⁴² Ministry of Defense, “Lessons Learned regarding the Response to the Great East Japan Earthquake (Final Report),” p. 25.

⁴³ Information about affected areas is unsorted, is biased, and is also vast in terms of quantity. If used effectively, however, it will be very beneficial as raw information from the field.

A contemporary new way of thinking is that such vast amount of information is referred to as “big data,” which has potential to become a useful source of information not only in an emergency such as natural disasters but also in a normal situation. There is a possibility that the damage situation and other situations can be “visualized” by connecting fragmentary information transmitted by each individual, which is not available in a systematic form. In addition, this is equally useful when an artificial disaster occurs. Even though the information does not clearly show a sign, integrating each person’s observation results will lead it to the “visualization” of a crisis. It could also become a tool, which will function with the related situations such as guerrilla, command, spy ships, and influx of refugees, while it can also work as a tool with which we can find consciousness, such as anxiety and desire of the people in a normal circumstance.

⁴⁴ However, the answer to the question of whether the JSDF can be mobilized based on the information on social media may require further examination and review. Mobilization of the JSDF at the time of disaster is allowed in the form of voluntary dispatch as well as based on a request from the head, etc., of local governments (Self-Defense Forces Act, Article 83, provisions of Paragraph 2). However, while information through social network may be treated in the same way as the one gained by telephone, it is not clear as to whether it is considered the information to be used for making a decision on the mobilization of the JSDF.

connected with the outside world.

Even after the information transmission system was functioning again due to the recovery of the conventional types of communication other than social media, its appropriate sharing and coordination involves major problems in disasters of extreme severity. For example, as pointed out in the previous section, information regarding the areas requiring support and support contents was insufficient in Tono City of Iwate Prefecture due to the lack of sharing and coordination of information randomly collected by support teams (supporters do not work, so I thought support teams were appropriate, could also have, rescue workers, volunteers, relief workers). Based on this challenging situation, the use of social media, which connects support teams and people who need support, is also required as a tool for information sharing, coordination and the screening of false information. By fulfilling this, a mismatch between support teams and people who need support will be resolved.

A possible countermeasure for this is building a social media system with eligibility to participate granted to officials involved in disaster operations. In fact, in the Great East Japan Earthquake, “The Great East Japan Earthquake affected municipality liaison group for ICT” was established mainly by the local government in the Tohoku region, and an attempt was made to achieve a match between the situation of each municipality and organizations that provide support. Considering the fact that disaster dispatch requires a request from respective local governments, it is important to verify these systems and to take action for networking among emergency response organizations including the JSDF, affected areas and other relevant organizations.⁴⁵

How the JSDF should use social media

(1) Points to be noted

1) Whether to gain trust as a “person inside”

In the internet world, sometimes the idea that the “authorities lie,” or that the “authorities cannot be trusted” emerge. This derives from the idea that it is state power, which prevents the freedom of the internet.⁴⁶ In a situation where information from the authorities frequently cannot catch up with the speed of transmission of information on the internet and so therefore falls one step behind, it is also based on the reality that many people are suspicious about the arbitrariness of the information released by authorities. These ideas used to be held about NHK. However, it is worth considering that, as described earlier, some of this distrust was resolved through the decision made by the “person inside” of NHK immediately after the Great East Japan Earthquake. Namely, if it is performed appropriately, the information sent from a “person inside” of the authority will gain enough trust on the social network. In order to earn people’s trust towards the information sent in response to a crisis, it is essential that this trust is earned from normal times. By doing this, information regarding disasters will also be transmitted effectively from victims and officials involved to the JSDF through social media.

2) Whether the JSDF can become an influencer

Currently, the amount of information transmitted and exchanged on social media is enormous.

⁴⁵ It should be noted that this mechanism is effective in other situations such as armed attack situations.

⁴⁶ It is well known that the background of the behavior of internet hackers represented by Anonymous is repulsive spirit against these tightening of internet regulations exercised by the authorities.

