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Executive summary

Like many European countries, Switzerland is facing a double demographic challenge: Due to an increased life expectancy and decreasing birth rate, the Swiss population is rapidly ageing.

The ageing population's need for healthcare services increases at the same time as the access to workforce declines. Given the services as they are today, the needs for care in the population will at some point surpass the available workforce. Healthcare technologies can be increasingly important for society to be able to offer health and care services at a quantity and quality that meets the expectations of the population. So, how can we best use new technology in health care services, what challenges does new technology create and what type of policy options are policy makers faced with?

These and other questions were tackled in the Swiss scenario workshop, held with 30 stakeholders on April 30th in Berne. Representatives from different interest groups (seniors, care providers, researchers, ICT providers) discussed various scenarios and developped visions of a desirable Swiss future in the elderly care.

In the discussion of scenarios, stakeholders emphasized the importance of data protection and quality assurance. The formulated visions included the following requests:

- Elderly people are involved throughout the technology development process.
- Technologies are evaluated and awarded a label if they fulfil the requirements or meet the needs of elderly people.
- Individual needs are acknowledged. Elderly people lead autonomous lives and make their own decisions on the use of technologies.
- Technologies are integrated into senior-friendly housing, urban planning is reassessed in view of the ageing society. Buildings and the environment provide generational flexibility.
- Technologies complement but are not a substitute for nursing and care provided by human beings
- Basic care provision is guaranteed and everyone has equal access to assistive technologies.

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?

Scenario workshop

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 Switzerland on April 30, 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.

[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

In Switzerland, the age structure of the population underwent fundamental change during the course of the 20th century. The share of young people (under age 20) dropped from 40.7% (1990) to 21.0% (2009); among older persons (over 64), it rose from 5.8% to 16.9%; among the elderly (age 80 and over), the increase was particularly pronounced (from 0.5% to 4.8%)[3]. This demographic ageing process is a consequence of a rising life expectancy and a declining birth rate.

Life expectancy at birth in Switzerland is currently one of the highest in the world. It has almost doubled since 1900: From 46.2 to 80.3 (2011) for men and from 48.9 to 84.7 (2011) for women. Nevertheless a gradual slowing-down of this trend can be observed. The difference between the two sexes has been decreasing since the nineties and in 2011 was 4.4 years.

This development may have consequences for health care for frail older people and their caregivers at home. But a longer lifespan does not necessarily cause a longer phase of disease or frailty. At the moment, the "gained life years" are in most cases years with good health. Health problems and the need of (institutional) care are postponed to a later age. But this may change with an even further increasing life expectancy.

Nevertheless, the demographic change will represent a challenge to the Swiss society. Telecare and home-based telemedicine technologies might help to face the challenges of an ageing population combined with a declining workforce.

Definitions

The Swiss Federal Office of Public Health (FOPH) issued in 2007 the "Swiss eHealth strategy", which comprises a definition of telemedicine:

"Telemedicine is a part of eHealth. Its main focus is the interaction of patients and physicians (teleconsultation) and between physicians (telekonsil) at a distance in the context of medical diagnosis and treatment. The specific feature of telemedicine consists in bridging distances by technical means of communication."[4]

Local players and responsibilities in the care sector

The administration of the Swiss healthcare system is based on the federal principle. The cantons have far-reaching authority in the field of healthcare, in terms of hospital care, cutting edge medicine, the right of health professionals to practice, prevention and health promotion. The federal government, on the other hand, fulfils the tasks assigned to it by the Federal Constitution, which include the fight against communicable diseases, compulsory health insurance, and reproductive and transplantation medicine.[5] Therefore, there is no specific policy for telecare and home-based telemedicine on a national level. With some exceptions (e.g. transplantation medicine) health issues are regulated by the 26 cantons, which have their own parliaments and constitutions.

Table 1 below shows all the different agencies involved in the policy-making at a national level – **national policy enablers**. The actors include, but are not restricted to, government departments, other statutory agencies and voluntary and private sectors.

[3] http://www.bfs.admin.ch/bfs/portal/en/index/themen/01/01/pan.html

[4] Strategie "eHealth" Schweiz. Bundesamt für Gesundheit, Eidgenössisches Departement des Innern; Bern, 27. Juni 2007

[5] http://www.bag.admin.ch/themen/gesundheitspolitik/index.html?lang=en

Name of Agency	Type of Organisation	Description of Role	Impact
Federal Office of Public Health FOPH	Government Agency	The Federal Office of Public Health (FOPH) is the integrated centre of excellence for health. The FOPH is non-partisan in its decision-making. It creates social and economic conditions that are conducive to promoting and maintaining the good health of everyone living in Switzerland.	FOPH issued the eHealth strategy for Switzerland (2007)
Swiss Conference of the cantonal Health boards (GDK)	Cantonal Agency	Coordinates the activity of the 26 Swiss health boards which exist on cantonal level.	By a framework agreement with the Confederation, GDK represents the cantons in the body called "eHealth Suisse"
eHealth Suisse	Coordination Agency	Coordinates Activities between cantonal (GDK) and Federal (FOPH) level.	Coordinates the national strategy for e-Health with the needs, requirements and auto-nomy of the cantons

Table 1: National policy enablers in Switzerland.

Table 2 summarises the target groups who are recognised as **policy enactors**. For example, organisations and communities that represent the interests of people who use health and social care services are deemed to be policy enactors. Furthermore, clients, family carers and care providers are part of the care system enacting policy. Finally, policy enactors refer to members of the public and communities who are potential users of health services and interventions.

Name of Stakeholder	Type of Stake-holder	Source of reference	Description
Curaviva	Association of Nursing Homes and Care Institutions	www.curaviva.ch -> Menschen im Alter (elderly people)	Curaviva promotes policy issues related to the needs of elderly and frail people on a national level.
Pro Senectute	Charity	www.pro-senectute.ch	Pro Senectute is the largest organization in Switzerland that provides services for elderly people. It is dedicated to the maintenance or the improvement of life quality of the elderly.
Schweizerischer Seniorenrat	Charity	www.ssr-csa.ch	The Swiss Council of Senior Citizen represents the economic and social concerns of elderly people at the Confederation, associations, institutions, media and the general public.

Spitex Verband Schweiz	Umbrella association of Non-profit homecare suppliers	www.spitex.ch	„Spitex“ provides health care, household support and health counseling at home (from German “spitalexterne Betreuung“ which means “care outside the hospital“). The national Spitex association represents the interests of non-profit homecare suppliers at the general public, politics, authorities, and partner organizations.
Swiss Association for Telemedicine and eHealth	Professional association	www.sgtm.ch	The association promotes the development and application of telemedicine and eHealth, the evaluation of its impact and the advancement of formation and research in telemedicine and eHealth.

Table 2: National policy enactors in Switzerland.

National policies

In Switzerland, health issues are generally regulated autonomously by the 26 cantons, which have their own parliaments and constitutions. Therefore, there are no specific policies on the national level regarding telecare and home-based telemedicine.

However, in order to define a Swiss coordination organism, the Confederation and the cantons have concluded a framework agreement and created a coordination body called "eHealth Suisse", which aims to promote eHealth in Switzerland[6].

The Swiss eHealth strategy

One of the aims of the “eHealth Strategy Switzerland” is to establish electronic patient records. By 2015, people in Switzerland should have access to their own personal electronic patient record, in which relevant information about them is available irrespective of location and time. They can make this information available to the medical specialists of their choice. The quality, security and cost efficiency of processes in the healthcare sector can be increased by giving healthcare operators access to an electronic network.

With the introduction of the Federal Law on the electronic patient record, a legal loophole will be closed at national level and a framework defined for the nationwide uniform implementation of the “eHealth Strategy Switzerland”. Specifically, the Federal Law on the electronic patient dossier is to regulate requirements for the secure handling of health information in the electronic patient record. The law is still at the drafting stage in 2013.

