

# タイトル; e-Government for Aging Society-a Case study of Japan

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One of the challenging aspects of e-Government implementation is to ensure inclusion of elderly population for them to access the benefits of information society and enhance their quality of life. This becomes particularly important given an increasing pace of ageing in European countries and Japan. Inclusion of elderly people in e-Government, however, has a number of obstacles to overcome as age is recognized to be a significant demographic variable that is related to the usage of online telecommunication tools. This study is an initial step of the research project that aims to assess e-Government readiness in Japan for inclusion of older members of its society to benefit from new communication opportunities. This paper reports intermediate results of e-Government readiness analysis based on two operational categories: institutional readiness and technological readiness.

**Key words:** aging society, e-Government, e-inclusion, elderly people

## e-Government for Aging Society—A Case Study of Japan

### 1. Introduction

The general background to this study derives from demographic aging phenomenon resulting from two almost universal trends: declining fertility and increasing life expectancy (Muenz, 2007). Japan's aging process is marked by its high speed relative to international standards. According to the government statistics in 2005 Japan became the fastest-ageing society when the ratio of elderly people came to 20% (Fuyuno, 2007). The elderly population is projected to increase by 7.7 million between 2008 and 2020. It is attributable to a continuous decline in the total fertility ratio and to extension of longevity to the top level in the world (Yashiro, 2008).

Prospects and consequences of demographic challenges are widely discussed in the aging countries in the contexts of replacement migration and employment protection policies; necessary changes to be done in pension regimes and health care systems; and the potential offered by Information and Communication Technologies

(ICT) for enhancing quality of life through sustaining independent living and providing opportunities for greater democratic and societal engagement (Muenz, 2007; Yashiro, 2008).

The search for appropriate measures to exploit ICTs to benefit senior people is increasingly being discussed in relation to eGovernment paradigm, produced by modernization of public services on the basis of the capabilities offered by ICTs (Niehaves *et al.*, 2009; Shirley, 2004; Chen, Dorsey, 2009). ICTs provide governments with new and powerful tools, which enable more convenient, friendly, transparent, inexpensive and faster communication with citizens. However this potential is needed to be exploited to ensure the benefits of technological innovation are delivered to all society.

e-Government can considerably support the independent life style of the elderly, as physical presence and waiting at government institutions is no more necessary, while active participation in politics and in other decision making processes can be easily accessed. Exploring opportunities for elderly in the area of public services receives a lot of concern in Japan. The government at national and local levels are looking for the measures to transform e-Government to become accessible to and meeting the specific needs of a growing number of older persons who are found to be willing and economically able to secure independent living (Usui, 2007).

The transition to inclusive e-Government requires certain preconditions which constitute the basic elements of the readiness of e-Government for inclusion of older generation. These preconditions include technological, institutional and user-oriented readiness (Antiroiko, 2005). This study is an initial step of the research project that aims to assess e-Government readiness in Japan for inclusion of the older members of its society to benefit from new communication opportunities. The overall readiness assessment will be further used as a strategic tool for elaboration of appropriate measures for the development of inclusive e-Government in Japan. The paper reports the assessment results of two operational categories: technological readiness and institutional readiness. The paper is structured as follows: Section 2 discusses the challenges of inclusion the elderly citizens in e-Government. Section 3 analyses current government initiatives addressing challenges of ageing society in Japan. Technological readiness analysis including availability of special infrastructure, devices and interfaces, services and applications accessible for senior people in Japan are presented in Section 4. Section 5 concludes the paper with a summary of intermediate assessment results and outline of directions for future research.

## **2. e-Government for the senior people: Implementation challenges**

Inclusion of elderly people in e-Government has a number of obstacles to overcome as age is recognized to be a significant demographic variable that is related to the usage of online telecommunication tools. Older people are less likely to be familiar with computers and the Internet, and as a result are being more comfortable using traditional methods of communication with authorities. Moreover, applications and services are often designed for a “standard” user and do not consider ICT maturity (digital skills) and special requirements of senior people.

