Case Report
Senior PC Volunteers introducing MICT

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(MIC member of Super-aging society design council)
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Meiji University, Tokyo, Japan

ISMICT 2013
7th International Symposium on Medical Information and Communication Technology (ISMICT)
Senior PC Volunteer since 1995

Routeku Project has been fostered
Senior PC Volunteers to support the
older adults, elderly people with
disabilities and caregivers at home

Routeku means Technology to help
Elderly. (Ms. Oshima, president of
Routeku Project, named 1992)
The Photo shows Ms. Oshima and her
sick mother Kiyo watching the Internet
Hinamaturi on TV Phone by
RakurakuPhone (docomo)
She enjoys beautiful dolls from Kyoto
And conversation with friends there.
Senior Citizen and ICT

Senior (age over 65) receive many benefit from ICT.
But They do not know ICT?
Not easy to get ICT?
Not easy to learn ICT?
It is rapidly changing now.
Japan - Super Aged Society

Report on Super-Aging Society and ICT & Perspectives in the E-health Policies
Mr. Yasuo Sakamoto
Ministry of Internal Affairs and Communications (MIC)

Data and Information from
MIC Super-aging society design council
Japan’s population aging rate is at the highest level among advanced countries, and is expected to reach 40% by 2050. This phenomenon is also expected to arise in the BRICs nations, which are currently experiencing advanced economic growth. In the latter, said rate is projected to grow rapidly from here onwards to reach approximately 30% by 2050.
The rate of Internet usage is 79.1% (96.1 million people). Looking at the rate of Internet usage by age group, the rate of usage for individuals aged 65 and up has a tendency to be up.

Source: “2011 Communications Usage Trend Survey,” MIC
# Shifts in the Profile of Aged Individuals and Their Styles of ICT Utilization

<table>
<thead>
<tr>
<th>Perception according to surrounding people</th>
<th>Representative Style Up Until Now</th>
<th>Style Foreseen for the Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uninformed individuals</td>
<td>Social mainstreamers</td>
<td></td>
</tr>
</tbody>
</table>

| Experience in ICT use                      | Practically none                 | Common ICT use              |

| Purpose behind ICT use                     | Desire to use PCs or the Internet | Everyday use of ICT as a tool |

| Core element of utilization                | “Senior Net” websites, IT workshops, digital photography, BBS | SNS, blogs, NPOs, SOHO      |

| Relations serving as basis                 | Fellow senior citizens teaching each other | Cross-generational exchange in which knowledge and experience are leveraged |

<table>
<thead>
<tr>
<th>Key words pertaining to utilization</th>
<th>Purpose in life</th>
<th>Determining one’s own “way of life”</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCs as a hobby</td>
<td>Taking advantage of ICT with a purpose in mind</td>
<td></td>
</tr>
<tr>
<td>Forming friends/acquaintances and engaging in social exchange</td>
<td>Region-building and role formation</td>
<td></td>
</tr>
<tr>
<td>Spreading of interests</td>
<td>Enrichment of wide range of activities</td>
<td></td>
</tr>
</tbody>
</table>

Coping with a Super-Aged Society

**Working and Income**
- Telework
- Job matching (new employment system)
- Support of diverse working styles
- Work-life balance etc.

**Health Care and Welfare**
- Regional health care partnerships
- Telemedicine
- Monitoring services
- Health assistance
- Nursing care robots etc.

**Living Environment**
- Ubiquitous residences; home information appliances
- Smart cities
- ITS
- Demand Responsive Transport (DRT)
- Online shopping
- Barrier-free; universal design
- Electronic national and local government
- Safety and security in times of disaster etc.

**Communication, Learning and Social Involvement**
- Ubiquitous Network Robots
- Lifelong learning
- Taking advantage of SNS etc.
- Community and volunteer support etc.
### Healthcare support by ICT Utilization (Smart Wellness City Project) - Niigata City, Niigata Prefecture, etc.

