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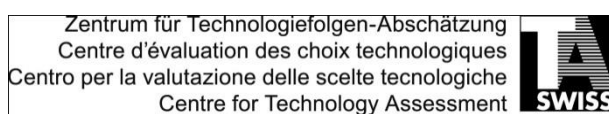
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Executive summary

The project is part of a European challenge of how the healthcare sector should deal with the increasing number of elderly citizens. Technology is already seen as part of the solution, but this project aims at exploring how the future health care sector can ensure a high level of service and ensure the life quality of the citizen. As part of the project the Danish Board of Technology held a scenario workshop, with the aim to engage stakeholders and facilitate recommendations to policy makers concerning future health care solutions. The aim of the report is to summarise, evaluate and analyse the Danish scenario workshop held 20th of May 2014, and to contextualize the results to the Danish national policy on the field of welfare services. The workshop engaged a wide range of stakeholders within both the public and private sector. The participants were policy makers, lobbyists and health care workers, so that the all perspectives on the issue at hand was represented. At the workshop the participants were presented with three scenarios, and had group discussions of their possible political consequences. The participants overall found the scenarios unrealistic and too simplistic, and highlighted that the scenarios didn't include the least healthy citizens. At the workshop the participants recommended six specific visions for the future. Overall the discussions focused on:

a) A national strategy for welfare technology, regarding knowledge sharing and legislation and standards, with the main goal to ensure "equal health for all"
b) A focus on the individual, meaning that the individual must always be the centre for the technological solutions, and ensure that the technologies key purpose is to preserve the citizens independence as long as possible.
c) Protection of health data, meaning that the health related it-systems from different suppliers in the future must be mutually compatible, ensuring the availability of the relevant knowledge about the citizen, so the best treatment is possible at all times.
d) The need for volunteers to cope with the demographic challenges, but with a clear division of labour between volunteers and professionals.

Introduction

How to cope with ageing societies is one of the grand challenges pointed out in the Lund Declaration (Lund, 2009). The rapidly growing population of senior citizens[1] confronts Europe with a double demographic challenge. The ageing population's need for healthcare services increases at the same time as the access to workforce declines[2].

Use of technology can be increasingly important for the society to be able to offer health care services at a quantity and quality that mirrors the expectations of the European populations. Our society can choose different strategies for the care services, and for the introduction of new technological tools in this sector. The technology promises many opportunities, but there are challenges to be solved and ethical dilemmas to be considered. How can we best use new technology in care services, what is acceptable and what is the resistance by the senior citizens themselves, and what type of options are policy makers faced with?

To facilitate and provoke forward-looking discussions and identify policy alternatives the PACITA project have conducted nine national and regional scenario workshops in; Denmark, Czech Republic, Hungary, Catalonia (Spain), Norway, Wallonia (Belgium), Switzerland, Austria and Bulgaria. A scenario workshop is a method aimed at facilitating forward-looking discussions and identifying policy alternatives in different contexts. In PACITA, the workshops will stimulate discussions on how one can meet the needs and face the challenges of the rising number of older adults in different European countries, with a set of scenarios as a starting point for the discussion.

To create awareness of the possible consequences of political choices, the participants were presented with three scenarios; "One size fits all", "Freedom of choice" and "Volunteering community". They differ with respect to which degree public and private players are providing future elderly care and how the senior citizens and other groups in the society organise themselves in order to meet the needs for care. To create awareness of the possible consequences of the choices, the participants was also presented with user stories, where four people were pictured and further how they could live their lives in 2025 in the given scenarios.

The scenarios and user stories have been used to provoke discussions in scenario workshops on how one can meet the needs and face the challenges of the rising number of older adults in the European countries. The scenario workshops in the PACITA project have produced visions for what kind of elderly care services the Europeans (though the views of a diverse range of elderly care stakeholders) want and policies envisaged to achieve these visions.

This report summarises and analyses the results of the national scenario workshop held in Denmark, 20th of May 2014.

The findings from the nine national workshops will be gathered and analysed in a synthesis report, to be presented to regional, national and European policy-makers at a policy conference in Brussels in late 2014.

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[1] The term „elderly" is commonly used. We are aware that this is a sensitive terminology. We have chosen to use the more neutral term "senior citizen" throughout this document.

[2] An ageing population is defined as a population in which the number of elderly (65+) is increasing relative to the number of 20-64 year olds. http://www.population-europe.eu/Library/Glossary.aspx

National context

The overall demographic tendency in Denmark is that people live longer, meaning that a larger part of the Danish society in the future will be represented by senior citizens. The group of 70+ will increase 66 % from 2015 to 2040 and at the same time will the group of the 0-69 year old decrease with about 1 % in the same period. There will be a total increase in the population of 8 % until 2040. The result of this trend means that less people of working age will have to take care of more senior citizens in the future. Furthermore, less people in the 0-69 year group will mean less people to pay for the health sector via taxes (elderly care, hospitals, etc.).

The second important trend is that more people – in all age groups – gets diseases related to their lifestyle e.g. obesity or COL, which leads towards more chronic ill among the entire population (Danish Public Welfare Technology Fund, 2012).