**Table 1** Age dependent changes in vision and auditory abilities

	Vision	Hearing
<b>Changes where ability decreases with age</b>	<ul style="list-style-type: none"> <li>• visual acuity (ability to resolve detail);</li> <li>• visual accommodation (ability to focus on close objects);</li> <li>• color vision (ability to discriminate/perceive shorter wavelengths);</li> <li>• contrast detection (ability to detect contrast);</li> <li>• dark adaptation (ability to adapt quickly to darker conditions);</li> <li>• glare (susceptibility to glare);</li> <li>• motion perception (motion estimation);</li> <li>• peripheral vision (width of field narrows).</li> </ul>	<ul style="list-style-type: none"> <li>• auditory acuity (ability to detect sound),</li> <li>• auditory localization (ability to localize sound),</li> <li>• audition in noise (ability to perceive speech and complex sounds).</li> </ul>
<b>changes where ability increases with age</b>	<ul style="list-style-type: none"> <li>• illumination (required light-increases with age);</li> </ul>	

Source: Holzinger, A., Searle, G., & Nischelwitzer, A., 2007.

Holzinger *et al.* (2007) associate the usability and accessibility challenges with 4 main problems of the elderly people: cognition, motivation, physical impairments and perception.

Most of the features in today's ICT-based services demand good eye sight and fine motor skills to use them easily which often lacks in individuals on the prime of their age. Majority of the people above 60 suffer from disabilities like difficulty in viewing objects and print in close proximity, hearing speaker sounds, muscular degeneration, glaucoma, cataracts, or diabetic retinopathy. The table below illustrates some common changes in vision and audition perceptions which occurs with age.

Besides perception difficulties elderly may have some physical impairments. There are a number of common illnesses classified as age-related, for example a rheumatoid arthritis, which is shown to cause isolation and depression in the elderly and sometimes hinders the use of technological innovations which could help reduce the isolation caused by lessened motor activity. Other effects of aging include slower response times, coordination reduction and loss of flexibility. There are five distinct human factors which show measurable disparities between older and younger people: learning time or time to perform task, speed of performance, error rate, retention over time and subjective satisfaction. Combination of physical and perceptual impairments may contribute to a loss of confidence, which leads to difficulty in the absorption of information and results in unwillingness to use ICTs for social and political purposes (Holzinger *et al.*, 2007).

Moreover older users also have problems understanding the technical meaning of the menus and help descriptions due to lack of knowledge of recent technologies and cognitive disabilities. The usability of the application essentially supports the acquisition of new knowledge procedures in order to operate and interact with the application properly (Holzinger *et al.*, 2007). Since cognitive performances slows down with age, elderly people have difficulties interpreting what is seen or heard

and difficulties making mental connections between different pieces of information, or have trouble with abstract reasoning. The type and degree of cognitive impairment can vary widely. Most common cognitive impairments are dyslexia, dyscalculia, learning and language disabilities, and dementia (Hellman, 2007).

Another problem of elderly with using ICTs for communication with public authorities arises from motivation. Though mobile and electronic services are considered today to be more convenient and faster than traditional services, for elderly people they seem to be difficult to use, complicated, not as safe or reliable as traditional services (Ahituv *et al.*, 2008). One portion of motivational barriers relates to attitudes and beliefs created with respect to the general use of ICTs for communication with public institutions. Older generation is not familiar with ICT and therefore unaware of the value they can deliver.

Elder people can also have attitudinal barriers stating that they do not need the ICTs. Researchers relate the lack of interest to the usage of ICTs with low expectations about measurable benefits and low confidence in own learning skills (Ahituv *et al.*, 2008; Holzinger *et al.*, 2007). This is supported by other studies which found that older adults are motivated to use applications when they are sufficiently informed as to the resulting benefits. Moreover, Holzinger *et al.* (2007) refers to the research showed that older adults tend to lose concentration easily and become bored with the subject, as result of anxiety that is based on the mistaken distrust in one's own capabilities. Thus, the unwillingness to use information technologies is motivated by both unawareness of benefits and value they could bring along with reluctance to learn a skill, which is seemed to be difficult to acquire and requires special knowledge.

