

Making Emergency Services More Accessible: Aiming for the Seamless Handling of Calls to the Emergency Services

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1. Background and purpose of the Emergency Call Accessibility Working Party

Due to Japan's aging population, it is no longer uncommon for people to be affected by illnesses or disabilities such as muscle weakness. As a result, there has been a recent trend towards a universal social system where anyone can live independently with or without disabilities.

Although emergency phone services are an important part of the infrastructure in this sort of social system, Japan does not adhere to the above philosophy because it lacks a framework for making these calls accessible to everyone.

In the emergency call framework, once someone has called the emergency number (119, etc.), he or she must vocally explain what is being reported (purpose of the report, etc.) to the operator of the emergency report response agency. This means it is impossible for people with hearing impairments or temporary speech difficulties to call the emergency services. In Japan, there are reckoned to be around 20 million people (both with and without disability certificates) who would find it difficult to summon an emergency service with a voice call.

On the other hand, due to recent advances in globalization, there are also growing numbers of people who have not mastered the official language of the country in which they are living. This leads to a similar problem in that some people are unable to express their intentions verbally, and find it difficult to report emergencies by themselves.

As the proportion of elderly and foreign residents rises in the future, there will also be a corresponding increase in the number of people who have difficulty reporting emergencies verbally. We should therefore construct a new emergency reporting system that does not rely on voice communication.

The current status of non-vocal emergency reporting systems in Japan is borne out by statistics on emergencies reported to the Fire Defense Headquarters in 2010–11, which show that in most regions of Japan, people with hearing and/or speech difficulties

are only able to report emergencies when inside a building that has a fax machine (e.g., at home or at work). When outdoors, these people therefore have to seek the assistance of a person with normal hearing in order to use conventional voice-based emergency reporting services.

Meanwhile, for everyday communications, these people have been shifting towards the use of services like email on mobile terminals like notebook PCs and mobile phones, which can also be accessed outdoors. By keeping up with these changes of primary communication tools, we should set up a system that makes it easy for people to report emergencies without relying on voice communication, and can adapt to the changing trends in the technology that people use to communicate.

From the viewpoint of infrastructure countermeasures in the event of a disaster, the voice-based emergency call framework (which is regarded as being robust in disaster situations) was itself affected by problems such as bad connections (lost calls) during the Great East Japan Earthquake Disaster of March 11, 2011, so we now know that it isn't completely dependable. On the other hand, it has also been confirmed that packet communication (as used by mobile phones and other such devices) can establish communications relatively easily. It is thus expected that voice-based emergency calls will be supplemented by a new

means of communication other than voice communication as used on mobile phones, and not just for people with hearing or speech difficulties.

In 2012, an emergency call accessibility working party was established to resolve these issues. This working party is affiliated to the Smart Communication Advisory Group (AG) of the Telecommunication Technology Committee (TTC), and is studying the implementation of seamless emergency calls that can connect anyone, anywhere, and in any situation, and the international standardization of its interfaces. (Over the three year period from 2012–13 to the current business year (2014–15), there has been an active Promotion Program for Scientific Fire and Disaster Prevention Technologies.)

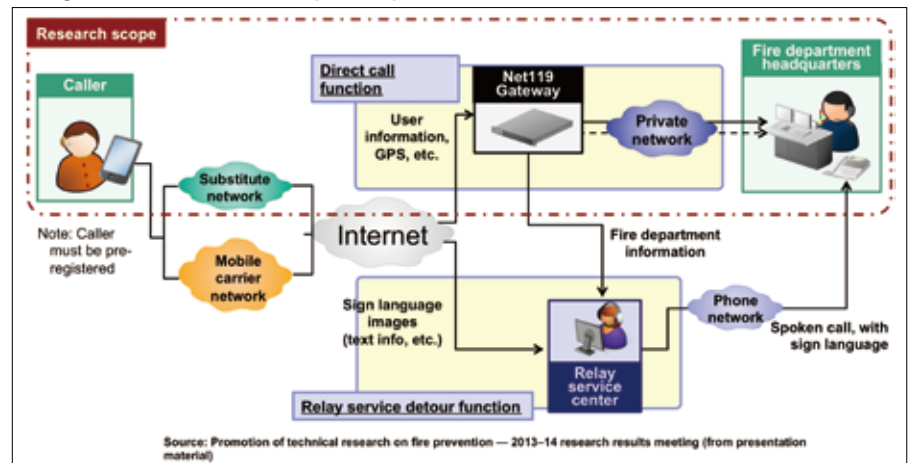
2. Progress made so far

We have made progress in research aimed at addressing the strong needs from people with hearing and language impairments, and dealing with fire and rescue situations where it is necessary to resolve issues with elevated priority. Specifically, we have been narrowing down the structure of technology for reporting emergencies to the fire department headquarters.