The increasing number of lifestyle related diseases and the rising number of senior citizens mean a rise in the number of people with chronic diseases. These trends will create a demand for a higher productivity in the health system if the quality of service is to stay at the same level as now. The question is how to best tackle this situation. Telecare and home-based telemedicine is expected to provide solutions that can reduce the costs and at the same time use the resources in regions and municipalities better and more effectively (Danish Public Welfare Technology Fund, 2012).

Below we will outline the structure of the Danish Welfare model and move into a description of the organization of the health care system and national policies and ambitions on the field of telecare and home-based telemedicine. This will provide the readers with a better understanding of the context from which the discussions at the scenario workshop took their starting point.

The Danish welfare model
In Denmark, the welfare society's offers are generally available to all citizens, and the public sector is required to deliver services of high quality. The Danish welfare model is based on the principle that all citizens shall be guaranteed certain fundamental rights in case they encounter social problems such as unemployment, sickness or dependency.

The majority of welfare tasks are performed by public employees, and not by private service companies, voluntary social organizations or the family. The municipalities have contracted out certain public social services to private enterprises in some areas and the public sector also cooperates with businesses and voluntary organizations to achieve a broad social protection program. But practically all social security benefits, social assistance benefits and services are financed by public taxation. User payments and self-financing generally play a smaller role in respect to social services. In certain areas, such as day-care facilities, residential accommodation and temporary home-care, the user pays some of the expenditure. However, the demographic trends described above constitutes challenges to the provision of public services to the Danish citizens – in particular to the senior citizens´ who will be helped to live more

independently and self-helped in order to cause less strain on the public elderly and health care services (Danish Ministry of Health, 2011).

Local players and responsibilities in the care sector

Denmark is composed of 5 regions (*regioner*), which contains 98 municipalities (*kommuner)*. There is no system of subordination between the regions and the municipalities, as they possess different tasks and responsibilities.

The task of the state in health care provision is to initiate, coordinate and advise on national health policy at a general level. The Ministry of Health, in its capacity of principal health authority, is responsible for drawing up overall national health policies and legislation on health care. The Ministry also draws up guidelines for general planning within the health sector and operation of the health care service. The guidelines are developed by the Danish Health and Medicines authority which is the national institution in charge of the common framework and direction for health in Denmark.

The regions' main responsibility is health care, i.e. hospital service, including psychiatry as well as health insurance, general practitioners and specialists (Danish Ministry of Health, 2012).

The municipalities are in charge of following tasks in the field of health: Home nursing and homes for senior citizens with care facilities and associated care staff, public and school health care, child dental treatment, general disease prevention and rehabilitation (Danish Ministry of Health, 2012).

The regions and the municipalities collaborate on binding partnerships in health coordination committees in order to ensure correlation between regional and local activities within health care. As we shall see in the section of visions and recommendations, exactly the division of health care tasks between regions and municipalities is seen as a challenge to an effective implementation of telecare.

In each of the five regions there have been established centers for telemedicine. These are in charge of the management of the dissemination of telemedicine in the respective region. The same structure of management in this field applies for the municipalities, where several municipalities have established centers of welfare technology or employed consultants specifically for the tasks of implementing welfare technology in the municipalities.

National policies

Policies, ambitions and plans on the field of telecare are described at the different levels of governance. As the tasks differ at the different levels, we will firstly look into the definitions of telecare and home-based telemedicine as expressed in Danish policy documents at the different levels:

Policy level	Definition	Source
Municipality	"Tele-health is the use of information and communication technologies to support preventive, therapeutic and rehabilitation	Local Government Denmark, 2013. The municipalities strategy for tele-health

	activities at a distance"	
Region	"Digital supported healthcare independent of time, place and space, delivered from distance and with potential of creating significant health profit or value".	Danish Regions, 2011. Strategy of telemedicine
State	"Telemedicine means that a health-person with the use of video, pictures, sound and measure-readings involves a specialist who is not situated where the patient is, in diagnostics and treatment".	Danish Health and Medicines Authority, 2013. Guidance on responsibilities etc. by doctors using telemedicine

At the various levels of governance in Denmark we see that all refers to the distanced healthcare services by the use of information and communication technologies in their definition of the concept of telecare/telemedicine/telehealth. At the hospitals (regions) as in the elderly care (municipalities) we see the same meaning of the technologies. We will now look into the policy and strategic documents on the field.

The national policies specifically related to this area we will outline here consist of the national ambitions, the legal basis and the policy strategies on the use of telecare.

National ambitions

In 2010 the former Danish government put a spectacular 3 billion Danish crones (400.000.000 Euro) into a foundation, the Danish Public Welfare Technology Fund,[3] with the purpose of advancing implementation of welfare technology. The strategy and rationale was to provide the funds for implementation in exchange for an envisioned increased productivity. The receivers of the funds were to document how much time/money they saved through implementation of welfare technology.

In 2010 the National eHealth Authority[4] were established to develop and manage the digitization across Denmark's health care system. They have two main tasks: 1) to ensure an active coordination of IT-support of the health sector, including the cooperation with the regions and municipalities, and 2) to take care of operation and development of health ICT systems under The Ministry of Health. Besides that they have the authority and responsibility for defining national standards and promote a coherent architecture for the use of ICT in the healthcare sector.