<table>
<thead>
<tr>
<th>Project outline</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Data collected by advanced pedometers are accumulated in the health cloud and analyzed to automatically create healthcare guidance programs in accordance with each person's lifestyle (exercise and diet). The state of achievement of program is fed back thorough a digital photo frame in each home to encourage busy workers to participate in fitness activities.</td>
<td></td>
</tr>
<tr>
<td>The physical fitness of participants improved more than 2.5 years after efforts made during 3 months and more than 40% of participants showed improvement of body composition.</td>
<td></td>
</tr>
<tr>
<td>2. In order to prevent solitary elderly persons from staying all the time in their home, a monitoring system is established and used so that their families living in remote places can monitor their activities. This contributes to active communications among family members.</td>
<td></td>
</tr>
<tr>
<td>- The number of communications via telephone, etc., increased by 35% in the case of participating families. - 10% of target elderly persons participated in healthcare classes by their own initiative.</td>
<td></td>
</tr>
</tbody>
</table>

### Effective use and utilization of ICT realizes continuous healthcare guidance and observation in accordance with each person’s lifestyle.

#### Promotion of participation in healthcare programs
- Participation of 550 workers, etc.
- Information can be shared among family members as a living terminal

#### Prevention of isolation of solitary elderly persons
- 20 solitary elderly persons and their 20 families participated
- Families living in remote places
- Support for preventing isolation is provided by checking the state of living activities
- Healthcare classes
- Participation
- Healthcare classes

### Diagrams:
- **Lifestyle engine**: Data collected by advanced pedometers is analyzed by the health cloud. Healthcare guidance programs are automatically created in accordance with each person’s lifestyle.
- **The health cloud**:
- **Workers, etc.**: Information is shared among family members as a living terminal.
Remote Health promotion for elderly - Tono City, Iwate Prefecture

**Project outline**
- Information is shared by medical specialists (cardiovascular specialists, etc.) in a remote place and co-medicals (nurses, etc.) in a local area by establishing an interlocking system of remote places and local areas.
- Based on test results, the doctors in the remote place provided advice and health instruction mainly on circulatory organs and lifestyle by utilizing videoconferences, etc. with the participation of approximately 400 residents in total (mainly the elderly) in 17 city areas including the district center.

**Effect**
In all groups (hypertension group, diabetes group, hyperlipidemia group and hepatic dysfunction group), values of test items improved (significant rate of patients who showed improvement of the highest blood pressure: 62.7%, significant rate of patients who showed improvement of DLD cholesterol: 47.1%)

<table>
<thead>
<tr>
<th></th>
<th>1st measurement</th>
<th>2nd measurement</th>
<th>Improvement (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belong to four groups</td>
<td>6</td>
<td>1</td>
<td>83.3</td>
</tr>
<tr>
<td>Belong to three groups</td>
<td>17</td>
<td>6</td>
<td>64.7</td>
</tr>
<tr>
<td>Belong to two groups</td>
<td>36</td>
<td>19</td>
<td>47.2</td>
</tr>
<tr>
<td>Belong to one group</td>
<td>13</td>
<td>9</td>
<td>30.8</td>
</tr>
</tbody>
</table>

**Diagram:**
- Doctor (remote place)
  - TV phone
  - PC for accessing medical data
  - Utilizing for communication between doctors, co-medicals, and subjects.
- Subject (Tono city)
  - Co-medical
  - measure
  - TV phone
  - Transmitting the data of blood pressure, pulse rate, blood sugar level. Real time communication with the video conference system.
- Server
  - Consulting
  - Data communication
  - Remote consultation
- Co-medical
  - TV phone
  - PC for accessing medical data
Research and Development that Benefits an Aging Society

For individuals who engage in the development of communications and/or broadcasting services or technology that contribute to enhanced convenience for aged and disabled individuals, the Ministry of Internal Affairs and Communications subsidizes up to ½ associated expenses.

