



Elderly-Friendly Support Service Using Simple ICT Equipment

Mizuho YAMAZAKI*, Toshiaki NOMURA, and Natsuki MORI

In 2030, Japan will enter a super-aging society where one in three people will be 65 years old or older. In a social environment, where all kinds of services are changing with the rapid digitization, elderly people with low IT (information technology) literacy are isolated from society. In addition, the aging of supporters who take care of the elderly in the community and the shortage of those supporters have become major social issues. In addition, the prolonged pandemic of COVID-19 has led to a new problem of the elderly becoming isolated due to the lack of face-to-face contact. In the field of welfare, where people support people, the need for IT-based non-contact monitoring systems is expected to grow further in the future. This paper introduces the joint research that Nissin Systems Co., Ltd. has conducted with the Kurobe City Council of Social Welfare in Toyama Prefecture since 2019, based on the company's concept of "Anyone can easily connect with the community." The authors present an ICT (Information and Communication Technology) terminal that was developed in the research project for the elderly at home and the support services using the terminal.

Keywords: ICT terminals that can be used by elderly persons at home, daily life support services.

1. Introduction

With the widespread use of ICT, it is necessary to build a communication system based on means that all individuals can use properly.

In the elderly support service, it is important to consider how to reduce the workload of supporters who support elderly persons, in addition to the convenience of elderly persons (i.e., users). There will be an absolute shortage of supporters against the number of elderly persons. It is essential to develop an IT-based support system to solve issues on both sides. The elderly support service has become a pressing issue in local cities in particular, where the population has been decreasing and aging. Nissin Systems Co., Ltd. (hereinafter, "NSS") and the Kurobe City Council of Social Welfare concluded a collaboration agreement regarding the use of ICT in the "Kurobe Net" project*1, a comprehensive watch-over program in Kurobe City. "Creation of an environment where supporters can easily offer support" is jointly promoted using ICT.

2. Development of a Terminal for Elderly Persons at Home

The terminal developed by NSS achieves easy operation by using cards and a button, which are familiar interfaces in our daily lives. Demonstration experiments started in FY2019 in collaboration with the Kurobe City Council of Social Welfare. Opinions were frequently exchanged with staff members, commissioned welfare volunteers in the community, and users regarding the terminal. In the development process, there were various ideas, such as installing an LCD screen. However, the development focused on minimizing and simplifying the functionality

due to concerns about complicated operation. The terminal is the size of a landline telephone. It consists of a large flashing button, a speaker, a volume control dial, and a contactless card reader.



Photo 1. Terminal for elderly persons at home

3. Connection with Community Services Using Special Cards

To reduce the anxiety of elderly persons over the use of the new terminal, complex menu selection has been eliminated. Instead, cards are used as physical media. Elderly persons are familiar with cards, such as patient registration cards of hospitals, in their daily lives. Issues faced in daily lives vary depending on the community and the user. Thus, elderly persons can select a necessary service by using a card. Notification can be given to a community supporter simply by passing the relevant service card over the reader and pressing the button. The supporter calls the elderly person by telephone (Fig. 1). When calling a taxi, the "Mobility Service" card is used. When requesting shopping (e.g., for food), the "Shopping/

Home Delivery” card is used (Fig. 2).

The details of services can be changed flexibly by adding or changing cards. This is another characteristic feature.



Fig. 1. Flow of offering community services

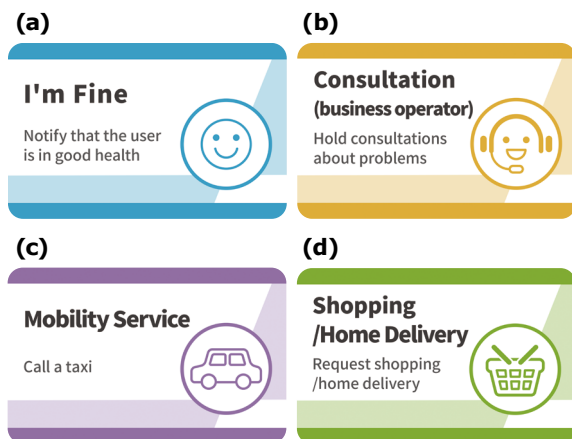


Fig. 2. (a),(b) Cards for reporting problems and one’s physical condition (Samples)
(c),(d) Various service cards (samples)

Another objective of installing a terminal in the houses of elderly persons is to monitor the status of elderly persons in the community in their daily lives. It aims to collect and analyze the status of community service usage and use the data for efficient support. The data of usage by elderly persons is accumulated and analyzed on a daily basis. When cards are not used for a certain period, a message is sent to prompt a visit by a person in charge of support as necessary. It has become easier to check whether or not elderly persons are active depending on the status of use of the terminal. The Kurobe City Council of Social Welfare has been verifying measures to increase the efficiency of the watch-over service in the community.