Due to the decentralised political structure of Switzerland, building a national eHealth framework is rather challenging since it involves different languages, many legal frameworks and political organizations, different cultures and understandings (quite similar to building an eHealth framework for Europe).

[6] http://www.bag.admin.ch/themen/gesundheitspolitik/10357/10359/index.html?lang=de

Table 3 outlines Swiss policies related to the telecare and home-based telemedicine.

Year	Policy	Description
2007	Swiss eHealth strategy (Strategie “eHealth” Schweiz)	It has three main fields of action: - Electronic patient records - Online services (including telemedicine) - Implementation of the strategy
2008	Creation of “eHealth Suisse”, the Swiss coordination organism related to the national eHealth strategy, in charge of organizing the process, providing sustainability and coherence.	In order to succeed, the eHealth strategy must be nationally planned and coordinated while respecting the needs, requirements and autonomy of each of the 26 cantons. The Confederation and the cantons have therefore concluded a framework agreement and created a coordination body called "eHealth Suisse". The financing is provided by the federal state and the GDK (Swiss Conference of the cantonal Health boards). The coordination organ represents a political governance in the steering committee and has representatives of numerous stakeholders, including patients, in the advisory board.
2009	Postulate of MP Bea Heim	In this postulate, the government (Federal Council) is asked to provide a report on the opportunities offered by telemonitoring in health care and care for the elderly. For the Federal Council, these aspects are already covered by the eHealth strategy of 2007. Thus no report was commissioned.
2010	Report on implementation	Describes the state of implementation of the different tasks of the Swiss eHealth strategy.
2012	Overview concerning objectives	Summarizes the achievement of the objectives of the Swiss eHealth strategy
2013	The Federal Council’s health-policy priorities “Health 2020”	In January 2013, the government (Federal Council) approved a comprehensive strategy entitled "Gesundheit 2020" (Health 2020). A total of 36 measures across all areas of the health system aim to maintain quality of life, increase equal opportunities, raise the quality of care and improve transparency. The measures will be implemented in the course of the next few years with the involvement of all key stakeholders. The objective is to make the Swiss health system fit for the challenges ahead and yet to contain costs. In this strategy report, “healthcare provision” is a priority area and measures to promote the implementation of eHealth are recommended. But this is predominantly related to electronic patient records and not to telecare or home-based telemedicine.

Table 3: Swiss policies related to the telecare and home-based telemedicine.

Technological status and development

Table 4 illustrates the type and nature of support programs available to support the adoption of telecare and home-based telemedicine policy. Furthermore, the type of service provider will provide insight into the mix of private and public services on offer.

Name of Service Provider	Date Introduced	Objective	Type of Service Provider
Medgate www.medgate.ch	1999	Medgate is one of the leading telemedical companies in Switzerland. It provides advice and treatment by telephone, the Internet and video for patients with urgent or general health queries. People with chronic illnesses benefit from telemedical care programs.	Company
Medi24 www.medi24.ch	1999	Medi24 is a Swiss pioneer in the field of telemedicine. It offers telephone assistance for medical advice or in the event of an emergency, and special care programs for chronically ill and at-risk patients.	Company
Schweizerisches Rotes Kreuz (Swiss Red Cross) www.redcross.ch	?	Provides emergency call solutions at home (system "Casa") or mobile solutions (system "Mobil").	Non-profit provider

Table 4: Service providers in Switzerland.

Table 5 outlines the current types of telecare and home based telemedicine technologies that are currently in use or on the market.

Type of Telecare/ Home- based Telemedicine	**Currently in use**	**Future Planned**
Personal Alarms	x	
Emergency Response Telephone	x	
Alarms with sensors to report falls or changes in person's temperature	?	?

Table 5: Type of telecare/home-based telemedicine in Switzerland.

Overall, Switzerland generally promotes eHealth applications, which seems an adequate measure for introducing telecare and home-based medicine. However, there is no explicit promotion of telecare and home-based medicine (i.e. there are no known incentives). So building up the appropriate infrastructure and implementing new technologies may take a long time.

As Switzerland is a country with a very good health care system and excellent research institutions in the high-tech domain (Federal Institutes of Technology), there would be the potential to develop and implement new technologies for health care.

However, a problem for implementation of new policies related to telecare and home-based medicine in Switzerland is the federalism, i.e. the comparably small competence of national authorities. Many decisions are made on a cantonal level.

Stakeholder workshop in Switzerland

Preparations

All documents (program, scenario brochure, slides and letters) were needed in German and French. For this purpose, we used the documents of our Austrian and Belgian PACITA partners as a starting point and adapted them to the Swiss setting. We also used the Austrian instruction documents for the table facilitators and note takers and somewhat adjusted them to better suit the Swiss workshop.

The participants received the program and brochure a few weeks prior to the workshop and were asked to read them beforehand. This way, every stakeholder got the background information in his or her language.

Recruitment process and participation

We recruited the participants for the Scenario Workshop mostly through our existing network (i.e. stakeholders that were involved in previous studies with a similar topic) and internet research. We aimed to get about 30 stakeholders, with an equal number of participants representing 1) seniors and patients; 2) ICT researchers; 3) ICT providers; 4) researchers and specialists in the areas nursing, health and age (e.g., gerontologists); and 5) care providers (such as nurses and representatives of nursing homes). We also aimed to include stakeholders from the French speaking part of Switzerland and accordingly invited some representatives from Western Switzerland.

We addressed the potential participants directly by email and met with a rather high interest. Particularly representatives of elderly people and the care sector were very willing to contribute to the discussion. Finally, about one third of the addressees agreed to participate and in the end 30 stakeholders actually attended the workshop. 6 people represented the senior community and patients (four were from the two largest senior organisations in Switzerland, one represented patients and one was from an Alzheimer's association). There were 7 ICT researchers attending, as well as 6 representatives of ICT and/or consulting firms. Nursing, health and age researchers were represented by 6 people, 5 participants represented the care sector (two were from the Swiss association of nurses and three from nursing homes). Of the 30 participants, five were French speaking or bilingual.

Overall, it was a fairly good representation of different stakeholders, even though women (n = 10) and French speaking participants were underrepresented. Furthermore, it would have been interesting to also include some physicians and politicians. We had addressed a few, but due to their strict time schedules it was difficult for them to attend the workshop, or they cancelled at the last moment.

Organisation of the workshop

The workshop was held in a seminar room at the Hotel Ador in Berne, which is located very close to the train station. This was particularly important since our participants were arriving from different regions in Switzerland.

The participants were divided into five groups of 5-7 participants each and were seated around five tables in the same room. Additionally, there were a table facilitator and a note taker present at each table. They guided the discussion and documented the arguments raised.

In Phase 1 & 2 in the morning, the groups were homogenous, i.e. stakeholder of similar interest groups together, whereas in Phase 3 in the afternoon the groups were mixed. In order that every participant knew where to sit, their table numbers were indicated for both the morning and the afternoon on their name tags. The list of participants is given in Appendix A.

The workshop started with a short introduction to TA-SWISS, the PACITA project, the scenario workshop method, and a quick walkthrough of the scenario document. Before each discussion round, the expected outcome from each phase of the workshop was explicitly explained.

We had participants from both the German and French speaking regions of Switzerland. Therefore we presented the slides in both languages, while the presentation was held in German. In Phase 1 & 2, the groups were bilingual and every participant could speak his/her language. In Phase 3, the groups were formed according to the language of the participants, resulting in four German and one French speaking group.