Example of subsidy: Mega-sized/waterproof/dustproof keyboard

A large-sized yet thin waterproof keyboard was developed to enable aged individuals as well as partially-sighted and other visually-impaired individuals to operate PCs with greater ease.
New Town Building Utilizing ICT

- The field projects for the realization of ICT new town (ICT smart town), that is utilized ICT packages such as sensor network, wireless networks and cloud.
- Helps to address the multiple regional and socioeconomic problems faced by Japan that are expected to intensify going forward.
- Contributes to the new growth of job, economic vitalization, job creation, etc. through promoting ICT utilization.

ICT new town development
Local ICT Projects Implemented throughout Japan

Over 550 projects have been completed, of which 111 are in the medical fields.
The majority are in imaging telediagnosis, emergency medicine, health-care, etc.

<table>
<thead>
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<th>Examples</th>
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<tbody>
<tr>
<td>Imaging telediagnosis</td>
</tr>
<tr>
<td>Telemedicine for patients staying home, support of visiting nursing</td>
</tr>
<tr>
<td>Medical info-sharing (Disease control, e-medical records)</td>
</tr>
<tr>
<td>Emergency support (info-sharing of patients in transit, etc.)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Medical Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthcare, assisting preventive medicine</td>
</tr>
<tr>
<td>Medical health information management support</td>
</tr>
<tr>
<td>Care-welfare service network</td>
</tr>
<tr>
<td>Others (dissemination of health information, medical education, etc.)</td>
</tr>
</tbody>
</table>

Note: To prevent multiple entries, any regions that receive support over
Problems in Computerization of Medical Information on which the Great Earthquake Shed Light

Issues that Accompanied the East Japan Great Earthquake

• Because medical information recorded on paper, basic data of patients was largely lost in the disaster, provision of appropriate medical treatment was difficult, which caused great communications difficulties among the medical staff and placed a large burden upon them.

• Due to the lack of information on prescription and dispensation of the medicine to the patients, physicians could not decide which drugs to prescribe for fear of double prescription. This placed a large burden on them.

• For physicians, the prescription details are important as they must repeat determinations of patients’ blood glucose level, ECG, blood pressure level, etc. at each examination.

• All of the medical records were carried off by the tsunami. Physicians examined patients twice as many as patients as normal without any records.

• Accordingly, it would be mandatory to strengthen the medical systems against damage from natural disasters, i.e., aim at computerization of medical records so that physicians and other medical workers may access cloud computing systems through the use of notebook computers and satellite communications system.

• In short, there should be a system in which medical records may easily be compiled, stored, and shared through a personal computer and appropriate communications environment.

• Storage, handing over and coordination of patient data is necessary. To prevent confusion, such as lack of prescription details and other problems, detailed medical records require a centralized storage system.

On the whole, necessitate EHR, which electronically records and stores patients’ medical treatment and prescription information recorded in medical facilities, and permits physicians and other medical staff to refer to and share the information as required.
Mobile Health (mHealth) – Examples of Use of Home Medical Treatment/Nursing Care ICT System

- Use of mobile terminals and sensors renders the system user-friendly, thereby allowing anyone to upload and record information.
- Sharing uploaded medical information of patients, a variety of professionals such as physicians, nurses and care managers are able to provide timely medical care services.

**Home Visit**
- Medical Information Collaboration Infrastructure (EHR)
- Simple measurement and uploading of a patient’s vital data reduces physicians’ work burden at the patient’s home.

**Chronic Disease Management**
- EHR
- The reference by physicians to daily uploaded patients’ vital data and directions to health care may prevent the advance of chronic diseases.

**Home Medical Care Model**
- EHR
- The physician at the clinic monitors the vital data of a patient collected by a nurse using electronic stethoscope and supports the nurse as the latter works at the patient’s residence.