(1) Service model

We set up a service model (Net119) based on a rationalization of the requirements from

Figure 1: Service model (Net119)



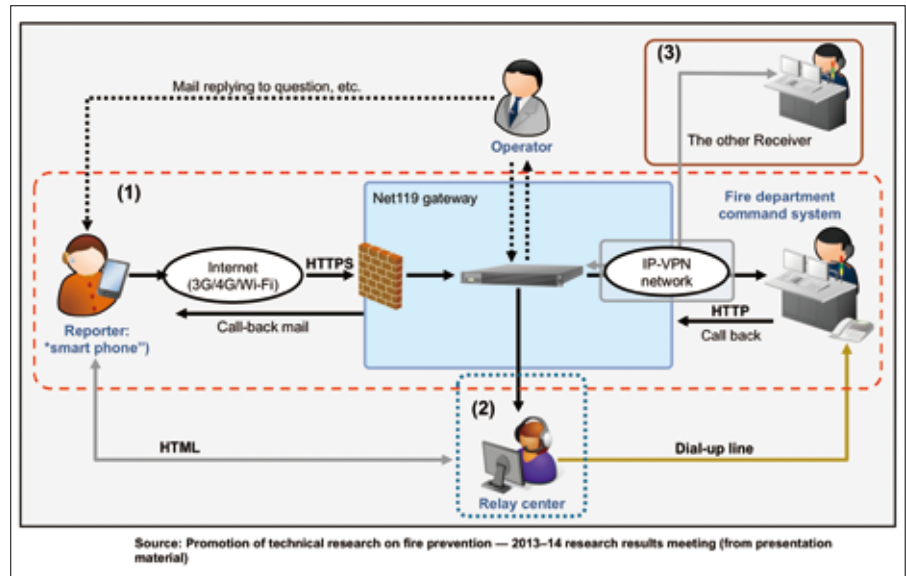
people reporting emergencies (support for people with hearing/language impairments) and emergency call operators (fire department headquarters), and on the results of a survey on communications technology and services trends both in Japan and overseas. (Figure 1) To make it possible for disabled people to live independent lives, we are establishing a model that allows disabled people to report emergencies wherever possible.

The features of this model are briefly summarized as follows:

- (1) The terminal used by the caller is assumed to be a mobile terminal such as a mobile phone or smart phone that is used as an everyday means of communication by people with hearing or language difficulties. In some foreign countries, services are provided not as applications but as web services.
- (2) In the network, connections to the fire department headquarters are made by assuming a closed network with the current voice mechanism. Since the same closed network has limited bandwidth, for the time being we decided to use a text-based format for the exchange of information (GPS position information, personal information). However, with future advances in technology, we anticipate being able to extend the bandwidth of the communication network and implement compressed transmission of large quantities of data, allowing the delivery of media such as still images and video pictures with sound by two-way communication using diverse types of communication. This is the concept implemented by the “Total Conversation” standard proposed in ITU-T recommendation F.703.
- (3) A gateway (GW) is set up to automatically distribute messages to their destinations and eliminate spam and other unwanted traffic when a reporter connects to the fire department headquarters or a relay service center via Net119. There are two automatic distribution functions — one that routes calls to the fire department responsible for the caller’s location based on the caller’s GPS position information, and one that routes calls to an available relay center (where operators are standing by).

Relay services that use operators to support sign language translation services are already commonplace information support services in many countries including the United States and Europe. Japan is lagging far behind other countries in the provision of such services, which is a major issue from the

■ Figure 2: Proposal for a 2014–15 demonstration, first version (before alteration)



viewpoint of accessibility. We must promote these services as soon as possible so that Japan achieves parity with other countries.

(2) Demonstration

We drew up a software design specification based on the above service model, and this year we are developing and verifying two prototypes — a gateway facility for the implementation of Net119, and a fire department headquarters receiver device. (Figure 2)

Ultimately, we plan to collect the results of the above verification trials and draw up a specification as a draft international standard.

3. International standardization efforts: Contribution to the ITU-T SG16 Sapporo meeting

Since the start of this study, we have been working to set up a service model with a view to achieving international standardization. We conducted a survey of technology trends and case studies of services similar to Net119 in other countries, and we roughed out a set of conditions that are capable of being adopted as an international standard. However, this was not fully adopted as an item for study by ITU-T. Evidently this is a service whose time has not yet arrived.

We therefore submitted a paper to the ITU-T SG16 Sapporo meeting held from 30 June to 11 July this year (“Proposal of a new study item to produce a new recommendation: Application layer information specification at the terminal to network interface for people with hearing and speaking difficulties to request rescue to emergency rescue agencies”). As a result, our proposed draft recommendation submitted

with our contributed paper has been adopted as a baseline text for further study. Hopefully this will stimulate active discussions about this service in the future.

4. Future issues

(1) Entry criteria and rules for service operators

Our aim is to have the Net119 service launched in Japan in the next business year (2015–16), but due to the nature of emergency communications, we consider that it is necessary to set up rules and conditions that must be observed for service providers who want to join in with this service. We therefore plan to summarize the rules and conditions that must be maintained with regard to operational aspects, and to submit our demands to related organizations.

(2) Expansion of target users and purposes for use

As mentioned above, to make it easier to organize discussions, we have previously been studying how users with auditory or language difficulties can stimulate a fire and rescue situation and obtain fire department photos. On the other hand, it is possible that this technology will not only be used by people with hearing and/or speech difficulties, but will also be widely used by other people. It is also possible that it will be used for reporting not only fire and rescue situations but also similar emergency services (police, highway patrol, etc.).

We therefore consider that in discussions of international standardization, we will do what we can to increase the number of target users.