The legal basis

The legal basis for the use of telemedicine by health care professionals is particularly the Authorization Act, the Health Act (the provisions of Part III Patients' Rights) and the Personal Data Act[5].

Policy strategies

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[3] Website of the Danish Public Welfare Technology Fund: http://www.ffvt.dk/

[4] Website of the National eHealth Authority: http://www.ssi.dk/Sundhedsdataogit/National%20Sundheds-it.aspx

[5] To find links for all relevant legal documents: http://sundhedsstyrelsen.dk/da/uddannelse-autorisation/autorisation/autorisation-og-pligter/telemedicin.

Publisher	Policy	Description
The Danish Public Welfare Technology Fund	National Action Plan on the dissemination of telemedicine, 2012	The aim of the strategy is to push the use of telemedicine forward, fast. But also to take the first steps towards national dissemination of the solutions with the biggest potential. The dissemination strategy has two purposes: 1) to secure that telemedicine will be used more than it is now 2) provide evaluations that can become the foundation for future decisions on national dissemination of telemedicine. The strategy aims at gaining more experience with telemedicine in larger scales to test how it will affect the treatment, quality and society. This is done in 5 case studies. The action plan was initiated by the Government, Danish Regions (interest organization of the regions) and the Local Government Denmark (interest organization of the municipalities).
The Government, Local Government Denmark and Danish Regions	Digital Welfare – New Possibilities for the Welfare Society, 2013	The strategy is to cover the health area, the social area and the educational area. The aim is to develop a strategy for digital welfare in Denmark that secures the quality of the public service sector despite a very narrow economical frame in the public sector the coming years. Concerning health care the first step is to start broadly implementing digital health care technologies and procedures that have been successfully tested and tried out in real life settings. The first step is financed by 10 mill. Euro. The Minister of Health says that it is time to move on from test stage to making digital health care an integrated part of the Danish health system.
Danish Regions	The Regions strategy of telemedicine, 2011	The purpose of the strategy is to develop a plan on how telemedicine can be used as a tool to gain efficiency savings at the hospitals. Thus, the strategy is focused on optimizing the hospital management and do not has a cross-sectorial aim.
Local Government Denmark	The municipalities strategy on tele-health, 2013	This strategy is developed on the basis of the health initiative by the Local Government Denmark "The near health care system" (2012) and the experiences with the tele-health technologies already implemented in the municipalities. The focus of the strategy is on the citizens need of contact with the health care system. The municipalities wish to use the tele-health technologies as a tool to bring the preventive, therapeutic and rehabilitative activities closer to the citizens according to the vision of the near health care system.

Furthermore the regions and municipalities have independent strategies on the dissemination and implementation of telemedicine and tele-health. In the region of Southern Denmark the 22 municipalities have intensified their work on a joint municipal strategy on welfare technology[6].

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[6] Link to a description of the joint municipal strategy: http://www.kl.dk/menu/Falleskommunal-strategi-for-velfardsteknologi-id130671/

For an overview of the different agencies involved in the generation of policy at a national level see the table below. The actors include, but are not restricted to, government departments, other statutory agencies and the voluntary and private sectors. The type of agency here will be of interest to determine the relationship of private and public agencies shaping policy generation. Also, the impact of the agencies contribution will help to determine the power of influence of the particular agency.

Name of Agency	Type of Organization	Description of Role	Impact
GTS – Advanced Technology Group	Network consisting of nine independent Danish research and technology organizations approved by the Minister of Education.	The main function of the network is to disseminate new knowledge and technology to companies and public institutions in order to support innovation and development. Customers are private businesses as well as public authorities on national and international levels. The GTS institutes also constitute the core of the technological infrastructure in Denmark, e.g. testing facilities, certification and approval activities.	Supports research, development and innovation in Danish companies in telecare and other technologies. The GTS-institutes had in 2010 a 3,4 DKK billion turnover and served 20.664 Danish customers with about 65% being small or middle sized companies.
Danish Regions	Interest organization for the five Danish regions	Danish Regions performs the interests of the five Danish regions nationally and internationally.	Co-ordinates the common strategy on health-IT between and amongst the Danish regions in the Danish healthcare sector.
The Danish Agency for Digitalization	Agency of the Ministry of Finance	The Danish Agency for Digitization has been established in 2011 to speed up the digitization processes required to modernize the Danish welfare society.	The Agency is in charge of the digitization of Denmark and is responsible for the implementation of the government's digital ambitions in the public sector.
The Danish Health and Medicines Authority	Agency for the Ministry of Health	In Denmark, the Danish Health and Medicines Authority is the supreme authority in	Their task is to ensure the best possible framework for the healthcare system to

		healthcare and regulatory control of medicines. It assists and advises the Ministry of Health as well as other authorities with the administration of healthcare services and inform Danish citizens on health issues. It is also their responsibility to ensure the availability of effective and safe medicines, medical devices and new therapies and to promote their proper use.	prevent and treat illness, suffering and functional limitations for the individual. They follow health conditions through monitoring and evaluation and endeavor to be at the cutting edge of professional knowledge within the healthcare area.
Local Government Denmark (LGDK)	Interest group and member authority of Danish municipalities	It is voluntary to be a member of LGDK, but nevertheless all 98 municipalities are members. The mission of LGDK is to safeguard common interests of the municipalities, assist the individual municipality with consultancy services and in addition ensure that the local authorities are provided with up-to-date and relevant information.	Co-ordinates the common strategy on health-IT between and amongst the Danish municipalities.
Confederation of Danish Industry (DI)	Danish Industry is the premier lobbying organization for Danish businesses on national and international issues.	Lobbying organization for Danish businesses	DI is one of the strongest actors in creative business policy, this of course includes healthcare it.

