Focus on

WELFARE TECHNOLOGY

Nordic Centre for Welfare and Social Issues
Introduction

The age wave presents a double demographic challenge, with the ageing population’s need for health and care services increasing at the same time as the number of young people entering the workforce is declining. With public services organised as they are and little use being made of new technology, there will not be enough hands to provide assistance for those who need it. This is the backdrop against which NVC is publishing its booklet on welfare technology (Ambient Assisted Living). What is more, and no less important, we believe that welfare technology will mean greater independence and a better life for the individual citizen. NVC therefore urges the Nordic countries to put welfare technology on the agenda. And not just talk about it, but put national strategies, investment funding and close Nordic cooperation in place. Because Denmark is the most advanced of the Nordic countries in the use of welfare technology, it provides the specialist backbone for this booklet.

The Nordic countries do not yet have have a common understanding of what welfare technology as a concept means – establishing such an understanding would be a good start.

NVC is convinced that the introduction of welfare technology will be a win-win situation for everyone, the individual citizen, society and business. Nor, as we see it, do the countries have any other choice. Work needs to start urgently, as major changes do not happen overnight.

The booklet has a comprehensive facts section, a section dealing with the technology in practice, a section on what politicians think, a section on research and development, and, finally, an international overview. As with all our theme booklets, we also make recommendations.

Enjoy!

Tone Mørk
Director
Nordic Centre for Welfare and Social Issues
The Nordic Centre for Welfare and Social Issues recommends

The Nordic region is facing a large age wave and by 2035 there will be twice as many people over 80 as there are now. Although many of them will be healthy, there is no getting round the fact that there will be far more older people with nursing and care needs. At the same time a persistently low birth rate means that there will be no corresponding growth in the workforce. There will be fewer hands to care for the elderly. If that were not enough, we know that today’s 60 year olds will have much greater expectations regarding quality of life and services than today’s older people, with many wanting to stay in their own homes.

1. The Nordic countries must target welfare technology for strategic action if they are to meet this challenge.

A strategic national effort is needed to meet the challenges. Unless direction is provided and work targeted, provision will be left to chance. If key public authorities do not take responsibility, other players will corner the market. This could lead to big differences, with those who can afford it being able to buy assistance and welfare technology solutions, while public welfare suffers. The use of welfare technology may mean make or break for our welfare society.

Welfare technology also opens the way for major industrial development.

2. Learn from each other and set up Nordic cooperation in the area.

The Nordic countries are at different levels as regards both attitudes to technology and the will to provide funding to test it out. There is great potential for learning from each other and setting up stronger Nordic cooperation in this area than currently exists. Knowledge and competence are needed to exploit the technology that already exists. Knowledge and experience sharing, innovation and standardisation are areas that would be useful and suitable for Nordic cooperation. NVC recommends setting up networks in these areas with a view to supporting positive development in the Nordic region.

3. Provide national funding for investments, trials and projects in local authorities. Ensure good documentation.

The Danish public sector demands welfare technology, making it a driving force for new initiatives in the area. The Danish Government accelerated development by setting up the Danish PWT (Public Welfare Technology) Foundation with DKK 3 billion to spend on testing and introducing technology in the public sector. See page 55. This is an example for the other countries to follow. National funding must be used to underpin a national strategy. Good documentation of experiences and implementation projects must be insisted on in this work to ensure that ideas and results are not lost when projects finish.

4. Use technology so that people with chronic ailments can take responsibility for their own health. This will lead to a good quality of live and save society money.

Welfare technology makes people living in their own homes better
able to look after and take responsibility for their own health. This will reduce hospital admissions. Claus F. Nielsen, International Manager, DELTA Business Development, says in an article on page 71 that introducing welfare technology could halve the number of hospital beds.

5. Use technology to help people with disabilities function better. Listen to users and consult them when technology is introduced.

For many people with disabilities new technological solutions can bring greater functionality and with it opportunities to function on their own terms. The use of smartphones with memory support and GPS can, for example, give people with cognitive problems greater security and enable them to obtain training and subsequently work.

6. Be prepared to change rules and work routines to get maximum benefit from new technology. Consult staff on the introduction of welfare technology.

Welfare technology is just a tool for dealing with anticipated developments, but the organisational consequences must be examined in order to make the most of the technological possibilities. Without the will to change cooperation routines and professional demarcations, it will be impossible to exploit the full potential.

The value of the technology must be clear to the staff who are going to use it. This requires knowledge, competence and, not least, the desire and motivation to learn something new. Staff must be prepared for change both at the organisational level and in the technology to be used. Insecurity and lack of acceptance will make it difficult to exploit welfare technology to the full.

7. Address the ethical problems of welfare technology with openness and adapt legislation so that users can benefit from new possibilities.

GPS means that people with cognitive disabilities, e.g. dementia, can move about more freely outside. It also prevents a lot of fear and unease for all concerned. At the moment the use of personal GPS locators is against the law in several of the Nordic countries. We recommend following Denmark’s example and amending legislation to make it possible to locate dementia sufferers who have lost their sense of direction and gone astray.
What is welfare technology?

The term welfare technology is mainly used in Scandinavia. This is because combining the words welfare and technology makes sense in the welfare society of the Nordic countries.

In general it can be said that welfare technology is the technology we use to improve the services provided by the welfare society and make them more efficient.

There are now many definitions and descriptions of what can be called welfare technology and there is still no common Nordic definition of what the term welfare technology covers.

The Danish Centre for Assistive Technology has drawn up a broad description, or understanding, of what welfare technology is, which can be used as a starting point:

Welfare technology means technological solutions that help to preserve or develop welfare services.

In the Nordic welfare societies the public sector offers a range of welfare services to citizens with special needs, e.g. nursing, care, practical assistance, assistive technology, home adaptation, rehabilitation, physical therapy, special education, sheltered employment, etc. Welfare technology consists of technological solutions that form part of these services. Welfare technology is not, therefore, restricted to a specific sector but extends into every sector, including health, social services, education and training, and employment.

Welfare technology includes technical solutions that are used by citizens in receipt of special welfare services and either compensate for or support a disability. Welfare technology also includes technological solutions that are mainly used by and support the staff who deliver or carry out welfare services.

Welfare technology can take the form of dedicated assistive devices, consumer goods, home adaptation solutions, educational equipment, tools, etc., and is mainly defined in relation to them by its twin focus. Welfare technology solutions have both an individual and a social perspective.

**Definition in relation to the technology used by hospitals**

It would not be possible or expedient to produce a precise definition of whether technology should be referred to as welfare or hospital technology, for example. It is very much dependent on who is responsible for treatment.

If the solution is part of hospital treatment and under ongoing medical supervision, it could rightly be regarded as a medico-technical or telemedical solution. If the same solution was initiated and prompted by local authorities and other occupational groups or the citizen him/herself, it could be regarded as a welfare technology solution.

The welfare technologies described in this publication are characterised by the solution having a high degree of direct user involvement. The citizen's ability to
What problems does welfare technology solve?
Welfare technology is used to rationalise and improve the welfare services provided by society for its citizens.

Welfare technology can, for example, help to:
- Remedy disabilities and make people more independent.
- Make it possible for people to live better and longer in their own homes with a chronic illness.
- Support citizens in living healthily with a better quality of life.
- Enable staff and family to provide a better, more efficient service.
- Enhance the safety and security of citizens and staff.

Examples of welfare technology solutions
- Bidet toilet with integrated washing, blow drying and possibly a lift seat for help with sitting and standing.
- Chronic care system – equipment that helps people live at home with a chronic illness.
- Rehabilitation and physical therapy in the home with a games console.
- Care system – mobile employee terminal with care file, drug list, log and instructions.
- Personal emergency alarm with GPS locator for people with dementia who can wander off.
- Smart home with environment control and automation solutions.
- Key system with digital key on mobile phone for home nursing.
- Medicine reminder/dispenser with alarm and possibly notification of nurse.
- Robot vacuum cleaner that automatically vacuums room when convenient.
- Citizen and family portal for service information, appointments, information sharing and bookings.
Why is welfare technology important in maintaining the welfare society?

Demographic challenge
The Nordic welfare societies are facing major challenges in continuing to guarantee nursing, services and care for future pensioners. In the years ahead the number of people of pensionable age will increase at the same time as the generations entering the workforce get smaller. According to Statistics Denmark, the number of people in active employment per pensioner will fall from just over 3.5 in 2010 to around 2.5 in 2025 and just over 2 in 2050.

This double demographic challenge means that there is expected to be a labour shortage in the public sector when it comes to providing services for the growing number of people who need help. The situation will be made worse by a disproportionately large number of public sector workers retiring in the next few years compared with the private sector.

The demographic trend alone will lead to growth of 20% or more in public spending on older people between 2000 and 2030. Three quarters of the growth will be due to older people over 65.

Finding the money to employ more resources in the public sector is considered unrealistic, so in future fewer staff will provide services for more clients.

The only way this can be done is by rationalising the public sector, and this is where the use of modern technology will play a major role.

Rambøll Management describes in a report how the introduction of three familiar technologies (Care System, Video Consultation, Chronic Care System) will reduce the need for labour in the public sector and so help ensure that there will be nursing and care for future older people too.

Technology can free up time for care and nursing

There are currently 106,000 employees in the elderly sector. Demographic development means that another 7,000 employees will be needed in the elderly sector in 2015 and 12,000 in 2022. To make time for care and nursing for older people in the future, investment in technological solutions is needed. Three familiar technologies could reduce demand for labour by 6,500-7,500 employees in 2020.

Source: Rambøll Management for the Danish Society of Engineers, IDA
Why invest in the development of welfare technology?
A number of reasons for introducing welfare technology have been mentioned, but the most important are thought to be:
• Enabling people to do things themselves that they would have previously needed help with.
• Using human resources more efficiently.
• Manual, menial or heavy work being done by technical solutions instead of staff.
• Helping to prevent and reduce the effects of chronic diseases and age-related complaints.

One way of solving the problem of finding labour for the welfare sector might be to import workers from countries with a labour surplus. This solution meets with political resistance in the Nordic countries, however, and is not considered a sufficiently realistic alternative at present, as there is no desire for increased immigration.

The question is, therefore, whether there is actually an alternative to using welfare technology or whether, like it or not, we will end up introducing technologies in a gradual, fragmented way as the pressure on public welfare services grows.

Globalisation – improving efficiency
The Nordic welfare societies are under pressure from globalisation and the present financial crisis. Among other things, the Nordic countries will have to compete with countries and regions that will continue to use fewer public resources for welfare.

In the face of this competition and the demographic challenge, it will become unrealistic in the long term to safeguard welfare levels for the growing number of pensioners with financial resources alone if there is to be any balance between society’s income and expenditure.

Just as it is necessary to increase competitiveness to safeguard revenue, there will also be a greater need to reduce or streamline the allocation of welfare services in order to manage expenses. The global financial crisis also means that the Nordic countries, which have otherwise weathered the storm relatively well, have been forced in some places to limit welfare spending too.

Chronic diseases
There are around 6.6 million people suffering from common chronic diseases in the Nordic countries, with around 2.2 million being severely incapacitated by them. This means that 60-80% of Nordic spending on hospitals goes to treat people suffering from these chronic conditions. Owing to the anticipated rise in life expectancy (more than 8% for both sexes between 2008 and 2050 in Denmark) and the increasing prevalence of chronic diseases, the number of the chronically ill is growing. This means that health costs are expected to rise from just over 6% of GDP to around 8% in 2020. It is therefore important to introduce technology that helps people to live with a chronic disease in their own...
home, enabling them to take responsibility for having as good a life as possible with a chronic ailment. Enabling a large proportion of people with chronic diseases to take greater responsibility for their own health by using welfare technology, for example, will be a vital factor in reducing resource consumption in the health sector.

**Ethnic diversity, support and motivation**

The shortage of labour in the public sector, combined with the difficulty of motivating and retaining staff, means that the future will bring major challenges:

Using IT systems and mobile terminals, all employees can receive professional in-service support and be offered job-relevant training in connection with the performance of their duties. This means that employees with fewer qualifications will be able to carry out a range of duties that were not previously open to them and so work on more interesting, motivating tasks. Meanwhile, staff with greater professional resources can concentrate on supervision and the tasks for which greater expertise is required.

Many new employees in the public sector already come from countries where education and culture differ from the Nordic countries, and this trend can be expected to continue. In some municipalities in Denmark around 15% of community care staff are from a non-Danish ethnic background.

To enable new employee groups to perform well in the public sector, a care system with mobile terminals, for example, can be used to provide staff with continuous support. This could include providing language instructions that help with reporting and the understanding of text and images.

Terminals can also provide professional support, which means that, when on home visits, new employee groups can obtain information and instructions on performing work processes, thereby ensuring service quality.

**From user to "customer"**

Around 25% of future pensioners will only have their state pension to live on. The other 75% will have additional income from savings and pension schemes.

A study carried out by SFI (Danish National Centre for Social Research) shows that more than a third of pensioners in Denmark have assets in excess of DKK 1 million (excluding pension savings). The proportion of wealthy pensioners is expected to increase for future generations.

This means that more pensioners will have the wherewithal to buy help and technological solutions over and above what the public sector can offer. This trend, which is already apparent, is set to intensify, partly because of political pressure to introduce more freedom of choice in a number of public services, and partly because future older people will be more used to buying what they need.

The continuous development and marketing of new and cheaper products on the "health products" market is also significant. This covers various assistive devices, including electric mobility scooters, phones with large keys and GPS locators for family members with dementia, exercise equipment and products that are better suited to the elderly and chronically ill because they take account of their needs and wishes. "Health products", e.g. blood pressure meters, can also include the purchase of various services, with people's health being monitored by means of measuring and monitoring...
equipment in the home and a monitoring centre operated by a private health supplier.

**Privatisation**

In several Nordic countries there is a politically motivated desire for a number of services paid for by the welfare society to be delivered by private players.

A trend has therefore been started that will lead to a greater proportion of public welfare services being supplied by private enterprise. It is therefore to be expected that even more businesses supplying publicly funded welfare services will be set up in the next few years. People with the means will be able to buy a number of extra services. This might be more and better cleaning, more and better assistive devices, and solutions for monitoring safety and health, for example. The new private players on the welfare market will try to expand the market for their extra products and services using consumer-oriented advertising. Increased consumer focus in the market may lead to demand for public services increasing further as a result people being made aware of the possibilities.

**Quality control**

In the future there will be a growing need for the quality of publicly funded services to be defined and controlled so as to ensure that citizens receive a set quality of service. This is due in part to demands by citizens and politicians, but will also be necessary because the functions delivering the service will be different from the functions that assess and prescribe which welfare services citizens should have. This division is necessary in order to facilitate the privatisation of a number of the delivery functions. It is therefore important to organise day-to-day work in such a way that staff have the skills to perform tasks to the necessary standard and document this. This means that there will be a need for systems that help staff to identify the specified quality, deliver it and document it.
Technology, needs and standardisation

The fact that the services provided by the welfare society are under pressure is a serious matter and the challenge is to discover how a stagnant or reduced workforce can deliver the same or equivalent services to more people. On the other hand, it is positive that technological development is allowing innovation, making it possible in a number of areas to rationalise and/or improve various public welfare services and free up resources for more front-line tasks, for example.

Against the background of general technological development, products and services are being developed at an ever faster rate for this market segment, which is expected to be one of the most attractive markets globally in the next few years owing to increased demand in Europe, North America and Southeast Asia among a more affluent older population.

All else being equal, it is therefore encouraging that in the future there will always be a raft of new technologies and solutions available for marketing to a welfare sector that has a growing need in the face of new challenges.

**Welfare technology solutions**

In addition to new technologies constantly being developed, existing technologies are also being improved. Many of the products and components will be of great importance in the development of new welfare technology solutions that will both perform new tasks and streamline or improve existing services.

Examples of welfare technology solutions that use new technologies and are either of current interest or have substantial potential are described below.