4. Characteristics of the Elderly Support Service

There are six main features of the elderly support service. (1) The size of the terminal is equivalent to a land-

line telephone. The terminal consists of a large button, a contactless card reader, a speaker, and a volume control dial. It can be used intuitively even by individuals who are unfamiliar with IT devices. (2) It is unnecessary to conclude a contract to use the Internet. No installation work is required to set up the terminal. It simply needs to be connected to the power supply. (3) Cards can be created for respective purposes. (This is not an exclusive system for specific service providers. The system makes it possible to take full advantage of the community resources by creating cards.) (4) Elderly persons can notify their physical condition by using the “I’m Fine” card. This is a new participation type watch-over system. (If the terminal is not operated for three days, a message that the terminal has not been used is sent to the manager.) (5) Any message can be entered from the management screen (e.g., daily life information, community information, call for attention). Aural messages can be given from the terminal. A sense of security can be given to users by offering information that is closely linked to their daily lives. (6) To use the terminal, it is only necessary to submit an application form (sheet of paper). It does not require troublesome registration using a PC.

5. System Configuration and Management Application

The overall configuration of the elderly support system is as shown in Fig. 3. The data of the terminal usage by elderly persons is sent to PCs and smartphones of the council of social welfare and supporters. The community data are collected and accumulated in the cloud. Needs for the service can be created through use of the data.

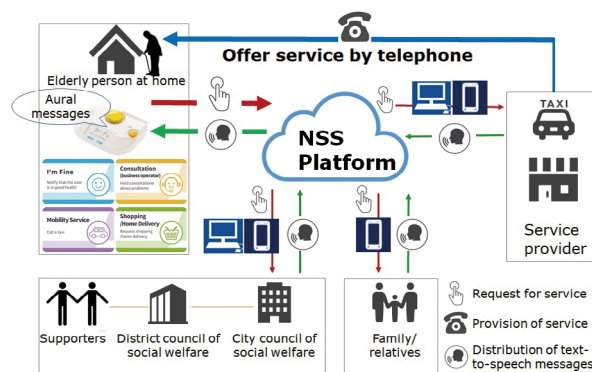


Fig. 3. System configuration diagram of the elderly support service

The management screen (web application) presents information in a visually understandable manner and ensures operability to support the activities of the supporters.

(1) The status of use of the terminal by users can be checked at a glance to enable day-to-day watch-over. When the terminal is not used for a number of days set by the administrator, a message is sent to the PCs and smartphones of supporters to prompt a visit or contact.

This helps raise awareness about the user’s activities (Fig. 4).

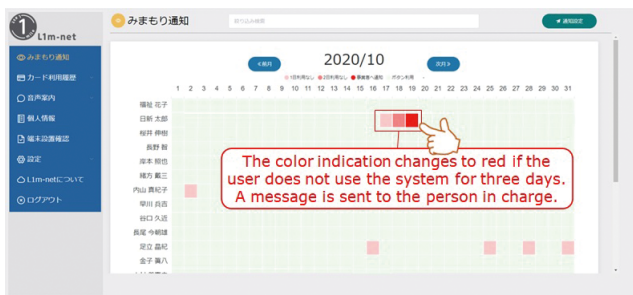


Fig. 4. Watch-over management screen

(2) When sending an aural message (e.g., daily life information, community information, or call for attention), the target terminals are designated, and the date and time to send the aural message are designated. Aural messages can be sent easily. It is also possible to make periodic reservations based on the calendar. Periodic messages, such as the date of disposing of waste, can be set easily (Fig. 5).



Fig. 5. Aural message registration screen

6. Results of the Demonstration Experiment in Kurobe City

In the Kurobe City demonstration experiment, which started in October 2019, 40 households of older senior citizens used the terminal.

The usage rate of the “I’m Fine” card, which is used by elderly persons to voluntarily report their physical condition, was high (78.2%). Supporters who felt that the terminal would help reduce the time and workload of the support activities accounted for 94%. The results showed that the terminal was highly satisfactory.

The demonstration experiment in FY2020 targeted commissioned welfare volunteers (i.e., supporters). The scale of the experiment was expanded to 80 devices and 300 people in total.

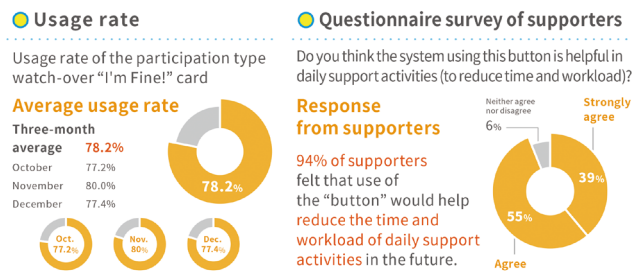


Fig. 6. Data of the Kurobe City demonstration experiment

7. Conclusion

The elderly support service aims to collect the terminal usage data and build a community communication platform in coordination with healthcare devices and sensors. It will horizontally connect the support service, which is vertically segmented, by sharing the data with local hospitals and local governments.

There is also a plan to apply the service to other fields to revitalize communities, such as collaboration with home medical care, watch-over of disaster-affected areas (those affected by disasters of extreme severity, including typhoons), and collaboration with services in the private sector.

Technical Term

*1 “Kurobe Net” project: The “Kurobe Net” project is a comprehensive watch-over support program organized by the Kurobe City Council of Social Welfare to give a sense of security to all residents in their daily lives.

Contributors The lead author is indicated by an asterisk (*).

M. YAMAZAKI*

• Division Manager, NISSIN SYSTEMS Co., Ltd.



T. NOMURA

• Senior Chief, NISSIN SYSTEMS Co., Ltd.



N. MORI

• Chief, NISSIN SYSTEMS Co., Ltd.