Technological status and development

In this section we outline the current types of telecare and home based telemedicine technologies that are currently in use or implemented as part of a project testing the potential of the technology. The information provided here will determine the take up and distribution of telecare.

Type of Telecare/ Home- based Telemedicine	Currently in use	Description
Tele psychiatry	x	Consultations through videoconferences, pilot project.
Internet psychiatry	x	Internet based treatments of psychiatric patients as supplement to conventional cognitive therapy, pilot project.
Bed alarm	x	A bed alarm for people with dementia or for senior citizens. Recognizes if the user does not return to their bed and then calls for help.
Medicine Recall (pille-ufo)	x	An intelligent medicine container helps the senior citizen remember to take his/her medicine.
Electronic monitoring of heart rhythm	x	An electronic patch monitors the heart rhythm of senior citizens with heart arrhythmia in their home and alarms the hospital if the pulse increases 150 or decreases to 60 or under.
Home-monitoring of pregnant women with diabetes.	x	The pregnant woman monitors her own blood sugar, weight and pulse and heart rhythm of the child. The data is controlled by a health care professional.
Patient suitcase	x	The Patient suitcase makes an early discharge of patients with COPD and other chronic diseases possible. The briefcase makes it possible to move parts of the treatment out of the hospital and into the patient's home. Thus the hospital frees up beds, and the patients avoid long periods of admittance. The Patient Briefcase makes it possible for a patient to be attended to and treated at home by a specialist doctor or nurse, physically located at the hospital. You can connect the Patient Briefcase to different kinds of medico technical equipment, which can be read by the medical attendant. The patient and the doctor can see and talk to each other via a screen and a built-in microphone. The patient experiences the same personal contact as during the regular hospital admittance but in the comfortable and secure environment of his/her own home.
Video conference treatment of alcohol abuse	x	Video conference treatment of patients with alcoholism while they are hospitalized.
Telemedicine solution in dialysis	x	Telemedicine solution between a dialysis-satellite department in one city and a neurological department in another city. The dialysis only has a doctor present in very few of its opening hours. Video conference is used for communication between doctor and patient and between doctor and nurse.

Telemedical sore assessment	x	Mobil telephones and video conference used for remote assessment of sore on diabetes patients.
Home monitoring and communication screen	x	Video conference for remote consultation of patients, disabled and senior citizens.
Home care (COLD)	x	Home treatment of patients with Chronic obstructive pulmonary disease (COLD)

See more detailed descriptions of some of the currently use of telecare and home-based telemedicine solutions in the Nation Action Plan on Dissemination of Telemedine (Danish Public Welfare Technology Fund, 2012).

Stakeholder workshop in Denmark

Preparations

We started by making a research of former projects on the field of welfare technologies for the senior citizens in Denmark. Former events carried through in this area were used to find inspiration for participants to invite to the scenario workshop. Subsequently, the background material, the scenarios and user stories were translated to Danish and further contextualising information was added to the material.

Recruitment process and participation

The recruitment of participants was carried out in-house, but we were helped to identify relevant actors by the private sector by the Confederation of Danish Industry. All participants got contacted by e-mail and followed up by a phone call. We made the emails personal to make them more appealing to the ones we invited. We started to invite 60 participants specifically selected to represent the different groups of actors we wanted to represent at the scenario workshop.

We made a big research to identify all politicians and public officers at both a regional and local level working in relevant health and elderly committees. We prioritised to invite those politicians and public officers at the local level from municipalities where they have established centres for welfare technology. We further prioritised to invite politicians and public officers at both levels from different parts of the country and different political parties in order to secure a representative participant group.

Our aim was 30 participants at the workshop to be grouped into five groups. We had 37 confirmed participants but we had six cancellations on the day of the event. The result was 31 participants, one person came in late. The participants were selected actors from relevant interest organisations (e.g. Dane Age Association), researchers within the field of Science & Technology Studies and geriatric, industry engaged with welfare technology and telemedicine, patient associations and politicians and public officials at a regional and local level. At the workshop only half of the participants from the industry showed up resulting in two participants from that sector. Among the other groups invited to the workshop five persons from different groups were unable to show up.

Our recommendation for future workshops would be that one should expect 5 to 10 participants will cancel their participation just before the workshop or simply not show up. This can be managed by inviting additional 5 to 10 participants to the number of participants one wishes to have at a workshop.

Organisation of the workshop

The scenario workshop was held in Copenhagen at the Danish Board of Technology Foundation. We arranged a meeting room with five tables for the group discussions and a central 'stage' from which the moderator and participants presenting the groups discussions spoke in plenum.

We made some editing of the programme in order to facilitate the production of more solution orientated results on the area for a national newsletter. Thus we took more time to both discuss visions and solutions for realising the proposed visions on the area. This will appear from the structure of the program below. We found no problems in relation to the discussions of the scenarios with this new time structure, since the participants quickly turned to discussions of, in their view, more realistic visions for the future.

