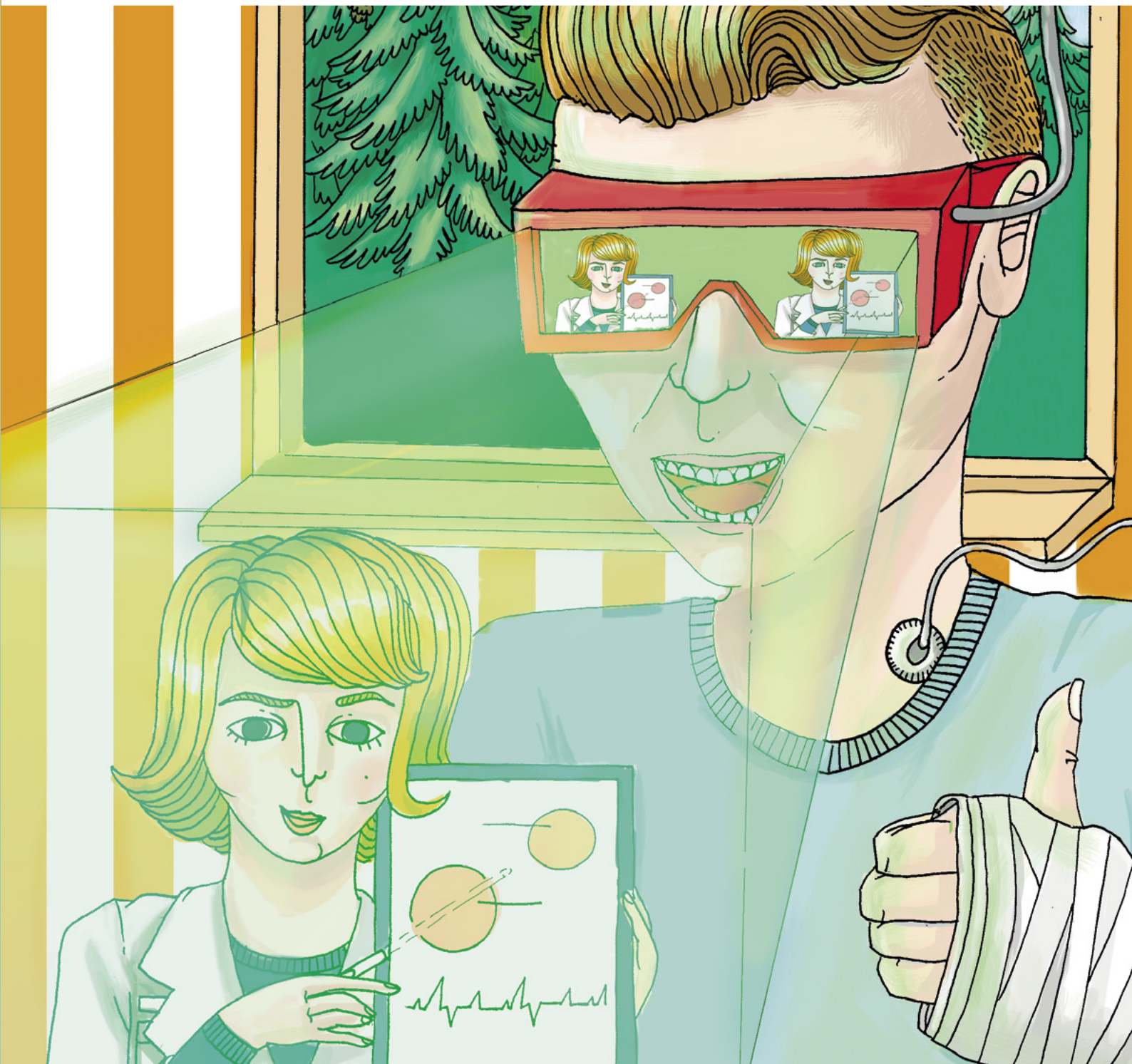


PAULA POIKELA & SINI TURPENNIEMI (eds)

# DISTANCE IS NOT A BARRIER TO HEALTH

Welfare technology makes life easier





**PAULA POIKELA &  
SINI TURPEENIEMI (EDS)**

**DISTANCE IS NOT  
A BARRIER  
TO HEALTH**

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makes life easier**

# Technology – welfare for people of all ages in all

PAULA POIKELA

We live in a society that cherishes and upholds welfare. This is no longer done strictly with "elbow grease", but rather using a variety of innovations – welfare technology innovations. The purpose of technology is to help not only those who need help, but also employees in their daily work.

We have grown accustomed to the idea that technology is not needed until some part of our bodies starts to give out. That is when the latest welfare technology solutions come to the rescue. In the field of medicine, we could provide a long list of medical advances made over the centuries. Wars in particular have served as milestones in development, but in a positive sense. These advances still have an impact on our lives. Many technological breakthroughs promote patient and client safety. Perhaps the greatest amount of media attention has been given to heart transplants, which would not be possible without the inventions that laid the foundation for these procedures. Many innovations have been developed in the best interests of the patient and client, who are not even aware that such technologies are being used in their treatment. The transmission of X-ray images and video consultations are tools that have been introduced recently. Effectively erasing distances, the use of welfare technology is of particular importance to the remote areas of Lapland.

The technologies used to ensure health and welfare are intended for people of all ages. At an early age, our smart, inventive youths begin coming up with new technological solutions to make their lives easier. Three welfare-related inventions developed by youths were introduced at the International Meeting on Simulation in Healthcare (IMSH) 2014 in San Francisco. Ranging from 15 to 18 years of age, one of the youths stood out. He had

developed a mobile phone application, which alerted the user to the onset of diabetic neuropathy. He himself was diagnosed as a diabetic.

Emma (8 years old) came up with an idea for a "cleaning she-robot", which would improve her welfare by keeping her messy room in order. The illustration shows that she had numerous alternatives in mind for she-robot accessories and her own welfare. She also came up with her own assembly instructions. Now is the time to put ideas into action – let's make the she-robot a reality and improve everyone's life! Or, perhaps we should wait until Emma has developed her math skills a bit more so she herself can build the she-robot for everyone's benefit. The price might also come down a bit by that time.

The purpose of this publication is to take a practical look at welfare technology from the point of view of employees, researchers, developers and educators. This publication opens the discussion on a topic, where the sky is the limit for development. Members of Generation Z (iGeners), who do not think or act like previous generations, are just now coming of age (Liisa Välikangas, Professor of Innovation Management, 4 April 2014 interview in Businesslike OY). As this generation enters the scene, will the sky still be the limit?

I would like to express my gratitude to everyone involved and to send a special thank you to Sini for her efforts in completing this publication.

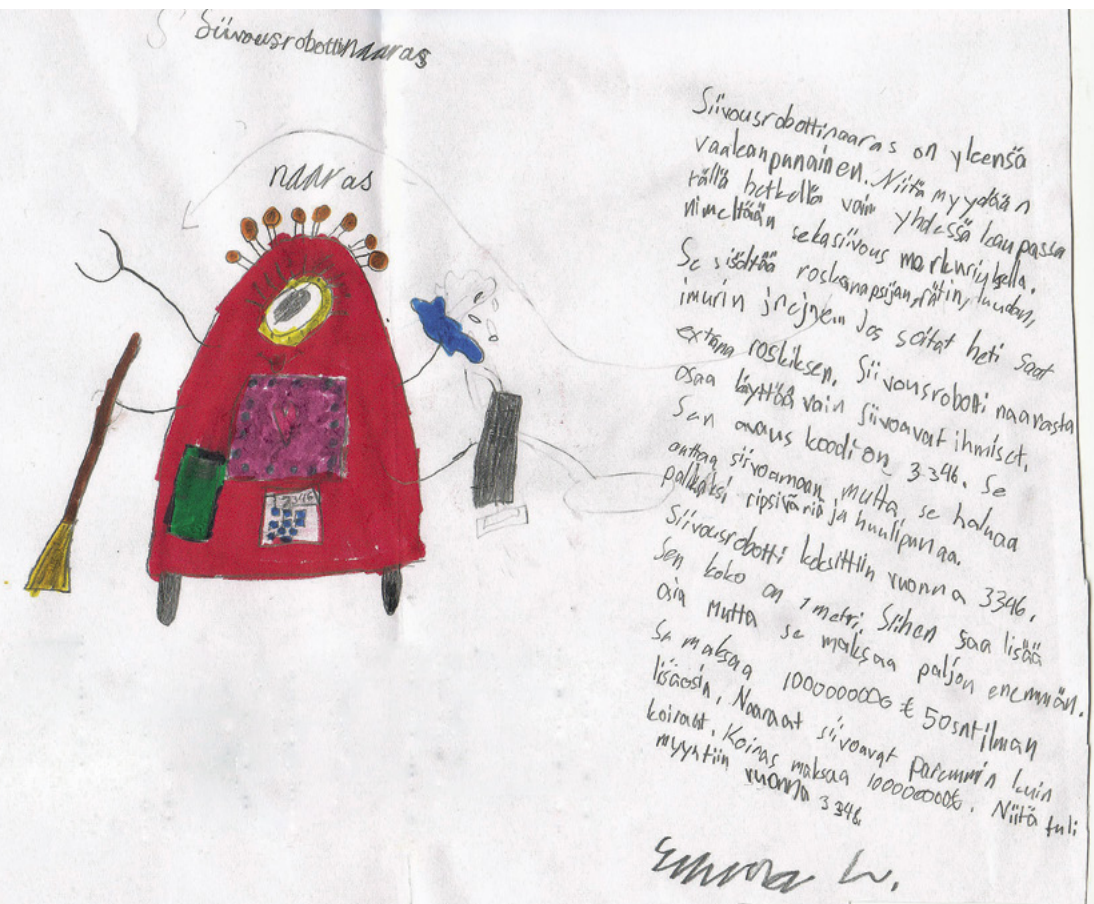
Come see what we have been innovating for the past two years!

Rovaniemi 31 January 2015

PAULA POIKELA  
*Project Manager*



# places



The she-robot is usually pink. Right now, they are only sold in one store called Mixed Cleaning – it's on Mercury. It has a trash-eater, a cloth, a broom, a vacuum, and so on. And if you call now, you'll get a trash can as an extra bonus. Only cleaning people know how to use the she-robot. Its code is 3346. It helps with cleaning, but it only wants to be paid in mascara and lipstick. Its size is 1 metre. The cleaning robot was invented in 3346. You can get extra parts for it, but then it will cost a lot more. It costs €1,000,000,000 and 50 cents, without the extra parts. The she-robots are better at cleaning than the he-robots. A he-robot costs 1,00,000,000. They will go on sale in 3346.

Emma L., 8 years old

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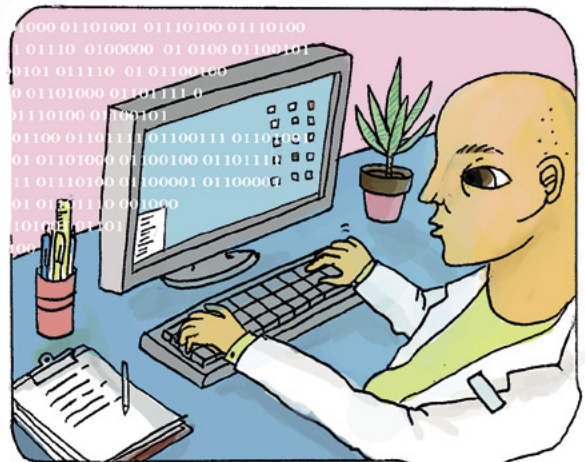
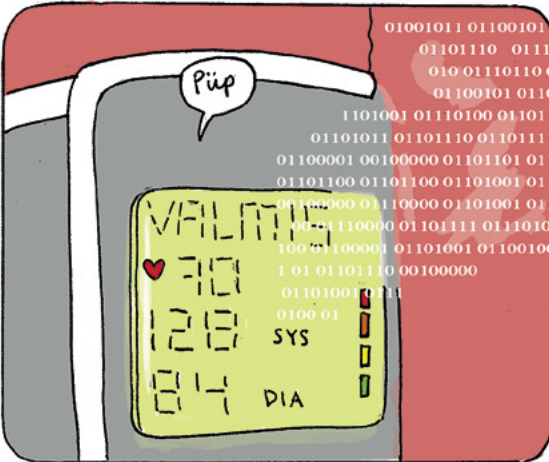
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I

**WELFARE TECHNOLOGY  
MAKES LIFE  
EASIER**







# This is where it all began

## OUTI SOIKKELI

HYTekla Project Manager Outi Soikkeli's thoughts on welfare technology as part of the Lapland University of Applied Sciences.

As the requirements of teaching methods have changed, the importance of welfare technology in teaching has also changed.

We have been involved in the development of welfare technology from the outset: we were already participating

in Telemedicine seminars in the 1990s. Together with Kerttu Oikarinen, we were also members of the Finnish Society of Telemedicine and eHealth (FSTeHS). At that time, the main emphasis was on medicine and radiology.

Over time, telemedicine has expanded to include the entirety of nursing work. Today, e-Health seminars are held each year. The seminars present information on the development and opportunities of welfare technology. We have also been able to regularly participate in these as an organisation.

1990

1995

2000

Unfortunately, attitudes towards welfare technology applications are often negative. They are widely seen as focusing on the increase of efficiency and cost savings, and the replacement of

human involvement. The development of welfare technology requires not only training, but even more importantly, a change in attitudes. The purpose of implementing a technology is,

Instruction in welfare technology has also developed within the UAS. For several years in the 2000s, the UAS curriculum included the "Information Technology and sector applications" course, in which I also served as a teacher. The focus areas included gerontechnology as well as information security and privacy issues, and structured documentation as part of privacy protection. In addition to these, treatment simulations and the Simulation and Virtual Centre ENVI have seen exponential growth.

Over time, telemedicine has expanded to include the entirety of nursing work. Today, e-Health seminars are held each year. The seminars present information on the development and opportunities of welfare technology. We have also been able to regularly participate in these as an organisation.

2005

Our co-operation with the University of Oulu and Lapland Hospital District began on a smaller scale during the TEL LAPPI projects. At that time, computer training, among others, was jointly provided. Videoconferencing systems were acquired for Lapland municipalities during

Our co-operation with the University of Oulu and Lapland Hospital District began on a smaller scale during the TEL LAPPI projects. At that time, computer training, among others, was jointly provided. Videoconferencing systems were acquired for Lapland municipalities during the projects. However, these systems were not immediately brought into use. Their effective implementation required a third TEL LAPPI project. I was involved with this project, visiting municipalities and providing training in the use of videoconferencing systems in nursing work.

above all, to reduce any unnecessary workload on care providers and increase the number of alternatives for clients. Welfare technology also

2010

the projects. However, these systems were not immediately brought into use. Their effective implementation required a third TEL LAPPI project. I was involved with this project, visiting municipalities and providing training in the use of videoconferencing systems in nursing work.

There is a clear need for developing care providers' expertise in welfare technology. Even before the HYTekla project, we made an effort to address problem areas in expertise by planning in-service training and specialisation studies. Unfortunately, the overall training entity at that time was not effective, thus requiring us to meet the needs through the project.

Indeed, the aim of the HYTekla project - Welfare technology support in seamless, client-oriented care, rehabilitation and service chains - was to tackle these problems that are encountered in the workplace.

alleviates the problems posed by long distances. Distance should not be a barrier to health.

2015

# Hip surgery patient experiences with self-care

KERTTU OIKARINEN

INTERVIEW WITH PENTTI MOILANEN

The main subject of this account is my 79-year-old interview subject, Pentti, who lives with his wife, Helleni in the sparsely populated region of Kainuu, 33 kilometres away from all municipal health care services. Five years ago, the pain in one of Pentti's hips and his back gradually increased to the point that he could only walk with a cane for a couple hundred metres at a time until the pain became unbearable. It was time for him to go see a physician. An X-ray showed that his hip joint had worn out to the point that it required replacement.

At that time, Kainuu was running the "Remote services supporting home care (KATE)" project, whose objective was to utilise information and communications technology to allow the elderly to live at home. One of the target groups in developing a remote care and service model was artificial joint patients. Online pre- and post-operative self-care services were developed for these patients. In addition, the health centre physiotherapist provided calisthenics guidelines and advice on preparing for the surgery. The patients were asked to give their feedback on the effectiveness of the technology, the quality of service and their own experiences as a service user.

Pentti was invited to participate and he accepted.

The project supplied and installed a digital television, computer, remote control, camera, microphone and fingerprint reader in Pentti's home and provided him with instruction in their use. All of this was provided free of charge. A wireless broadband connection (Wimax 512) was installed in the home. The free MediaPortaali was used as a platform for the self-care programmes. All the equipment and devices provided were made available for purchase at the end of the trial.

The project customised self-care programmes, which guided the patients in preparing for the

surgery and post-operative rehabilitation. Patients could use MediaPortaali to view programmes and exercises, learn how to take care of their skin and deal with pain, and receive guidance on oral and dental care. The programmes also provided information on nutrition, issues related to smoking and alcohol consumption, and caring for the surgical wound. If desired, the patient could use the



*"I didn't have any previous experience using a computer – I just thought it was high time I learnt."*



*“I’m still using these here. I also learnt how to do other things, like browse the Internet and save photos.”*

**ONLINE  
PRE- AND  
POST-OPERATIVE  
SELF-CARE SERVICES**

provided video and audio equipment to contact the health care nurse and socialise with other artificial joint surgery patients participating in the project.

A satisfied Pentti explains:

*The equipment was brought to us in May 2007. I had exactly 5 months to familiarise myself with self-care before the operation. I moved my sofa to the computer and started watching the exercise programmes. I exercised regularly, several times every day, while lying on the sofa. I noticed that there was less pain and moving about got easier. In the autumn, I went in to see my doctor to evaluate my eligibility for surgery. The doctor wondered whether the hip replacement was even necessary, because everything looked perfectly fine. However, the X-ray revealed the truth – I needed an operation.*

*The artificial joint surgery was performed in a central hospital, where I stayed for six days. I practised walking with a support device in the hospital. My walking was fine, so I was then*

*transferred to a health centre for a three-day rehabilitation. I was sent home with crutches. A few days later, it started to snow and all the roads were blocked. My nearly 90-year-old brother, who lives right next door, was in a panic because he couldn’t get to the doctor’s office. The only thing I could do to help was hop into my tractor and plough out the roads. And I was able to do it. I had got my muscles into such good shape by exercising before the operation that I didn’t have any trouble getting around and working. Three weeks after the surgery, I carefully tried driving my snowmobile – I just had to get in some ice angling on a local lake.*

*The exercise programmes offered a lot of variety and I was allowed to do them at any time. They showed me how to do the motions right and encouraged me to exercise regularly. The other guidance materials were also interesting. All in all, everything went well and the self-care was worth it. I also increased my computer skills.*

# HYTekla project in a nutshell

PAULA POIKELA

## *Background*

The subgoals of Lapland regional development programme spearhead projects include ICT expertise and technological innovations. The development of technological expertise is a focal point and cross-cutting area of competence in both the Innovation Programme of the Universities of Lapland and the Lapland University of Applied Sciences strategy.