**Home Nursing Care Model**
- EHR
- The helper measures and uploads vital data and other patient conditions, and the physician returns appropriate directions if required.
Mobile Health (mHealth) – Establishment of Home Medical Treatment/Nursing Care ICT System

- Verify appropriate combinations of “terminal X Transmission Protocol X Measuring Instruments” according to users, communication environment and conditions of patients, and ideal situation of network security, transmission standards and user interface
- Collecting and grasping daily information on home-staying patients accurately utilizing mobile terminals, sensors or the like, and register and accumulate it in EHR, and realize sharing of home medical care and the nursing ICT system

Validation Process

- Utilization of individually collected vital data
  Individuals upload daily vital data they measure to the medical cloud, which may be utilized by medical organizations, etc.
- Utilization of mobile terminals, sensors, etc.
  By use of mobile terminals and sensors, transmission among medical devices (M2M: machine to machine) based on the transmission standards such as NFC and Continua can be realized
- A variety of uses
  An individual may easily make measurements and upload the data. Because the circuit is wireless, the network can be used for home and remote medical care, and health management

- Carry out proposals, standardizations of communications standards, best-practices, or the like through the venues of ITU (International Telecommunication Union)
Ubiquitous Network Robots for Life Support

Objective
Nationwide installation of network robots (for nursing care, monitoring, etc.) by 2020

Expected capabilities (life-support activities to promote social participation for the aged and the challenged)

**Shopping assistance, reducing burdens on care takers** (remote active listening service, etc.), monitoring (gathering information on family members of the aged, etc.), healthcare (gathering and storing biological information, healthcare advise), guidance information: services mainly for communication

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Tohoku Medical Megabank

Outline of project

- For reconstruction in response to the Great East Japan Earthquake, MIC aids financially local governments (Iwate Prefecture, Miyagi Prefecture and Fukushima Prefecture) affected by the tsunami to construct EHR (Electronic Health Records)
- To be more specific, MIC helps them to construct the following systems
  1) Store and share a variety of information, including medical charts, drug dispensing and nursing care data
  2) Telemedicine with video phone
  3) Implement health guidances
Strategy for ICT utilization in the super-aging society

Issues posed by super-aged society in advanced countries

Taking advantage of ICT’s ability to transcend time and distance

World’s most advanced telecommunications infrastructure

New trends

- Barrier-free “ubiquitous society”
  (Connecting people to people, people to things, and things to things)

- Developments in easy-to-use ICT
  (Dramatic improvements in user interfaces)
  - Cloud computing
  - SNS
  - Smartphones
  - Smart TVs

- Development of new ICT
  - Communication Robots
  - Sensor network
  - M2M
  - Big data
  - etc.

- Collaboration and integration of real and cyber

Total strategy

“New social system”

- Utilization of benefits of technical innovation to the maximum extent

- Cooperation among different fields
  - Issues cannot be solved in one sector

- Development of services and products that address the needs of aged individuals and other forms of contributing to economic growth

- Sharing of best practices of international cooperation
Super-aging society to be aimed at

“Super-aging society where people can feel richness and happiness”

- Vibrant society where each of us can live richly and brightly
- “New social model” in which the elderly support local communities and different generations (recognition that implicit shared awareness and presuppositions are reviewed and the paradigm of the society is changed)
- A truly mature society is realized by developing new social systems, etc. (peaceful and free society where emphasis is put on the improvement of mental richness and quality of life)
- Society where the young generation is able to live with dreams for future

Principal areas

1) Purpose in life / employment
2) Health / social welfare
3) Living environment / migration
4) Communications (contact with people) / social participation
Good News

Recently, many PC School in big cities has changed the style to class for senior students!!

They start to teach mobile phone and smartphone. and iPad(all Tablet) is popular
Still There are “Big 2 Walls”

1 Wall in Mind
   ICT is too difficult to use for seniors?
   Not only Seniors, but also their family think
   “Old people are impossible or dangerous to use PC and online service.