The main structure of the workshop followed the three phases:

1. Three scenarios of the future (Phase 1)

- Positive and negative feedback on the scenarios

2. Development of visions (Phase 2)

- What visions do you have for the elderly care in the future?

3. Solutions for realization of the visions (Phase 3)

- Which options for action and which challenges do the municipalities and regions face in order to realize the visions?

- Identification of concrete solutions to be included in the political agenda.

All participants were expected to have read the information material with the described scenarios beforehand so they were ready to start and give feedback on the scenarios. We highlighted this expectation in the invitation and sent reminders to all participants a few days before the workshop.

As it will appear from the participant list in appendix A we prearranged the groupings of the participants at each of the five tables. We numbered the tables so the participants could move to the table number we had written on their name sign. In that way we rearranged the groups from being homogeneous in the first phase to be heterogeneous in the two following phases.

The more detailed program of the workshop includes the presentations in plenum subsequent to phase 2 and 3 as well as a short introduction to the workshop, lunch and concluding summing up:

Programme

8.45 – 9.00 Registration

9.00 – 9.15 Welcome and introduction

9.15 – 9.30 Short presentation of the scenarios

9.30 – 10.30 Phase 1: Feedback and reflections on the scenarios

10.30 – 11.50 Phase 2: Development of visions

11.50 – 12.45 Lunch

12.45 – 13.30 Presentation of phase 2

13.30 – 14.45 Phase 3: Solutions and challenges to the visions

14.45 – 15.00 Coffee and tea break

15.00 – 15.45 Presentation of phase 3

15.45 – 16.00 Sum up

Responses to the scenarios

Overall the scenarios were perceived as unrealistic and too simplistic – they did not capture the more complex reality we are facing in the future. The scenarios didn't seem very visionary to a lot of the participants. They did not expect the future health and elderly care services to be strictly divided into a public and private sector. Further, we only received very little feedback on the user stories. Some participants highlighted that the user stories only covered the 'healthy' senior citizens and thus did not take the most severe cases into account.

Scenario 1: One size fits all

Standardized solutions do not fit the real world - people are different and have different needs. Only the technologies needed should be given to the respective senior citizens. The scenario is from the past today we look into a different pattern of disease where standardized solutions are of no use.

It could be an option to have minimum standards. It would be more realistic since the senior citizen should expect less public service in the future. Otherwise we should think more in a national framework for the use of technologies and then leave the decision making to the municipalities.

The question is what we want to create by the use of technologies; surveillance or a sense of security? It will depend on the situation of the senior citizen. Some would be able to have different wishes and demands while other citizens with severely dementia would need to be helped by the municipalities.

Crucial to the technologies introduced to the senior citizens is the user-friendliness. Today the development of technologies is fragmented – the technologies need to be able to interact; for example the batteries should be the same for all products. Such standards could be set out by the state to the private sector.

Scenario 2: Freedom of choice

This scenario could lower the quality of professional of health care because private companies would not have the same obligations and ethical responsibility to the senior citizen as the municipalities do.

It will be too insecure for the senior citizen to depend on the private sector – companies might bankrupt or move to other countries. Who will be responsible for the senior citizen in that situation?
It implies that the citizens should be fully informed about all technology solutions in order to make choices.

Further all citizens will not have the same opportunities. The richest would be able to buy better services than those of less means. A consequence of this scenario could be greater social inequality.

It should not be the responsibility of the senior citizen (of whom many are in such a bad condition that they cannot take responsibility of their one situation) to make choices about their health care services it is a responsibility of the municipality.

Private companies would gain access to personal data through the technologies they provide. This could be problematic in terms of the use of the personal data – could insurance companies get access to that data?

Under this scenario one could question: Who will be helped by the technology? Those who are ill or those who should help the ill? It is important that an economically logic of profiting does not take over, we also need to secure solidarity in the society.

If the municipalities could set out standards of quality and were in charge of inspection of the services provided by the private sector this scenario could be more realistic.

Scenario 3: Volunteering community

This is too idealistic even though it is positive with engagement from the civil society.
A volunteer community would be the best way to handle the problem of loneliness among the senior citizen with the increased implementation of technologies.

Volunteering needs to be attractive and cannot replace the jobs of the health service sector. Volunteers should not take the responsibility for the professional health care. They could take care of social activities but would need guidance and training. The training of volunteers should be managed by the municipalities, and then a clear balance between the tasks of the volunteers and the public health care could be easily managed. On the other hand it might be a problem if the municipalities are too involved in the volunteering tasks – there needs to be some freedom and initiatives from the volunteers themselves in order to make it attractive and engaging for the volunteering.

The idea of given the volunteers the opportunity to get other services in return of the volunteer services they provide then it is no longer free services they provide – it would be a barter economy.

If a greater responsibility is passed on to volunteering communities it could be a problem to those living in less populated areas simply because there might not be enough people volunteering to undertake the responsibilities.

General response to the scenarios

In the future the public and private sectors would have to solve the challenges together. We cannot divide it into the different sectors as it is done in the scenarios. Thus, the challenge is how we define the boundary between the public and private field of responsibility. The municipalites are experts in supervisory control but they are not as innovative in terms of development of new technologies as the private sector is.