The national health care development programme highlights the importance of extensive co-operation. Through co-operation, it is possible to find new operating approaches and ensure the provision of services that meet the needs of citizens. Key approaches are the development of technologies and service innovations. Welfare technology expertise and its promotion form the basis for all development.

Learning and self-development are needed to ensure that the makers of technological working environments do not lose control of them. Development projects need to tackle this challenge, at least when answering the following key questions: 1) Who are the subjects of learning? 2) Why do they learn, and what makes them make the effort? 3) What do they learn, and what are the contents and outcomes of learning? 4) How do they learn, and what are the key actions or processes of learning? (Engeström 1987). The performance of work should be made into a new type of co-configuration between experts, clients and patients. Development is a tool for expanding one's own expertise, where organisations set out to make their own future, work processes and patient safety more flexible and manageable.

## *Participants in development*

The HYTekla project – Welfare technology support in seamless, customer-oriented care, rehabilitation and service chains (e.g. hip fracture and stroke patient service chains) met this challenge. Nursing and rehabilitation staff from the following organisations were involved in the project: Lapland Central Hospital Emergency Department and the Department of Surgery and Neurology, Lapin Kuntoutus Oy, Sodankylä Health Centre and nursing homes Nutukas and Helmikoti. Five teachers in the fields of welfare and technology, two adult students and students of nursing and physiotherapy from the Lapland University of Applied Sciences participated in the project.

## *Developmental goals and interest in development*

The aim of the project participants was to expand their knowledge of the possibilities offered by welfare technology and deepen their level of expertise in their own work processes. Their interest was based on a desire to develop their own work by utilising welfare technology. Although technologies were indeed implemented, in many cases they were only superficially or partially utilised. Good patient care is the foundation on which all expertise is based. Another goal was to improve the technological expertise of nursing and teaching staff as well as the utilisation of networks in disseminating information and practices. Expertise in welfare technology should be given greater consideration at the very start of training. It is also vital to increase the awareness of the fact that the third sector is and will be intensively involved in care chains as well as the self-initiated promotion of health.



## Implementation

Participants developed their own expertise in the following:

*Training days*, which were held eight times during the project. Training days consisted of entities focusing on welfare technology in the present and the future. The purpose of training days was to present the possibilities offered by welfare technology. Initially, welfare technology was generally perceived as only comprising patient information systems, which promote patient safety and improve the work processes of health care personnel. As the project went on, people's knowledge of welfare technology expanded. The HYTekla project supports the democratic aims of the Government spearhead project, eServices and eDemocracy Acceleration Programme (SADe): equal welfare services for all citizens, regardless of the place of residence or wealth.

*Computer training day* in Sodankylä (9 April 2014) and at the Lapland Central Hospital (28 April

2014), where the goal was to deepen expertise in information technology and increase the use of information systems.

*Study trip* to Oulu on 22–23 April 2014. The purpose of the trip was to gain a familiarity with welfare technology projects at Oulunkaari and their activities.

*Seminar days* 6–7 November 2014. During the seminars, participants learnt about health care technology from a researcher's perspective, practical experiences with the role of the third sector in care chains, the results of the Ikäihminen toimijana (The Elderly as actors) project and international outlooks on the future.

*At their own workplaces*, participants examined the care chains of hip fracture and stroke patients in terms of welfare technology and drafted a report on the subject. All participating organisations contributed to the publication.

### TRAINING DAYS:

- 28 May 2012 Project orientation and the importance of welfare technology today and tomorrow. The HYTekla project is based on the SADe programme, i.e. the eServices and eDemocracy Acceleration Programme.
- 8 November 2012 Remote health care and remote guidance in the promotion of health.
- 11 February 2013 Welfare technology expertise in the Lapland Hospital District and the catchment area for highly specialised medical care.
- 11 October 2013 Information security in the use of welfare technology and privacy in patient work.
- 12 December 2013 Technology in the daily lives of the elderly – needs and wishes concerning the use and implementation of technology as seen from an ethical standpoint.
- 25 March 2014 Mobile device and tablet use in client and patient work.
- 27 May 2014 Videoconference in remote care and rehabilitation as well as in support of remote guidance.
- 30 September 2014 Making ideas real – visions for the future. Quantified self in future health promotion and the treatment of diseases.

**1. DESCRIPTION OF CURRENT SEAMLESS, CUSTOMER-ORIENTED AND EFFICIENT CARE, REHABILITATION AND SERVICE CHAINS IN TERMS OF WELFARE TECHNOLOGY USE AND EXPERTISE.**

**2. DEVELOPMENT AND TRAINING PROGRAMME BASED ON ASSESSING THE CURRENT STATE OF WELFARE TECHNOLOGY.**

**3. FUNCTIONAL CO-OPERATIVE NETWORK FOR THE DEVELOPMENT AND DISSEMINATION OF GOOD PRACTICES.**



*Publication* “Distance is not a barrier to health”, which provides a comprehensive idea of how to implement welfare technology in customer-oriented, seamless care and service chains that transcend administrative and sector boundaries. The publication describes the citizen self-care process related to all care and service chain phases as well as the joint promotion of welfare technology expertise as a new type of citizen skill by educators and the third sector.

### **Results**

1. Description of current seamless, customer-oriented and efficient care, rehabilitation and service chains in terms of welfare technology use and expertise.

The description of the current situation revealed that there is already a great deal of welfare technology being used in all areas of the care, rehabilitation and service chains. The user base is also very extensive. However, there are many shortcomings in the level of welfare technology

expertise, particularly in the use of information systems. In addition, technology is not always used to its fullest potential. The orderer and provider could also jointly invest in improving usability.

- 1.1 The contribution of the third sector in the self-initiated promotion of health in service chains in addition to official health care during the hospital care phase.

Public health and patient organisations play a co-operative role in the social welfare and public health service reform, providing citizens with support in self-care and promoting their health-related skills. Improving the self-care skills of citizens is the goal of promoting health and functional capacity (promotive and preventive) as well as the obligation of social welfare and health professionals in the different phases of service chains. The same goal is also sought through volunteer work conducted by organisations and research and development. The comprehensive idea of how to implement welfare technology in



customer-oriented, seamless care and service chains, as modelled in the HYTekla project, also includes a description of the self-care process (health as a public skill, public skills in emergency situations, commitment to care and self-care skills) and the enhancement of expertise in welfare technology as a co-operative model between professionals and the third sector.

2. Development and training programme based on assessing the current state of welfare technology.

A vital part of the development plan is the development of expertise in welfare technology. Key areas of expertise development are general computer training, expertise in the procurement of information systems, the management of distances, security issues and project expertise. Operating units should provide training in accordance with an expertise needs survey. Personnel involved in the project can act as support persons and share the information they gain.

Training must be planned for each locality within the existing network. A person from each locality appointed to serve as a mentor participates in a joint core group, which receives extensive training at the national and international level. Once the perception of welfare technology has expanded, personnel can examine the technology used in their respective units and determine what else could be implemented. They can also come up with a vision for the future.

3. Functional co-operative network for the development and dissemination of good practices.

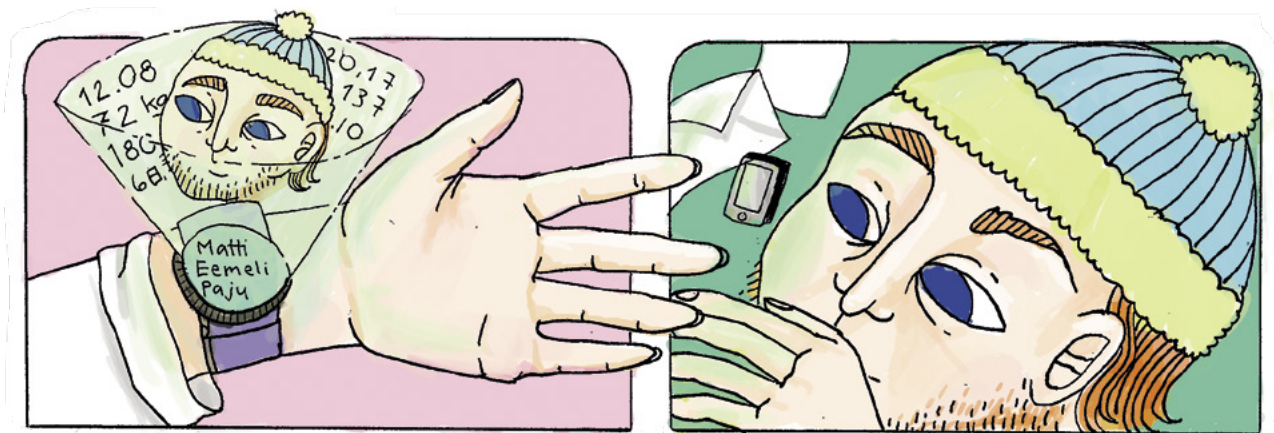
Based on expert interviews and project surveys, official networks form around patient information systems. There are few informal networks in existence; primarily in cases like this, a random attempt may be made to contact a person who may possess the appropriate expertise, if necessary. Networking is promoted in the Lapland University of Applied Sciences HYTekla project.

# Lapland as an operating environment for welfare tech

KERTTU OIKARINEN, SINI TURPENNIEMI AND PAULA POIKELA

One of the key phenomena for building the future identified in the Lapland Agreement (Lapland's regional development programme for 2014-2017) is virtual living, which includes digital solutions and remote innovations for promoting health and welfare. In developing the model for social welfare and health services in Lapland, attention should be given to this phenomenon and finding some direction by the year 2040. The regional objective is to carry out the service structure reform in a controlled, sensible manner, consolidating public, private and third sector resources to form an operational entity. This requires increased co-operation and resource-efficient activities that transcend administrative and sector boundaries. The Regional Association Strategy of Lapland 2030 describes the dimensions of association activities and opportunities for co-operation.

"TECHNOLOGY IS  
NO GUARANTEE FOR  
THE FUTURE,  
BUT WITHOUT THE SUPPORT  
OF TECHNOLOGY  
GUARANTEEING THE FUTURE  
IS IMPOSSIBLE."  
(VTT.FI)



*The implementation of technological applications will be used to develop services that are custom-tailored to meet client needs.*



According to the Lapland Agreement, changing operating approaches throughout the region is essential. In social welfare and health services, it is possible to intelligently specialise in welfare technology and change course by conducting rapid trials. Lapland must be exceptional in not only its geographic position but also its functions when it comes to Arctic expertise and opportunities. The implementation of technological applications will be used to develop services that are custom-tailored to meet client needs. Patients and clients are also given the ability to handle their transactions securely online. Remote technology innovations are used to support public participation, learning, active involvement and taking care of one's own health. Information on currently available remote technology solutions is gathered and their implementation is disseminated. For example, interactive technology environments are used to monitor health and welfare.

## Welfare technology

In social welfare and health care, welfare technology involves IT and technical solutions, which are used to maintain or improve the quality of life, welfare, health and functional capacity of people, both at work and during their free time. Welfare technology can be divided into six areas (Table 1): Assistive technologies, Information and communications technologies, Social technologies and security, Health technologies, the Design for All philosophy, and Client and patient information systems (Ahtiainen & Auranne). Digital technology and social media, which are part of future expertise and civics, have been added to the Information and communications technologies area.

Table 1. Welfare technology areas.

WELFARE TECHNOLOGY AREAS
<p>1. <i>Assistive technologies</i>: devices for assisting in mobility and performing daily tasks, e.g. wheelchairs, customised vehicles and bicycles, toilet aids, eating and drinking aids.</p>
<p>2. <i>Information and communications technologies</i>: reading, writing and speech aids, e.g. communication devices and programs, screen readers, speech synthesis software, digital technology and social media.</p>
<p>3. <i>Social technologies and security</i>: surveillance, assistance, care and security alarm systems, e.g. security bracelets, smart bracelets, care phones, safety floors, video phones, Caring-TV, "flower pedestal" home surveillance system.</p>
<p>4. <i>Health technologies</i>: monitoring devices, instruments and web-based self-care support systems, e.g. remote health monitors and software, Arctic Touch &amp; MyClinic, eHealth portals, Virtu.fi service portal.</p>
<p>5. <i>Design for All</i>: fully-accessible design for all people in public spaces and commonly used technologies.</p>
<p>6. <i>Client and patient information systems</i>: entities which combine patient-related information with other information used in social welfare and health, e.g. electronic patient record systems, other documents and messages.</p>



Table 2. Participation at the centre of customer-oriented operating approaches.

## PARTICIPATION IN THE DRAFTING AND MONITORING OF THE CARE OR REHABILITATION PLAN

### *Information participation:*

What information related to health and functional capacity do patients and their loved ones feel they need?

Do they know where they can find this information (e.g. terveyskirjasto.fi, kanta.fi, organisation websites; sydanliitto.fi, youtube.com/user/sydanliitto)?

Do the patients and their loved ones need guidance in searching for information and interpreting it?

How do the patients and their loved ones understand the information and were there any questions regarding it? (evaluation)

### *Planning participation:*

How does compliance with care orders and guidelines seem to fit with the given life situation?

How are things handled in this given life situation and is there any support available (if necessary), e.g. support from loved ones, peer support from the third sector, professional support?

How do the patients and their loved ones comply with the care orders and guidelines and how has the health status changed? (evaluation)

### *Decision-making participation:*

Do the patients and their loved ones want to specify which of the listed alternatives should be entered in the care or rehabilitation plan?

How has the care or rehabilitation plan worked? (evaluation)

### *Procedural participation:*

Do the patients and their loved ones need instruction on how a care or rehabilitation procedure will be carried out or how to live a healthy life?

How have the procedures worked and what are their impacts on health and functional capacity? (evaluation)

**IN SOCIAL WELFARE AND HEALTH CARE,  
WELFARE TECHNOLOGY INVOLVES IT AND  
TECHNICAL SOLUTIONS, WHICH ARE USED TO  
MAINTAIN OR IMPROVE THE QUALITY OF  
LIFE, WELFARE, HEALTH AND  
FUNCTIONAL CAPACITY OF PEOPLE,  
BOTH AT WORK AND  
DURING THEIR FREE TIME.**

Increasing the benefit of welfare technology involves the examination and restructuring of care and service chains. The basis for this is seamless, customer-oriented services that promote citizen self-care and transcend administrative and sector boundaries.

### ***Participation results in a customer-orientation***

A customer-oriented approach to doing things is based on participation. Participation can be divided into the understanding, finding and receipt of health information, i.e. health information literacy (Information participation), participation in the planning of self-care (Planning participation), decision-making power (Decision-making participation) and the client's own activities (Activity participation). As a participant, clients/patients are involved in not only planning but also giving their own views in various contexts and commenting on matters that concern them in the provision of care at the societal and service system

level. The idea is that the client/patient and professional can engage in a dialogue, for example, based on the questions shown in Table 2, when drafting a care or rehabilitation plan and evaluating it during monitoring (Kettunen & Kivinen 2012, Oikarinen & Rautajoki 2014).

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# Welfare technology in seamless service chains

KERTTU OIKARINEN

## Management, strategy and communications

The more extensive implementation of welfare technology in seamless, customer-oriented care, rehabilitation and service chains is a question of attitude and expertise as well as a question of welfare and communications in public health (Figure 1). The question of attitude and public health is basically resolved in strategic choices made based on the municipality's mandatory welfare report. These choices involve management and decision-making. The tripartite of welfare promotion in municipalities consists of the municipality's strategic activities, the activities of various administrative sectors and other actors within the municipality (e.g. companies, organisations and educational institutions), and the self-initiated activity of residents in the municipality.

The challenges facing the promotion of welfare, health and welfare technology solutions should be considered just as important as economic challenges in municipalities.

In decision-making at the municipal and organisational level, it is important to have a comprehensive understanding of the public health situation in the local population as well as the general welfare situation. With regard to this, consideration should be given to the benefits of e-services and the regional developers (public, private and third sector and educational institutions) of these services should be identified. This provides an excellent foundation on which to build an array of social welfare and health care services. The results of many research and development projects, even those proved effective, will fall completely by the wayside, unless strategic choices regarding the

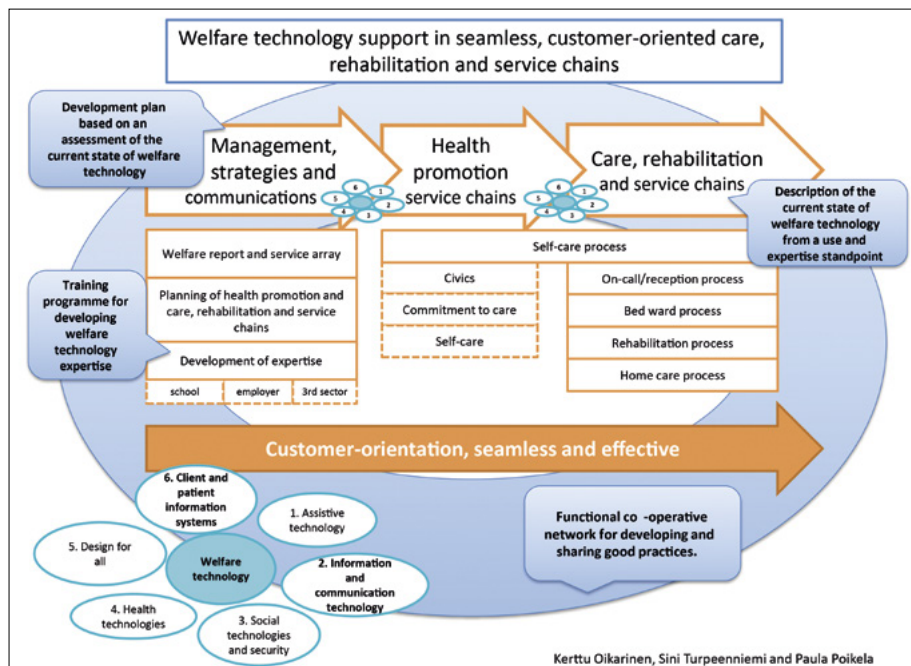


Figure 1. Developed in the HYTekla project, overview of welfare technology used in social welfare and health services.

STRATEGIC CHANGE  
DOES NOT  
JUST HAPPEN -  
IT IS MADE

digitising of services are made and included in the operating plans of organisations.

Strategic change communications is one of the biggest challenges facing supervisors today. The strategy should steer supervisors and teams in the performance of their daily work, so that operations can be regularly examined and oriented to meet strategic and key tasks. Supervisors play an important role in communicating and implementing the strategy. Their job is to ensure that the strategy is thoroughly discussed and every effort is made to find a common vision for going forward. Personnel should be able to understand what is expected of themselves and the teams as well as to prioritise their own tasks using set targets. Increasing e-services in care and service chains alters familiar operating practices and requires supervisors to ensure their employees' skills. Supervisors also gather feedback from their employees on the strategy, expertise and establishment of the strategy. (www.esimies.info)

### Expertise requirements increasing

The digitising of social welfare and health services is increasing the expertise requirements for both professionals and citizens because it involves a change in thinking. Civics in this millennium include information and media skills as well as digital social capital (Table 1). Information skills refer to the smart use and management of search engines, the gathering of information from various sources and knowledge-building in teams, examples of which include blogs, wikis and shared documents. Media skills refer to online publishing skills, skills in putting together an e-portfolio, skills in creating media-rich presentations and skills in the use and illustration of online tools. Digital social capital refers to the management of an online identity,

knowledge of data security and copyrights, the building of various professional or social networks, and even job searches using social media. In the future, everyone will need skills in the use of digital technology. Age, wealth, educational background or belonging to a specific group should not be an obstacle to digital access (Olander 2014).