**Chronic care systems**

In a chronic care system, a device is installed in the home of a person with diabetes, for example. Every day it reminds the person to measure blood sugar, examine legs, check weight and take blood pressure. Various key parameters regarding the person’s state of health and possible confusion are clarified by means of individual, diagnostic communication between the device and the person. The device uses remote monitoring via the Internet, wireless data transfer and biosensors. External measuring equipment can connect to the device wirelessly. The readings are sent automatically to a central computer at a municipal health centre, for example. The equipment automatically tells staff about anything unusual, enabling them to take action at an early stage so as to prevent acute measures and admission to hospital. In the most advanced solutions a video link can be opened between the person and a local health centre for direct, personal contact and guidance.

Chronic care systems are common in the USA and UK. Clinical experience shows that people feel more secure and take their medicine on time more frequently, reducing the number of hospital admissions. Such systems are only in limited use in Nordic countries, where there is great potential owing to hospitals’ rising costs for treating the chronically ill. One of the reasons may be thinking inside the box owing to sectoral and professional demarcations.
Several trials are under way for various solutions, with initial results indicating that this technology has great potential.

**Personal emergency alarms**
The purpose of a personal emergency alarm is to enable a person to summon help quickly and easily. The alarm is activated manually or transmits automatically to a monitoring centre, which contacts the nursing staff or family. Or the alarm can go straight to a family member’s mobile.

Stationary alarms can be used by people who have dementia or at risk of falling, for example. With a transmitter round their neck, on their wrist or in their pocket, the person can, when at home, send an alarm to a monitoring unit at a care centre in the event of an acute problem, assault or break-in. When the alarm is received, staff can speak to the person and send help. The alarm can also operate passively and be activated by pressure-sensitive pads or floors if the person does not return from the toilet, for example, within a set time and may have fallen. The next step is prevention, with fall warning solutions being developed in which an accelerometer sensor and terminal record a person’s normal movements over time and, if their movement pattern changes, alert care staff that the person needs to be checked on. The person may not even have noticed that anything is wrong.

Mobile personal emergency alarm systems can have a built-in locator that uses the Global Positioning System (GPS) and mobile phone technology (GSM/GPRS) to transmit voice and location. They can be used to locate a person outdoors, but often do not work indoors. They can also be set up for a defined geographical area (Geofence), with an alarm being sent if the person goes outside it.

Mobile personal alarms can help people with mild dementia, stopping them being lost for long periods and easing the strain on the family, who live with the uncertainty until they hand over responsibility to the public services. The disappearance of people with dementia can be a big health risk and often overstretches the resources of care staff, police, etc.. There are all sorts of products and services on the market, and new, improved solutions are

The dream for many older people is not to end up in a nursing home, but to live in their own home for as long as possible. Creating safety in the home is a matter of dignity. Photo: L. Salix
always being launched. Although users, their families and staff would like to see personal emergency alarms with GPS location used more often so that dementia sufferers can go out more safely and maybe stay in their own homes longer, unresolved ethical and legal issues mean that GPS locators are only used to a limited extent in the Nordic countries.

Robots
Developments in robot technology, which are traditionally driven by industry's automation needs, are coming thick and fast. There is great potential for humanoid robots to be used in the welfare sector, but with just a few exceptions, such as robot vacuum cleaners/floor washers, the Paro robot seal (for dementia sufferers) and some robotic arms (feeding robots), the solutions are very expensive in relation to the functions they can perform and replace safely.

Work is being done in several places on exoskeletons, which can enhance the strength of weak limbs or help staff with heavy lifting using biosensors, mechanics and advanced control systems. There is a tendency to apply the term robot to various products which were not previously thought of as robots. The "Ironing Robot", which is just a torso that steams a shirt that is put over it, is an example of this. It is ideal for ironing shirts, though – in care homes too – and a good example of useful welfare technology that saves staff time and effort.

The robot vacuum cleaner is a self-propelled vacuum that uses sensor technology to avoid obstacles and change course, enabling it to clean the whole floor. More and more consumers are buying robot vacuum cleaners for home use. Several local municipalities are investigating whether they can be used in institutions and by older people living at home with publicly funded home care. One of the advantages is that people can have the vacuuming done when they want and do not have to wait for care staff. It works best if the floor is clear, there are no trailing leads and the furniture is high enough for the vacuum cleaner to pass underneath. Initial results show that robot vacuum cleaners are a good supplement to ordinary vacuuming in some places, but still cannot replace conventional vacuuming completely.

Like other new, advanced products, robot vacuum cleaners are often called intelligent. With few exceptions, the products currently called intelligent are extremely simple and not "intelligent" in the human sense. But they can be adaptive, or good at analysing and handling large quantities of data and complex relations. They are therefore perceived by some people as intelligent and also marketed as such. It does not, however, seem intelligent or energy efficient for a robot vacuum cleaner to cover the same spot on the floor five times while other areas are left uncleaned. Work is constantly being done on the algorithms to make the cleaning robots of the future more efficient.

Automatic toilets and personal washers
The bidet toilet (shower toilet - washlet) has integrated washing and blow drying. The toilet can also be fitted with a seat lifting device to help users with weak legs sit down and stand up. The advantage is that people can decide for themselves when to go to the toilet and manage on their own. The personal washer (bathing robot) is a cabin that the
person is placed in. When started, it follows a washing programme that washes everything except the head.

Both product types give people greater independence/dignity, reduce the risk of staff sustaining work injuries and in some cases can save on labour. Although the toilets have been common in Japan for many years, for consumers too, they are not really used in the Nordic countries. A trend has started, however, and the products are being tried out in versions that are better suited to Nordic conditions.

Rehabilitation
Electronic games consoles, which can be controlled more and more with body movements (e.g. the Wii and Xbox Kinect), are ideal for some rehabilitation tasks and physical therapy, with it being possible to use and develop proper "therapy games". This means that, following a professional introduction, therapy can take place at home and, if necessary, be monitored or done together over the Internet. Game scenarios that are exciting and fun can make the exercises interesting and help people stay motivated, increasing the possibility of enjoying an active life for longer and postponing the onset of passivity with its attendant risks.

Care systems with mobile terminals
In addition to staff being able to see the schedule for the people they are to visit that day, together with their care file and drug list, they can report any incidents that occur to the relevant professionals. If someone has developed an ulcer, the care assistant can receive illustrated instructions on how to assess the ulcer on the terminal and use the built-in camera to take a photograph and send it to a specialist, who can assess the damage and suggest a specific treatment.

Citizen and family portals
Some municipalities are introducing citizen and family portals, where they and, if relevant, their third-party care providers, can make a range of information available.

The portal is a website that the citizen can log into with a user name and code. Family can also have access if the citizen consents. The portal contains information on the help the citizen has been referred for, current drug list, care file and other personal details. It can also include information on the citizen's contacts and a facility for quick communication by email or phone. The portal can provide an overview of activities in day centres in the municipality and the various meal and transport schemes on offer.

The idea is that, in the future, the portal will offer a facility for booking home care, changing appointments, ordering transport, signing up for events and obtaining information on acquired diseases.

Medicine reminder/dispenser
Many people forget to take their medicine correctly and/or on time. This can cause serious problems and may not be discovered until the damage has been done. In many cases a medicine reminder could help people to remember to take their medicine, saving time for staff and family. There are several different models, which make medicine available punctually and let the person know by beeping until the medicine has been taken. If the medicine is not removed from the reminder within a set time, some models will alert a care centre.
There are smart home solutions at many different levels and all sorts of names for virtually the same thing, but what they all share is technology that makes it possible to control functions in the home, either automatically or by remote control, so as to achieve greater independence, increased safety and security, energy savings and more comfort. Such functions include temperature control, the opening/closing/locking of doors/windows/curtains, lighting control, smoke/heat/gas alarms/alerts and TV/radio/PC operation. The simplest solutions involve operating individual units with a basic remote control, just like a television, while the most advanced solutions consist of integrated systems with a network for units throughout the home and connection to services on the Internet.

Installation of smart home technology has a long payback period, but the costs are reduced significantly if electricity for relevant functions in the home is deducted. It is therefore recommended that 230 V should be installed or prepared (electrical pipes) to all windows and doors, in all renovations and new housing with care. The higher cost per square metre is quickly recovered with the installation of even limited smart house technology.

Digital key systems
It gives people greater security and means greater efficiency in the home care service if carers have access to people’s homes with a key sent to them digitally on their mobile phone. Greater security, because only selected persons have access at specific times. Greater efficiency thanks to easier key handling and reduced travelling time. A digital solution has a high cost-saving potential in the case of lost keys in particular, with traditional locks being time-consuming and expensive to change. Digital keys are especially common in Sweden and offer great potential throughout the Nordic countries.

Standard products
Smartphones (2”–4” screens) and tablets (7”–9” screens) are mobile terminals with data processing, memory and graphics, which a few years ago were only available on large, expensive computers. In addition to displaying detailed graphics and running software quickly, smartphones and tablets offer advanced functions that can help people with disabilities in everyday life. Examples include voice recognition, which enables people who are paralysed to control things in the home, and activity lists, which give structure to the lives of young people with ADHD.

Products for people with disabilities are often specially designed and produced in small, expensive series. The cost of solutions could be greatly reduced by making more use of standard products, like smartphones and tablets, which can be adapted to a particular group or even individualised. If it is only the software that has to be adapted to specific needs, programmers can develop special versions with the emphasis on accessibility much more easily than before. But not everyone can use standard products. One example is the touch screen on smartphones, which can be an additional challenge for some user groups. The spread of open source software and open development platforms on many standard consumer electronic products makes it possible for parties other than the manufacturer to develop functions and user interfaces for
small groups with special needs. A good example is the applications (apps) for Android smartphones/ tablets and IPhone/iPad/iPod platforms, which offer unprecedented opportunities for individualisation – and with very low development costs too. We are already seeing private individuals develop these apps for narrow target groups and predict that this market will explode in the next few years. This could result in very cheap adaptive solutions for people with disabilities in cases where standard products can be used or easily adapted.

Nordic countries have a long tradition of generating standards for assistive technology that have been elevated to European and international standards owing to their foresight and quality. Standards will help the spread of many welfare technology solutions. Smart home and chronic care systems are examples of welfare technology areas where standards are essential to success and where we should take part in standardisation work with a view to fully exploiting potential in a Nordic context.

In the smart home area there is a lack of common, open standards that make it possible to integrate all types of unit, service and product in a network. Integration is needed to develop the scenarios that will produce the right smart solutions to make users independent and increase their security, safety and quality of life. Work is being done under the auspices of the EU (FP6/FP7) on protocols, architectures and platforms that will facilitate the secure, broad integration of standard units and Internet-based services for smart home solutions. There are several possible architectures and the aim is to combine the best of them in a common architecture as the basis for the standards.

Chronic care systems present a smaller, but still considerable, challenge. Here telemedical data from measuring instruments in the home has to be sent to the monitoring unit via the Internet and then transferred to other systems and possibly patient files held by the local authority or hospital in order to reduce manual work, increase efficiency and improve quality. A number of companies (including large multinationals like Intel, Panasonic, Samsung and Philips) have set up Continua Health Alliance, which is working

**Standardisation**

As in other areas, standardisation of welfare technology is one of the building blocks that will increase the opportunities for creating integration, independence and competition, making better and cheaper solutions possible. The

---

**Standardisation**

EU smart home standardisation www.aal-europe.eu/

Joint EU smart home standards and AALOA and EvAAL platforms www.monami.info/

Continua Health Alliance www.continuaalliance.org
to create an ecosystem where data transfer is standardised in protocols so that products that comply with the standard can be connected and used regardless of brand. The alliance is not closed, but an open standard for manufacturers who want to take part. In order to create confidence, products have to be certified to use the logo.

Through companies and experts from the Nordic countries being involved in this standardisation work, we increase the possibility of influencing the standards and improve our chances of achieving solutions that satisfy the wishes and requirements embodied in the values of our welfare society. Early insight into and influence on standards also make it possible to develop products that can be launched early and head the competition. Standards are particularly important for SMEs in the Nordic countries if they are to benefit globally from niche products in a larger potential market.

User-driven innovation, usability and design
In the development of welfare technology products and services the Nordic countries use a relatively high degree of user-driven innovation in order to ensure that the new solutions really solve the specific problems of the various users groups, as well as being usable and ethical.

According to the Danish Enterprise and Construction Authority and Handivision, "user-driven innovation" can be described as follows: "The process whereby knowledge is obtained from users with a view to developing new products, services and concepts. A user-driven innovation process is based on an understanding of user needs and a systematic involvement of users." This includes both conscious and unrecognised user needs.

Without early and ongoing user involvement in the innovation process for products and services it is, for example, difficult to ensure usability. Usability is achieved by, among other things, prioritising the most important functions in order to reduce complexity and make operation simpler. It is also essential to promote use of the methods of user-driven innovation in the implementation of welfare technology solutions so that the process continues through into operation.

The design tradition of the Nordic countries means that design and aesthetics are worked on right from the start of a project in order to ensure that welfare products are attractive, durable and non-stigmatising. The ability to combine disciplines such as design, usability, engineering and organisation in small, interdisciplinary, user-driven innovation environments is one of the strengths of Nordic developers, enabling us to compete globally in the area of welfare technology.
Welfare technology policies and initiatives

A number of initiatives are under way in the Nordic countries with a view to developing and introducing welfare technology solutions. Programmes are being planned and implemented, and the countries are allocating or are expected to allocate considerable funds.

Several Nordic countries have launched demonstration products with the aim of testing welfare technology solutions in practice. In cases where the potential is obvious or has been proved by demonstration projects, use is started immediately or implementation projects are initiated to introduce the technologies on a large scale.

As a result of these major efforts it must be expected that many new welfare technology solutions will be developed in the Nordic countries in the next few years, the aim being to exploit new technologies continuously in the welfare sector in order to improve quality and make services more efficient.

Initiatives in Denmark

The Danish PWT Foundation

As part of the Quality Reform of 2007 the 2008 Budget allocated DKK 3 billion in the period 2009-2015 to the PWT (Public Welfare Technology) Foundation to ensure that marked improvements and investments in welfare rest on sound and responsible economic foundations.

The PWT Foundation invests in projects that try out and disseminate new labour-saving technology and new operational/organisational methods that can ease the burden on staff and leave more time for front-line services and care in the public sector. This is resulting in the co-funding of demonstration and implementation projects that can produce measurable efficiency gains by new technology making tasks superfluous or easier and faster for staff to perform. Many projects have been launched and more projects are initiated at the two annual application rounds.

The Business Innovation Fund

When the Globalisation Fund was set up in 2009, DKK 936 million was allocated to innovation and enterprise in the period 2010–2012 under the Business Innovation Fund (also known as the red-green technology fund). It supports the "market development of public health and welfare solutions" through preliminary projects and what are called lighthouse projects, which are major interdisciplinary projects that develop commercial solutions to concrete social problems in the welfare sector.

The Prevention Fund

Since 2007 it has been possible to apply to the Prevention Fund for funding for projects that prevent physical and mental stress at work, improve rehabilitation and promote health.

In addition to the above funding options, a number of other public and private foundations provide grants for welfare technology projects.

Education and research

Danish programmes and research with the emphasis on welfare technology include the following: MSc in Biomedical Engineering and Informatics (Department of Health Science and Technology, Aalborg
University) and BEng in Healthcare Technology (Engineering College of Aarhus). Projects are also conducted in this area in connection with programmes at the IT University of Copenhagen, the Engineering Colleges and the Maersk Mc-Kinney Moller Institute at the University of Southern Denmark, for example.

A number of knowledge institutions and institutes have a special interest in the field of welfare technology in terms of research, development, consultancy and mediation. They include: Danish Technological Institute (Robot Technology, Technology Partnership, Human Resources Development), Virtual Center for Technology for the Elderly and Handicapped (Aalborg University), Alexandra Institute and Danish Centre for Assistive Technology.

Several networks and clusters have been set up and it would take too long to mention them all, but they include: CareNet, IntelliCare, RoboCluster, CareWare, HanDiaTek, Centre for Health Technology and welfaretechnology.now.

Initiatives in Sweden
In Sweden the Ministry of Health and Social Affairs has produced a report entitled "Den ljusande framtid är vård" (A Brighter Future is Spelled Care). In order to meet the double demographic challenge, it recommends greater use of technology to ensure that good nursing and care continue.