All three scenarios should be linked together in the future.

The technologies need to be developed in interaction with the citizens. This is an aspect that we are missing in the scenarios.

Further the participants highlighted that the scenarios only include the strongest patients, but in reality a lot of citizens are in a much worse health condition. In future scenarios it is necessary to take the least healthy population into account – those who cannot make choices and need constant monitoring.

It is also necessary to incorporate preventive activities in future scenarios. Technologies could be implemented to enable the senior citizens to react to changes in their health condition before they turn in to actual patients.

Analysis and synthesis of visions and recommendations from Denmark

The scenarios worked as kick-start for the participants' group discussions of key questions regarding the utilization of technology in the eldercare of the future. In several groups it was, to start with, questioned whether it would be necessary with massive economic savings on eldercare given the growth in the number of elderly citizens. One recurrent argument from different participants was that the general health condition is continually improving and the years with possible disease late in life are correspondingly shorter. At the same time, the targeted use of welfare technologies can help tackle the challenges with several of the chronically sick, who, e.g. through tele solutions, can be treated in their homes. Tele solutions should also be used targeted in rehabilitation after, for instance, coronary and brain haemorrhage, was the message from the participants at the scenario workshop.

National strategy for welfare technology

Another common topic of discussion, inspired by the scenarios, revolved around society's task to ensure that the best possible care technologies are made available to the citizens. Regarding this, the assessment was that there is a great need for an independent state technology assessment, that collects concrete experiences and research, develops business cases regarding the welfare- and economic effects of technological solutions, and makes knowledge available to the health care professionals in the municipalities, but also to the citizens, who can be expected to be offered care technologies directly through the producers.

One participant, Ruth Lauridsen Grindsted (V), chairman of the social and health committee in Billund Municipality, argued for the advantages of setting an overarching national strategy for welfare technology with corresponding legislation, because that would give the municipalities a highroad to follow. Karina Due (DF), chairman of the elder- and handicap committee in Silkeborg Municipality, concurred. Additionally she pointed out that the legislation needs to be sufficiently flexible that the municipalities have latitude to act. Further, she favoured developing national quality and ethical standards for the care that the State should offer its citizens. But the care given should be adjusted to the individual because the course of diseases can differ significantly, as with dementia.

The worth of the technology to the individual citizen was also central to the discussions. To retain the mantra "equal health for all" we need a system that primarily tenders to the citizens' interests – not the technology producers'. We must promote technology that ensures citizens are heard and have their needs covered, was the message from multiple participants.

The key points from the workshop concerning national strategy are:

- Make best possible care available
  - Independent State technology assessment
  - Knowledge sharing
- National strategy regarding welfare technology
  - Legislation and standards
- Ensure continued "equal health for all"

Focus on the individual

The individual must always be the centre for the technological solutions, and the technologies must have as a general key purpose to let the citizens preserve their independence as long as possible. Concurrently the welfare technologies should have, as another important purpose, to assist in alleviating the large and increasing challenges of loneliness and isolation among elderly people. As Søren Jakobsen, senior consultant at Geriatric ward at Svendborg Hospital and chairman of the Danish Society for Geriatrics, pointed out, humans are fundamentally social beings, whose wellbeing is also dependent on whether other people care for them. He further emphasized that elderly people in the future will have entirely different individual needs than the elderly people today, and that welfare technology should not be implemented to generate savings, but to give people better welfare. He goes on to point out, that implementing new technologies doesn't mean saving money, among other things because the staff needs to learn to use them and the solutions need maintenance and repairs. Instead welfare technologies should be considered long term investments, and not measures to create short term savings.

Jakobsen further emphasizes that, if in some situations it is elected to make business cases, it is important to account for the many positive factors that are difficult to measure such as improved life quality, greater quality of treatment, absence of re-hospitalizations etc. Finally he stresses the importance of not letting the new technological solutions contribute to creating an even more divided technological A- and B-team.

Marie-Louise Brehm Nielsen (V), chairman of the Elderly- and Health Committee in Lolland Municipality, points out that there are great differences in the challenges facing each municipality, which should be kept in mind when legislating on the subject. On Lolland, she exemplifies, they can't afford to practice the 'longest time possible at home' dictum, because there are great distances between the citizens. With the local economy on Lolland, they can't afford to implement welfare technology as a supplement to existing services; they would be replacing services. They now are developing a high-tech care centre plenty of space and recreational and social opportunities that are attractive to both citizens, staff, relatives and the local community.

The key points concerning a focus on the individual are:
- People must be central to technological solutions
- Enable citizens to stay independent
- Alleviate loneliness and isolation
- Not a means of saving, but of improved service
- Take care not to create technological A- and B-teams

Protection of health data

The technologies behind the welfare technologies of the future were also up for debate. A recurring wish among the participants was that health related it-systems from different suppliers be mutually compatible, so all parts of the health services always have knowledge of the health condition of the elderly and what has been initiated in terms of treatment.

At the same time there was broad agreement that securing the balance between protection and usefulness of data is paramount. There has to be created a large degree of anonymity and it must be ensured that health data and other data regarding the citizen are not abused. In terms of the functionality of the technological solutions, they have to be simple and intuitive to use, so citizens won't have to call a support centre every time a battery needs changing.