There is still a long way to go, which is why the development of expertise should go hand in hand with the transition to e-services.

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Table 1. Civics in digital technology

#### SKILLS IN THE USE OF DIGITAL TECHNOLOGY AND SOCIAL MEDIA

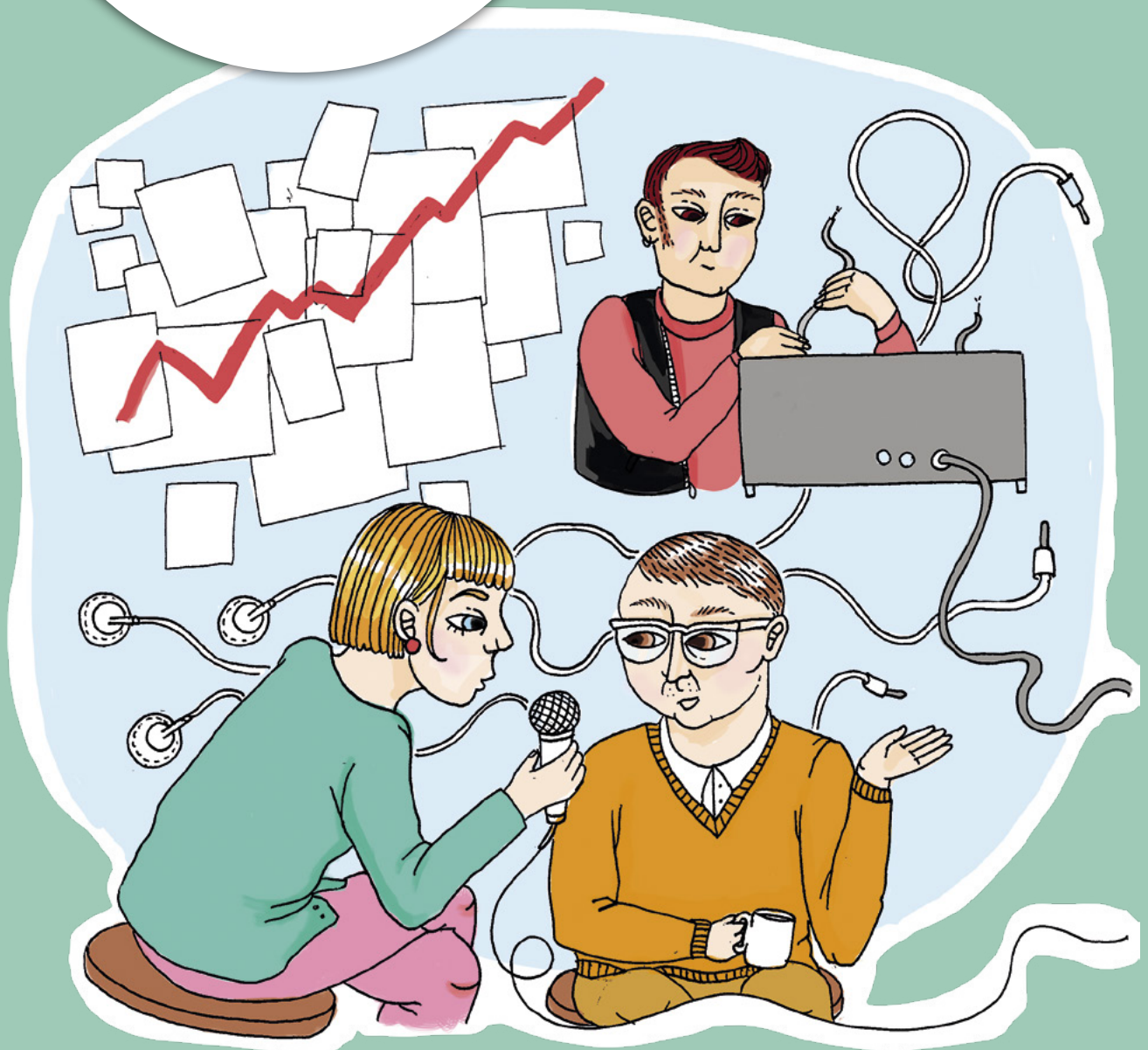
*Information skills:* the smart use and management of search engines, the gathering of information from various sources and knowledge-building in teams and groups, blogs, wikis and shared documents.

*Media skills:* online publishing skills, e-portfolio, creating media-rich presentations and the use and illustration of online tools.

*Digital social capital:* online identity management, knowledge of data security and copyrights, job searches using social media, building professional networks.

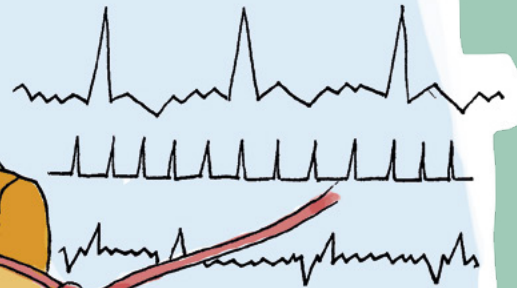
II

WELFARE  
TECHNOLOGY  
MANAGEMENT





Telemedicine in the future



Medical  
Care




# Full of life – clients and professionals together

KERTTU OIKARINEN

## *Promoting health and functional capacity in care and service chains*

The promotion of health as a principle of welfare policy refers to health in all policies. In its strategic planning and decision-making, a municipality must set goals based on local conditions and needs for the promotion of health and welfare and specify the measures to support these goals. Municipal residents should be offered health-related advice. The promotion of health must be taken into consideration when making decisions in different sectors. Decisions concerning health and welfare are made and implemented in all municipal sectors, such as zoning, construction, residential planning and implementation, traffic planning, education and the workplace ([www.thl.fi](http://www.thl.fi)).



THE GOAL IS  
TO SUPPORT THEM  
IN SELF-CARE AND ASSUME  
RESPONSIBILITY FOR  
MAKING CHOICES  
THAT PROMOTE HEALTH  
AND WELFARE

The concept of health promotion is multidimensional (Table 1). Health and functional capacity should be promoted in social welfare and health care in each phase of the care and service chains by instructing and guiding clients and patients, with the goal being to support them in their self-care and taking responsibility for choices affecting their health and welfare.

Table 1. The promotion of health as a concept.

ASPECTS OF HEALTH PROMOTION
<i>Promotive health promotion:</i> Work that lays the foundation for the support and creation of requirements for health, functional capacity and meaningful activities as well as supports the creation of an environment that promotes security and health.
<i>Primary preventive health promotion:</i> Work intended to prevent the development of diseases. In cases of chronic diseases, approximately 70% of coronary artery disease cases and up to 90% of Type 2 diabetes cases, among others, could be prevented by adopting lifelong healthy living habits. Through technological developments, some 80% of all health-related problems could be handled virtually, without requiring a visit to a physician's office (Sitra).
<i>Secondary preventive health promotion:</i> Preventing further aggravation of the disease by evaluating, eliminating and reducing the effects of risk factors.
<i>Tertiary preventive health promotion:</i> Enhancing functional capacity and preventing further aggravation of the disease and its adverse effects through rehabilitation.

Personnel working in the social welfare and health sector have a special obligation in the promotion of client health and welfare. In the work of nurses and public health nurses, the promotion of health and functional capacity is based on health policy steering and fundamental values. Identifying, evaluating and using information on public health and welfare in one's own work are all part of the professional skill. Diseases, accidents and health problems are prevented by identifying factors that cause public health problems and addressing risk factors. Health and functional capacity are promoted at the individual, group and organisational level.

Expertise in education and guidance is closely related to the promotion of health and functional capacity. The introduction of welfare technology increases the requirements for this expertise. The client's guidance and education process should be planned, implemented and evaluated in a new way at the individual client and group level. Client-specific education and guidance are not possible without a command of technological work methods or without choosing the right educational and guidance methods for each client. With the digitising of services, skills in the proper use of educational and guidance materials and the production of new materials have increasingly become part of the work performed.

### *Self-care process and skills in the use of welfare technology*

Each and every person has a desire to live a full life, regardless of their age or health. Health equality requires that people of all ages can live in a health-promoting environment, know how to actively promote their own health and receive the health advice, care and rehabilitation they need at the right time and equally, regardless of gender, place of

residence, socioeconomic status or ethnic background. Growing up active and healthy as well as healthy ageing with the ability to work and functional capacity are key goals. This requires systematic welfare and safety work in different sectors of society as well as supporting people's ability to assume responsibility for their own health and safety in a personal self-care process ([www.sydanliitto.fi](http://www.sydanliitto.fi)).

Self-care is evidence-based nursing planned by the patient in co-operation with a professional that is ideally suited to dealing with a particular need at a given time. Self-care emphasises patient autonomy as well as problem-solving and decision-making skills. In supporting self-care, a professional serves as a coach, who tailors the appropriate care for the patient and their life situation based on a consultation with them. In self-care, the patient assumes responsibility for their own solutions ([www.terveyskirjasto.fi](http://www.terveyskirjasto.fi)). According to this definition, self-care is associated with people with an illness that requires treatment.

Self-care can also be seen more broadly as a process associated with all phases of the care and service chains and, with the proliferation of e-services, as a skill in the use of welfare technology. Everyday experience and research data show that nearly all people need the support of social welfare and health care professionals for their own self-care process as well as the support offered by their loved ones and third sector organisations. A large percentage of citizens need coaching or instruction in obtaining skills in the use of welfare technology.

In the work of social welfare and health professionals, ensuring expertise in self-care and skills in the use of welfare technology is the objective sought for promoting health and functional capacity as well as instruction and guidance. Over the long term, an increase in people's self-care and welfare

**THE USE OF WELFARE  
TECHNOLOGY BRINGS  
NEW EXPERTISE  
REQUIREMENTS TO  
HEALTH PROMOTION**



technology skills will shift the focus of health care from medical care to health promotion and preventive work, thus resulting in shorter health care queues, fewer differences in the health of citizens and improved cost-effectiveness (Figure 1.).

The areas of self-care process are: the self-initiated promotion of a healthy, safe and fully-accessible living environment (Design for All); learning healthy living habits and civics associated with safety; commitment to care with the onset of illness and obtaining self-care skills during the rehabilitation phase; learning how to self-monitor; and finally, long-term, systematic expertise in self-

care. Health information literacy plays a key role in every area of the self-care process.

Skills belonging to the self-care process can be drawn from areas of welfare technology. These are: a knowledge of assistive technology and managing its use for personal needs; new civics involving information and communications technology and social media; a knowledge of social and security technology, anticipating future needs; expertise in health technology for use in self-monitoring; conceptualisation of the possibilities offered by Design for All; and, with reference to client and patient information systems, expertise in accessing





Figure 1. Supporting the self-care process and ensuring skills in the use of welfare technology.

one's own information in the Patient Data Repository. Seen from a public health standpoint, it could be said that health is a form of civics.

The voluntary function of public health and patient organisations plays a major role in the social welfare and public health service reform as a means of supporting citizen self-care and civics. It is also recommended that contract-based co-operative and partnership models be developed with the public sector in addition to outsourced services. Organisations do not need to replace official functions, but in some situations they serve those in need of support more effectively. For example, in the joint "One Life" project, the Finnish Heart Association, Brain Association and Diabetes Association are working together to produce online ([youtube.com/user/sydanliitto](https://www.youtube.com/user/sydanliitto); [sydanliitto.fi](http://sydanliitto.fi)) and printed materials for citizens to support them in self-care as well as proven work methods, tools and training for professionals ([yksielama.fi](http://yksielama.fi); [sydanliitto.fi](http://sydanliitto.fi)). Organisations train peer support persons and organise peer group activities throughout the country (Table 1.).

Peer support persons working in heart-related activities are trained by the Heart Association. They are bound to secrecy and receive constant training.

These support persons have also been diagnosed with heart disease or are closely related to heart patients. The purpose of peer support is to provide experience-based information on what it is like to be a heart patient and how to live with the disease. Peer support persons listen, share experiences, provide encouragement and disseminate information. Peer support persons can also serve as the leader of a heart patient support group, a patient lecturer or a peer adviser in rehabilitation courses. Upon request, they can also make hospital visits. Peer support is a voluntary function of the heart associations and is free of charge to those who need it.

The peer group function involves group activities led by a layperson, who is also a member of the group itself. Each group member is only responsible for him or herself. The task of the leader is primarily to convene the group and take care of the practical arrangements. A group can be formed, for example, among friends, at a workplace, for a sports club or for a trail, village, resident, heart or pensioner association. The group decides on the content, time and duration of its meetings. The aim of the peer group function is to use the collective power of the group in finding healthy living habits. The support of friends, acquaintances and other people helps



Table 1. One Life umbrella project - online services for citizens and professionals.

**ONLINE GUIDANCE MATERIALS FOR PROFESSIONALS AND  
CITIZENS TO SUPPORT THE SELF-CARE PROCESS**  
([youtube.co/user/sydanliitto](https://youtube.co/user/sydanliitto); [sydanliitto.fi](https://sydanliitto.fi); [yksielama.fi](https://yksielama.fi))

*Healthy living habits:*

Healthy living habits for a lifetime – World Heart Day 29 September  
Finland here we come – Smart Family  
UIT presents: The Brain Song (Aivolaulu) – Feel Your Pulse  
Karate Grannies surprise health organisations with flashmobs – Feel Your Pulse  
New Year's Resolution; Day job collection; Become an ex-smoker  
Heart health and nutrition  
Heart symbol/products/recipes  
Core muscle exercises – strength for life; Intensive back muscle exercises;  
Muscle exercises for the shoulders; Easy, effective exercises for the thigh muscles;  
Side stretches; Stretching after a run

*Emergency situations:*

Red presents: Do I Really Look Like This?  
Prevent heart attacks with a wrist grip – Feel Your Pulse  
This is what an emergency looks like – Stroke  
This is what an emergency looks like – Heart attack  
CPR Flash Mob  
Resuscitation: Don't hesitate – help (Freda – Elää mä sain)  
Feel Your Pulse – Online training  
Atrial fibrillation and general principles of care – M. Syväne  
Atrial fibrillation and stroke prevention – K. Rantanen  
Taking the pulse and teaching the client

*Organisation work:*

Volunteer  
Sydän tekee hyvää – Finnish Heart Association  
Tule sydänystäväksi  
Legacy – Heart association activities over three generations  
SOSTE flashmob at Parliament House 2012

once a person has made the decision to permanently change their living habits. Experiences shared in the group offer members new perspectives for ideas, the strength to stick with their own decisions and help in applying knowledge in their own life.

The always-available online social welfare and health services, self-care support services provided by organisations, health information literacy and skills in the use of digital technology are an outstanding source of support for the self-care process. They are changing the expertise requirements and job descriptions for social welfare and health care through guidance and instruction towards providing support for a lifelong, customer-oriented self-care process as well as cross-disciplinary networking in seamless

care and service chains that transcend administrative and sector boundaries. Electronic operating systems and advancing technologies present a major challenge and opportunity in the restructuring of education in social welfare and health in order to better meet future expertise needs. Facing such developmental challenges, the time has come to adopt the Quadruple helix principle, which involves identifying opportunities in higher education institutions and the public, private and third sector, and taking these opportunities into consideration in innovation. It remains to be seen when virtual living and smart welfare technology solutions for dealing with Lapland's long distances will be routine in the lives of every citizen and professional.



**THE QUADRUPLE  
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INTO CONSIDERATION  
IN INNOVATION.**

# Lapland welfare technology projects and networks


MARKO VATANEN

One goal of the HYTekla project was to share good practices developed in previous projects, while also developing existing network activities. A highly functional network offers tools for the utilisation of information and good practices that can be used to provide high-quality, cost-effective services. These tools also facilitate the development of systems and new services.

The Lapland Hospital District has had several welfare technology projects, during which networks between various actors have formed. Lapland Hospital District personnel were interviewed on the networks and their activities. The Lapland Hospital District has played a key role in all the projects reviewed. Based on the interviews and other research materials, a description of the present state of health care networks was made from a welfare technology standpoint.

## *On networks*

The concept of "network" is often used to describe the activities of present-day organisations. However, few stop to consider what the concept really means and when its use is justified. Järvensivu et al. refer to an organisation study, in which inter-organisational activities are described in three different modes. These modes are hierarchy, market and network. A network is an entity comprised of several actors, whose activities are based on trust and commitment. A key goal is to tackle challenges and solve problems, which exceed a single organisation's resources or expertise. In a hierarchy, activities are based on authority and different types of power structures. A market, on the other hand, is based on agreements between the buyer and seller. In some development projects, activities may include all three of the above elements.



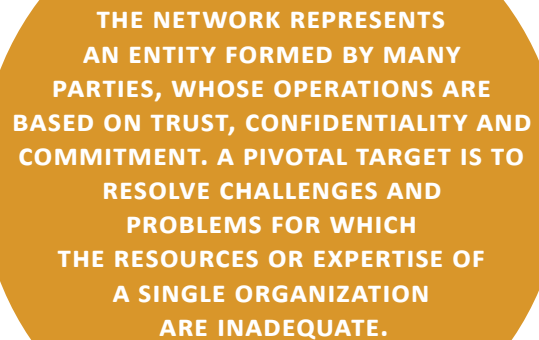
A WELL-FUNCTIONING NETWORK OFFERS TOOLS FOR UTILIZING INFORMATION AND BEST PRACTICES, THROUGH WHICH IT IS POSSIBLE TO GENERATE SERVICES IN A HIGH-QUALITY, COST-EFFECTIVE MANNER.



The TEL LAPPI umbrella project involved extensive, long-term development, whose purpose was to implement information technology systems within the Lapland Hospital District. The primary goal was the creation of a common infrastructure and networked health care in Lapland. The project participants were, on one hand, municipal actors (basic health care – health centres) and, on the other, equipment and systems providers (companies – outsourced services). The project participants also included other educational institutions, the Regional Council of Lapland, the Ministry of Social Affairs and Health and the Ministry of Employment and the Economy.

In 2004, the Ministry of Social Affairs and Health approved the Lapland Hospital District as a trial area for seamless service chains. The SAU LAPPI project (Seamless Welfare Services in the Lapland Hospital District) was launched for this trial. The development of inter-organisational activities and, above all, ensuring seamless care require co-operation and flexibility, in order to ensure that everyday life runs smoothly and matters are handled effectively. Activities are prescribed and, in accordance with the care chain philosophy, responsibilities are clearly defined.