The government has also allocated SEK 66 million for the development of technological solutions for older people in the "Technology for Elderly" programme, which runs from 2010 to 2012 under the Swedish Institute of Assistive Technology. The Institute has also received SEK 50 million for a new programme, "Bo bra på äldre dar", which will run from 2010 to 2012. The aim of the programme is to find solutions to how a growing older population can live in ordinary housing even if they have disabilities.

Various regional initiatives have been launched by the regions and local authorities too. They are being funded by the various local partners, sometimes with support from VINNOVA (Governmental Agency for Innovation Systems), and private enterprise. These initiatives often have both a commercial and a public purpose.

Research is being done into welfare technology solutions at a number of Swedish universities and colleges, often in cooperation with regional initiatives or as part of European projects in the field. The initiatives receive funding from the usual sources for research grants.

Initiatives in Norway
The Norwegian government is pursuing a wait-and-see policy on the issue of promoting the use and development of welfare technology, which was not mentioned in the Budget for 2011 presented in October 2010.

The Norwegian Board of Technology is the driving force behind putting welfare technology on the agenda. The Board gives impartial advice to parliament and other authorities on important technology issues and contributes to the public debate on technology. In 2009 it published a report entitled "Fremtidens alderdom og ny teknologi" (Ageing and New Technology), which resulted in the government setting up a committee to find new solutions for meeting future care challenges. The "Innovation and Care" committee (also called the Hagen Committee) is to assess the possibilities for product development, commercial development and exports as a result of cooperation between business...
and the public sector in the field of care, with special emphasis on architecture and new technology. The committee, which is expected to make its recommendation in May 2011, will also look at the ethical aspects of its proposals and the consequences they are expected to have for the individual's private life, particularly with regard to the use of new alarm and monitoring technology.

InnoMed is a national competence network for needs-driven innovation under the Directorate of Health with a special interest in future housing for older people, dementia and COPD. InnoMed finances projects based on concrete needs in the Municipal Health Service and Specialist Health Service.

The Research Council of Norway provides grants for large research programmes, which are monitored and coordinated by IT Funk (ICT for the Disabled). Research institutions working on welfare technology include: SINTEF in Trondheim and Oslo, NTNU Trondheim, University of Oslo, Gjøvik University College, University of Stavanger, Centre for eHealth and Care Technology (research centre at the University of Agder).

SINTEF has applied to the Research Council of Norway in cooperation with several of these environments to set up SFI – "Centre for Research-Based Innovation", which will be operational from 2011.

A number of local authorities have embarked on trials of technology, some in collaboration with the environments listed above.

Trondheim and Bærum are examples of local authorities that are investing in the use of welfare technology through the "Technology in the Care Sector" project with a view to meeting the major demographic challenges of the future.

"TrygghedsNett" is an example of an intermunicipal project (12 local authorities in Vestfold) using a solution that includes the Internet to give people with disabilities (such as dementia) living at home and their families help and support in their everyday lives.

Eighteen municipalities have joined forces in "Innovasjonssalliansen" with the aim of generating dialogue and debate, developing expertise and good examples, and acting as a midwife for innovation.

Several educational institutions have decided to put welfare technology on the agenda and taken the necessary steps. Many offer both engineering and nursing courses and want to make their mark in eHealth and welfare technology. Bergen, Gjøvik and the campuses in Kristiansand and Grimstad are examples of this. The University of Agder offers master's programmes in "Health and Informatics" and ICT health subjects. It is also possible to do a PhD. The University of Tromsø offers a masters in telemedicine. A 5-year initiative in the area of "needs-driven innovation and business development in the health sector" was launched by the
Ministry of Health and Care Services and the Ministry of Trade and Industry in 2007. It is focusing on the development of new, innovative solutions in ICT and medico-technical equipment in the Specialist Health Service. There is a move to extend it until 2017 and enlarge its scope to include research-driven innovation.

The Norwegian Centre for Integrated Care and Telemedicine is based in Tromsø and works on disseminating knowledge to promote the use of high-quality telemedicine and eHealth in ensuring efficient operation.

Initiatives in Finland

TEKES

TEKES is the most important publicly funded expert organisation for financing research, development and innovation in Finland. TEKES supports ambitious innovation activities in research environments, industry and the service sector with funding and expertise. The aim is to boost projects that generate long-term benefits for employment, the economy, society and welfare through increased productivity and competitiveness, for example. The emphasis is on high-quality social and health service systems, among other things. In total TEKES will hand out €600 million a year in the period 2008-2015 for around 2,000 new projects, around 600 of which are public research projects at universities, institutes and engineering colleges.

Sitra

Sitra, the independent, publicly funded Finnish Innovation Fund has been supporting the development of Finland’s economy and society by enhancing competitiveness, for example, since 1967. Sitra finances programmes through endowment capital and companies, ensuring systematic change processes for the benefit of welfare. Sitra develops and tests new models and best practice, giving particular priority to efficient projects with citizen involvement and cooperation between public and private sector. Its five programme areas include a "Municipal Programme".

In the period 2009-2013 Sitra will implement a major programme in cooperation with a large number of local authorities with the aim of developing models for services that will better enable local authorities to cope with the double demographic challenge and regional inequalities. One of the aims is to improve productivity, as well as ensuring better service, greater freedom of choice and more citizen involvement. This can be done by sharing and exploiting international experiences in the area, for example.

KASTE

The KASTE programme under the Ministry of Social Affairs and Health is a national development programme for the period 2008-2011. The fund has €26.8 million a year available for projects (2010, 2011). KASTE supports projects that reform and boost work in the social and health sector and try to create structural and functional improvements in the organisation of services.

OSKE

OSKE is a cluster programme with the emphasis on health and well-being. The aim is to link research to commercialisation and support successful business opportunities for services and technologies. Priority areas include welfare technology (AAL), e.g. products and services for environment control, communication and safety. The cluster’s areas of responsibility
are shared between knowledge centres in the Kuopio, Oulu, Tampere and Helsinki regions, with the network's members including universities, engineering colleges, hospital trusts and local authorities.

**Innokylä**
Innokylä (Innovation Village), which is supported by TEKES, the National Institute for Health and Welfare and local authorities, is a national network/forum for the Finnish social and health services, organisations and local authorities. In the period up to 2013 systematic information is being collected on projects in the social and health sectors with a view to sharing experiences and not repeating mistakes in future projects.

**KÄKÄTE**
KÄKÄTE is 5-year project focusing on user-driven technology development for older people and carers. The aim is, through user involvement and professional cooperation, to increase focus on the usability of technology for older people and care staff with a view to improving quality of life for the elderly.

Education provision for welfare technology is constantly developing and most universities offer master's and/or bachelor programmes. It is, for example, possible to become a Bachelor of Engineering in Welfare Technology at several universities of applied science, e.g. TAMK, JAMK and SAMK. Course content can vary between programmes. Most universities also focus on projects and dissertations in welfare technology, with the University of Oulu being an example.

**Initiatives in Iceland**
Long-term public initiatives involving investment in welfare technol-
ogy have been put on hold for the time being. The main emphasis is on financial support from charitable, public and private foundations. There is no systematic experience gathering for welfare technology in use in care homes, sheltered accommodation and social housing.

There is great openness to the use of new technology and Iceland has a general strategy for technology and IT: Internet Society of Iceland – the Icelandic Government’s Strategy on the Information Society 2008–2012. The intention is to use more IT and common consumer technology to enhance assistive devices and increase user involvement.

The research environments at the University of Iceland, University of Akureyri and Reykjavik University are supplemented by Innovation Center Iceland, the Icelandic Health Insurance’s Assistive Technology Center and the Icelandic Centre for Research, with the last-named also funding programmes.

In the private sector there is a global leader for assistive devices in the prosthetics and bracing category. Össur is developing advanced welfare technology that will find favour in the assistive technology products of the future. It employs a high degree of user involvement in the development of sensor-controlled prosthetics with motorised joints, also known as exoskeletons, for which a great future is predicted in welfare technology.

### Nordic cooperation on technology for welfare

Using technology in welfare is one of the core competencies in the Nordic countries. It is therefore an important action area for them, both with regard to use in the individual countries and with a view to the development of new export opportunities. In a globalised world, efficient and innovative Nordic cooperation in this area will help to maintain the position established by the Nordic countries in the field and provide an opportunity to take the Nordic welfare model further. This is being done by building up dynamic cooperation between innovative Nordic environments in key areas where new technology will have the greatest potential and impact. Against this background the Nordic Centre for Welfare and Social Issues has decided to set up a Nordic Innovation Network for welfare technology. The network will help to ensure that experiences with welfare technology solutions are shared, researchers and businesses in the Nordic region work more efficiently together, and Nordic innovation clusters are established in prioritised areas. The idea is that the network should be developed continuously in line with needs and possibilities.
Prerequisites for the use of welfare technology

**Change processes**
The introduction of new welfare technology solutions is not just a matter of buying some technology and training staff to use it. The full benefit can only be obtained from many welfare technology solutions by means of a targeted effort involving the entire organisation and relevant user groups.

To exploit this potential, it is vital to analyse the changes that will have to be made in the division of tasks between the professional groups involved and establish whether new procedures need to be introduced and changes made to the decision-making structure and organisation. It is also vital for the users, various staff groups and managers at different levels to understand what the new solutions will mean for them and their situation.

It is therefore essential for organisations to initiate professionally designed change processes and make use of the knowledge available on how they should be implemented before and during the introduction of welfare technology solutions.

**Sectoral demarcations**
The division of the welfare systems of the Nordic countries into sectors means that it is often hard to exploit the full potential of new welfare technology without altering sectoral and professional demarcations.

In a privately financed system like the USA, systems to support the health of people with chronic diseases living at home, for example, are introduced when it results in savings for the insurance company that pays for ongoing care.

In a publicly financed welfare system divided into sectors there is no corresponding motivation to introduce and operate such systems because there are often no approved services and settlement systems. What is more, the costs of setting up and operating the new welfare technology systems will often have to be paid by a different sector to the one that will save the most.

If the Nordic countries are to enjoy all the benefits of new welfare technology, political steps must be taken to make the necessary structural changes and introduce settlement models for new welfare technology services.

**Lack of operating experience and communication**
Not much information is available on organisational and professional operating experience and measurable effects of new welfare technology solutions.

It is, however, important to review all the good and bad experiences so that those planning the introduction of welfare technology solutions can build on the experience gained by other organisations.

It is important at the stage when new welfare technology solutions are being tested for new user groups in new areas to implement measures to ensure the systematic collection, processing and active communication of results.

Such measures will be vital when it comes to minimising costs for the introduction and operation of welfare technology solutions.

It will also be of benefit to
businesses producing and supplying welfare technology solutions to have systematic access to operating experiences from their own and competitors’ solutions. It would make sense to do such information gathering at a Nordic level since the welfare systems of the Nordic countries have largely the same objectives, conditions and challenges.

**Ethics**

**Considerations**

The motive of the authorities and organisations in introducing welfare technology solutions will usually be to save human resources or streamline services. This is not a problem in itself if the concrete solutions are designed and introduced in such a way as to take account of the needs and wishes of users, staff and families. This suggests that welfare technology solutions will be most successful if the needs and wishes of these groups are also taken into account in the chosen solutions and the way in which a solution is implemented and administered day to day.

It is disempowering and unethical not to consult the user groups affected when introducing new solutions. It is also both unethical and inexpedient to introduce solutions that restrict people’s functional options and responsibility instead of extending them. It is, moreover, unacceptable if the technological solutions isolate them from contact with the people they need. The aim should therefore be for welfare technology solutions to support people’s ability to live the life they want and take as much responsibility for doing so as possible.

**Ethics Proposal by Danish Alzheimer’s Association: Tryghed for demente – også når de går**

http://alzheimer.dk/files/Tryghed%20for%20demente.pdf

**GPS «Lov om ændring af lov om ...»** (BEK nr. 688 af 21/06/2010)

www.retsinformation.dk/Forms/R0710.aspx?id=132681

**Danish Alzheimer’s Association: Ny lov om GPS til demente på vej**

www.alzheimer.dk/index.php?pk_menu=498&pk_news=141
Dilemmas
The use of new welfare technology solutions often means a dilemma involving a number of desirable advantages and some disadvantages that can lead to ethical problems. It is necessary to face up to this dilemma and find acceptable solutions before the technology is implemented in practice.

It is, for example, of great benefit for dementia sufferers living at home and their families for the person with dementia to be fitted with a mobile personal emergency alarm with GPS locator and mobile communication so help can be summoned in case the person is lost. On the other hand, the use of GPS location might make it possible to track and monitor that person's movements.

Since Denmark judged that the advantages of using location technology are greater than the drawbacks, the rules were changed with effect from 1 July 2010 at the urging of the Danish Alzheimer’s Association, making it easier to give dementia sufferers, families and staff greater peace of mind.

Citizen’s choice
It is impossible to draw up general ethical rules in advance for how different technologies should be used in different solutions employed in different contexts with different user groups. Instead, possible ethical problems have to be assessed in the user’s specific situation.

Staff, users and welfare technology
An example of this is a situation in which a person could reduce the risk of being injured in a fall by using technology that would also reveal personal behaviour data. The risk of falling can be predicted by wearing an accelerometer, but the continuous recording of a person’s movement pattern also provides information on what the person is doing.

Basically, the individual must decide whether to take up the offer and use the technology depending on how important it is for him/her to minimise the risk of falling in relation to the ethical and personal drawbacks.

Staff, users and welfare technology
There is often a big difference between what users and professionals think about the use of welfare technology.

Studies show that older people are generally much more positive about the use of welfare technology than the professionals. What senior citizens say is that using welfare technology makes it easier for them to control, and avoid or limit, staff assistance with intimate situations such as going to the toilet and personal hygiene.

So “warm hands” and personal assistance are not always preferred by users if welfare technology solutions allow them to take care of their own personal hygiene at their own convenience.
Industrial policy issues

The Nordic countries as a region and market for welfare innovation
The fact that the Nordic countries have publicly funded welfare systems, which will make increasing use of welfare technology solutions in the next few years to ensure that the high standard of welfare services is maintained, is a positive framework condition.

Since the objective for the Nordic welfare systems is largely the same, though there are some minor differences in how the systems are organised, the Nordic countries will benefit greatly from exchanging knowledge, while the differences between the countries will lead to multifaceted experiences and solutions, which it will be a great advantage to share and turn to account.

A conscious and necessary commitment to using technology in the welfare sector will open up a large market in the individual Nordic countries in the next few years. The establishment of efficient Nordic cooperation in the field of welfare technology, with knowledge and experience sharing, joint projects and common requirement specifications, could help open up a large single Nordic market for welfare technology solutions.

Export opportunities
The Nordic countries' targeted commitment to renewing and streamlining their welfare systems on an ongoing basis, partly by the increasing use of welfare technology, will provide unique expertise on how modern technology is used in this field. This application expertise, combined with the countries' high level of technological innovation, will offer excellent opportunities for exporting welfare technology solutions to markets outside the Nordic region.
Environment and saving energy

Many welfare technology solutions are also efficient when it comes to saving energy and minimising environmental impact. Electronic key systems mean that staff do not have to drive to fetch keys when needed, while automatic visit planning helps reduce the distances staff have to drive to visit clients. Automatic monitoring equipment means that many people can check various parameters that they used to have to go to a hospital or medical centre to have checked, while medicine reminders and automatic dispensers enable people to take their own medicine, reducing the need for staff to use transport.

With more intelligent solutions in the home, it will also be possible to save energy and make better use of natural resources for the benefit of everyone.
From reality
Strong commitment from political and professional leadership

"We're painfully aware of the coming age wave and that there will also be fewer hands to provide help where it is needed. We're past the pain phase, though. Now we're hunting for solutions more and finding them to a large extent in technology."

Lisbeth Hammer Krog, Deputy Mayor of Bærum Municipality, and Kristin Standal, Coordinator in the Department of Health Informatics, are leading the introduction of welfare technology. Ably assisted by the Development Department.

The municipality is launching a building project for homes with smart home technology for persons with developmental disabilities. Read about smart home technology on page 17.

"I like to call it peace-of-mind technology, because peace of mind for the individual is what it’s all about. The technology creates independence and helps people manage their own lives. Older people can stay in their own homes longer. The alarm systems can prevent hospital admissions and, if someone is admitted to hospital, mean they can be discharged sooner. It also makes good socio-economic sense. The burden on the public purse is reduced. It's a win-win situation for everyone," says Krog.