Ole Glahn (RV), chairman of the Elderly and Health Committee in Kalundborg Municipality, stressed the importance of new welfare technological solutions being sold differently to different groups of elders in society. According to him, weak elderly people need an extra effort because they are often suspicious or uncomfortable with the technology, therefore it is important not to exaggerate the complexity so people are scared away. As he points out, it is rarely particularly complicated because the new technologies are just developments of aids that people have known for decades. He adds, that it's often not the citizen who's the most technology averse, but rather the care staff, thence there is a particular effort to make in relation to them. Ole Glahn ultimately pointed out that it far from always new technology that constitutes the most optimal solution to a given problem. Sometimes communication or a voluntary visitor may be what is needed, and the individual citizen should be given real freedom of choice as to whether he/she wants the technological solution.

The key points concerning the protection of health data are:

- Compatibility between different systems to ensure cooperation and transparency
- Balance between protection, anonymity and usefulness of data
- Effort to ensure acceptance among citizens and employees
    - Ease and intuitiveness of use
- Not technology, for the sake of technology

The need for volunteers

There was general agreement among the participants that voluntary helpers will be playing an integral part of elder care in the future. Ruth Lauridsen Grindsted from Billund Municipality said that there is a need for increased cooperation between professionals and volunteers, for instance via volunteer units in the local communities to avoid that the individual volunteer doesn't have to travel too far, but the life and wellbeing of the elderly must never depend on volunteers. Therefore the health service must not be based on volunteering; it must be ensured that if the volunteer fails, there is a setup that can support the elderly citizen, and the division of labour between professional and volunteer must be very clearly drawn. She added that it is important to build relations between the elderly and volunteers before they reach the stage where they can't look after themselves, so they know and feel comfortable around the volunteers when the need arises. Similarly, it may be beneficial to choose elder care centre at a relatively early stage in order to be prepared for it. Additionally it's important to build the residential homes where people want to live, and not where properties happen to be cheap, she finishes.

The key points concerning the need for volunteers are:

- Volunteers will increasingly be used, but service cannot and must not rely on volunteers
- Clear division of labour between volunteers and professionals
- Long term relations between citizen and volunteer (group)

Overview of visions

Vision 1: Establishment of a national research centre with a focus on welfare technology

Recommendations: The instituted collects and shares research and knowledge about welfare technology, and provides access to education for decision makers, employees and users of welfare technology. Supplementary training is to ensure that managers and employees can integrate the technological agenda into the everyday life of the citizens.
New technological solutions need to go through a test- and trial phase so their usefulness is ensured.

When the technologies are used, the innovation happening among the citizens in utilization of them in new ways, should be collected and in that way promote user driven innovation. Furthermore new methods for citizen involvement needs to be developed.Vision 2: Implementation of high speed broadband in all of Denmark by the state

Recommendations: The establishment of high speed it infrastructure as basis for the technology utilization in the future ought to be a State job. To avoid political reluctance to think long-term because of 1-year budgets and electoral periods, it is suggested that the State invest a lump sum that initiates a long-term development.

Vision 3: Technology development must be thought inter-sectorial with the citizen at the centre

Recommendations: Citizens and employees should be involved in the technology development via e.g. citizen panels. Welfare technology and telemedication are part of a common, cross-sectorial platform that ensures maximal coherence and better infrastructure between the sectors.
A holistic approach, where the technologies citizens have in their homes are compatible with the central systems, is necessary.
The technology suppliers must take care of the involvement of citizens and the vantage point of the technology development must be the citizens' needs.
IT-educations must increasingly focus on the needs of people.
A national centre for telemedication must be established, as the present solution with regional centres entail cooperation difficulties between municipalities.

Vision 4: Welfare technology must support the self-esteem and quality of life of the citizen

Recommendations: Technologies must be implemented the citizens' terms, they must make sense in the citizens' everyday life and must give the citizen maximum influence on his own situation.
The person should be in centre for the technology – and the technology should promote freedom, independence and security.
Citizens, employees, and local community must be included in the technology development.
There has to be respect regarding the citizen's technological knowledge and capabilities, as to avoid a technological A- and B-team. It is important to ensure that implementation happens on the citizens' terms.

Vision 5: Implementation of incentives to support development of cost effective technologies

Recommendations: producers of welfare technology solutions that makes citizens independent and self-reliant – and e.g. demonstrably enables faster release from hospital – should be rewarded.

Vision 6: Citizens should be in their 'own lives' as long as possible

Recomendations: Introduction of technologies that replace visits from nursing aids etc. is a challenge when considering lonely citizens who feel left to their own device and who wants just such visits. It is important to take care of the lonely, which does not necessarily have anything to do with technology, but can have. It is, for instance, possible to introduce online group training where citizens are instructed in physical exercises and can communicate with the other group members, while still in their homes, so to make them part of a group.
Welfare technologies should be integrated as a natural part of the provided care and should promote self-realization and self-care.
Technological solutions must be shaped individually to the recipient.
Welfare technologies must be considered in relation to private homes, newly built nursing homes and residential homes, and along the same lines, including and recreational facilities must be implemented when building new districts and the like.