The aim of the "New services and operational models in Lapland" project was, as the project title says, to develop and implement new operational approaches in providing social welfare and health care services. The aim was also to develop operating approaches both within organisations and between them as well as to increase the level of cross-disciplinary co-operation between professionals. An effort was made to make activities more network-like by increasing co-operation. The project's target group was comprised of municipalities in Lapland,



**THE NETWORK REPRESENTS AN ENTITY FORMED BY MANY PARTIES, WHOSE OPERATIONS ARE BASED ON TRUST, CONFIDENTIALITY AND COMMITMENT. A PIVOTAL TARGET IS TO RESOLVE CHALLENGES AND PROBLEMS FOR WHICH THE RESOURCES OR EXPERTISE OF A SINGLE ORGANIZATION ARE INADEQUATE.**

the Lapland Hospital District and Kolpene Service Centre Joint Municipal Board. Other, co-operating project participants included the Länsi-Pohja Hospital District and the Northern Finland Centre of Expertise on Social Welfare (POSKE). A vital tool in increasing the level of co-operation was the consolidation of Lapland e-services into a single portal. The Northern Finland Centre of Expertise on Social Welfare (POSKE) was selected as the portal administrator.

#### *Description of the current state of networks*

The above-mentioned development projects have played a key role in the technological development of Lapland's health care. It can be stated with certainty that they made it possible to systematically and properly implement extensive procurement entities and develop expertise, which would have otherwise been extremely challenging for a single actor to manage and realise. Co-operation between the municipalities of Lapland and the Lapland Hospital District has been close, with several still-functioning networks being formed around various themes during the projects.



The new service and operating models have gained a foothold and are currently being implemented in the Virtual Social Welfare and Health Centre (VIRTU), which is administered and co-ordinated by POSKE.

The network between the main users of information systems is one of the most important. Its activities are run on nearly a daily basis. The activities are very natural because they are based on a real need and have clearly-defined content. The activities transcend organisational boundaries and are also primarily based on the development of trust and respect between partners. It can be said that these activities meet the definition of a true network.

The Project Manager Network and KanTa supervisory personnel network are also typical networks, in which representatives of different organisations solve problems and develop operations without a clearly-defined hierarchy or obligations.

### *Networking as part of the HYTekla project*

Key actors in the HYTekla project are the Lapland University of Applied Sciences, Lapland Hospital District, Municipality of Sodankylä and Lapin kuntoutus Oy. During the project, networking and co-operation between various actors was concretely promoted by means of workshops and joint training exercises. The workshops offered a wide range of content and served as a forum for lively debate on the challenges and opportunities of using welfare technology. People became familiarised with one another and the threshold for addressing issues has been lowered.

The aim of the final seminar was to more broadly promote co-operation and networking between

various actors. The seminar participants were health care professionals and students from different units in Lapland and elsewhere in Finland. Several welfare technology companies also participated in the seminars to present their products and host workshops. Networking as a whole has grown stronger and the level of co-operation between different actors increased during the project. The understanding that a network offers support in dealing with welfare technology problems has also increased. Hopefully this trend will continue.

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# Surveys – a roadmap for development

SINI TURPEENNIEMI AND MAISA MIELIKÄINEN

In the HYTekla project, expertise in practical work-based wellness technology has been examined by means of surveys. The goal of data collection has been to clarify the current situation of practice and know-how. A review has been completed in data collection of what technology and information systems in organizations are in use and which systems are connected with the care chains. The expertise regarded as needed has also been clarified as well as which sort of training should be implemented for the development of expertise.

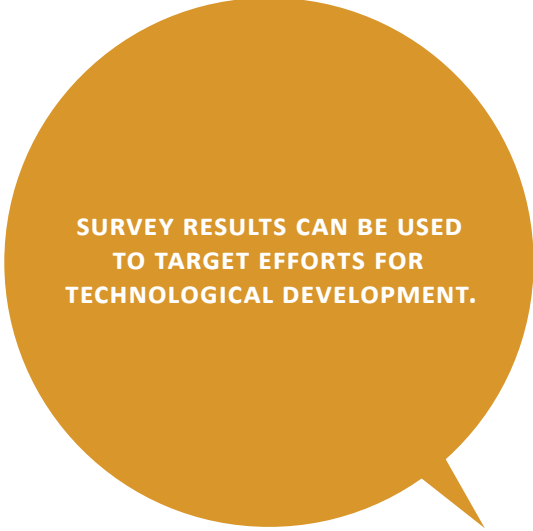
By means of the survey-based research results, it is possible to target operations towards the development of technological competence. Two surveys for wellness technology organizations have been conducted in the project. The first survey was organized at the initial stage of the project, and the second during the end stage. In the first survey, the current situation of information technology (IT) competence is clarified, as well as problems connected with the use of IT. With regard to the latter, the question is posed as to what kind of wellness technology sector training the employees in the organizations feel they require.

## *Results of surveys*

Approximately 70 individuals responded to the questionnaires. Those who replied represent, on a comprehensive basis, various age groups as well as persons whose careers vary in terms of tenure. The distribution by gender is female-oriented.

## *Expertise*

On the basis of the results, the reactions to the adequacy of the IT initiation offered by the employer were contradictory. Of those who responded, one-third were of the view that the initiation has been



**SURVEY RESULTS CAN BE USED  
TO TARGET EFFORTS FOR  
TECHNOLOGICAL DEVELOPMENT.**

sufficient. Almost the same proportion of the respondents considered it lacking. Other replies concerning the sufficiency of initiation were also given by over one-third of those who responded: for instance, referring to learning on the job and through the help of colleagues. Training is provided through the available information technology, but many feel that they would require more. Conversely, many do not necessarily recognize any personal need for training, even if it may be appropriate.

Of those who responded, the majority – over 60% – regard their IT-related readiness as either good or excellent. Almost 30% also assessed it as satisfactory. Only seven (7) individuals considered their readiness only fair, and none assessed their competence as poor.

## *Information technology at work*

Almost all who replied agreed that information technology eases their work: it smooths the way for seeking information as well as for registration and recording tasks, improves customer service, and accelerates liaisons. The need for improvement in

the use of IT is also noted. The software is regarded as too slow and clumsy, deficiencies are found in its functions, and operational interruptions as well as untimely delays hamper the work process. Computers are too few by reference to the requirements, and the available computer stock is getting too old to be able to successfully run new applications. The applications themselves are also difficult to use. In addition, lack of expertise and support personnel both cause problems. Support personnel and persons in charge are generally known and accessible, but only during office hours.

### Summary and educational themes

The same themes are repeated in most of the responses (Fig. 1).

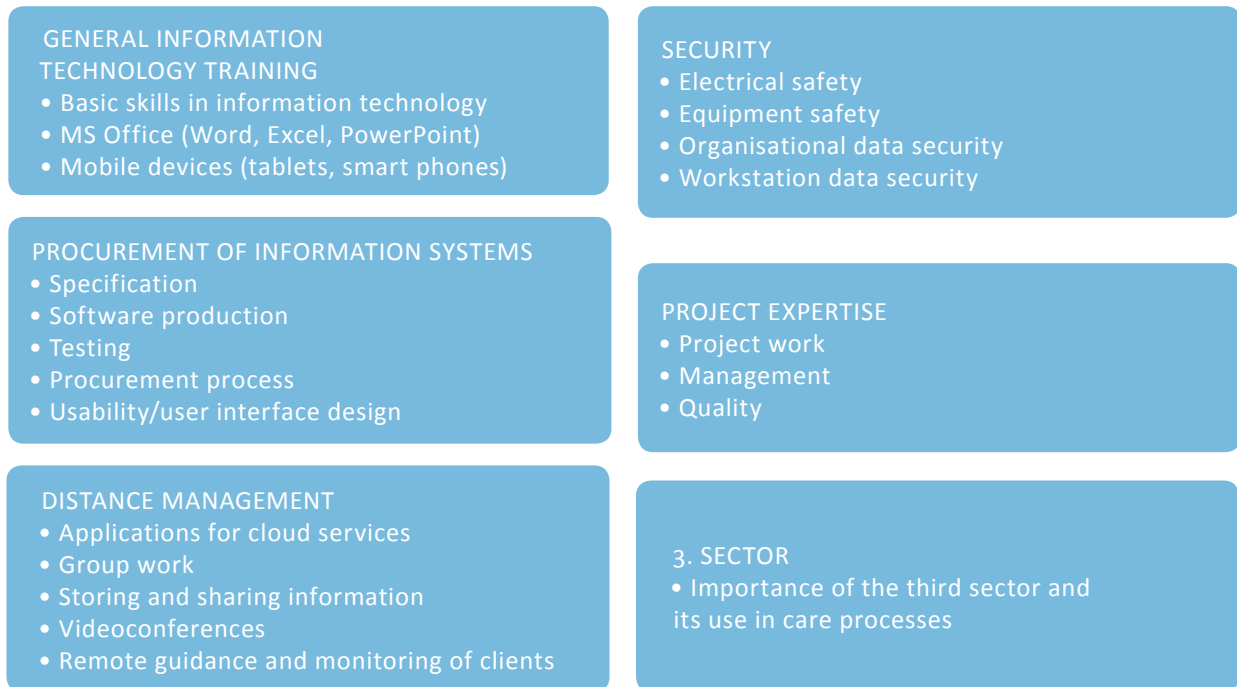


Figure 1. Themes for training needs

### General information technology education

The lack of competence on the basic level affects all operations. Basic practical skills in information technology are deficient and problems come up in daily routines. Competence needs are also noted in the use of mobile devices. Therefore, there is a need for general information technology training.

### Information systems

#### procurement expertise

In the questionnaires, ease of use of software and end user feedback in particular, as well as modifying software to make them suitable for use, came to the fore as matters to be developed. Among other things, personnel should be able to assess and test new

deployable systems, participate in the procurement of new systems and be able to determine features, functions and appearance connected with them as required in practical work. In system development, there should always be basic users involved in addition to the software supplier. Operability and interface design have as their goal a system that is user-friendly and suitable for everyday work. This is possible via cooperation between the end user and software supplier. Operability can essentially improve by comprehensively increasing information systems procurement expertise. Fig. 2 illustrates how the product does not always correspond to specific requirements in a simple manner. So that technology would respond as well as possible to the requirements, it is very important that end users are able to specify the products they want and both test them and provide feedback. For this reason, it would also be good for end users to know how to be involved in the various stages of product development. The customer and the supplier should 'speak the same language' and have the same understanding of the product. (APPENDIX: Assessment tool)

#### *Management of distances*

With the large distances in Finnish Lapland, the management of distances assumes a special position. In the health and well-being sector, various remote possibilities support seamlessness. Video conferences offer flexible liaisons between various offices and localities. Relief is also brought by the tools and methods of customer-oriented remote direction and control. Guidance via video could be used to more utility. Cloud services are becoming prevalent, and the potential they offer would also be worthwhile to utilize in a versatile manner.

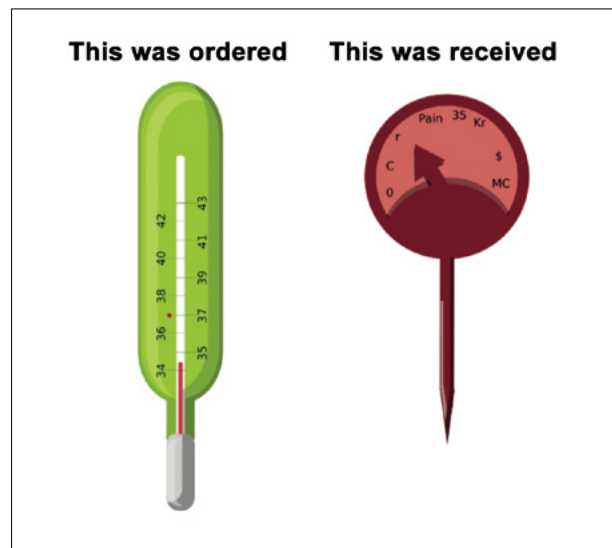


Figure 2. Ordering a thermometer for patient use. (Picture: Petri Hannula)

#### *Security questions*

Security in the working environment was also examined in the surveys. Data security and problems of confidentiality were regarded as risks; such as shared computers, leaving software open and interference with data security protection shields as well as forgetting to lock machines when leaving. There are also security risks in the functionality of software: data are missing and there are errors in the regimens. Computers that are continuously in operation heat up easily, and electrical cords on the floor in cramped spaces cause risk of accidents. Almost half of the respondents encountered problems of reliability with regard to either functionality or security. Information security and other security as well as their expertise are very important in all organizations and in all sectors.

THE ORDERER AND PROVIDER MUST SPEAK THE SAME LANGUAGE AND HAVE THE SAME UNDERSTANDING OF THE PRODUCT.

Particularly in the public health field, there is a considerable amount of delicate information collected in the same location. There must be knowledge on how to use this information correctly. In addition, electrical and equipment safety as connected with wellness technology is in a key position in security considerations.

#### *Project expertise*

Project operations, management and quality are matters where training requirements come vigorously to the fore. Project management skills and quality assurance are being continuously emphasized in development projects. A controlled and systematic approach is a prerequisite for successful, cost-effective projects that successfully reach targets.

The lack of know-how is reflected in all operations, i.e. it tends to arrest development and new experimentation and also negatively affects attitudes connected with the use of technology. In the results of the survey, the observation that technology has been introduced as part of old processes and the processes have not been renewed is emphasized. This creates both problems and resistance to change.

#### *The significance of the third sector in care chains*

The significance of the third sector is growing in well-being self-care processes and in the support of

care. (Halonen and Kauhanen, Lapin Kansa, 18 Dec. 2014). It emerged in the surveys that the professionals in the organizations of the wellness sector need guidance in how the third sector functions and how it can be utilized in well-being processes. The third sector is still, to a large extent, an unused resource in the area of Finnish Lapland. In the new model for social and public health care services (SOTE), cooperation between the third and public sectors is needed in order to find the best, customer-oriented procedures. (Halonen and Kauhanen, Lapin Kansa, 18 Dec. 2014)

#### *Other data collection*

Data collection for the utilization of wellness technology was also performed as a process description. Hip surgery and stroke patient care, rehabilitation and service chains were the processes examined. The processes were itemized into emergency and reception processes and hospital ward processes as well as the rehabilitation, home care and self-care processes. The interviews were one of the data collection implementation modes. In the interviews, the students of Lapland University of Technology surveyed the wellness technology in the various operational units. The results of the process descriptions and interviews are discussed separately in the Current situation summary section.

#### *Sources*

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## APPENDIX: EVALUATION TOOL

The evaluation tool has been developed to support the procurement and further development of information systems. The tool can be used to evaluate the usability of existing information systems. In this context, procurement expertise refers to expertise in specification, software production, testing and procurement processes as well as expertise in usability and user interface design.

The user evaluates each item below on a scale of 1-5 (1 = poor, 5 = excellent)

### SIMPLE, NATURAL TEXTS

- Does the user understand natural and logical order?  5  4  3  2  1
- Is information needed at the same time found in close proximity to one another?  5  4  3  2  1
- Is the order on the screen the processing order of the user?  5  4  3  2  1
- Are colours, animations, etc. used only to gain the user's attention?  5  4  3  2  1
- Are the colours used in the application pleasant and suitable?  5  4  3  2  1

Suggestions:

### THE USER'S OWN LANGUAGE

- Is the language used in the user interface the language of the user?  5  4  3  2  1
- Are the icons/buttons comprehensible?  5  4  3  2  1
- Does the application language match the user's profession?  5  4  3  2  1
- Is the terminology used correct?  5  4  3  2  1
- Does the application avoid the use of specialised IT terminology?  5  4  3  2  1

Suggestions:

### MINIMISING THE USER'S MEMORY LOAD

- Are there any models for entering data? (e.g. model for entering the date)  5  4  3  2  1
- Are limits and units for numerical data provided?  5  4  3  2  1
- Do the same values/text have to be entered more than once? (e.g. names)  5  4  3  2  1
- Are there prescribed alternatives that are available, i.e. are drop-down menus used?  5  4  3  2  1

Suggestions:

### CONSISTENCY

- Do certain functions always work the same way? (e.g. saving or searching)  5  4  3  2  1
- Are results always the same type/look the same?  5  4  3  2  1
- Is the terminology consistent (only one term for one function)?  5  4  3  2  1
- Are the locations and order of buttons and menus consistent?  5  4  3  2  1

Suggestions:

### ADEQUATE FEEDBACK

Is feedback given on functions (completed successfully/failed)?  5  4  3  2  1

Is the feedback clear and comprehensible?  5  4  3  2  1

Is function progress information given (e.g. saving/search progress)?  5  4  3  2  1

Suggestions:

### CLEAR EXIT ROUTE FROM DIFFERENT STATES AND SITUATIONS

Is an exit route always visible?  5  4  3  2  1

Is it possible to cancel long-running action?  5  4  3  2  1

Suggestions:

### SHORTCUTS

Are there any shortcuts available (e.g. a Windows command such as Ctrl+S)?  5  4  3  2  1

Suggestions:

### CLEAR ERROR MESSAGES

Are the error messages presented in a manner easily understood by the user?  5  4  3  2  1

Do the error messages explain the correct actions to take and help the user fix the problem?  5  4  3  2  1

Are the error message polite and constructive?  5  4  3  2  1

Suggestions:

### PREVENTING ERRORS

Are irreversible functions confirmed in advance (e.g. delete)?  5  4  3  2  1

Are default values offered in fields to be filled?  5  4  3  2  1

Can the user choose values from a list instead of entering them?  5  4  3  2  1

Suggestions:

### ADEQUATE AND CLEAR ASSISTANCE AND DOCUMENTATION

Are the functions easy enough to learn and understand without requiring user instructions?  5  4  3  2  1

Are the user instructions easy to find?  5  4  3  2  1

Are there any online guides available?  5  4  3  2  1

Can the online guide be accessed at any point?  5  4  3  2  1

Does the guide open to the section/chapter for a given situation?  5  4  3  2  1

Suggestions:

# Now and in the future – Wellness Technology in

ANNE RAUTIO AND SINI TURPEENIEMI

## *Current status, experiences and future visions with regard to wellness technology*

In the HYTekla project, one particular goal was to describe the care, rehabilitation and service chains implemented by actors (the municipality of Sodankylä, Lapland Hospital District and Lapin Kuntoutus) in their everyday work from the perspective of client orientation, seamlessness and wellness technology. In order to describe the current status, information collection was implemented in the project in which the participants themselves examined, by means of process description, the hip surgery and stroke patient care, rehabilitation and service chains as well as the technology used therein. Information obtained later in the process descriptions was further specified through interviews whose implementation was the responsibility of physiotherapy and nursing students. In the interviews, many types of shortcomings came to the fore with regard to well-being technology expertise and concrete possibilities of use.

During the project, the actors received training in the newest application possibilities of technology and the concrete use of various technological products. Before the training, the description by the actors of the technology in use remains primarily a characterization of various information systems in various activity chains within the process descriptions completed. As a result of training, awareness of wellness technology has expanded, and by means of interviews a lot of other already utilized wellness technology was discovered within the processes in addition to the information systems. In particular, the increase in awareness is seen in the descriptions of the future, in which innovation in the use of technology brought many new,

implementation-appropriate ideas and potential in hip and stroke patients-based care, rehabilitation and service chains.

In the following, there has been an attempt on the basis of the information collection performed to create a description of the current use of and competence in wellness technology in various activity chains, as well as to build together users' experiences of wellness technology. Finally, the use of wellness technology and the coming utilization potential derived are examined from the perspective of the future.