These challenges of using modern technology can be nevertheless resolved through introduction of measures promoting accessible interface design and motivation. The next section presents analysis of the ICT policies implemented by the Japanese government in attempt to address the challenges of inclusion of older people in e-Government.

### **3. Institutional environment: General policies and regulations**

To address the challenges of ageing-society, active inclusion of the ageing population in social and economic life became the key policy target in Japan. The challenges of aging society are being addressed by the government in general policy areas as well as in specific legislation and regulations concerning universal design and accessibility standards.

Among general policies addressing aging society challenges are e-Japan strategy pursued since 2001, and the New IT Reform Strategy adopted by the government in 2006. The aim of e-Japan is to create a “knowledge-emergent society,” where everyone could actively utilize information technology (IT) and fully enjoy its benefits. The e-Japan Strategy consists of four priority areas: 1) building an ultra high-speed Internet network and providing constant Internet access at the earliest date possible, 2) establishing rules on electronic commerce, 3) realizing an electronic government and 4) nurturing high-quality human resources for the new era. Among the features of ideal IT society this documents mentioned social participa-

tion where physically handicapped and the elderly will be able to take part in society more easily, and volunteer or other social activities will be more readily available. The following measures for bridging “digital divide” have been declared “e-Japan Priority Policy Program—2003”: 1) Ensuring the accessibility of electronic government as a task of each central government agency and 2) Providing support for ensuring the accessibility of local public agencies and other public areas, as a task of the Ministry of Internal Affairs and Communications (Koga, 2006).

These measures were reinforced by specific policy programs and legislation emphasizing the necessity of the web accessibility of e-government. The Basic Law on the Formation of an Advanced Information and Telecommunications Network Society enacted in 2000 and the Persons with Disabilities Fundamental Law amended in 2004 request the states and local authorities to undertake necessary measures to spread information and communications equipment which are easy to use for people with disabilities (Yamada, 2007).

The “Basic Program for Persons with Disabilities,” issued by the Cabinet Office in 2002, declared “the guidelines for designing accessible telecommunication equipment for persons with disabilities should be standardized by JIS.” As a result, Japanese Standards Association issued a series of accessibility standards known as Guidelines for older persons and persons with disabilities—Information and communications equipment, software and services. They include five components: (JIS X 8341-1: 2004) “Common Guidelines,” (JIS X 8341-2: 2004) “Information processing equipment,” (JIS X 8341-3: 2004) “Web content”, (JIS X 8341-4: 2005) “Telecommunications equipment” and (JIS X 8341-5: 2006) “Office equipment.”

Other government initiatives have also taken place to promote online access to government resources by elderly citizens. The “Development Plan of Electronic Government” issued by the CIO Council of the Government of Japan in 2003, declared “securing universal design” as one of the eight core principles of e-Government. The revised version of the “Basic Plan for Electronic Provision of Administrative Information” issued in 2004 urges central government agencies to revise and maintain their Web contents along with Web accessibility standards defined in JIS X 8341-3 (Koga, 2006). The above mentioned Persons with Disabilities Fundamental Law also requests local governments to develop accessible websites (Yamada, 2007).

In 2006 the government issued The New IT Reform Strategy as a new general policy program of the IT society in Japan. This program outlined the measures for realizing a society in which: 1) the aged are able to live their remaining days with purpose; 2) all people have access to high-quality and efficient medical insurance, medical care and social services of life; 3) all persons including senior citizens, the disabled, can obtain education whenever they want to learn and can work whenever they want, thereby promoting social participation, and to raise the quality of services that will support such persons to transform society into one where all persons can enjoy healthy, prosperous, and active lifestyles.

One of the core measures of the policy package was creation of support systems for ICT usage for elderly and disabled through promotion of universal design adoption: creation of guidelines for the standardization methods of operation of

devices and terminals and the promotion of user-friendly web sites (Koga, 2006). To achieve objectives defined in the program, the government set up special study groups (such as Strategic Council on Bridging the Digital Divide, Study Group on Broadcasting for People with Visual and Hearing Disabilities in the Age of Digital Broadcasting *etc.*) comprised of the experts from both government and private sector. The efforts of these groups were mainly focused on infrastructure projects.