The agenda of the day was as follows:

8.45 – 9.00	Registration
9.00 – 9.15	Welcome and introduction
9.15 – 9.45	Presentation of the workshop method and the scenarios
9.45 – 10.30	Phase 1: General response to the scenarios
10.30 – 10.45	Coffee break
10.45 – 12.00	Phase 2: How would reality be in Scenario 1, 2 and 3?
12.00 – 12.45	Plenary session – presentation of phase 2
12.45 – 13.45	Lunch
13.45 – 15.30	Phase 3: Formulation of the participant's visions
15.30 – 15.45	Coffee break
15.45 – 16.45	Plenary session – presentation of participant's visions and recommendations
16.45 – 17.00	Concluding remarks, thank you and good bye

Responses to the scenarios

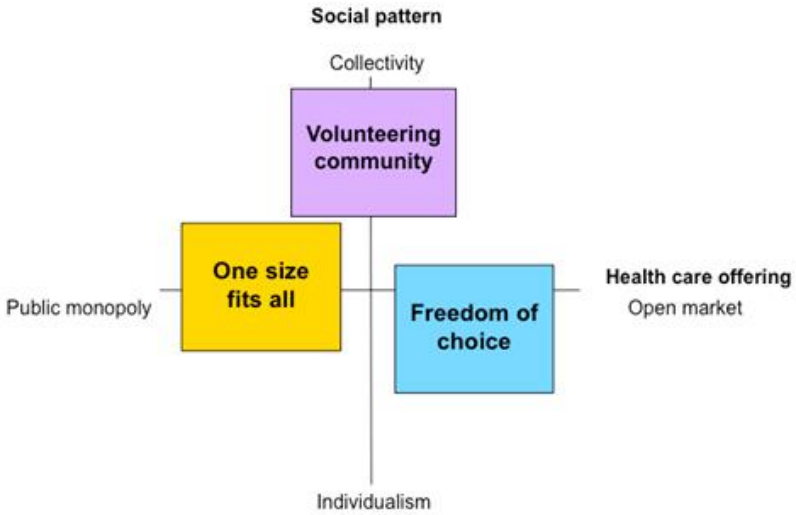
The scenarios used in this workshop addressed choices that politicians can take for improving the future care services to senior citizens – and the dilemmas they are faced with. The two main concerns in our scenarios were:

1. Is it the public or private health care providers who are providing future elderly care?

2. How do the senior citizens and other groups in the society organize themselves in order to meet the needs for care?

We have chosen to look at these two main concerns as two axes. On the horizontal axis the one extreme is that the government decides which technologies everybody will be entitled to, and the other extreme is that people can choose freely themselves from an open marked. On the vertical axis, the one extreme is that the senior citizens themselves, their relatives and the community cooperate and help out, and constitute the major resource in the elderly care. The other extreme is that each senior citizen has to find and choose his or her own care services.

To illustrate the consequences that might follow different decisions three scenarios have been developed. The three scenarios are not the aforementioned extremes but they include a combination of them. The way they address the main concerns is illustrated by where they are located in the coordinate system (see figure below):



The three scenarios illustrate different ways the community can develop. They show in particular how the health care services may develop, how the cantons and municipalities may be affected by increased government control, a stronger private sector or a better organised voluntary community. The scenarios also illustrate what municipalities can do to tackle the different reality models.

Scenario 1: One size fits all

*The first scenario **"One size fits all"** is based on the assumption of lack of labour in the future, and it describes a large-scale governmental initiative using technologies to make people more self-reliant.*

In this scenario, the care service system is under governmental control. The new services were defined based on two pillars; assistive devices to everyone in need, the so-called "care kits" (security health care kit), and a health care system focused on prevention and healthiness.

The purpose of this transformation is to facilitate the senior citizens across the country to live an independent life in their residence – despite impaired state of health and a certain need for treatment. Standardized "care kits" ensure a minimum level of quality and security for senior citizens in need for care, regardless of residence and personal finances

The cantons and municipalities still provide most of the public support services. However, national standards now determine which homecare technologies and services the cantons and municipalities must provide.

Everyone in need for care is offered a "care kit". The "care kit" consists of different assistive devices like body sensors, monitoring- and tracking devices that can be worn by the user or be attached to the house (smart house technology). Use of the care kit can enable communication with the family, the health care service, volunteering organisations or a rescuing service like an ambulance. They can also monitor and act on certain triggers and alarms. This care kit and the corresponding services can be expanded if deemed necessary.

The government developed an intensive e-learning program for care-takers that focuses on how to tailor the care-kit to the user's needs and how to operate the care kits. All employees in the care sector have to complete this program.

The local municipality is responsible for choosing and installing the care kits in the homes of the users in need. It is also responsible for monitoring, answering and acting upon triggers and alarms from the care kit.

General response to Scenario 1

Seniors' representatives mentioned that experience from other countries should be taken into account: Canada, for example, has a central purchasing system for technologies. In other countries, the introduction of a standardized system led to a decline in quality and an increase in costs.

Without Scenario 3 (volunteering), Scenario 1 would not be feasible, according to a seniors' representative.

According to a care sector representative, management of the health sector at the federal level has advantages and disadvantages. Certain elements could perhaps be better organized at the cantonal, regional or communal level.

Positive responses to Scenario 1

Guaranteed basic care provision and access for all, equal opportunities: All seniors with similar health problems could obtain the same services; this scenario ensures that everyone would receive a minimum level of services, even in poorer cantons.

Standardization: Scenario 1 promotes the development of norms and standards, thus permitting quality assurance. Central purchasing via federal government would mean that everyone used the same devices. As pointed out by representatives of ICT research and of ICT companies and consultants, this facilitates communication between systems.

Preselection: A national framework specifies the care packages or technology kits which are financed and provide support in many cases. Technology purchasing thus poses less of a challenge for seniors, relatives and professionals. Various workshop participants took a very positive view of this preselection on the technology market, since quality criteria or purchasing standards are already applied at this stage.

Prevention as an integral part of healthcare: The focus on prevention was frequently cited as a positive element of Scenario 1 by various representatives of the care sector and of ageing and health research.

Other assessments were as follows: Scenario 1 is desirable for those with limited financial resources. Scenario 1 is likely to materialize because in future there will be more elderly than young people voting and guaranteed basic care provision is an important issue for these voters.

Negative responses and concerns related to Scenario 1

Undue interference: The system decides what is good for the patient. This was criticized by seniors' representatives – the decision on the use of technologies should rest with the individual. Certain technologies transmit or record data without the consent of the person concerned and could trigger medical decisions.

Costs: The standardized system does not necessarily lead to lower costs, the technologies may supplement rather than necessarily replace personnel. Scenario 1 would have to be implemented without any impact on costs. By way of comparison, a unified health insurance scheme was rejected on the grounds that it could not be financed.

Rapidly evolving technologies: Standards and recommendations would have to be frequently amended.

Expertise: Can the federal/cantonal/communal authorities make a good choice? Who has the capacity and is at the same time sufficiently impartial to specify the care kits?

Safety issues: Malfunctions and errors are more serious with a centralized system and the same technology used everywhere.

Risk that **devices** received/prescribed **will not be used**: there are always some people who do not want to use something they have not chosen themselves.

Delaying effect: The best/latest technology is not yet included in the specified kit. There is no incentive for rapid further development of technologies.

Uniformity: Scenario 1 is less desirable because, with a high degree of standardization, the requirements of different personal situations may not be met. Scenario 1 is unrealistic because there is no freedom to choose products. Scenario 1 offers little individuality, which is very important for elderly people.

Federalism: Scenario 1 is rather unlikely given Switzerland's federalist structure; the standardized system would not be approved by the Parliament. Scenario 1 would not be feasible because of the principle of subsidiarity. The federal government should only provide guidance or play a supporting role. A mixed (public-private) system would be preferable.

Dilemmas in Scenario 1

Political influence on financing of technology: Seniors' representatives point out that with this system, citizens – by voting – can help to determine what is available. But, as representatives of ICT research argue, lobbies would also have a major influence when decisions are to be taken on the types of technologies to be funded by health insurers.