She is also eager to use GPS solutions for older people with dementia.

"The families of dementia sufferers are constantly telling us about their anxieties. Mobile alarms with GPS technology would locate people who wander off, confused, and can't find their way home. The technology exists and I'm so impatient to use it!"
Krog hopes the Data Inspectorate will take the lead in amending the legislation that prevents GPS location being used by public services.

**Not just projects**
Otherwise Bærum Municipality has passed the trial stage in several areas of welfare technology. In the last couple of years it has automated, streamlined and improved the quality of several service production tasks. Their experiences with mobile PDAs (Personal Digital Assistants) for home services have been good.

Tablets, which are used by the municipality’s rehabilitation service, are another tool. Occupational therapists use them on home visits, for example. Tablets are easy to carry and can use the mobile network to communicate with the office back at council headquarters. The special feature offered by tablets is the touch screen and the way it can be flipped to enable the user to sign the application being displayed.

“We spent a few months trialling the tool to see how the software and setups worked. We also tested various machines for mobile signal coverage and usability. We drew up work routines and held training days for rehabilitation service staff. There is always teething trouble, but the mobile tool is here to stay,” says Kristin Standal.

She thinks that the rehabilitation service is far more efficient than before, with a better service for users, faster processing and better quality control.
From reality

**A field visit**
Mareena Brännare, an occupational therapist with the rehabilitation service, is visiting a nursery. A young user needs assistive devices. Brännare brings up the assistive technology centre’s range via the web and mother, child and therapist decide together what it would be most suitable and realistic to search for. If they need information, the user’s file can be checked. User participation is ensured by the mother helping to choose devices and write the application. Brännare flips the screen and the mother signs. Brännare writes the assessment when she gets back to the office. There is never any data on the tablet. The application is saved centrally for printing and sending to NAV (Norwegian Labour and Welfare Organisation).

"The tablet makes life easier. I go from user to user and don't spend much time in the office. As long as there's mobile coverage, I can download the information I need. Storage is secure and the process is paperless. We can process cases much faster," says Mareena Brännare.

**Very busy**
Inspired by Denmark, Scotland and, not least, the Norwegian Board of Technology, Bærum Municipality is ready to launch a safety package for care receivers. It includes fall sensors, body sensors, automatic drug dispensers, tracking solutions and temperature/smoke detectors. At the moment it is not clear who is responsible for response. Is it a public responsibility, can it be shared between public and private sector, and is cooperation with family an option?

"The challenge is to create a system to respond to alarms. We are looking into setting up a local medical centre to handle alarms and also involving the family," says Kristin Standal.

For the second year the municipality is trialling robot vacuum cleaners at two institutions for the elderly. The idea is to free up resources for care. Standal will not say that the project has failed, but staff attitudes to what is good hygiene mean that implementation is taking time.

Bærum Municipality is involved in an SFI (Centre for Research-Based Innovation) together with SINTEF, among others. The Municipality is strong on competence and home to major development environments. It is Norway’s fifth largest municipality and relatively prosperous.

**Where is central government?**
Hammer Krog wants central government to have the courage to take welfare technology seriously, especially the debate on GPS location solutions, legislation and ethics. She thinks politicians refuse because many believe personal care will be replaced by technology.

"That's quite wrong. In some areas technology will be a supplement, while in others it will make the service better and processing faster. Knowledge and understanding of what welfare technology is and means is required. And with the big increase in the number of very old people, there is really no choice. With fewer hands we need to find other solutions. And to that end the state should offer a carrot or two, such as investment funding for new technology and training."
GPS locator okayed for dementia

The Danish Alzheimer's Association fought long and hard for a more liberal approach to GPS locator use by people with dementia. Now the Danish Parliament has changed the rules and the association has its reward.

Location technology is used to determine geographical position. Wearable GPS locator solutions are now common. "GPS can increase freedom of movement, give spouses peace of mind and help people with dementia stay in their own homes for longer," said Benedikte Kiær, Denmark's Minister for Social Affairs, when she opened the DemensDagene conference on dementia in May.

A happy day

- We're delighted that the politicians have listened to what we, the families, and dementia sufferers themselves have been saying for years: people with dementia getting lost is a problem.

  It's usual for people affected by dementia to lose their sense of direction. They have a tendency to wander, then often get lost, unable to find their way home. The police
search for 2-3 people a day and every year 7-10 people die because they weren't found in time," says Nis Peter Nissen, Director of the Danish Alzheimer's Association.

He also points to the anxiety and stress this causes for the spouse, family and friends of someone with dementia.

"Many have driven round for hours looking for their spouse and found their loved one sitting crying on the verge, distressed and not suitably clad for the elements. That's why GPS is a good idea," he says.

**A harmless device**

"It's also a completely harmless technological device that has been used on dogs and cats for years. Studies show that 94% of Danes would prefer to have GPS if they were in the same situation, in other words 9 out of 10 Danes. The association has long had the ethical and moral support of the Danish people for the use of GPS solutions. The challenge has been to convince politicians it was right. Many imagined that GPS would make it possible to watch people on a screen and follow their every move. That's not the case of course, it's about location. Using GPS leaves an electronic trail, but that happens with mobile phones too. Lack of knowledge about GPS was probably at the root of it and jurists are always scared of the surveillance society," says Nissen.

**Brighter future**

It used to be necessary to apply for permission to use GPS location for a specific period and then apply again when it ran out. Now Denmark has incorporated an exemption in the act to the effect that people with advanced dementia do not need to apply. It is on a par with applying for a rollator.

Five municipalities in Denmark have been granted DKK 2.5 million for a pilot project in which 300 people with dementia living at home will be fitted with a GPS locator unit. Help can be summoned with an emergency button and the unit also sends data on the person's location.

Assistive devices for people with dementia can be borrowed from the technology library in Odense. The advice and contact centre for dementia sufferers and their families is behind the library. Several professionals are attached to the library, which helps with training and adaptation.

"The great thing is that we can try GPS solutions out in practice. GPS is a supplement to good care and provides security when other measures fail. It's important that people with dementia have enough carers around to look after them, have time to go for a walk, etc., not that they are out on their own in traffic," Nissen concludes.
Quality and efficiency go hand in hand

When Malene Holmer, a care assistant in the Municipality of Vejle, visits clients, she follows a schedule downloaded straight to her smartphone. This makes a morning planning meeting superfluous, saving her lots of time, time that can be spent providing clients with a better service instead.

While Malene is out and about, Signe Karstoft is back in the admin department. “In Vejle we use Uniq Omsorg and I’m the system administrator. The system also has an add-on in the form of Mobil Omsorg, which is on a standard HTC smartphone.”
that community care workers take with them on home visits. All the relevant data is there – itinerary, client particulars, next of kin, doctor, case notes, info on medicines, etc.” Signe explains.

Both find the system easy to use, especially because all the information is in one place. “I’m very reliant on the smartphone in my job. We used to use cards – before we computerised, that is. At morning meetings you wrote down on a piece of paper what you had to do that day and then headed off. There were no case records, just small books in the client’s home where we could make a note of things. Everything that was in the books is now beautifully organised in Uniq Omsorg and on the handheld device. With the mobile, you have up-to-date client data with you when you need it. That used to be the problem with home care – we may have had data, but in the home situation we were often left with nothing but our bare hands,” says Malene.

If, for example, a client is unwell when the care assistant arrives, it is possible to check whether a night nurse has made a visit and written anything in the case notes. “In this way we can offer a better service because we use the infor-
mation provided. If a client does not open the door, you can quickly find their telephone number, and that of their next of kin, on your mobile instead of having to contact the office like before. There are all sorts of benefits," says Malene.

Because staff no longer have to attend a planning meeting at 7.15 am, flexitime can be used to some extent – for a staff group that has not previously enjoyed such benefits.

A technically stable solution
As with virtually all large IT systems, the Municipality of Vejle experienced some teething trouble when it suddenly grew tenfold following local government reform in 2007. Since then there have only been minor problems, mainly in connection with system updates.

"All IT systems have some downtime," Signe adds, "but a lot also depends on the user and their attitude to having to use an electronic system. If, like Malene, you have the attitude that this is a great tool, then technical problems are also less frequent and easier to handle. As system administrator, you also come across users with a negative attitude – which immediately makes things more difficult."

Malene adds:
"I've only had trouble logging on twice in the first nine months; we've been using the latest version of the system, so that's not much at all," she says.

User friendly
Mobil Omsorg has a simple design, so anyone can learn to use it. For most members of staff a course lasting a couple of hours is enough, even for a group with very varied IT experience. The biggest challenge is not technical, but educational: getting staff to see the advantage of using a new solution instead of their familiar routines.

The complete Uniq Omsorg is a bigger system that takes a lot more getting used to, but, like Malene, many care assistants only ever use the mobile system and can document their work without having to log onto the main care system.

Malene is not in any doubt.
"It's really easy to get to grips with. And now so many savings have to be made, all the time gained by doing away with the morning meeting and going straight to the client adds up. And no work time is wasted driving to the first client after the morning meeting either, so efficiency is improved without you losing anything."

"Yes, it's a free saving," Signe adds, "since it doesn't cost the staff anything to drive to a client instead of the office. As far as improving the system is concerned, some staff have asked about being able to use the handheld unit as a dictaphone so that they can record case notes instead of typing them – in other words voice recognition that converts speech into text. That will probably happen in the next generation or the one after that, but Malene, for example, likes typing on the little, pull-out keyboard. The solution works the way it is."

A new way of thinking
As Denmark's local authorities get more and more free-choice providers, using the mobile system offers a benefit that is not immediately apparent. Vejle is now up to ten free-choice providers in addition to the municipal provider. Seven only provide practical assistance, which means that the municipal provider supplies correspondingly less practical assistance. As a result, the greatest pressure of work by far is in the morning. Once people had been helped to get up and fed,
After the reality, the morning used to be spent on things like cleaning, shopping and laundry before lunch, siesta and suchlike. With many free-choice providers now offering this sort of practical help in the morning, the local authority cannot spend the precious hours of the morning on planning meetings.

"At that time of day you just have to get out to the clients so that the last few aren't left in bed until half past ten. Now we typically hold group meetings around 11 o'clock to coincide with a break for lunch, but first thing it's all hands on deck. The Freedom of Choice Act and demographic trends mean that a new, different way of thinking is needed," says Signe.

"As a professional I certainly can't do without the mobile unit in my job now that I'm used to it," Malene concludes.

Assistive technology in the home

The Functional Home is an exhibition centre for everyone interested in secure housing and safety in the home. The exhibition is run by Helsinki's Social Services Department in a block of council flats in the Kottby area of the city. It is visited by 4,000-5,000 people a year. The information centre is open to the public and admission is free. The centre provides information on the assistive devices available on the market.

"For a product to be exhibited, it must be safe, useful and obtainable," says Tiina Petäjävaara, Exhibition Manager at The Functional Home. The exhibition has everything from phones for older people to adjustable kitchens, automatic fire extinguishers installed over cookers and toilets that both wash and dry.

This year The Functional Home is working with 67 exhibiting companies.

An advanced toilet

The exhibition includes a toilet that both washes and dries the bottom. In Finland it is classed as an assistive device and can be obtained and installed at the local authority’s expense for people who need assistance with personal hygiene.

"The toilet helps me, as his carer, to look after his hygiene," says Marja, whose husband has a disability. "I don't need to lift him off the toilet to wipe. My husband likes the device," she says.

A washing device is installed in place of the usual lid. The user can then control washing and drying him/herself using a remote. It is also possible to adjust the force of the jet and the temperature of the water. The device requires electricity, a water outlet and a toilet of the right size.

Words: Martina Harrikari
"Now staff no longer need to drive anywhere to leave keys for each other. It’s really cut stress," says Åsa S. Åberg, Unit Manager in the municipality’s home care service.

Älvsbyn is in Norrbotten, Sweden’s northernmost county. It is sparsely populated and journeys can be long. Staff may have to drive tens of kilometres to reach everyone entitled to home care, the users. Planning where and how to hand over keys and knowing who had whose key used to take a lot of planning. If a member of staff visited someone at home in the morning and that person had to be visited again in the evening, a time and a place had to be agreed for handing over the key. Now everyone has a mobile phone and a code for logging in. Users have had a box installed on the
inside of the front door. When staff log in, the box is activated and the lock turns and opens. Staff can lock up after a visit in the same way.

**You always have the key**

"This system gets you out of having to keep track of lots of keys, and you never need to worry about a key being missing, as from time to time someone would take a key home with them, of course," says Åberg.

The home care service does not just have scheduled visits. Åberg’s unit also has 85–90 people with a personal emergency alarm. The alarms have a loudspeaker function so that users can communicate with the alarm centre without lifting the receiver or phoning if they need acute help. Sometimes the alarms are about something innocuous, with a pensioner just being uneasy and wanting to know that the home care service is on the way, but they can also be serious and require an ambulance to be sent. Now alarms can be
responded to faster than before. Previously, staff first had to track down the key or drive to the office to collect it. Now the member of staff who is closest responds to the alarm and also lets the ambulance crew in if necessary.

"It's really great. Before, if the alarm was raised because someone had fallen, we might have to drive tens of kilometres to collect the key," says Kerstin Johansson, an assistant nurse who works in the sparsely populated Vistträsk area.

**Less stress and greater security**
Since Kerstin Johansson and her colleagues got digital keys, they have been saved lot of driving.

"Yes, it's less stressful now," Johansson admits. The conventional keys are still there in case the digital system goes wrong, but that has only happened a couple of times.

"It's not just an ordinary mobile phone. Special software has been installed on it and it works without a signal. You don't need to worry about coverage. The other day Telia had major problems with the network, but it didn't affect our ability to use the lock function," says Åberg.

Some of the older people who use the home care service were worried that the digital keys would mean that anyone with a mobile phone could enter their home. But that is not the case. No one can get in without a phone that has the right software and a personal code from the home care service. Nor is there any risk of a mobile falling into the wrong hands.

The key code is deactivated ten minutes after logging in. Then the lock can no longer be operated until the member of staff logs in again.

"It was much less secure when we used keys. Then the lock had to be changed if someone lost a key. If someone loses their mobile, we just have to cancel it and get a new one," says Unit Manager Åsa S. Åberg.

**The key as a visit log**
When not in use, the mobiles are put on to charge in the group office for the home care staff. While a phone is charging, the visits made during the day are logged. It shows who has been visited and when. Some local authorities use the phones for time reporting, with staff also recording what they do for each pensioner and how much time it takes. Älvsbyn does not use this facility though.

"It's good to see how much time
is spent with each pensioner, though. Sometimes a user with memory problems says that we haven’t been, but we have the log to show we were there and can reassure the family,” says Birgit Nilsson, Head of Social Services. She says that the digital key system has so far been on trial in some parts of the municipality, but is now being introduced throughout the Älvsbyn home care service, since it works so well.

“The system isn’t cheap, so there’s no financial saving, but it improves the working environment for staff and reduces emissions because there are fewer car journeys,” says Nilsson.

**Good for users**

Unit Manager Åsa S. Åberg thinks it benefits users too. She cites the morning meetings in the office as an example.

“The time used to be spent handing out keys and discussing how to sort out the key logistics. Now we can devote the time to talking about what happens on visits, about the job itself.”
New technology at Gårdsbacka Centre for the Elderly

Sensors in beds that tell staff about residents’ movements, doors that are opened by fingerprint, a vacuum conveyance system for refuse, sound panels with music and spoken word. This is just some of the new technology in use at the Gårdsbacka Centre for the Elderly in East Helsinki.

Gårdsbacka Centre for the Elderly was completed in 2009 next door to the old centre, which no longer met all the new requirements. The building is an example of the active use of innovative technology. The centre, which offers a range of services for Helsinki’s older population, has two units for day services, 196 long-stay places and a day centre.

"Older people who attend the day centre can have a meal, have their hair done, use the gym, do a craft course or see the social worker, who is there to support older people living at home. We have long-stay places for clients who need round-the-clock care," says Leila Koivisto, Manager of the Gårdsbacka Centre for the Elderly.

High-tech locks
Koivisto takes me on a tour of the building and demonstrates the locks that work by fingerprint. She puts her finger in the reader and the lock pops open.