In 2006, the Japanese Government launched its u-Japan strategy based on the e-Japan strategies and The New IT Reform Strategy. The “u” in u-Japan represents the “u” for “ubiquitous,” “universal,” “user oriented,” and “unique,” shifting the focus on the user in Japanese IT policies. There are three policy directions taken under this initiative: (1) development of the ubiquitous network infrastructure, (2) ICT utilization to resolve the emerging economic and social problems Japan will face as it moves towards the 2010s and (3) establishment of a safe and secure usage environment (ITU, 2005).

Since initiation of the e-Japan Strategy in 2001, the government was involved in different infrastructure activities resulting in steady development of broadband networks and establishing interconnectivity and interoperability between them. These has given a rise of a wide range of mobile and ubiquitous services available in Japan such as digital wallet services, mobile digital music, portable TV *etc.*

While the ubiquitous network is continuously being developed, the government tries to address the second aspect of u-Japan policy. In order to stimulate use of the ubiquitous network for solving social problems, the Ministry of Internal Affairs and Communications in 2006 began awarding the “u-Japan Best Practice Award” (Murakami, 2008). The prizes are awarded to practical models of information and communication technology services and systems that provide the answers to a variety of problems in everyday personal and business life. Variety of solutions are being developed and proposed by different players including not only ICT companies, but also universities, communities and medical institutions. “The more promising are the solutions, the higher the priority that is given to their dissemination throughout the country” (Murakami, 2008). Very few of them however have been developed specially for the elderly, though many possess indubitable value for the senior people.

Among one of the last awarded projects with a direct link to e-Government and e-awareness was community-based data broadcasting service. “As a regional cable TV station, it provides information closely connected to the life of the citizens via data broadcasting, such as announcement from the municipal government, town meeting, school, *etc.* as well as community information on the website” (MIC, 2007). This service might be especially beneficial for the elderly people for whom TV continues to be the most familiar mean of information acquisition (MIC, 2008).

The third direction of u-Japan policy relates to “the most vulnerable issues of the usage environment,” namely safety and security (Murakami, 2008). Japanese government identified 104 “vulnerable” issues that the ubiquitous networks can possess. They refer to privacy, information security, illegal and harmful content, measures for intellectual property rights, information literacy, the geographical divide and ecological considerations. To solve the first three problems, strategy

assumes such measures as strengthen security by amendment of current legal system that regulates communications and broadcasting and by user education and training. These measures also aim at elimination of the negative perception of elderly population towards online provided services including e-Government services as being not secure or not private and reliable as traditional services. Provision of assisting training on the use of internet for accessing e-Government services will allow resolving the problem of trust and low confidence in own learning skills inherent to senior people.

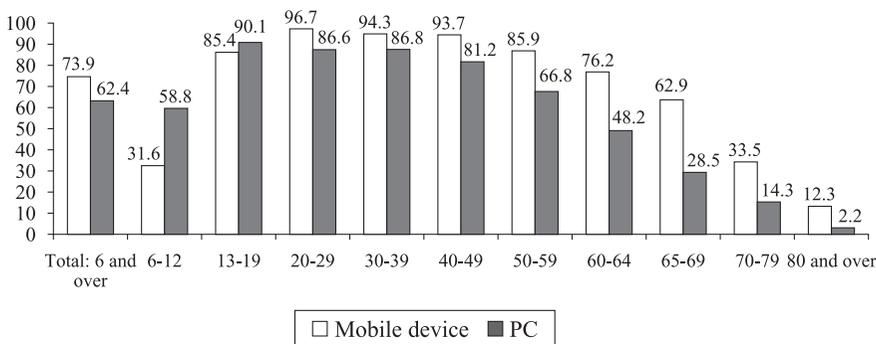
Among other general policies addressing aging society challenges it is worth noticing the long-term policy roadmap on innovation called “Innovation 25,” adopted by the government adopted in 2006. It calls for greater working opportunities for the elderly; progress in health care enabling elderly people to enjoy life without worrying about physical handicaps; advances in sensing and monitoring technologies enabling children, and the elderly or handicapped to live a safe, secure and comfortable life.