## *Technology and actors in the processes*

The actors have described the care process of the hip surgery and stroke patient from the perspective of their everyday work. The actors' process descriptions are distributed as follows: emergency and reception process, hospital ward and follow-up care process, rehabilitation process and home care process.

Orientation to the patient's scheduled operation begins with the pre-operative procedures. After the operation, activity continues as post-operative care and rehabilitation. Depending on the condition of the patient, s/he is directed towards follow-up care or released to go home. The home care process is implemented in accordance with the client's situation either at home or, for instance, in an assisted care facility.

A care and rehabilitation plan is drawn up for the patient in a client-oriented manner, based on his/her health and the existent resources. As the process advances, the client's functional capacity is assessed and self-care is supported. The need for an auxiliary device is examined as the rehabilitation process advances. Communication amongst the members of a multi-professional working group as well as

# the eyes of health sector employees

## EMERGENCY AND RECEPTION PROCESS

nurse, practical nurse, orderly, on-duty physician (conservative care), ward secretary, specialist, x-ray technician, laboratory manager, archivist, messenger, typist, patient, patient driver, institutional custodian, physiotherapist

*Information systems: patient information systems, laboratory support system, archives program for patient documents, appointment program, x-ray image program, operating theatre monitoring system, food-ordering system, prosthesis follow-up program*

*Measurement devices: blood pressure, saturation and blood sugar monitors, digital thermometer and equipment measuring vital functions, activity wristband*

*Communication and security: mobile phone and text message information, personal portable mobile devices, nurse-calling device, monitoring video-viewing possibility, patient call system*

*Mobility auxiliary devices: electric bed and other mobility auxiliary devices, encrypted video-conference connection*

## HOSPITAL WARD AND FOLLOW-UP CARE PROCESS

patient, nurse, practical nurse, ward secretary, ambulance, physician, physiotherapist, speech therapist, neuropsychologist, occupational therapist, social worker, relatives

*Information systems: patient information systems, patient supervision monitors, laboratory support systems, appointment program*

*For instance, measurement devices for auxiliary devices connected with care: suction, oxygen, air, ECG machine, RR-m VS-, saturation and thermometers, feeding pumps, lights equipped with dimmer*

*Communication and security telephone, patient call system, communicator and other auxiliary speech devices, encrypted video-conferencing connection, alarm equipment*

*Auxiliary devices for mobility and daily functions: electric bed, lifting unit, parking device, transfer device, electric doors*

## REHABILITATION PROCESS

client, registered nurse, practical nurse, ward secretary, physiotherapist, physician, social worker, occupational therapist, pedicurist, relatives, home service worker

*Information systems: client information systems, control and communication system*

*Information systems: client information systems, control and communication system*

*Communication and security telephone, monitoring system safety wristband and phone, emergency and first aid buttons, safety email, digital camera and Physiotools as an aid to preparing home instructions, Skype*

*Tools used in rehabilitation: Nintendo Wii, weight-lightened walking equipment*

## HOME CARE PROCESS

resident, driver, registered nurse, practical nurse, physician, physiotherapist, speech therapist, relatives, home service worker; help with food, cleaning and transport

*Information systems: patient information systems, patient security system, E-resepti (E-prescription) Centre*

*Measurement equipment: RR, VS and related measurement equipment, pill dispenser with memory aid*

*Communication and security telephone, locator phone, safety phone, security wristband, locator wristband, surveillance systems, wandering alarm, alarm button, nurse-calling device, communication equipment, security email, electronic access control and wandering alarm*

*Auxiliary devices for mobility and daily functions: electric bed, lifting equipment, electrically operated wheelchair*

maintaining contact with clients and their relatives act in the background as support measures.

Based on the account of the actors involved, the Figure describes the persons belonging to the hip surgery and stroke patient's care process as well as the wellness technology used. The description is not completely comprehensive, but provides clues on how wellness technology is being used.

### *Experiences of wellness technology use*

Experiences of actors in the use of wellness technology were gathered by means of interviews which the nursing and physiotherapy students conducted, total: 9 interviews. The interviews were carried out after the project had already been initiated, whereupon the awareness of the interviewees regarding the use of technology and its potential had conceivably already managed to change. Increase in awareness also increased criticality: as final users of the technology, they should have had not only the possibility to evaluate and develop the technological solutions but also the competence to do so. At the same time, there was a desire to increase expertise in the general use of the technology.

Experiences in the use of wellness technology are positive as a whole. Wellness technology was regarded as something that brought high intrinsic value to care, rehabilitation and service chains. The information systems increase both patient and information security. Auxiliary devices based on communication and security as well as mobility improve patient safety and security as well as augment the patient's sense of personal initiative. Wellness technology was regarded as not only intensifying the effectiveness of care but also having the benefit of accelerating and facilitating the work of the staff. Wellness technology also equalizes the



**VIA MODERN TECHNOLOGY,  
PATIENT INFORMATION IS  
QUICKLY ACCESSIBLE.  
AS A RESULT OF THE PROJECT,  
ONE OF THE ACTORS HAS ADOPTED  
THE USE OF ENCRYPTED EMAIL, WHICH  
HAS EASED COMMUNICATION.**

work effort by increasing occupational safety and speeding up the acquisition of information.

### *Wellness technology as support for clients*

The interviewees considered that they acted in a client-oriented manner and stated that all activity was based on cooperation with the client, his/her relatives and the care environment. Wellness technology was regarded as strengthening cooperation and facilitating the accessibility of care as well as versatile care provision.

Wellness technology was regarded as supporting the seamlessness of the operational chain as well as client orientation, facilitating and accelerating the implementation of the processes. Communications and information acquisition are good examples of how wellness technology acts as support to care



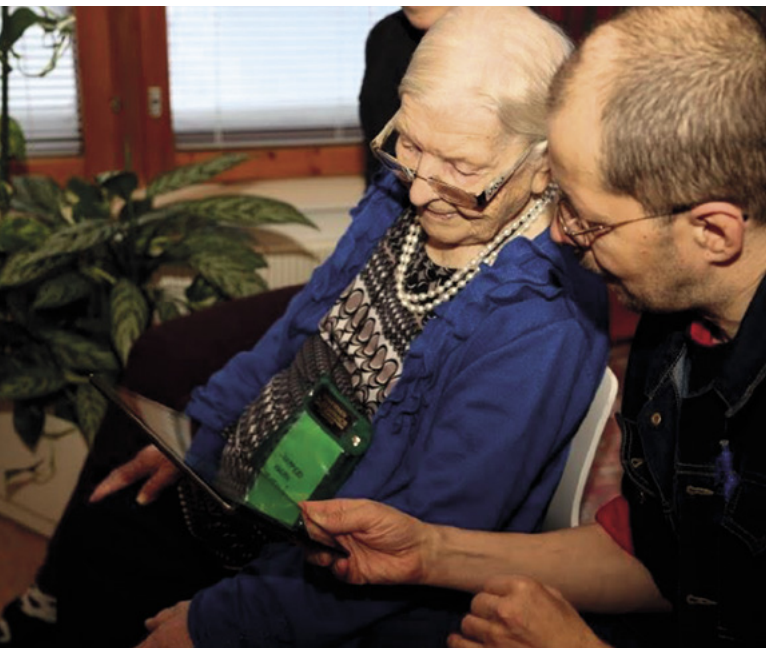


*Image 1. Lapin Kuntoutus Oy's rehabilitation situation video. Filmed by Esko Poikela*

efforts. Encrypted email and the application potential of various databases ensure patient as well as information security. Via the current technology, patient information is quickly accessible. As a result of the project, one of the actors has adopted the use of encrypted email, which has eased communication. Letters in paper format were formerly in use. Technology also provides tools for the mobility of patients. By

means of monitoring, clients are able to move about more freely, whereupon the independence and feeling of security on the part of the client also increase.

Wellness technology is also utilized in the client's self-help. Through its aid, it is possible to expand clients' functional capacity and increase self-initiative by means of, for example, auxiliary devices for mobility. Technology can be used to remind clients to take their medication, among other things. When the rehabilitation situation is filmed on video and assessed together with an expert, the rehabilitee can follow his/her own development and s/he can be better supported in self-initiated training. The use of step and activity meters can bring more motivation into self care. The use of wellness technology and auxiliary devices should, however, be considered on



a client-by-client basis, so that the excessive use of auxiliary devices does not passivate the client and thereby slow down, e.g. self-initiated rehabilitation.

Electronic communication tools and video contacts can be used as support for self care. They increased the effectiveness of self care as well as the client's surety of action by enabling visual contact with the guiding nurse or physiotherapist. The client is capable of ensuring matters from an expert that are of interest to him, also in his/her own home environs. The encrypted video connections would add to the effectiveness and realization of self-care, in addition to information security. The ease-of-use of technology supporting self-care was regarded as important.

The share of the third sector in current care, rehabilitation and service processes is growing continuously. The organizations offer support and services in abundance which complement the actions of the official care system. In the north, where distances are long, the peer networks and discussion platforms functioning on the Internet replace activities missing from the local community. In addition to the fact that the organizations offer online peer support potential, their websites offer considerable concrete and practical information. The share of the third sector in the self-care process is examined more closely in the Full of life section.

### *The future of wellness technology*

Wellness technology has a great deal to offer to care, rehabilitation and service chains. In the interview situations, practical wishes came to the fore for more effective use of existing wellness technologies as well as new development.

A single, secured information system with all units and improvement in the mutual functionality of the various patient information systems would facilitate information acquisition and advance both patient and information security. In addition, the third sector could be introduced more widely into operations.

The deployment of an encrypted video conferencing system more comprehensively into the home environs than what currently applies would improve the effectiveness of remote guidance and self care as well as the remote assessment of

#### **PRACTICAL HOPES WITH REGARD TO WELLNESS TECHNOLOGY:**

- encrypted contacts
- procurement of tablets and machines
- monitoring system
- localization devices
- motion detector carpet
- door alarms
- info board
- entry device

functional ability. Video contact would also be a good thing in contact maintenance and consultation between members of the care staff. Having their own tablets and computers in all units would intensify the effectiveness of care and information acquisition. They could also be utilized in the guidance of patients and in following their development by taking pictures and videos.

A more comprehensive monitoring system could be useful in the various units. For example, the foyer facilities frequently remain outside monitoring. Door alarms in rooms and motion detection carpets would also be useful. An increase in localization devices – for example, in rollators – would facilitate finding their owners and, on the other hand, increase clients' freedom of mobility.

A technology-aided info-board with regard to the care situation and condition, etc., of patients under treatment would ease detecting the whole and its control, as well as shortening queue times to see physicians, nurses and for imaging sessions. Making remote entries – e.g. via smart phones directly to information systems – would make the work of nurses easier.

#### *Innovations from wellness technology*

At the end of the project, technology had become more familiar, and its potential applications were regarded as more comprehensive than in the beginning. The actors were indeed allowed to freely envision the future of wellness technology in their own work (images 3 and 4).

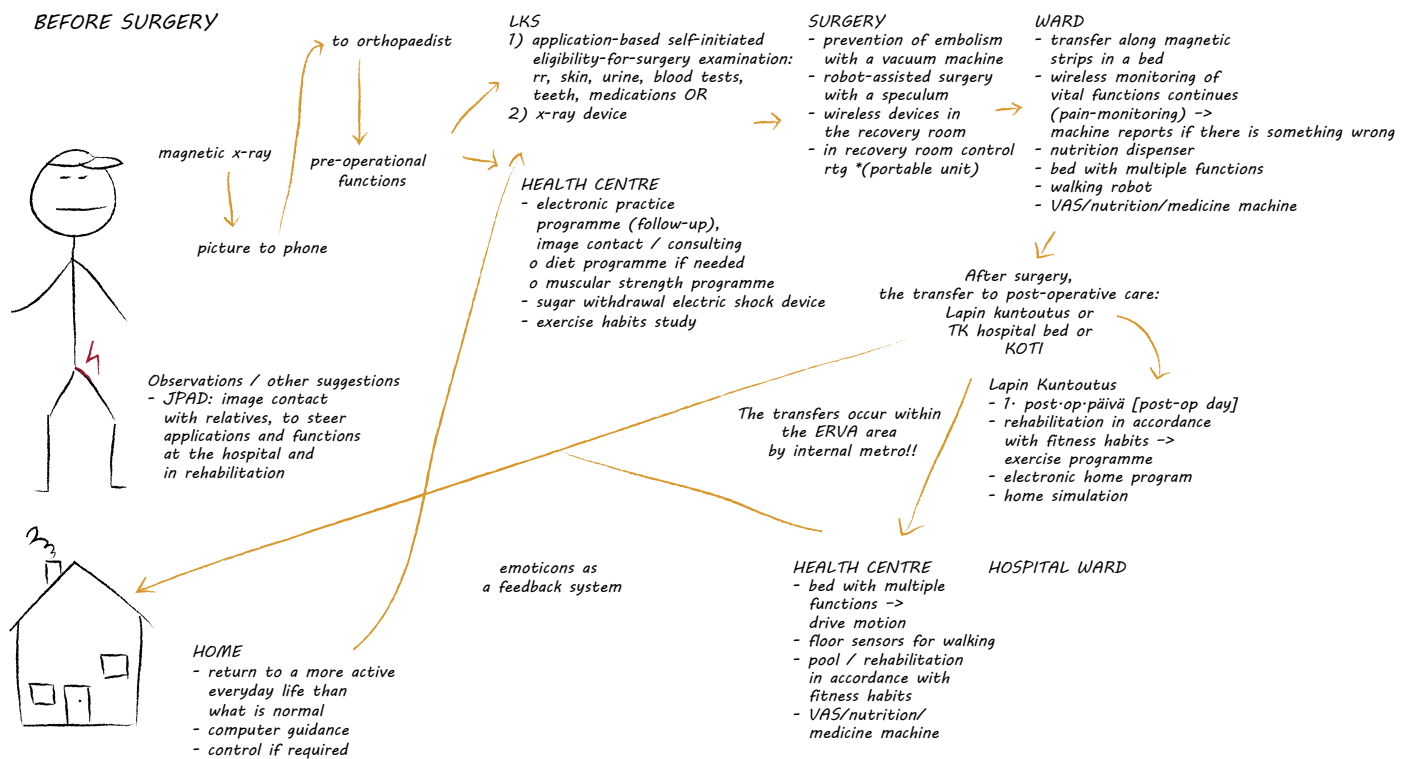


Figure 3. Hip patient's care process in the future.

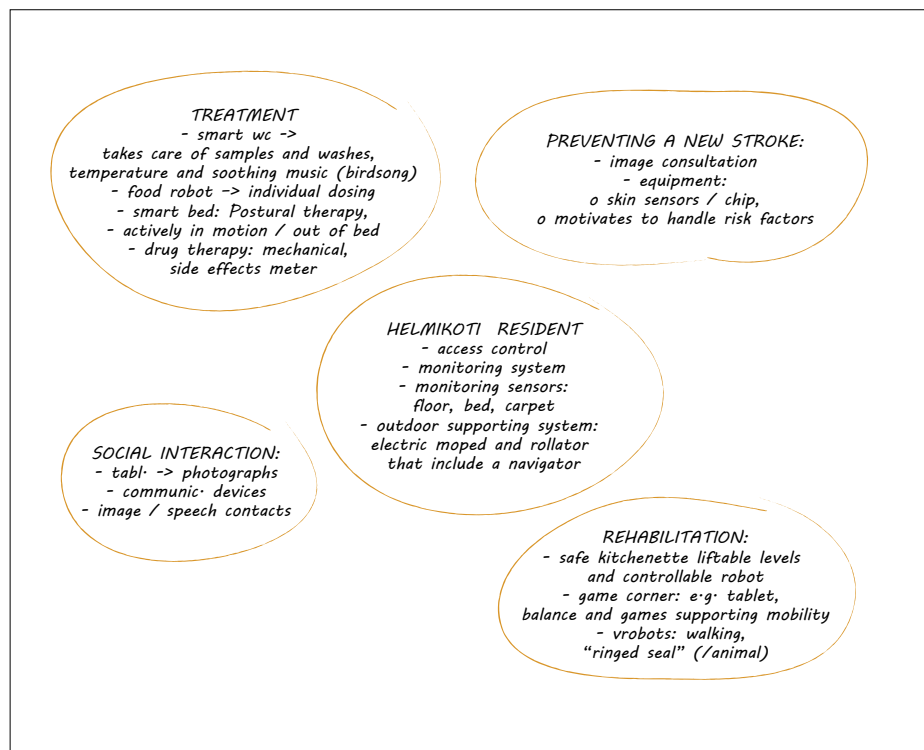
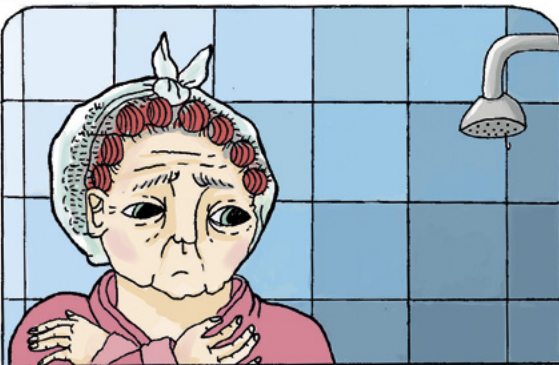


Image 4. Stroke patient care process in the future.

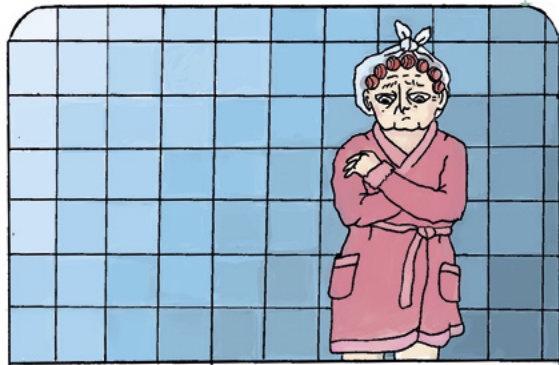


III

WELLNESS/  
TECHNOLOGY USERS,  
RESEARCHERS AND  
PRODUCT DEVELOPERS  
IN ACTION



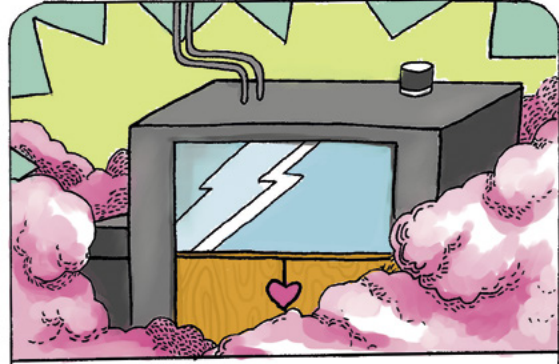
*"I don't want to shower!"*



*"I don't like to wash in company."*



*"I wish there was some other way."*



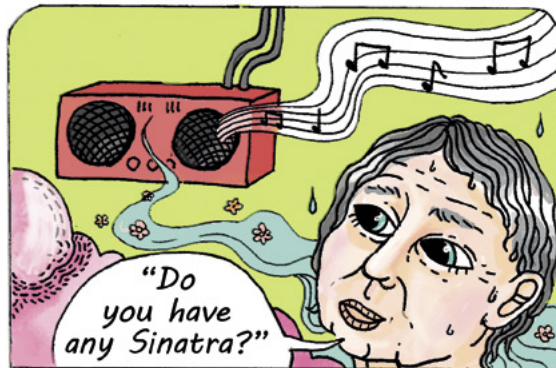
*Luckily, there is one: the amazing person-washing machine!*



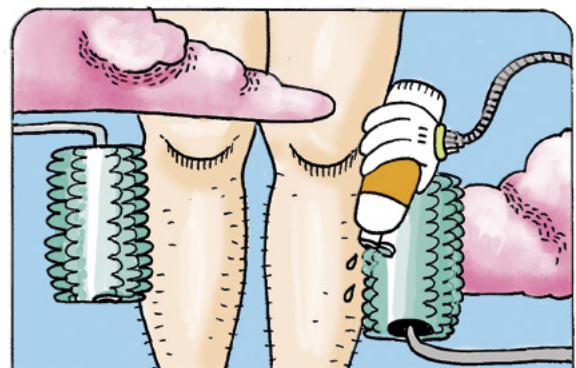
It is like the combination of a steam bath and a carwash.