2 Wall in Society
   Very few school, text, Teacher for older adults.

we support
Senior PC Volunteer's Activity
Senior Teach ICT for Seniors
Case of Marchan 6 min video

http://www.youtube.com/watch?v=mtUyJLJ_hIA

Marhcan(78) is teaching PC at home
Making original Textbook for her student.
Enjoy World travel and making video program
マーチャンのExcelでアート
塗りと算線を使ってみよう編

著者: 若宮正子

エクセルアートを利用した作品
BEGINNER はじめての方へ

図形の「塗りつぶし」だけを使ってもこんなに楽しいアートが

1. ちいさな花
   - モチーフ黒板を描きます
     - 青や緑色「背景」で塗りつぶし
     - 黒色「花びら」を塗りつぶす

2. 出来上がり
   - 「塗りつぶし」で緑色を塗りつぶして
     - 「花びら」を塗りつぶす
   - オリジナルなアートを作成します

FILL 塗りつぶし

図形の「塗りつぶし」だけを使ってもこんなに楽しいアートが
Marchan and I Share Facebook with her Medical Home Doctor Doctor Nakamura
Ms. Oshima faced the trouble
Her parents, sick Patients are difficult to move, watch, hear and talk.
Communication is the Key to survive.

50% of age over 65, have a hearing trouble.
Telecommunication Handicap

Hearing Loss will cause Dementia?
Hearing trouble is invisible disability.
But Japan do not have phone relay service.

Today, there are many good tools to solve
Problem of commutation. But it is not easy to hand
To the people need them
Assistive Technologies

Photo from http://eduassistivetech.blogspot.jp/
NPO introduce AT for patients
Sendai-Finland Wellbeing Center

The City of Sendai is the largest city in Northeast Region in Japan with the population of 1 million. The city is promoting "Sendai-Finland Wellbeing Center Project" in collaboration with Finland, an advanced IT and welfare country. This project aims to create new business in the field of highly value added welfare equipment and services with joint efforts of companies both in Finland and Sendai.
Internet Event at Sendai FWBC
Introduce MICT with FUN! 2012

Report (Japanese & Video) Online Tanabata Festival
Over 14000 people watched the Ustream event

Dr. Salo (Vice Meyer, Oulu City) introduced the policy
In Oulu on iPad

http://www.ustream.tv/channel/bbsch#/recorded/24533310
My friend Mako Hattori (Actress) was a fashion model. She wears Universal Design Wear Designed by Ms. Takeda in Sendai. She owns a dress maker shop and she started to make clothes for the people with disabilities from her own experience of being a patient in the hospital.

Mako and I supporting the Women at home through Aubergine project:

I am reading message from SNS, seniors watching Ustream online Event from their PC Learning Class in the day service center.

Photo from Abiko Senior Life Net. In Chiba Prefecture http://asln.jp/
フィンランドから来日してくれた方々
左から セイナヨキ応用大学理事長で市議会議員のアーロさん
同大国際部長 ヘッリさん、 退職者協会事務局長のウラさんは 日本語で
“上を向いてあるこう”を歌ってくださいました。

3 people visited Sendai from Finland, Seinayoki
Why they do not know MICT?

- Few Information?
- Need to place a person who in charge?
- Need a reasonable incentive?

Internet is the best tool to educate
The people with low cost and effective
Seniors has a great interest in their Own Health. Internet senior users answer, most benefit from internet service is about the Medical information, such as their disease, effect of drug, new treatment, good hospital. Welfare service in the local community.
Merit to collaborate with Volunteer to have MICT seminar

1. Many senior PC volunteer have a political power in local community.

2. They are happy to join the test or trial of treatment, but it is not good to treat them just like animals.

3. Good Patient produce Good MICT.
Join! PC Volunteer

Young Students in the Medical or Technology major, please join PC Volunteer activities.

You can meet good friend and You will Find good idea to create the New MICT With world best longevity country, Japan
Thank you very much.

Noriko Kondo
Kondo-noriko@nifty.com