Alignment with national policies

The visions from the scenario workshop in many ways correspond with the Danish national strategy on the area. Policies from Danish regions and ministries all focus on enabling citizens to stay independent, so that they can stay in their own homes for as long as possible and take charge over their own life situation. The workshop participants' focus on welfare technologies ability to support life quality of the individual can be seen within the same line of thought.
However the idea of implementation of high speed broadband in all of Denmark haven't been presented before. The suggestion shows an acceptance of the need of high-speed infrastructure to enable realization of the other visions.
The wish to secure the patients health data can be seen as part of a contemporary national debate about personal data and data security. Thus the vision hasn't been describes in the nationals strategies yet.

Appendix A: List of participants in the scenario workshop

List of participants

All participants participated in the same manner. They were engaged in group discussions in homogeneous groups during the first phase and then in heterogeneous groups for the second and third phase.

Name	Position	Institution
Kai Nielsen	Vice chairman, Committee for the patient as a partner	Region Zealand
Maja Holt Højgaard	Chairman, Committee concerning intersectoral collaboration	The Capital Region
Sonny Berthold	Vice chairman, Committee for innovation	Region of Southern Denmark
Marie-Louise Brehm Nielsen	Chairman, Committee for Elders and Health	Lolland Municipality
Henning Due Lorentzen	Chairman, Social and Care Committee	Fredericia Municipality
Karina Due	Chairman, Committee for Elders and Disability	Silkeborg Municipality
Ruth Lauridsen	Chairman, Social and Health Committee	Billund Municipality
Ole Glahn	Chairman, Committee for Elders and Health	Kalundborg Municipality
Halfdan Eika	Consultant, Centre for Telemedicine	Central Denmark Region
Judith Lørup Rindum	Head of Centre for Telemedicine	The Capital Region
Tina Heide	Project director, TeleCare Nord	The North Denmark Region
Gitte Duelund Jensen	Director, Centre for Welfare Technology	Local Government Denmark
Stine Johansen	Director	Helsingør Municipality
Lars Nøhr	Director of development, The furtures Nursinghome	Aalborg Municipality
Ivan Kjær Lauridsen	Head of Unit for Welfare Technology	Aarhus Municipality
Jette Hede Skytte	Development consultant, Welfare Technology	Viborg Municipality
Helle Skibsted	Project manger, Welfare Technology	Tønder Municipality
Bente Christensen	Project manager, Tele-health	Kolding Municipality
Kristina Aggergaard	Development consultant, Welfare Technology	Slagelse Municipality
Gitte Laursen	Director, Active Nursing and Care	Nordfyn Municipality
Astrid Bjerg Caspersen	Development consultant, Centre for Welfare Technology	Gladsaxe Municipality
Merete Halkjær	IT project manager, IT-projektleder, Health and social care administration	Københavns Municipality
Søren Jakobsen	Chairman	Danish Society for Geriatrics
Finn Olesen	Lecturer, STS Center	Aarhus University
Henriette Langstrup	Lecturer, MeST, Public Health Science	University of

		Copenhagen
Malene Bødker	PhD student, MeST, Public Health Science	University of Copenhagen
Kristoffer Karlsen	Technical Director	Dansk Telemedicin A/S
Michael Dines Schlünssen	Director	Sensor Medical A/S
Maj Vingum Jensen	Senior consultant, Societal analysis	DaneAge Association
Bent Aa. Rasmussen	Chairman	Danish Board of Elders
Nis Peter Nissen	Director	Alzheimer Society
Susanne Vestergaard	Project manager, Research and knowledge	Diabetes Society
Magnus Bendtsen	Project manager, Telemedicine	Danish Lung Society
Maria Bregnhardt	Consultant, Analysis and Campaign	FOA

Appendix B: References

Danish Health and Medicine Authority. 2005. Guidance on responsibilities etc. by doctors using telemedicine (Vejledning om ansvarsfordeling mv. ved lægers brug af telemedicine). Available at: https://www.retsinformation.dk/Forms/R0710.aspx?id=10132

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The Lund Declaration. 2009. Available at: http://www.vr.se/download/18.7dac901212646d84fd38000336/

Overview of relevant institutions and their websites *(most in in Danish)* :

- The Danish Agency for Digitisation on telemedicine: http://www.digst.dk/Servicemenu/English/Policy-and-Strategy/Digital-Welfare

- Danish Patients on telemedicine: http://www.danskepatienter.dk/tema/telemedicin

- Danish Health and Medicines Authority: http://www.sst.dk/Tilsyn%20og%20patientsikkerhed/Autorisation%20og%20pligter/Telemedicin.aspx

- The Danish Public Welfare Technology Fund: http://www.ffvt.dk/

- DaneAge Association: http://www.aeldresagen.dk/sider/forside.aspx

- Advisory Comittee for Telemedicine (under NSI). http://www.danskepatienter.dk/r-dgivende-udvalg-telemedicin

- Hjælpemiddelcentret. http://www.hjaelpemiddelcentret-kk.dk/169-forside.htm

- Danish Regions on telemedicine: http://www.regioner.dk/sundhed/sundheds-it/telemedicin

- Overview of Danish projects from Medcom http://www.medcom.dk/dwn5059.pdf

- Local Government Denmark on tele-health: http://www.kl.dk/Sundhed/Fra-telemedicin-til-telesundhed-id126933/