"Now I can wash in comfort and privacy!"



You can select the scent and music to create a nice atmosphere.

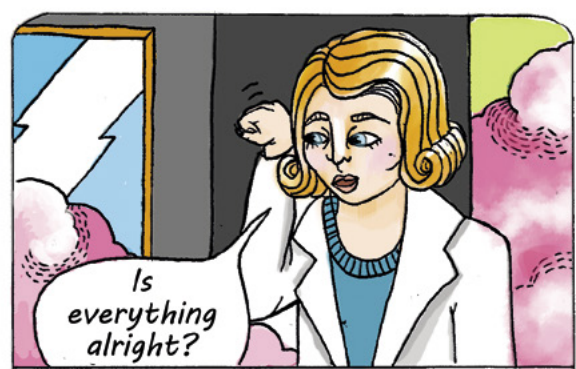


The soft sponge moisturises and massages sore spots.



AN ORDINARY WASH OR a human-washing machine?

"Finally, a client-oriented approach!"



Is everything alright?

The nurse outside the door ensures safety.



# From paper letters to encrypted email

EMILIA LILJA

*What is wellness technology and does it have anything to give to practical nursing work? I was occupied with these thoughts when my participation in the Hytekla project began. I would like to relate my own experiences with the project and the practical value that participation generated.*

I was baking May Day doughnuts in 2013 when I got a phone call from my head nurse. “Would you like to participate in a wellness technology project?” said the voice on the other end. I considered the matter for a moment and replied in the affirmative. I thought that I’d at least get to experience a change in my work in the ward. It was also a fine thing to be asked to participate in something.

The project in my view did not sound all that tempting; wellness technology supported, in seamless client-oriented care, rehabilitation and service chains – and that was already quite a mouthful! My experience of technology was primarily based on ADP equipment – which either worked or didn’t.

As the project continued, however, I got more and more enthusiastic about the matter. In addition, I developed a better understanding of what wellness technology actually is – in other words, much more than mere computers. The first training day already gave me an excellent idea about how to develop our operations.

I’ll tell you a little about the background. In the Lapland Hospital District, CVA liaisons-based operations were launched in 2011 as part of the care chain of patients who have had a cerebrovascular accident. In the municipalities, there are specific public health care professionals appointed, who function as liaisons. The job description of an CVA (cerebrovascular accident) liaison includes

## CVA (CEREBROVASCULAR ACCIDENT) LIAISON ACTIVITY IN THE LAPLAND HOSPITAL DISTRICT LAUNCHED IN 2011

- liaisons appointed in the municipalities
- the patient gives consent to sending information to the liaison
- the liaison makes telephone contact with the patient about three weeks after being sent home
- if needed, the liaison makes a house call
- discusses how everyday life is going, the need for services and their implementation, follow-up rehabilitation, the implementation of social benefits and drug therapy
- encourages and motivates patients towards self care, so that possible new cerebrovascular incidents do not occur.

arranging that the patient is successfully relocated to his/her home or transferred for follow-up care from the neurological ward – ensuring, for instance, the implementation of controls, rehabilitation and social benefits as well as getting by in everyday life. CVA liaisons have an important task in the secondary prevention of cerebrovascular accidents. There was a problem, however, in transferring the information to the CVA liaison. When the CVA liaison failed to get information about a patient who had already left the hospital, a large number of operational objectives were not implemented.

On the first day of training, a person from the Social Affairs Learning Centre of Northern Finland delivered a lecture, presenting the Virtu project, in which social and welfare sector dealings with an

WHAT WELLNESS  
TECHNOLOGY IS:  
I.E. MUCH MORE THAN  
JUST COMPUTERS.  
ALREADY THE FIRST TRAINING  
DAY PROVIDED AN EXCELLENT  
IDEA HOW TO DEVELOP  
OUR OPERATIONS.

*Cerebrovascular Accident Unit  
Photograph: Krista Saijets*



encrypted video connection are being developed. This gave rise to the thought: could an encrypted connection also be utilized in our situation? I was first in contact with the Virtu project and then with the person in charge of electronic communications at the Hospital District about our goal to develop an encrypted method to arrange for information to be transferred between the CVA liaisons and us – easily, securely and reliably.

Matters were clarified during the summer and autumn of 2013. The most rational and cost-effective of the alternatives turned out to be encrypted email. In March 2014, we managed to get the encrypted email working, and after that information has reached all parties, according to the feedback we've received.

My own attitude towards wellness technology has become more positive as a result of the project. New technology is not the bogeyman that steals something away from us. The deployment of new technology is not always easy or problem-free. After testing, the versions capable of utilization will remain in operation. On our ward at the moment there are a couple of pilot programs connected with ADP technology going on. In addition, a virtual outpatients' clinic pilot in cooperation with the Social Affairs Learning Centre of Northern Finland is starting in 2015.

I hope that in the future as well I can benefit from wellness technology in my work on behalf of clients/patients. I await with interest wellness technology-based innovation in the future.

# Wellness technology at Lapin Kuntoutus

PASI OLLILA AND MARJA VARTIAINEN

*The supervisors of nursing and physiotherapy at Lapin Kuntoutus Oy have examined wellness technology and its potential in their work.*

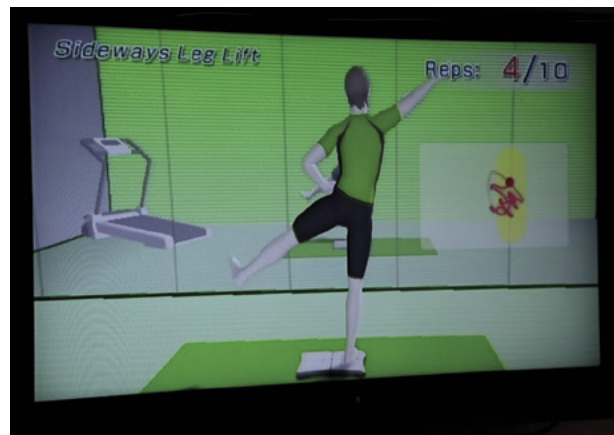
Technology is already a considerable part of the processes at Lapin Kuntoutus. For this reason, it is indeed difficult to devise how new wellness technology could be used as an aid in rehabilitation. However, a shortcut via technology cannot be found in the rehabilitation going on in the facility. Physical rehabilitation is hard work for the rehabilitee. Self-care is the basic pillar of rehabilitation. As support for self care, auxiliary devices have been developed, and they are much used. The world of games and its applications have also brought the rehabilitee new potential as support for rehabilitation. Already now this is everyday life, but new options are being developed continuously.

Everyday technology is developing at a dizzying speed. Rehabilitation employees have been required to learn the use of new technologies to help younger rehabilitees. The young rehabilitee can, in fact, be more aware of the technological possibilities, which can frustrate the staff no end.

Home is dear to all of us. Social utility economically and for the improvement of a person's quality of life is found in the need for help connected with the possibility of living at home. To make this possible, considerable economic support from the community should be targeted for the purpose. In practice, the testing of technology for a small private enterprise is difficult. If there is clearly utility for the municipality from new functional technology, however, then of course its functionality should be further developed. Sodankylä is a good example of this: a lot of wellness technology is utilized there.

*Nintendo Wii as part of rehabilitation training*

*Photo: Esko Poikela*





*Weight-lightened walking equipment is an aid in physical exercise*

*Photo: Esko Poikela*



**BY VIDEOFILMING  
THE CLIENT'S CARE PROCESS,  
IT CAN BE SEEN CONCRETELY  
HOW THE REHABILITATION  
PROCESS PROGRESSES AND  
FUNCTIONAL CAPACITY  
IMPROVES.**

The use of illustrated materials is of considerable benefit in rehabilitation services. By videofilming the client's care process, it can be seen concretely how the rehabilitation process progresses and how functional capacity improves. Even if consent from the client may be obtained for the use of the image materials, however, it cannot be forwarded to others. The legislation should be re-examined so that the transfer of information could be enabled in a more multifaceted way.

During the project, it nevertheless emerged strongly that for senior citizens, the right human contacts are highly important. If it is difficult to arrange care services for those living in remote regions, the position of personal carers should be examined in an entirely new light.

# Thoughts of Sodankylä inhabitants on wellness

MINNA KANGAS, SARI KILPELÄ, PAULA KOSKELO,  
SOILE LEHTOLA AND RITVA SEIPÄJÄRVI

The thoughts of Sodankylä inhabitants on wellness technology and the HYTekla project. The writers function within the units and in care and related services as well as in rehabilitation, producing health services for the municipality of Sodankylä. In the area of the municipality of Sodankylä, there were several work units involved which considered care, rehabilitation and service chains for hip surgery and stroke patients during the project. As several work units were involved, the description of the patient's care process successfully covered the entire care pathway. Simultaneously, the cooperation network and joint consideration of current and future challenges converged within the Sodankylä municipal region, but also beyond its borders.

The technology should be utilized to cover long distances in the municipality as maximally as possible.



Monitoring in the rooms

As support for home release and rehabilitation, chat guidance, for instance, could be applied. The comprehensiveness of the networks nevertheless creates limitations. At the moment, no care measures are being taken using remote connections, but perhaps this will happen in the future.

At Ryhmäkoti Nutukka (the Nutukka group home), the development of wellness technology is being driven amongst a top team. Patient security and the smoothness of nurses' work processes are being promoted by means of various technological devices.

*We have, for instance, the Esgraf "monitoring device". This unit is a good auxiliary device for nurses. Movements by residents in their own rooms can be tracked by its means. Alarms can be turned on in the rooms if needed. Then it is known if the resident is on the move. Particularly at nights this is useful when there is only one night nurse in the building. When the alarms are turned on, an alarm is also triggered to the nurses' phones. Continuously recording cameras have been placed at the outer doors and terraces where movements can be seen.*

*There are sensor lights in the washrooms in the rooms and corridors. Lights turn on from the motion of the resident. These can often cause confusion to those with memory loss, and they may accidentally press the alarm when they try to turn off the lights. Sensor lights are nevertheless a security factor. As the resident moves about, lights are turned on and the journey to the WC is made safe.*

*'Runaway' alarms are also in use: i.e. wristbands that look like wristwatches, either on the wrist or concealed within the person's clothing. A 'runaway' alarm is connected to the monitoring device, and the unit makes a loud noise if the resident exits the premises. This has also resulted in many false*



## technology in nursing

*alarms, however, because the alarm reacts too sensitively to the resident proceeding past the outer door. Nutukka's phones are wireless and messages can also be sent from them internally. At the top of the phone there is a red alarm button: pushing it will bring help right away from other nurses. The new patient security devices require development, also due to excessive reaction sensitivity, for instance. Despite the technology – and due to its benefit – we have been able to produce good, safe care for our clients.*

SARI AND MINNA, NUTUKAS

DESPITE  
THE TECHNOLOGY AND  
DUE TO ITS BENEFIT  
WE HAVE BEEN ABLE TO  
PRODUCE GOOD,  
SAFE CARE  
FOR OUR CLIENTS.

One of the positive contributions of the project has been building it within a multiprofessional team. With this, language barriers were broken between the various professional interests and new shared concepts in the discussion of wellness technology were found. The understanding of wellness technology as a whole expanded and diversified on the basis of the patient information systems. When something is ordered in the same language, one gets what one has ordered!

The training and educational trips during the project gave rise to new ideas for the development of one's own work as well as the care and rehabilitation of the patient. During visits, we got familiar with interesting innovations – for example, the health centre virtual clinic and a walking robot.

The project inspired us to consider and do a survey on devices that were connected with the security of the work unit, such as surveillance equipment. The personnel were given instruction and guidance about wellness technology, but the actual demand for it was greater than what the project was capable of providing.

If the connections are developed to become more operable in general, it will already be easy to make matters operable here in the provinces, right on the spot. This way continuity in treatment will be assured.



*Nutukka's monitoring system  
Photo: Sini Turpeenniemi*

# University of Applied Sciences students' report on

TARJA HEIKKA, HILLEVI ILLIKAINEN AND SIRPA KAUKIAINEN

*The students of health care and public health nursing at Lapland University of Applied Sciences examined their experiences of wellness technology and its expertise in the home care of two municipalities.*

As a result of being involved with the HYTekla project, we became interested in clarifying the experiences of home care employees in wellness technology expertise and what sorts of development ideas would emerge as a result of the personnel utilizing such expertise. The use of wellness technology will increase in home care in the future, so the competence of the home care staff in utilizing wellness technology is important both from the perspective of clients and that of employees.

We have clarified what sort of wellness technology is in use in home care, taking into account the long distances in Lapland in Ranua and Ylitornio and how the home care staff react to their technology-based expertise. The goal of our thesis was to clarify the development ideas in the home care staff's technology expertise by which it is possible to support safe living at home on the part of clients, manage independently, and promote the quality of nursing. From the standpoint of developing nursing, it is important to bring the experiences of nurses to the fore.

On the basis of the research material, the nurses know how to refer to many of the technological devices that they use daily in their work. Many of the devices contributed to the safety of the clients. Various measurement devices were also in use. Equipment strengthening social interaction in home care was in minimal use.

The interviewees brought to the fore that all technology increasing the safety and security of the client as well as living at home is welcome. At the same time, equipment that facilitates the safety and

## QUOTATIONS FROM INTERVIEWS:

"Wellness technology – it was quite a difficult term to start with."

"...wellness technology...well, uh, does it have something to do with computers?"

"...knows a few things, the main things, but not nearly everything in there, doesn't really know how to use it well..."

"...could know better how to use it...it's sort of superficial..."

"...personal guidance, now that'd be best of all..."

"...I'd like to get that...training with the program, since there are still gaps in

what I know and I've got to ask for help..."

"...everything that's linked at least with information technology...I should get some more guidance...and whenever there are changes, I should get more familiar with them right away..."

security of staff members as well as their work is important.

The deployment of technological devices also affects culture and environment. When home care assistance is needed, a person hopes that another person will act as a nurse. In this respect, the big picture may nevertheless remain unseen. Correctly

## wellness technology

**ALL TECHNOLOGY INCREASING  
THE SAFETY AND SECURITY OF  
THE CLIENT AS WELL AS LIVING  
AT HOME IS WELCOME.  
AT THE SAME TIME, EQUIPMENT  
THAT FACILITATES THE SAFETY AND  
SECURITY OF STAFF MEMBERS  
AS WELL AS THEIR WORK IS  
IMPORTANT.**

targeted, technology supplements services and increases both the number of service producers and clients' well-being – and does not replace people at all.

Home care nurses were rather pleased with what they regarded as their competence in the area of wellness technology. On the other hand, it emerged from the responses that the nurses have a desire to develop their wellness technology-based expertise. This could be affected with more thorough education, the available tools and equipment, and further practice in their use. In vocational education, the technology-related training was regarded as minimal. In the interviews it emerged that in home care the clients have equipment that they do not know how to use. Nevertheless, the home care employee is in a key position in considering the ability of a client to manage at home, together with his/her security. In the view of the nurses participating in the study, the significance of multiprofessional cooperation is also emphasized, since in that case the best possible utility is gained from wellness technology. Sufficient attention

should also be given to training in the use of technological devices as well as getting familiar with them. Educators must identify the skill and knowledge level of those they are teaching as well as their readiness for learning. Also in home care, motivation has great significance in deploying technology.

Wellness technology is a part of home care and the everyday life of home care personnel, even if at the beginning of the interviews the respondents reacted to the 'wellness technology' term as something strange, and were confused about it. The experience of the nurses in the insufficiency of wellness technology availability came to the fore from the results. Technology is nevertheless part of everyday home care. Shortcomings mainly exist in guidance and instruction as well as in the maximal operability of the equipment. The earlier research brought the importance of orienting oneself to the use of the equipment as a main issue. Orientation should not end at deploying technology, however; rather, it should be a continuous process.

# Quantified Self as a promoter of well-being

MARIA KONTTINEN, JANIKA OJALA, TEEMU YLINAMPA AND TOMMI HAAPAKANGAS

In the hurries of everyday life, it is a challenge to look after one's health alone. When social interaction is insufficient as support, help can be found from wellness technology. Technology is involved in maintaining one's health as a coach, mentor or even a friend. Via technology, it is easy to compare one's own results and set objectives.



## WHAT DO PEOPLE MEASURE?

- sleep
- nutrition
- physical exercise
- daily activity
- time management
- stress levels
- moods

## *More knowledgeable about your own body – with smart tech*

Technology applications monitor the operation of our vital functions inconspicuously. They provide a huge amount of information for our use which – presented correctly – can develop, maintain and motivate us to take good care of our well-being. If we give it a chance, smart technology can also help us to listen to our own bodies.

These days, more and more people measure themselves and their actions by making use of wellness technology. It has become a growing trend as a result of the development of the technology. This phenomenon is referred to by the term Quantified Self: i.e. measuring oneself. Data are gathered from one's own daily physical functions – from life components such as diet, sleep, mood and daily activities. The Quantified Self phenomenon also links essentially with the term biohacking. It could be described as a way of life in which there is an attempt to clarify almost all available information from one's own body.

Previously, devices used to measure oneself were limited exclusively to pulse meters and, for example, manually entered training diaries. The Quantified Self concept first took off in 2007 when Apple brought its iPhone to market. After this, measuring oneself became a lot easier and simpler, as smart phone applications in themselves already offered rather semi-automatic data about the user's activities.

## *Smart technology's many formats*

Smart phones – which are found in almost everyone's pocket – make the use of various applications easy. Ownership of a smart phone is not, however, necessary, because the Internet



**THE GROWTH  
IN POPULARITY OF  
QUANTIFIED SELF  
IS MAKING PEOPLE  
MORE AWARE OF THEIR  
OWN WELLNESS.**

*Tools for  
measuring  
oneself*

### *Technology as an aid in promoting health*

The growth in popularity of Quantified Self is making people more aware of their own wellness. For less mobile persons, the devices serve as motivators to get up and move, whereas real fitness enthusiasts can monitor their own recovery and thereby avoid excessive overloading by their means. Smart technology can also be of value in the treatment and prevention of illnesses. People are capable of reacting to their own physical problems in good time and to distribute, by means of a smart device, the information gathered with their physician. The phenomenon can also be regarded as leading in the future to a situation where smart technology promotes well-being alongside prescription drugs. In the future, physicians will be able to prescribe wellness applications in the same manner as prescriptions are issued to patients – for example, to increase exercise. Though smart technology will not be able to replace physicians, valuable information about the patient will be made available already upon arrival.

provides an enormous range of programs and web services suitable for measuring oneself.