Dilemmas concerning use of data & information

(Explanation: It would be possible for seniors to be equipped with sensors (placed in clothing or worn on the skin) which regularly transmit health data, e.g. blood pressure, to a healthcare professional. Many people with dementia already wear a GPS tracking device which triggers an alert if they stray beyond a certain area. The sensors and GPS devices operate continuously, generating data which has to be stored or processed somewhere.)

Representatives of ageing and health research warned that it is not specified in Scenario 1 who can do what with the data resulting from the use of technology. With Scenario 1, opportunities would arise from the existence of a centralized dataset. Clients and health professionals would have access to the same information. But what other health system actors should be allowed to see and use this data? The health insurers who set our premiums? There would be a risk of excessive transparency. On the other hand, access to different patients' health data is also required in order to generate knowledge and drive improvements. Today, various patients already use wearable activity-tracking systems (e.g. Jawbone). This represents an opportunity for prevention.

Other issues regarding Scenario 1

What is lacking in Scenario 1?

- In all the scenarios, the role to be played by insurers is not defined.
- There is a need for technical support and a coordinating body.
- The communes should have a say, as they are most familiar with the needs of the people concerned.
- Scenario 1 does not define the role to be played by Spitex (home care services) in providing technology/care kit "training" and in assessing individual needs in consultation with physicians. Here, Spitex plays a crucial role.
- At the communal and cantonal level, there is a need to develop resources and expertise for the use of assistive technologies.
- Responsibilities concerning the care kits are not defined in Scenario 1. Who is to – or can – decide on the content of these kits?

Measures relating to Scenario 1

- With regard to technologies, the federal authorities would have to set a framework for **quality** and financing. According to seniors' representatives, there is a need for uniform **standards**, e.g. for **funding**. An example would be the flat rate per case system (Diagnosis Related Groups, DRG), where national standards exist.

- If Scenario 1 were to be implemented, the health system would have to be **organized at the national level**, i.e. uniform legislation would need to be developed.
- Higher education institutions could prepare an **overview** of tried-and-tested and useful technologies. An overview of possible options for funding and responsibilities could be prepared by a university/university of applied sciences.
- According to seniors' representatives, a **training** category would need to be created for elder-care personnel. One cannot introduce new systems without providing appropriate training programmes. Spitex staff should receive technology training.

Differences between the groups

In this scenario, prevention is highly rated by representatives of the care sector and of ageing and health research. Of major importance for representatives of ICT research and ICT companies are the standardization and product selection aspects. Particularly important for seniors are self-determination and political influence.

Scenario 2: Freedom of choice

*The second scenario **"Freedom of choice"** is based on a new political system where incentives for care recipients go directly to the user, and this scenario furthermore describes a society where you can buy a great variety of care services from the open market. Everyone in need for care is entitled to incentives and financial support depending on his or her health condition.*

In this scenario, the municipal care sector was liberalized all over the country. Simultaneously, the Parliament established a system where incentives for care recipients go directly to the care recipients. Everyone in need for care is entitled to incentives based on their health condition. Each and every one can use these financial aids – likely combined with personal finances – to be spent on the particular services they want and need.

The responsibility of the cantons and municipalities is now to ensure the existence of an adequate supply (national standards or higher) of care services for those living and residing there.

At several places, the local care services are shut down, while some municipalities still provide care services in competition with private operators. The cantons and municipalities who manage to create an excellent professional and working environment are most successful. That makes them competitive as both employer and service provider.

General response to Scenario 2

Quality assurance: Care sector representatives warn that, because there is no provision for preselection – or labels for reliable, useful technologies – in this scenario, hospital IT projects would involve high risks of poor decisions and resultant costs.

Data protection: In this scenario, individuals are free to decide whether or not – and to whom – they wish to disclose their data. There is a very high level of personal responsibility. However, people in need of care or elderly patients may no longer be able to decide for themselves. Persons providing support thus face a decision problem and an ethical dilemma – should they make the data available to professionals, or for research purposes?

Mandatory diagnosis: Under this system, payments for technology purchases would be made directly to care recipients on the basis of a diagnosis – which, according to care sector representatives, means that consulting a doctor would no longer be voluntary.

Training: This scenario calls for a broad focus: care personnel have to be familiar with and able to consider many different aspects. There is a need for basic training in elder care, including the use of technologies.

Employment: At the cantonal level, this scenario would lead to the elimination of many straightforward tasks – there would thus be fewer low-level jobs in this area. At the same time, the burden of routine activities would be eased for those working in the care sector.

Gender: Men tend to be the first to take an interest in technology; women do so later. The predominance of female professional carers could delay the acceptance or use of assistive technologies.

Positive responses to Scenario 2

Freedom of choice and individual responsibility: A positive aspect of Scenario 2, according to seniors' representatives and ICT research representatives, is that those who can decide for themselves will still be able to do so. Scenario 2 is believed to be likely given the rise of the "selfie" generation and the importance attached to individual responsibility and easing the burden on others. Direct payments strengthen the individual, in the view of care sector representatives.

Needs-oriented: According to a representative of ICT companies and consultants, Scenario 2 is desirable because it is potentially oriented to demand and needs. The possibility of selection based on needs and financial resources is also noted by representatives of ageing and health research: a desired service could be specifically selected. Care sector representatives added that some elements of Scenario 2 are already a reality. In the canton of Berne, the care institution can be freely chosen. With Scenario 2, it would also be possible to choose the apps one wishes to use. Consequently, funds would not be misspent. In the technology field, a free market is better than centralized systems.

Freedom for communes: According to a care sector representative, Scenario 2 would also offer communes greater freedom, especially with regard to locations.

Shifting of costs: What makes Scenario 2 attractive is that it promotes individual responsibility; only what is actually needed would be used, and this would reduce costs, according to seniors' representatives. Also attractive is the fact that funding would be provided directly to the individuals concerned, as in the personal assistance model adopted by the Invalidity Insurance (IV) scheme for people with disabilities. According to representatives of ICT research, patients may also possibly use the money for prevention. What this group found attractive about Scenario 2 is the fact that competition between public and private operators leads to low equipment and service costs; there is an incentive for low-cost solutions. In Scenario 2, according to this group, public healthcare costs would be reduced, and there would be a shifting of costs.

Negative responses and concerns related to Scenario 2

Role of communes: According to seniors' representatives, Scenario 2 is not realistic since long-term care is organized at the communal level; for those who can afford to pay, private operators would then take over. Representatives of ICT research noted that Scenario 2 involves a major challenge: cantons and communes would have to be able to compete on the market. Cantons and communes with public facilities for low

income groups would find it difficult to compete with private operators with facilities for the wealthy population.

Too demanding for elderly people: Representatives of ageing and health research criticized that the "Freedom of choice" scenario presupposes a high level of autonomy, with everyone knowing what they need. However, dementia tends to be not the exception, but the rule. Those in need of care would have to be able to check whether a technology is useful for them or works well, but that is precisely what they are not able to do. Experience from Germany shows that, with the freedom of choice system, poorer people who lack education misspend the money they receive. In the future, according to representatives of ICT research, elderly people will still find it difficult to cope with new devices.

The "freedom" of choice is deceptive, in the view of care sector representatives – numerous dependencies remain, not least because of commissions received by vendors. In addition, there are no cushioning measures, which could pose risks especially for people with cognitive, mental or physical disabilities. A comparison with the telecommunications sector is instructive: the variety of services offered is bewildering, and many are not tailored to individual requirements. Under these conditions, it is very difficult to make an informed decision, and there is a risk of being talked into something unsuitable. Only those who are familiar with the technologies are able to choose freely.

Shortage of personnel: In this scenario, skilled personnel will be in short supply, according to seniors' representatives. Working conditions could become worse for professional carers; it is not attractive to be permanently on call or contactable.