"The good thing about the locks is that no one has to carry keys.

Leila Koivisto, Manager of the Gårdsbacka Centre for the Elderly opens a lock using her fingerprint.
The system is not without its problems, though, and takes a lot of organisation and practice. Your finger has to be positioned just right in the reader," she explains.

All the staff also have a personal code to open the locks. If the system goes down, the doors can also be opened with a conventional key.

**Bed sensors**
Up on a care section, Koivisto shows me a sensor that has been put in a bed. It is the sensor’s job to alert staff to unusual movements. The sensor system is usually turned on at night, when fewer staff are on duty.

A monitor tells the nurses if a client is in bed or has got up. This system is customised for each resident. If staff know that a patient needs help going to the toilet, the system is set up to alert them when the patient gets out of bed.

When I visit a care section, the system had unfortunately been out of action the night before. The alarm kept going off at odd times. Thankfully, the supplier has sorted problems out quickly when they have occurred.

"The system helps the nurses to be on the spot when they are actually needed. Unnecessary checks on rooms have been reduced. And the residents aren't disturbed by someone coming in during the night to see that everything is all right," says a nurse on Ward 5.

"When working at its best, the system provides a sense of security and peace of mind," says Leila Koivisto.

**Labour-saving refuse system**
All the wards have a service room where refuse can be left. The refuse is conveyed to the centre’s bins by a vacuum pipe system.

This has reduced the need to transport smelly waste in the corridors. The waste includes incontinence pads, which have a strong smell. The smell problem has been reduced, as has the physical burden on the nurses.

**Music and spoken word**
Panphonics Sound Showers, panels that deliver sound, have been installed at various points in the corridors. The panels are in the ceiling and the sound can be heard in a limited area below them. There are various options to choose from.

"Outside the library you can listen to short stories, in the café you can hear news, and on the fifth floor we have birdsong," says Koivisto.
The technology is in the walls

"The technology is in the walls," says Sigrid Gusland. She is operations manager with Care Service Southwest in Larvik Municipality, where several care facilities built since 1998 have smart home technology.

"We’re very happy that the smart home technology was installed during construction. Now the technology is in the walls and we can use what the residents and staff need. The well-planned standard basic package can easily be adapted to new residents. Adjustments are also easily made when residents’ needs change. People aged from 48 to well over 90 live in the housing with care, so needs vary widely. Providing for safety and independence means that most people can live out their lives there," says Gusland.

Lots of options
The housing with care has sensors at the front door, patio door and bedroom and lounge windows, as well as a bed alarm. The bed alarm is a pad under the mattress that responds to vibrations, such as in the case of an epileptic fit. It will also notice if the resident gets out of bed in the night and does not return within a set time. This can prevent the resident lying injured on the floor after a fall. Early intervention can also save the resident being admitted to hospital. The sensors register if doors and windows are open or closed, or if windows are opened by more than a set amount.

“This stops residents climbing out of the window or anyone getting in that way,” Gusland explains, stressing that many residents are active and not much in need of smart home solutions. Everyone has safety alarms, which are connected to the system.
The technology also controls lighting and heating, and some residents have a cooker monitor and a coffee maker that switches off after a set time. All bathrooms have a moisture sensor to prevent water damage.

"We have to assess what to activate for each resident continuously. The well-planned infrastructure minimises the need for retrofitting."

Gusland demonstrates the control unit, which lists the apartments with care and the nursing home rooms together with the options activated for each resident. The control unit is an ordinary PC with customised software. Gusland can use it to enter, remove and reprogram units in the system simply and clearly.

Listening to staff
It is also important to listen to staff, since the technology will be part of their working lives.

"The alarms go to cordless receivers, alarm phones, carried by the staff. This means there is no need to listen out for bells in the corridor or on boards in the staffroom. Alarms go to all the carers on call. To stop the signal, the message has to be read and the person responding has to press the acknowledge button. There are various solutions to this. We’re considering going down to two alarm phones. This means that two members of staff will respond while the others keep working."

Gusland stresses that the alarm phones must be easy to use, with keystrokes being kept to a minimum. The advantage is that the message shows which alarm or sensor has been activated, so staff know whether it is a door alarm, fire alarm or personal alarm, for example.

Staff attitudes to the smart home technology affect how it is used and turned to account.

"We got off to a slow start with the technology, possibly because of lack of staff training and traditional thinking. For smart home technology to work, staff must have good training, the technology must be reliable and the alarm phones must be light and tough enough to cope with damp bathrooms and being dropped," says Sigrid Gusland.

Informed consent
Under Norwegian law a person must basically decide for him/herself whether s/he wants an assistive device as a technical solution or not, in other words informed consent. This means that the person must receive enough information on the device to enable him/her to reach a decision for him/herself. Informed consent means not just providing information on the assistive device itself, but also explaining the consequences of using it.

If it is not possible to obtain informed consent, statutory authority is required for intervention with technical solutions.
An easy balancing act
A knee that thinks

Icelander Gísli Jónsson lost a leg in a motorbike accident 28 years ago. Since then he has used various prosthetics and artificial knees. The trend is towards prosthetics and knee joints with artificial intelligence that can be adapted to each user’s natural movements.

"My latest knee, a Rheo Knee, is different from previous knees in one key respect. The user always used to have to tread straight down with his foot and be very aware of maintaining balance in a certain position, which took a lot of energy and concentration. Whereas now there’s a built-in processor that sends an electric pulse to a brake in the knee. The processor can tell if you are walking quickly or slowly and adjusts the resistance based on the electric pulses sent to the brake. It’s easy for the user to customise all the settings with the software provided. Very little daily care is needed. The knee simply has to be plugged in to charge overnight, just like a mobile phone," Jónsson explains.

New social life

"It took a whole year to get used to the Rheo Knee, as it was difficult to get my brain to understand that I could rely on the knee instead of treading straight down like I had to
with the old knee. Now I can relax more, as this knee doesn't put as much strain on my back, as it takes the weight when I go down steps, for example. When I go up steps, I have to lead with the healthy knee, as there's no motor in the Rheo Knee," says Jónsson.

Once he got used to the knee, Gísli had a whole new social life. With a slight catch in his voice, he says:

The knee gives me better balance, peace of mind and self-confidence when I'm with other people, whereas before I was constantly on the watch for and scared of something going wrong and me falling over. I wouldn't go where there were a lot of people.

Light on his feet with a light knee
The artificial leg and knee are a bit lighter than the other leg and knee, an advantage in everyday use.

"As far as I'm concerned, it's a definite advantage, as it puts less stress on the stump, but it mustn't be too light either, as then it can swing too far. You've always got to remember that the artificial knee isn't part of you and isn't likely to be. So you also want it to take up as little space as possible, in terms of weight too. It needs to be a certain size for reasons of strength, though.

Thanks to his new knee Gísli Jónsson has started riding a motorbike again. The motorbike weighs 300 kg, so it is vital to have a knee that will take the strain when he gets off. Gísli fancies being able to lock his knee in position and that sort of solution is being worked on at Össur, the company that manufactures prosthetics, bracings and supports, and is a world leader in its field.

Further development
According to Hilmar B. Janusson, Össur's development manager, it normally takes 7–10 years to complete the development of innovations in the field of prosthetics. The work is split into platforms and a new platform, a motorised knee, is currently in progress. Janusson says that these knees will be the greatest innovation ever in the field of prosthetics, both because it will be easier for users to go up steps and, not least, in terms of endurance. Now users will easily be able to walk for more than 10 minutes at a time without tiring.

Innovation's worst enemy
"Of all our products, the new Power Knee will be the greatest revolution for people who have lost limbs. It will be crucial for people who have lost limbs to vascular disease, for example. Ask any vascular specialist and they will tell you that movement and an upright position are vital to these patients' contin-
ued wellbeing and life expectancy. Although we have never made anything similar with so much power before, we are being told that it costs far too much and could never be offered to everyone. Health professionals and users are setting the limits way before the insurance companies and authorities! And then we find out that it's no problem for these people to get a grant for a motorised wheelchair costing between DKK 750,000 and 1,000,000! The wheelchair has a much more limited range and provides much less independence. This sort of assistive technology has made it through the system and been approved after going through the same process 10–15 years ago as we're facing now.

We're fighting technology that's more expensive than ours, technology that's gained a foothold on the market and is keeping people in bed or a wheelchair. This is the greatest challenge when it comes to innovation. Technical problems usually sort themselves out. External circumstances are the big problem. My personal opinion is that the system is not as ambitious to do something good as I thought," says Janusson.

**Let them fall over in peace!**

When you improve people's lives, you create new problems. A good example from the Rheo Knee is an integrated feature called *stumble recovery*, which is designed to stop users stumbling.

"We were immediately told by people that they were stumbling far less than before. The response of health professionals was that these people may well have been stumbling all the time, but nothing could be done about it! The prevailing view in the health system is that if nothing can be done about it, it isn't a problem. It's just one of those things. This view is a huge challenge for eager designers, engineers and developers, and very hard to understand for everyone working in this sector. It looks like people in the health system are of the general opinion that it is okay for amputees just to fall over," says Janusson.
Politics
The PWT Foundation – paving the way for welfare technology

When the PWT (Public Welfare Technology) Foundation was set up in 2008, the Danish government allocated DKK 3 billion for ongoing investment in innovative projects in the period up to and including 2015. The aim is to support new ways of using technology in the public sector.

"When we look at some of the applications and see how simple the solutions often are, we sometimes think, 'Why aren’t they doing it? – in hospitals, institutions, schools, etc.'" said PWT Foundation Chairman Thomas Børner (centre) at this autumn’s big AAL Conference in Odense. He also tried to provide an answer: "In many places people don’t have the energy because they’re so short of time and other resources that all they can do is focus on day-to-day operations and problems. This is where the PWT Foundation comes into the picture to give a push in the right direction."

The ethos of the PWT Foundation's work is that investments should be used as a lever for development and efficiency in the public sector – for the benefit of citizens and staff alike.

"The challenge for the public sector is that the pressure on public services is constantly increasing, partly because there are more older people and more people with chronic diseases. At the same time,
labour will be in short supply. In short the challenge is that fewer staff will have to deliver more in future. And we can only achieve that if we do things in new ways," says Thomas Børner, the Foundation's chairman on its website.

"Some people thought that the main purpose of the PWT Foundation was to fire people because the name originally mentioned 'labour-saving'. And that was certainly never the intention," he says in the same place.

Increasing productivity without reducing quality

In the future it will simply not be possible to employ more home helps or nurses, as there will be no one available to fill the jobs. Making staff work harder increases the strain on them and reduces their job satisfaction, which does not make the public sector an attractive employer. Instead the vision is that public sector employees should be able to deliver more services to citizens for the same effort in future if use is made of new technology and more intelligent organisation. The aim is to increase productivity in the public sector without reducing quality.

New thinking

"The foundation has some specific requirements for projects it will support. They must help the public sector to do more, but with the same number of staff and without increasing the individual's workload. This is one of the solutions to the demographic challenge, of course. They also have to involve something new, something innovative. We support new technology or existing technology used in new ways. New thinking pure and simple," said Thomas Børner at the AAL Conference in September 2010.

For staff new technological solutions mean that work can be organised in new ways and so can often be done faster and more easily. This makes jobs more interesting and reduces strain. For citizens it means more flexible services and greater peace of mind. And for the politicians in the
individual municipality or region it means that resources can be freed up for other uses. It is quite simply a win-win-win situation.

Driving force for public-private partnership
Public institutions, whether working alone or in partnership with private enterprise, can apply for co-funding for project proposals with labour-saving potential for the public sector. The projects supported by the PWT Foundation are typically conducted in partnership between several public and private parties. This means that the PWT Foundation can act as an engine for public-private partnership.

Selecting the best projects
Proposals and ideas are evaluated by the PWT Foundation’s screening committee, which is made up of people with considerable experience of running major public services or private enterprise and experts with understanding and experience of labour-saving technologies and new operational/organisational forms.

But PWT does not support just anything.
"It's about smart solutions. It's about getting the public authorities to talk to each other. Because everyone knows what the good solutions are, but most people want to develop them themselves. So it's largely about supporting the dissemination of good, smart solutions.
"Each project is accompanied by a business case, which means there is complete control of benefits in terms of efficiency and cost. In other words, the public sector must be prevented from continually reinventing the wheel. That's what the PWT Foundation must help with," writes Thomas Børner in a blog on careweb.dk.

To read more about and find descriptions of the projects funded so far, visit the foundation’s website: www.abtfonden.dk
Thinking long-term in a recession

Like many other countries, Denmark must prepare for a future with more older people and fewer people of working age. This sets a challenge for the public sector and Benedikte Kiær, Minister for Social Affairs, sees a good way to meet it.

"Welfare technology is an essential response to this challenge. The correct use of welfare technologies will enable us to deliver more with the same resources. Technology can also make people more independent and ease the burden on staff."

Interplay between public and private sector

The Minister for Social Affairs from the Conservative People’s Party predicts that there will be increasing demand for welfare technologies in the social sector and is not slow to point out that there is great potential for Danish business in this area – one of her party’s key policies.

"Welfare technologies are also an opportunity for public-private partnership. The public sector uses the technology that the private sector develops. And the development environment in our research institutions plays an important role in this. Many of the relevant parties have seized on the idea and are engaged in environments that promote the development of welfare technologies."

The Danish public sector is demanding welfare technology, which means that in many ways the public sector has become an engine driving new welfare technology initiatives forward. More than DKK 60 billion a year is spent on elderly and disabled care and these two areas employ more than 110,000 people (full-time equivalents) to perform all sorts of tasks. In the future there will be more tasks, because there will be more older people and a smaller workforce.

"This provides strong motivation to try out new ideas and solutions. Among other things, the government has boosted development by setting up the PWT (Public Welfare Technology) Foundation and allocating DKK 3 billion for projects aimed at testing and introducing technologies in the public sector. A systematic approach, good ideas from municipalities and businesses, and organisational support (PWT Foundation) mean that we can show why welfare technology is..."
worthwhile. It goes to the bottom line, because better use is made of staff resources.

"The PWT Foundation will help to ensure a long-term strategy in the area, regardless of the recent recession," says Kiær.

Robots can be very useful...
The Nordic – and many other – countries are facing a major challenge in the form of rising costs for both care and health as a result of demographic change. Technology can both ease the burden on staff and help to make people more independent and so less reliant on care staff. Welfare technology can provide a better service for the elderly, and other people, while helping to make the working environment better, with staff not having to do any heavy lifting, for example. Benedikte Kiær also believes that it will save money, too.

"It is therefore important to find solutions that enable more to be done, preferably better and more cost-effectively. The goal is not to replace staff with robots, but to free up resources for the tasks where personal contact is needed most. I'm really not interested in the discussion about warm and cold hands. There is a need for both care assistants and systems developers. Robots can be very useful if used correctly."

The Danish Council of Ethics has looked at the use of social robots, which are among the more advanced welfare technology. It points out that, when new technology is introduced, it must be considered whether the goal is to supplement or replace human contact, and what assistive activities the technology is desirable for.

"There are areas where attention certainly needs to be paid to the ethical issues of using technology, but some welfare technologies do not on the face of it present any more ethical problems than the conventional way of doing things. Some welfare technologies, for example, are of a very specific and practical nature, just as many can be described as support tools for staff. We are talking about lifting in home care, electronic locks, digital self-service solutions or washing and disinfection systems for care beds, for instance."
The Minister's recipe: fresh ideas and free choice

"If new technology is going to be developed and used, it’s vital to open up the care system to fresh ideas and free choice." So says Maria Larsson, Sweden’s Minister for Children and the Elderly.

One of the issues that Swedish Minister for Children and the Elderly Maria Larsson (Christian Democrat) is passionate about is more free choice regarding care.

The Swedish government has also forced through several projects aimed at stimulating new welfare technology.

One initiative that Maria Larsson...
wants to highlight is a trial of free choice of assistive technology in three counties: Stockholm, Kronoberg and Sörmland. The aim is to introduce free choice nationwide in the next few years.

"Assistive technology is a key part of everyday life for many people, so it is important that they should have as much control over it as possible," says Maria Larsson.