Some of the newest popular devices are activity meters which follow daily activity and rest by means of an acceleration transducer. They guide the person to remain sufficiently active the whole day and report excessively long sitting periods. The latest innovation on the market is smart trousers, a Finnish innovation ([www.hs.fi](http://www.hs.fi)). By means of these trousers, physical fitness enthusiasts and athletes obtain new information regarding muscle loading, performance techniques, muscular balance and economy in muscle work, since they measure the functions of the large muscles in the manner of a pulse meter.

It can be anticipated that the Quantified Self phenomenon will also be implemented in the future at the workplace. Via smart technology, the employer will acquire valuable information about employees' well-being and will be able to consider which changes to the working conditions could be made to preserve wellness. In the best scenario, self-measurement motivates employees to maintain better care of themselves and become more conscious of their own well-being. This represents good news for the employer, since it will keep personnel healthy and increase comfort at work. Taking care of one's own health and wellness is relevant to each one of us, so why not benefit from modern technology in pursuing them?



# Flexibility for nursing via mobile devices

HANNA VUOJÄRVI

*Various mobile devices accompany the nursing work of many in their daily professional tasks. Mobile technology offers opportunities to intensify the efficiency of work, learning on the job and flexible working procedures. This outline is based on a presentation held at the Wellness and Expertise with Technology seminar in November 2014.*

## **From mobile potential to practical applications**

### *What's a mobile device?*

The word 'mobile' first brings to one's mind the various portable devices carried in a pocket or bag – for example, smart phones and tablets – which enable social interaction and the use of various Internet services in a flexible manner with regard to time and place. Mobile devices increasingly accompany nursing work – which is more and more based on movement from one place to another, also extending beyond institutional walls. The information required in nursing as well as contacts with colleagues and interest groups should be available regardless of where the work is done. The easy mobility and small size of communication equipment support their usability as part of care service chains, but mobility and its potential can also be examined from beyond the perspective of physical mobility.

Those who do nursing work meet a lot of people on a daily basis, and this interaction requires the setting of various roles. For example, a registered nurse can consider with a colleague the solution to problems connected with a patient's care, receive practical instructions from a physician for the continuation of treatment, and inform the patient's relatives of his/her condition and treatment progress. The common denominator of all these encounters is the patient

and his/her care, but interaction situations have various goals: problem-solving, information acquisition and practical application, knowledge distribution, listening, empathy and offering support.

The acquisition and distribution of information as well as the use of support materials can be enabled by mobile devices, as well as smooth transfer from one role and situation to another. Sometimes information must be sought from many sources: the overall situation must basically be built and joined from small pieces. Smart phones and tablet PCs bring local and online resources as well as the tools for information-building to the fore when needed. Over the years, data stored on devices, databases and cloud services are also invariably accessible, readable and further subject to editing.

### *Examined information*

The use of mobile devices in nursing has been examined both domestically (in Finland) and internationally. For example, the use of smart phones is regarded as useful particularly in planning work as well as in consultation situations. The use of phones was considered to be something that improves the quality of consultations, promoting the distribution of information and offering the opportunity for learning and mentoring.

The documentation of experiences and events as well as the transfer from one situation to another was also enabled, as a result of telephone use, in challenging and insufficient operational environments. Under extreme conditions, the use of phones has also obtained support for a clinical problem-solving.

Generally speaking, the most pivotal benefits of mobile technology are regarded as the possibility to obtain answers quickly and avoid errors as a result of effective information distribution. The real-time

character, management and accessibility of information are regarded as having improved, also in mobile nursing work. With tailored mobile applications, it has been possible to streamline practices and improve safety in, for example, the more effective monitoring of medical treatment, instrument loss and sample transport as a result of more precise temperature monitoring.

#### *From questions to practice*

The use of mobile devices and information networks enables matters that bring considerable effectiveness, safety and flexibility to nursing work, but the deployment and integration of equipment as part of the work do not come about by themselves. The basic question appears to be this: What is the problem if the solution is the deployment of mobile technology as part of nursing and rehabilitation work? The careful consideration of this question and composing the answer manifest those goals which the use of mobile devices is hoped to achieve. When the goals are clear, equipment choices, deployment planning and the surveying of educational requirements all become smoother. Deployment always has its challenges, but sensible devices, sufficient training and clearly defined approaches bind professional nursing-related working methods to development on the level of both the individual and the entire organization.

#### *Future trends and development targets*

In the future, nursing training and work life will be more closely linked with each other. With mobile devices, activity at and exceeding the borders of training and work life is supported. The role of patients and clients in the generation of health services will become more pivotal, and service

#### QUESTIONS CONNECTED WITH DEPLOYMENT

What is appropriate from the perspective of the entire organization?

How does the renewal of working methods affect the work community or labour distribution?

Which laws, regulations and decrees must be taken into account?

What does the deployment of mobile devices mean from the perspective of practical care and rehabilitation work?

Who is responsible for implementing change and leading it?

Which sorts of educational needs do personnel have, and how is sufficient training assured?

chains will be formed so that they also extend beyond the walls of the institutions. Various kinds of 'smart' clothing and mobile applications enable the client to directly monitor, for example, some basic vital functions at home and deliver the information via the applications to the unit performing care. Via the applications' alarm systems on the basis of results or missing information outside the reference values, the client can be given adequate extra help to the circle quickly as well.

It is also noted that with mobile health technology such as, for example, with exercise applications or digital food journals, there is potential to promote positive health behaviour. In the future, we will surely also see more game-like elements and mobile games as part of nursing and preventative health education. By their means, the personal motivation of the patients and clients can be awakened and supported, as well as bring meaningfulness to post-operative rehabilitation.

# Virtual dealings using service design

PIA YLIRÄISÄNEN-SEPPÄNEN

Social and health services are generated in order to promote the health and well-being of municipal inhabitants. In Finnish Lapland, the municipal inhabitants are nevertheless in an unequal position with regard to the accessibility of services, due to long distances as well as varying economic and personnel-based resources in the municipalities. One way to improve the accessibility of social and health care services is to utilize electronic services. Social welfare and health sector professionals may nevertheless be concerned about how electronic services affect interaction or the quality of services. Challenges can be responded to by utilizing service design methods. Service design is a rising trend in the design of public services, because it is possible through its aid to better respond to the needs of users and intensify the effectiveness of service processes.

Service design refers to a user-oriented perspective in the planning of services incorporating design methods. Planning in which services are designed with the user for the user. The client using the service concerned and the service-implementing professional are both users who participate in the planning.

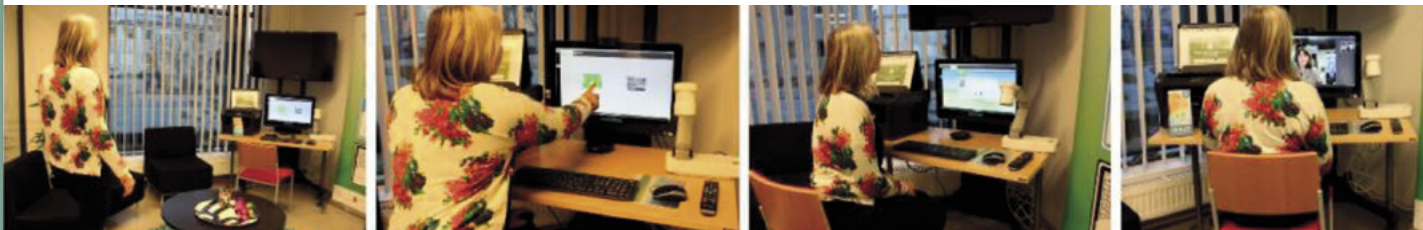
Through service design methods, the attempt is to find, for instance, non-perceived needs and to either visualize service concepts or concretize service processes. Via such methods, possible problem aspects can already be found at the planning stage and solutions to the same can be conceptualized. In

addition, the participation of users in the design of services helps professionals in developing a new approach as well as committing to the same.

In designing electronic services, the participation of users is important, since the deployment of technology changes the operational processes of clients and professionals alike. In addition, the deployment of technology affects interaction, which particularly comes to the fore in image phone services. In image phone services, persons situated at various locations are connected by means of a computer to a mutual meeting in which they see and hear each other as if they were in the same room. In this respect, the interaction is by means of technology, but it enables both verbal and non-verbal communication, such as facial expressions as well as gestures.

*In the Virtu interaction by means of video connection* project, municipal resident-related electronic business sites, Virtu service points and image phone services such as a psychologist's services were piloted. In addition to individual services, peer group activity was piloted, in which the participants at risk of diabetes sought peer support in changing their life habits from various parts of Finnish Lapland. In both services, the core formed interaction with regard to which the experiences were positive.

The Virtu service point is intended for client use. It is possible there to use image phone services and

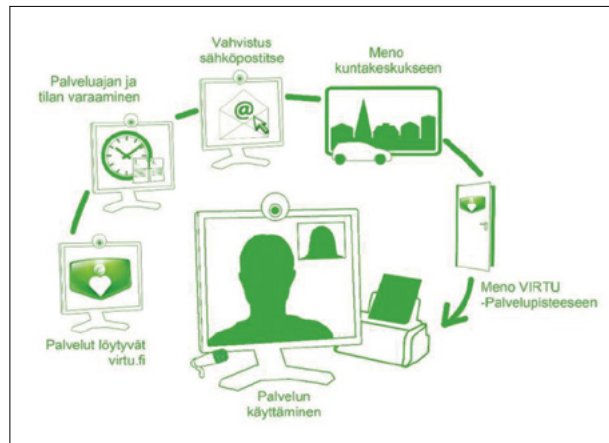


*Image phone contact forming in the Virtu service point, photographer: Inkerelli Vieltojävi.*

**ACQUAINT  
YOURSELF WITH  
SOCIAL WELFARE AND  
HEALTH SERVICES AT  
WWW.VIRTU.FI.**

*Interaction  
point demo,  
photographer:  
Pekka Ojaniemi.*

*Service point process.*



services available on the Internet as well as print/scan/copy. The goal was to make these functions easy to use and secure with regard to data. At the same time, the service point had to be made suitable for the operational culture of the municipality in question as well as for the requirements of social welfare and health sector professionals.

The sort of service provided by the Virtu service point had not existed in Lapland previously, so collection of the background information, such as user situation observation or client feedback, had not been feasible. For this reason, the persons working at the interface of the municipality and service implementers were brought into the planning of the service. They were able to bring not only their own roles to planning but also the most usual client situations, needs and challenges. The service design workshops and, in particular, service prototyping are functioning well in the development of electronic services. By utilising them in the planning process, it was possible to raise the challenges linked to usage and the environment, as well as to rapidly generate solutions together for these. On the basis of the information, the electronic dealings-related

program's interface, guidelines, premises and employees' action process were modified.

There is a need for the development of electronic social welfare and health services. Utilization of the service design therein improves service quality and facilitates their deployment, without forgetting cost-effectiveness. Moreover, in the area of long distances in Lapland, electronic social welfare and health services generate economic and quality-based utility for their users. Correctly designed and utilized, image phone services and other electronic services represent potential that increases the well-being of Finnish Lapland inhabitants.

The virtu.fi Electronic Services for Lapland Inhabitants project has been funded by the Regional Council of Lapland Sustainable Development and Work 2014–2020 structural fund programme for the years 2014–2020. The administrator of the project is the Federation of Municipalities of the Kolpene Service Centre, and the implementer acts as the North Finland Centre of Excellence on Social Welfare together with the region's municipalities, federations of municipalities and interests functioning in the social and public health care sector.

# A life of value and worth for seniors

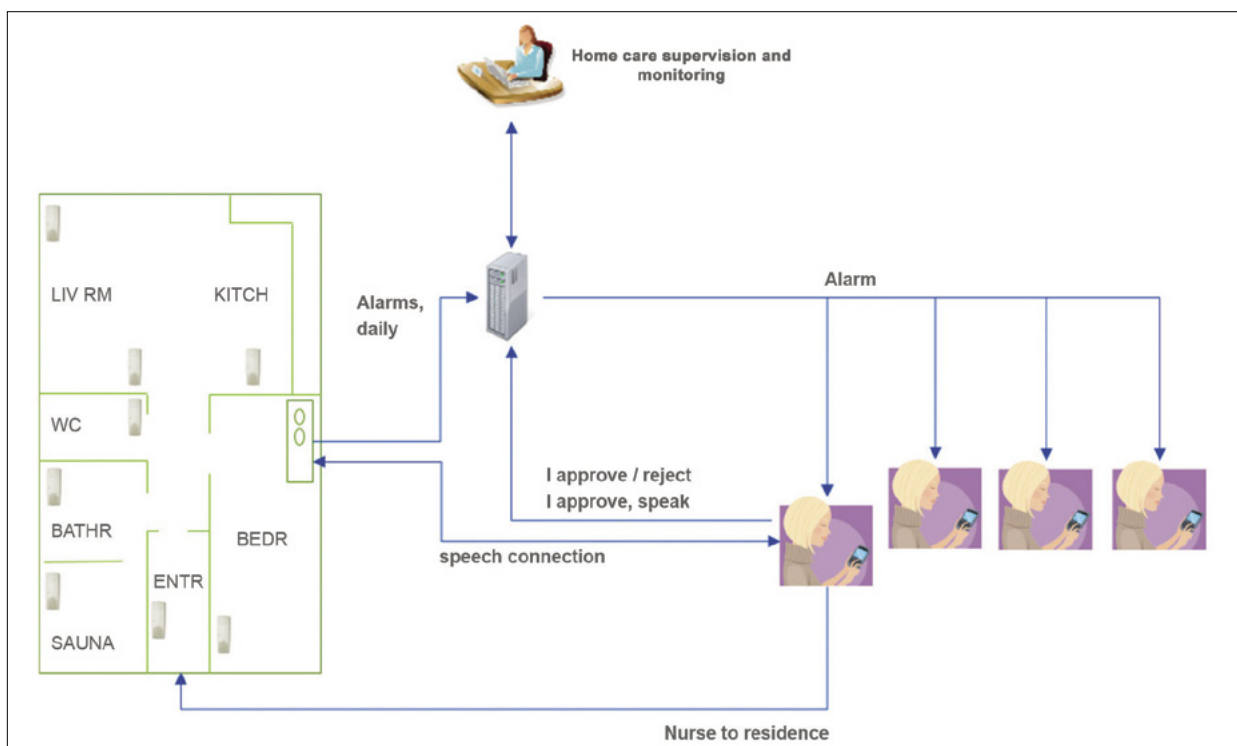
JARI SOUDUNSAARI

The Act on Supporting the Functional Capacity of the Older Population and on Social and Health Services for Older Persons (Vanhuspalvelulaki) endeavours to improve the position and well-being of the aging population. The goal is to support living at home as long as possible. Seniortek Oy has developed a monitoring and alarm system to support residential living on the part of older people. The cosy “Flower Pedestal” unit fits in as part of the décor – and does not create the image of constant surveillance. By means of the Flower Pedestal, the independence of senior citizens is increased as well as the ability to live securely at home for a longer period. If possible problems emerge, the automated alarm creates contact with the care chain rapidly and effectively. The Flower Pedestal is easily installed

and moved from place to place. The research indicates that cost-effective security and a valuable, worthy life for seniors are created by its means.

The Flower Pedestal features are modular and expandable. By means of a motion detector, the residence under surveillance is detected for falls, immobility and absence from home. In addition, by using the monitoring data the Flower Pedestal can follow the client’s daily rhythms (for example, waking up, sleeping, going outdoors, etc.). Through monitoring daily rhythms, changes are effectively detected in, for example, events of illness.

The Flower Pedestal sends alarms as text messages and, if needed, demands acknowledgement from the care chain of the alarm delivered. In addition to alarm actions, a speech connection to the care







Images: Seniortek

chain can be added to the Flower Pedestal as well as a call button to independent alarm delivery.

With the additional features, the Flower Pedestal also expands to be become a break-in, fire and moisture warning system, and via the residential temperature monitor, it is possible to obtain a warning about the residence becoming excessively cool or warm. The Flower Pedestal can also naturally function as a reminder (e.g. medication regimen reminder).

The Flower Pedestal delivers monitoring information to the system from the residence. The system processes the data it receives automatically in accordance with the processing rules given to it. In exceeding the alarm limit, the system sends an alarm to the care chain or, for example, to relatives, with regard to which someone must acknowledge the alarm received. If s/he wishes, the nurse can

BY MEANS OF  
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THE INDEPENDENCE OF  
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A LONGER PERIOD.

also arrange for a speech connection to the residence. Via the interface on the computer, the care chain (relatives) obtain additional information about the resident’s daily rhythms, periods of absence, etc.

### *The Flower Pedestal in the future*

The data handled by the Flower Pedestal will be precision-adapted in the future to process, in addition to motion information, the position and movements of the body. With more precise measurement, it is possible to detect changes more effectively, increase the effectiveness of surveillance – for example, recovery from falls – and observe the effects of care measures (rehabilitation, medication, etc.) and more precise changes which could have been caused by, for example, depression or incidents of illness.

The Flower Pedestal expands from an alarm-based system into a comprehensive tracking/monitoring system which also covers continuous supervision of functional capacity. Functional capacity supervision enables precise observation of whether it is still possible to remain living at home or if there is the need to transfer to, for example, a serviced residence.

# Better videoconferencing and public health care

TONI KURVINEN

*Client orientation and self-care are matters which wellness technology supplier companies are endeavouring to respond to. Products and services are targeted often so that they enable self-care safely and in connection with nursing professionals. The Arctic Touch homecare terminal is one of the favoured remote tools.*

## Arctic Touch homecare terminal

The Arctic Touch homecare terminal enables bringing several various services that promote health, security and well-being to senior citizens living at home or in care facilities as well as to others within the sphere of similar services. By means of the homecare terminal, it is possible to arrange versatile health and wellness services for those living at home or in institutional care. By means of the terminal, an image connection is obtained for health care professionals, friends and relatives. With the home terminal, it is also possible to make mutual video calls, increasing the sociality of the users in an entirely new way.

The Arctic Touch care terminal is an important member of the Arctic Communicator videoconferencing product family. Commissioning the system is quite easy and reliable, because contacts with health and social welfare field actors can be engaged immediately. The telecommunication interconnections are highly secure, since they are at best doubly encrypted.

Arctic Touch is integrated together with an effective videoconferencing solution. This gives seniors the opportunity to utilize versatile functions more effectively and improve their own activity and health. Everything happens easily by employing a touch screen. Arctic Touch is easy to use, and it is possible get it as a larger touchscreen unit or as a

tablet version. The Arctic Touch program calendar brings more activities to older persons or users requiring rehabilitation. In the program calendar, the content producers can relate their own programs and content to users easily. The users can participate in interactive occasions in accordance with their interests. Arctic Touch also serves as excellent support across the range from, for instance, surgical operations to rehabilitation.