Gender: Seniors' representatives thought that more attention should be paid to the difference between the sexes in the use of technology. For both carers/professionals and those in need of care, inhibitions can prevent people from taking full advantage of technologies. Those who are technology-averse will not use or will be unable to operate devices and will therefore receive poorer care. Representatives of ICT companies also saw a risk of isolation for elderly people in the future who are unfamiliar with ICT applications.

Driven by economic interests: Economic interests, rather than the needs of elderly people, were perceived as central in Scenario 2. According to seniors' representatives, there is a risk that people will be sold devices which they do not know how to use or which are of poor quality. Representatives of ICT research noted that complete privatization and freedom of choice are not optimal approaches in the elder-care sector. With Scenario 2, representatives of ICT companies and consultants also expected to see speculation and supply-driven costs. Care sector representatives feared that freedom of choice could be exploited by professionals receiving commission for the sale of devices. Advice would never be truly impartial.

Risk of outsourcing: Representatives of ageing and health research warned that there was a risk of the system being internationalized, with elderly people being "outsourced" to lower-cost centres abroad. Support services (e.g. telemedicine) could be outsourced for reasons of cost and provided by people whose language skills may be inadequate.

Two-tiered society/lack of basic provision: With Scenario 2, all the representatives at the workshop saw a risk of a two-tiered society. What will happen to those who cannot afford good-quality technologies? In the view of seniors' representatives, the question of justice will be central. The well-off will be able to obtain good care, while those of limited means will be dependent on welfare in Scenario 2 (cf. the US system). Representatives of ICT research warned that there would be no basic level of provision, as in Scenario 1,

and two-tiered medicine would emerge. Representatives of ageing and health research noted that the quality of care would depend on one's financial situation. Scenario 2 would lead to segregation within society.

Costs: Technological innovations may not replace services provided by care personnel, but would be additional and could trigger an increase in costs. According to seniors' representatives, there would still be a need for home visits. Emergency call systems for elderly people living at home could create new costs for communes. Representatives of ageing and health research raised the objection that the description of Scenario 2 suggests that sufficient funds would be available for distribution. Care sector representatives warned of the disadvantages associated with direct payments – levels could vary, depending on the pressure to make savings within the commune. Cost pressures could lead to poor care services, as illustrated by a case in Sweden.

Profusion, quality, continuity and integration of devices: The market for innovative technologies is small and highly fragmented. There are numerous small technology providers, each offering their own system. There are no major players for efficient solutions, according to representatives of ICT companies and consultants. With Scenario 2, according to representatives of ICT research, there will be a bewildering variety of products. The excessively dynamic market will mean that continuity of applications is not assured. Standards would have to be controlled by the federal authorities, otherwise the integration of devices could not be guaranteed. Representatives of ageing and health research expressed concerns about the quality of technology products. In their view, the freedom of chosing among proven, i.e. effective products would be desirable. Care sector representatives also objected to the lack of quality standards in Scenario 2; these would need to be carefully defined.

Intergenerational solidarity: With Scenario 2, according to representatives of ageing and health research, there would also be a rupture between the generations, with younger people no longer feeling responsible for the care of their elders.

Funding models: Funding needs to be carefully considered, according to care sector representatives. There are currently 12 classes of care, each with a defined amount paid by the health insurer; recipients can then purchase the services they require. Alternatively, care packages worth e.g. CHF 3000 could be defined, with a specified content, and people could then compare what they can get for the same amount.

Dilemmas in Scenario 2

Relief: Scenario 2 eases the burden on the State, but at the same time the federal government has to implement a quality assurance system for which no funding is envisaged in Scenario 2.

Expertise: Representatives of ICT research pointed out that it is very difficult to maintain an overview of the various offerings. Even they, as professionals, would not know which is best for a particular person. This complicates the provision of advice and the specification of the products/services available. Who is to choose the content of a package in Scenario 2?

Resource use: Energy consumption is likely to rise as a result of the increased use of assistive technologies. In addition, the production of high-tech devices, batteries, screens, sensors, etc. requires the use of scarce raw materials, often obtained from conflict-affected regions with significant energy and water consumption.

Communes: Scenario 2 poses a dilemma for communes: while the commune has more freedom in its provision of nursing and care services, the definition of these services may be too challenging.

Other issues regarding Scenario 2

What is lacking in Scenario 2?

Liability: In Scenario 2, responsibility or the risks associated with the use of a certain technology are borne by the consumer, not the provider; this issue is not considered.

Financing of support: Direct payments only relate to the technologies; user support and supervision (e.g. by the GP) is not covered.

Financial situation: Seniors' representatives noted that, in all the scenarios, no reference is made to the financial situation. What will happen if, for individuals and the state, less and less money is available? With Scenario 2, according to representatives of ageing and health research, it is not clear whether access to a minimum level of healthcare will be assured in 2025.

User empowerment and education: Freedom of choice is only advantageous for well-educated seniors. In Scenario 2, according to representatives of ICT research, there is a need for empowerment of users.

Quality assurance authorities: In Scenario 2, according to research representatives, there are no authorities responsible for defining quality standards and monitoring compliance. Care sector representatives emphasized that the quality of technologies needs to be guaranteed so as to avoid empty promises. For example, there would need to be a standard for telemedicine or a plan to ensure reliable implementation of an emergency call system. Quality standards would have to be defined by the federal authorities and professional associations (nursing association?).

Care personnel: In Scenario 2, the issues of personnel and regional differences are not considered: experience from Germany shows that, in regions where housing and living costs are too high for care workers, there are shortages of care personnel. Representatives of ICT research expressed concern that the market will probably not be able to attract sufficient care personnel in all areas.

Advisory role of health professionals: According to representatives of ageing and health research, more technologies and a free market would call for additional skills on the part of health professionals, as they would also take on an advisory role.

Decision on care requirements: In Scenario 2, in particular, it is not clear who is to decide on the use of technologies for those whose cognitive abilities are inadequate.

Measures relating to Scenario 2

Standards, quality assurance bodies: In Scenario 2, registered certificates/labels would be required for products and services. Regulatory bodies would need to be established and service levels defined. Standards are required for services and quality. Care services would need to be evaluated using key performance indicators. Operators would have to introduce quality management. According to representatives of ICT research, criteria are also required for the purchasing system. Representatives of ICT

companies noted that, in Scenario 2, independent standard setting, quality requirements and ethical guidelines are needed.

Advisory services: In Scenario 2, according to representatives of ICT research, independent advisory services would be required. It would not necessarily be desirable that they should be financed by health insurers. In addition, professionals would require training in the selection and use of assistive technologies. Public-private partnerships (PPPs) should be launched. A professional association would be needed to provide support on selection and use, according to care sector representatives.

Assessments: Patients need to be assessed, and a certain sum of money can then be granted on the basis of this assessment.

Care personnel: Cantons and communes must ensure that sufficient care personnel are available. They must offer specific training courses and provide further training for qualified staff.

Models: There is a need for new models, according to seniors' representatives – e.g. barrier-free or technology-compatible environment planning, or engagement of relatives in care homes. There should be a move towards the personal assistance model used by the IV. A solution could also lie in a combination of Scenarios 2 and 3.

Data protection: Awareness of data protection needs to be raised among technology users (professionals, relatives, seniors, volunteers). Consumer protection organizations would also need to take an interest in medical technologies. Care sector representatives expressed that protection of privacy must also be possible with advanced technologies.

Differences between the groups

To a greater extent than other stakeholders, seniors' representatives are seeking alternative models for the organization and financing of care services. For representatives of the care sector and representatives of research (in both areas), the main concern arising from Scenario 2 is the potential for technology users and purchasers to be manipulated or excessively challenged. Representatives of ICT companies are more concerned about who would be responsible for setting standards, and who would assume the advisory role in Scenario 2.