#### 4. Technological readiness

##### *Devices and interfaces*

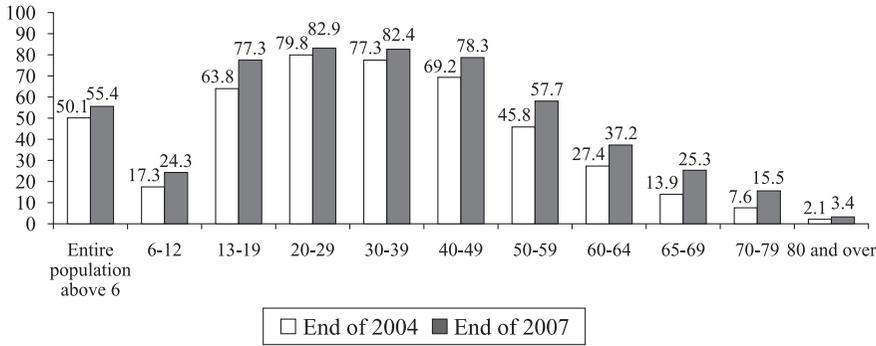
Elderly people are a segment with the lowest usage of PCs and Internet lagging behind their younger counterparts. Mobile phones on the contrary are rapidly becoming common property. Older people in Japan are increasingly becoming owners of mobile phones. The rate of mobile phone usage at the end of 2007 was over 60% for the late 60s age group (Ministry of Internal Affairs and Communications, Japan, 2008). The generational gap for PC usage is wider than for mobile phone usage as the use of PCs demands a fair amount of knowledge or “digital skills” lacked by older people. As can be clearly seen at Fig. 1 the rate of PC usage was over 80% for people aged 13 to 49, whereas it dropped to 66.8% for the 50s, 48.2% for the early 60s and 28.5% for the late 60s. As for the mobile Internet usage, there is a significant growth during the last three years among those aged 50 and older (MIC, 2008).

Growing uptake of mobile phones by senior people in Japan has been fostered



**Fig. 1** Usage Rates of Mobile Phone and PC by Generations (Individuals) in Japan as the End of 2007.

Source: Ministry of Internal Affairs and Communications, Japan, 2008.



**Fig. 2** Usage Rates of Mobile Phone Internet in Japan.  
 Source: Ministry of Internal Affairs and Communications, Japan, 2008.

by incorporation of Universal Design principles by mobile phone manufactures that came to realize the significant market opportunities brought by the needs and lifestyle aspirations of its ageing society. Universal Design models embedded individualized Universal Design principles using as the starting point seven principles introduced by The Center for Universal Design (The Center for Universal Design, 1997). The extensive use of Universal Design by manufacturing industries in Japan is believed have been encouraged both by the activities of the International Association of Universal Design (IAUD) and “some deeper-seated factors within Japanese corporate culture or values within its society as a whole.” Among these factors Macdonald mentions (Macdonald, 2007):

- 1) the tradition of relatively stable lifetime employment in Japanese corporate culture,
- 2) the creation and sustained support of a cohort of young and dynamic design managers informed in UD principles and philosophy,
- 3) the absolute devotion to understanding and satisfying the customer, and
- 4) the engagement of users through specialized user research tools.

In order to compensate for the challenges of physical and cognitive impairments, manufactures have introduced simple physical designs of mobile phones and multi-modality options for input and output. Large fonts and high contrast is used to increase accessibility for users with vision impairments. Voice on the web makes content accessible for people with dyslexia or other learning disabilities and people with impaired vision (Hellman, 2007).

Introduction of universally designed mobile phones was pioneered with Raku-Raku phone by NTT DoCoMo in 2001. NTT DoCoMo’s strategy with the Raku-Raku phone concept has been built on three fundamental—easy to read, easy to hear, easy to operate (NTT DoCoMo, 2008). The simple and easy to use interface has been achieved by providing big buttons, enlarged font size, easily viewable display, features to support visual functions, audio features such text reading and voice-activated call feature based on recognition technology (Irie *et al.*, 2005). The mobile phone continued to evolve through a series of generations introducing more features to increase usability for elderly. Some mobile phones have a camera which is to be used as a ‘magnifying’ device for reading text, “Slow Voice” features to slow

down the callers speech, “Clear Voice” noise reducing feature to filter out the ambient noise to make the call clearer and adjust the ringtone volume to suit. Text messages, emails and web pages are also possible to be read out using an automated voice service as are incoming calls (Altoft, 2007).