Such large volumes of information are a mixture of wheat and chaff. It does not mean that just because information is transmitted, many people will read it. The issue to be considered is how to make the information sent by the JSDF, within the overall information flow, become the one to be read and to be trusted. Namely, whether the JSDF can become an effective influencer on social media is being questioned. Specifically, it is whether the contents of Twitter and blogs transmitted by the JSDF at the central, regional, prefectural and camp levels will be able to gain many followers from civilian users. In particular, it is being questioned as to whether it functions as a prompt transmission tool for correct information, as well as whether it receives the correct recognition as a space for victims who want to send and share the information, and as a space for eliminating a large amount of misunderstood or false information sent over the internet.

Of course, as was touched on in the previous section, it cannot be denied that there is a possibility that information transmitted by the JSDF may receive negative opinions and feedback due to its association with a government agency, regardless of how much effort is made. If this is the case, at least the issue of whether the JSDF can function as an appropriate source of information for powerful influencers would be an important point for consideration. If influencers, who receive feedback such as “I believe what this blogger says” and “I listen to the tweet if it is from this person,” believe the information transmitted by the JSDF and are willing to reproduce it, then virtually it will serve the function of an influencer. When the influencers hesitate to send out certain information and the JSDF side can provide them with appropriate and correct information in a timely manner, then correct information will spread promptly. Conversely, incorrect information will be quickly denied, which will also contribute to avoiding the spread of panic situations. Currently, in addition to blogs and Twitter to which the individual influencers post, there is an automation software called (internet) Bot, which automatically collects and publishes information from all kinds of official accounts including the JSDF Tweet account etc., as necessary, and which has gained a number of followers. In order to respond to these mechanized information transmission tools, it is important that the JSDF discloses prompt and accurate information on its official account.

(2) Possibility of the use of social media by the JSDF

1) Active consideration for the introduction of social media devices is recommended

As it was examined in the previous section, in the Great East Japan Earthquake, there were only a few examples of the active use of social media when the JSDF collected or operated information through social media as an organization, in a planned manner, or with a unified intention. However, since some units perform information collection and make contact using tablet devices, there are some units that are requesting to be equipped with communication equipment. The following remark by then Commanding General Kimizuka is noteworthy as they are specific words by a commander who knows the actual site⁴⁷: “When dealing with disasters, usually it is unlikely that we have opportunities to meet each other face to face. This may be a normal condition for the U.S. Army and the Maritime Self-Defense Force, but the culture of the Ground Self-Defense Force tends to value a face-to-face meeting. Nevertheless, I emphasize here that the current era is not that sort of era. Therefore, I request a simple report using e-mails.” Taking a step towards

⁴⁷ “JTF—A letter from Tohoku,” No. 24, April 6, 2011. “JTF—A letter from Tohoku” covered the contents of the meeting held more than twice daily at the Joint Command Headquarters established in Sendai City and was distributed to all the units.

a prompt examination of the test introduction of information equipment such as tablet devices is recommended. However, based on that, verification of their effectiveness and any other issues is required.

In addition, when introducing information devices, not only the simple introduction of equipment and deployment but also preparation in the normal context including the environment development such as the provision of exchange space on social media is also important. In this kind of exchange, a flexible and systematic response in which the JSDF, volunteers and NGOs all share the common goal of working to rescue people and at the same time understanding and accepting the ways of thinking and behavior patterns of volunteers required by the JSDF side.

With regard to the cooperation with local governments, it would be important first to recognize that the initiatives for using social media by local governments are still in the process of developing, and then to further clarify the problems in cases of disaster through training such as making contact and information exchange between the JSDF and each specific local government utilizing social media.

Furthermore, the use of devices personally possessed by individual JSDF officers is another issue to be considered. JSDF officers, particularly those of a younger age belong to the newer generation, and therefore, almost all of them possess a private mobile phone or smartphone. Many of the contemporary mobile phones can be connected to the internet and also function as a social media device. Although it is deemed that personal belongings cannot be used for official duties, considering the usefulness of social media, allowing the use of them in official duties may be taken into account by establishing a certain protocol. However, it is also necessary to ensure that there should be a mechanism, which prevents such a measure from causing information leakage. We should be fully aware of the risk that JSDF officers may cause if they start using Twitter and other social media on their own as they may leak information unconsciously, if an appropriate use restriction method has not been taken.⁴⁸

2) Place an officer in charge of social media at a Division close to the site, Provincial Cooperation Office, etc.