Scenario 3: Volunteering community

*The third scenario **"Volunteering community"** is based on volunteering people as the key resource for the community and for each other. This could include the senior citizens themselves, their relatives, charities, neighbours, school children etc. The cantons' and municipalities' main role is to mobilize coordination of the volunteering organisations.*

In this scenario, the government established the *Community for the senior citizens* program, which called for a mobilization of senior citizens and volunteers in all municipalities. The idea was to invite healthy senior citizens, their relatives, neighbours, charity organisations and other volunteers to a national boost, to relieve the workload of the care services. The program introduced new types of financial subsidies, like funding of voluntary projects within the cantons and municipalities. The initiative also spured many bottom-up initiatives by the local community, schools, volunteering organisations etc.

Simultaneously, an increasing number of cantons and municipalities decided to open the market to new care service operators. All these new companies have to satisfy high national standards for quality and patient dignity. Foreign businesses may now be authorized as care service providers for Swiss municipalities.

There are also some new trends. Senior citizens, more often than earlier, share resources as well as expences for housing, healthcare and help for everyday tasks. Information technology is used to coordinate the supply and demand for volunteering resources like IT-competence, gardening help or chauffeur assistance.

The cantons and municipalities are responsible for ensuring proper healthcare to their inhabitants, including the monitoring of the quality of care provided. They are required to deliver some health services, to manage licenses for private operators and to stimulate the coordination of the volunteering organisations.

General response to Scenario 3

Seniors as a resource: According to seniors' representatives, there are untapped resources in seniors which could be more widely recognized, respected and taken advantage of. Active seniors are capable of serving as volunteers, looking after those in need of care. In addition, they can draw on their experience to support younger people. Scenario 3 thus arouses the interest of seniors' representatives.

Role of social media: Technologies (platforms) can promote volunteering, according to representatives of ICT companies. Representatives of ageing and health research added that volunteer organizations can optimize their activities by using social media. Exchanging of services is facilitated (time banking system). Numerous services are already exchanged on the Internet. According to care sector representatives, time assets are already exchanged by professionals.

Combination desirable: Volunteering is an important resource, and seniors' representatives suggested that it should be incorporated into Scenario 1. The volunteering system is always available and complementary to the other two scenarios. While considering volunteering to be desirable as an additional component of healthcare, representatives of ageing and health research stressed that volunteering alone is not realistic, for the following reasons:

Restricted scope: Volunteering works within certain limits, e.g. for providing personal support to prevent isolation. Volunteering is a realistic option for social care and contacts, but not for physical care: people do not want to be washed by their neighbours. It is an illusion that professional care can also be provided by volunteers.

Payback: Representatives of ICT companies raised the question of the true meaning of "voluntary". Don't people always expect something in return? Voluntary services with no "payback" are rare. The notion of solidarity has yet to take root.

Today, according to representatives of ageing and health research, volunteers are increasingly scarce, as people are increasingly occupied with new technologies.

Positive responses to Scenario 3

Intergenerational understanding: Scenario 3 is desirable because it promotes intergenerational understanding, because it enables society to take more responsibility and because it permits the involvement of active seniors. This model would preserve rather than undermine the intergenerational contract.

Easing the burden on the state and care services: Many stakeholders considered Scenario 3 to be desirable because financial resources are of lesser importance. Scenario 3 offers a solution to shortages of funding and skilled personnel.

Technology as a means of organizing care: What makes Scenario 3 attractive is the fact that technology merely acts as a catalyst, providing organizational support: not technology itself is central, but the benefits technology brings, e.g. by creating new opportunities for volunteering. Collaboration tools facilitate community self-management. For example, an individual can serve as a point of contact. People close to a patient can be involved via new technologies. However, there is still a need for support from health professionals, who can empower patients, volunteers and relatives.

Promoting contacts: According to representatives of ageing and health research, this is the only model that promotes social contacts; there is no substitute for human relationships. According to representatives of ICT companies, however, technologies also offer opportunities to strengthen existing communities or create new ones. Seniors could form virtual communities and, via technology, offer something back to the community.

Help with using technologies: According to care sector representatives, the involvement of volunteers offers a huge potential in connection with the use of technologies – a child can explain how to operate a mobile phone.

Quality/benchmarking: Social media permit transparency and comparisons (seniors or volunteers report on the services provided in their area, others report on their experiences), thus contributing to the quality of care, according to representatives of ICT companies.

Negative responses and concerns related to Scenario 3

Exploitation: Seniors' representatives recount that people frequently take advantage of volunteers. In most cases, these are women who have already spent their whole life looking after and caring for others.

Lack of continuity: According to seniors' representatives, Scenario 3 is undesirable because the continuity of care which is urgently required cannot be guaranteed with volunteers.

Trend towards individualism: Representatives of ICT research considered Scenario 3 to be rather unrealistic, given the current trend towards increasing individualism. Representatives of ageing and health research also took the view that it is unlikely that existing voluntary activities could be expanded.

Far-off relatives: A representative of ICT consultants estimated that 50% of households may soon be one-person households. Relatives – the volunteers "closest" to the patient – would then no longer be available.

Quality: Volunteers are not trained and cannot provide a professional service. Their reliability may also be inadequate, according to representatives of ageing and health research. This could lead to deficiencies in the quality of care. There are limits to what volunteers can do.

Seniors looking after seniors: According to representatives of ICT consultants, seniors cannot be looked after solely by others from the same age group. Everyday technologies are tending to become more complicated (ticket machines, self-scanning checkouts, etc.). Representatives of ageing and health research added that this age cohort is not accustomed to the use of technologies (the "digital homeless").

Volunteers' workload: With current workloads, the volunteering resources are simply not available. According to representatives of ageing and health research, today's 40-year-olds already carry a triple burden – looking after children and ageing parents, as well as working. Care sector representatives also point out that people with a heavy workload, such as the working poor, do not have the option of volunteering and cannot participate in a time banking system. How is this equitable?

Administration: A time banking system requires administration. Otherwise, people cannot be sure that today's efforts will still count in the future.

Data protection: According to care sector representatives, access to or use of data by volunteers could be problematic.

Dilemmas in Scenario 3

The deployment of volunteers is realistic, but only as a complementary measure, and it must remain voluntary. Representatives of ICT research found that caring for relatives can be highly stressful. Volunteers are not professionals; a sound professional basis is needed for emergencies; in practice, provision of care by relatives is often unrealistic.

According to representatives of ICT consultants, ethical dilemmas may arise because there are always some people not willing to accept every new technological development.

Exchanges do not amount to volunteering; rather, they involve the bartering of services. This can remove financial obstacles, but it may also impose an excessive burden on those involved.

Other issues regarding Scenario 3

What is lacking in Scenario 3?

- Incentive systems such as a "care time account" would support the development of neighbourhood assistance. In St. Gallen, a "care credit" system is already operating.
- In Scenario 3, Spitex could play an important role by managing volunteer accounts or coordinating volunteer activities.
- Not described in the scenario is the role of financing, or whether there would be regular state contributions.
- Awareness of privacy/security issues is lacking in Scenario 3. The transparency of social media (used, for example, to share information among volunteers) leads to risks of misuse.
- According to representatives of ageing and health research, the tensions between the aim of improving quality of life and low-cost care are not addressed in Scenario 3.
- This scenario fails to distinguish between formal and informal volunteering; the difference is important.
- The possibility of "younger seniors" looking after "older seniors" is not mentioned.

- If volunteering is to work, there needs to be a clearly defined framework and professional support for volunteers.