A change in attitudes
But before that can happen, a change is needed in attitudes to new technology in the welfare sector, particularly elderly care. So far the development of new technology has been pursued without focusing on needs, wishes or demand among older people. That is why the government commissioned the Swedish Institute of Assistive Technology to coordinate the 'Technology for elderly' initiative, the aim of which is that good, safe welfare technology should be readily available to meet the needs of older people for devices and services.

"There needs to be a change of culture that includes the will and ability to test new technology with a view to improving efficiency and the quality of care. Work is being done to introduce more free choice in elderly care in general, but also with regard to assistive technology," says Maria Larsson.

Development and knowledge sharing
Maria Larsson thinks that Sweden needs to promote innovation and new technology in a more structured way. Large sums are allocated to R&D every year, but there is a lack of opportunities to introduce new technology in the social sector.

"We have a lot of good Swedish assistive technology manufacturers. User-friendly applications for existing technology would sell well if people only knew they existed. I've led Swedish delegations to China, for example, where there is great interest in such innovations," says Maria Larsson.

Maria Larsson also sees great potential for knowledge sharing between the Nordic countries. The Swedish Institute of Assistive Technology, with its great experience and expertise in the field, would be a good source of knowledge.

Ethical problems
There is another, more problematical aspect to the increasing use of welfare technology. If technology is misused, ethical problems can arise. One example is that human contact can suffer, with users meeting staff face to face less frequently. Maria Larsson believes that more free choice will reduce the risk of misuse.

"Human contact will still be needed, but many people actual prefer to use technology to take a shower, for example, rather than be helped by an unfamiliar person from the home care service. It's best if different alternatives are available and older people can choose what best suits them," says Maria Larsson.

There are also different interests to consider when it comes to welfare technology. This might involve staff and users needing different technical solutions.

"I think that the ideas of older people and staff usually coincide. But if they do want different things, older people's needs must weigh heaviest," says Minister for Children and the Elderly Maria Larson.
Living independently – for as long as possible

Anne-Grete Strøm-Erichsen, Norway’s Minister of Health and Care Services, gave NVC this reply when asked how the government would meet the double demographic challenge and whether investment in welfare technology was on the cards.

The overall objective for current and future care services is to help the individual live a life that is secure, meaningful and as independent as possible despite demanding life challenges, social and health problems or disability. This means that care services will have to be organised so that users can live independently for as long as possible.

Boosting municipal finances
In order to achieve this, the government has put forward a plan for enhancing capacity, competence and quality in care services: Care Plan 2015. Boosting municipal finances in the period 2006–2011 has added upwards of 16,000 more full-time equivalents to this sector. Studies show that the full-time equivalents have mainly been used to expand home nursing for younger users under 67. This is helping to make it possible for people to stay in their own homes and get the assistance they need to live independently.

We are aware that there are now all sorts of assistive devices, whether for enablement, safety or treatment. Municipalities are free to use what is available in order to provide the best possible services for their inhabitants.

Innovation and care
The government has appointed a public “Innovation and Care” committee (also called the Hagen Committee) to look at new solutions for meeting future challenges. The committee is to propose new innovations and solutions for meeting future care challenges with the emphasis on new technology, architecture and new forms of living, user involvement, self-enablement and R&D. Against this background the committee will assess new solutions and submit proposals for the design of future nursing homes, forms of living and services that will meet the needs of future users and use their resources. This work include analysing experiences from other countries and drawing on them.

We do not want to comment on individual measures before the “Innovation and Care” committee submits its report, which is due in spring 2011.

Several projects to do with developing assistive technology for different user groups are already under way. The Directorate of Health has initiated an assistive technology project aimed at younger people with dementia together with other Nordic countries. The Directorate will complete a guide to the use of assistive technology in autumn 2010.
Welfare technology in a crisis

New ideas have always been readily accepted in Iceland. That was also the case in 2003-2007, when there were big plans to introduce welfare technology. But the advent of the financial crisis in 2008 gave people something else to think about.

Thór Thórarinsson, Chief of Section in the Icelandic Ministry of Social Affairs and Social Security, is very aware of the problems in the remote villages around the country. Iceland is taking part in a joint project, Competence Development through Use of New Technology in the West Nordic Region, in cooperation with the Faroe Islands, Greenland, the Nordic Centre for Welfare and Social Issues and the Norwegian Centre for Telemedicine in Tromsø. The project is looking at how new communication technology can be used by families and staff working with people with disabilities, and how technology can be used for competence development in day-to-day work. The aim is to improve services for people with disabilities in small, remote villages.

Video and image communication
The process often starts with the user receiving a home visit from the consultant. This allows the user, family and often a local professional to be shown how to use the new options offered by video and image communication. This means that users in eastern Iceland do not have to attend the diagnosis centre in Reykjavik as often.

"It avoids splitting up families, so there is much to be gained from this model. Then, once personal contact has been established, follow-up takes place using ICT. In this way we improve the user’s quality of life, as the consultant goes to the area and in many cases gives local professionals information and support that may help afterwards," says Thórarinsson.

The financial crisis
The advent of the financial crisis in 2008 meant that many good initiatives in the welfare field had to be put on hold, even if they would have brought savings in the long term. There are still initiatives that can be implemented using flexible solutions, however.

"The challenge now is to find solutions that incur no extra costs up front. The need for savings is acute here and now, even though we are very aware of the positive side benefits of introducing more welfare technology," he explains.
Research and future knowledge needs
Hunting for solutions

"It's solutions we help develop. The technology exists, but the systems, organisation and competence of those involved have to be in place for it to be used. There's not much point in self-testing for the chronically ill if there is no one to report to - and no assistance when needed."

“We envisage a 24-hour call centre that will help a number of chronic patient groups,” say Jarl Reitan, product developer and research manager at SINTEF in Trondheim, and Synnøve Sunde, clinical nurse specialist and project manager in the lung department at St. Olavs Hospital.
So says Jarl Reitan, product developer and research manager at SINTEF in Trondheim. "It's a whole that has to work in practice. The user, GP, family, municipal health services and hospital - the entire network has to work together," he stresses.

COPD-HOME, a project SINTEF is conducting for InnoMed, is precisely about creating a model for how the network can work together. The background to the project is that one in five acute admissions to Norwegian hospitals is for COPD. Patients with chronic obstructive pulmonary disease (COPD) account for nearly 20% of acute admissions to medical wards. Doctors at St. Olavs Hospital in Trondheim thought something should be done and the project is a joint effort involving the Lung Department at St. Olavs Hospital, Trondheim Municipality and SINTEF/InnoMed. While infectious diseases and heart attacks are far rarer than before, COPD and dementia have increased. The trend is up. The age wave, with its increased nursing and care needs and shrinking workforce, does not make the future look brighter. Today's 50 year olds will also have much greater expectations regarding quality of life and services than today's older people, with many wanting to stay in their own homes.

Lots of material
Synnøve Sunde is a a clinical nurse specialist and project manager in the hospital's lung department. She says that the keywords for the project were establishing a better treatment line for home-based care, monitoring, early intervention, treatment and rehabilitation of patients with severe COPD, defined as less than 50% lung capacity. "We also focused on incorporating better, more active and effective coordination between professions and levels in the health service, while helping to prepare technology for streamlining cooperation between the parties involved," says Sunde.

Nearly 200 patients have been randomised, with intervention for around half. The process ensured that age distribution and disease panorama were roughly the same in both groups. Lots were drawn for which group would receive intervention. "We are still recruiting and will follow patients up for 3 years," she says.

Modern technology is the starting point
"In order to obtain a better knowledge base for what is needed for an integrated model to work in the future, we are taking modern technology, i.e. measuring lung capacity with a spirometer, as our starting point," says Reitan.

Patients are given "My COPD Book", which includes an observation table in which community nurses and the patient can record lung function regularly. Then there is a treatment plan, drawn up by a lung specialist, for drug intervention in the event of deterioration. Knowledge is needed to be able to assess the patient's situation and, if necessary, change his/her medication. Community nurses attend a training course on the disease and project, while patients with no community nurse receive an interactive COPD course. Use of "My COPD Book" is also reviewed on home visits to the patients attended by the specialist health service and, if relevant, the home service.

The community nurse and patient record symptoms and, if they need help with decisions or are unsure about anything to do
From research with the patient, they call the lung department’s COPD centre, which was set up for the project and is open from 8.30 am to 3.30 pm on weekdays.

The GP is kept informed of the patient’s condition, medicine and treatment, if any.

A shared electronic case history would have been great and meant that everyone involved could have obtained up-to-date information at any time,” says Jarl Reitan.

**Future solution?**

“This project has shown us what works and what can be done to improve the lives of COPD patients, while streamlining health services and saving society a lot of money. In the future we envisage a call centre, like the COPD centre we set up for the project, receiving inquiries from the home and more chronic patient groups. Call centre staff must know about the diseases in question and the patient, which requires staffing continuity. And, not least, the call centre must be available to patients around the clock. We also recognise that there should be closer and better communication between community nurse, GP and hospital. The hospital will still have to provide the specialist competence with regard to both the disease and the patient. And, as before, the GP will be medically responsible for the patient.

“There is a need for a tool that will help patients with self-observation and recording, teach them about their illness and provide information on how to live with COPD. “The COPD briefcase (Patientkufferten) used in Denmark could be just such a tool. There are several such solutions and we are looking at acquiring one for the project and testing it in practice,” Reitan concludes.

**A long-term, systematic approach and public co-funding**

He believes that in many ways the technology is too complex and not adapted to users’ needs. Lack of knowledge of user-driven innovation in business is one of the reasons. He highlights Taiwan, which has set up a telecare platform that delivers comprehensive, professional health services to older people living at home, for example.

“The success factors are the long-term, systematic expansion of a national welfare technology infrastructure, the development of a local telecare industry and public co-funding,” says Reitan, who hopes that the Norwegian authorities will learn from Denmark’s PWT Foundation (see page 55).

“In the Nordic countries we face largely the same challenges and should be able to learn from each other. A joint Nordic arena for experience sharing is welcome,” he says.

Finally, Reitan would like a couple of big national centres of excellence to generate growth in the welfare technology sector and so stimulate the development of new solutions.
The screens are divided into ten small windows. In each window she can see a participant copying her actions. Suddenly a new window pops up. "Good morning, Holger!" she says in greeting. "You've made it, take your time!"

The video interactive morning exercise class from the Gustafsgård Centre for the Elderly is in full swing.

The video interactive morning exercise class by video link is part of the IITA project (Improved Independence and functional capacity Through interActivity), one of Gustafsgård’s four innovation and development projects for welfare technology. Together the four projects make up InnoKusti, an evaluation and development project aimed at improving quality of care and facilitating the work of care staff using welfare technology, for example. Knowledge and experience are gathered by care staff, but the opinions of clients, the home care service and families are of key importance in the InnoKusti project.

**Floor sensors ensure safety**

"Various welfare technology care methods have changed care practice at Gustafsgård," says Ward Sister Kaarina Raivio. "Assistive technology has given clients more freedom of movement," she explains, referring to the floor sensors and pads that tell...
care staff about clients’ movements. Within the framework of the TAA (Towards a Safe, Active Everyday Life) and Askelturva (Safe Steps) projects Gustafsgård has tested two different types of sensor: sensor pads that tell care staff if clients have got out of bed and built-in floor sensors.

The sensors make everyday life safer for clients with dementia, for example. Care staff used to have to restrict their movements with solutions like bed rails. Using floor sensors and pads, staff can get information on what is happening and take action when needed. Kaarina Raivio says that the technology has also helped clients with cognitive problems do things like going to the toilet more flexibly than before, as staff, using information from the sensors, were able to intervene at the right moment and show them how to manage independently.

Project planner Riitta Vesterinen adds that alarm systems are not standard equipment at Gustafsgård. The risks and strengths of each client are analysed so that assistive technology can be based on individual needs. The aim is to enable clients and create a stimulating environment based on each client’s wishes, while minimising the risk of accidents.

**Stimulation by video link**

Interactive video links have been chosen as a trial area for countering the loneliness and insecurity felt by clients with good cognitive abilities but restricted mobility who live alone. “Using the technology has not been a great problem for clients,” says Vesterinen. At the start participants were a bit unsure about how they would cope with the technology, but as they got to grips with the equipment, their self-confidence grew and staff found that they were keen to learn more. The video events are popular, with more than 70% of participants actively taking part.

"The project has given rhythm to the participants’ day. The various video events have given them a reason to get up, get dressed, comb their hair and eat breakfast in time to do the exercise class at 10 o’clock. Some participants have flowers that can be seen on camera while they are exercising. They obviously feel that they are being visited via the video equipment," says Vesterinen.

Vesterinen adds that the initiative to take part must come from the older people themselves. The video equipment is not there to check on participants and replace ordinary healthcare. Staff never get in touch via the video equipment, even if a participant has not taken part for a while.

**A living lab**

Informing and educating staff about the technical equipment and the facilities it offers has been an important part of the project. When the project started, it was discussed in depth with both staff and clients’ families. Raivio adds that the project staff took care of the technical equipment and contact with the manufacturer, while the role of care staff was to evaluate the equipment.

"Incorporating welfare technology in care work takes time, resources and training, and good technical support. Many of the devices are at the development stage: Gustafsgård is a living lab, where a variety of equipment has been tested. Extra resources are a must, as care staff’s time is already at a premium," Vesterinen adds.

Both the pads and floor sensors, not to mention the enabling every-
day activity model, are now part of Gustafsgård's ordinary operations. In some situations it has been found that the technical equipment can actually replace the physical presence of care staff. It is also possible to use time that, with conventional care methods, would be spent travelling, etc., for actual work with clients. Vesterinen thinks that in many cases it has been found that, once people's fear of the unknown disappears, the equipment stops being strange. Contact between care staff and older people is natural and real, despite being mediated by technology.

More freedom
In response to the question of whether assistive technology invades clients' privacy, Raivio asks what the alternative is for clients with severe cognitive problems, for example. As such clients cannot be left unsupervised, should the alternative to a sensor be to restrict clients' movements or have clients' activities constantly monitored by staff. With the sensor system, care staff only intervene when necessary.

The work on assistive technology is continuing at Gustafsgård despite the InnoKusti project ending in 2010. The project will be described in a comprehensive final report, which is to be published at the end of the year, and an article in an international journal is planned. Gustafsgård has also been visited by a large number of Finnish and international guests throughout the project. The project staff have also taken part in a number of national and international meetings, conferences and exhibitions, where they provided information on the project. The care models developed by the project will be used in elderly care throughout Finland. "The aim is that in the future assistive technology should be used both in institutions and the home," Vesterinen concludes.
A new interface between people and technology

Developments in welfare technology point to whole new ways of compensating for disabilities and creating a new interface between people and technology.

So says John Paulin Hansen, lecturer and associate professor at the IT University of Copenhagen. He himself is engaged in the development of an eye tracking system that improves the quality of life for people with severe disabilities. The system makes it possible for users to control a computer purely with their eyes. By looking where they want the cursor, they can browse, play games and even control a wheelchair.
Multiple benefits
"It’s a good example of modern technology that offers brand new possibilities," says John Paulin Hansen. He is very positive about the development of technology and sees it as a way of both improving quality of live and tackling the consequences of the demographic trend towards fewer people of working age having to look after more older people. He thinks that the development of welfare technology can also have a knock-on effect on the development of technologies not aimed at people with disabilities.

"The need to come up with special solutions will be a sort of engine that furthers technical development in general," says John Paulin Hansen. In the same way that military technology spreads to and is used in everyday life.

Searching for solutions
The big trend in welfare technology is the search for solutions to the major common diseases. One example is the lung disease COPD, which virtually only kills smokers and is estimated to account for between 4 and 7% of all deaths in Europe. Instead of forever being admitted to hospital, patients can take a briefcase home with them and remain in constant online contact with the hospital’s COPD department, which can check if their readings are different from expected at a moment’s notice.

Welfare technology also increases the chances of older people being able to live at home longer than before. Assistive devices with the emphasis on daily activities are constantly being developed to facilitate cooking, personal hygiene, shopping and cleaning. Consequently, older people can already live at home instead of having to go into a care home, a trend that is set to continue.