Another group of mobile phones targeted at senior people allows one to do only four basic things: turn it on, turn it off, dial a number and accept a call. These phones have regular numeric keypad and one button dialing capabilities which are suitable for the older people. Some models have “technically appropriate sound quality and volume adjustment for older hearing capabilities” (Macdonald, 2007).

Generally, it is enough for private companies to follow JIS standards voluntarily. However, telecommunication equipment supplied for the government use must to be designed with consideration for ICT accessibility determined in the series of existing standards. The government authorities require the companies participating in tenders to explain how the national accessibility standards are met.

As for accessibility of web content for the elderly, in spite of policy initiatives that urge government agencies to secure web accessibility, these measures are found to have little impact (Koga, 2006). Though there are some good examples of government portals developed in compliance with the guidelines, most of the portals still lack a lot of functions important for elder users such as changing font size of the text, changing spacing between words, vocalization of the text; changing color to negative polarity color scheme; multimedia tutorial for usage of the site *etc.* (Obi, 2009). Besides organizational problems within central and local government, one of the main reasons is related to the fact that website development for these central and local governments is usually contracted to system integrators. System integrators develop both special software for governmental websites and web accessibility checking tools. In this situation it is difficult to ensure the extent to which a contractor is capable and qualified to meet web accessibility standards (Koga, 2006).

### ***Services and applications***

It is recommended the needs of older people with regard to quality of life in highly developed countries be classified into five groups: needs for health, safety, independence, mobility and participation (Malanowski *et al.*, 2007). Needs for health are the most acute as they determine to a large extent all the aspects of human life and connected with the rest of the needs. The needs for personal safety, mobility and independence are often challenged by health conditions that are usually worsen with old age. Mobile companies along with the local governments are quite active in developing services and applications addressing these particular needs of elderly people.

One of the most popular services is location-based service originally introduced by NTT DoCoMo, which allows finding or monitoring old people unable to take care of themselves. Accurate location information is provided on maps accessible through both PC and mobile phone if the person you are looking for has a GPS-compatible FOMA handset. Even if the other person does not have a GPS-compatible FOMA handset, the service allows getting maps with approximate location information acquired from base stations. Mobile communication service

oriented toward elderly safety needs is also reflected in au-KDDI's Helpnet which is a one-button push emergency service to signal the location of the caller (Abe, 2006). Both services are meant to be used during emergencies caused by health conditions and natural disasters.

Since the services provided by mobile carriers are targeted and restricted only to i-mode users, local governments are making efforts to enable wider access of elderly people to the services. One example of such efforts is "Hometown Cell Phone Project" run by the local governments in cooperation with the Ministry of Public Management and NGOs. The aim of this project is to investigate needs of the citizens living in the city and to provide corresponding services through established local Mobile Virtual Network Operator. The most widespread service offered for senior people is a one-button push emergency service that connects senior people and private centers that are operating 24 hours. In case of emergency, nurses call the relatives and request ambulances to check health condition of a caller. This service is not necessarily provided through mobile phones. In Koto town, the service is available through special devices installed in houses of old people who are chronically-diseased or require assistance in daily activities but live alone or stay at home alone during a day.

These location finding services are supplemented by two-way communication during natural disasters and other emergency situations and health consultation. These services are available in Miyoshi City in Tokushima Prefecture, Miyazu City, Kyotango City, Ine Town, and Yosano Town, Sumida Town.

Service usage fees along with the use of mobile phones and other necessary technologies are often subsidized by local governments to reduce financial burdens of senior people. For example, Iga City in Mie prefecture pays for contract deposits for the service and for its setting up fee, Isahaya City provides the elderly with portable communication terminal equipments, while Shinjuku-town subsidizes usage fees of remote terminal equipments.