Measures relating to Scenario 3

- A pool of relatives would need to be established, providing support where the care recipient lives, not where the relatives live.
- Protection of privacy: Those in need of care must be able to control what is communicated to whom.
- Scenario 3 is conceivable if incentives are created, e.g. for young people, to help those in need of care. There must be a guarantee that the volunteer work performed can be redeemed at a later date – a system of credits for services provided.
- Scenario 3 requires a high level of integration into society.

Differences between the groups

Seniors' representatives were inspired by this scenario because it involves the mobilization of social resources, including those of active seniors. Representatives of ageing and health research and care sector representatives had concerns about the capacity of volunteers and the quality of care. The latter, as well as representatives of ICT research and of ICT consultants, emphasized that there are limits to what volunteers can do, and that there is still a need for professional basic care provision.

General response to the scenarios

According to care sector representatives and representatives of ICT research, assistive technologies should maintain the quality of life of elderly people and offset disabilities. In the scenarios, reference is only made to the functionality of technologies. While the use of technologies could compensate for a lack of personnel, seniors' representatives emphasized that attention still needs to be paid to the subjective quality of life of the people concerned. For example, while the use of GPS devices would appear to be valuable for people with dementia, its use would need to be reconsidered, if the permanent surveillance makes them feel uncomfortable.

Seniors' representatives added that we should focus on the benefits of technologies rather than on the various technologies themselves or on regulatory aspects. This requires policymakers to define the services which technologies should provide in elder care and in the daily lives of elderly people.

Care sector representatives also found that affinity to technology plays a major role in the use and acceptance of technologies: for seniors who are unfamiliar with computers and – in many cases – for women, the use of ICT may be less attractive; they may also have difficulties in operating these technologies.

Emergency call systems enable people to get help in an emergency situation even if they live alone. This obviates the need for regular visits. However, with all uses of technology (e.g. rehabilitation via video), there is a risk that elderly people will have fewer social contacts or be visited less frequently.

All stakeholder groups pointed out that there is a need to build up expertise in the use of assistive technologies and the provision of advice. Large-scale introduction of technologies (as in Scenario 1) would necessitate specific training for professionals and those in need of nursing or care, as well as for relatives and volunteers.

Potential: Care professionals' representatives expressed that, with the use of assistive technologies, certain routine tasks would no longer be necessary; hopefully, this would make it possible to devote more time to those in need of care. However, this would require the automation of non-care activities. The use of technologies could also provide relief to those living at some distance from the doctor or hospital, as they would not need to make the journey for a check-up. Robots (cf. the TA-SWISS report on RoboCare[7]) could in the future minimize heavy physical tasks such as lifting, repositioning or transferring. In addition, extensive use of technologies in elder care would create new advisory and other jobs for skilled professionals.

A representative of the eHealth sector presumed that the technologies would also have changed by 2025, not just the regulation and organization of elder care. The regulations would therefore need to be adapted to these developments.

A gerontologist criticized that the scenarios are idealized – with no mention of scarce resources – and are thus remote from reality. A representative of ageing and health research observed that the people portrayed are exclusively middle class: no-one is of migrant origin or has a chequered personal history.

In the view of one participant, scenarios are designed merely to stimulate intellectual exercises; in reality, mixed solutions would emerge.

At the end of the discussion, a senior representative requested a short and informal poll where all participants could vote for a scenario. In this vote, Scenario 1 was the most popular (11 votes), followed by Scenario 2 (8 votes) and Scenario 3 (7 votes). However, all participants agreed, that none of the scenarios as a stand-alone version would represent a desirable future. Instead, they wished for a mix that involved elements of all three scenarios.

[7] https://www.ta-swiss.ch/en/robotics/

Analysis and synthesis of visions and recommendations from Switzerland

Overview of visions

The visions were formulated independently of the scenarios, but on the basis of the knowledge of and the reflections on all three scenarios.

Below, the visions and associated measures are grouped under 8 thematic headings, or **8 requirements for future regulations**:

1. Recognition and acknowledgement of individual needs
2. Self-determination, autonomy and freedom of choice
3. Guaranteed basic care provision
4. Participation and inclusion
5. Supporting role of technology
6. Quality assurance and data protection
7. Frameworks, organization, roles and actors
8. Coordination with environment and urban planning (integration into new buildings which are senior-friendly/provide generational flexibility)

Recognition and acknowledgement of individual needs

Visions

Seniors have access to technologies which meet their needs and wishes.

In order for this vision to be realized in the future, the following measures should be adopted:

- In cooperation with insurers, the financing of assistive technologies must be assured.
- Stakeholders (research, business, healthcare) work together on the development of technologies.
- Surveys are conducted to determine users' requirements.
- Technologies are evaluated and awarded a label if they fulfil the requirements or meet the needs of elderly people.
- Data protection must also be assured in the use of new technologies; legislation must be adapted accordingly. Guiding principle: "non-intrusive technologies".
- The availability of personnel must be ensured by determining future demand, providing appropriate training and allocating resources for this purpose.
- Public funding should be provided to strengthen seniors' and patients' associations.

Elderly people use technologies according to their needs, to make up for disabilities and maintain quality of life.

To enable them to do so, elderly people need to receive training or advice; they must be aware of the possibilities and able to express specific wishes. They should also be able to opt for minimal technological support or no support at all. It should be possible for the technologies to be switched off.

Technologies should compensate for deficits.

Technologies should take needs into account and compensate for individual weaknesses (vision, etc.). Technology must be adaptable to individual and current needs. Technologies should help people to regain the quality of life that has been lost; this includes social aspects.

Elderly people receive the care or services they require or desire.

In the future, better assistance and support should also be assured for those of advanced age (over 80); they must not be simply abandoned to their fate.

Self determination, autonomy and freedom of choice

Visions

Technology should enable people to maintain their autonomy for as long as possible, with a high (subjective) quality of life.

Support should be possible in the areas of mobility, personal hygiene, nutrition, hearing/vision/memory, housekeeping, social contacts, etc.

Assistive technologies should not restrict but enhance autonomous living, e.g. by making a person who is in need of care less dependent on a home or family members (e.g. self-driving car).

As elderly people, we would wish to use teleassistance if it is voluntary and beneficial. We would not wish to be marginalized for being unable or unwilling to use technological devices.

The quality of life, dignity and autonomy of each individual is the central concern. Elderly people are respected as citizens of equal status and not subject to discrimination; they should be able to make their own decisions and lead autonomous lives.

Autonomy: People should be able to live in their own home for as long as possible.

People's current needs are decisive. "Allowing them to live at home for as long as possible" is not always ideal. New forms of living can make it possible for a couple to live together even if one partner requires residential care.

Guaranteed basic care provision

Visions

Teleassistance is available for everyone.

Measures:

- Pilot phase in one region; technologies which have proved valuable should then be made available to everyone.
- To make this possible, there is a need for public funding or for insurance arrangements (e.g. via disability or health insurance supplementary benefits)

Care should be affordable for patients and the state.

Measures: A combination of volunteers (for social contacts) and professionals (for personal care) is a promising approach. This requires the development of an effective organization coordinating services at the regional or communal level.

Care services and assistive technologies are technically and economically efficient, while giving due consideration to the autonomy, dignity and individual responsibility of people in need of care.

Measures: Quality assurance, transparency, benchmarking, involvement of users.

Participation and inclusion

Visions

Elderly people are involved throughout the technology development process, with their needs and acceptance being taken into account. A simple and user-friendly way of operation and use is a basic requirement for all assistive technologies.

Measures:

- Elderly people regularly evaluate the user-friendliness and utility of technical aids.
- Funding for technology development is only provided if elderly people are involved (participation stipulated as a condition, e.g. at the level of the Commission for Technology and Innovation).

No-one is to be excluded from social life as a result of technology (e.g. if train tickets can only be purchased online).

Evaluation of assistive technologies must be a central component of research methods.

Research in this area must be consolidated in Europe and in Switzerland.