Not a big brother society
Another example is the exoskeleton, a kind of robot that gives someone who has trouble going up steps or carry heavy weights extra strength in the form of an external skeleton. It can also be adjusted to offer suitable resistance so that it functions both as an assistive device and exercise equipment.

"Modern technology also facilitates social contact," says John Paulin Hansen. Lonely people who have trouble going out can, for example, use a good video link on their television to stay in touch with old friends and family.

John Paulin Hansen sees no obstacle to this development, either for reasons of integrity or owing to a lack of technical expertise.

"The biggest obstacle to development is the notion of the sanctity of private life," he says. "Critics fear a sort of big brother society in which the home care service or authorities spy on users. I believe that fear is exaggerated if the alternative is loneliness."

He thinks that we are on the verge of a change in mentality, with generations who are used to living with Facebook and dense social networks online growing older. John Paulin Hansen says that video conferences with family and friends will be commonplace within 5 years.

"If you don't want visitors, you can just close the curtains."

Savings and better care
Technological development can do more than improve quality of life. According to John Paulin Hansen, it can also lead to both savings and better care. The savings will result from technology reducing the need for labour. Improvements in care will come from it being possible to combine technology and patient files, producing a good decision-
making basis and methods for further individualising treatment.

"Future welfare technology will focus on making the individual independent for as long as possible," says John Paulin Hansen. "I see great potential for the Nordic region in developing service concepts based on its welfare model that can be exported to other countries, such as China and Japan, which are facing the same demographic trend."
International overview
From 10 to 23,000 hits in 3 years

Claus F. Nielsen and Social Democrat MP Sophie Hæstorp Andersen set themselves the task of making Ambient Assisted Living a meaningful Danish term. It became 'velfærdsteknologi' – welfare technology. In three years it went from 10 hits on Google to 23,000.
Sophie Hæstorp combined ‘welfare’ and ‘technology’, and Claus F. Nielsen developed the term’s content.

"I decided to promote the term welfare technology. It means more than ambient assisted living, which can be very difficult to sell in purely political terms. Many people don’t immediately understand the English term, making it difficult to put on the agenda. If you want to appeal to particular target groups, you also have to use words that can be sent and received," says Claus F. Nielsen.

"The problem with the term welfare technology, on the other hand, is that it’s most useful in the Nordic countries. If you say welfare technology in the UK, it means something else – and something else again in Germany. In our Nordic frame of reference we connect welfare with public services and the sense that we are well off. Peace of mind and security: our Nordic model in fact. If you go to the USA, it means virtually the opposite. It has connotations of aid, or communism. It’s also referred to as independent living, but that term covers more than just technology.

"And welfare technology is precisely to do with technological development in which things get smaller and smaller, like microchips, for example, so you can build intelligence into smaller and smaller units, of which there are lots of examples. Like the electronic plaster with a built-in microprocessor to monitor your heart."

Claus F. Nielsen and Sophie Hæstorp Andersen thought that the new term, welfare technology, would cover some of these new things, so they created a page on Wikipedia.org to explain it. Back then, a search for welfare technology produced 10 hits on Google. Three years later there are 23,000. "That’s what I call putting an issue on the agenda," says Claus F. Nielsen.

Denmark leads the way
The development happening in Denmark is very much focused on service innovation. It is applied research to do with producing useable products. Germany focuses more on pure research, especially programmes aimed at developing specific areas. There is a lot of industrial policy support for research.

The USA has the independent living approach. One point of interest is that the USA has some of the biggest global players, such as Intel, who are now moving into this market. There is also the whole group of companies involved
in Continua Health Alliance. They are very patient-focused, but have had trouble breaking into the medico-technical sector and are now switching to welfare technology.

In Japan the focus is very much on robot automation, while the UK has some very large programmes with the emphasis on business cases.

"Holland has the same area of focus as Denmark, but without Denmark’s high level of funding in the form of the PWT Foundation and the new red-green technology fund, for example, not to mention all the user-driven innovation programmes and the performance contracts with the technological service institutes. In terms of size, Germany would have to invest around €50 billion to match Denmark's investments in this area. So when Europe looks at Denmark, we're in a really strong position. Denmark is highly focused on using this for growth and development. The benefits are threefold: giving citizens more quality, meeting the demographic challenge and generating business growth. In the Region of Southern Denmark the belief is that welfare technology could be a new success story to equal the Danish wind turbine industry and there is enormous commitment to achieving that, so Denmark is strong on vision," says Claus F. Nielsen.

**It is about delivering food to people**

Claus F. Nielsen thinks that in Denmark in particular the focus used to be on hospitals, cancer scanners and patients. "Now it is gradually dawning on us that this is an important subject. Governments fall if they can’t feed the population. Who is going to deliver food to pensioners? Who will make sure that they have their dressings changed and that sort of thing? All of a sudden it can mean defeat for a politician, which is highly motivating, making it easy to sell politically – or easier and easier at any rate. It can be compared to road safety. Welfare technology represents the decent cars that drive safely on the roads day after day, while eHealth represents those old, cheap Eastern European cars that are always in the garage, expensive to run and not as safe."

**Halve the number of beds – use technology**

At a time when it seems twice as many people need to go into hospital, Claus F. Nielsen wants to turn it all on its head instead. "Otherwise we haven’t captured the essence of the revolution we can bring about. All investment – everything – needs to be turned right round. Of course there will be acute cases and serious illnesses that require admission and therefore beds. But the point is that someone can just as easily be operated on in Jutland by a specialist in Copenhagen using the robotic surgery employed by the American armed forces. It can be done, but daring is required. Why send a community nurse out to people all the time for checks and observations when readings can be taken electronically? Why should you be stuck in hospital and get even sicker among all the other sick people there if you can stay at home with a few simple sensors and devices to monitor you?"
This was said by Lena Gustafsson, chair of the AAL Programme, at the AAL Forum on welfare technology in September. AAL’s name comes from the English term for welfare technology: Assisted Ambient Living (AAL).

"Welfare technology is very exciting and important. First there is the double demographic challenge, with the number of older people needing help to live a good, dignified life increasing. At the same time there will be fewer people to care for them.

"What we have to do is turn this challenge into something positive and see the opportunities. We will increase the market for small and medium-sized business in the welfare technology sector and so create more jobs. It’s a golden business opportunity and we need to reduce the gap between research and bringing a product to market. We also have to see older people as a resource. Many older people want to be active and can help."

Asked about the situation in Europe compared with America, Gustafsson replied: "We’re right up there. There is still enormous potential that we need to exploit."
Standards that benefit users

"We need standards. Standards that everyone will use, so we can have one market and technical systems that work together for the benefit of users," said Anne-Sophie Parent, Director of AGE, Europe's largest interest organisation for older people, in a panel debate at the conference.

"But we have 27 ministers fighting to ensure that their particular system sets the standard, so we are getting nowhere. Individual countries have to understand that if they all work towards a compromise and give up some of their demands, it will benefit both their older people and the economy in general."

And she was not alone in raising the need for standards – participants from various continents referred to the subject time and again.

Facts about the AAL Joint Programme
The AAL Programme was initially set up for the period 2008-2013. Its planned total budget is €700 million, with about half coming from public funds and half from private finance.
See page 81.
In a number of countries in Europe the double demographic challenge is much greater than in the Nordic countries owing to a persistently low birth rate.

The EU therefore initiated various activities in both its 6th and 7th framework programmes aimed at helping the ageing population to benefit from new technology with a view to living an independent life at home for as long as possible. The AAL Joint Programme is intended to run from 2008 to 2013.

It has a planned total budget of €700 million, about half of which is covered by public funding from either the AAL partner countries or the EU and about half from the private organisations, such as businesses, that are taking part.
Objectives of the Ambient Assisted Living (AAL) Programme

The purpose of the AAL Joint Programme is to improve quality of life for older people and strengthen the industrial base in Europe through the use of information and communication technology (ICT).

The new investment activity is due to the demographic challenges and ageing in Europe, which will bring not only challenges, but also opportunities for citizens, the social and health system, industry and the European market. The term Ambient Assisted Living means:

- extending the time people can live in their preferred environment by increasing their independence, confidence and mobility
- supporting the preservation of health and functionality in older people
- promoting a better, healthier lifestyle for individuals in risk groups
- improving safety in order to prevent social isolation and help maintain the individual’s network
- supporting carers, families and care organisations
- increasing the efficiency and productivity of the resources used for older people

Southeast Asia

Prompted by the great need Japan in particular has for providing a rapidly growing older population with services, work is being done in Japan and South Korea, for example, on the development of advanced robots and exoskeletons (strength enhancers for people) to remedy disabilities and ease the burden on staff.

This does not mean, however, that mature, advanced humanoid robots have been introduced to perform care or services for older people and people with disabilities. That is because it is still far too expensive in relation to utility value and because critical personal safety problems have not been solved. The development and implementation of personal hygiene products, e.g. automatic toilets and personal washers, have come a long way though.
Suggested reading
Initiatives in Denmark

- The PWT Foundation – Public Welfare Technology
  www.abtfonden.dk/
- The Business Innovation Fund
  www.fornyelsesfonden.dk/
- The Prevention Fund
  www.forebyggelsesfonden.dk
- Aalborg University
  www.aau.dk
- Aalborg University V-CenTAH
  www.vcentah.aau.dk/
- IT University of Copenhagen
  www1.itu.dk/
- Danish Technological Institute
  www.teknologisk.dk/
- IntelliCare
  http://intelicare.dk/
- CareNet
  www.carenet.nu
- RoboCluster
  www.robocluster.dk
- BEng in Healthcare Technology – Engineering College of Aarhus
  www.iha.dk/Sundhedsteknologi-4962.aspx
- Maersk Mc-Kinney Moller Institute
  www.sdu.dk/om_sdu/institutter_centre/mmmi_maersk_mckinney_moeller.aspx
- CareWare
  www.carewareweb.dk
- HanDiaTek
  http://467964.g.portal.aau.dk/
- Welfaretechnology.now
  www.welfaretechnology.dk
- Alexandra Institute
  www.alexandra.dk
- Welfare technology – new assistive devices in elderly care. (Danish language)
  www.aeldreforum.dk/udgivelser/submenu23/velfaerdsteknologi-nye-hjaelpemidler-i-aeldreplejen
- Patientkufferten til genoptøning i eget hjem
  http://en.ddc.dk/node/1533

Initiatives in Sweden

- Ministry of Health and Social Affairs: "Den ljusande framtid är vård" (A Brighter Future is Spelled Care)
  www.sweden.gov.se/sb/d/108/a/148929
- "Ny teknik för äldre" (Technology for elderly)
  www.teknikforaldre.se/
- Ministry of Health and Social Affairs: "Bo bra på äldre dar" at Hi.se
  www.regeringen.se/sb/d/13215/a/149759
- Vinnova
  www.vinnova.se
- Robotdalene
  www.robotdalene.se/
- Swedish Institute of Assistive Technology - SIAT
  www.hi.se

Initiatives in Norway

- Research Council of Norway
  www.forskningsradet.no
- IT Funk – IT for people with disabilities
  www.itfunk.org
- Norwegian Association of Local and Regional Authorities
  www.ks.no
- Innovasjonssällansens www.ks.no/innovasjonssallansens
- Resource Centre for Local Government Reorganisation
  www.ro.no
- Norwegian Board of Technology "Fremtiders Alderdom/The Future of Ageing"
  www.teknologiradet.no/default1.aspx?m=258
- Hagen Committee “Innovation and Care”
• SINTEF – Centre for Research-Driven Innovation in Welfare Technology
  www.sintef.no/Projectweb/Velferdsteknologi/
• Trondheim: Technology in the care sector
  www.trondheim.kommune.no/velferdsteknologi/
• TrygghetsNett
  www.trygghetnett.no/filmsnutt-trygghetsnett/category260.html
• Innovemed – a national competence network for innovation in the health sector
  www.innomed.no
• Directorate of Health
  www.helsedirektoratet.no/
• ”Kommunehelsetjenesten” and ”Spesialisthelsetjenesten”
  www.loddata.no/all/hl-19821119-066.html
• ”Avtale om samarbeid om behovsdrevet innovasjon og næringsutvikling”
  www.helse-sorost.no/stream_file.asp?iEntityId=5604
• NTNU Trondheim – Norwegian University of Science and Technology
  www.ntnu.no/studier/medisinhelsesosialfag
• University of Oslo
  www.uio.no/
• Gjøvik University College
  www.hig.no/nyheter/velferdsteknologi
• University of Agder
  www.uia.no
• The Centre for eHealth and Care Technology is a research centre
  at the University of Agder
  www.omsorgsr.no/
• University of Stavanger
  www.uis.no/
• University of Bergen
  www.uib.no
• The University of Tromsø offers a master’s programme in telemedicine
• University of Tromsø Centre for Care Research
  www2.uit.no/ikbViewer/page/ansatte/organisasjon/hjem?p_dimension_id=88122&p_menu=42374&p_lang=2
• Ageing and Health - Norwegian Centre for Research, Education and Service Development
  www.nordemens.no
• Centre for Care Research
  www.omsorgsforskning.no
• Norwegian Computing Center
  www.nr.no
• Borg Innovasjon
  www.borginnovasjon.no
• Fremtids alderdom og ny teknologi. Report by Norwegian Board of Technology (2009)
  www.teknologiradet.no
• Kartlegging av behov og muligheter for bruk av robot- og sensorteknologi i helse- og omsorgssektoren. Report by SINTEF (2009)
  www.sintef.no
• Perspektivmeldingen. St.meld. nr. 9 (2008–2009)
  www.regjeringen.no
  www.ks.no
  www.sintef.no
• Velferdsteknologi gir samfunnsekonomiske gevinster. Rapport by Northern Research Institute Tromsø, Norwegian Centre for Integrated Care and Telemedicine
  www.telemed.no
• Klar for eldrebelgen? Omgivelse og teknologi. Report by Norwegian Board of Technology
  www.teknologiradet.no
• Finansieringsmuligheter for utvikling og forskning av velferdsteknologi. Research Council of Norway
  www.forskningsradet.no
- eKommune 2009 – det digitale spranget. Norwegian Association of Local and Regional Authorities (2005), Kommuneforlaget AS, Oslo www.ks.no
- Aktiv deltakelse, likeverd og inkludering. Et helhetlig hjelpemiddeltibud. NOU 2010:5 www.regjeringen.no

**Initiatives in Finland**
- TEKES www.tekes.fi
- SITRA www.sitra.fi
- Välfungerande it för det sociala området. IT-projektet inom socialvården (Ministry of Health and Social Affairs' booklets 2008:7) www.stm.fi/julkaisut/esitteita-sarja/nayta/_julkaisu/1084628#fi
- OSKE Cluster Programme (Welfare Technology, etc.) www.hyvinvointiklusteri.fi/
- Innokylä (Innoby – Innovation Village) www.innokyla.fi/
- HYVITE Programme www.hyvite.fi/webhyvote/hyvite.nsf/
- University of Oulu, welfare technology programmes www.kotu.oulu.fi/hyvinvointi/hyvatekn/index.html
- Innokusti project - https://publications.theseus.fi/handle/10024/23500
- IITA project (Improved Independence and functional capacity Through interActivity) http://www.hel.fi/wps/wcm/connect/a3b1c9004288a2779b339b7eecc66b6f2/2_innokusti_iita.pdf?MOD=AJPERES

**Initiatives in Iceland**
- Innovation and technological development in the field of assistive technology in the Nordic region
- Háskóli Íslands (University of Iceland) www.hi.is
- Háskólinn á Akureyri (University of Akureyri Iceland) www.unak.is
- Háskólinn í Reykjavík (Reykjavik University) www.hr.is
- Sjúkratrýggingar Íslands (Assistive Technology Center) www.sjukra.is
- Nýskópunarmiðstöð Íslands (Innovation Center Iceland) www.nmi.is
- Rannsóknarmiðstöð Íslands – Rannis (The Icelandic Centre for Research) www.rannis.is
Sammendrag
Summary
Norðurlöndin standa andspaðenis flöðbyggi aldraðra og fyrir árið 2035 verða tvöfalt fleiri einstaklingar yfir átrætt en í dag. Í svo að margir verði heilsuhrastur verður ekki liði hérað eftirfarandi staðreynd: Mun fleiri aldraðir munu þarfnaðt hjúkrunar og umönnunar.