Another example of monitoring services include alerts to family or local authorities in case of changes in the well-being of elderly who live on their own or with other elderly people. Such monitoring services use ICT to transmit data from a sensing system without putting any burden or stress on the individual being monitored. Each sensor recognizes a resident's movements and sequentially sends the information to a center appointed by municipality. Emergency report is sent automatically when a sensor cannot recognize any movements of a resident for a given length of time.

Other solutions developed for the elderly people provide preventive health care support to help maintain the health of elderly people who do not require care directly. ICT is used to connect elderly in their homes with a professional caregiver or rehabilitation center. This system enables participating members to communicate among themselves and to receive instruction on exercises that help to maintain sense of balance and avoid injurious slips and falls. To promote the deployment and use of these systems by local authorities, university hospitals throughout Japan, company conducted several field tests during 2007 (NTT Group, 2007). Currently this service is available in Tsuruga City.

Telemedicine Centers is another prioritized direction of healthcare service delivery for the seniors. It is predicted that aging would occur more rapidly in sparsely populated areas than in urban areas. At the same time, only medical institutions in urban areas tend to have advanced medical facilities. This means that senior patients who live in rural areas need to travel far in order to get treatments, which is quite problematic given possible mobility concerns. To reduce a medical care gap between rural and urban areas local governments in Japan are establishing telemedicine network centers that use advanced telecommunication equipments to meet citizens' expectations. Telemedicine Centers are currently available in Asahikawa Medical University Hospital in Hokkaido, Chiba Prefecture Togane Hospital and in Kagawa Medical Association.

Preventive health care services are also made available through one of the latest models of Raku-Raku phones. The model has health management features, such as a built-in pedometer and heart-rate meter. It is designed to link with an external scale and blood pressure meter *via* an infra-red signal port, enabling the compilation and analysis of the user's medical data in graph form. The data is analyzed, and then health advice is given to the user (NTT DoCoMo, 2008).

Another area is service provision is emotional support that helps to relieve the loneliness of those who live on their own or link them with other family members. One such solution is NTT's Life Support—a communication service in which volunteers and professional caregivers are communicating from their homes via broadband videophone to connect with and listen to the cares and concerns of elderly people living on their own (NTT Group, 2007; Abe, 2006).

Aside from services addressing health and safety concerns, senior people have natural desire for participation, for being active members of the society and to have their importance to the society tangibly confirmed. To address this need and enable social and political integration of senior people the governments should ensure a genuine access to data and bring citizens closer to administration, service delivery, decision and policy making.

Democratic political participation must involve the means to be informed, the mechanisms to take part in the decision-making and the ability to contribute and influence the policy agenda. There can be a one-way relationship in which government produces and delivers information for use by citizens, a two-way relationship in which citizens provide feedback to the issues submitted by the government for consultation, and a relationship based on partnership with government in which citizens actively engage in defining the process and content of policy-making (Macintosh, 2004).

In Japan, formal tools for enabling citizens to engage with their government are quite limited. The main mean for soliciting citizen comments is Public Comments System, which the government established in 2005 (Accenture, 2008). Though Public Comment System does not have legal binding, each Government must provide an opportunity for public on procedural participation in process of political decision-making by public comment system under the basic law on reform of the Governments. However this system to date has not been proved to be effective in encouraging citizens input. In particular, it has been found: (1) solicitation for

comments comes late; (2) comments induce little change; (3) public comments receive no attention; and (4) business groups send a bulk of the comments, while the citizens use is low (Nakamura, 2007).

In spite the means of introducing public comments are mostly limited to feedback options available at public websites, such as e-mails to governor, mayor, public relations section there are some examples of more sophisticated mechanisms of e-participation. The best examples include Fujisawa city and Mitaka city which implemented a system for adopting proposals from e-forums. E-Forum of Fujisawa being the first e-Forum in Japan served as a means for discussion of the overall city administration. e-Forum established in the city Mitaka aimed to collect citizens' views about what policy goals should be set within the new Master Plan of the city. E-forum involved e-symposium and e-community carte.