Technology as support

Visions

Technologies complement but are not a substitute for nursing and care provided by human beings.

Assistive technologies are user-friendly, unobtrusive and optional technical aids, which can be used autonomously. The technology supports quality nursing/care. It should be as simple as possible to ensure user friendliness.

Technologies enhance overall quality of life and make it easier to utilize one's own remaining resources.

Measures: Products must be designed in such a way that people are familiar with them before using them (well-known principles of operation). Technology should help to preserve the patient's individual personality by being acquired when the person is still healthy in order to be at the patient's disposition when faculties are beginning to be lost (e.g. dementia).

Care professionals (including communes, Spitex) should receive support that enables them to work as efficiently and effectively as possible.

Technologies take over physically strenuous or repetitive care tasks, enabling the carer to devote more time to the patient. Technologies should support not only elderly people but also informal care-givers and professionals.

Quality assurance

Visions

Policymakers establish guidelines so that appropriate standards exist both for care services and for assistive technologies.

Measures: Associations define a standard for telemedicine and criteria for the reliable implementation of emergency calls.

Assistive technologies which meet patients' requirements for quality, specific utility and safety are awarded a registered label.

Data protection and protection of the privacy of elderly people is also guaranteed in connection with the use of assistive technologies. Patients benefit from the data recorded. Data is only recorded if it is needed. There are clear guidelines on data storage and use.

Frameworks, organisation, roles and actors

Visions

By 2025, a consensus/technical standard for the quality of assistive technologies is established and implemented.

The federal government initiates pilot projects for people in need of care, with incentives for communes to deploy technologies. A precondition is that industry develops user-friendly and useful products, with higher education institutions participating in this process. In addition, individual responsibility and autonomy must be assured.

Policy design must be sustainable. Policymakers should create a uniform framework to reduce/optimize future care costs.

Technology promotion should help to maintain quality of life, with affordable prices. Technology use is promoted, for example, by means of building regulations (e.g. IT equipment) and appropriate design of the living environment.

Equal access to assistive technologies and the care provision system is assured for people in need of care. To guarantee this, compensatory mechanisms are used.

People in need of care receive advice from someone who is familiar with the options available. Relatives also receive advice on the available technologies, not just the people concerned. A new group of specialists

is required, capable of suggesting suitable technical solutions for each kind of disability (diagnosis). The canton could provide such advice and would have to train people for this task.

Health professionals have up-to-date knowledge on assistive and effective technologies. There is a need for appropriate education on assistive technologies and for professional skills. The canton must invest in the training of care professionals. The federal government must introduce knowledge into the market and make knowledge centrally available. Care professionals must either be kept up to date on technologies (regular training) or at least have access to a network which possesses this knowledge. Cooperation is required between care professionals and specialists on the use of technologies.

Coordination with environment and urban planning (integration into new buildings which are senior-friendly/provide generational flexibility)

Visions

Autonomy & social contacts: People should be able to live for as long as possible in familiar surroundings or in their own home, but they should not feel lonely. Technologies should facilitate this.

Technologies (for this purpose) are integrated into an adaptable home and living environment, where they can provide support during the various phases of ageing.

Measures:

- Architects develop homes and buildings which are capable of being adapted.
- Engineers develop technologies for senior-friendly housing, not just for medical facilities.
- Buildings and the environment are planned with integrated technologies. Consideration should also be given to the care professionals who work there.
- Urban planning is reassessed in view of the ageing society.

Housing and living environments have a flexible design, so that they meet the varying requirements of different generations. Technologies are linked to the living situation, so that architecture and assistive technologies are more effectively combined – for the benefit of the ageing.

Measures:

- Federal, cantonal and communal authorities ensure that the necessary infrastructure is made available.
- Promotion of technology use via building regulations (e.g. IT equipment), appropriate design of the living environment.
- Barrier-free, centrally located and affordable housing should be supported by the communes.
- Barrier-free housing should also be provided with basic technical equipment (IT infrastructure). The environment is important, not just the accommodation.

Alignment with national policies

Due to Switzerland's federalist structure, there is no specific policy for telecare and home-based telemedicine on a national level. Therefore, the visions and measures developed by our stakeholders cannot be directly compared to actual Swiss policies.

It is, however, interesting to note that Scenario 1 “One size fits all” was voted the most popular – a scenario that was at the same time evaluated as rather unrealistic for Switzerland. Such a scenario would call for a centralized governmental system that sets the standards and controls the health market. This stands in contrast to the very decentralized Swiss federal principle, where the 26 cantons mostly have the authority to regulate the healthcare system.

Summary and concluding remarks

Overall, our participants were very motivated and eager to discuss the subject on telecare in an ageing society. This highlights the relevancy of this topic for all stakeholder groups. Particularly seniors and people from the care sector highly appreciated the opportunity to voice their opinion and be heard.

Furthermore, the exchange between representatives of different interest groups was perceived as very enriching by the participants. It therefore seems essential to encourage a dialogue between the different stakeholder groups when it comes to the development of new technologies and policies regarding telecare and home-based telemedicine. An involvement of different interest groups would help to reach an agreement that is supported by all parties concerned.

Appendix A: List of participants in the scenario workshop

Stakeholder Group	Name		Organisation/firm	Phase 3
Elderly/Patients	**Hubmann**	Vreni	Vereinigung aktiver Senioren- und Selbsthilfe-Organisationen Schweiz	1
	Schenker	Ruedi	Vereinigung aktiver Senioren- und Selbsthilfe-Organisationen Schweiz	2
	Schönenberg	Hansruedi	Schweizerischer Seniorenrat	3
	Schümperli	Monika	Alzheimervereinigung Kanton Zürich	5
	Vincenz	Alex	Schweizerischer Seniorenrat	1
	Ziltener	Erika	Dachverband Schweizerischer Patientenstellen	2
ICT research	**Darvishy**	Alireza	ICT-Accessibility Lab, School of Engineering, ZHAW	5
	Geissbühler	Antoine	Faculté de Médecine, Université de Genève	4
	Holm	Jürgen	Medizininformatik, Berner Fachhochschule	1
	Kistler	Rolf	iHomeLab – Hochschule Luzern	3
	Roth	Stephan	School of Engineering, ZHAW	5
	Urwyler	Prabitha	ARTORG CENTER, Universität Bern	--
	Wessig	Kerstin	iHomeLab – Hochschule Luzern	2
ICT & consulting firms	**Corrado**	Luigi	Association Romande de Biotélévigilance (ARBT)	4
	Köppel	Ruth	OrgaVisit	1
	Rappoport	Moshe	IBM Research	3
	Rüfenacht	Martin	Cisco Systems	5
	Scheuer	Eberhard	eHealth Consulting GmbH	3
	Sottas	Beat	sottas formative works	5
Research: nursing, health & age	**Bennett**	Jonathan	Institut Alter, Berner Fachhochschule Wirtschaft, Gesundheit und Soziale Arbeit	1
	Gysin	Brigitte	Institut für Ergotherapie, ZHAW	3
	Lambelet	Alexandre	Haute école de travail social et de la santé EESP	4
	Schelling	Hans Rudolf	Zentrum für Gerontologie, Universität Zürich	5
	Stuckelberger	Astrid	Institut de santé globale, Université de Genève	4
	Thilo	Friederike	Berner Fachhochschule, Fachbereich Gesundheit	5
Care sector: nursing & homes	**Gassmann**	Barbara	Schweizer Berufsverband der Pflegefachfrauen und Pflegefachmänner	1
	Leser	Markus	CURAVIVA, Fachbereich Menschen im Alter	--
	Leuthold	Urs	logisplus AG	--
	Meichtry	Benno	CURAVIVA, Fachbereich Menschen im Alter	3
	Portenier	Lucien	Schweizer Berufsverband der Pflegefachfrauen und Pflegefachmänner	4