Um leð veldur fækkun barna um árábil því að ekki fjögjar á sama hatt á vinnumarkaði. Það verða færri hendur til þess að annast aldraða. Þar við bætist að við vitum að þeir sem eru sextugir í dag munu meira þjóknustunnar en þeir sem eru aldraðir í dag og margir munu vilja búa heima.

Þetta er ástæða þess að Norræna velferðarmiðstöðin gefur út þetta hefti um velferðartæknit – og mælir eindregið með að Norðurlönd setji velferðartæknit á dagskrá. Og ekki bara á dagskrá, heldur komi á stefnumáttvæli og vælir þjónustunnar en þeir sem eru aldraðir í dag og margir munu vilja búa heima.

1. Til þess að bregðast við þessari áskorun þurfa Norðurlöndin að hafa velferðartæknit sem stefnumarkandi áhersluvið. Stefnumótan gríða í hverju landi sér til þess að bregðast við áherslum á þessum stigum. Þetta höfðum að þeir sem eru sextugir í dag munu þarfnist hjúkrunar og umönnunar.


3. Leggið fjármagn í fjár- festingum í hverju landi sér til þess að þeir sem eru sextugir í dag munu þarfnist hjúkrunar og umönnunar.

Norræna velferðarmiðstöðin metur það svo að innleiðing velferðartæknit muni vera öllum til hagsbóta, sérverjum borgara, samfélaginu og atvinnulífinu. Við fáum heldur ekki séð að lóðin eigi annarra úrkosta væl.

Heftið er með þarlega fræðileg- an kafla, kafla sem lýsir daglegri notkun tæknit, kafla um álit sjörmálamanna, kafla um rannsóknir og þróunarstarf og í lokin kafla um alþjóðavetvæng. Að auki komum við með nokkrar ráðleggningar.

Mýmir Gudnason

TRANSLATION: Magnus Gudnason

Norðurlöndin standa andspaðenis flöðbyggi aldraðra og fyrir árið 2035 verða tvöfalt fleiri einstaklingar yfir átrætt en í dag. Í svo að margir verði heilsuhrastur verður ekki liði hérað eftirfarandi staðreynd: Mun fleiri aldraðir munu þarfnaðt hjúkrunar og umönnunar.

Um leð veldur fækkun barna um árábil því að ekki fjögjar á sama hatt á vinnumarkaði. Það verða færri hendur til þess að annast aldraða. Þar við bætist að við vitum að þeir sem eru sextugir í dag munu meira þjóknustunnar en þeir sem eru aldraðir í dag og margir munu vilja búa heima.

Þetta er ástæða þess að Norræna velferðarmiðstöðin gefur út þetta hefti um velferðartækni – og mælir eindregið með að Norðurlönd setji velferðartæknit á dagskrá. Og ekki bara á dagskrá, heldur komi á stefnumáttvæli og vælir þjónustunnar en þeir sem eru aldraðir í dag og margir munu vilja búa heima.

Í þessari vinnu þarf að leggja áherslu á skýrar heimildir um reynslu og framkvæmdaverkefni. Það er mikilvægt til þess að hugmyndir og niðurstöður glatist ekki þegar verkefninu lýkur.

4. Notið tæknina þannig að einstaklingar með langvinna sjúkðómá fái tök á að bera ábyrgð á eigin heilsu. Það leiðir til aukinna lífsgaða hjá notendum og sparar samfélaginu fjárðun.

Velferðartækní gerir heimabúandi einstaklingum með langvinna sjúkðómá kleift í auknum mæli að sjá um og bera ábyrgð á eigin heilsu. Með því móti má fækka innlögnum á sjúkrahúsi. Claus F. Nielsen, yfirmaður alþjóðadeildar hjá Delta Business Development, segir í grein á blaðsíðu 71, að innleiðing velferðartæknin geti fækkað legurýmum á sjúkrahúsum um helming.


Fyrir marga einstaklinga með fótulin geta nýjar tæknilausnir leitt til aukinna færni og þar með kosti á að þrifast á eigin forsendum. Til dæmis getur notkun snjallsíma með minnisstuðningi og staðsetningarteræki veitt aukna öryggiskendur hjá einstaklingum sem glíma við vitsmunakerðingu og gert þeim kleift að afla sér menntunar og vinnu í kjölfarið.


Velferðartækní eru bara verkfæri til að mæta þeirri þróun sem mun koma, en til þess að nýta hina tæknilegu möguleika til fulls verðum við að horfa til skipulagslegra afleiðinga. Án vilja til að breyta samstarfsvenjum, faggreina- og fagsviðsmörkum, er ekki hægt að nýta velferðartæknina til fulls.

Gildi tækninnar þarf að vera augljóst því starfsfólk sem á að taka hana í notkun. Þetta krefst þekkingar og færni og ekki sist áhuga og hvata til þess að læra eitt hvaða nýtt. Starfsmenn þurfu að vera tilbúinir til breytinga, bæði á skipulagi og með tilliti til þeirrar tækní sem á að innleiða. Örygggr og skortur á samþykki á nýrri tækní gerir það erfitt að hafa fullt gagn af velferðartækninu.

7. Takið siðferðislegum vandamálum velferðartæknína með opnum huga og aðlagið lagaum-hverfið þannig að nýta megi hina nýju möguleika til hagsbóta fyrir notendur.

Notkun GPS tækja til að finna eigin staðsetningu veldur því að fólk með vitsmunakerðingu, til dæmis eilibilun, getur í auknum mæli notið útivistar. Það hindrar lika mikinn ötta og óþægindi fyrir alla sem hlut eiga að máli. Enn sem komið er hindrar lögjöf notkun hreyfanlega öryggis-kerfa með staðsetningartæknínum (GPS) í mörgum Norðurlandanna.

Við vætum með að Norðurlöndin fylgi forðan í Norðurlöndin fylgi fordæmi Dana og aðlagið lögjöf sína þannig að til dæmis reynist unnt að finna einstaklinga með eilibilun sem hafa misst áttaskynið og villst.
Summary

The Nordic countries are facing a huge wave of elderly people and before year 2035 there will be twice as many people above 80 compared to today. Even though many of them will be healthy, the following fact remains: There will be far more elderly people in need of treatment and nursing care. At the same time, the persistent lower birth rate leads to a lower rate of growth of labour force. There will be fewer hands to take care of the elderly. As if that is not enough, we know that the 60 years old of today will have far greater expectations to quality of life and quality of services than those who are elderly today, and many will wish to live at home.

It is on the basis of this that the Nordic Centre for Welfare and Social Issues publishes this theme publication on welfare technology (Ambient Assisted Living technologies) – and highly recommends to the Nordic countries to put welfare technology (AAL) on the agenda. And not just on the agenda, but to establish national strategies, finances and closer Nordic cooperation within this field. Due to Denmark’s leading role in the Nordic countries with regard to the implementation of welfare technology, the theoretical backbone in this publication is from there.

We are in a hurry to get going, because big changes will not happen overnight. The Nordic Centre for Welfare and Social Issues is absolutely convinced that the introduction of welfare technology is a win-win situation for everybody, each citizen, society and business life. We cannot see any other options for the countries.

This publication has an extensive facts section, a section on technology in practice, a section on the views of politicians, a section on research and developmental work and finally an international overview. In addition, we make a few recommendations.

1. **In order to address this challenge, the Nordic countries must have welfare technology as a strategic focus area.**

A strategic national effort is needed to meet the challenges. Without control and goal-directed work, it will be a matter of coincidence. If central official authorities do not take responsibility, other players will take over the scene. This may lead to big differences where well-off people will be able to buy assistance and welfare technology solutions, while public welfare suffers. The use of welfare technology may be a matter of to be or not to be for our welfare society. In addition, welfare technology opens up for major industrial development.

2. **Learn from each other and establish Nordic cooperation in the field.**

The Nordic countries are at different levels, both with regard to attitudes to technology and the will to provide financial means in order to make tests. There is a great potential to learn from each other and to establish stronger Nordic cooperation within this field than we have today. Knowledge and competencies are needed in order to use already existing technology. Exchange of knowledge and experience, cooperation on innovation and cooperation on standardization are areas which are useful and suitable for Nordic cooperation. The Nordic Centre for Welfare and Social Issues recommends the establishment of networks within...
these fields in order to support positive development in the Nordic countries.

3. Provide national financing, testing and projects within the municipalities.
Make sure there is solid documentation.

The public sector in Denmark demands welfare technology, which in turn has made it become a driving force in launching new initiatives within the field of welfare technology. The Danish government has speeded up the development by, e.g. establishing the ABT-fund (Anvendt Borgernær Teknologi – "Public Welfare Technology") of DKK three billion to projects aimed at testing and introducing technology within the public sector. Read more on page 50.

This could serve as an example to the other countries. National financing should be used to support a national strategy. In this work, solid documentation of experiences and implementation projects should be stressed. It is important in order for ideas and results not to get lost at the end of the project.

4. Use technology in such a way that people with chronic diseases will be able to be responsible for their own health. This will lead to quality of life for the users and mean savings for society.

Welfare technology makes it possible for people with chronic diseases, who live at home, to a higher degree to be able to take care of and be responsible for their own health. Thus the number of admissions to hospital can be reduced. Claus F. Nielsen, International Manager, DELTA Business Development, states in an article on page 71 that the introduction of welfare technology may diminish the number of beds at hospital by fifty per cent.

5. Use technology in such a way that people with disabilities will be able to function better. Listen to the users and their advice when implementing the technology.

To many people with disabilities, new technological solutions may lead to improved function and thus possibilities of functioning on their own terms. As an example, the use of smartphones with memory aid and positioning systems may provide increased security to people with cognitive disabilities and make them able to receive an education and later on get employment.

6. Be prepared to change rules and work routines in order to get maximum benefits from the new technology. Seek advice from staff when welfare technology is implemented.

Welfare technology is just a tool to meet the development we know is due, but in order to get optimum benefits from the new technological possibilities, we have to look into the organizational consequences. Unless there is a will to change cooperation routines, subject and sector demarcations, we will not be able to use welfare technology to its full potential.

The value of technology must be obvious to the staff who have to use it. It demands knowledge and competencies and not the least a desire and motivation to learn something new. The staff must be prepared for change, both with regard to organization as well as to the technology to be implemented. Insecurity and lack of acceptance of new technology makes it difficult to use welfare technology to its full advantage.
7. Address the ethical problems of welfare technology with an open mind and adjust the law in order to make the new possibilities useful for the users.

Positioning by using GPS makes it possible for people with cognitive disabilities, e.g. dementia, to move more freely out of doors. It also prevents much fear and unease for everybody involved. For the time being, the law puts a stop to the use of mobile aid-call alarms with positioning systems (GPS) in many of the Nordic countries.

We recommend to the Nordic countries that they follow the example of Denmark and make amendments to their laws, thus making it possible to track people with dementia who have lost their sense of orientation and got lost.

---

Pohjolaan on odotettavissa suuri ikääntyneiden aalto, ja vuoteen 2035 mennessä yli 80-vuotiaita on kaksi kertaa niin paljon kuin tällä hetkellä. Vaikka monet tulevatkin pystyvät pysymään terveinä, meidän on tunnustettava tämä tosiasia: hoitoa ja hoivaa tarvitsevien ikääntyneiden määrä tulee kasvamaan paljon. Samanaikaisesti vaikuttaa, että työvoiman määrä kasvaa vastaavasti, vaikka vanhustenhuollossa tulee olemaan vähemmän käsiä. Eikä siinä vielä kaikki. Me tiedämme, että tämän päivän 60-vuotiailla on paljon suuremmat odotukset elämänlaatuista ja palvelujen laatua kohtaan, kun tämän päivän ikääntyneillä, ja monet haluavat asua kotona.


Alkuun pääsyllä on kiire, koska suuria muutoksia ei tehdä yhdessä yössä.

Pohjoismaisen hyvinvointikeskuskunnan määrä suuremmat odotukset elämänlaatuista ja palvelujen laatua kohtaan, kuin tämän päivän ikääntyneillä, ja monet haluavat asua kotona.


Alkuun pääsyllä on kiire, koska suuria muutoksia ei tehdä yhdessä yössä.

Pohjoismaisen hyvinvointikeskus on täysin vakuuttunut siitä, että kaikki osapuolet, yksittäinen kansalainen, yhteiskunta ja elinkeinoelämä, tulevat hyöytymään hyvinvointiteknologian käyttöön- otosta. Emme myöskään näe mailla olevan muuta vaihtoehtoa.

Vihko sisältää kattavan faktaosan, teknologian käytännön sovellutuksesta kertovan osan, politiikkojen mielipiteitä asiasta, tutkimukseen ja kehittämiseen suuntautuvan työn osan ja lopuksi kansainvälinen katsauksen. Lisäksi annamme joitakin suosituksia.


Työntekijöiden on oltava muutosvalmiita sekä organisa- torisella tasolla että käyttöön otettavan teknologian tasolla. Epävarmuus ja uuden teknologian hyväksynnän puuttuminen vaikeuttavat täyden hyödyn saamista hyvinvointiteknologista.

Writers from the Nordic Centre for Welfare and Social Issues

Lasse Winther Wehner
Information assistant, MSc in IT and BA in English. Performs information and journalism tasks, including editing, layout, website, translation and IT work.

Magnus Gudnason
Academic assistant, MA in Danish and English, state-authorised translator. Performs various information and journalism tasks, including editing, simultaneous interpreting and translation, and maintains NVC’s contact network.

Helena Lagercrantz
Information manager, journalist, BA in Cultural Science. Responsible for coordinating information at NVC.

Henrik Svensson
Welfare technology consultant from Danish Centre for Assistive Technology. Electronics engineer experienced in the usability and development of consumer electronics. On loan to NVC as an expert for this booklet.

Gerd Vidje
Editor and journalist. Freelance, currently attached to NVC. Bioengineer, journalist, communications and management.

Nino Simic
Communicator, journalist. Works with information both for specific action areas and generally, including editorial work for the website, newsletter and NVC’s theme booklets.

Louise Hertzberg
Communicator, journalist, BA in political science. Works on information and journalism.

Nina Karlsson
Project assistant, sociology student, prospective Master of Social Sciences. Webmaster for Nosam.net. Assists with various projects at Helsinki office.

Erlan Winterberg
Engineer. Welfare technology project manager. Has worked on rehabilitation technology and accessibility at a European and Nordic level for many years.

Nina Karlsson
Project assistant, sociology student, prospective Master of Social Sciences. Webmaster for Nosam.net. Assists with various projects at Helsinki office.

Martina Harrikari
Project assistant, Master of Social Sciences in Sociology. Assists with various projects, mainly to do with alcohol and drug issues, at Helsinki office. Work includes information, organisation, administration and coordination of various tasks.
Sammendrag

Summary

Writers from the Nordic Centre for Welfare and Social Issues

www.nordicwelfare.org
We are active in the following areas:

• Alcohol and drug issues
• Economic inclusion
• Deafblindness
• Disability issues
• Social service
• The welfare model
• Welfare technology

Our organisation
The institution has its head office in Stockholm and branches in Denmark and Finland.

The Nordic Centre for Welfare and Social Issues is run by a board consisting of representatives from the five Nordic countries. The board is appointed by the Nordic Council of Ministers.

We are assisted in our work by a network of Nordic institutions and experts. Their task is to anchor our work in practice and communicate the results to decision-makers and practitioners.

A important part of our work is international. We cooperate with international players in the area of social affairs and health, including the EU, Council of Europe and UN.

Nordic Centre for Welfare and Social Issues

— an institution under the Nordic Council of Ministers

We work to shed light on and stimulate development of the Nordic welfare model.

Our work aims to promote the inclusion of vulnerable groups, equality, social solidarity, and accessibility and quality with regard to social services.

The Nordic Centre for Welfare and Social Issues has three main tasks:

Knowledge
We gather and compile experiences from the Nordic countries in the area of welfare policy.

Communication
We disseminate knowledge and experience of best practice through our activities and networks.

Dialogue
We create dialogue between politicians, researchers and practitioners.

Nordic Centre for Welfare and Social Issues

Our important part of our work is international. We cooperate with international players in the area of social affairs and health, including the EU, Council of Europe and UN.