E-Symposium was organized to discuss the principal policy goals identified based on prior conducted surveys. The animated recording and minutes of the symposium were distributed via internet so that those citizens who could not attend the symposium but were interested in the subject could see the content of discussion and make comments if they wish (Horita, 2005). E-Community carte was aimed at collecting on-site information relevant to urban policy, such as dangerous crossings etc. All these views and information that was collected through e-forum were examined by policy-makers, who attempted to incorporate these responses into the final revised Master Plan.

Aside from low contributions in the form of opinion posting and making proposals based on discussions, both projects didn't reach a key objective of e-participation, namely of inviting previously non-engaged citizens to express their views (Horita, 2005; Shinkai, 2005). Those users of e-forums who did contribute to the discussion are the citizens who have already been active in various community activities. This has a direct consequence for the inclusion issue as the main idea of using of ICT is to reach the wider audience supporting those who would not typically access the internet and take advantage of the large amount of information available (Macintosh, 2004). This requires provision of relevant information in a format that is both more accessible and more understandable for less experienced users and users with disabilities. This brings us back to the problem of accessibility of web sites and offered applications, suggesting more efforts are required to improve government services both in terms of accessibility of web content and as to offer means for e-participation.

In addition to accessibility problems, prospects for inclusion of senior people in e-participation processes in Japan are facing problems of e-literacy. Along with special functions allowing elder users changing font size, spacing and vocalization of the text, older users may benefit from multimedia tutorials for usage of e-government services and special training for learning how to use PCs. Availability of both accessible websites and assisting trainings on the use of e-Government applications is not uniform across Japan, comprising excellent and poor examples depending on each particular case.

## 5. Conclusion and future directions

In the light of fast approaching and almost global phenomena of aging Japanese government has made great progress in terms of developing policies aimed at promoting accessibility of ICTs and e-Government services to meet the needs of its aging citizens. In spite some challenges remain, Japanese efforts in this area might serve to other countries as a good example of e-Government transformation policy for inclusion of older members of its society to benefit from new communication opportunities.

Implementation of accessibility policies has been especially beneficial to the development of mobile phones and applications that address older people's needs for health and safety. High uptake of mobile services among the elderly population was possible due to accessible mobile phones and content offered by mobile communication industry, which came to realize the significant market opportunities brought by the needs and lifestyle aspirations of its ageing society. Since the services provided by mobile carriers and targeted and restricted only to their customers, local governments are playing key role in enabling wider access of elderly people to these services. The latter is achieved by subsidizing service usage fees along with the use of mobile phones and other necessary technologies and launching the projects aimed at identification of new service opportunities for bringing value to seniors. Given a wide and constantly growing use of mobile technology by elderly people, mobile phones seem to be a very promising means for reaching senior citizens with other government services as well. Mobile dimension for provision of administration services to date remains unexploited. Although present e-Government framework stipulates development of ubiquitous government services for the elderly people, it lacks more concrete measures promoting their development. Additional channels such as interactive digital TV must be also considered to achieve social and political integration of senior people. At the same the government services provided through PC based access lack means for introducing public participation and civic engagement. These initiatives should receive a stronger legislation support and should be prioritized in the strategic action plan for e-Government implementation.

Significant efforts have been made by the government to make its public web sites accessible to elderly people and people with disabilities. As result websites of central government and local government are steadily being modified as to comply with national accessibility standards. This however needs to be further strengthen by introduction of special measures to ensure uniform adoption of the accessibility standards by all government units.

More efforts are also needed to be focused on provision of various assisting trainings on the use of e-Government applications to resolve the motivation problems of the elderly arising from low trust and confidence in own learning skills. This step however will be challenged by a lack of understanding of user needs, lack of studies and surveys on the user segments. Assessment of user-related readiness to utilization of ICT based innovations and services supporting social and political participation, is therefore an indispensable task for the next step of our research. This research will add to our current understating of the barriers preventing the use

of eGovernment services in Japan, incentives to democratic and societal engagement and identification of new areas of opportunities, which involve the unmet needs and wants of elderly people.

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