In order to make a full use of social media appropriately in an emergency such as a disaster, it is useful to include social media into standard operations on a routine basis as well as revising the operational manual to make it appropriate. Indeed, the center of the JSDF has started using social media such as Twitter. For example, JGSDF does not only officially use Twitter but also has separate Twitter accounts called “Takuma-kun” and “Yu-chan,” having boys and girls in mind, respectively. However, while the Twitter for the entire JGSDF has been updated frequently in recent years, tweets from “Takuma-kun” and “Yu-chan” have been made at low-frequency, only once every three months, which makes it difficult to attract many followers.⁴⁹ Information transmission by the JMSDF happens more frequently. For example, they tweet almost every day, and sometimes

⁴⁸ Although, for example, some officials of the JMSDF reveal their affiliation on Facebook, which takes a real name system, and also the name of vessel on which they work as well as their behaviors, these are problematic behaviors in terms of security. Articles, which point out this serious problem, include the following: “*Kaijojieitai, Sosharu Media de Kimitsu Joho wo Tsugitsugi Kaiji? Sensuikan Unko made* [The Japan Maritime Self-Defense Force Disclosing Confidential Information One After Another on Social Media? Even the Submarine Operations...],” *Business Journal*, December 19, 2012 <http://biz-journal.jp/2012/12/post_1181.html>.

⁴⁹ As of February 2014, the number of followers has reached just over 250,000.

they update a few times a day. Furthermore, the contents of their posts give readers a friendly impression in that they tweet about the weather (though they are not clear about the location), use a colloquial style in their posts, and so on. Nonetheless, as the tweets of both the JGSDF and JMSDF demonstrate closeness to their followers as they greet and reply to their followers, a certain positive effect seems to be generated. However, this is happening at the central level, which is not locally-based information transmission and exchange.

Regionally, the following offices are conducting Public Relations activities using social media such as Twitter: Provincial Cooperation Offices in Fukuoka (Kyushu), Okayama (Chugoku), Osaka and Mie (Kinki), Aichi (Chubu), Chiba (Kanto), Iwate and Miyagi (Tohoku), as well as at Tome Regional Office in Miyagi and Anjo Regional Office in Aichi. On these Twitter accounts, new information is posted quite often, and information disclosure and exchange seems to be conducted in a fairly friendly manner, with the accounts answering and responding to their followers' comments.⁵⁰ Information disclosure of this kind of format is necessary and its applicable value in an emergency is also deemed high. It is a point to consider that, from now on, new Twitter accounts, which will be similar to the accounts currently open, should be opened by every JSDF unit such as each camp and division as well as all the Provincial Cooperation Offices. In particular, tweets on the current Miyagi Provincial Cooperation Office's Twitter match the characteristic of the internet residents and seem to earn the support and understanding of its followers. While this is not to say that this level is required by all accounts, it seems that it should be used as a reference.

As for the contents to be posted on Twitter on a routine basis, generally content aimed towards beginners and novices can attract readers more easily than topics aimed towards enthusiasts. Thus, the contents should be about tidbits concerning JSDF officers in their daily context, such as familiar activities by the JSDF, trivia about the JSDF, familiar incidents that have happened in the office or a unit, funny stories, and impressive incidents in a familiar context. The key is to post them frequently. Of course, sometimes effort is required to present profound knowledge about a specific subject, which is something typical of JSDF officers, in order to attract readers with a deeper interest who are looking for such information. Following the method described above, it is desirable that at least dozens of articles should always be available for reading on the account. This is because if there are only a few articles to be read, then visitors will finish reading all of them on their first visit and will not become a regular visitor or a reader. Readers and followers attracted this way are assumed, if they are also a resident in the neighborhood, will try to acquire necessary information by referring to the Twitter of their local JSDF officer in an emergency such as a disaster. Readers and followers who regularly communicate with JSDF officers will be likely to report the disaster situation around their area in responding to a request from JSDF officers.