Photos: Arctic Touch

### *Effective self care directly at home*

Frequently a problem in home care is formed by the control measurements required at regular intervals. The problem is highlighted particularly when distance are great. Arctic Touch and Telehealth offer consistent and precise monitoring of the patient's vital signs and symptoms by means of easy-to-use home technology, combining photo calls with the concept. In addition to Arctic Touch, the Telehealth method offers a coherent means of health measurement for a person in his/her own home. Participation in one's own health care increases when one is able to measure his/her important values by means of a blood pressure meter, blood sugar meter, oxygen saturation meter, scale, spirometer, thermometer, anticoagulation meter and ECG. Patients measure their values and respond to a number of health-related questions every day. The measurement value is forwarded to the control centre where staff that have received nursing training confirm the result. If the values go beyond the parameters set for the patient, the

information is forwarded via alarm functions to the nursing centre that has medical responsibility for the patient. By means of the system, it is also possible to ensure that the client really follows the values in accordance with the plan.

### *Better service through cooperation*

The population structure is changing, and people are living longer. With the increase in the number of older people, the need for safe and effective solutions in geriatric maintenance and care work is also growing. Arctic Connect Oy is engaged in cooperation with the world's leading company in the field of safety technologies and system solutions, Tunstall Healthcare Group. As a result of this collaboration, Arctic Connect Oy – as the first in the world to do so – has integrated standards-accordant videoconferencing technology into one uniform viable concept with Tunstall's progressive Telehealth technology and emergency phone technology. This way we are capable of offering not only better videoconferencing but also better health care.



*Photos: Arctic Touch*

# NurseBuddy – new generation home care

SIMO HÄNNIKKÄLÄ AND ANTERO SALONEN

## Story behind the company

The NurseBuddy program has been developed by a Finnish enterprise, Loikka Design Oy. It was established in 2012 by four friends whose passion was developing both technology and health care. All of us as founders already had friends and relatives at work in home care, and we noticed how we could help in the work required with our own expertise – by developing a program that would help all parties to home care without forgetting relatives. We jumped into the cars that belonged to home carers and embarked on field trips so that we would truly understand the sorts of needs and operational situations our clients have. These first steps in our enterprise were important and steered us in the right direction: NurseBuddy is renowned particularly for its clarity and ease-of-use.

The company has been selected for an acceleration programme in Dublin, invited to present its product at one of the world's largest new health care events in Silicon Valley, and has been listed in the TOP-35 young enterprises in European health care technology. We engage in discussions continuously with home care personnel, care coordinators, various specialists and partners in order to ensure that our solutions are currently the best and will continue to develop rapidly to become increasingly better by following advancements in the field.

## NurseBuddy

NurseBuddy is a nursing-based mobile activity coordination and communications program by which not only supervisors, nurses and physicians but relatives as well can plan and monitor care as well as follow the latest news and developments.



Photos: NurseBuddy

NurseBuddy has been developed by means of the newest technologies, together with home care personnel and nursing supervisors, and this guarantees its ease of use. The program can be used both on a computer and on any phone or tablet whatsoever. The nursing information is updated continuously between the various devices. We want to combine the best care practices from various countries and offer our customers a unique solution as an aid to home care.

## NurseBuddy's most important features

NurseBuddy is an easy-to-use mobile application. This enables nurses to always have important nursing information along in a mobile application, by which means it is possible to ensure good, up-to-date care. They can report important observations such as blood pressure values or deliver images of ankle wounds with just a few clicks.

By means of automatic operating time measurement, a care coordinator knows exactly when the nurses have arrived to be with clients. By means of this feature, care coordinators are capable



<p><b>CARE COORDINATOR OR SUPERVISOR</b></p> <ul style="list-style-type: none"> <li>• high-quality, proactive care planning is easy</li> <li>• a general picture of the field work situation in real time</li> <li>• comprehensive reporting on invoicing and salary payment</li> <li>• operational indicators: direct working hours, for instance</li> </ul>	<p><b>FAMILY MEMBER</b></p> <ul style="list-style-type: none"> <li>• sees relative’s health status and related updates from anywhere and at any time</li> <li>• easily relates his/her own observations and shares possible concerns</li> <li>• transparency in services – knows what has been done and when</li> </ul>
<p><b>NURSE</b></p> <ul style="list-style-type: none"> <li>• all care info always available</li> <li>• more time with clients</li> <li>• less paper work and less need for extra phone calls</li> </ul>	<p><b>PERSON UNDER CARE</b></p> <ul style="list-style-type: none"> <li>• individual, high-quality, proactive care</li> <li>• smaller risk of malpractice.</li> </ul>

of reacting immediately to delays and last-minute changes as well as receive the information required for invoicing automatically.

By means of the program, it is possible to make comprehensive notes and measure various data from clients. It is possible to monitor the client’s medication, daily meals, amount of exercise, observations made by the physician and a lot more. All this information is stored in a database and is easily retrievable when needed.

Information about manufacturers’ sensors can be easily attached to NurseBuddy and, e.g. the activity, weight or sleep of the person under care can also be followed between appointments. Together with appointment data and nurses’ notes, these provide a good overall picture of the health status of the person under care, and changes can even be anticipated.

It is important that the client’s relatives remain up-to-date on things. Through NurseBuddy, the care coordinators are capable of conveniently communicating care procedures and about the client’s condition to his/her family. This reduces the

time required in delivering email messages and making phone calls, because all essential data are already available in the system. Family members are also able to relate their own observations.

The client’s information security is encrypted via NurseBuddy. The program uses 256-byte SSL encryption (the same as many banks use) to ensure seamless data security for clients. Moreover, all stored data are backed up with copies each day on the servers, which are situated in their own fireproof premises.

NurseBuddy offers many kinds of help also with regard to practical arrangements. Care coordinators can quickly plan daily, weekly and monthly client visits for the nurses and easily ensure which of them are best-suited for each visit. Planning can also be done by means of automatic, ‘smart’ optimization. The program adapts to the needs of home care units of various sizes. By means of automatic time management and ‘smart’ client data, the information needed is collected with regard to invoicing, salary calculation and business planning. Integration with various systems is easy and fast.



**CONCLUDING  
OBSERVATIONS**



# The next step for development

PAULA POIKELA, SINI TURPEENIEMI AND KERTTU OIKARINEN

*The goal of the HYTekla project was to generate a development and education plan on the basis of an assessment of the current status of wellness technology. In the future, the plan will continue to be used as part of the training and project planning.*

The expansion of expertise is a tool by which communities mould their own future, working processes and security to make them more manageable. Ahtiainen and Auranne (2007) describe wellness technology by dividing it into six sections: 1) auxiliary device technology, 2) communication and information technology, 3) social technologies and security, 4) health technology, 5) full-accessibility planning and Design for All thinking, and 6) client and patient information system as well as gerontological wellness technology and social media. In the project, the concentration was on communication and information technology, social technologies and security, health technology, and client and patient information systems.

Wellness technology is developing continuously and is abundantly available. The technology is not, however, being utilized as much as possible since there are shortcomings in its know-how in use. The development, implementation and training of wellness technology proceed hand-in-hand.

The development and education plan is described on the basis of the questions formulated herein by Engeström (2010) by answering the following queries:

- 1) who are the participants in development?
- 2) why are they developing their competence and why are they interested in its development?

- 3) what competence are they developing and what are the content and results of development?
- 4) how are the participants developing their skills?
- 5) what are the core measures or processes in development?

## *Interest in development*

Achieving wellness technology benefits in social welfare and health care means a change in attitude in the administration and decision-making, such as also with professionals, citizens and educators in the field. Motivation also has great significance in the deployment of technology in the social welfare and health sector. The electrification of services is raising competence requirements on all levels, because what this concerns is a change in the way of thinking alongside the change in approaches.

The development of wellness technology competence should be seen as user-oriented service design in which the partners are social welfare and health care clients, managers and professionals in the sector, educators and researchers, and product developers and organizational actors. Development must proceed from the needs of clients and the identification of the level of wellness technology competence. In municipalities' decision-making, wellness-related policy outlines should be made part of well-being reporting, also with respect to technological services. The management and supervisors of the organization should put plans into action, acquire technology, look after the organization of staff training and evaluate the change in attitudes and approaches. The personal interests of employees are in a key position in the success of change.



Employees working in the social welfare and health sector have noticed that self-development with regard to wellness technology is inevitable if they are to remain on top of developments in the field. Clients and patients are becoming continuously more aware, and their technological expertise may cause confusion for health care sector employees. It should be possible to be able to steer clients towards the use of wellness technology.

By including educators and researchers in the mix, training that is close to working life is assured, as well as the modelling of development work and the identification of good practices. Product developers can give hints as to how everyday work could be developed by means of new wellness technology methods. For the generation of services, it is advisable to utilize third sector development work. For example, the Finnish Heart Association, Finnish Brain Association and Finnish Diabetes Association together produce the One Life project entity-related electronic ([youtube.com/user/sydanliitto](https://www.youtube.com/user/sydanliitto); [sydanliitto.fi](http://sydanliitto.fi)) and printed material for citizens to support self care and working methods, tools and training researched for professionals ([yksielama.fi](http://yksielama.fi)); The organizations train peer support persons to act close to patients and arrange peer group activities round the country.

### *The future is built through expertise*

According to the Health Care Act (Terveydenhoitolaki), municipal residents should be offered counselling in the area of health. Client-oriented promotion of health and functional capacity as well as guidance and the particular obligation for teaching rests with social welfare and health sector personnel. Clients and patients require the guidance of professionals and the support of volunteer actors

from organizations in order to be able to live a full life, no matter what age or personal health status. Health and functional capacity should be promoted at all stages of the care and service chains by teaching and guiding clients and patients so that the goal is to support them in self care and take responsibility for the choice they make affecting their health and well-being. The utilization of wellness technology in guidance and support services raises the competence-related demands of both professional personnel and citizens.

With regard to the sections of wellness technology, civic skills respective to citizens' self-care process which social welfare and health care professionals should be able to steer and teach can be particularly selected. These are specific auxiliary device technology awareness and use management-related information and communication technology and social media-based skills for one's own needs, an awareness of social and security technology-based requirements in the future, health technology expertise in self-monitoring, a perception of full accessibility-based planning and (as connected with client and patient information systems) the skill to review one's own information in the main archives. General health- and illness-related information intended for citizens can be found in abundance in the health library. The use of the health library and main archives require health literacy, by which is meant know-how in acquiring and finding information as well as understanding the same.

Competence in wellness technology for vocational education is also a great challenge, since the share of well technology in the current curriculum is regarded as minimal. Already in basic training, professionals should obtain readiness in the use of wellness technology. For example, the professional

requirements for registered and public health nurses include, for instance, the skill to utilize electronic services as part of the patient's/client's overall care and social media in nursing, and distinguish the private and professional role in the use of social media. The competence requirements also include mastery in the use of pivotal treatment and control equipment required in clinical nursing as well as the skill to use patient information systems, without forgetting responsible action in the maintenance of information safety and data security.

### *From educational requirements to procedures*

The cornerstone of competence development is comprehensive education. The HYTekla project proved to be the first step in the unbiased deployment of wellness technology. In the project, the flexible use of existent instruments was learned as well as the enabling of future visions in one's own work. Training will have to be continued on the basis of the foundation established in the HYTekla project.

Training needs were surveyed during the period of the project via questionnaires. The following development requirements rose to the fore from the survey: general information technology training, the acquisition of competence in information systems, management of distances, safety and security questions, and project-related expertise.

There is always a need for general information technology training. An increase in comprehensive information systems-based acquisition competence came to the fore as a newer component in educational needs: ease-of-use in programs and final user feedback, assessment and testing competence, procurement skills, usability and interface planning and cooperation between the final user and software supplier.

Management of distances is emphasized by the substantial travelling from place to place required in Finnish Lapland, and training is also desired in this area. As an aid to the management of distances, both remote connections and client-oriented remote supervision and control tools and methods are available, e.g. videoconferencing and cloud services.

Data security and other safety-related questions – for example, equipment and electrical safety – are quite important components in this work, whose expertise-related shortcomings are connected with the fact that what these contain and what the user should know and be capable of doing are inadequately perceived. Project expertise is referred to widely, but its content is veiled. These days the project word is fashionable, but not everything beneath the label can be understood to be project activity. Project expertise is an important component in training, since frequently development derives from the projects.

### *Development in one's own work*

The development of know-how means the development of the individual's know-how and professional development during his/her entire career – which can be, among other things, updating, expanding and deepening one's expertise or entire re-orientation. The goal is the development of comprehensive work community- and organization-based competence in which, from the highest management downwards, the significance and importance of development is identified and recognized (Finnish Association of Business School Graduates included 11 January 2015). In one's own work, development does not necessarily require conscious development, since development occurs also in doing the work itself.

In the HYTekla project, the foundation has been created for a network that can function as a kind of mentor in setting the foundation for wellness technology-based working methods, as well in the use of tools as the basis for patient safety and security. After all, mentoring has long been regarded as a format in which the older actor with more work experience spars with a younger one. Consideration could be given to having a mentor skilled in wellness technology come to the workplace, or a mentor could be chosen for all sections of wellness technology separately.

### *Online learning*

Learning is an interactive event and requires a planned interactive environment. Networks are one



Photographer: Esko Poikela

way to support learning. A “loose” network has been created in HYTekla, which is currently limited for the most part on a locality-by-locality basis. This, too, represents a start. Learning should be goal-oriented and challenging. One possibility is to implement the learning organization’s ideas, supporting distributed learning and interaction, e.g. by using chat platforms as well as giving special attention to sharing experiences and having a joint databank. Everyone should have the opportunity to know what the destination is in joint operations (Sipilä 2003). The network should identify its learning goals on all levels and follow development by means of indicators. Network development discussion occasions are the right place to bring up total learning from time to time.

## Measures

The awareness of the municipalities’ decision-making and organizations’ management of the primary importance of competence and training should be strengthened when technologies easing work and revising old approaches are adopted.

The development of wellness technology- and virtual lifestyle and the partnerships in training should be built on the basis of the Quattro helix principle, whereupon the resources of universities as well as the public, private and third sector are combined in innovation activities.

Training in work units should be arranged in accordance with the competence need survey. Those involved in the project can work as support persons and distribute the information they have acquired.

Training on a locality-by-locality basis must be planned within the already existent network. In addition, the person intended as a mentor for each locality will participate in a joint core group that will obtain extensive training both nationally and internationally.

When the perspective on wellness technology has expanded, employees shall be able to examine the technology in use within their own work units and consider what else it may already be possible to deploy. In addition, they may prepare visions of the future.

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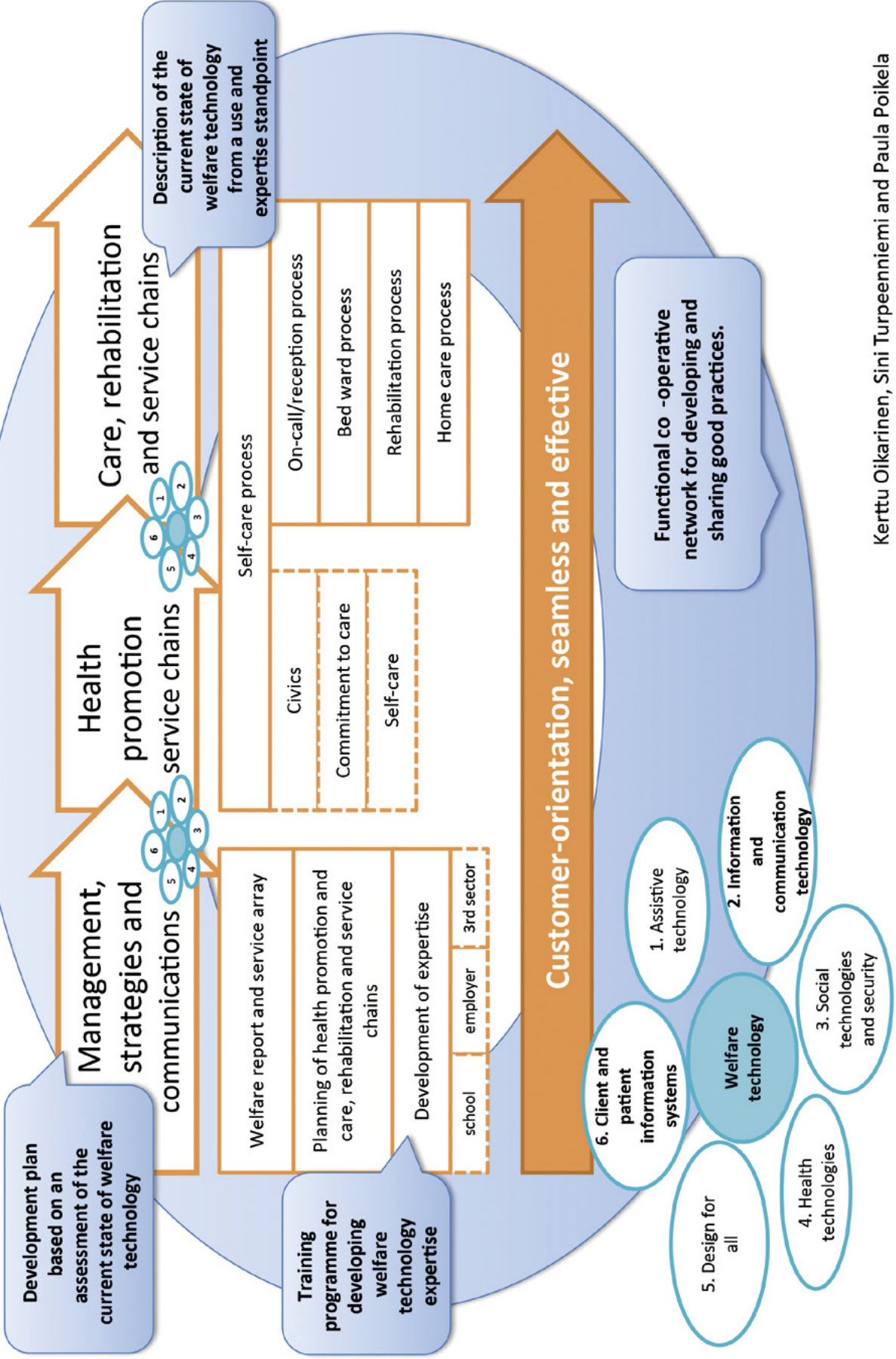
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# Welfare technology support in seamless, customer-oriented care, rehabilitation and service chains



**“Distance is No Obstacle to Health”** is a publication that conveys the results of the HYTekla project after two years of intensive work. The articles shed light on the experiences, thoughts and new inroads in the utilization of technology amongst the client’s professionals, health technology planners and wellness field as well as technology instructors working within the health care sector.

Cooperation between actors and users strengthens expertise and provides innovation for new operational potential. Distance is no obstacle to health – nor must distance mean loneliness: rather, by means of wellness technology, it is possible to create the feeling of security in even the more southernmost corners of Finnish Lapland.



Leverage from  
the EU  
2007-2013



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