For this task, it is desirable to select personnel, who have basic knowledge of information transmission and exchange on social media, and to train them. For example, using JSDF officers who have become almost incapable of conducting their work, due to serious injuries caused by accidents, etc. whilst on duty, should be considered for these roles. What is required here is thinking power, expressive power and judgment, while technical skills are not as important. For technical capabilities, assigning personnel from the newer generation who already have the relevant abilities will be the solution.

⁵⁰ According to the condition checked in February 2014.

3) Create a “person inside” of the JSDF by pairing the newer generation (digital generation) and the older generation.

As we saw in the first section of this paper, what is referred to as the older generation who were engulfed in the internet movement after they were appointed, and the newer generation whose daily life already incorporated the internet environment before their appointment live together. The newer generation has the skills to make full use of the internet environment and is easily able to use it, while there is a tendency that they do not have sufficient wisdom to make accurate judgments and transmission whilst overseeing the organization and the entire society, as the older generation does. Thinking in this way, one possibility of a “person inside” in the JSDF is based on the notion of a “person inside” created by pairing both the newer and older generations. Considering from the viewpoint of the effective use of human resources, virtually creating one “person inside” by pairing a JSDF officer from the older generation who is capable of making a judgment and an officer from the newer generation who has the skill to make full use of devices, utilizing the wisdom of JSDF officers from the older generation who cannot recover in the front-line field due to injuries or other reasons. The JSDF officers to be selected are required to have the following abilities, and therefore, it is necessary to discover these talents⁵¹: (1) To make a judgment on a situation and transmit information from the original viewpoint of a JSDF officer; (2) ability to be able to be involved in a changing situation; and (3) ability to transmit one’s opinion without being afraid of objections. A pair becoming a “person inside” created in this way will transmit the judgments and information of the JSDF on social media. Simultaneously, it can also work as On-the-Job-Training (OJT), in which the judgment know-how and crisis management know-how of the older generation with high capabilities will be taught and transferred to JSDF officers of the newer generation. However, it is harsh to inflict such a heavy responsibility on the activity conducted by a “person inside” who, to some extent, speaks freely at his or her own certain voluntary discretion. Thus, internal rules, which give consideration to the “person inside” himself/herself and the correspondence from the office to which he or she belongs, will be required.⁵²

Conclusion

The Great East Japan Earthquake brought large unprecedented damage to us. However, drastic changes in the communication environment due to the technology innovation showed us a potential of social media, which is completely different from the conventional mass media in terms of its interactivity and immediacy.

Under such an environment, the JSDF should be more sensitive towards new social media and consider its active use as soon as possible, in order to exercise its disaster response capability to the fullest level in an emergency. This approach towards social media may be effective in

⁵¹ Tachiiri, *An Examination of the Great East Japan Earthquake: What Did Social Media Report?*, p. 250. In the experiment conducted by Tsukuba City, a person who has feelings of curiosity and holds his/her antenna for information high up is also mentioned as the right person for information transmission (“Report of practical experimental results” In “Tsukuba City Twitter materials”).

⁵² Tsukuba City, which posted information in the wake of the Great East Japan Earthquake, created the “Tsukuba City Twitter materials” based on experiments and actual work. The materials include guidelines regarding the mitigation of responsibility of a person who posted when city workers engage in such an activity and receptive behaviors towards such a behavior in the office, in order to avoid problems similar to this to occur as much as possible. The guidelines are considered to apply to other places.

perceiving signs of not only a crisis situation caused by natural disasters but also a variety of artificially caused situations, which are anticipated in the future. Furthermore, social media has the potential to be used as an information transmission tool for both the handling and collection of information after the occurrence of disasters. Hence, it is considered that this approach should be put forward as soon as possible.